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EXECUTIVE COMMITTEE OF
THE MULTILATERAL FUND FOR THE
IMPLEMENTATION OF THE MONTREAL PROTOCOL
Eighty-first Meeting
Montreal, 18-22 June 2018

PROJECT PROPOSAL: NIGERIA

This document consists of the comments and recommendation of the Secretariat with regard to the following project proposal:

Phase-out

•	HCFC phase-out management plan (stage II, first tranche)	UNDP, UNIDO, and Government of Italy

PROJECT EVALUATION SHEET – MULTI-YEAR PROJECTS
Nigeria

(I) PROJECT TITLE	AGENCY
HCFC phase-out management plan (stage II)	UNDP (lead), UNIDO, Government of Italy

(II) LATEST ARTICLE 7 DATA (Annex C Group I)	Year: 2017	265.82 (ODP tonnes)

(III) LATEST COUNTRY PROGRAMME SECTORAL DATA (ODP tonnes)									Year: 2017
Chemical	Aerosol	Foam	Fire-fighting	Refrigeration		Solvent	Process agent	Lab use	Total sector consumption
				Manufacturing	Servicing				
HCFC-123									
HCFC-124					7.45				7.45
HCFC-141b		23.53		55.42					78.95
HCFC-141b in imported pre-blended polyols		25.26							25.26
HCFC-142b									
HCFC-22				38.94	140.49				179.42

(IV) CONSUMPTION DATA (ODP tonnes)			
2009–2010 baseline:	344.9	Starting point for sustained aggregate reductions:	398.2
CONSUMPTION ELIGIBLE FOR FUNDING (ODP tonnes)			
Already approved:	90.2	Remaining:	308

(V) BUSINESS PLAN		2018	2019	2020	After 2020	Total
UNDP	ODS phase-out (ODP tonnes)	51.05	0	78.05	50.00	179.10
	Funding (US $)	1,237,117	0	1,937,286	4,915,532	8,089,935
UNIDO	ODS phase-out (ODP tonnes)	19.00	0	3.40	0	22.40
	Funding (US $)	1,189,874	0	23,201	0	1,213,075
Italy	ODS phase-out (ODP tonnes)	3.95	0	3.55	0	7.50
	Funding (US $)	115,339	0	100,494	0	215,833

(VI) PROJECT DATA			2018	2019	2020	2021	2022	2023	2024	2025	Total
Montreal Protocol consumption limit			310.41	310.41	224.19	224.19	224.19	224.19	224.19	112.09	n/a
Maximum allowable consumption (ODP tonnes)			310.41	310.41	224.19	224.19	224.19	224.19	224.19	112.09	n/a
Project costs requested in principle (US $)	UNDP	Project costs	2,356,638	0	1,971,093	0	2,123,500	0	1,071,591	687,650	8,210,472
		Support costs	164,965	0	137,977	0	148,645	0	75,011	48,136	574,733
	UNIDO	Project costs	1,426,837	0	1,060,000	0	1,832,966	0	67,000	0	4,386,803
		Support costs	99,879	0	74,200	0	128,308	0	4,690	0	307,076
	Government of Italy	Project costs	269,025	0	234,400	0	0	0	0	0	503,425
		Support costs	34,937	0	30,440	0	0	0	0	0	65,377
Total project costs requested in principle (US $)			4,052,500	0	3,265,493	0	3,956,466	0	1,138,591	687,650	13,100,700
Total support costs requested in principle (US $)			299,780	0	242,617	0	276,953	0	79,701	48,136	947,186
Total funds requested in principle (US $)			4,352,280	0	3,508,109	0	4,233,419	0	1,218,293	735,786	14,047,886

(VII) Request for funding for the first tranche (2018)		
Agency	**Funds requested (US $)**	**Support costs (US $)**
UNDP	2,356,638	164,965
Government of Italy	269,025	34,937
UNIDO	1,426,837	99,879
Funding request:	Approval of funding for the first tranche (2018) as indicated above	
Secretariat's recommendation:	For individual consideration	

PROJECT DESCRIPTION

Background

1. At the 80th meeting, on behalf of the Government of Nigeria, UNDP as lead implementing agency, submitted a request for funding for stage II of the HCFC phase-out management plan (HPMP), at a total cost of US $21,661,626, consisting of US $12,413,345, plus agency support costs of US $868,934 for UNDP, US $7,299,575, plus agency support costs of US $510,970 for UNIDO, and US $503,425, plus agency support costs of US $65,377 for the Government of Italy.

2. During the project review process, it was not possible to address issues arising in time for the meeting and UNDP, therefore, withdrew the submission. The issues in question included: the accuracy of consumption data for 2015, which, according to the verification exercise, had been substantially larger than that which was reported; the lack of verification of 2016 HCFC consumption; the slow progress in converting polyurethane (PU) foam enterprises under stage I; the eligibility of a proposed project to produce hydrocarbons (HCs); the incremental costs of the conversion projects; and the size of activities and the associated HCFC phase-out in the refrigeration servicing sector. UNDP stated that stage II of the HPMP would be resubmitted to the 81st meeting, once all the issues had been addressed.

Resubmission of stage II of the HPMP

3. On behalf of the Government of Nigeria, UNDP as lead implementing agency, has resubmitted[1] to the 81st meeting a request for funding for stage II of the HPMP, at a total cost of US $22,631,742 consisting of US $13,319,995, plus agency support costs of US $932,400 for UNDP, US $7,299,575 plus agency support costs of US $510,970 for UNIDO, and US $503,425, plus agency support costs of US $65,377 for the Government of Italy as originally submitted. Implementation of stage II will phase out 221.23 ODP tonnes of HCFC by 2025. The total HCFC phase-out associated with stages I and II would be equivalent to 74.84 per cent of the HCFC baseline.

4. The first tranche for stage II, is being requested at US $7,400,731, consisting of US $3,703,495, plus agency support costs of US $259,245 for UNDP, US $2,929,000, plus agency support costs of US $205,030 for UNIDO, and US $269,025, plus agency support costs of US $34,937 for the Government of Italy, as originally submitted.

Status of implementation of stage I of the HPMP

Progress report on implementation of stage I of the HPMP

Legal framework

5. The Government of Nigeria has established a legal framework for the management of ODS, including HCFCs. The National Environmental Regulation (2009) sets out guidelines for the manufacture, import, sale and use of ODS and a protocol for a licensing and quota system. The regulation was amended in 2016 to include HFC-control issues, in line with the recent Montreal Protocol provisions.

6. The licensing and quota system is being implemented and a procedure for the management of licences and quotas has been established. The quotas are determined by the national ozone unit (NOU) of the Ministry of the Environment, according to national phase-out targets, and conveyed to the National Agency for Food and Drugs Administration and Control, which issues import permits with quotas. The

[1] As per letter submitted by the Federal Ministry of Environment of Nigeria on 12 March 2018.

quotas are enforced by the Nigerian Customs Service at the port of entry. Customs data are transferred to the NOU once a year for consolidation and reporting.

Upgrade of systems houses to produce methyl formate-based pre-blended polyols (UNDP)

7. Stage I included an investment project to upgrade a systems house in order to formulate polyols based on methyl formate (MF), and phase out the use of 45.41 ODP tonnes (412.8 metric tonnes (mt)) of HCFC-141b by downstream users by December 2015. However, owing to difficulties related to currency exchange and various technical issues, the systems house was commissioned in November 2017 only. As of April 2018, the conversion of nine downstream users has been completed and 25.84 ODP tonnes (234.93 mt) of HCFC-141b have been phased out. The conversion of the remaining downstream users is scheduled for the first half of 2018. The project is planned to be completed by the end of 2018, in line with decision 80/24.[2]

Phase-out of HCFC-141b used for PU foam in commercial refrigeration (UNIDO)

8. The project aimed to convert the manufacture of refrigeration insulation foam to MF in 109 enterprises consuming 34.12 ODP tonnes (310.2 mt) of HCFC-141b. To date, 75 enterprises have been converted and a total of 23.82 ODP tonnes (216.50 mt) of HCFC-141b had been phased out. The remaining 10.30 ODP tonnes (93.70 mt) consumed by the remaining 34 enterprises will be phased out through technical assistance, including the provision of personal protection equipment and a training workshop on use of the new MF formulations.

