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EXECUTIVE COMMITTEE OF
THE MULTILATERAL FUND FOR THE
IMPLEMENTATION OF THE MONTREAL PROTOCOL
Ninety-first Meeting
Montreal, 5-9 December 2022
Item 9(d) of the provisional agenda¹

PROJECT PROPOSAL: NIGERIA

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

Phase-out

- HCFC phase-out management plan (stage III, first tranche) UNDP and UNIDO

¹ UNEP/OzL.Pro/ExCom/91/1

PROJECT EVALUATION SHEET – MULTI-YEAR PROJECTS

Nigeria

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

(II) LATEST ARTICLE 7 DATA (Annex C Group I)	Year: 2021	150.18 (ODP tonnes)
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(III) LATEST COUNTRY PROGRAMME SECTORAL DATA (ODP tonnes)							Year: 2021	
Chemical	Aerosol	Foam	Fire-fighting	Refrigeration		Solvent	Lab use	Total sector consumption
				Manufacturing	Servicing			
HCFC-22				28.59	103.15			131.74
HCFC-141b		18.44						18.44
HCFC-141b in imported pre-blended polyols		2.18						2.18

(IV) CONSUMPTION DATA (ODP tonnes)			
2009–2010 baseline:	344.9	Starting point for sustained aggregate reductions:	398.2
CONSUMPTION ELIGIBLE FOR FUNDING			
Already approved:	230.4	Remaining:	167.8

(V) ENDORSED BUSINESS PLAN		2022	2023	2024	Total
UNDP	ODS phase-out (ODP tonnes)	2.40	0.0	41.37	43.77
	Funding (US \$)	200,000	0	3,385,000	3,585,000
UNIDO	ODS phase-out (ODP tonnes)	5.87	26.14	0.0	32.01
	Funding (US \$)	959,275	4,271,145	0	5,230,240

(VI) PROJECT DATA			2022	2023	2024	2025	Total
Montreal Protocol consumption limits (ODP tonnes)			224.19	224.19	224.19	112.09	n/a
Maximum allowable consumption (ODP tonnes)			224.19	167.81	167.81	112.09	n/a
Project costs recommended in principle (US \$)	UNDP	Project costs	0	0	0	0	0
		Support costs	0	0	0	0	0
	UNIDO	Project costs	1,944,347	0	1,199,847	0	3,144,194
		Support costs	136,104	0	83,989	0	220,093
Total project costs recommended in principle (US \$)			1,944,347	0	1,199,847	0	3,144,194
Total support costs recommended in principle (US \$)			136,104	0	83,989	0	220,093
Total funds recommended in principle (US \$)			2,080,451	0	1,283,836	0	3,364,287

(VII) Request for approval of funding for the first tranche (2022)		
Implementing agency	Funds recommended (US \$)	Support costs (US \$)
UNDP	0	0
UNIDO	1,944,347	136,104
Total	1,944,347	136,104

Secretariat's recommendation:	Individual consideration
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PROJECT DESCRIPTION

Background

1. On behalf of the Government of Nigeria, UNDP as the lead implementing agency has submitted a request for stage III of the HCFC phase-out management plan (HPMP), at a total cost of US \$5,056,222, plus agency support costs of US \$353,936 for UNIDO, as originally submitted.² The implementation of stage III of the HPMP will phase out 17.13 ODP tonnes of HCFC-22 and assist Nigeria in meeting the target of 67.5 per cent reduction in HCFC baseline consumption by 2025.

2. The first tranche of stage III of the HPMP being requested at this meeting amounts to US \$1,910,673, plus agency support costs of US \$133,747, as originally submitted.

Status of implementation of stages I and II of the HPMP

3. Stage I of the HPMP is financially closed and the funding balance was returned to the 90th meeting.

4. Stage II of the HPMP was approved at the 81st meeting³ to phase out 140.26 ODP tonnes of HCFCs used in the foam manufacturing and refrigeration and air-conditioning (RAC) servicing sectors, at a total cost of US \$8,890,734 plus agency support costs, to meet the 51.3 per cent reduction from the baseline by 2023. The second tranche was approved at the 88th meeting.

HCFC consumption

5. The Government of Nigeria reported a consumption of 150.18 ODP tonnes of HCFC in 2021, which is 56 per cent below the HCFC baseline for compliance. The country also used 2.18 ODP tonnes of HCFC-141b contained in imported pre-blended polyols, which is 96 per cent below its average use from 2007 to 2009. The 2017-2021 HCFC consumption is shown in table 1.

Table 1. HCFC consumption in Nigeria from 2017 to 2021 (Article 7 data)

HCFC	2017	2018	2019	2020	2021	Baseline
Metric tonnes (mt)						
HCFC-22	3,262.24	3,194.60	3,054.40	2,406.14	2,395.28	4,518.77
HCFC-123	0.0	45.70	0.0	0.0	0.0	0.00
HCFC-124	338.46	251.36	305.20	0.0	0.0	0.00
HCFC-141b	717.69	901.00	585.80	312.30	167.60	875.90
Sub-total (mt)	4,318.39	4,392.66	3,945.40	2,718.44	2,562.88	5,394.67
HCFC-141b in imported pre-blended polyols*	229.66	288.27	275.70	172.60	19.85	**484.43
ODP tonnes						
HCFC-22	179.42	175.70	167.99	132.34	131.74	248.50
HCFC-123	0.0	0.91	0.0	0.0	0.0	0.00
HCFC-124	7.45	5.53	6.71	0.0	0.0	0.00
HCFC-141b	78.95	99.11	64.44	34.35	18.44	96.35
Sub-total (ODP tonnes)	265.82	281.25	239.14	166.69	150.18	344.88
HCFC-141b in imported pre-blended polyols*	25.26	31.71	30.33	18.99	2.18	**53.29

* Country programme data

** Average use between 2007 and 2009

6. The steadily decreasing consumption of HCFCs in Nigeria can be attributed to the implementation of the activities under the HPMP and the shift to non-HCFC refrigerants available on the market.

² As per the letter of 29 July 2022 from the Federal Ministry of Environment of Nigeria to UNDP.

³ Decision 81/40

HCFC-142b, HCFC-123, and HCFC-124, both in pure and blended forms, were imported for servicing chillers from 2016 to 2019, but have been banned since 2020, when the Government established a ban on the import of HCFCs except for HCFC-22 and HCFC-141b.

7. Conversions completed at four commercial refrigeration foam manufacturing enterprises have contributed to the reduction in consumption of HCFC-141b; the enterprises have been informed of the upcoming ban on the import of HCFC-141b, starting from 1 January 2023.

Country programme (CP) implementation report

8. The Government of Nigeria reported HCFC sector consumption data under the 2021 CP implementation report that is consistent with the data reported under Article 7 of the Montreal Protocol.

Verification report

9. The verification report confirmed that the Government is implementing a licensing and quota system for HCFC imports and exports and that the total consumption of HCFCs reported under Article 7 of the Montreal Protocol for 2021 was correct (as shown in table 1 above). The verification concluded that Nigeria remains in compliance with the control targets set out in the Montreal Protocol and in its Agreement with the Executive Committee.

