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EXECUTIVE COMMITTEE OF
THE MULTILATERAL FUND FOR THE
IMPLEMENTATION OF THE MONTREAL PROTOCOL
Ninety-third Meeting
Montreal, 15-19 December 2023
Items 9(c) and (d) of the provisional agenda¹

PROJECT PROPOSALS: NIGERIA

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

Phase-down

- HCFC phase-out management plan (stage II, third tranche) UNDP, UNIDO and Italy

Energy efficiency

- Pilot project to maintain and/or enhance the energy efficiency of replacement technologies and equipment in the context of HFC phase-down (non-investment activities) UNIDO

¹ UNEP/OzL.Pro/ExCom/93/1

PROJECT EVALUATION SHEET – MULTI-YEAR PROJECTS

Nigeria

(I) PROJECT TITLE	AGENCY	MEETING APPROVED	CONTROL MEASURE
HCFC phase-out plan (stage II)	UNDP (lead), UNIDO, Government of Italy	81 st	67.5% 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: 2022	
Chemical	Aerosol	Foam	Fire-fighting	Refrigeration		Solvent	Process agent	Lab use	Total sector consumption
				Manufacturing	Servicing				
HCFC-22				25.13	90.67				115.80
HCFC-141b in imported pre-blended polyols		1.11							1.11

(IV) CONSUMPTION DATA (ODP tonnes)			
2009-2010 baseline:	344.9	Starting point for sustained aggregate reductions:	398.2
CONSUMPTION ELIGIBLE FOR FUNDING			
Already approved:	299.37	Remaining:	98.85

(V) ENDORSED BUSINESS PLAN		2023	2024	2025	Total
UNDP	ODS phase-out (ODP tonnes)	41.02	25.41	0.00	66.43
	Funding (US \$)	2,782,000	1,723,205	0	4,505,205
UNIDO	ODS phase-out (ODP tonnes)	26.32	0.00	0.00	26.32
	Funding (US \$)	1,283,836	0	0	1,283,836
Italy	ODS phase-out (ODP tonnes)	0.00	0.00	0.00	0.0
	Funding (US \$)	0	0	0	0

(VI) PROJECT DATA			2018-2019	2020*	2021-2022	2023**	2024	2025	Total
Montreal Protocol consumption limit			310.41	224.19	224.19	224.19	224.19	112.09	n/a
Maximum allowable consumption (ODP tonnes)			310.41	224.19	224.19	167.81	167.81	112.09	n/a
Agreed funding (US \$)	UNDP	Project costs	2,600,000	1,400,000	0	2,600,000	0	1,610,472	8,210,472
		Support costs	182,000	98,000	0	182,000	0	112,733	574,733
	UNIDO	Project costs	176,837	0	0	0	0	0	176,837
		Support costs	15,915	0	0	0	0	0	15,915
	Government of Italy	Project costs	269,025	234,400	0	0	0	0	503,425
		Support costs	34,937	30,472	0	0	0	0	65,377
Funds approved by ExCom (US \$)		Project costs	3,045,862		1,634,400				4,680,262
		Support costs	232,852		128,472				361,324
Total funds requested for approval at this meeting (US \$)		Project costs				2,600,000			2,600,000
		Support costs				182,000			182,000

* Funding for the 2020 tranche was approved in 2021.

** This tranche was scheduled for submission in 2021. A revised agreement is to be considered at the 93rd meeting.

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 third tranche of stage II of the HCFC phase-out management plan (HPMP), at a total cost of US \$2,782,000, consisting of US \$2,600,000, plus agency support costs of US \$182,000 for UNDP.² The submission includes a progress report on the implementation of the second tranche, the verification report on HCFC consumption for 2022, and the tranche implementation plan for 2024 to 2026.

Report on HCFC consumption

2. The Government of Nigeria reported a consumption of 115.80 ODP tonnes of HCFCs in 2022, which is 66.4 per cent below the HCFC baseline for compliance. The 2018-2022 HCFC consumption is shown in table 1.

Table 1. HCFC consumption in Nigeria (2018-2022 Article 7 data)

HCFC	2018	2019	2020	2021	2022	Baseline
Metric tonnes (mt)						
HCFC-22	3,194.60	3,054.40	2,406.14	2,395.28	2,105.50	4,518.77
HCFC-123	45.70	0.00	0.00	0.00	0.00	0.00
HCFC-124	251.36	305.20	0.00	0.00	0.00	0.00
HCFC-141b	901.00	585.80	312.30	167.60	0.00	875.90
Total (mt)	4,392.66	3,945.40	2,718.44	2,562.88	2,105.50	5,394.67
HCFC-141b in imported pre-blended polyols*	288.27	275.70	172.60	19.85	10.05	484.43**
ODP tonnes						
HCFC-22	175.70	167.99	132.34	131.74	115.80	248.53
HCFC-123	0.91	0.00	0.00	0.00	0.00	0.00
HCFC-124	5.53	6.71	0.00	0.00	0.00	0.00
HCFC-141b	99.11	64.44	34.35	18.44	0.00	96.35
Total (ODP tonnes)	281.25	239.14	166.69	150.18	115.80	344.88
HCFC-141b in imported pre-blended polyols*	31.71	30.33	18.99	2.18	1.11	53.29**

* Country programme (CP) data.