Demonstration project for the production of HC refrigerants (UNDP)

9. The demonstration project to establish a pilot facility for HC production has been completed. The facility has been established in Pamaque Nigeria Limited with a capacity of 200 mt per year, and can produce R-290 and R-600a with a minimum purity of 99.5 per cent. The market price of the HC refrigerants is US $3.00 to US $5.00/kg.

10. The importance of following recognized standards in the use of HC refrigerants (mainly European Standard EN 378 and the Guidelines for the safe use of HC refrigerants, published by the German Corporation for International Cooperation[3]) has been constantly emphasized throughout the project implementation. Training in the safe use of HCs has been provided to technicians. A train-the-trainer workshop has been organized and 100 technicians have been trained in the safe handling of flammable refrigerants. The Government of Nigeria is currently working on upgrading its national standards to ensure that the necessary safety conditions are met. On the basis of international standards, a full set of safety guidelines for operation of the production facility and transportation of HC refrigerants has been developed and can be shared with other enterprises for replication.

Project implementation and monitoring unit

11. Awareness-raising/outreach activities and training workshops for stakeholders were conducted to help ensure that the 2013 and 2015 HCFC reduction targets were met. Regular visits to beneficiary enterprises have been made to ensure that activities have been implemented as planned in the HPMP.

[2] To approve the extension of the duration of stage I of the HPMP to 31 December 2018, on the understanding that no further extension of project implementation would be requested and that the project completion report would be submitted to the first meeting in 2019.

[3] http://www.giz.de/expertise/downloads/giz2010-en-guidelines-safe-use-of-hydrocarbon.pdf

Level of fund disbursement

12. As at March 2018, of the US $4,938,830 approved, US $4,320,743 had been disbursed (US $2,383,249 for UNDP and US $1,937,494 for UNIDO) as shown in Table 1. The balance of US $618,087 will be disbursed in 2018.

Table 1. Financial report of stage I of the HPMP for Nigeria (US $)

Agency	Funds approved	Funds disbursed	Disbursement rate (%)	Remaining
UNDP	2,999,750	2,383,249	79.5	616,501
UNIDO	1,939,080	1,937,494	99.9	1,586
Total	**4,938,830**	**4,320,743**	**87.5**	**618,087**

Stage II of the HPMP

HCFC consumption and sector distribution

HCFC consumption

13. The Government of Nigeria reported consumption of 265.82 ODP tonnes of HCFCs in 2017 which was 23 per cent below the HCFC baseline. HCFC consumption between 2013 and 2017 is shown in Table 2.

Table 2. HCFC consumption in Nigeria (2013–2017 Article 7 data)

HCFC	2013	2014	2015	2016	2017	Baseline
Metric tonnes						
HCFC-22	3,887.91	3,535.12	3,657.75	3,554.30	3,262.24	4,518.77
HCFC-141b	1,096.59	997.08	238.55	311.37	717.69	875.90
HCFC-142b	0.00	0.00	202.82	8.90	0.00	0.00
HCFC-123	0.00	0.00	10.60	-	0.00	0.00
HCFC-124	0.00	0.00	313.11	200.90	338.46	0.00
Subtotal (mt)	**4,984.50**	**4,532.20**	**4,422.83**	**4,075.47**	**4,318.39**	**5,394.67**
HCFC-141b in imported pre-blended polyols	350.91	319.06	362.40	523.00	229.66	484.43*
ODP tonnes						
HCFC-22	213.84	194.43	201.18	195.49	179.42	248.53
HCFC-141b	120.62	109.68	26.24	34.25	78.95	96.35
HCFC-142b	0.00	0.00	13.18	0.58	0.00	0.00
HCFC-123	0.00	0.00	0.21	0.00	0.00	0.00
HCFC-124	0.00	0.00	6.89	4.42	7.45	0.00
Subtotal (ODP tonnes)	**334.46**	**304.11**	**247.70**	**234.74**	**265.82**	**344.88**
HCFC-141b in imported pre-blended polyols	38.60	35.10	39.86	57.53	25.26	53.29*

*Average consumption of 2009–2010.

14. HCFC consumption decreased between 2013 and 2016, but slightly increased in 2017. The overall decreasing trend in consumption is due to implementation of the phase-out activities in stage I, the shift in the market to non-HCFC alternatives, and the recent economic crisis caused by low oil prices and currency exchange issues.

15. Nigeria consumes HCFC-141b pure and contained in imported pre-blended polyols, both in the PU foam sector. In addition, HCFC-142b, HCFC-123 and HCFC-124 were imported in 2015 and 2016 as components of refrigerant blends or as pure refrigerants for servicing chillers.

Verification report

16. UNDP had submitted verification reports for 2015 and 2016 confirming that the Government is implementing a licensing and quota system for HCFC imports and exports and that the country was in compliance with the Montreal Protocol control targets for both years.

17. As of 2015, the Nigerian customs service started to apply new customs codes in order to be able to differentiate between types of HCFC. Previously, all HCFCs had been recorded under the same code. The verification exercise for 2015 indicated that the licensing and quota system had not captured all the HCFC imports, with approximately 30 per cent of the imports identified through records of other countries indicating their exports to Nigeria. Accordingly, the Government of Nigeria requested a correction of the data previously reported under Article 7 of the Montreal Protocol.

Sector distribution

18. Table 3 presents the distribution of HCFC use among sectors as reported in the country programme (CP) data for 2016, the year used as the reference for the investment projects when stage II was prepared.

Table 3. Distribution of HCFC use by sector and substance (2016)

Substance	Manufacturing			Servicing	Total	% of total
	Foam	Refrigeration	Total			
Metric tonnes						
HCFC-22	0.00	1,012.98	1,012.98	2,541.32	3,554.30	77.29
HCFC-141b	271.67	39.70	311.37	0.00	311.37	6.77
HCFC-141b in imported pre-blended polyols	501.64	21.36	523.00	0.00	523.00	11.37
Total (mt)	**773.31**	**1,074.04**	**1,847.35**	**2,751.12**	**4,598.47**	100.00
Total (%)						
ODP tonnes						
HCFC-22	0.00	55.71	55.71	139.77	195.49	66.89
HCFC-141b	29.88	4.37	34.25	0.00	34.25	11.72
HCFC-141b in imported pre-blended polyols	55.18	2.35	57.53	0.00	57.53	19.68
Total (ODP tonnes)					**292.27**	100.00

19. HCFC is consumed in the following manufacturing sectors:

(a) *PU foam:* HCFC-141b, pure or contained in imported pre-blended polyols, continues to be used by small and medium-sized enterprises (SMEs) in the manufacturing of rigid PU foam applications, including commercial refrigeration and panels. There are two systems houses, one of which (Vitapur) can provide MF formulations, while the other acts as a distributor of MF formulations;

(b) *Commercial and industrial refrigeration:* Approximately 55.71 ODP tonnes (1,012.98 mt) of HCFC-22 are used by 150 companies, mostly SMEs manufacturing or assembling ice-making machines, cold rooms or freezers. Only 84 of these companies would be eligible for funding; and

(c) *Air-conditioning (AC):* This sector consists of enterprises consuming between 14.00 and 140.00 mt of HCFC-22/year. During the implementation of stage I, many companies have either shifted to use HFCs or no longer produced. There remains only one enterprise (HPZ Ltd.) producing ACs with a total consumption of 2.87 ODP tonnes (52.25 mt) of HCFC-22 that is eligible for funding and willing to convert its manufacturing line within the next five years.