Status of progress and disbursement

Legal framework

10. The Government of Nigeria has an established legal framework for the management of ozone-depleting substances (ODS), including HCFCs. The National Environmental Regulation (2009) sets out guidelines for the manufacture, import, sales, and use of ODS, and establishes a protocol for the licensing and quota system. A ban on the import of HCFCs except for HCFC-141b and HCFC-22 has been in effect since 1 January 2020. The Ozone Layer Protection Regulation has been updated to include HFC control measures in line with the Kigali Amendment and the recent Montreal Protocol provisions. HFCs have been added to the licensing system, and energy-efficiency provisions have been included in the updated Regulation and gazetted by the Government.

Phase-out of HCFC-141b in the polyurethane (PU) foam manufacturing sector

11. Conversions undertaken at four commercial refrigeration PU foam manufacturers to phase out 30.5 mt of HCFC-141b are almost complete. Equipment has been delivered and installed; tests and trials are ongoing. All four enterprises are expected to be converted by December 2022.

12. The conversion at Slavit Group to replace 96 mt of HCFC-141b with cyclopentane in the manufacturing of insulation foam for cold storage rooms and panels for building construction is progressing. Equipment has been purchased and partially delivered; shipment of the remaining equipment had been delayed due to challenges faced by the manufacturer; equipment installation, tests and trials are expected to be completed by December 2022.

13. The group project to convert 35 downstream PU foam enterprises to replace 301.32 mt of HCFC-141b with methyl formate in spray foam, insulation panel and thermoware applications is ongoing. The National Ozone Unit (NOU) is currently in the tendering process for a conversion of a systems house. Following the selection process, the systems house is expected to be converted by November 2022. The conversion of downstream enterprises, including field applications of formulations and awareness workshops for small enterprises will follow.

Activities in the RAC servicing sector

14. The following activities were implemented in the servicing sector:

- (a) Ozone Layer Protection Regulations have been reviewed and updated to include provisions related to HFC control and energy efficiency; the Government gazetted the updated regulations and established a policy to ban the import and use of HCFC-141b as of 1 January 2023; HFCs have been added to the licensing system; a training manual on ODS import control has been developed and printed, with 500 copies distributed to customs officers; training was provided to 70 importers and 30 enforcement officers; and 50 sets of refrigerant identifiers were procured, with delivery expected by November 2022;
- (b) A draft national code of practices for the safe use of ammonia (NH₃), carbon dioxide (CO₂), and hydrocarbon (HC) in RAC systems was developed, published, and disseminated in 500 copies; enforcement of the licensing and quota system with regard to ODS and HFC has been strengthened with a newly developed electronic data registry and reporting tool;
- (c) The national training curricula for RAC technicians have been updated and are pending validation and dissemination to training institutions; a train-the-trainer programme for RAC technicians has been developed, with the first 30 participants to be trained abroad in November 2022;
- (d) A working group has been established to develop and implement a certification programme for RAC technicians; a tender for technical assistance is being issued to develop a framework for the national certification scheme, including registry and database, website, training materials, training for trainers and assessors, pilot implementation, and monitoring;
- (e) A list of equipment needed to establish two master training centres and upgrade the 16 existing training centres has been developed; equipment specifications are being reviewed; the procurement process has been initiated and delivery is expected in November 2022;
- (f) Operational guidelines have been developed for refrigerant recovery and reclamation, covering binding regulatory conditions, quality assurance, sustainability, minimum required infrastructure, and scope of coverage; equipment and 200 servicing kits have been procured for a medium-sized refrigerant reclamation centre to support the refrigerant recovery network, with equipment delivery expected in November 2022;
- (g) A total of 100 units of R-290-based air conditioners and 10 sets of equipment for monitoring energy performance have been purchased for installation in Government offices and training institutes to demonstrate the new technology, with equipment delivery expected in November 2022; a feasibility study on the use of R-290 in domestic air conditioners and the use of CO₂- and NH₃-based technologies in larger installations has been initiated to analyze technical solutions with respect to investment, energy efficiency, safety, installation, and maintenance; and
- (h) Awareness-raising activities included drafting the training curricula for dealers, installers, designers, and other stakeholders; supporting industry associations by strengthening their communication and networking infrastructure; promoting technologies with low global-warming potential (GWP) and the technician certification programme.

Level of fund disbursement

15. As of September 2022, of the US \$4,680,262 approved so far, US \$1,190,909 had been disbursed (US \$1,014,072 for UNDP and US \$176,837 for UNIDO), as shown in table 2. The balance of US \$3,489,353 will be disbursed in 2023-2024.

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

Agency	First tranche		Second tranche		Total		
	Approved	Disbursed	Approved	Disbursed	Approved	Disbursed	Balance
UNDP	2,600,000	*945,220	1,400,000	**68,852	4,000,000	1,014,072	2,985,928
UNIDO	176,837	176,837	0	0	176,837	176,837	0
Italy	269,025	0	234,400	0	503,425	0	503,435
Total	3,045,862	1,122,057	1,634,400	68,852	4,680,262	1,190,909	3,489,353
Disbursement rate (%)	37		4.2		25		

* An additional US \$1,173,136 has been committed in equipment purchase orders.

** An additional US \$400,361 has been committed in equipment purchase orders.

Project management and coordination

16. Project management, monitoring and coordination is conducted by the project management unit (PMU) within the NOU. Total PMU expenditures for UNDP amount to US \$192,508 with the following breakdown: staff and consultants US \$100,827; travel US \$35,316; meetings and workshops US \$48,558; and other miscellaneous expenses US \$7,807. The PMU cost of US \$17,376 for UNIDO has been fully disbursed for staff and consultants.

Stage III of the HPMPBackground

17. The project for the phase-out of HCFC-22 in the RAC manufacturing sector had been initially included in stage II of the HPMP, as submitted to the 81st meeting. The Executive Committee, however, decided to remove the project from stage II, and approved stage II to achieve a 35 per cent reduction from the baseline in 2020, and a 51.35 per cent reduction by 2023 only, noting that the approval of stage II did not preclude Nigeria from submitting, not earlier than 2020, stage III of its HPMP (decision 81/40(c)).

18. Stage III of the HPMP primarily focuses on the investment projects for the phase-out of HCFC-22 in the RAC manufacturing sector to achieve additional HCFC reductions. It does not overlap with the ongoing activities in stage II, i.e., phase-out activities in the PU foam manufacturing and RAC servicing sectors.

Remaining consumption eligible for funding

19. After deducting 230.38 ODP tonnes of HCFCs associated with stages I and II of the HPMP, the remaining consumption eligible for funding amounts to 167.81 ODP tonnes of HCFC-22. Stage III proposes to phase out 17.13 ODP tonnes of HCFC-22, i.e., its total consumption in the manufacturing sector; the remaining consumption to be phased out in future stages of the HPMP is calculated at 150.68 ODP tonnes, as originally submitted.