** Average consumption between 2007 and 2009.

3. HCFC consumption has been steadily decreasing, attributed to implementation of the phase-out activities in the HPMP, including awareness-raising and the reduction in allocated quotas. Furthermore, imports of HFCs are increasing and replacing HCFC-22 in the servicing sector. All HCFCs other than HCFC-22 and HCFC-141b were banned from 1 January 2020, and a ban on the import and use of HCFC-141b, including in pre-blended polyols, took effect from 1 January 2023. Nigeria did not consume any HCFC-141b in 2022, other than 1.11 ODP tonnes of HCFC-141b contained in imported pre-blended polyols, following the conversions at four commercial refrigeration foam manufacturing enterprises.

Country programme implementation report

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

Verification report

5. The verification report 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 Article 7 of the Montreal Protocol for 2022 was correct (as shown in table 1 above). The verification concluded that

² As per the letter of 3 September 2021 from the Federal Ministry of Environment of Nigeria to UNDP.

Nigeria, having achieved the 35 per cent Montreal Protocol reduction target in 2020 and with the 2022 HCFC consumption at more than 66 per cent below the baseline, is expected to far exceed the 67.5 per cent reduction in HCFCs required by 1 January 2025.

Progress report on the implementation of the second tranche of stage II of the HCFC phase-out management plan

Legal framework

6. The Government of Nigeria has updated the established legal framework for the management of ODS. The Ozone Layer Protection Regulation was gazetted on 27 April 2022³ and updates the earlier 2009 regulation to include HFC control measures in line with the Kigali Amendment. HFCs were added to the licensing system, and energy efficiency provisions are included. Thus, the import of all HCFCs is banned, except HCFC-22.

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

7. The conversion of four commercial refrigeration enterprises to replace 30.50 mt of HCFC-141b with methyl formate (MF) or hydrofluoroolefins (HFOs) was completed in March 2023. The four enterprises were supplied with high-pressure foaming machines and are now using HFO-based chemicals to produce insulation foam for cold rooms.

8. The conversion of the Slavit Group (Slavit) to replace 96.00 mt of HCFC-141b with cyclopentane in the manufacturing of insulation foam for cold storage rooms and panels for building construction has been delayed due to a cash flow problem at the beneficiaries and supply chain issue with equipment procurement. The equipment has been ordered and a cyclopentane tank was delivered. Under the coordination of UNDP, the other equipment for the conversion was delivered in July 2023 and installed with assistance from the manufacturer. Following the tests and trials that are being conducted, the project is expected to be completed by the end of 2023.

9. The group project for the conversion of 35 downstream foam enterprise to replace 301.32 mt of HCFC-141b with MF in spray foam, insulation panel and thermoware applications is progressing. Identification and selection of a system house provider took longer than expected, and in the end Vitapur Nig. Ltd, Lagos was selected. Two technical advisors were recruited to support the project. Raw materials are being purchased for laboratory testing and trials for optimizing the formulation of the polyurethane (PU) systems. Once the test and trials are completed, assistance will be provided to end-users to convert their production to MF. It is expected that the conversion of the 35 downstream users will be completed by December 2024.⁴

Refrigeration servicing sector

10. The following activities were implemented during the second tranche:

- (a) *Strengthening policy and regulatory framework:* Draft report on the feasibility of incentive schemes for promoting ODS alternatives; an online ODS and HFC registry was developed and tested; stakeholder review of a code of practice on using hydrocarbon, ammonia and

³ Official Gazette, volume 109, no. 79 National Environment (Ozone Layer Protection and Hydrofluorocarbons Phase Down) Regulations 2022.

⁴ The remaining activities for the conversion of the 35 downstream foam enterprises include: optimization of the system house by the first quarter of 2024; foam dispenser retrofits for downstream users by the early second quarter of 2024; and trials, testing and training for downstream users by the fourth quarter of 2024.

CO₂ was completed and 1,000 copies distributed; and stakeholder consultations on an integrated control system for ODS and HFC lifecycle management;

- (b) *Strengthening customs and import control capacity:* Procurement of two refrigerant identifiers, with the remaining 48 identifiers to be purchased in the third tranche;⁵ and training of 70 importers on the licensing system;
- (c) *Strengthening RAC training and capacity:* Training of 32 trainers on hydrocarbon refrigerants and energy efficiency in Italy; update of national training curricula to include hydrocarbons with 2,000 copies disseminated to stakeholders; equipment procured for two master training centres to become centres of excellence;⁶ equipment procured for the upgrade of six training centres and strengthening of a further 10 training centres;⁷ consultations with training centres on the RAC training strategy; draft of certification scheme, registry, database, website, testing modules, and materials developed; and 5,000 copies of newsletter for two RAC associations distributed;
- (d) *Refrigerant recovery and reclamation (RRR):* Completion of the scheme for refrigerant reclamation facilities, stakeholder consultations, and tendering; development and dissemination of 500 copies of local guidelines for reclamation facilities; delivery of equipment for the establishment of a reclamation centre; procurement of 200 sets of RRR tools;⁸ and dissemination of pamphlets and posters (1,000 copies) on counterfeit refrigerants and 300 technicians informed on the dangers of using fake refrigerants;
- (e) Conducting feasibility studies on CO₂ refrigeration in supermarkets and small-medium scale ammonia applications, expected to be completed by December 2023; and
- (f) *Demonstration of low-global-warming-potential (GWP) technologies:* One hundred R-290-based split air-conditioning units and 10 energy performance monitoring devices were procured and delivered to Nigeria; these will be installed to demonstrate R-290 technology and energy efficiency performance.