20. HCFC-22 in the refrigeration servicing sector is consumed across the full range of RAC applications and equipment. HCFC-123 and HCFC-124 were primarily used in 2015 and 2016 for servicing chillers. In addition to HCFCs, HFCs and HFC blends are being consumed (i.e., HFC-134a and R-404A in commercial refrigeration, and R-410A and R-407C in the AC sector).

21. The service sector is composed of a large number of small workshops. The technical knowledge and capacity of technicians is low and qualified engineers are scarce. Only about 36,000 out of the estimated 80,000 technicians are registered. There are 26 technical training institutions that deliver RAC training; many of these institutions were established during the CFC national phase-out plan. Since 2010, a total of 1,400 technicians have been trained with Multilateral Fund assistance, and additional 10,800 have been trained through various programmes and initiatives. Poor equipment maintenance and frequent power fluctuation have resulted in high levels of leakage of refrigerants from equipment. Additional training and capacity development are needed to support the servicing sector phase-out.

Overarching strategy

22. The Government of Nigeria is proposing to achieve a 74.84 per cent reduction in its HCFC consumption baseline by 1 January 2025, through the completion of stage I and implementation of stage II of the HPMP. The overarching strategy has been developed in consultation with stakeholders, including from the industry sector, and contains the following five strategic lines:

(a) Complete phase-out of HCFC-141b consumption (including HCFC-141b contained in imported pre-blended polyols) in the foam manufacturing sector (four projects); and a ban on the import of HCFC-141b (including HCFC-141b contained in imported pre-blended polyols) by 1 January 2023, after completion of all the conversion projects;

(b) Complete phase-out of HCFC-22 consumption in the RAC manufacturing sector (two projects); and a ban on the import of HCFC-22-based split-type AC and other small AC units, after completion of the conversion projects;

(c) Expansion of the capacity of the HC-refrigerant production facility developed in stage I, from 200 mt to 600 mt per year;

(d) Strengthening of the licensing and quota system and technical assistance in the refrigeration servicing sector; and

(e) Project coordination, monitoring and reporting.

Phase-out of HCFC-141b in PU foam sector

Conversion at Slavit Group (UNDP)

23. The enterprise Slavit Group, which comprises two subsidiary enterprises, Sparcle and Crystal Ltd., and Lange and Grant, is nationally owned and was established in 2006. It produces insulated sandwich panels, roof insulation, wall spraying and vessel insulation, consuming 116.00 mt (12.76 ODP tonnes) of HCFC-141b in 2015. The baseline equipment includes: one high-pressure foam dispenser and one low-pressure foam dispenser for panels; two high-pressure dispensers for pour-in-place foam and four high-pressure dispensers for spray foam. The alternative technologies selected are cyclopentane for the insulation panels and MF for spray foam.

24. Incremental capital costs (ICCs) for the conversion of the two subsidiary enterprises to cyclopentane for panels, and MF for spray foam, include replacement of four foam dispensers (US $480,000); retrofit of four spray foam dispensers (US $20,000); plant safety including encapsulation

of equipment and presses and electrical modifications (US $180,000); trials and commissioning, technical assistance and safety audits (US $120,000); and contingencies (US $80,000). The ICCs requested are US $880,000; incremental operating costs (IOCs) have not been requested. The cost-effectiveness of the conversion is US $7.59/kg. Table 4 summarises the modifications proposed to the equipment and associated costs.

Table 4. Estimated costs for the conversion at Slavit Group

Description	Cost (US $)
Foam dispensers replacement or retrofit (two plants)	480,000
Safety items (two plants)	180,000
Retrofit of spray foam units (two plants)	20,000
Trials and commissioning (two plants)	50,000
Technical Assistance and Supervision (two plants)	50,000
Safety Audits (two plants)	20,000
Sub-total	800,000
Contingencies	80,000
Incremental operating costs	Not requested
Total	**880,000**
Phase-out of HCFC-141b (mt/year)	116
Cost effectiveness (US $/kg)	**7.59**

Conversion at 37 foam-manufacturing enterprises (UNDP)

25. The group of 37 enterprises consuming 380.10 mt (41.81 ODP tonnes) of HCFC-141b consists of: one that produces both panels and spray foam; seven that produce insulation panels; 20 that produce spray foam; seven enterprises that produce cold-room spray foam and two that produce thermoware. A total of 29 enterprises have dispensers, and the remaining eight have no equipment in their baseline.

26. The ICCs include support for the systems house to develop foam formulations (US 99,000); for the downstream users: retrofit of 29 foam dispensers and partial cost of eight new dispensers (US $468,600); trials and testing (US $111,000), and US $1,000 per downstream user for project management with the assistance of the systems house. IOCs have been estimated at US $1,216,320. The total cost of the conversion has been estimated at US $1,931,920, with cost-effectiveness of US $5.08/kg, as shown in Table 5.

Table 5. Estimated costs for the conversion at 37 foam-manufacturing enterprises

Description	Cost (US $)
Systems house	
Technology introduction	90,000
Contingency	9,000
Downstream users	
Foam dispensers retrofits for 37 users	426,000
Contingency	42,600
Trials and testing	111,000
Project management for 37 enterprises	37,000
Total ICC	715,600
Total IOC	1,216,320
Total	**1,931,920**
Phase-out of HCFC-141b (mt/year)	380.10
Cost effectiveness (US $/kg)	**5.08**

Auxiliary project for very small foam enterprises (UNDP)

27. The auxiliary project is planned to assist 50 very small foam users (with yearly consumption below 300 kg) that have not been addressed in other projects. A demonstration project on low-cost foam options using low-GWP technology in Egypt[4] has provided an option for addressing the very small users. The project plans to produce low-density formulations (below 35 m^3/kg) in order to reduce the price. The requested costs, which include optimization of the MF formula, provision of pouring equipment and training and awareness workshops, amount to US $825,000 as shown in Table 6. This project component does not have consumption phase-out.

Table 6. Estimated costs for the auxiliary project for very small foam enterprises

Description	Cost (US $)
Blending equipment	25,000
Laboratory equipment	25,000
Trials (10 batches)	200,000
Field applications	75,000
Equipment for estimated 50 very small users	350,000
Awareness workshops (five)	75,000
Sub-total	**750,000**
Contingencies	75,000
Total	**825,000**

Conversion of four commercial refrigeration enterprises (UNIDO)

28. This project will phase out 30.50 mt (3.36 ODP tonnes) of HCFC-141b used in four enterprises that produce spray and insulation foam for cold rooms. In stage I, UNIDO implemented a project to phase out HCFC-141b consumption in insulation foam for freezers and ice machines, but not spray foam and cold rooms. The phase-out of HCFC-22 in refrigeration systems by these four enterprises has also been included in stage II. The alternative technology selected is MF and the costs requested include the procurement of four dispensers (US $60,000) and IOCs of US $115,900, calculated at US $3.80/kg, resulting in a total cost of US $175,900, with cost-effectiveness of US $5.77/kg. Table 7 summarises the modifications proposed to the equipment and associated costs.

Table 7. Estimated costs for the conversion of four commercial refrigeration enterprises

Description	Costs as requested (US $)
Dispensers (four units)	60,000
IOC (US $/kg)	115,900
Total	**175,900**
Phase-out of HCFC-141b (mt/year)	30.50
Cost effectiveness (US $/kg)	5.77

Complete phase-out of HCFC-22 in the manufacturing sector

Conversion in the commercial refrigeration manufacturing sector at 84 enterprises (UNIDO)

29. This group project addresses 791.98 mt (43.56 ODP tonnes) of HCFC-22 consumption in 84 enterprises that manufacture ice machines and cold rooms. Of the 84 enterprises included in the project, three large enterprises consume 594.00 mt (32.67 ODP tonnes), while the other 81 smaller enterprises

[4] EGY/FOA/76/DEM/129.

consume the remaining 197.98 mt (10.89 ODP tonnes). All the enterprises are nationally owned and were established before 2007.

