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EXECUTIVE COMMITTEE OF
THE MULTILATERAL FUND FOR THE
IMPLEMENTATION OF THE MONTREAL PROTOCOL
Ninety-fifth Meeting
Montreal, 4–8 December 2024
Item 9(d) of the provisional agenda[1]

PROJECT PROPOSAL: BENIN

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

Phase-down

• Kigali HFC implementation plan (stage I, first tranche)	UNEP and UNIDO	Individual Consideration

[1] UNEP /OzL.Pro/ExCom/95/1

PROJECT EVALUATION SHEET – MULTI-YEAR PROJECTS

Benin

PROJECT TITLE	AGENCY
Kigali HFC implementation plan (stage I)	UNEP (lead), UNIDO

LATEST ARTICLE 7 DATA (Annex F)	Year: 2023	517.75 mt	901,445 CO_2-eq tonnes

SECTORAL HFC CONSUMPTION DATA (CO_2-eq tonnes) AND ACTIVITIES

	Aerosol	Foam*	Fire-fighting	AC and refrigeration				Solvent	Other
				Manufacturing			Servicing		
				Refrigeration	AC	Other			
As submitted (2023)	0.00	4,635	0.00	0.00	0.00	0.00	795,860	0.00	0.00
Latest CP report (2023) **	0.00	4,635	0.00	0.00	0.00	0.00	901,445	0.00	0.00
KIP stage I activities as agreed (Y/N)	N	N	N	N	N	N	Y	N	N

*HFCs contained in pre-blended polyols
**CP data report was based on the import records, assuming that all imports were used within the year

AVERAGE 2020-2022 HFC CONSUMPTION IN SERVICING	757.05 mt	1,366,209 CO_2-eq tonnes

BASELINE CONSUMPTION DATA (CO_2-eq tonnes)	2020	2021	2022	Average 2020-2022
HFC annual consumption	1,482,208	1,433,252	1,183,168	1,366,209
HCFC baseline (65%)				508,848
HFC baseline				1,875,057

HFC CONSUMPTION ELIGIBLE FOR FUNDING	
Starting point for sustained aggregate reductions	n/a
Previously approved HFC phase-down investment projects	No
Aggregate reductions from previously approved projects (CO_2-eq tonnes)	0

PROJECT DATA AS AGREED			2024*	2025-2026	2027	2028	2029	Total
Consumption (CO_2-eq tonnes)	Montreal Protocol limits		1,875,057	1,875,057	1,875,057	1,875,057	1,687,551	n/a
	Maximum allowable		1,875,057	1,875,057	1,875,057	1,875,057	1,687,551	n/a
	Maximum allowable (%)		100	100	100	100	90	n/a
Amounts recommended in principle (US $)	UNEP	Project costs	117,500		102,500			220,000
		Support costs	15,275		13,325			28,600
	UNIDO	Project costs	60,000		80,000			140,000
		Support costs	7,800		10,400			18,200
	Total project costs		177,500		182,500			360,000
	Total support costs		23,075		23,725			46,800
	Total funds		200,575		206,225			406,800

* Recommended for approval at the present meeting

Reduction from remaining consumption eligible for funding stage I in CO_2-eq tonnes	n/a

Secretariat's recommendation:	Individual consideration

PROJECT DESCRIPTION

1. The present document contains the following sections:

I. Summary of the proposal as submitted

II. Background: Implementation status of the country's HCFC phase-out management plan and previous HFC-related projects.

III. HFC consumption: Overview of the country's HFC consumption levels, trends, and sectoral uses

IV. Stage I of the Kigali HFC implementation plan, as submitted: Overarching strategy and plan of implementation for the first tranche

V. Secretariat's comments, including the agreed cost of activities

VI. Recommendation

I. Summary of the proposal as submitted

2. On behalf of the Government of Benin, UNEP as the lead implementing agency has submitted a request for stage I of the Kigali HFC implementation plan (KIP), at a total cost of US $406,800, consisting of US $220,000 plus agency support costs of US $28,600 for UNEP and US $140,000, plus agency support costs of US $18,200 for UNIDO, as originally submitted.[2]

3. The implementation of stage I of the KIP will assist the Government of Benin in meeting the target of 10 per cent reduction from its HFC baseline consumption by 1 January 2029.

4. The first tranche of stage I of the KIP being requested at this meeting amounts to US $211,875, consisting of US $117,500, plus agency support costs of US $15,275 for UNEP and US $70,000, plus agency support costs of US $9,100 for UNIDO, as originally submitted, for the period of January 2025 to December 2027.

II. Background

Status of implementation of the HCFC phase-out management plan

5. Table 1 presents information on the HPMP in Benin as of November 2024.

Table 1. HPMP implementation status for Benin

	Stage I	**Stage II**
Meetings when HPMP was approved/updated	63rd/70th	90th/93rd
Reduction from baseline	35% by 2020	100% by 2030
Total project cost (US $)	625,778	1,290,000
Date of completion (actual/planned)	31 December 2022	31 December 2031

[2] As per the letter of 8 August 2024 from the Ministry of Living Environment and Transport, in charge of the Sustainable Development of Benin to the Chief Officer of the Multilateral Fund Secretariat.

Status of implementation of previous HFC-related activities

6. Table 2 presents an overview of activities implemented in Benin in the context of the Kigali Amendment that have been funded by the Multilateral Fund.

Table 2. Previously approved HFC-related activities in Benin

Approval meeting	Project title	Implementing agency	Cost (US $)	Date of completion
74th	Survey of ODS alternatives	UNEP	55,000	Jul 2017
81st	Enabling activities for HFC phase-down	UNEP	128,885	Dec 2022

III. HFC consumption overview

HFC consumption levels

7. Benin only imports HFCs for use in servicing in multiple refrigeration and air-conditioning (RAC) subsectors and small amounts contained in pre-blended polyols for use in the polyurethane (PU) foam manufacturing sector. The most consumed substances in 2023 were R-410A (48.4 per cent of total HFC consumption in CO_2-equivalent (CO_2-eq) tonnes), HFC-134a (33.1 per cent), R-404A (12.9 per cent), and other HFCs (5.6 per cent). Table 3 presents the country's HFC consumption as reported to the Ozone Secretariat under Article 7 of the Montreal Protocol.