Project implementation and monitoring

11. Project coordination and monitoring was conducted by the project and management unit (PMU) established within the national ozone unit (NOU). The total expenditure incurred to date amounts to US \$243,457, for staff and consultants (US \$168,954); travel (US \$35,891); meetings and workshops (US \$30,714); and miscellaneous expenses (US \$7,898).

Level of fund disbursement

12. As of September 2023, of the US \$4,680,262 approved so far (US \$4,000,000 for UNDP, US \$176,837 for UNIDO and US \$503,425 for the Government of Italy), US \$3,190,181 (68 per cent) had been disbursed (US \$2,827,391 for UNDP, US \$176,837 for UNIDO and US \$185,953 for the Government of Italy). The balance of US \$1,490,081 will be disbursed in 2024.

⁵ Only two of the planned 50 refrigerant identifiers were purchased due to supply chain issues, and the remaining funds were used for purchasing training equipment; the remaining identifiers will be budgeted into the third tranche.

⁶ The equipment was delivered to Nigeria in the second quarter of 2023; one centre in Lagos has received equipment, and delivery of equipment to the second centre (Abuja) is pending governmental procedure.

⁷ Equipment planned under the third tranche that was purchased with funds from the second tranche.

⁸ The procurement of 78 sets of tools had been planned under the second tranche of the HPMP. An additional 122 sets planned for the third tranche were purchased with funds from the second tranche.

Implementation plan for the third tranche of stage II of the HCFC phase-out management plan

13. The conversion activities at Slaviv and under the group project of 35 foam enterprises will continue to be implemented during the third tranche with the funding approved under the first and second tranche.

14. The following activities will be implemented between January 2024 and December 2026 under the servicing sector:

- (a) *Strengthening policy and regulatory framework:* Consultations with stakeholders to mainstream the HCFC control mechanism and potential incentives; troubleshooting of the online registry for customs import permits; training 50 stakeholders on and dissemination of 1,000 copies of the updated code of practice which has included hydrocarbons, ammonia and CO₂ refrigerants; recruitment of an enterprise to develop the online system for implementation of the integrated control system for ODS lifecycle management; and a study tour to an Article 5 country on the certification system for technicians (US \$175,000);
- (b) *Strengthening customs and import control capacity:* Training of 310 customs officers on data recording and reporting and the identification of refrigerants; and training for 230 importers on the licensing system (US \$361,995);
- (c) *Extending the scope of RAC education:* Update of national training curricula to include CO₂ and ammonia; provision of additional equipment for two master training centres to support the trainings on CO₂ and ammonia; targeted support on training strategy and knowledge management for two master training centres and 35 training centres; training workshops for 250 dealers, consultants, installers, and designers on certification; and achieving accreditation for the trainer training certification (US \$197,000);
- (d) *RAC technician certification scheme:* Assessing compatibility of certification system, registration and database; training additional 70 trainers and 30 assessors to cover 37 regions; pilot certification programme for 30 technicians followed by training and certification of 2,500 technicians; and monitoring certification process and support to RAC associations (US \$713,234);
- (e) *Refrigerant recovery and reclamation programme:* Stakeholder review of local guidelines for reclamation facilities; installation and commissioning of refrigerant reclamation equipment procured under the second tranche; training in operation of RRR equipment; training 270 technicians from 27 small/medium workshops and service enterprises on RRR operations; three awareness-raising workshops for 75 participants targeting small service enterprises, end-users, and training centres to promote RRR, equipment registration, and technician certification; and an awareness-raising campaign on the negative impacts of using counterfeit refrigerants (US \$237,771);
- (f) *Demonstration of low-GWP technologies:*
 - (i) Conversion of a supermarket from HCFC-22 to CO₂ technology, including installation of procured equipment (three central CO₂ chillers, two cold storage rooms, 30 display units, equipment for monitoring energy efficiency) (US \$340,000);
 - (ii) Conversion of two small- to medium-sized cold storages to ammonia technology (one for low temperature and one for medium temperature); and installation of safety monitoring systems (US \$385,000);

- (iii) Demonstration of hydrocarbon technology, including installations of units and energy-monitoring devices purchased in the previous tranche, monitoring energy efficiency, and analyzing data (US \$10,000); and
- (g) Project monitoring (US \$170,000), including US \$150,000 for staff and consultants; US \$15,000 for travel; and US \$5,000 for miscellaneous costs.

SECRETARIAT'S COMMENTS AND RECOMMENDATION

COMMENTS

Progress report on the implementation of the second tranche of stage II of the HCFC phase-out management plan

Legal framework

15. The Government of Nigeria has already issued HCFC import quotas for 2023 at 115.5 ODP tonnes, which is lower than the Montreal Protocol control target.