30. The alternative technologies selected are either HC-290 or transcritical CO_2, depending on the final products and the technical and economic conditions of each enterprise. The project intends to provide the basic tools and minimum equipment necessary to handle flammability or the operating pressure of CO_2. IOCs are not requested. The total costs requested amount to US $5,784,000, with a cost-effectiveness of US $7.30/kg, as shown in Table 8.

Table 8. Costs requested for the conversion of 84 enterprises in the commercial refrigeration sector

Item	Quantity	Unit cost (US $)		Total costs (US $)
		HC-290	CO_2	
Refrigerant handling package				
Charging equipment (including supply pump)	84	10,000	15,000	
Refrigerant storage/securing	84	10,000	2,000	
Pre-charging evacuation	84	15,000	15,000	
Leak detection	84	12,000	12,000	
Lokring set	84	1,500		
Recovery/venting machine	84	1,500	6,000	
Sub-total refrigerant handling package	**84**	**50,000**	**50,000**	**4,200,000**
Safety package	84	10,000	10,000	840,000
Sub-total equipment cost				**5,040,000**
Contingency (10 per cent)				504,000
Total ICCs				**5,544,000**
Technical assistance workshop	12	10,000	10,000	240,000
IOCs (not requested)				**0**
Total				**5,784,000**
Phase-out of HCFC-22 (mt/year)				791.98
Cost effectiveness (US $/kg)				7.30

Conversion of HCFC-22 in the AC manufacturing enterprise HPZ Ltd

31. HPZ Ltd, established in 2001, is the only enterprise in the AC manufacturing sector. It operates in partnership with Haier (75 per cent locally-owned, and 25 per cent China-owned) and sells its products on the domestic market only. The enterprise has one manufacturing line that produces split and cabinet AC units with capacities of 9,000, 12,000, 18,000 and 24,000 British thermal units (BTU). It also has a mini manufacturing line for larger models (48,000 and 96,000 BTU), which consumes less than 0.40 mt (0.02 ODP tonnes) of HCFC-22 per year. The total consumption of HCFC-22 was 52.25 mt (2.87 ODP tonnes) in 2016.

32. The project proposes the conversion of the manufacturing line producing 9,000 BTU to 24,000 BTU AC units to R-290 technology. For the larger AC units, the enterprise will convert to an alternative technology later, using its own funding, as no viable low-GWP alternatives are currently available. The total costs requested amount to US $1,049,675 to phase out 52.25 mt of HCFC-22, with cost-effectiveness of US $20.10/kg. Table 9 summarises the modifications proposed to the equipment and associated costs.

Table 9. Estimated costs for the conversion of in the AC manufacturing enterprise HPZ Ltd

Description	Quantity	Unit costs (US $)	Total costs (US $)
Technical assistance for product modification	1	25,000	25,000
Technical assistance for factory layout	1	25,000	25,000
Refrigerant supply station	1	80,000	80,000
Refrigerant handling package			
Refrigerant charging machines	1	10,000	10,000

Description	Quantity	Unit costs (US $)	Total costs (US $)
Leak detectors	2	17,500	35,000
Ultrasonic welding machine	1	30,000	30,000
Helium leak detection system	1	125,000	125,000
Sub-total equipment cost			200,000
Safety, ventilation, recovery for repair area			200,000
Assembly line modification	1	25,000	25,000
Performance test area modifications	28	2,500	70,000
Safety audit and certification	1	30,000	30,000
Total cost			655,000
Contingency (10 per cent)			65,500
Total incremental capital cost			720,500
Incremental operating cost at US $6.30/kg	1	329,175	329,175
Total project cost			**1,049,675**
Phase-out of HCFC-22 (mt/year)			52.25
Cost effectiveness (US $/kg)			20.09

Commercial production of HC refrigerants

33. Stage II proposes to expand the pilot HC production facility established in stage I into a full, commercial HC-production facility with a capacity of 600 mt per year. The distillation process in combination with adsorption would remove impurities and separate the components from liquid petroleum gases to obtain pure R-290 and R-600a refrigerants. The total cost is estimated at US $4,944,000, including the design, plant construction, safety audit and project management. The Government is requesting US $1,530,000 for market studies, design, construction and other support costs to phase out 340.0 mt (18.70 ODP tonnes) of HCFC-22, at a cost-effectiveness of US $4.50/kg. Although the project does not directly phase out any HCFCs, it will facilitate the introduction of low-GWP refrigerants.

Servicing sector activities

34. Given the large amount of consumption of HCFCs in the refrigeration servicing sector, the Government of Nigeria considers activities in this sector an essential element of stage II. Strengthening policy and regulation will help influence stakeholders and create incentives for behavioural change, sustain phase-out in the manufacturing sector and support consumption reduction in the servicing sector. Further development of the capacity of the servicing sector through training and a certification mechanism, and the establishment of a recovery and reclamation programme, combined with efforts to enhance the capacity of customs and other enforcements officers, will facilitate a reduction in the demand for HCFCs and improve the control of HCFC imports. Implementation of these activities is expected to promote the introduction of more efficient RAC equipment and prevent the excessive imports of HFCs, thereby preparing the servicing sector for future challenges associated with the Kigali Amendment.

35. The Government proposes five sets of activities in the servicing sector, relating to: policy and regulation development; capacity building for the customs service department; strengthening the RAC servicing sector; refrigerant recovery and reclamation; and an awareness-raising programme, as shown in Table 10. The total cost is calculated at US $8,032,500, to phase out 1,785 mt of HCFC-22, with cost-effectiveness of US $4.50/kg.

Table 10. Costs of the activities for the refrigeration servicing sector

Description	Costs (US $)
Policy and regulations: strengthening licensing system; developing national codes of practices for flammable and toxic refrigerants; policy support for certification of technicians; developing an integrated control system for ODS management	450,000

Description	Costs (US $)
Strengthening RAC training capacity: train 60 trainers and 10,000 technicians on flammable and toxic refrigerants; establish two master training centres and upgrade 30 existing training centres; develop technician certification scheme; support industrial associations	2,550,500
Training of 340 customs and enforcement officers; provision of 40 refrigerants identifiers; training of 300 importers and dealers	400,000
Refrigerant recovery and reclamation: provision of equipment to establish five reclamation centers; provision of 1000 servicing tools to develop servicing network; carrying out 20 training workshops for small servicing workshops; conducting awareness campaign on refrigerant quality	3,782,000
Demonstration of low-GWP technologies including HC-based ACs, CO_2-based refrigeration in supermarkets and small NH_3-based refrigeration applications	850,000
Total	**8,032,500**

Project management and coordination

36. Project coordination and monitoring is proposed to ensure efficient and effective implementation of the activities planned in the HPMP. In stage II, a large number of SMEs will be addressed. The alternative technologies selected are either flammable, toxic or high-pressure, requiring careful planning and management. UNDP and UNIDO plan to bring in international experts (one each) to assist with the implementation. The overall costs requested for this element amount to US $914,000.