Table 3. HFC consumption in Benin (2019–2023 Article 7 data)

HFC	GWP	2019	2020	2021	2022	2023
Metric tonnes (mt)						
HFC-32	675	36.30	39.90	48.50	65.50	68.00
HFC-134a	1,430	776.41	423.50	369.75	300.50	208.50
R-404A	3,921.6	67.45	53.20	65.25	45.25	29.75
R-407C	1,773.85	11.18	7.75	6.75	5.00	2.50
R-410A	2,087.5	42.56	300.50	289.30	250.5	209.00
Total (mt)		**933.90**	**824.85**	**779.55**	**666.75**	**517.75**
CO_2-eq tonnes						
HFC-32	675	24,503	26,933	32,738	44,213	45,900
HFC-134a	1,430	1,110,266	605,605	528,743	429,715	298,155
R-404A	3,921.6	264,512	208,629	255,884	177,452	116,668
R-407C	1,773.85	19,832	13,747	11,973	8,869	4,435
R-410A	2,087.5	88,844	627,294	603,914	522,919	436,288
Total (CO_2-eq tonnes)		**1,507,956**	**1,482,208**	**1,433,252**	**1,183,168**	**901,445**

Established HFC baseline

8. The Government of Benin reported the Article 7 data for 2020–2022. The country's HFC consumption baseline was established at 1,875,057 CO_2-eq tonnes by adding 65 per cent of its HCFC baseline (expressed in CO_2-eq tonnes) to its average HFC consumption in 2020–2022, as shown in table 4.

Table 4. HFC baseline calculation for Benin (CO_2-eq tonnes)

Baseline calculation components	2020	2021	2022
HFC annual consumption	1,482,208	1,433,252	1,183,168
HFC average consumption in 2020-2022			1,366,209
HCFC baseline (65%)			508,848
HFC baseline			**1,875,057**

Country programme implementation report

9. The sectoral HFC consumption data provided by the Government of Benin in its country programme (CP) implementation report for 2023 is consistent with the data reported under Article 7 of the Montreal Protocol.

HFC consumption trends

10. Overall, HFC consumption decreased by approximately 37.5 per cent (in terms of mt) from 2020 to 2023. The reason for such a decrease is that, during the COVID-19 pandemic, HFC imports remained steady but were not fully used for servicing due to restrictions in movement and decreased economic activity, which resulted in significant import savings for 2022 and 2023.

HFC consumption by sector

11. HFCs are mainly consumed for servicing in commercial refrigeration (36.7 per cent in mt and 36.4 per cent in CO_2-eq tonnes), followed by domestic refrigeration (21.2 per cent in mt and 18.9 per cent in CO_2-eq tonnes), chillers (12.6 per cent in mt and 11.7 per cent in CO_2-eq tonnes), mobile air-conditioning (MAC) (11.8 per cent in mt and 10.5 per cent in CO_2-eq tonnes) and other subsectors, as shown in tables 5 and 6.

Table 5. HFC consumption in Benin by sector / in the refrigeration and AC servicing subsectors in mt (2023)

Sector	HFC-32	HFC-134a	R-404A	R-407C	R-410A	HFC-245fa	Total*	Share of total (%)
Refrigeration and AC servicing								
Refrigeration subsectors								
Domestic	0.00	105.31	0.00	0.00	0.00	0.00	105.31	21.2
Commercial	0.00	170.89	11.51	0.00	0.00	0.00	182.40	36.7
Fishing vessels	0.00	3.94	19.11	0.00	0.00	0.00	23.05	4.6
Transport	0.00	0.00	0.46	0.00	0.00	0.00	0.46	0.1
Air-conditioning subsectors								
Residential	13.97	0.00	0.00	0.00	7.16	0.00	21.13	4.3
Commercial	12.58	0.00	0.00	0.00	30.50	0.00	43.08	8.7
Chillers	0.00	55.38	0.00	2.26	4.83	0.00	62.47	12.6
MAC	0.00	58.43	0.00	0.00	0.00	0.00	58.43	11.8
Total	**26.55**	**393.95**	**31.08**	**2.26**	**42.49**	**0.00**	**496.33**	**100**
Foam**	0.00	0.00	0.00	0.00	0.00	4.50	0.00	n/a

* Differences between the 2023 reported imports shown in table 3 (top-down approach) and the use estimated in this table (bottom-up approach) can be attributed to uncertainties associated with field data estimations and the carry-over of refrigerants among different years. Furthermore, HFC-32 was not tracked in the survey due to its limited uses.
**HFCs in pre-blended polyols

Table 6. HFC consumption in Benin by sector / in the refrigeration and AC servicing subsectors in CO_2-eq tonnes (2023)

Sector	HFC-32	HFC-134a	R-404A	R-407C	R-410A	HFC-245fa	Total*	Share of total (%)
Refrigeration and AC servicing								
Refrigeration subsectors								
Domestic	0	150,593	0	0	0	0	150,593	18.9
Commercial	0	244,373	45,138	0	0	0	289,510	36.4
Fishing vessels	0	5,634	74,942	0	0	0	80,576	10.1
Transport	0	0	1,804	0	0	0	1,804	0.2

Sector	HFC-32	HFC-134a	R-404A	R-407C	R-410A	HFC-245fa	Total*	Share of total (%)
Air-conditioning subsectors								
Residential	9,430	0	0	0	14,947	0	24,376	3.1
Commercial	8,492	0	0	0	63,669	0	72,160	9.1
Chillers	0	79,193	0	4,009	10,083	0	93,285	11.7
MAC	0	83,555	0	0	0	0	83,555	10.5
Total	**17,921**	**563,349**	**121,883**	**4,009**	**88,698**	**0**	**795,860**	**100**
Foam**	0	0	0	0	0	4,635	0	n/a

* Ibid table 5

** Ibid table 5

Foam manufacturing

12. The PU foam sector consumes HFCs contained in imported pre-blended polyols for manufacturing insulation panels by two enterprises as shown in table 7. The main reason for a decrease in imports for 2022 and 2023 is the carry-over from 2020 and 2021. The Government of Benin is considering banning imports of HFC-based pre-blended polyols once a cost-effective, commercially available technology with low GWP makes it possible.