16. Although there had been no customs training implemented since the first tranche of stage II of the HPMP, the customs department forms part of the HPMP project steering committee and attends import quota meetings organized by the NOU, thus maintaining its overall awareness of Montreal Protocol control measures.

Refrigeration servicing sector

17. The Secretariat noted that UNDP advanced the procurement of equipment for the servicing sector originally planned under the third tranche to the second tranche due to the delays and challenges caused by the COVID-19 pandemic in order to reduce the number of procurement activities and shipment costs; to benefit from UNDP's long-term agreement (LTA) with vetted suppliers; to mitigate global supply chain uncertainties; and for programmatic reasons. As a result, 10 activities planned for the second tranche (US \$534,700), including development of the integrated system for lifecycle ODS management, the study tour for technician certification, training of customs officers, training of technicians and certification, were re-programmed and funds were used for procurement of equipment for training institutions, refrigerant identifiers for customs, tools for technicians, and equipment for monitoring energy efficiency of R-290 air-conditioning units in the demonstration project. The delayed activities will be implemented using the funding from the third tranche.

18. The tools and equipment through the advanced procurement have already been delivered to the country and will support the training and technology demonstration activities to be conducted in the third tranche. The total funds of US \$534,700 re-programmed accounts for 11 per cent of the total funding and therefore is allowed under paragraph 7(a) of the Agreement, relocation of funds, and paragraph 8(a) of the Agreement, considerations for the refrigeration servicing sector, where the country could use the flexibility available under the Agreement to address specific needs that might arise during project implementation.

19. The Secretariat further noted there is an overspending of US \$31,062 in Italy's component in the first tranche that was originally allocated to the foam conversion project at Slavit. UNDP explained that there was a misunderstanding with regard to Italy's funding allocation, and that funds have been used for training trainers on hydrocarbon refrigerants. UNDP further informed that this amount will not be needed for the foam project and requested to move the funds to the servicing sector. The Secretariat noted that an increase in funding for the servicing sector would change the cost effectiveness approved for the servicing sector. In line with precedent cases where unused balances of other sectors have been allocated to undertake

additional activities in the servicing sector, it was agreed to deduct 6.47 mt (0.36 ODP tonnes) of HCFC-22 from the remaining eligible consumption for funding, calculated at US \$4.80/kg.

20. Regarding the supply of R-290 technology in Nigeria, the Secretariat enquired about the pilot facility for hydrocarbon production funded under stage I of the HPMP in Pamaque Nigeria Limited. UNDP reported that the NOU continues to look for ways to upscale the pilot hydrocarbon plant but has not been able to due to insufficient funds of the technology developer. A public-private partnership model and/or possible donor funding are being explored.

Implementation plan for the third tranche of stage II of the HCFC phase-out management plan

21. The Secretariat noted that the training of 80 local trainers that was delayed from the second tranche was not included in the third tranche and considers that it is important to implement it. Subsequently, adjustments were made to include the training for local trainers and to reduce the budget for customs and importer training by joint implementation of the training courses. A comparison of the revised cost budget is shown in table 2.

Table 2: Proposed and revised funding allocation for the third tranche of stage II of the HPMP

Activity	Proposed funding (US \$)	Revised funding (US \$)
Strengthening policy and regulatory framework	175,000	175,000
Strengthening customs and import control capacity	361,995	328,131
Extending the scope of RAC education	197,000	197,000
RAC technician certification scheme*	713,234	747,098
Refrigerant recovery and reclamation programme	247,771	247,771
Demonstration of low-GWP technologies	735,000	735,000
Project monitoring	170,000	170,000
Total requested for third tranche	2,600,000	2,600,000

* Includes trainer training in Nigeria.

Gender policy implementation

22. The NOU established a gender desk for coordinating all issues related to gender mainstreaming in Montreal Protocol projects, and is collaborating with female consultants to increase the participation of women in activities implemented under the HPMP. A gender analysis of the RAC sector was conducted and, following a stakeholder review, 2,000 copies were disseminated to stakeholders. An action plan is being implemented to facilitate activities to enhance gender equality and women's empowerment under the HPMP projects in Nigeria. More women are being invited to participate in Montreal Protocol meetings and trainings. Female stakeholders are recommended to participate in a scholarship scheme for female manufacturing technicians under the UNIDO component of stage III of the HPMP. One of the key beneficiary RAC servicing enterprises has increased its female staff from one to five, based on the HPMP's advocacy of gender mainstreaming. The training activities under the HPMP will encourage more participation of women, especially with the support and awareness-raising activities for the scholarship scheme for female technicians under stage III of the HPMP. Gender disaggregated data has been collected for training participants in the RAC training centres.

Request for the extension of stage II of the HCFC phase-out management plan

23. Stage II of the HPMP for Nigeria was approved at the 81st meeting in June 2018, but the project document was not signed until November 2020. Subsequently, Nigeria has been impacted by the COVID-19 pandemic, which has caused a delay in the implementation of the activities under stage II of the HPMP. The request for the third tranche, originally scheduled for 2021, is being submitted to the 93rd meeting in 2023, and the fourth and final tranche of stage II of the HPMP will be requested in 2025. UNDP has anticipated that stage II of the HPMP will be completed by 31 December 2026. The Secretariat recommends this extension to enable completion of the remaining activities in the country.