Total cost of stage II of the HPMP as submitted

37. The activities proposed and associated costs for stage II of the HPMP for Nigeria are shown in Table 11.

Table 11. Summary of activities proposed for stage II of the HPMP for Nigeria

Project	Technology	Project costs (US $)	HCFC reduction (mt)		Total reduction (ODP tonnes)	C.E (US $/kg)	Agency
			HCFC-141b	HCFC-22			
PU foam: conversion at Slavit Group	Cyclopentane/MF	880,000	116.00	0	12.76	7.59	UNDP
PU foam: conversion of 37 foam enterprises	MF	1,931,920	380.10	0	41.81	5.08	UNDP
PU foam: auxiliary project	MF	825,000	0	0	0.00	n/a	UNDP
PU foam: conversion of four commercial refrigeration enterprises	MF	175,900	30.50	0	3.36	5.77	UNIDO
Sub-total PU foam		**3,812,820**	**526.60**	**0**	**57.93**	**7.24**	
RAC manufacturing: conversion of 84 enterprises in the commercial refrigeration sector	CO_2/R-290	5,784,000	0	791.98	43.56	7.30	UNIDO
RAC manufacturing : Conversion of the AC manufacturing line at HPZ Ltd	HC-290	1,049,675	0	52.25	2.87	20.09	UNIDO
HC production	HC	1,530,000	0	340	18.70	4.50	UNDP
Sub-total RAC		**8,363,675**	**0**	**1,184**	**65.13**	**7.06**	
Servicing sector activities	Various	8,032,500	0	1785	98.18	4.80	UNDP/ Italy

Project	Technology	Project costs (US $)	HCFC reduction (mt)		Total reduction	C.E (US $/kg)	Agency
			HCFC-141b	HCFC-22	(ODP tonnes)		
Project management and coordination	n/a	914,000	0	0	0	n/a	UNDP/ UNIDO
Grand total		**21,122,995**	**526.60**	**2,969**	**221.23**	**6.04**	

SECRETARIAT'S COMMENTS AND RECOMMENDATION

COMMENTS

38. The Secretariat reviewed stage II of the HPMP for Nigeria in light of stage I, the policies and the guidelines of the Multilateral Fund, including the criteria for funding HCFC phase-out in the consumption sector for stage II of HPMPs (decision 74/50), and the 2018-2020 business plan of the Multilateral Fund.

Operation of the licensing and quota system

39. Several issues related to the operation of the licensing and quota system have been identified, including: that 30 per cent of HCFC imports in 2015 were not recorded by the country's customs service; that some enterprises had imported HCFCs without a permit; that no penalty had been applied in cases when importers had surpassed the import quota; and that permits were issued by a different department. The Secretariat raised concerns with UNDP about the effectiveness of the licensing and quota system and recalled that this issue had already been discussed during the approval of the first and third tranches of stage I of the HPMP [5]. UNDP indicated that improvements to the licensing and quota system have so far been limited, in part because no funding was allocated to address this issue in stage I, as priority was given to investment activities to phase out HCFC-141b and to a pilot HC production project.

40. Further to discussions on feasible activities that could be implemented in stage II to strengthen the licensing and quota system, UNDP proposed the following:

(a) Review of the implementation of the existing licensing and quota system to provide suggestions for improvements from the legal point of view;

(b) Establishment of a regular coordination mechanism (two meetings per year) between the NOU, the National Agency for Food and Drugs Administration and Control and the customs service to discuss the quota allocations, monitoring and data reporting;

(c) At least one training session for custom officers on identification and control of ODS per year;

(d) At least one joint training session per year for all importers and dealers of ODS and ODS-based equipment, including of pre-blended polyols, on the related policy and quota system;

(e) An exchange visit with another Article 5 country to undertake a thorough review of the operation and legal aspects of its licensing system; and

(f) Regular monitoring of implementation of the above activities, with information thereon to be included in the verification reports, to ensure progress in terms of policy enforcement.

[5] The issue was discussed in paragraph 26 of document UNEP/OzL.Pro/E`xCom/62/43 and paragraphs 12 and 13 of document UNEP/OzL.Pro/ExCom/71/44.

41. The Secretariat considers that the above activities would assist the country in improving the operation and enforcement of its licensing and quota system, and agreed with UNDP that approval of the second tranche would be conditional on the timely implementation of the above activities, and the satisfactory operation of the licensing and quota system which has been confirmed by the independent verifier in the verification report.

Overarching strategy for stage II

42. The strategy proposed by the Government of Nigeria is in line with the guidelines of the Executive Committee. The complete phase-out of HCFC consumption in the foam and RAC manufacturing sector, the application of bans on the import of HCFC-141b, and the activities proposed in the refrigeration servicing sector would sustain the phase-out in stage II.

43. During the project review process, an issue emerged as the RAC manufacturing enterprise HPZ Ltd. (52.25 mt) included in stage II withdrew its project owing to the current uncertainty of the proposed technology in the local market. As all the activities of a stage of an HPMP need to be submitted and agreed altogether, an option discussed was to implement stage II up to 2023 (rather than 2025), which would allow the submission of request for preparation of stage III in 2021 including the conversion of HPZ Ltd. The Government of Nigeria, however, preferred to maintain the strategy for stage II as originally planned to achieve the complete phase out of HCFCs in the manufacturing sector before 2025, and issue import bans on HCFC-22 based RAC equipment prior to that year to provide certainty to the industry and the market. After further discussion on how to include the conversion of HPZ Ltd. in stage II, it was agreed to follow a similar approach applied for stage II of the HPMP in Egypt approved at the 79th meeting[6], to allow submission of the funding request for the conversion of HPZ Ltd. to happen later in stage II, but before 1 January 2020. Accordingly, the Government would ban the use of HCFC-22 in the refrigeration manufacturing sector and imports of split-type AC and small AC units by 1 January 2024 once the conversion project in HPZ Ltd. is completed. As the conversion of HPZ Ltd. has been retained in stage II, the complete phase-out of HCFC-22 in RAC manufacturing sector remains part of the strategy for stage II. The calculation of HCFC-22 reduction, therefore, includes the entire 55.71 ODP tonnes of HCFC-22 used in the RAC manufacturing sector.

44. The Secretariat further suggested capping HCFC-22 consumption by HPZ Ltd. to prevent consumption growth. It has been agreed that, when the conversion project in HPZ Ltd. is submitted, eligible consumption will be determined on the basis of the existing guidelines of the Executive Committee, but the maximum eligible level will be 3.82 ODP tonnes (69.54 mt). [7]

Proposed phase-out activities in stage II

Eligible consumption of HCFC-141b in the PU foam sector

45. The consumption of HCFC-141b (both in bulk and contained in imported pre-blended polyols) of 834.36 mt (91.78 ODP tonnes) in 2016, was used as the reference to prepare the PU foam projects. In reviewing the projects for the phase-out of HCFC-141b proposed in stage II, the Secretariat identified the following issues:

(a) A total of 386.55 mt (42.52 ODP tonnes) of HCFC-141b was consumed by a large number of foam enterprises funded under stage I whose conversions have not been completed and were still consuming HCFC-141b in 2016. As this consumption would constitute double

[6] UNEP/OzL.Pro/ExCom/79/32

[7] Represents the consumption of 52.25 mt in 2016 allowing a growth rate of 10 per cent up to the year 2019, taking reference of the growth shown by the enterprise in the last three years (average 12 per cent).

counting it was deducted;

(b) The group of 37 foam enterprises included funding for the conversion of two enterprises, Frigoglas (A.J. Leventis) and Femtej, with an aggregated consumption of 20.00 mt (2.20 ODP tonnes of HCFC-141b. However, during the review process, UNDP indicated that the two enterprises were inadvertently included in stage II, as they received funding for their conversion during stage I. Accordingly, the consumption of HCFC-141b and costs associated with the two enterprises were removed from stage II; the number enterprises in the group project were reduced to 35; and the consumption of the enterprises were reduced from 380.10 mt to 360.10 mt;

(c) After deducting the total consumption of 406.55 mt (44.72 ODP tonnes) of HCFC-141b associated with already funded enterprises indicated in sub-paragraphs (a) and (b) above, the remaining eligible consumption that can be funded under stage II amounts to 427.81 mt (47.06 ODP tonnes) of HCFC-141b; and

(d) The total consumption of HCFC-141b requested for funding in stage II amounted to 486.65 mt (53.53 ODP tonnes[8]). However, 58.82 mt (6.47 ODP tonnes) had already been funded under stage I. Therefore, UNDP agreed to deduct 6.47 ODP tonnes (58.82 mt) consumption from the foam group and very small foam users project. The consumption be to phased out was reduced from 360.10 mt (41.81 ODP tonnes) to 301.32 mt (35.34 ODP tonnes).