Table 7: Consumption of HFC-245fa in pre-blended polyols in Benin (2020–2023)

	2020		2021		2022		2023	
	Mt	CO_2-eq tonnes	Mt	CO_2-eq tonnes	Mt	CO_2-eq tonnes	Mt	CO_2-eq tonnes
HFC-245fa	10.50	10,815	8.25	8,498	6.75	6,952	4.50	4,635

Refrigeration and air-conditioning servicing sector

13. There are 100 RAC engineers, two of whom are women, 200 RAC technicians who received formal education in the RAC field, 18 of whom are women, and approximately 3,000 informal technicians (including 30 women), as well as 3,000 workshops consuming HFCs in Benin. Most technicians service both RAC and MAC equipment. There are eight centres of excellence in Benin offering different types of courses, from basic skill qualification certificates to master's degrees, for approximately 370 students annually.

Domestic, commercial, fishing vessels and transport refrigeration servicing

14. Domestic and commercial refrigeration collectively account for the highest consumption of HFCs. Domestic refrigeration includes refrigeration equipment such as refrigerators, freezers, and water coolers that are found in residential households. The dominant refrigerant used is HFC-134a, with 79 per cent of domestic units containing this substance, with the remaining 21 per cent containing R-600. Commercial refrigeration uses 182.40 mt and encompasses centralized and condensing systems and standalone units based on HFC-134a (94 per cent) and R-404A (6 per cent).

15. The fisheries sector is characterized by 21 national and international fishing fleets, both artisanal and industrial. There are 190 ice-making facilities that typically use HFC-134a and R-404A as refrigerants, while 1,200 fishing vessels rely on HFC-134a. The total HFC use of the fishing sector is 23.05 mt based on R-404A (83 per cent) and HFC-134a (17 per cent). Transport refrigeration contributes to 0.2 per cent of the HFC consumption in CO_2-eq tonnes. It consists of refrigerated cargo areas for trucks, vans and containers, and is based on R-404A.

Residential and commercial air-conditioning and chiller servicing

16. The residential and commercial AC sector uses a total of 64.21 mt of HFCs, namely R-410A (59 per cent) and R-32 (41 per cent). Chillers use 62.47 mt, with a predominant use of HFC-134a (89 per cent) followed by R-410A (8 per cent) and R-407C (3 per cent) and are installed in buildings and industrial cooling applications.

17. Residential AC comprises window, single-split, and portable units prevalent in households and small commercial establishments. The commercial AC sector includes multi-split, variable refrigerant flow and roof-top units. Chiller types are scroll, rotary, and reciprocating (water- or air-cooled) and screw or centrifugal water-cooled.

Mobile air-conditioning servicing

18. The MAC sector provides climate control for small and large vehicles to approximately 250,000 units and relies only on HFC-134a and a few units of high-end new cars using HFO-1234yf.

IV. Stage I of the Kigali HFC implementation plan as submitted

Institutional, policy and regulatory framework

19. The Government of Benin ratified the Kigali Amendment on 19 March 2018, and from January 2020, the import/export of HFCs in Benin have been subject to authorization, in line with the Kigali Amendment. HFC import quotas were introduced starting on 1 January 2024. The National Ozone Unit (NOU), located in the Ministry of Environment and Sustainable Development, works with the Ministry of Trade to set annual quotas for the import of refrigerants expressed in CO_2-eq tonnes. The maximum level of HFC quotas is set according to the country's commitments under the Kigali Amendment.

20. In 2018, the Government of Benin issued Decree No. 2018-563, which entered into force in June 2020 and sets minimum energy performance standards and energy labelling criteria for lamps and room AC units in the country. While this does not constitute a ban on the import of HCFC-based equipment *per se*, it encouraged the transition to more energy-efficient equipment and the uptake of HFC-based inverter technology equipment (i.e., mostly R-410A), with importers subsequently reducing their import of HCFC-based equipment. Furthermore, the formal ban on the import of used and new HCFC-based equipment will be issued by December 2025.

Phase-down strategy for stage I of the Kigali HFC implementation plan

Overarching strategy

21. The Government of Benin aims to follow the established Montreal Protocol reduction targets for HFCs to define the stages of its KIP. The strategy in stage I is to foster an enabling environment that will allow for the smooth transition to zero/low-GWP technologies in HFC consuming sectors by establishing and enforcing the necessary regulatory measures to support HFC phase-down; building the capacity of stakeholders such as RAC and MAC servicing technicians and customs and enforcement agencies; promoting low-GWP alternatives; and raising stakeholder awareness to ensure support for the transition of the RAC sectors to low/zero-GWP refrigerants.

Proposed reductions

22. The target for stage I of the KIP is 10 per cent reduction from the baseline by 2029, eliminating 187,506 CO_2-eq tonnes of HFCs. The Government of Benin and UNEP have forecasted HFC consumption in an unconstrained scenario based on an annual average growth rate of 9 per cent and the HFC phased in from HCFC phase-out as shown in table 8.

Table 8. HFC consumption forecast under unconstrained scenario, Montreal Protocol limits and proposed HFC reductions under stage I (CO_2-eq tonnes)

	2023*	2024***	2025	2026	2027	2028	2029
HFC consumption forecast (**)	901,445	1,055,445	1,144,331	1,241,217	1,346,823	1,461,933	1,587,403
Montreal Protocol HFC consumption limits	n/a	1,875,057	1,875,057	1,875,057	1,875,057	1,875,057	1,687,551
Proposed HFC consumption under the KIP	n/a	1,875,057	1,875,057	1,875,057	1,875,057	1,875,057	1,687,551
Proposed reduction in HFC consumption from baseline (%)	n/a	0	0	0	0	0	10

* As per Article 7 data

** The forecast is presented for indicative purposes, notwithstanding uncertainty regarding uses during the baseline years, it includes an estimated economic growth of 6 per cent and a population increase rate of 3 per cent, as well as the HFCs phase-in from the HCFC phase-out.