Revision of the Agreement

24. The Agreement between the Government of Nigeria and the Executive Committee for stage II of the HPMP has been updated to reflect the deduction of 0.36 ODP tonnes of HCFC-22 from the starting point for aggregate reductions; reflect the additional funding disbursed by the Government of Italy for activities in the servicing sector; reallocate the third tranche to 2023 and the fourth tranche to 2025; and reflect the extension of the Agreement to 31 December 2026, as contained in annex I to the present document. The fully updated Agreement will be appended to the final report of the 93rd meeting.

Sustainability of the HCFC phase-out and assessment of risks

25. The ban on the import and use of HCFC-141b, effective from 1 January 2023, will ensure the sustainable conversions of enterprises in the PU foam manufacturing sector to low-GWP, zero-ODP alternatives. Updating the training curriculum to include the safe use of hydrocarbon refrigerant, and providing tools and equipment to support training institutions, will sustain the RAC technician training and, along with the certification of technicians and the currently established bans on the import of HCFCs and HCFC-based equipment, will continue to support transition of the servicing sector to non-HCFC alternatives. While the certification of RAC technicians is included in the regulations, enforcement of the regulations is weak and thus the NOU will continue to work with the enforcement arm of the Federal Ministry of Environment in this regard. Challenges to the success of the project include stakeholder resistance to hydrocarbon refrigerants due to safety concerns; delays in project implementation; and the large size and population of the country. The steps taken to mitigate these challenges include continuous awareness-raising on the safe use of hydrocarbon refrigerants; the advanced training of RAC trainers in Italy and training of local trainers to build capacity on handling low-GWP refrigerants throughout Nigeria; continuous engagement with the environmental enforcement agency to implement the Ozone Layer Regulations; and continued awareness-raising of HPMP activities. The infrastructure being established for the recovery and reclamation of HCFC-22 will also contribute to the sustained reduction in consumption of virgin HCFC-22 for servicing purposes.

Conclusion

26. The Government of Nigeria is implementing a licensing and quota system, and HCFC consumption in 2022 was lower than the targets set in the Montreal Protocol and in its Agreement with the Executive Committee. Due to a delay in the signature of the project document and challenges related to the COVID-19 pandemic, activities in the foam manufacturing and servicing sectors were delayed. The foam conversion projects are delayed but are back on track and progressing, and are expected to be completed by December 2024. Since the ban on the import and use of HCFC-141b came into force on January 2023, no HCFC-141b has been imported. The equipment and tools for RAC sector training and for customs officers to identify refrigerants have been procured and delivered; these will aid the training activities to be conducted in the third tranche. Unused funds for the conversion of Slaviv amounting to US \$31,062 were reallocated to additional activities in the servicing sector that will result in an additional reduction of 0.36 ODP tonnes of HCFC consumption.

RECOMMENDATION

27. The Fund Secretariat recommends that the Executive Committee note:
- (a) The progress report on the implementation of the second tranche of stage II of the HCFC phase-out management plan (HPMP) for Nigeria;
 - (b) The deduction of 0.36 ODP tonnes from the remaining HCFC eligible consumption for funding associated with the relocation of unused funds from the foam conversion project at Slaviv to the refrigeration servicing sector;

- (c) That the Fund Secretariat has updated the Agreement between the Government of Nigeria and the Executive Committee for stage II of the HPMP, as contained in annex I to the present document, specifically: paragraph 1; Appendix 2-A, based on the deduction from the remaining eligible consumption for funding, the reallocation of the third tranche to 2023 and the fourth tranche to 2025, and the extension of the Agreement to 31 December 2026; and paragraph 17 that has been added to indicate that the revised Agreement supersedes that reached at the 81st meeting; and
- (d) 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.

28. The Fund Secretariat further recommends blanket approval of the third tranche of stage II of the HPMP for Nigeria, and the corresponding 2024-2025 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 II, third tranche)	2,600,000	182,000	UNDP

PROJECT EVALUATION SHEET – NON-MULTI-YEAR PROJECT

Nigeria

PROJECT TITLE **BILATERAL/IMPLEMENTING AGENCY**

(a) Pilot project for maintaining energy efficiency in refrigeration and air-conditioning (RAC) servicing sector	UNIDO
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PROJECT OBJECTIVE

The purpose of the pilot project is to implement minimum energy performance standards in the RAC sector through regulatory enforcement, capacity-building, monitoring and data collection, and awareness-raising activities.
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NATIONAL CO-ORDINATING AGENCY	National ozone unit
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LATEST ARTICLE 7 DATA (Annex F)	Year: 2022	10,521.14 mt	17,374,682 CO ₂ -eq tonnes
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Particular	Non-investment activities
	RAC servicing
HFC used by the servicing sector	9,826.34 mt 15,180,524 CO ₂ -eq tonnes
Project duration (months):	24 months
Initial amount requested (US \$):	150,000
Final project costs (US \$):	145,000
Requested grant (US \$):	145,000
Implementing agency support cost (US \$):	13,050
Total cost of project to Multilateral Fund (US \$):	158,050
Energy efficiency savings (US \$/KwH):	n/a
Status of counterpart funding (Y/N):	n/a
Project monitoring milestones included (Y/N):	Y
Minimum energy performance standards available for the relevant sector (Y/N):	Y