HCFC consumption by sector

20. Stages I and II have targeted a complete phase-out of HCFC-141b, both pure and contained in imported pre-blended polyols. Although conversion projects in the PU foam manufacturing sector approved under stage II are still being implemented and HCFC-141b continues to be imported, a ban on the import

of HCFC-141b both pure and in pre-blended polyols has been established and will come into effect on 1 January 2023. The remaining consumption in Nigeria is only for HCFC-22 used in the RAC manufacturing and servicing sectors. Table 3 presents HCFC consumption by sector in 2021.

Table 3: HCFC consumption by sector in Nigeria in 2021 (CP data)

HCFC	Foam	Refrigeration		Total
		Manufacturing	Servicing	
mt				
HCFC-22	0	519.78	1,875.50	2,395.28
HCFC-141b	167.60	0	0	167.60
Sub-total (mt)	167.60	519.78	1,875.50	2,562.88
HCFC-141b in imported pre-blended polyols	19.85	0	0	19.85
Total (mt)	187.45	519.78	1,875.50	2,582.73
ODP tonnes				
HCFC-22	0	28.59	103.15	131.74
HCFC-141b	18.44	0.00	0.00	18.44
Sub-total (ODP tonnes)	18.44	28.59	103.15	150.18
HCFC-141b in imported pre-blended polyols	2.18	0.00	0.00	2.18
Total (ODP tonnes)	20.62	28.59	103.15	152.36

21. In its CP report for 2021, the Government of Nigeria reported a consumption of 519.78 mt (28.59 ODP tonnes) of HCFC-22 in the RAC equipment manufacturing sector. Based on a field survey conducted in 2019 at 259 enterprises, HCFC-22 is primarily used in the manufacturing of domestic and commercial refrigeration, including refrigerators, freezers, ice-making machines, cold rooms, chiller boxes, and water coolers, and in the production of air-conditioning (AC) equipment. A total of 185 enterprises with a total consumption of 311.47 mt (17.13 ODP tonnes) were identified as eligible for funding; 183 of these are in the commercial refrigeration equipment sub-sector and two are AC manufacturers. Table 4 presents the consumption of HCFC-22 at the RAC-equipment-manufacturing enterprises eligible for conversion in stage III.

Table 4. Consumption of HCFC-22 by eligible enterprises in the RAC manufacturing sector (2019)

Application / Enterprise	Year established	Consumption of HCFC-22 (mt)
Commercial refrigeration		
Baosam Concepts	1997	7.07
Ifeco Tech Company	2006	6.53
Perabeam Limited	1988	11.56
Sanden Intercool	1990	10.80
Verac Technical Company	1979	6.50
Group I of 12 enterprises consuming 3-6 mt	Before 2007	50.69
Group II of 166 enterprises consuming 0- 3 mt	Before 2007	146.38
Sub-total for commercial refrigeration		239.53
Residential AC		
Sacral Industries Ltd	2004	14.88
Somotex Nigeria Ltd	1997	57.06
Sub-total for residential AC		71.94
Total		311.47

Phase-out strategy in stage III of the HPMP

22. Stage III proposes to completely phase out the use of HCFC-22 in the RAC manufacturing sector, mainly in small and medium-sized enterprises, through an umbrella project to achieve a 67.5 per cent reduction by 2025. To the extent possible, when selecting low-GWP technologies for conversions, the project will take advantage of the wide availability of HC-based alternatives in the country. Regulatory

measures to ban the use of HCFC-22 in the RAC manufacturing equipment are planned to ensure sustainability of the completed conversions. Safety standards will be developed for the servicing sector and technicians will receive training on the safe handling of flammable refrigerants to support the market adoption of the converted products.

23. In the commercial refrigeration manufacturing sector, R-290 will be used for equipment with small refrigerant charges (refrigerators, freezers, ice makers), while HFC-32 will be used for equipment with larger charges, taking into consideration safety requirements.

24. HFC-32 was selected for the conversion of residential AC manufacturing at Sacral Industries. For Somotex Nigeria Ltd, R-290 or HFC-32 is proposed.

Proposed activities in stage III of the HPMP

Conversions of manufacturing capacity in the commercial refrigeration sector

25. The cost of individual conversions at five commercial refrigeration manufacturers with consumption above 6 mt, including the replacement of equipment (refrigerant handling package, refrigerant charging machine, pre-charge evacuation, leak testing), safety system and antistatic floor in charge zone, Lokring, and modifications to the manufacturing zone, was calculated at US \$112,000 per line, as shown in table 5, at a total of US \$560,000 for all enterprises.

Table 5: Cost details for the conversion of manufacturing lines in the commercial refrigeration sector

Item	Quantity	Unit cost (US \$)	Total cost (US \$)
Refrigerant handling package	1	5,000	5,000
Charging machine (including supply pump)	1	30,000	30,000
Refrigerant storage	1	10,000	10,000
Pre-charging evacuation	1	5,000	5,000
Leakage detection	1	10,000	10,000
Lokring*	1	2,000	2,000
Safety package	1	40,000	40,000
Test package	1	10,000	10,000
Total cost of conversion per manufacturing line		112,000	112,000

*Used for sealing the refrigerant circuit, replacing the ultrasonic welding machine.

26. Twelve enterprises with annual consumption ranging from 3 to 6 mt (Group I) will have their equipment partially replaced. Depending on their needs, these beneficiaries will be able to select equipment from a list including charging machines, sparkless vacuum pumps, ventilation systems, valve manifold gauge sets, HC detectors, anti-explosion utilities, recovery machines, air blowers, Lokrings, and fire extinguishers, for a value of up to US \$40,000 per enterprise.

27. An additional 166 enterprises with annual consumption below 3 mt (Group II) will be converted under another group project; 51 of these beneficiaries will receive auxiliary equipment at a value of up to US \$10,000 per enterprise, including HC detectors, sparkless vacuum pumps, air blowers, and four-valve manifold gauge sets. Technical assistance and expert consultations will be provided to the remaining 115 manufacturers with a consumption below 1 mt per year. Enterprises in both Groups I and II will need to provide co-funding for equipment received from the Fund in order to convert to the selected alternative.

28. Technical assistance for all 183 enterprises in the commercial refrigeration manufacturing sector is planned in the form of 20 workshops, at a total cost of US \$100,000. Incremental operating costs (IOCs) are not being requested. The total funding for the conversion of the 183 enterprises was calculated at US \$2,800,000, with a cost effectiveness of US \$11.69/kg.

Conversions of manufacturing capacity in the residential AC sector

29. The conversion of two AC enterprises will involve replacement of equipment in the refrigerant supply, assembly line (pre-charge evacuation, refrigerant charge, leak detection, refrigerant circuit sealing), product testing line, recovery machines for repair, and provision of a safety system (sensors and control system, ventilation, antistatic floor, firefighting equipment) for handling flammable refrigerant. The incremental capital costs (ICCs) were calculated at US \$493,500 per line, as shown in table 6 below, amounting to a total of US \$987,000 for two lines.