*** In 2024, the HFC phase-in is estimated as 8 per cent of the 2023 HFC consumption

Proposed activities

23. The proposed activities for stage I of the KIP for Benin and their costs as submitted are presented in table 9:

Table 9. Activities proposed for implementation in the servicing sector under stage I of the KIP

#	Activities and sub-activities	Cost (US $)	
		UNEP	UNIDO
1.	**Legal and regulatory measures to support HFC phase-down and capacity building of customs and enforcement officers**		
1.1	Enhance the HFC quota system, including the criteria for quota allocation and monitoring, and conduct two workshops with importers on HFC quota distribution; assess a ban on the imports of HFC-based equipment in coordination with main country stakeholders and with other West African Economic and Monetary Union (UEMOA by its French acronym) member countries; conduct inter-institutional coordination meetings to assess the impact of additional HFC control measures;[3] and conduct information campaigns on the regulations adopted	55,000	0
1.2	Update the training materials for customs officials to include the monitoring and recording of imports and exports of HFCs and HFC-based equipment, Harmonized System (HS) customs codes, the control and identification of HFCs and HFC-based equipment, refrigerant labelling, the prevention of illegal trade and risk analysis; and train 300 customs and enforcement officers	40,000	0
1.3	Develop and maintain a database of RAC servicing workshops and technicians to improve the data reporting system on equipment serviced, refrigerant uses, and recovery and recycling volumes per workshop; carry out monitoring and assessment of the data reported; hold meetings with main stakeholders and develop an awareness campaign aimed at technicians working in the informal sector	35,000	0
	Subtotal for component 1	*130,000*	*0*
2	**Capacity building of trainers and servicing technicians from RAC and MAC subsectors and awareness raising**		
2.1	Update the training material on good practices in the MAC servicing subsector	6,000	0
2.2	Train a total of 360 RAC/MAC servicing technicians	54,000	0

[3] Measures to be assessed would be specific regulations to prevent venting of HFCs during installation, servicing and decommissioning of RAC equipment; leakage checks for larger HFC-based equipment; record-keeping practices; prohibition of import of HFCs in non-refillable containers; mandatory recovery of HFCs during servicing of RAC equipment; and mandatory recovery of HFCs from containers and equipment at their end of life.

#	Activities and sub-activities	Cost (US $)	
		UNEP	**UNIDO**
2.3	Conduct awareness-raising campaigns on HFCs and low-GWP technologies targeting end users and female technicians	10,000	0
	Subtotal for component 2	*70,000*	*0*
3	**Facilitating the introduction of low-GWP technologies**		
3.1	Design and implement activities to substitute R-404A-based commercial refrigeration equipment to demonstrate the installation, operation, performance, and training for servicing of two commercial refrigeration monoblock[4] units based on R-290 with a capacity of less than 20 kW including information outreach of project results	0	80,000
3.2	Rehabilitate the training rooms of three vocational schools where flammable refrigerants will be handled, by hiring an expert to conduct inspections, provide an assessment and make recommendations; and equip[5] the rooms appropriately	0	60,000
	Subtotal for component 3	*0*	*140,000*
Total for activities in the servicing sector		**200,000**	**140,000**
Coordination, monitoring and evaluation		20,000	0
KIP costs per Agency		**220,000**	**140,000**
KIP total costs		**360,000**	

Project implementation, coordination and monitoring

24. The NOU and UNEP will monitor activities, report on progress, and work with stakeholders to phase out HFCs. The cost of those activities for UNEP amounts to US $20,000, which includes project consultants (US $10,000), domestic travel (US $4,000), meeting costs (US $4,000) and miscellaneous expenses (US $2,000).

Gender policy implementation

25. In line with decisions 84/92(d), 90/48(c) and 92/40(b), stage I of the KIP will consider gender equality and women's empowerment for all aspects of implementation, promote gender-balanced participation in training and capacity-building activities and establish links with government agencies on gender mainstreaming. Counting on the resources of the institutional strengthening project and the HPMP, the NOU will synergistically conduct an assessment to determine why women are not sufficiently represented in the servicing sector and draft a gender action plan for RAC/MAC servicing. UNEP confirmed that the Government of the Benin will report on all of the Multilateral Fund's mandatory gender mainstreaming indicators[6] in KIP progress reports and tranche requests, including inter alia the number of women and men employed through the project, the progress of the gender mainstreaming activities, quantitative data disaggregated by sex for the activities implemented, knowledge products produced with a gender focus, targeted awareness-raising campaigns to motivate women to study in the RAC field and gender-related training workshops with main stakeholders.

Coordination of activities in the servicing sector under HCFC phase-out and HFC phase-down plans

26. The Government of Benin is committed to harmonizing the implementation of HPMP and KIP activities to the extent possible, noting that the HPMP will be implemented until 2030 and that UNEP and UNIDO will be the implementing agencies for both projects. Synergistic actions between them will be carefully balanced, in order to ensure complementarity and avoid overlaps and duplication of efforts. Activities under stage II of the HPMP include inter alia robust components for the training of customs

[4] Refrigeration equipment pre-charged with refrigerant and containing all components required for cooling (i.e., compressor, condenser, evaporator, expansion valves and fans) in a single unit.

[5] Smoke detectors, alarms, flame control systems, hoses, fire extinguishers and others, installation of ventilation ducts, fire resistance glass, emergency doors, and others.

[6] As proposed in annex XXII of UNEP/OzL.Pro/ExCom/92/56

officers, training and certification of RAC technicians in good servicing practices and alternative refrigerants, strengthening centres of excellence to support training and the recovery and recycling of refrigerants, and developing technical standards for managing flammable and toxic refrigerants. The KIP is focused on creating an enabling environment for the adoption of low-GWP alternatives, including banning imports of HFC-based equipment, updating the customs training workshops, updating the training material and the design of specific training for the MAC servicing subsector, providing a demonstration of equipment based on low-GWP alternatives in commercial refrigeration, and equipping the training rooms where flammable refrigerants will be handled.