SECRETARIAT'S RECOMMENDATION	Individual consideration
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**PILOT PROJECT TO MAINTAIN AND/OR ENHANCE THE ENERGY EFFICIENCY OF
REPLACEMENT TECHNOLOGIES AND EQUIPMENT IN THE CONTEXT OF HFC
PHASE-DOWN (NON-INVESTMENT ACTIVITIES)**

PROJECT DESCRIPTION

Background

29. On behalf of the Government of Nigeria, UNIDO has submitted, in line with decision 91/65, a request for a pilot project to maintain and/or enhance the energy efficiency of replacement technologies and equipment in the context of HFC phase-down (non-investment activities), in the amount of US \$150,000, plus agency support cost of US \$13,500, as originally submitted.⁹ The submission includes a description of specific activities, targets, and performance indicators and an implementation plan for 2024 to 2026.

Status of implementation of energy-efficiency-related activities funded by the Multilateral Fund

30. During implementation of the enabling activities project, the national ozone officer (NOO) strengthened partnership with the Ministry of Energy to identify the linkage between the HFC phase-down and energy efficiency. Two twinning workshops were organized for national energy efficiency policymakers and the NOOs. As a result, the energy efficiency issues for refrigeration and air-conditioning (RAC) appliances were incorporated into the National Energy Policy (NEP).

Energy efficiency pilot project

31. The Government of Nigeria ratified the Kigali Amendment on 20 December 2018.

Report on HFC consumption

32. The Government of Nigeria reported a consumption of 17,374,682 CO₂-eq tonnes of HFCs in 2022. The HFC consumption baseline has been established at 15,187,779 CO₂-eq tonnes. The 2019-2022 HFC consumption reported under Article 7 of the Montreal Protocol is shown in table 1.

Table 1. HFC consumption in Nigeria from 2019 to 2022 (Article 7 data)

HFC	2019	2020	2021	2022
Metric tonnes (mt)				
HFC-134a	1,801.15	1,829.88	3,232.70	8,401.92
HFC-32	0.00	0.00	0.00	26.90
HFC-227ea	0.00	0.00	0.00	631.88
R-404A	205.89	0.52	0.00	147.91
R-407A	0.00	0.00	0.00	7.40
R-407C	0.00	0.11	0.00	41.35
R-410A	0.00	0.52	1,800.50	1,263.78
Total (mt)	2,007.04	1,831.03	5,033.20	10,521.14
CO₂-eq tonnes				
HFC-134a	2,575,645	2,616,728	4,622,761	12,014,746
HFC-32	0	0	0	18,158
HFC-227ea	0	0	0	2,034,654
R-404A	807,418	2,039	0	580,044
R-407A	0	0	0	15,592
R-407C	0	195	0	73,349
R-410A	0	1,086	3,758,544	2,638,141
Total (CO₂-eq tonnes)	3,383,063	2,620,048	8,381,305	17,374,682

⁹ As per letter from the Federal Ministry of Environment of Nigeria to UNIDO on 24 August 2023.

Policy, regulatory and institutional framework

33. The Federal Ministry of Environment is the designated national authority in Nigeria for the implementation of the Montreal Protocol and Kigali Amendment. The national ozone unit (NOU) is established within the Ministry and is responsible for implementing activities at the operational level.

34. Various Government departments play significant roles in the implementation of the Montreal Protocol and the energy-efficiency-related activities as highlighted below. The Standards Organization of Nigeria (SON) is responsible for the development, adoption and enforcement of standards and has a key role in developing and enforcing minimum energy performance standards (MEPS). The SON is the authority for issuing MEPS and labelling certificates to manufacturers and importers and carries out market surveillance with shops and refrigerant distributors for illegal imports of appliances and refrigerants.

35. The Energy Commission of Nigeria (ECN) promotes sustainable energy development in Nigeria through the development of strategic plans and the coordination of national policies. ECN supports collecting energy data and carrying out studies and analysis for the development of regulations (such as MEPS) and policies.

36. The Nigerian Customs Service (NCS) and National Agency for Food and Drug Administration are responsible for issuing licences for controlled substances and equipment; NCS also conducts customs clearance of imported refrigerants and appliances and has a key role in implementing the labelling standard.

37. The NEP outlines the Nigerian Government's vision and goals for the development and utilization of energy resources in the country. The National Energy Efficiency Action Plan was developed to identify barriers and set the targets and indicators based on the national potentials and socio-economic assessments. In this context, Nigeria developed the MEPS for refrigerators and air conditioners in 2017. Meanwhile, the African Union and the Economic Community of West African States (ECOWAS) developed regional MEPS for RAC equipment which have been adopted by Nigeria to replace the national MEPS.

38. The MEPS requires that the manufacturers affix energy labels to products and that the refrigerant used has zero ODP. The labelling standard has been completed for air-conditioning equipment and is under preparation for refrigeration appliances.