Table 6: Cost details for the conversion of manufacturing lines in the residential AC sector

Item	Quantity	Unit cost (US \$)	Total cost (US \$)
Technical assistance for product modification	1	25,000	25,000
Technical assistance for factory layout	1	25,000	25,000
Refrigerant handling package	1	200,000	200,000
Safety measures	1	100,000	100,000
Assembly line modifications	1	25,000	25,000
Refrigerant tank and piping	1	40,000	40,000
Performance test area modifications	10	2,500	25,000
TÜV* or equivalent safety certification	1	30,000	30,000
Contingency (5 per cent)	1		23,500
Total ICCs per manufacturing line			493,500

* Technischer Überwachungsverein

30. The IOCs were calculated at US \$6.30/kg for a total consumption of 71.94 mt, resulting in a total cost of US \$453,222 for one year. The total incremental costs were calculated at US \$1,440,222 for the conversion of two manufacturing lines, with a cost-effectiveness of US \$20.02/kg.

Scholarship programme for female engineers and technicians

31. Phase-out activities proposed in stage III include the Kpabep scholarship programme, intended to develop the potential of female technicians and engineers and to create a group of experts and policy makers advocating for women employed in the RAC manufacturing sector in Nigeria. The cost of the scholarship, estimated at US \$336,000, as outlined in table 7, is further discussed in paragraphs 46 and 49.

Table 7: Cost of the scholarship programme proposed in stage III of the HPMP for Nigeria

Item	Description	Cost (US \$)
Steering committee	Setting up the governance mechanism	30,000
Selection of candidates	Identification and selection of candidates in partnership with local educational institutes and international partners (to be delegated to the Society for Women Engineers)	30,000
Scholarships	Average US \$3,600 x 30 female beneficiaries x 2 years (to be delegated to the Society for Women Engineers)	216,000
Monitoring of the recipients' performance	Continuation of the scholarship is subject to the recipients' performance shared by their educational institutes (to be delegated to the Society for Women Engineers)	40,000
Awareness raising	Facilitating social acceptance of female technicians working in the RAC and foam manufacturing sector	20,000
Total		336,000

Project management and monitoring

32. The system established under stages I and II of the HPMP will continue into stage III. A PMU for stage III will be established within the NOU, with the NOU, UNDP and UNIDO monitoring activities, reporting on progress, and working with stakeholders to phase out HCFCs. The PMU established for the implementation of stage III will operate in coordination with the stage II PMU and will be responsible for

managing and coordinating the implementation of activities. The cost for UNIDO amounts to US \$480,000, and includes personnel, operation, local travel, consultation meetings, documentation and reporting, storage, and other miscellaneous expenses (US \$195,000), consultancy services, monitoring and evaluation of implementation, travel, development of verification reports and tranche submissions (US \$255,000); and a five per cent contingency amount (US \$30,000).

Gender policy implementation⁴

33. Gender mainstreaming will be incorporated into all activities in the HPMP. Stage III plans to implement a scholarship programme for future female engineers and technicians with the goal of opening up employment opportunities for women in technical fields, particularly in the foam and RAC manufacturing sectors. The scholarship will encourage women to consider careers in technical subjects and engineering; strive to remove social and financial barriers for potential female candidates; actively help women develop leadership skills and confidence to succeed in RAC engineering and technology careers; model engineering and technology professions as a positive force leading to improved income and quality of life; demonstrate the value of diversity and inclusion; and encourage women to advocate for their peers and younger girls.

Total cost of stage III of the HPMP

34. The total cost of stage III of the HPMP for Nigeria has been estimated at US \$5,056,222 (plus agency support costs), as originally submitted, for achieving a 67.5 per cent reduction from its HCFC baseline consumption by 2025. The cost breakdown for activities by enterprise is presented in table 8.

Table 8: Proposed cost of activities in stage III of the HPMP for Nigeria

Application / Enterprise / Project	Selected technology	HCFC-22 consumption (mt)*	ICCs (US \$)	IOCs (US \$)	Project cost (US \$)	CE** (US \$/kg)
<i>Commercial refrigeration</i>						
Baosam Concepts	R-290/HFC-32	7.07	112,000	0	112,000	15.84
Sanden Intercool		10.80	112,000	0	112,000	7.53
Ifeco Tech Company		6.53	112,000	0	112,000	17.15
Perabeam Limited		11.56	112,000	0	112,000	1.96
Verac Tech Company		6.50	112,000	0	112,000	17.23
Group I of 12 enterprises consuming 3-6 mt		50.69	480,000	0	480,000	9.47
Group II of 166 enterprises consuming 0-3 mt		146.38	1,660,000	0	1,660,000	11.34
Technical assistance					100,000	
Sub-total for commercial refrigeration		239.53	2,700,000	0	2,800,000	11.69
<i>Residential AC</i>						
Sacral Industries Ltd	R-290/HFC-32	14.88	493,500	93,744	587,244	39.47
Somotex Nigeria Ltd	HFC-32	57.06	493,500	359,478	852,978	14.95
Sub-total for residential AC		71.94	987,000	453,222	1,440,222	20.02
PMU					480,000	
Scholarship programme					336,000	
Total		311.00	3,687,000	453,222	5,056,222	16.23

* According to the 2019 survey

** CE = cost-effectiveness

⁴ In line with decision 84/92(d), decision 90/48(c) encouraged bilateral and implementing agencies to continue ensuring that the operational gender mainstreaming policy was applied to all projects, taking into consideration the specific activities presented in table 2 of document UNEP/OzL.Pro/ExCom/90/37.

Activities planned for the first tranche of stage III

35. The first funding tranche of stage III of the HPMP at a total amount of US \$1,910,673 will be implemented by UNIDO between December 2022 and December 2023 and will include the following activities:

- (a) *Commercial refrigeration manufacturing sector*: technology and business viability assessment at five beneficiary enterprises selected for individual conversions and procurement of equipment; assessment of key components and preparation of a selection of options to best suit the different budgets and needs of the 12 enterprises in Group I conversion project (US \$1,010,000);
- (b) *Residential AC manufacturing sector*: initiation of conversion at one enterprise (Somotex Nigeria Ltd.) to phase out 57.06 mt of HCFC-22 (US \$590,673);
- (c) *The Kpabep scholarship programme*: establishment of a governance mechanism and initial selection of candidates for the scholarship (US \$150,000); and
- (d) *Project monitoring and management*: establishment of a PMU to oversee programme implementation in stage III, and recruitment of an international coordinating consultant to assist the national ozone officer in monitoring activity (US \$160,000).

SECRETARIAT’S COMMENTS AND RECOMMENDATION

COMMENTS

36. The Secretariat reviewed stage III of the HPMP in light of the policies and guidelines of the Executive Committee, including the criteria for funding stage II of the HPMP (decision 74/50) and the 2022-2024 business plan of the Multilateral Fund. The review is summarized as follows.

Starting point, latest consumption, phase-out in stage III and remaining eligible consumption

37. The starting point for aggregate reductions of HCFC consumption for Nigeria includes 1,224.27 mt (67.33 ODP tonnes) of HCFC-22 consumption in the manufacturing sector which has not been addressed yet; stage III aims to phase out all this consumption. Based on the CP report, the average consumption of HCFC-22 between 2019 and 2021 in the RAC manufacturing sector amounted to 568.23 mt (31.25 ODP tonnes); of which 295.02 mt (16.23 ODP tonnes) are eligible based on the survey conducted during the preparation of stage III. Since stage III was designed to phase out all HCFC-22 consumption in the RAC manufacturing sector, the total 1,224.27 mt (67.33 ODP tonnes) of consumption will be deducted from the starting point after stage III. The remaining eligible consumption to be addressed in future stages will be 1,797.34 mt (98.85 ODP tonnes) of HCFC-22 in the servicing sector, as shown in table 9.