27. Stage I of the KIP will be implemented in two tranches.

Total project cost

28. The budget for stage I has been proposed at US $360,000. The costs of activities in the refrigeration servicing sector have been proposed in line with decision 92/37 applicable to low-volume-consuming countries. The proposed activities and cost of stage I of the KIP are summarized in table 9 above.

Implementation of the first tranche of stage I of the Kigali HFC implementation plan

29. The first funding tranche of stage I of the KIP, in the total amount of US $187,500, will be implemented between January 2025 and December 2027 and will include the following activities:

(a) *Legal and regulatory measures to support HFC phase-down and the capacity building of customs and enforcement officers:* Enhance the HFC quota system including the criteria for quota allocation and monitoring, and conduct one workshop with importers on HFC quota distribution; assess a ban on the imports of HFC-based equipment in coordination with main country stakeholders and with other UEMOA member countries; conduct inter-institutional coordination meetings to conduct a regulatory impact assessment of additional HFC control measures, and information campaigns on the regulations adopted; update the customs training material and conduct training sessions for a total of 150 customs and enforcement officers; develop a database of RAC servicing workshops and technicians to improve the data reporting system on equipment serviced, refrigerant uses, and recovery and recycling volumes per workshop (UNEP) (US $72,500);

(b) *Capacity building of trainers and servicing technicians from RAC and MAC subsectors and awareness raising:* Update the training material on good practices in the MAC servicing subsector and train 60 RAC/MAC servicing technicians; and conduct awareness-raising campaigns on HFCs and low-GWP technologies targeting end-users and female technicians (UNEP) (US $35,000);

(c) *Facilitating the introduction of low-GWP technologies:* Design the activities to demonstrate the installation, operation, performance, and training for servicing of two commercial refrigeration monoblock units based on R-290 and a capacity of less than 20 kW in substitution of R-404A; and rehabilitate the training rooms of two vocational schools where flammable refrigerants will be handled by hiring an expert to conduct inspections, provide an assessment and make recommendations, and modify/equip the rooms appropriately (UNIDO) (US $70,000); and

(d) *Project coordination and monitoring:* Funding to be allocated for consultants to support implementation, domestic travel and meeting costs (UNEP) (US $10,000).

SECRETARIAT'S COMMENTS AND RECOMMENDATION

V. Comments

Overarching strategy

30. Stage I of the KIP involves activities to address the challenges in the RAC and MAC servicing sectors according to the country's priorities and resource availability, in coordination with activities implemented under stage II of the HPMP.

HFC consumption levels

31. The Secretariat enquired about the reasons for the HFC import fluctuations and whether those imports had been correctly registered, which was confirmed by UNEP. The Secretariat noted that when comparing the HFC uses and imports for 2023, 41 mt of HFC-32 and 160 mt of R-410A would have been carried over to 2024, while the demand for HFC-134a in 2023 might have been partially covered by the remaining imports from 2021 and 2022. UNEP indicated that, according to their experience, not all quantities imported in one year are used in the same year. Furthermore, UNEP acknowledged that the pandemic caused supply-chain adjustments such as over-imports of HFCs in 2020 and 2021 used in subsequent years. However, UNEP highlighted that the Benin HFC imports in the first half of 2024 amounted to 936,457 CO_2-eq tonnes, which is higher than the imports in 2023.

32. Noting that the HFC consumption reported during the baseline years may not be representative of the local market's regular consumption needs but rather reflect transitory fluctuations, and in line with similar cases discussed in KIP proposals considered in previous meetings of the Executive Committee, the Secretariat and UNEP agreed that the Government of Benin would continue to monitor the situation in order to understand the extent to which consumption reported in baseline years was representative of the local market's needs and to assess future HFC demand, and that it would provide that analysis when submitting the second tranche of the KIP. Accordingly, the maximum allowable consumption limits for the remaining years of stage I of the KIP, as contained in Appendix 2-A to the future Agreement between the Government of Benin and the Executive Committee, would be revised as necessary when the Committee considered the second tranche of the KIP.

Institutional, policy and regulatory framework

HFC licensing and quota system

33. In line with decision 87/50(g), UNEP has confirmed that the Government of Benin has an established and enforceable system of licensing and quotas for monitoring HFC imports in place. Import quotas are provided to importers in CO_2-eq tonnes according to the refrigerants requested. The 2024 quota issued for HFC imports is 1,700,000 CO_2-eq tonnes. The current HFC licensing and quota system requires upgrading and updating on a continuous basis. It is also necessary to establish clear applicable criteria that ensure a fair distribution of import quotas among the importers, while enabling the country's compliance with the HFC phase-down targets.

34. The country will update its regulations and incorporate the ban on imports of HFC-based equipment. However, the timeline of such a ban will be discussed and coordinated with other countries of the UEMOA and ECOWAS.[7] Benin will include a detailed report on progress in developing a ban on the import of HFC-based equipment, in particular domestic refrigeration and commercial stand-alone refrigeration units, as part of the second tranche request. That report will include a specific timeline for the implementation of such bans.

[7] Economic Community of West African States

Technical and cost-related issues

35. The average consumption in the servicing sector of Benin during the baseline years is 757.05 mt. However, based on the current uncertainty with regard to HFC consumption trends, Benin is requesting to be treated as a low-volume-consuming country for the first stage of the KIP. The country has requested funds according to an average HFC consumption range of 300 to 360 mt in the refrigeration servicing sector for the years 2020–2022, at the maximum funding levels established by the Executive Committee in decision 92/37(b)(ii). Consequently, the total cost of stage I of the KIP for Benin (without agency support costs) amounts to US $360,000. The level of funds recommended remains as requested.

Demonstration project in the commercial refrigeration sector

36. Stage I of the KIP includes a demonstration project to assess and showcase the effective replacement of HFC-based systems in food preservation and refrigerated storage by monoblock units. UNEP explained that the demonstration involved replacing two existing R-404A-based systems with single closed R-290-based systems of under 20 kW capacity. The end-user will provide the necessary infrastructure, and civil works, which represents 25 per cent of the total replacement cost. UNEP highlighted the project's potential for replication, especially in the food preservation subsector, where more than 1,000 similar HFC-based systems are currently operating. The demonstration project includes the collection and proper disposal of old units, and a comparative analysis of the performance and energy use of both the baseline and newly installed equipment over a one-year period, to ensure the proper monitoring, recording and documentation of results.