39. Nigeria developed its National Cooling Action Plan in 2022 to define the roadmap to phase out controlled substances under the Montreal Protocol while reducing emissions through the enforcement of energy efficiency requirements in the RAC sector. The action plan recommends updating the MEPS and labels for refrigerators and air conditioners in 2025 and 2028.

Project objective

40. The pilot project for maintaining and/or enhancing energy efficiency of replacement technologies and equipment in the context of HFC phase-down in Nigeria is designed to remove the barriers to enforcing MEPS in the RAC sector by establishing labelling and updating MEPS; upgrading the national testing laboratory and providing training in verification testing; and coordinating capacity-building, monitoring, regulatory enforcement and awareness-raising activities.

Proposed activities

41. The following activities have been proposed for the pilot project:

- (a) Establishing the labelling standard for refrigeration appliances (Nigeria Industrial Standard (NIS) ECOSTAND 071-1), including stakeholder consultation, coordination with the SON for approval, and gazetting the approved standard (US \$15,000);

- (b) Establishing a market surveillance programme to collect data on the energy efficiency of RAC appliances for the regular update of MEPS by forming a partnership between the RAC association, importers and appliance retailers (US \$20,000);
- (c) Reviewing and upgrading the MEPS and labelling standard for air-conditioning equipment for improved energy efficiency, including incorporating the requirements for using low-GWP and zero-ODP refrigerant into the standard, public consultation with stakeholders, and launching the updated MEPS and labelling standard (US \$28,000);
- (d) Upgrading the testing laboratory for refrigerators and air conditioners to facilitate testing appliances with flammable refrigerants (US \$35,000); and training staff on verification testing of RAC product samples from the market (US \$25,000);
- (e) A desk study for a public green procurement policy which will be used to guide purchases of low-GWP energy-efficient RAC equipment in the public sector (US \$10,000);
- (f) Organizing two training sessions for 20 customs officers on enforcement of the energy efficiency labelling standard (US \$7,000); and
- (g) Awareness-raising and training activities on the updated MEPS and labelling requirements among regulatory authorities (the NOU, SON, ECN, Ministry of Industry, and NCS), the enforcement procedures, and lessons learned from case studies (US \$10,000).

Total cost of the pilot project

42. The total cost of the pilot project was estimated at US \$150,000. The project will be implemented over 24 months.

Coordination of energy efficiency activities funded outside the Multilateral Fund

43. The energy-efficiency-related projects funded outside of the Multilateral Fund include a project for scaling up sustainable cooling, led by ECN and funded by the Clean Cooling Collaborative, and a project for abating greenhouse gas emission from obsolete RAC equipment in West Africa (AGORA) funded by the French Facility for Global Environment (FFEM). The former integrates cooling targets in the National Determined Contribution (NDC), conducting awareness campaigns to promote energy-efficient and climate-friendly air conditioners; and recommends protocols and provides training to enhance monitoring, verification and enforcement. The latter project aims to strengthen policy and regulation, transform the RAC market through equipment replacement, and create a fleet of energy-efficient RAC equipment using low-GWP refrigerants (e.g., R-290-based domestic air conditioners).

44. The NOO will ensure complementarity of the proposed energy efficiency project and the above-mentioned activities. The proposed project upgrades MEPS for refrigerators only as the MEPS for air-conditioning has been covered by the scaling up project. The awareness-raising component in the current project will also complement the awareness campaigns in other projects by targeting more stakeholders and locations within the country. The training of customs to read the MEPS will complement the training of other regulatory officers under the scaling up project to form a complete monitoring team for enforcing the MEPS and labelling standard for RAC appliances.

45. The proposed project will provide an institutional framework to facilitate the successful implementation of the rebate scheme for air conditioners proposed under the AGORA project to be started in 2024. The upgrading of the MEPS and labels for refrigerators proposed in the project will guide the procurement of equipment for the rebate scheme under the AGORA project.

SECRETARIAT'S COMMENTS AND RECOMMENDATION

COMMENTS

46. The Secretariat has reviewed the project proposal in light of the activities described under decision 91/65.

47. In line with decision 91/65, confirmation from the Government of Nigeria has been received confirmation: that the NOU will coordinate with relevant energy efficiency authorities and national standards bodies to facilitate consideration of refrigerant transition when developing energy efficiency standards in the relevant sectors/applications; that, if Nigeria has mobilized or is to mobilize funding from sources other than the Multilateral Fund for energy efficiency components when phasing down HFCs, the project will not result in the duplication of activities among those funded by the Multilateral Fund and those funded from other sources; that the information on project progress, results and key learning will be made available, as appropriate; and that the date of completion of the project will be set as no more than 36 months after the date of approval by the Executive Committee and a detailed project report will be submitted to the Executive Committee within six months of the date of completion of the project.

Policy, regulatory and institutional framework

48. Upon enquiry on the implementation status of the MEPS and whether these are mandatory, UNIDO confirmed that the MEPS and labelling standard for RAC equipment are mandatory as approved and gazetted by the federal Government. The MEPS is being enforced but the labelling part was on hold due to reviewing the label for compliance with the ECOWAS Standards Harmonization Model. The redesign has been recently approved by ECOWAS Parliament and will need to be approval by the SON Standards Council for subsequent gazetted and implementation. The MEPS is due for a review and the arrangement for its review has commenced.