Table 9: Starting point, reductions, and remaining eligible consumption for stages I, II, and III of the HPMP for Nigeria

Substance		HCFC-22			HCFC-141b			Total	
		Manu- facturing	Servicing	Sub-total	Pure	In pre- blended polyols	Sub- total		
Starting point	mt	1,224.27	3,294.50	4,518.77	876.36	484.45	1,360.82	5,879.59	
	ODPt*	67.33	181.2	248.53	96.40	53.29	149.69	398.22	
Stage I	Phase-out	mt	0	193.11	193.11	495.73	227.27	723.00	916.11
		ODPt	0	10.62	10.62	54.53	25.00	79.53	90.15
	Remaining	mt	1,224.27	3,101.39	4,325.66	380.63	257.18	637.82	4,963.48

Substance		HCFC-22			HCFC-141b			Total	
Sector		Manu- facturing	Servicing	Sub-total	Pure	In pre- blended polyols	Sub- total		
		ODPt	67.33	170.58	237.91	41.87	28.29	70.16	308.07
Stage II	Phase-out	mt	0	1,274.05	1,274.05	380.63	257.18	637.82	1,911.86
		ODPt	0	70.07	70.07	41.87	28.29	70.16	140.23
	Remaining	mt	1,224.27	1,827.34	3,051.61	0	0	0	3,051.61
		ODPt	67.33	100.5	167.84	0	0	0	167.84
Stage III	Phase-out	mt	1,224.27	30.00	1,254.27	0	0	0	1,254.27
		ODPt	67.33	1.65	68.98	0	0	0	68.98
	Remaining	mt	0	1,797.34	1,797.34	0	0	0	1,797.34
		ODPt	0	98.85	98.85	0	0	0	98.85

*ODPt = ODP tonnes

Consumption and eligibility

38. As the HCFC consumption data initially submitted for the seven enterprises to be converted individually was from 2019, the Secretariat requested their baseline information, including consumption and production output in the last three years, a list of baseline equipment, and equipment installation timeframe. Based on the updated information provided by UNIDO, the verified consumption at three commercial refrigeration enterprises⁵ was found to be smaller than reported in 2019; furthermore, the enterprise Vera Tech withdrew from the project. Accordingly, only one commercial refrigeration enterprise (Sanden Intercool) and two residential AC manufacturers (Sacral Industries and Somotex Nigeria) could be considered eligible for individual conversions. The HCFC consumption to be phased out by the remaining three enterprises was adjusted based on their average consumption over the 2019–2021 period.

39. Due to the large number of smaller enterprises in Group I and Group II, the production and baseline equipment information was not available for all beneficiaries. It was agreed that this information would be verified during implementation. Should an enterprise in Group I or II be identified as ineligible, the associated funding shall be returned to the Fund, unless another eligible enterprise is identified and assisted. UNIDO will provide a list of enterprises that are identified as eligible and assisted in the tranche progress report.

Sustainability of the HCFC phase-out and assessment of risks

40. Stage III proposes to completely phase out HCFC-22 consumption in the RAC manufacturing sector and enact a ban on the use of HCFC-22 in the sector from 1 January 2025. The Secretariat noted that this strategy is consistent with decision 79/25.⁶ It is further noted that the Government also plans to ban the import of HCFC-22-based RAC equipment after 2025, with a schedule to be confirmed.

41. The Secretariat noted that completing conversions in 185 small enterprises within two years and fully adopting alternative technologies before January 2025 could be challenging, given the uncertain availability of R-290 and HFC-32 and the need to train technicians in handling flammable refrigerants while ensuring that enterprises were certified to handle the alternatives in accordance with regulatory requirements. In the Secretariat's estimate, a complete conversion of the RAC manufacturing sector could take up to five years, depending on local conditions, the speed of equipment procurement and delivery, and technical challenges. Consequently, it was agreed that the date of the ban on the use of HCFC-22 in the

⁵ Baosam Concepts, Ifeco Tech Company and Perabeam Ltd.

⁶ The Executive Committee decided to request bilateral and implementing agencies together with Article 5 countries, when preparing requests for funding for complete HCFC phase-out in the manufacturing sector, to include the necessary regulatory measures to ensure the sustainability of complete HCFC phase-out in that specific sector, such as policies banning the import and/or the use of HCFC.

manufacturing sector should be deferred to January 2027, when the conversions have been completed, and that the ban on the import of HCFC-22-based equipment should be planned for 1 January 2026.

42. Noting that HFC-based AC equipment was being both locally manufactured and imported to Nigeria, the Secretariat enquired how the converted R-290/HFC-32 products could compete with high-GWP, R-410A-based units in the local market, given the safety requirements for using flammable refrigerants and other foreseen barriers to adopting R-290- and HFC-32-based products. UNIDO indicated that the Government planned to address this challenge by first raising awareness on the safe use of HCs to allay the fears of consumers and manufacturers. The demonstration of R-290-based air conditioners being implemented in the servicing sector would also showcase the technology to end-users and technicians to increase their confidence in the technology. In terms of economic intervention, the NOU will work with the relevant authorities to initiate tax reductions for R-290- and HFC-32-based equipment and other financial incentives to offset some incremental costs resulting from the additional safety requirements of these technologies. The NOU will also consider the licensing and quota system for HFC-based equipment when implementing phase-down activities under the Kigali HFC implementation plan.

Technical and cost-related issues

43. Regarding the choice of technology, UNIDO explained that the commercial refrigeration equipment targeted in stage III was too small to allow for the consideration of NH₃ as refrigerant, while the use of CO₂ required operation under high pressure, posing additional challenges in terms of technical capacity. It is expected that most beneficiaries will follow the NOU's vision to switch to low-GWP refrigerants (R-290 or HFC-32 where relevant) wherever it is technically and economically feasible and market conditions allow. UNIDO plans to review the management decisions of each beneficiary as the project advances.

44. The IOCs for the conversion of AC manufacturing were initially calculated at US \$9.43/kg, including the refrigerant price difference, the cost of improving product safety, and the cost of upgrading the storage and distribution network; the latter cost was eventually considered ineligible and removed. The eligible IOCs exceeded the cost threshold; therefore, the amount of US \$6.30/kg has been agreed.