37. In line with decision 92/36(g), the Secretariat requested UNEP and UNIDO, upon completion of the project, to submit a final report on its implementation, including the HFC phase-out and energy-efficiency gains achieved.

Total project cost

38. At a total cost of US $360,000, stage I of the KIP for Benin will result in a reduction of 187,505 CO_2-eq tonnes from the country's HFC consumption eligible for funding, as summarized in paragraphs 23-24 above.

39. In line with Executive Committee decision 94/59, stage I of the KIP for Benin will be implemented in two tranches. The schedule of HFC phase-down and HCFC phase-out commitments, and the activities and associated costs of stage I of the KIP and stage II of the HPMP are presented in annexes I and II, respectively, to the present document.

Tranche distribution under stage I of the Kigali HFC implementation plan

40. During the discussions on the implementation plan, UNEP requested a redistribution of the projects to facilitate the introduction of low-GWP technologies, shifting the rehabilitation of the training rooms from the first tranche to the second tranche, and shifting the demonstration project for commercial refrigeration from the second tranche to the first tranche. No changes were requested in other components. In summary, the tranche distribution under stage I (as requested and agreed) is introduced in table 10 below:

Table 10: Tranche distribution of stage I (as requested and agreed)

Activities	First tranche (US $)		Second tranche (US $)		Total budget (US $)
	Requested	Agreed	Requested	Agreed	Requested and agreed
Enhance the HFC quota system, including the criteria for quota allocation and monitoring, and conduct two workshops with importers on HFC	30,000	30,000	25,000	25,000	55,000

Activities	First tranche (US $)		Second tranche (US $)		Total budget (US $)
	Requested	Agreed	Requested	Agreed	Requested and agreed
quota distribution; assess a ban on the imports of HFC-based equipment in coordination with main country stakeholders and with other UEMOA member countries; conduct inter-institutional coordination meetings to assess the impact of additional HFC control measures; and conduct information campaigns on the regulations adopted (UNEP)					
Update the training materials for customs officials to include the monitoring and recording of imports and exports of HFCs and HFC-based equipment, Harmonized System (HS) customs codes, the control and identification of HFCs and HFC-based equipment, refrigerant labelling, the prevention of illegal trade and risk analysis; and train 300 Customs and enforcement officers (UNEP)	20,000	20,000	20,000	20,000	40,000
Develop and maintain a database of RAC servicing workshops and technicians to improve the data reporting system on equipment serviced, refrigerant uses, and recovery and recycling volumes per workshop; carry out monitoring and assessment of the data reported; hold meetings with main stakeholders and develop an awareness campaign aimed at technicians working in the informal sector (UNEP)	22,500	22,500	12,500	12,500	35,000
Capacity-building of trainers and servicing technicians from RAC and MAC subsectors and awareness raising (UNEP)	35,000	35,000	35,000	35,000	70,000
Demonstrate the installation, operation, performance, and training on servicing two commercial refrigeration monoblock units based on R-290 (UNIDO)	10,000	**60,000**	70,000	**20,000**	80,000
Rehabilitate the training rooms of three vocational schools where flammable refrigerants will be handled (UNIDO)	60,000	**0**	0	**60,000**	60,000
Coordination, monitoring and evaluation (UNEP)	10,000	10,000	10,000	10,000	20,000
Total	187,500	**177,500**	172,500	**182,500**	360,000

Implementation plan for the first tranche of the Kigali HFC implementation plan

41. With the changes requested for the implementation of the component to facilitate the introduction of low-GWP technologies, the revised first tranche of implementation is as follows:

(a) *Legal and regulatory measures to support HFC phase-down and the capacity building of customs and enforcement officers:* Enhance the HFC quota system including the criteria for quota allocation and monitoring and conduct a workshop with importers on HFC quota distribution; issue a ban on imports of HFC-based equipment in coordination with main country stakeholders and with other UEMOA member countries; hold inter-institutional coordination meetings to conduct a regulatory impact assessment of additional HFC control

measures, and information campaigns on the regulations adopted; update the customs training material and conduct training sessions for a total of 150 customs and enforcement officers; develop a database of RAC servicing workshops and technicians and collect information on RAC servicing workshops and technicians to improve the data reporting system on equipment serviced, refrigerant uses, and recovery and recycling volumes per workshop (UNEP) (US $72,500);

(b) *Capacity building of trainers and servicing technicians from RAC and MAC subsectors:* Update the training material on good practices in the MAC servicing subsector and train 160 RAC/MAC servicing technicians; and conduct awareness-raising campaigns on HFCs and low-GWP technologies targeting end-users and female technicians (UNEP) (US $35,000);

(c) *Facilitating the introduction of low-GWP technologies:* Design the activities for the demonstration project in the commercial refrigeration subsector; coordinate with stakeholders for equipment procurement and installation; train 20 servicing technicians on the installation and servicing of R-290 commercial equipment; collect and properly dispose of old units; and monitor the energy efficiency of baseline and demonstration equipment for a year (UNIDO) (US $60,000); and

(d) *Project coordination and monitoring:* Funding to be allocated for consultants to support implementation, domestic travel and meeting costs (UNEP) (US $10,000).

Exemption for high-ambient temperature parties

42. Benin is one of the countries operating under the high-ambient temperature (HAT) exemption in line with decision XXVIII/2 of the Parties. The decision allows these countries to request exemptions for specific subsectors or uses where suitable alternatives do not exist.[8] Additionally paragraph 35 indicates that the amount of Annex F substances subject to the HAT exemption are not eligible for funding under the Multilateral Fund while they are exempted for that party. As stated in the Ozone Secretariat website, on 15 August 2024, Benin withdrew its notification of intention to use the HAT exemption. Benin indicated that they will not need the HAT exemption, following the results of their KIP implementation.