Conversion at Slavit Group (UNDP)

46. While consumption in 2015 by the two subsidiary enterprises of Slavit Group was reported as 75.00 mt (8.25 ODP tonnes) for Sparcle and Crystal Ltd., and 10 mt (1.10 ODP tonnes) for Lange and Grant at the 80th meeting, the consumption reported in the project submitted to the 81st meeting amounts to 116 mt (12.76 ODP tonnes). After review of the last three years' consumption by the enterprises provided by UNDP, consumption of 96.00 mt (10.56 ODP tonnes) has been used for calculation of the phase-out.

47. Upon discussion with UNDP, the cost of replacement or retrofit of the dispensers has been adjusted from US $480,000 to US $300,000, taking as a reference the characteristics of the baseline equipment and the cost of conversion of other PU foam enterprises. The contingency costs were applied to equipment only. The adjusted total costs therefore amount to US $664,000 to phase out 10.56 ODP tonnes (96.00 mt) of HCFC-141b, at the cost-effectiveness of US $6.92 /kg, as shown in Table 12.

Table 12. Agreed cost for conversion of Slavit Group

Description	Agreed cost (US $)
Foam dispensers replacement or retrofit (two plants)	300,000
Safety items (two plants)	180,000
Retrofit of spray foam units (two plants)	20,000
Trials and commissioning (two plants)	40,000
Technical Assistance and Supervision (two plants)	50,000
Safety Audits (two plants)	20,000
Sub-total	610,000
Contingencies	54,000
Incremental operating costs	Not requested
Total	**664,000**
Phase-out of HCFC-141b (mt/year)	96.00
Cost effectiveness (US $/kg)	6.92

[8] This consumption has taken into account the adjustments for Salvit Group (20 mt) and the group project (20 mt).

Conversion at 37 foam-manufacturing enterprises and auxiliary project for very small foam enterprises (UNDP)

48. The Secretariat noted that the enterprises to be converted in the group project are downstream users of the systems house Vitapur, which has already been converted to non-HCFC technology in stage I. The cost of technology introduction (US $90,000) for Vitapur was therefore removed. In addition, the costs of retrofitting of foam dispensers for downstream users were aligned to the level of funds recommended in previous similar proposals. After removing Frigoglas (A.J. Leventis) and Femtej from stage II, the total number of companies to be addressed in this project decreases to 35.

49. The IOCs as submitted, included an increase in density for the application of MF and a more expensive polyol, which had not been needed before when applying this technology. It was agreed that the IOCs would be calculated on the basis of no increase in density, no increase in the price of the polyol, removal of the cost of phasing in the alternatives, and using eligible tonnage of 301.32 mt (35.34 ODP tonnes) (see paragraph 45), after removing consumption already being funded under stage I. This resulted in total IOCs of US $451,980.

50. In reviewing the auxiliary project to address very small foam users and the project addressing the group of 35 small users, the Secretariat considered that by combining the two projects into one the request in the auxiliary project for formulation optimization, blending equipment, laboratory equipment, field applications and workshops could be rationalized. Upon this suggestion, UNDP agreed with this approach, and adjusted the cost of the project to US $1,440,480 (including US $451,980 for IOCs), based on the consumption of 301.32 mt (33.14 ODP tonnes) eligible for funding (at a cost-effectiveness of US $4.78/kg). Table 13 summarises the modifications proposed to the equipment and associated costs.

Table 13. Agreed cost for the group project and very small users project combined

Item	Cost (US $)
Systems house	
Technology introduction	-
Blending equipment, lab equipment, trials and field applications for development and optimization of MF formulations for very small users	325,000
Contingency	25,000
Downstream users	
Foam dispensers retrofits for 35 users	385,000
Contingency	38,500
Test trials and testing	105,000
Project management	35,000
Awareness workshops for very small users	75,000
Total ICC	988,500
Total IOC	451,980
Total incremental cost	**1,440,480**
Phase-out of HCFC-141b eligible for funding (mt/year)	301.32
Cost effectiveness (US $/kg)	4.78

Phase-out of HCFC-141b in four commercial refrigeration enterprises (UNIDO)

51. In reviewing the IOC calculation for this project, it was noted that the density of the density of the new foam following conversion to MF should be the same as for HCFC-141b and, therefore the request for increase in density was not incremental. The IOCs were then re-calculated on the basis of 50 per cent of the consumption being converted to MF and 50 per cent to water, resulting in total IOCs of US $96,838. With the inclusion of the costs of four dispensers at US $15,000 each as requested, the total cost of the project amounts to US $156,838, to phase out 30.5 MT (3.35 ODP tonnes), with cost effectiveness of US $5.14/kg, as shown in Table 14.

Table 14. Agree costs for the conversion of four commercial refrigeration enterprises

Description	Costs as requested (US $)	As agreed (US $)
Dispensers (four units)	60,000	60,000
IOC (US $/kg)	115,900	96,838
Total	**175,900**	**156,838**
Phase-out of HCFC-141b (mt/year)	30.50	30.50
Cost effectiveness (US $/kg)	5.77	5.14

52. The Secretariat further noted that HCFC-141b is only consumed in the foam manufacturing sector and has been fully addressed through the conversion projects included in stage II. Accordingly, the total remaining eligible consumption of 70.19 ODP tonnes should be deducted from the starting point. Therefore, the remaining eligible consumption in rows 4.2.3 and 4.3.3 of Appendix 2-A of the Agreement would be zero.

Complete phase-out of HCFC-22 in the manufacturing sector

Phase-out of HCFC-22 in commercial refrigeration manufacturing sector (UNIDO)

53. Upon a request for clarification, it was confirmed that of the consumption levels of three large enterprises amounts to 208.44 mt (11.46 ODP tonnes) of HCFC-22 which is much lower than the consumption included in the project. The Secretariat noted that, owing to the decrease in the consumption levels and the large number of enterprises with small consumption in the project, the cost-effectiveness had risen to US $27.75/kg, exceeding the threshold of US $15.21/kg for projects in commercial refrigeration sector. By applying the cost threshold of US $15.21/kg and allowing an additional 25 per cent for low-GWP technologies in accordance with decision 74/55(c)(iii), the total cost has been recalculated as US $3,962,966 for phasing out 208.44 mt of HCFC-22, with a cost-effectiveness of US $19.01/kg. The agreed costs are shown in Table 15.

Table 15. Agree costs for the conversion of 84 commercial refrigeration enterprises

Item	Quantity	Unit costs (US $)		Total costs (US$)	Eligible (US$)
		R-290	CO_2		
Refrigerant handling package including charging machines, pre-charging evacuation, leak detection, lokring set, and recovery and venting machine	84	50,000	50,000	4,200,000	
Safety package including sensors, ventilation system, antistatic flooring and central control system	84	10,000	10,000	840,000	
Sub-total equipment cost				5,040,000	
Contingency (10 per cent)				504,000	
Total incremental capital cost				5,544,000	
Technical assistance workshop	12		20,000	240,000	
Incremental operating cost			not requested	0	
Total				**5,784,000**	**3,962,966**
Phase-out of HCFC-22 (mt/year)				791.98	208.44
Cost effectiveness (US $/kg)				7.30	19.01

54. The Secretariat noted that the group project for phasing out HCFC-22 in the commercial refrigeration equipment manufacturing sector and the conversion of the AC manufacturing line at HPZ Ltd cover all the manufacturing capacity in the country. With the implementation of these two projects, 55.71 ODP tonnes (1,013 mt)[9] of HCFC-22 consumption in the RAC manufacturing sector will be deducted

[9] The total consumption in RAC manufacturing sector reported by Nigeria under the CP in 2016.

from the starting point. When the conversion project in HPZ Ltd is submitted, the consumption will not be deducted from the starting point as the consumption in the manufacturing sector has already been deducted.