45. Upon discussion of cost-related issues, the Secretariat made the following adjustments to the proposed costs:

Commercial refrigeration sector

- (a) Based on the information provided during the review, the number of manufacturing lines/enterprises that would be individually converted was reduced to one (Sanden Intercool), as specified in paragraph 38, while the total number of enterprises in Group I increased to 13. The remaining 168 small enterprises have been divided into Group II (53 enterprises consuming 1-3 mt of HCFCs) and Group III (115 enterprises consuming 0-1 mt). The cost of conversion for Group III enterprises was reduced from US \$10,000 to US \$5,000, on the understanding that these enterprises would only receive technical assistance;
- (b) For the conversion of the manufacturing line at Sanden Intercool, the cost of replacing the refrigerant charger (US \$30,000) was removed as it had been purchased after the cut-off date, and TÜV or equivalent certification (US \$30,000) was added as an important element that had not been included in the original submission;

Residential AC sector

- (c) For the individual conversion of the AC manufacturing line at Somotex Nigeria Ltd, the cost of the refrigerant handling package (US \$200,000 including pre-charge evacuation, refrigerant charge, leak detection, recovery in repair area, and civil work) was reduced to US \$22,000 as the charge machine and leak detection equipment had been purchased after the cut-off date, and the proposed costs of civil works were not eligible incremental costs;
- (d) For the individual conversion of the AC manufacturing line at Sacral Industries Ltd, the cost of the refrigerant handling package (US \$200,000) was reduced to US \$32,000, as the charge machine had been purchased after the cut-off date and the proposed costs of civil works were not eligible incremental costs; the cost for safety measures was reduced to US \$60,000, assembly line modifications to US \$12,000; and technical assistance for factory layout to US \$16,000, as this is a smaller manufacturing line than that at Somotex;
- (e) Contingency costs were applied only to equipment and not to technical assistance activities; and
- (f) The cost of the PMU was reduced to US \$205,695, including staff and consultant (US \$96,000), travel (US \$92,000), and meetings US \$17,695.

Scholarship programme for female engineers and technicians

46. Noting that the scholarship programme had a high administrative cost and had not been associated with a tonnage of HCFC phase-out, the Secretariat expressed concern about a lack of apparent connection between the scholarship and the expected contribution of the trained personnel. Upon discussion, it was agreed that the funding for scholarship would be reduced to US \$144,000 to assist 30 female students in the RAC professions. The students would share part of the tuition fee and commit to working in the industry for a certain period after graduation. An associated tonnage of 30 mt (1.65 ODP tonnes) would be deducted from the remaining eligible consumption.

Total project cost

47. After applying the deductions discussed in paragraphs 44-46, the revised cost for stage III of the HPMP amounts to US \$3,144,194, as shown in table 10 below. The funding was divided into two tranches, with the first tranche covering the cost of equipment and conversions of AC manufacturing lines.

Table 10: Adjusted cost of activities in stage III of the HPMP for Nigeria

Application/Enterprise /Project	Selected technology	HCFC-22 consumption (mt)*	ICCs (US \$)	IOCs (US \$)	Project cost (US \$)	CE** (US \$/kg)
<i>Commercial refrigeration</i>						
Sanden Intercool	R-290/HFC-32	10.07	112,000	0	112,000	11.12
Group I: 13 enterprises consuming 3-6 mt		57.20	520,000	0	520,000	9.09
Group II: 53 enterprises consuming 1-3 mt		120.50	530,000	0	530,000	4.40
Group III: 115 enterprises consuming 0-1 mt		44.52	575,000	0	575,000	12.92
Technical assistance					100,000	
Sub-total for commercial refrigeration		232.29	1,737,000	0	1,837,000	7.91

Application/Enterprise /Project	Selected technology	HCFC-22 consumption (mt)*	ICCs (US \$)	IOCs (US \$)	Project cost (US \$)	CE** (US \$/kg)
Residential AC						
Sacral Industries Ltd	R-290/HFC-32	10.93	249,100	68,859	317,959	29.10
Somotex Nigeria Ltd	HFC-32	51.80	313,200	326,340	639,540	12.35
Sub-total for residential AC		62.73	562,300	395,199	957,499	15.26
PMU					205,695	
Scholarship programme		30.00			144,000	
Total		325.02	2,299,300	395,199	3,144,194	9.67

* 2019-2021 average consumption based on the updated data

** CE = cost-effectiveness

Impact on the climate

48. Stage III will phase out 295.02 mt of HCFC-22 through conversions and replace it with either HFC-32 or R-290. The exact amounts of HFC-32 and R-290 to be phased in are unknown at this stage. If the total consumption of 295.02 mt is replaced by R-290, the climate impact of stage III in terms of reducing greenhouse gas (GHG) emissions will be 1,928,322 CO₂-eq tonnes; if it is replaced by HFC-32, emission reductions from the conversion will amount to 1,316,858 CO₂-eq tonnes, as summarized in table 11 below.

Table 11: Climate impact of conversion to R-290 and HFC-32 in the RAC manufacturing sector

Emissions by sector	HCFC-22 consumption per year (mt)	GHG emissions (CO ₂ -eq tonnes)				
		HCFC-22 baseline	R-290		HFC-32	
			Emissions	Reduction	Emissions	Reduction
Commercial refrigeration	232.29	3,882,654	2,086,035	1,796,619	2,676,211	1,206,443
Direct		1,724,211	2,001	1,722,210	572,825	1,151,386
Indirect		2,158,443	2,084,034	74,409	2,103,386	55,057
AC manufacturing	62.73	788,199	656,496	131,703	677,784	110,415
Direct		113,893	132	113,761	37,838	76,055
Indirect		674,306	656,364	17,942	639,946	34,360
Total	295.02			1,928,322		1,316,858

49. The proposed scholarship programme will phase out an additional 30 mt (1.65 ODP tonnes) of HCFC-22 in the servicing sector. It is expected that the training provided to female technicians, architects and entrepreneurs will promote women's involvement in the activities under the HPMP and enable them to carry out better refrigeration practices which will result in the reduction of emission of refrigerants into the atmosphere and related climate benefits.

Co-financing

50. Stage III includes many small enterprises with consumption below 6 mt. Due to the limited funding eligible for the conversion of this manufacturing capacity, co-financing will need to be provided by these enterprises. As an in-kind contribution, the Government will support the development of policies, regulations, and standards to support the sustainable phase-out of HCFCs in stage III.

51. Nigeria partakes in a joint project with Ghana on Abating GHG emissions from obsolete RAC equipment in West Africa (AGORA), which has been approved by the French Facility for Global Environment (FFEM) for the full-size development of the project with a total FFEM contribution of EUR 2,484,600. The project aims to support market adoption of energy-efficient, low-GWP refrigerators and AC appliances, consequently enhancing the objectives of the HPMP in Nigeria and supporting activities including the ban on imports of HCFC-based equipment and other policy measures, while strengthening the refrigeration training centres, the certification system for refrigeration technicians, and the recovery, recycling and reclaim centres.

2022-2024 draft business plan of the Multilateral Fund

52. UNIDO is requesting US \$3,144,194, plus agency support costs, for the implementation of stage III of the HPMP for Nigeria. The total requested value of US \$3,364,287, including agency support costs for the period 2022–2024, is US \$1,865,953 below the amount in the business plan.

Draft Agreement

53. A draft Agreement between the Government of Nigeria and the Executive Committee for stage III of the HPMP is contained in Annex I to the present document.

