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EXECUTIVE COMMITTEE OF
THE MULTILATERAL FUND FOR THE
IMPLEMENTATION OF THE MONTREAL PROTOCOL
Ninety-fourth Meeting
Montreal, 27-31 May 2024
Item 9(c) 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, second tranche) UNDP and UNIDO

¹ UNEP/OzL.Pro/ExCom/94/1

PROJECT EVALUATION SHEET – MULTI-YEAR PROJECTS

Nigeria

(I) PROJECT TITLE	AGENCY	MEETING APPROVED	CONTROL MEASURE
HCFC phase-out plan (stage III)	UNDP (lead), UNIDO	91 st	67.5% phase-out by 2025

(II) LATEST ARTICLE 7 DATA (Annex C Group I)	Year: 2022	115.80 ODP tonnes
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(III) LATEST COUNTRY PROGRAMME SECTORAL DATA (ODP tonnes)							Year: 2023	
Chemical	Aerosol	Foam	Fire-fighting	Refrigeration		Solvent	Process agent	Total sector consumption
				Manufacturing	Servicing			
HCFC-22				19.70	83.96			103.66

(IV) CONSUMPTION DATA (ODP tonnes)			
2009-2010 baseline:	344.88	Starting point for sustained aggregate reductions:	398.20
CONSUMPTION ELIGIBLE FOR FUNDING			
Already approved:	299.37	Remaining:	98.85

(V) ENDORSED BUSINESS PLAN		2024	2025	2026	Total
UNDP	ODS phase-out (ODP tonnes)	0.0	0.0	0.0	0.0
	Funding (US \$)	0	0	0	0
UNIDO	ODS phase-out (ODP tonnes)	26.32	0.0	0.0	26.32
	Funding (US \$)	1,283,836	0	0	1,238,836

(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
Funding agreed 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
Funds approved by ExCom (US \$)		Project costs	1,944,347	0		0	1,944,347
		Support costs	136,104	0		0	136,104
Total funds recommended for approval at this meeting (US \$)		Project costs			1,199,847		1,199,847
		Support costs			83,989		83,989

Secretariat's recommendation:	Blanket approval
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PROJECT DESCRIPTION

1. On behalf of the Government of Nigeria, UNDP as the lead implementing agency has submitted a request for funding for the second and final tranche of stage III of the HCFC phase-out management plan (HPMP), in the amount of US \$1,199,847, plus agency support costs of US \$83,989, for UNIDO only.² The submission includes a progress report on the implementation of the first tranche, the verification report on HCFC consumption for 2023, and the tranche implementation plan for 2024 to 2026.

Report on HCFC consumption

2. The Government of Nigeria reported under the country programme (CP) implementation report a consumption of 103.66 ODP tonnes of HCFCs in 2023, which is 70 per cent below the country's HCFC baseline for compliance. The Article 7 data for 2023 has not been reported yet. The 2019-2023 HCFC consumption is shown in table 1.

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

HCFC	2019	2020	2021	2022	2023*	Baseline
Metric tonnes (mt)						
HCFC-22	3,054.40	2,406.14	2,395.28	2,105.50	1,884.72	4,518.77
HCFC-124	305.20	0.00	0.00	0.00	0.00	0.00
HCFC-141b	585.80	312.30	167.60	0.00	0.00	875.90
Total (mt)	3,945.40	2,718.44	2,562.88	2,105.50	1,884.72	5,394.67
HCFC-141b in imported pre-blended polyols*	275.70	172.60	19.85	10.05	0.00	**484.43
ODP tonnes						
HCFC-22	167.99	132.34	131.74	115.80	103.66	248.53
HCFC-124	6.71	0.00	0.00	0.00	0.00	0.00
HCFC-141b	64.44	34.35	18.44	0.00	0.00	96.35
Total (ODP tonnes)	239.14	166.69	150.18	115.80	103.66	344.88
HCFC-141b in imported pre-blended polyols*	30.33	18.99	2.18	1.11	0.00	**53.29

* CP data

** Average consumption between 2007 and 2009

3. The steadily decreasing HCFC consumption has been attributed to the effective implementation of the HPMP, including awareness-raising activities and reductions in the allocated import quotas. All HCFCs other than HCFC-22 and HCFC-141b have been banned since 1 January 2020, and a ban on the import and use of HCFC-141b (pure and in pre-blended polyols) has been in effect since 1 January 2023, as reflected in the latest data.