Co-financing

43. The country will provide in-kind contribution, covering office space and other logistical and personnel support whenever required during the implementation of stage I of the KIP. Furthermore, plumbing, electrical and civil works will be provided by the beneficiaries of the demonstration project and the training centers; and the existing websites, forums, and newsletters of both the Government and private stakeholders will be used to build awareness on KIP activities, goals and initiatives.

2024–2026 business plan of the Multilateral Fund

44. UNEP and UNIDO are requesting US $360,000, plus agency support costs, for the implementation of stage I of the KIP for Benin. The total value of US $200,575, including agency support costs, requested for the period of 2024–2026, is US $14,159 above the amount in the business plan.

Sustainability of the HFC phase-down and assessment of risks

45. The main potential risks to the sustainability of the HFC phase-down in Benin include supply-chain constraints limiting the local availability of low-GWP technologies; growing demand for domestic

[8] Exempted equipment under HAT include multi-split air conditioners (commercial and residential); split-ducted air conditioners (commercial and residential); and ducted commercial packaged (self-contained) air conditioners.

appliances; the influx of HFC-based RAC equipment into the country; and the absence of affordable alternative refrigerants or technologies that could exacerbate the use of HFCs. Additionally, the current recovery and recycling system remains under development with only some technicians fully equipped and/or trained in handling alternative refrigerants.

46. To address these risks, the country plans to assess bans on the import of HFC-based RAC units in coordination with other countries of the region, including domestic and commercial refrigeration. Furthermore, the certification and training of technicians, as well as expanded distribution of tools and equipment aimed at strengthening recovery and recycling performance is to be implemented under the HPMP. The demonstration project on R-290-based monoblocks and related training to be provided to local training institutes, technicians and enterprises is expected to popularize low-GWP technologies across the country, ensure long-term sustainability of skills and expertise in the workforce, and promote the involvement of domestic importers and supply-chain stakeholders in HFC phase-down.

Impact on the climate

47. The activities proposed, including legal and regulatory measures to support HFC phase-down and efforts to promote low-GWP alternatives, indicate that the implementation of stage I of the KIP will reduce refrigerant emissions into the atmosphere, resulting in climate benefits. A calculation of the impact on the climate of the activities in the KIP indicates that by 2029, Benin will have reduced its emissions by approximately 187,505 CO_2-eq tonnes of HFCs, calculated as the difference between the baseline and the 2029 target, assuming that all consumed HFCs would have eventually been emitted.

Draft Agreement

48. A draft Agreement between the Government of Benin and the Executive Committee for stage I of the KIP has not been prepared as the Agreement template is still under consideration by the Executive Committee.

49. If the Executive Committee so wishes, the funds for stage I of the KIP for Benin could be approved in principle, and funds for the first tranche could be approved on the understanding that the Agreement would be prepared and presented at a future meeting, before the submission of the second tranche, and once the Agreement template has been approved.

VI. Recommendation

50. The Executive Committee may wish to consider:

(a) Approving, in principle, stage I of the Kigali HFC implementation plan (KIP) for Benin for the period 2024–2029 to reduce HFC consumption by 10 per cent of the country's baseline by 2029, in the amount of US $406,800, consisting of US $220,000, plus agency support costs of US $28,600, for UNEP and US $140,000, plus agency support costs of US $18,200, for UNIDO, as reflected in the schedule contained in annex 1 to the present document;

(b) Noting:

(i) That the Government of Benin will continue to monitor HFC consumption to understand the extent to which consumption reported in baseline years is representative of the local market's needs and to assess future HFC demand, and that it will provide this analysis when submitting the second tranche of its KIP;

(ii) That, on the basis of the information provided in subparagraph (b)(i) above, the maximum allowable consumption limits for the remaining years of stage I of the KIP, as contained in Appendix 2-A to the future Agreement between the Government of Benin and the Executive Committee, will be revised, if appropriate, when the Committee considers the second tranche of the KIP;

(iii) That upon completion of the end-user project included in stage I of the KIP, UNIDO will submit a final report on the implementation of this project, including the HFC phase-out and energy-efficiency gains achieved, in line with decision 92/36(g);

(c) Approving the first tranche of stage I of the KIP for Benin and the corresponding tranche implementation plan, in the amount of US $200,575, consisting of US $117,500, plus agency support costs of US $15,275, for UNEP and US $60,000, plus agency support costs of US $7,800, for UNIDO; and

(d) Requesting the Government of Benin, UNEP, UNIDO and the Secretariat to finalize the draft Agreement between the Government of Benin and the Executive Committee for the reduction in consumption of HFCs, including the information contained in the annex referred to in subparagraph (a) above, and to submit it to a future meeting once the KIP Agreement template has been approved by the Executive Committee.

Annex I

SCHEDULE OF HFC PHASE-DOWN AND HCFC PHASE-OUT COMMITMENTS AND FUNDING TRANCHES UNDER THE KIGALI HFC IMPLEMENTATION PLAN AND THE HCFC PHASE-OUT MANAGEMENT PLAN FOR [BENIN]

Kigali HFC implementation plan (stage I)

Row	Particulars	2024	2025	2026	2027	2028	2029	Total
1.1	Montreal Protocol reduction schedule of Annex F substances (CO_2-eq tonnes)	1,875,057	1,875,057	1,875,057	1,875,057	1,875,057	1,687,551	n/a
1.2	Maximum allowable total consumption of Annex F substances (CO_2-eq tonnes)	1,875,057	1,875,057	1,875,057	1,875,057	1,875,057	1,687,551	n/a
2.1	Lead IA (UNEP) agreed funding (US $)	117,500	0	0	102,500	0	0	220,000
2.2	Support costs for Lead IA (US $)	15,275	0	0	13,325	0	0	28,600
2.3	Cooperating IA (UNIDO) agreed funding (US $)	60,000	0	0	80,000	0	0	140,000
2.4	Support costs for Cooperating IA (US $)	7,800	0	0	10,400	0	0	18,200
3.1	Total agreed funding (US $)	177,500	0	0	182,500	0	0	360,000
3.2	Total support costs (US $)	23,075	0	0	23,725	0	0	46,800
3.3	Total agreed costs (US $)	200,575	0	0	206,225	0	0	406,800

HCFC phase-out management plan (stage II)