RECOMMENDATION

54. The Executive Committee may wish to consider:

- (a) Approving, in principle, stage III of the HCFC phase-out management plan (HPMP) for Nigeria for the period from 2022 to 2025 to reduce HCFC consumption by 67.5 per cent of the country's baseline, in the amount of US \$3,144,194, plus agency support costs of US \$220,093 for UNIDO only;
- (b) Noting the commitment of the Government of Nigeria to implement the following regulatory measures to support the complete phase-out of HCFCs in the refrigeration and air-conditioning manufacturing sector:
 - (i) Ban on the import of HCFC-22-based equipment starting from 1 January 2026;
 - (ii) Ban on the use of HCFC-22 in refrigeration and air-conditioning equipment manufacturing once the conversion projects in stage III are completed, no later than 1 January 2027;
 - (iii) Tax reductions for equipment using R-290 and HFC-32, developed in collaboration with the relevant authorities;
- (c) Deducting 68.98 ODP tonnes from the remaining HCFC consumption eligible for funding;
- (d) Approving the draft Agreement between the Government of Nigeria and the Executive Committee for the reduction in consumption of HCFCs, in accordance with stage III of the HPMP, contained in Annex I to the present document;
- (e) Approving the first tranche of stage III of the HPMP for Nigeria, and the corresponding tranche implementation plan, in the amount of US \$1,944,347, plus agency support costs of US \$136,104 for UNIDO only; and
- (f) Requesting UNDP and UNIDO to provide the updated list of enterprises that have received assistance from the umbrella project in the tranche implementation progress reports.

Annex I

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

Purpose

1. This Agreement represents the understanding of the Government of Nigeria (the “Country”) and the Executive Committee with respect to the reduction of controlled use of the ozone-depleting substances (ODS) set out in Appendix 1-A (“The Substances”) to a sustained level of 112.09 ODP tonnes by 1 January 2025 in compliance with Montreal Protocol schedule.
2. The Country agrees to meet the annual consumption limits of the Substances as set out in row 1.2 of Appendix 2-A (“The Targets, and Funding”) in this Agreement as well as in the Montreal Protocol reduction schedule for all Substances mentioned in Appendix 1-A. The Country accepts that, by its acceptance of this Agreement and performance by the Executive Committee of its funding obligations described in paragraph 3, it is precluded from applying for or receiving further funding from the Multilateral Fund in respect to any consumption of the Substances that exceeds the level defined in row 1.2 of Appendix 2-A as the final reduction step under this Agreement for all of the Substances specified in Appendix 1-A, and in respect to any consumption of each of the Substances that exceeds the level defined in rows 4.1.3, 4.2.3 and 4.3.3 (remaining consumption eligible for funding).
3. Subject to compliance by the Country with its obligations set out in this Agreement, the Executive Committee agrees, in principle, to provide the funding set out in row 3.1 of Appendix 2-A to the Country. The Executive Committee will, in principle, provide this funding at the Executive Committee meetings specified in Appendix 3-A (“Funding Approval Schedule”).
4. The Country agrees to implement this Agreement in accordance with stage III of the HCFC phase-out management plan (HPMP) approved (“the Plan”). In accordance with sub-paragraph 5(b) of this Agreement, the Country will accept independent verification of the achievement of the annual consumption limits of the Substances as set out in row 1.2 of Appendix 2-A of this Agreement. The aforementioned verification will be commissioned by the relevant bilateral or implementing agency.

Conditions for funding release

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

activities initiated with previously approved tranches; and that the rate of disbursement of funding available from the previously approved tranche was more than 20 per cent; and

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

Monitoring

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

Flexibility in the reallocation of funds

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

- (a) Reallocations categorized as major changes must be documented in advance either in a Tranche Implementation Plan as foreseen in sub-paragraph 5(d) above, or as a revision to an existing Tranche Implementation Plan to be submitted eight weeks prior to any meeting of the Executive Committee, for its approval. Major changes would relate to:
 - (i) Issues potentially concerning the rules and policies of the Multilateral Fund; Changes which would modify any clause of this Agreement;
 - (ii) Changes in the annual levels of funding allocated to individual bilateral or implementing agencies for the different tranches;
 - (iii) Provision of funding for activities not included in the current endorsed Tranche Implementation Plan, or removal of an activity in the Tranche Implementation Plan, with a cost greater than 30 per cent of the total cost of the last approved tranche; and
 - (iv) Changes in alternative technologies, on the understanding that any submission for such a request would identify the associated incremental costs, the potential impact to the climate, and any differences in ODP tonnes to be phased out if applicable, as well as confirm that the Country agrees that potential savings related to the change of technology would decrease the overall funding level under this Agreement accordingly;
- (b) Reallocations not categorized as major changes may be incorporated in the approved Tranche Implementation Plan, under implementation at the time, and reported to the Executive Committee in the subsequent Tranche Implementation Report;
- (c) Any enterprise to be converted to non-HCFC technology included in the Plan and that would be found to be ineligible under the policies of the Multilateral Fund (i.e., due to foreign ownership or establishment post the 21 September 2007 cut-off date), would not receive financial assistance. This information would be reported as part of the Tranche Implementation Plan;

- (d) The Country commits to examining the possibility of using pre-blended systems with low-global-warming-potential blowing agents instead of blending them in-house, for those foam enterprises covered under the Plan, should this be technically viable, economically feasible and acceptable to the enterprises;
- (e) The Country agrees, in cases where HFC technologies have been chosen as an alternative to HCFCs, and taking into account national circumstances related to health and safety: to monitor the availability of substitutes and alternatives that further minimize impacts on the climate; to consider, in the review of regulations standards and incentives adequate provisions that encourage introduction of such alternatives; and to consider the potential for adoption of cost-effective alternatives that minimize the climate impact in the implementation of the HPMP, as appropriate, and inform the Executive Committee on the progress accordingly in tranche implementation reports; and
- (f) Any remaining funds held by the bilateral or implementing agencies or the Country under the Plan will be returned to the Multilateral Fund upon completion of the last tranche foreseen under this Agreement.

Considerations for the refrigeration servicing sector

8. Specific attention will be paid to the execution of the activities in the refrigeration servicing sector included in the Plan, in particular:
- (a) The Country would use the flexibility available under this Agreement to address specific needs that might arise during project implementation; and
 - (b) The Country and relevant bilateral and/or implementing agencies would take into consideration relevant decisions on the refrigeration servicing sector during the implementation of the Plan.

Bilateral and implementing agencies

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

10. The Lead IA will be responsible for ensuring coordinated planning, implementation and reporting of all activities under this Agreement, including but not limited to independent verification as per sub-paragraph 5(b). The Cooperating IA will support the Lead IA by implementing the Plan under the overall coordination of the Lead IA. The roles of the Lead IA and the Cooperating IA are contained in Appendix 6-A and Appendix 6-B, respectively. The Executive Committee agrees, in principle, to provide the Lead IA and the Cooperating IA with the fees set out in rows 2.2 and 2.4 of Appendix 2-A.