Technical and cost-related issues

49. Regarding the upgrade of the laboratory, UNIDO clarified that the testing facility is in operation. The upgrade is for installing safety measures to facilitate testing of equipment using flammable refrigerants. The upgrade includes installation of a ventilation system, a fire safety system, extinguishers, fire-retardant materials on the interior of the laboratory, etc. Upon further discussion, the cost of installation of equipment and fire-retardant materials on the ceiling, interior wall and floor was reduced from US \$20,000 to US \$15,000. The total cost of upgrading the laboratory was agreed at US \$30,000.

Agreed cost of the pilot project

50. The total cost of the project was adjusted to US \$145,000 for implementing the proposed activities summarized in paragraph 41.

Sustainability of the pilot project and assessment of risks

51. Nigeria is implementing mandatory MEPS and labelling standards for RAC equipment. Regular updates of the MEPS will support the continuous improvement of the energy efficiency of RAC equipment. The updated MEPS and labelling standard will be disseminated among stakeholders to ensure the adoption by all stakeholders in the country.

52. The risks identified include low priority of the project by some institutions, political instability and a lack of technical capacity which could hamper the successful implementation of the project. To address these, the NOU will ensure full consultation and information sharing during implementation. UNIDO will

set up a national office to support project implementation, and the selection of key counterparts will be made based on their strong interests and commitments in close consultation with the NOU.

RECOMMENDATION

53. The Executive Committee may wish to consider:

- (a) Approving the pilot project to maintain and/or enhance the energy efficiency of replacement technologies and equipment in the context of HFC phase-down (non-investment activities) for Nigeria, in the amount of US \$145,000, plus agency support costs of US \$13,050 for UNIDO, noting:
 - (i) That the Government of Nigeria has committed to the conditions referred to in decision 91/65(b)(iv)b. to (b)(iv)d.; and
 - (ii) That the project would be operationally completed no later than 31 December 2026 and a detailed project report would be submitted to the Executive Committee within six months of the date of completion of the project.

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 II OF THE HCFC PHASE-OUT MANAGEMENT PLAN

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

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 the Montreal Protocol schedule.

Validity

17. This updated Agreement supersedes the Agreement reached between the Government of Nigeria and the Executive Committee at the 81st meeting of the Executive Committee of the Multilateral Fund.

APPENDIX 2-A: THE TARGETS, AND FUNDING

Row	Particulars	2018	2019	2020	2021	2022	2023	2024	2025	Total	
1.1	Montreal Protocol reduction schedule of Annex C, Group I substances (ODP tonnes)	310.41	310.41	224.19	224.19	224.19	224.19	224.19	112.09	n/a	
1.2	Maximum allowable total consumption of Annex C, Group I substances (ODP tonnes)	310.41	310.41	224.19	224.19	224.19	167.81	167.81	112.09	n/a	
2.1	Lead IA (UNDP) agreed funding (US \$)	2,600,000	0	1,400,000	0	0	2,600,000	0	1,610,472	8,210,472	
2.2	Support costs for Lead IA (US \$)	182,000	0	98,000	0	0	182,000	0	112,733	574,733	
2.3	Cooperating IA (Government of Italy) agreed funding (US \$)	269,025	0	234,400	0	0	0	0	0	503,425	
2.4	Support costs for Cooperating IA (US \$)	34,937	0	30,472	0	0	0	0	0	65,377	
2.5	Cooperating IA (UNIDO) agreed funding (US \$)	176,837	0	0	0	0	0	0	0	176,837	
2.6	Support costs for Cooperating IA (US \$)	15,915	0	0	0	0	0	0	0	15,915	
3.1	Total agreed funding (US \$)	3,045,862	0	1,634,400	0	0	2,600,000	0	1,610,472	8,890,734	
3.2	Total support costs (US \$)	232,852	0	128,472	0	0	182,000	0	112,733	656,025	
3.3	Total agreed costs (US \$)	3,278,714	0	1,762,872	0	0	2,782,000	0	1,723,205	9,546,759	
4.1.1	Total phase-out of HCFC-22 agreed to be achieved under this Agreement (ODP tonnes)										70.43
4.1.2	Phase-out of HCFC-22 to be achieved in the previous stage (ODP tonnes)										10.62
4.1.3	Remaining eligible consumption for HCFC-22 (ODP tonnes)										167.45
4.2.1	Total phase-out of HCFC-141b agreed to be achieved under this Agreement (ODP tonnes)										41.90
4.2.2	Phase-out of HCFC-141b to be achieved in the previous stage (ODP tonnes)										54.50
4.2.3	Remaining eligible consumption for HCFC-141b (ODP tonnes)										0.00
4.3.1	Total phase-out of HCFC-141b contained in imported pre-blended polyols agreed to be achieved under this Agreement (ODP tonnes)										28.30
4.3.2	Phase-out of HCFC-141b contained in imported pre-blended polyols achieved in the previous stage (ODP tonnes)										25.00
4.3.3	Remaining eligible consumption for HCFC-141b contained in imported pre-blended polyols (ODP tonnes)										0.00