Country programme implementation report

4. The HCFC sectoral consumption data reported by the Government of Nigeria in its 2022 CP implementation report is consistent with the data reported under Article 7 of the Montreal Protocol.

Verification report

5. The verification confirmed that the Government was implementing a licensing and quota system for HCFC imports and exports and that the total consumption of HCFCs reported under the CP implementation report for 2023 was correct (as shown in table 1 above). The verification concluded that Nigeria continues to be in compliance with the Montreal Protocol targets outlined in the Agreement with the Executive Committee.

² As per the letter of 23 February 2024 from the Federal Ministry of the Environment of Nigeria to UNIDO.

Progress report on implementation of the first tranche of stage III of the HCFC phase-out management plan

Legal framework

6. The Government of Nigeria ratified the Kigali Amendment on 20 December 2018. A ban on the imports of HCFC-141b, both pure and in pre-blended polyols, has been in effect since 1 January 2023. In line with decisions 79/25 and 91/46(b), the complete phase-out of HCFCs in the refrigeration and air-conditioning (RAC) manufacturing sector will be supported by a ban on the imports of HCFC-22-based equipment starting from 1 January 2026, a ban on the use of HCFC-22 in the manufacturing of RAC equipment that will be imposed upon completion of conversion projects included in stage III (no later than 1 January 2027), and tax reductions for equipment using R-290 and HFC-32. Under the first tranche, the national ozone unit (NOU) has started building awareness on the planned bans through meetings, training sessions, and workshops with relevant stakeholders, including importers. Regarding the tax reduction measures, the NOU has discussed them with the customs authorities, and agreed to present the issue jointly to the Federal Ministry of Finance.

Manufacturing sector

7. Stage III of the HPMP for Nigeria includes projects in the RAC manufacturing sector only, focusing on phasing out HCFC-22 through conversions of manufacturing capacity to alternative technologies. The status of implementation of activities planned under the first tranche is as follows:

Commercial refrigeration:

- (a) The individual conversion at Sanden Intercool was cancelled as the enterprise had converted its manufacturing process from HCFC-22 to R-290 with its own resources;³ the Government requested through UNIDO that the funding of US \$112,000 originally approved for Sanden be reallocated to address the HCFC consumption in the country's servicing sector, *inter alia* by promoting the use of R-290 appliances and supporting the sustainability of conversions (as detailed in paragraph 11 below);
- (b) Out of the three groups⁴ of enterprises assisted in the umbrella project under stage III, the conversion project for Group I was officially launched in May 2023 with an inception workshop for stakeholders to discuss implementation modalities; consultations were held for technology selection and R-290 was selected for most enterprises, taking into consideration the charging limits to meet the safety requirements; specifications for training equipment for flammable refrigerants were prepared and equipment was procured; and consultations and information exchange between equipment suppliers and the beneficiary enterprises were held, followed by a training session and procurement of equipment for conversion;

Residential air-conditioning:

- (c) The conversion of one air-conditioning (AC) manufacturing line to HFC-32 at Sacral Industries Ltd. has been completed; production and sales of HFC-32-based equipment have begun on a commercial scale; safety certification was obtained from the National Environmental Standards and Regulations Enforcement Agency; and product assembly and safety training sessions were carried out (completion expected in June 2024);

³ The enterprise has already begun selling equipment based on R-290 and R-600a, including glass door coolers, stand-alone units, cabinet refrigerators, chest freezers, wine coolers, and refrigerators.

⁴ Group I included 13 enterprises with consumption between 3 and 6 mt, Group II included 53 enterprises with consumption between 1 and 3 mt, and Group III included 115 enterprises with consumption below 1 mt of HCFCs.

- (d) The eligibility of the enterprise Somotex Nigeria Ltd. has been validated; HFC-32 was selected as the alternative technology; a contract was signed; a conversion plan was developed; and equipment was purchased and delivered; and

The Kpabep scholarship programme for female engineering and science students:

- (e) The scholarship⁵ was launched in May 2023 at the inception workshop for stage III of the HPMP; the candidate selection process was contracted to the Society of Women Engineers (SWE); a working group was established in September 2023 as the programme's governing body; a call for applications was issued in October 2023; out of 245 applicants, 30 were officially awarded the scholarship in March 2024; and Sacral Industries Ltd. expressed willingness to employ a Kpabep scholar.