Production of HCs

55. The Secretariat notes that a similar project had been submitted to the 79th meeting and that it was not approved.[10] In addition to the reasons given at the 79th meeting, Nigeria had already received funding under stage I (US $869,000), on an exceptional basis for the pilot project on hydrocarbon production. For these reasons, the Secretariat did not recommend this project.

Refrigeration servicing sector

56. Although the Government of Nigeria proposes to achieve 74.8 per cent reduction in the HCFC baseline by 2025, it was agreed that the target for stage II of the HPMP is to achieve the 67.5 per cent reduction by 2025 only, following the Montreal Protocol phase-out schedule. In order to achieve 67.5 per cent reduction by 2025, additional 70.07 ODP tonnes (1,274.05 mt) would need to be reduced through the servicing sector activities, after counting the 125.81 ODP tonnes that will be phased out from the foam and refrigeration manufacturing sectors.

57. Stage I did not provide funding for the servicing sector, except for pilot production of HCs. The licensing and quota systems needs to be strengthened and the training of customs officers in ODS import monitoring and control needs urgent attention. Moreover, essential activities in the servicing sector, such as technician training, certification, refrigerant recovery and reclamation, would assist the country in its HCFC reduction efforts and assist the transition to low-GWP technologies. Therefore, a robust intervention in the refrigeration servicing sector is required under stage II. Upon discussion of the activities proposed and their costs, it was agreed an increase in the number of technicians trained by the training centres; optimization of costs related to upgrading of the training curriculums and developing code of practices; rendering mandatory the certification of technicians; and implementation of an end-user demonstration programme with 40-50 per cent co-funding.

58. The total funding for the service sector was calculated as US $6,115,417 to phase out 70.07 ODP tonnes (1,274.05 mt) of HCFC-22, at the cost effectiveness of US $4.80/kg. The detailed cost breakdown is presented in Table 16 below.

Table 16. Detailed activities and costs in the refrigeration servicing sector

Description of activities	Costs (US $)	
	As submitted	As revised
Policy and regulation: strengthening licensing system; developing national codes of practices for flammable and toxic refrigerants; policy support for certification of technicians; developing an integrated control system for ODS management	450,000	479,946
Strengthening RAC training capacity: Train 60 trainers and 10,000 technicians on flammable and toxic refrigerants; establishing two master training centers and upgrading 30 existing training centres; technician certification scheme; support industrial associations	2,550,500	2,500,500
Training of 340 customs and enforcement officers; provision of 40 refrigerants identifiers; training of 300 importers and dealers	400,000	520,000
Refrigerant recovery and reclamation: provision of equipment to establish five reclamation centers; provision of 1000 servicing tools to develop servicing network; conduct 20 training workshops for small servicing companies; awareness campaign on refrigerant quality	3,782,000	1,754,971
Demonstration of low-GWP technologies including HC-based ACs, CO_2-based refrigeration in supermarkets and small NH_3-based refrigeration applications	850,000	860,000
Total	**8,032,500**	**6,115,417**

[10] Paragraphs 52 and 53 of document UNEP/OzL.Pro/ExCom/79/32 discuss an HC production project.

Project management and monitoring

59. On the basis of the adjustments of phase-out activities and associated funding levels made to the stage II activities, the requested costs for project management and monitoring, for UNIDO and UNDP, have been adjusted to US $761,000 (i.e., US $494,000 for UNDP, and US $267,000 for UNIDO).

Consumption and remaining eligibility

60. After taking into account the additional consumption to be deducted from stage II, the phase-out in stages I and II and the remaining eligible consumption in Nigeria is presented in Table 17.

Table 17. HCFC reductions and remaining eligible consumption in Nigeria (ODP tonnes)

Substance	Starting point	Stage I phase-out	Remaining after stage I	Stage II reduction		Remaining after stage II
				Funded	Deduction	
HCFC-22	248.50	10.62	237.88	84.41*	125.79	112.09
HCFC-141b	149.69	79.53	70.19	47.06	70.19	0.00
Total	398.19	90.15	308.07	131.47	195.98	112.09

* This included 2.87 ODP tonnes (52.25 mt) to be phased out by HPZ Ltd for which project would be submitted later time prior to 1 January 2020.

Agreed costs for stage II of the HPMP

61. The agreed costs for the activities proposed in stage II of the HPMP, to achieve a 67.5 per cent reduction in the HCFC baseline in 2025, amount to US $13,100,700 (excluding agency support costs), with cost-effectiveness of US $6.86/kg, as summarized in Table 18.

Table 18. Agreed costs to be requested for stage II of the HPMP for Nigeria

Project	HCFC	Cost (US $)	Phase-out		C.E. (US $/kg)
			mt	ODP t	
PU Foam conversion of Slavit	HCFC-141b	664,000	96.00	10.56	6.92
PU Foam conversion of 35 foam enterprises	HCFC-141b	1,440,480	301.32	33.15	4.78
PU Foam auxiliary project	HCFC-141b		-	-	
PU foam conversion of four commercial refrigeration enterprises	HCFC-141b	156,838	30.50	3.36	5.14
Sub-total foam manufacturing sector		2,261,318	427.82	47.06	5.29
Conversion of 84 enterprises in commercial refrigeration sector	HCFC-22	3,962,966	208.44	11.46	19.01
Conversion of air-conditioning manufacturing line in HPZ*	HCFC-22	0	-	-	n/a
HC production	HCFC-22	0	-	-	0
Sub-total RAC manufacturing sector		3,962,966	208.44	11.46	19.01
Servicing sector activities	HCFC-22	6,115,417	1,274.05	70.07	4.80
Project management and coordination		761,000	0	0	n/a
Grand total		**13,100,700**	**1910.31**	**128.60**	**6.86**

* To be submitted by 1 January 2020 with the maximum eligible consumption to be funded of 69.54 mt.

Activities for the first tranche of stage II

62. The first funding tranche of stage II of the HPMP, which has been agreed at the total amount of US $4,052,500, will be implemented between 2018 to 2020. It will include the following activities:

(a) Conversion of the foam manufacturing enterprises Slavit Group from HCFC-141b to cyclopentane (UNDP, US $464,887) (Italy, US $199,113);

(b) Conversion of 35 foam downstream enterprises and 50 very small enterprises from HCFC-141b to MF (UNDP) (US $893,000);

(c) Conversion of four enterprises manufacturing commercial refrigeration foam from HCFC-141b to MF (UNDP) (US $156,838);

(d) Group project for commercial refrigeration: initiation of beneficiary assessment; technical assistance for equipment re-design; procurement of first batch of equipment; installation, conversion of manufacturing operation from HCFC-141b to R-290 or CO_2, and training (UNDP) (US $1,200,000);

(e) Activities in the servicing sector including: strengthening policy and regulatory framework; training of 60 trainers, upgrading two training centres; developing technician certification scheme and training for certification (100 trainees); supporting industrial associations; training of 100 customs officers, 150 importers and provision of 25 refrigerant identifiers; feasibility study on reclamation scheme; and demonstration of low-GWP technologies (R-290, CO_2 and NH_3) (UNDP, US $875,251) (Italy, US $69,911); and

(f) Monitoring and coordination to ensure efficient implementation (UNDP, US $123,500) (UNIDO, US $70,000).

Impact on the climate

63. All the projects included stage II have selected low-GWP technologies as alternatives. The phase-out of HCFC-141b in PU foam manufacturing enterprises and HCFC-22 in the RAC manufacturing sector (excluding HPZ Ltd.) would avoid the emission into the atmosphere of some 2,861,734 tonnes of CO_2 equivalent, as shown in Table 19.