Non-compliance with the Agreement

11. Should the Country, for any reason, not meet the Targets for the elimination of the Substances set out in row 1.2 of Appendix 2-A or otherwise does not comply with this Agreement, then the Country agrees that it will not be entitled to the Funding in accordance with the Funding Approval Schedule. At the discretion of the Executive Committee, funding will be reinstated according to a revised Funding Approval

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

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

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

Date of completion

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

Validity

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

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

APPENDICES

APPENDIX 1-A: THE SUBSTANCES

Substance	Annex	Group	Starting point for aggregate reductions in consumption (ODP tonnes)
HCFC-22	C	I	248.5
HCFC-141b	C	I	96.4
Sub-total			344.9
HCFC-141b contained in imported pre-blended polyols	C	I	53.2
Total	C	I	398.2

APPENDIX 2-A: THE TARGETS, AND FUNDING

Row	Particulars	2022	2023	2024	2025	Total
1.1	Montreal Protocol reduction schedule of Annex C, Group I substances (ODP tonnes)	224.19	224.19	224.19	112.09	n/a
1.2	Maximum allowable total consumption of Annex C, Group I substances (ODP tonnes)	224.19	167.81	167.81	112.09	n/a
2.1	Lead IA (UNDP) agreed funding (US \$)	0	0	0	0	0
2.2	Support costs for Lead IA (US \$)	0	0	0	0	0
2.3	Cooperating IA (UNIDO) agreed funding (US \$)	1,944,347	0	1,199,847	0	3,144,194
2.4	Support costs for Cooperating IA (US \$)	136,104	0	83,989	0	220,093
3.1	Total agreed funding (US \$)	1,944,347	0	1,199,847	0	3,144,194
3.2	Total support costs (US \$)	136,104	0	83,989	0	220,093
3.3	Total agreed costs (US \$)	2,080,451	0	1,283,836	0	3,364,287
4.1.1	Total phase-out of HCFC-22 agreed to be achieved under this Agreement (ODP tonnes)					68.98
4.1.2	Phase-out of HCFC-22 to be achieved in the previous stage (ODP tonnes)					80.69
4.1.3	Remaining eligible consumption for HCFC-22 (ODP tonnes)					98.85
4.2.1	Total phase-out of HCFC-141b agreed to be achieved under this Agreement (ODP tonnes)					0
4.2.2	Phase-out of HCFC-141b to be achieved in the previous stage (ODP tonnes)					96.4
4.2.3	Remaining eligible consumption for HCFC-141b (ODP tonnes)					0
4.3.1	Total phase-out of HCFC-141b contained in imported pre-blended polyols agreed to be achieved under this Agreement (ODP tonnes)					0
4.3.2	Phase-out of HCFC-141b contained in imported pre-blended polyols to be achieved in the previous stage (ODP tonnes)					53.3
4.3.3	Remaining eligible consumption for HCFC-141b contained in imported pre-blended polyols (ODP tonnes)					0

*Date of completion of stage II as per stage II Agreement: 31 December 2024.

APPENDIX 3-A: FUNDING APPROVAL SCHEDULE

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

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

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

- (a) A narrative report, with data provided by tranche, describing the progress achieved since the previous report, reflecting the situation of the Country in regard to phase out of the Substances, how the different activities contribute to it, and how they relate to each other. The report should include the amount of ODS phased out as a direct result from the implementation of activities, by substance, and the alternative technology used and the related phase-in of alternatives, to allow the Secretariat to provide to the Executive Committee information about the resulting change in climate relevant emissions. The report should further highlight successes, experiences, and challenges related to the different activities included in the Plan, reflecting any changes in the circumstances in the Country, and providing other relevant information. The report should also include information on and justification for any changes vis-à-vis the previously submitted Tranche Implementation Plan(s), such as delays, uses of the flexibility for reallocation of funds during implementation of a tranche, as provided for in paragraph 7 of this Agreement, or other changes;

- (b) An independent verification report of the Plan results and the consumption of the Substances, as per sub-paragraph 5(b) of the Agreement. If not decided otherwise by the Executive Committee, such a verification has to be provided together with each tranche request and will have to provide verification of the consumption for all relevant years as specified in sub-paragraph 5(a) of the Agreement for which a verification report has not yet been acknowledged by the Committee;
 - (c) A written description of the activities to be undertaken during the period covered by the requested tranche, highlighting implementation milestones, the time of completion and the interdependence of the activities, and taking into account experiences made and progress achieved in the implementation of earlier tranches; the data in the plan will be provided by calendar year. The description should also include a reference to the overall Plan and progress achieved, as well as any possible changes to the overall Plan that are foreseen. The description should also specify and explain in detail such changes to the overall plan. This description of future activities can be submitted as a part of the same document as the narrative report under sub-paragraph (b) above;
 - (d) A set of quantitative information for all Tranche Implementation Reports and Plans, submitted through an online database; and
 - (e) An Executive Summary of about five paragraphs, summarizing the information of the above sub-paragraphs 1(a) to 1(d).
2. In the event that in a particular year two stages of the HPMP are being implemented in parallel, the following considerations should be taken in preparing the Tranche Implementation Reports and Plans:
- (a) The Tranche Implementation Reports and Plans referred to as part of this Agreement, will exclusively refer to activities and funds covered by this Agreement; and
 - (b) If the stages under implementation have different HCFC consumption targets under Appendix 2-A of each Agreement in a particular year, the lower HCFC consumption target will be used as reference for compliance with these Agreements and will be the basis for the independent verification.

APPENDIX 5-A: MONITORING INSTITUTIONS AND ROLES

1. The National Ozone Unit (NOU) will be monitoring the implementation of the project activities and will prepare a quarterly progress report for the project. The monitoring programme will therefore ensure effectiveness of all the proposed projects within the Plan through constant monitoring and periodic review of the performance of individual projects. Independent verification will be conducted by a consultant arranged by the Lead IA.

2. The Lead IA will have a particularly prominent role in the monitoring arrangements because of its mandate to monitor ODS imports, and its records will be used as a crosschecking reference in all the monitoring programmes for the different projects within the Plan. The Lead IA, along with the Cooperating IA will also undertake the challenging task of monitoring illegal ODS imports and exports and advise the appropriate national agencies through the NOU.

APPENDIX 6-A: ROLE OF THE LEAD IMPLEMENTING AGENCY

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

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

APPENDIX 6-B: ROLE OF THE COOPERATING IMPLEMENTING AGENCIES

1. The Cooperating IA will be responsible for a range of activities. These activities are specified in the Plan, including at least the following:

- (a) Providing assistance for policy development when required;
- (b) Assisting the Country in the implementation and assessment of the activities funded by the Cooperating IA, and refer to the Lead IA to ensure a coordinated sequence in the activities;
- (c) Providing reports to the Lead IA on these activities, for inclusion in the consolidated reports as per Appendix 4-A; and
- (d) Reaching consensus with the Lead IA on any planning, coordination and reporting arrangements required to facilitate the implementation of the Plan.

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

1. In accordance with paragraph 11 of the Agreement, the amount of funding provided may be reduced by US \$351.78 per ODP kg of consumption beyond the level defined in row 1.2 of Appendix 2-A for each year in which the target specified in row 1.2 of Appendix 2-A has not been met, on the understanding that the maximum funding reduction would not exceed the funding level of the tranche being requested. Additional measures might be considered in cases where non-compliance extends for two consecutive years.

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