Project implementation and monitoring

8. Project implementation and monitoring activities were conducted by the NOU at a total expense of US \$87,848, including US \$31,379 for national consultants, US \$16,469 for travel, and US \$40,000 for meetings.

Level of fund disbursement

9. As of May 2024, of the US \$1,944,347 approved so far for UNIDO, US \$713,357 (37 per cent) has been disbursed, as shown in detail in table 2. The balance of US \$1,230,990 will be disbursed in 2024-2025.

Table 2: Disbursement of the first tranche of stage III of the HPMP for Nigeria (US \$)

Component	Total stage III funding	Funding approved for first tranche	Funding disbursed so far	Balance
Group conversion project (commercial refrigeration)	1,837,000	812,000	190,550	621,450
Conversion project at Sacral Industries Ltd. (residential AC)	317,959	317,959	317,959	0
Conversion project at Somotex Ltd. (residential AC)	639,540	639,540	60,000	579,540
Kpabep scholarship programme	144,000	72,000	57,000	15,000
Project monitoring and implementation	205,695	102,848	87,848	15,000
Total	3,144,194	1,944,347	713,357	1,230,990
Disbursement rate for the first tranche (%)			37	

Implementation plan for the second and final tranche of stage III of the HCFC phase-out management plan

10. The following activities will be implemented by UNIDO between June 2024 and December 2026:
- (a) *Commercial refrigeration manufacturing*: Provision of technical assistance to the following group projects:
- (i) Group I enterprises (13), including training on the manufacturing process using R-290 and R-600a, assistance in obtaining safety certificates, and equipment for conversions⁶ (funds from the first tranche);

⁵ The Kpabep scholarship programme intends 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.

⁶ Including sparkless vacuum pumps, ventilation, four valve manifold gauge sets, hydrocarbon detectors, anti-explosion utility provisions, ATEX recovery machines, ATEX air blowers, Lockrings, and fire extinguishers.

- (ii) Group II enterprises (53), including training on the manufacturing process using R-290 technologies based on the training model and infrastructure created for Group I, and equipment for the adoption of R-290 technologies⁷ (US \$530,000);
- (iii) Group III enterprises (115), including training on the manufacturing process using R-290 technologies to be carried out in the training hub established during Group I training, and organization of 20 technical workshops (US \$495,000);
- (b) *Residential AC manufacturing*: Completion of conversion of one AC manufacturing line at Somotex Nigeria Ltd., including equipment installation, testing, trials, commissioning, and staff training (US \$579,540 from the first tranche);
- (c) *The Kpabep scholarship programme*: Continuation of the programme by the volunteer working group and the SWE for the second year, including selection of 30 additional scholarship recipients (US \$72,000); and
- (d) *Project management and monitoring*: Personnel, operations, local travel, consultation meetings, documentation and reporting (US \$50,000); consultancies, monitoring and evaluation (US \$47,847); and contingencies (US \$5,000) (for a total of US \$102,847).

Activities in the refrigeration and air-conditioning servicing sector

11. The following activities have been proposed in the servicing sector with the funding of US \$112,000 from the cancelled project at Sanden Intercool (as mentioned in subparagraph 7(a) above):

- (a) Designation of Sanden Intercool as a national R-290 commercial refrigeration manufacturing pioneer (US \$5,000);
- (b) Development of training material on commercial refrigeration manufacturing with R-290, including safety information, to be uploaded as an online tool, and of a 15-minute video on safely charging and handling R-290 in a commercial refrigeration manufacturing process (US \$52,000);
- (c) Support for the research and collection of information on local accidents with flammable refrigerants by the Union of Associations of African Actors in Refrigeration and Air-Conditioning; and development of a report to raise awareness on the proper handling of flammable refrigerants (US \$8,000);
- (d) Demonstration of R-290 technology at an international forum to support its market adoption; connecting international suppliers of components such as compressors with regional commercial refrigeration manufacturers through an international forum to provide business-to-business matching opportunities (US \$30,000); and
- (e) Establishment of a technical group for refrigerant technologies with low global-warming potential (GWP) at an existing national association to promote low-GWP technologies (US \$17,000).