Table 19. Impact of investment activities on the climate associated with stage II of the HPMP

Substance	GWP	Tonnes/year	CO_2-eq mt/year
Before conversion			
HCFC-22	1,810	1,534.74	2,683,298
HCFC-141b	2,310	427.82	310,170
Total impact before conversion			2,898,895
After conversion			
Cyclopentane, MF, CO_2 and R-290	~ 20	1,858.06	37,161
Net impact on climate of stage II HPMP			**(2,861,734)**

64. In light of the range of equipment manufactured in the commercial refrigeration manufacturing sector, and that the selection of the low-GWP technology has yet to be determined, the climate benefits of the conversions in the RAC manufacturing sector are estimated only on the basis of the direct HCFC-22 emission reductions achieved. Improvements in energy efficiency would result in additional climate benefits. The proposed activities in the servicing sector, which include better containment of refrigerants through training and the provision of equipment, will further reduce demand for HCFC-22 in refrigeration servicing. The activities planned by the Government of Nigeria in this sector, in particular its efforts to promote low-GWP alternatives, refrigerant leakage control through good service practices, and refrigerant recovery and reclamation, are likely to reduce emission of refrigerants into the atmosphere thereby resulting in benefits to the climate.

Co-financing

65. The Government of Nigeria has secured US $620,000 from the Kigali Cooling Efficiency program to implement a "cooling more and consuming less" initiative. This project is intended to reinforce energy-efficiency performance, to address barriers to implementation, and to facilitate a market transformation to energy-efficient equipment to complement HPMP implementation. The initiative includes activities to improve service practices through training, enhanced curriculums and new codes of practices to improve operational and maintenance procedures and reduce leakage.

66. The Government is exploring other co-financing opportunities, potentially: the training of service technicians in cooperation with refrigeration associations and foreign enterprises that have an interest in promoting better servicing practices in Nigeria; a partnership with an HC production plant; and within the end-user conversion demonstration programme.

2018–2020 consolidated business plan of the Multilateral Fund

67. UNDP, UNIDO and the Government of Italy are requesting US $13,100,700, plus agency support costs of US $947,186 for the implementation of stage II of the HPMP. The total value requested, of US $7,860,389 for the period 2018 to 2020, is US $2,206,839 more than the amount that was included the business plan.

Draft Agreement

68. A draft Agreement between the Government of Nigeria and the Executive Committee for the phase-out of HCFCs in stage II of the HPMP is contained in Annex I to the present document.

RECOMMENDATION

69. The Executive Committee may wish to consider:

(a) Approving, in principle, stage II of the HCFC phase-out management plan (HPMP) for Nigeria for the period from 2018 to 2025 to reduce HCFC consumption by 67.5 per cent of the country's baseline, in the amount of US $14,047,887 consisting of US $8,210,472, plus agency support costs of US $574,733 for UNDP, US $4,386,803, plus agency support costs of US $307,076 for UNIDO, and US $503,425, plus agency support costs of US $65,377 for the Government of Italy;

(b) Noting the commitment of the Government of Nigeria:

(i) To reduce HCFC consumption by 67.5 per cent of the country's baseline by 2025;

(ii) To ban, by 1 January 2020, the import of all HCFCs and HCFC-blend refrigerants except for HCFC-141b and HCFC-22;

(iii) To ban, by 1 January 2023, the import and use of HCFC-141b, including that contained in imported pre-blended polyols, pursuant to decision 61/47(c)(iv);

(iv) To ban, by 1 January 2024, the use of HCFC-22 in the manufacturing sector; and the import of split air-conditioners using HCFC-22 as the refrigerant; and

(c) Noting that, once a technology has been selected and prior to 1 January 2020, the Government of Nigeria, through UNDP could submit a proposal, to convert the domestic air-conditioning sector to alternatives with low global-warming potential under stage II, on

the understanding that the maximum consumption eligible for funding would be 3.82 ODP tonnes;

(d) Deducting 195.98 ODP tonnes of HCFCs from the remaining HCFC consumption eligible for funding;

(e) Approving the draft Agreement between the Government of Nigeria and the Executive Committee for the reduction in consumption of HCFCs, in accordance with stage II of the HPMP, contained in Annex I to the present document; and

(f) Approving the first tranche of stage II of the HPMP for Nigeria, and the corresponding tranche implementation plan, in the amount of US $4,352,280, consisting of US $2,356,638, plus agency support costs of US $164,965 for UNDP, US $1,426,837, plus agency support costs of US $99,879 for UNIDO, and US $269,025, plus agency support costs of US $34,937 for the Government of Italy; and

(g) Noting that approval of the second tranche will be subject to confirmation that the activities to resolve the identified deficiencies in the licensing and quota system have been implemented and verified as part of the independent verification exercise.

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 II 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 the stage II 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;

(ii) Changes which would modify any clause of this Agreement;

(iii) Changes in the annual levels of funding allocated to individual bilateral or implementing agencies for the different tranches;

(iv) Provision of funding for activities not included in the current endorsed Tranche Implementation Plan, or removal of an activity in the Tranche Implementation Plan, with a cost greater than 30 per cent of the total cost of the last approved tranche; and

(v) Changes in alternative technologies, on the understanding that any submission for such a request would identify the associated incremental costs, the potential impact to the climate, and any differences in ODP tonnes to be phased out if applicable, as well as confirm that the Country agrees that potential savings related to the change of technology would decrease the overall funding level under this Agreement accordingly;

(b) Reallocations not categorized as major changes may be incorporated in the approved Tranche Implementation Plan, under implementation at the time, and reported to the Executive Committee in the subsequent Tranche Implementation Report;

(c) 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. The United Nations Development Programme (UNDP) has agreed to be the lead implementing agency (the "Lead IA") and the United Nations Industrial Development Organization (UNIDO) and the Government of Italy have agreed to be the cooperating implementing agencies (the "Cooperating IAs") 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 IAs taking part in this Agreement.

10. The Lead IA will be responsible for ensuring co-ordinated 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 IAs will support the Lead IA by implementing the Plan under the overall co-ordination of the Lead IA. The roles of the Lead IA and Cooperating IAs 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 IAs with the fees set out in rows 2.2, 2.4 and 2.6 of Appendix 2-A.

Non-compliance with the Agreement

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

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

13. The Country will comply with any reasonable request of the Executive Committee, and the Lead IA and the Cooperating IAs to facilitate implementation of this Agreement. In particular, it will provide the Lead IA and the Cooperating IAs 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	248.50
HCFC-141b	C	I	96.40
Sub-total			344.90
HCFC-141b contained in imported pre-blended polyols	C	I	53.29
Total	C	I	398.20

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	
1.2	Maximum allowable total consumption of Annex C, Group I substances (ODP tonnes)	310.41	310.41	224.19	224.19	224.19	224.19	224.19	112.09	
2.1	Lead IA UNDP agreed funding (US $)	2,356,638	0	1,971,093	0	2,123,500	0	1,071,591	687,650	8,210,472
2.2	Support costs for Lead IA (US $)	164,965	0	137,976	0	148,645	0	75,012	48,136	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	30,440	0	0	0	0	0	65,377
2.5	Cooperating IA (UNIDO) agreed funding (US $)	1,426,837	0	1,060,000	0	1,832,966	0	67,000	0	4,386,803
2.6	Support costs for Cooperating IA (US $)	99,879	0	74,200	0	128,307	0	4,690	0	307,076
3.1	Total agreed funding (US $)	4,052,500	0	3,265,493	0	3,956,466	0	1,138,591	687,650	13,100,700
3.2	Total support costs (US $)	299,780	0	242,616	0	276,953	0	79,702	48,136	947,186
3.3	Total agreed costs (US $)	4,352,280	0	3,508,109	0	4,233,419	0	1,218,293	735,786	14,047,886
4.1.1	Total phase-out of HCFC-22 agreed to be achieved under this Agreement (ODP tonnes)									125.79
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)									112.09
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

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 HPMP 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, whose records will be used as a crosschecking reference in all the monitoring programmes for the different projects within the HPMP. The Lead IA, along with the Cooperating IAs 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 IAs;

(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) Co-ordinating the activities of the Cooperating IAs, 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 IAs, 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 IAs on any planning, co-ordination 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 IAs 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 IAs, and refer to the Lead IA to ensure a co-ordinated 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, co-ordination 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 $194 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.