Row	Particulars	2022	2023	2024	2025	2026	2027	2028	2029	2030	Total
1.1	Montreal Protocol reduction schedule of Annex C, Group I substances (ODP tonnes)	15.47	15.47	15.47	7.73	7.73	7.73	7.73	7.73	0	n/a
1.2	Maximum allowable total consumption of Annex C, Group I substances (ODP tonnes)	15.47	15.47	15.47	7.73	7.73	7.73	7.73	7.73	0	n/a
2.1	Lead IA (UNEP) agreed funding (US $)	125,000	0	0	210,000	0	180,000	0	0	185,000	700,000
2.2	Support costs for Lead IA (US $)	15,536	0	0	26,100	0	22,371	0	0	22,993	87,000
2.3	Cooperating IA (UNIDO) agreed funding (US $)	200,000	120,000	0	0	0	270,000	0	0	0	590,000
2.4	Support costs for Cooperating IA (US $)	14,000	8,400	0	0	0	18,900	0	0	0	41,300
3.1	Total agreed funding (US $)	325,000	120,000	0	210,000	0	450,000	0	0	185,000	1,290,000
3.2	Total support costs (US $)	29,536	8,400	0	26,100	0	41,271	0	0	22,993	128,300
3.3	Total agreed costs (US $)	354,536	128,400	0	236,100	0	491,271	0	0	207,993	1,418,300

Annex II

SIMULTANEOUS IMPLEMENTATION OF THE HCFC PHASE-OUT MANAGEMENT PLAN AND THE KIGALI HFC IMPLEMENTATION PLAN IN BENIN

	HPMP – stage II		KIP – stage I		HPMP + KIP combined cost (US $)
Category of activity	**Activity**	**Cost (US $)**	**Activity**	**Cost (US $)**	
Legal and regulatory measures to support HCFC-phase-out/ HFC phase-down	Ensure a functional and enforceable system of licensing and quotas for HCFC imports through legislative and regulatory measures	40,000	Enhance the HFC quota system Assess a ban on the imports of HFC-based equipment in coordination with main country stakeholders and with UEMOA member countries Conduct inter-institutional coordination meetings assessment the impact of additional HFC control measures	40,000	80,000
	15 workshops for importers on the procedures for issuing import licenses and granting annual quotas and the safety risks of certain refrigerants	80,000	Conduct two workshops with importers on HFCs quota distribution and information campaigns on other regulations adopted	15,000	95,000
Strengthening of record-keeping	n/a	0	Develop and maintenance of a data base of RAC servicing workshops and technicians to improve the data reporting system, monitoring an assessment of data reported, carry out meetings with main stakeholders	35,000	35,000
Training of customs officers and border dialogues	Train 800 customs and enforcement officers, environmental inspectors and trade controllers on control of HCFCs and HCFC-based equipment, combatting illegal HCFC trade, identification of refrigerants and related laws and regulations Attend four meetings on trans-border collaboration between customs and enforcement officers in the	150,000	Update the training materials for customs officials to include the monitoring and recording of the imports and exports of HFCs and HFC-based equipment, HS Customs Codes, control and identification of HFCs and HFC-based equipment, refrigerant labelling, and prevention of illegal trade and risk analysis Train 300 Customs and enforcement officers	40,000	190,000

	HPMP – stage II		KIP – stage I		HPMP + KIP combined cost (US $)
Category of activity	**Activity**	**Cost (US $)**	**Activity**	**Cost (US $)**	
	ECOWAS sub-region with the aim of curbing illegal trade				
Developing standards	Development of regulatory standards and protocols on the use of flammable and toxic substances in RAC equipment	40,000	n/a	0	40,000
Certification of technicians	Establishment of a certification scheme for refrigeration technicians and implementation of national certification in the RAC sector	110,000	n/a	0	110,000
Training of RAC MAC Technicians	Awareness-raising campaign and 40 training sessions for 1,000 RAC technicians on good servicing practices, recovery, recycling and reuse of refrigerants and safe handling of refrigerants and equipment	205,000	Update the training material on good practices in the MAC servicing subsector Train a total of 360 RAC/MAC servicing technicians	60,000	265,000
Training on low-GWP alternatives	Training of 200 RAC technicians servicing large scale RAC and industrial equipment and 30 trainers on the safe handling of low-GWP alternative refrigerant	150,000	n/a	0	150,000
Support to centres of excellence and training institutions	Acquire and distribute training equipment recovery machines, HCFC recovery machines, contamination test kits, air blowers, recovery cylinders, charging stations for HC, and RAC servicing tools, including associated installation and training in two training centres; Provision of 30 sets of recovery and recycling equipment	320,000	Rehabilitate the training rooms of three vocational schools where flammable refrigerants will be handled through hiring an expert for conducting inspections, assessment and recommendations and equip the rooms appropriately inspections, assessment and recommendations and equip the rooms appropriately	60,000	380,000
Technology demonstration	n/a	0	Demonstrate the installation, operation, performance, and training on servicing two commercial refrigeration monoblock units based on R-290	80,000	80,000

	HPMP – stage II		KIP – stage I		HPMP + KIP combined cost (US $)
Category of activity	**Activity**	**Cost (US $)**	**Activity**	**Cost (US $)**	
Additional activities to maintain and/or enhance energy efficiency under decision 89/6	Market study for upgrading the labelling and technical specifications for AC units to replace existing units	18,000	n/a	0	18,000
	AC unit replacement plan to be replicated in the future	90,000	n/a	0	90,000
	Sound management of replaced AC units	12,000	n/a	0	12,000
Awareness Raising/ Gender mainstreaming	Targeted gender-based campaign for female students to enter the RAC field	15,000	Conduct awareness-raising campaigns on HFCs and low-GWP technologies targeting and end-users and female technicians	10,000	25,000
Coordination and monitoring	Hire consultants to support implementation, and cover domestic travels and meeting costs	60,000	Hire consultants to support implementation and cover domestic travels and meeting costs	20,000	80,000
Total		**1,290,000**		**360,000**	**1,650,000**
Percentage of total (%)		**78.2**		**21.8**	**100**