12. The Government further proposes that the HCFC phase-out associated with the funding of US \$112,000 is calculated as 1.28 ODP tonnes (23 mt) at US \$4.80/kg. This amount will be deducted from the remaining eligible consumption for funding for Nigeria.

⁷ Including air blowers, detectors, sparkless vacuum, and four-valve manifold gauge sets.

SECRETARIAT'S COMMENTS AND RECOMMENDATION

COMMENTS

Progress report on implementation of the first tranche of stage III of the HCFC phase-out management plan

Legal framework

13. The Government of Nigeria has already issued HCFC import quotas for 2024 at 148.5 ODP tonnes, which is lower than the Montreal Protocol control targets and the targets set in the HPMP Agreement for the year.

Technical and cost-related issues

14. In line with decision 91/46(f), UNIDO confirmed that all beneficiary enterprises included in the umbrella project had been verified and are eligible for funding, and that therefore there were no changes to the initial list of beneficiaries.

15. Noting that all incremental operating costs for Sacral Industries Ltd. had been disbursed, the Secretariat enquired about the quantity of units manufactured by the enterprise so far. UNIDO reported that Sacral Industries purchased 8.08 mt of HFC-32, sufficient for producing 14,000 AC units. In 2023, 2,934 units were produced and placed on the market, and production of 17,600 more units is planned in 2024.

16. Regarding the request to reallocate US \$112,000 from the cancelled project at Sanden Intercool to activities in the refrigeration servicing sector, described in paragraph 11 above, the Secretariat noted that the level of reallocated funding constituted only a minor change under the flexibility clause of the Agreement, as it represented less than 30 per cent of the total cost of the approved tranche. The Secretariat also noted that no activities in the refrigeration servicing sector had initially been included in stage III of the HPMP, and that the additional activities proposed in the sector would represent a further reduction of 1.28 ODP tonnes (23 mt) in HCFC consumption during stage III, to be reflected in the revised Agreement between the Government and the Executive Committee. The Secretariat discussed the proposed activities with UNIDO and concluded that they supported the sustainability of the ongoing manufacturing conversions.

17. In providing more detail on the designation of Sanden Intercool as a national R-290 commercial refrigeration manufacturing pioneer, UNIDO explained that it would involve setting up a short manufacturing line for training purposes at Sanden Intercool, with co-financing from the enterprise. The pilot training programme would start with 26 trainees from Group I project (two participants from each enterprise), covering all safety-related issues in the process of manufacturing and installation of commercial refrigeration equipment using R-290. Following the training for Group I enterprises, participants from Group II and III projects would be trained at the same site.

Gender policy implementation

18. In line with decisions 84/92(d) and 90/48(c), gender mainstreaming is being incorporated into all HPMP activities. Under stage III, a scholarship programme for female engineers and technicians has been implemented, with the goal of opening up employment opportunities for women in technical fields, particularly in the foam and RAC manufacturing sectors. During the first tranche, 30 women were awarded the scholarship, and additional 30 women will be selected as its recipients in the second tranche. One beneficiary enterprise, Sacral Industries Ltd., currently has women occupying middle-management positions, and is planning to engage female engineers in the future and to facilitate the career advancement of existing female employees.

Updated Agreement

19. The Agreement between the Government of Nigeria and the Executive Committee has been updated to include the additional reductions of 1.28 ODP tonnes of HCFC-22 as per paragraph 12 above, as well as the deduction of 0.36 ODP tonnes of HCFC-22 and the extension of stage II to 31 December 2026 as per decision 93/36.⁸ Specifically, Appendix 2-A has been revised and paragraph 17 has been added to indicate that the updated Agreement supersedes that reached at the 91st meeting as contained in annex I to the present document. The full updated Agreement will be appended to the final report of the 94th meeting.

Sustainability of the HCFC phase-out and assessment of risks

20. Stage III addresses the consumption of HCFC-22 in the RAC manufacturing sector. The Government will enact a ban on the use of HCFC-22 in the sector once the conversion projects are completed to ensure sustainability, in line with decision 79/25. The Government also plans to ban the import of HCFC-22-based RAC equipment at a date that remains to be confirmed. The conversions of manufacturing lines at Sacral Industries Ltd. and Sanden Intercool have been completed, resulting in a phase-out of 21 mt of HCFC-22 and the elimination of associated HCFC-22 use for equipment servicing.

21. The potentially low interest in the market adoption of converted products using alternative technologies has been identified as a sustainability risk. To address it, the Government has proposed to use the funds reallocated from the conversion of Sanden Intercool to implement several activities in the servicing sector to support the market adoption of the converted products, including training sessions at manufacturing enterprises on handling flammable refrigerants to ensure safety, awareness-raising activities to promote low-GWP technologies, and technology demonstrations and technical support provided to enterprises. Hopefully the implementation of these activities will support the sustainable phase-out of HCFCs in the country.

Conclusion

22. The Government of Nigeria has been implementing a licensing and quota system for HCFC imports and exports and has remained in compliance with the Montreal Protocol targets stated in its Agreement with the Executive Committee. The conversion projects are progressing as planned; UNDP confirmed the eligibility of the beneficiaries in the plan. One commercial refrigeration line (Sanden Intercool) and one AC manufacturing line (Sacral Industries Ltd.) have been converted to R-290 and HFC-32, respectively, and are now producing units using the adopted technologies. Noting that Sanden Intercool converted with its own funding, the Government proposes to use the funds approved for Sanden Intercool to implement several activities to support the sustainable adoption of low-GWP technologies, with the associated phase-out of 1.28 ODP tonnes of HCFCs. Accordingly, the Agreement between the Government of Nigeria and the Secretariat has been updated to deduct 1.28 ODP tonnes from the country's remaining consumption eligible for funding. In view of the progress achieved and the 37 per cent disbursement level, the Secretariat recommends approval of the second tranche.

23. The funding request submitted to the current meeting is for the last tranche of stage III of the HPMP, planned to be completed by 31 December 2026. Noting that stage III was approved to assist the manufacturing sectors while stage II was still ongoing, and that the final tranche of stage II will be submitted in 2025, the Secretariat recommends including the project monitoring and reporting component of stage III into the country's stage II progress report.

⁸ In approving the third tranche of the HPMP for Nigeria by decision 93/36, the Executive Committee approved the Secretariat's recommendation contained in paragraph 27(d) of document UNEP/OzL.Pro/ExCom/93/77, indicating that "the Agreement for stage III of the HPMP will be revised accordingly to reflect the deduction of 0.36 ODP tonnes of HCFCs when the second tranche is submitted."

RECOMMENDATION

24. The Fund Secretariat recommends that the Executive Committee:

- (a) Note:
- (i) The progress report on the implementation of the first tranche of stage III of the HCFC phase-out management plan (HPMP) for Nigeria;
 - (ii) That the Fund Secretariat has updated the Agreement between the Government of Nigeria and the Executive Committee, as contained in annex I to the present document, specifically: Appendix 2-A, based on the additional reductions of 1.28 ODP tonnes of HCFC-22 associated with the reallocation of US \$112,000 to additional activities in the servicing sector and 0.36 ODP tonnes of HCFC-22 deducted from the remaining HCFC consumption eligible for funding in line with decision 93/36; and paragraph 17 that has been added to indicate that the updated Agreement supersedes that reached at the 91st meeting; and
- (b) Request the Government of Nigeria, UNDP and UNIDO to include, in future progress reports for stage II of the HPMP, the status of progress in the implementation of stage III of the HPMP, and to submit a project completion report for stage III of the HPMP to the first meeting of the Executive Committee in 2027.

25. The Fund Secretariat further recommends blanket approval of the second and final tranche of stage III of the HPMP for Nigeria, and the corresponding 2024–2026 tranche implementation plan, at the funding level shown in the table below.

	Project title	Project funding (US \$)	Support costs (US \$)	Implementing agency
(a)	HCFC phase-out management plan (stage III, second tranche)	1,199,847	83,989	UNIDO

Annex I

TEXT TO BE INCLUDED IN THE UPDATED 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

(Relevant changes are in bold font for ease of reference)

17. This updated Agreement supersedes the Agreement reached between the Government of Nigeria and the Executive Committee at the 91st meeting of the Executive Committee.

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)					70.62
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)					97.21
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 **decision 93/36(a)(xiv)**: 31 December **2026**.