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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 agenda¹

PROJECT PROPOSAL: SENEGAL

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

Senegal

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

LATEST ARTICLE 7 DATA (Annex F)	Year: 2023	1,075.81 mt	2,261,398 CO ₂ -eq tonnes
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SECTORAL HFC CONSUMPTION DATA (CO ₂ -eq tonnes) AND ACTIVITIES									
	Aerosol	Foam	Fire-fighting	AC and refrigeration				Solvent	Other
				Manufacturing			Servicing		
				Refrigeration	AC	Other			
Latest CP report (2023)	0.00	0.00	0.00	0.00	0.00	0.00	2,261,398	0.00	0.00
KIP stage I activities as agreed (Y/N)							Y		

AVERAGE 2020-2022 HFC CONSUMPTION IN SERVICING	891.45 mt	2,013,625 CO ₂ -eq tonnes
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BASELINE CONSUMPTION DATA (CO ₂ -eq tonnes)	2020	2021	2022	Average 2020-2022
HFC annual consumption	1,959,036	1,985,961	2,095,877	2,013,625
HCFC baseline (65%)				773,290
HFC baseline				2,786,915

HFC CONSUMPTION ELIGIBLE FOR FUNDING	
Starting point for sustained aggregate reductions	TBD
Previously approved HFC phase-down investment projects	No
Aggregate reductions from previously approved projects (CO ₂ -eq tonnes)	n/a

PROJECT DATA AS AGREED			2024*	2025-2026	2027	2028	2029	Total
Consumption (CO ₂ -eq tonnes)	Montreal Protocol limits		2,786,915	2,786,915	2,786,915	2,786,915	2,508,224	n/a
	Maximum allowable		2,786,915	2,786,915	2,786,915	2,786,915	2,261,398	n/a
	Maximum allowable (%)		100	100	100	100	81.1	n/a
Amounts recommended in principle (US \$)	UNEP	Project costs	168,000		138,000		84,000	390,000
		Support costs	21,840		17,940		10,920	50,700
	UNIDO	Project costs	127,500		317,500		25,000	470,000
		Support costs	8,925		22,225		1,750	32,900
	Total project costs		295,500		455,500		109,000	860,000
	Total support costs		30,765		40,165		12,670	83,600
	Total funds		326,265		495,665		121,670	943,600

* Recommended for approval at the present meeting

Reduction from remaining consumption eligible for funding stage I in CO ₂ -eq tonnes	672,615
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Secretariat's recommendation:	Individual consideration
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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 Senegal, 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 \$951,800, consisting of US \$540,000, plus agency support costs of US \$69,400 for UNEP and US \$320,000, plus agency support costs of US \$22,400 for UNIDO, as originally submitted.²

3. The implementation of stage I of the KIP will assist the Government of Senegal in meeting the target of 12.5 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 \$523,090, consisting of US \$283,000 plus agency support costs of US \$36,790 for UNEP and US \$190,000, plus agency support costs of US \$13,300 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 Senegal as of November 2024.

Table 1. HPMP implementation status for Senegal

	Stage I*	Stage II
Meeting when HPMP was approved/updated	65 th /77 th	88 th
Reduction from baseline	37.5% by 2020	81% by 2025
Total project cost (US \$)	620,663	585,000
Date of completion (actual/planned)	31 December 2021	31 December 2026

* At the 77th meeting, based on the results of the verification report submitted with the second tranche of the HPMP, the starting point for sustained aggregate reductions in HCFC consumption was revised from 36.15 ODP tonnes calculated at the time of submission of stage I of the HPMP to 20.96 ODP tonnes (decision 77/55 a (ii)).

² As per the letter of 13 August 2024 from the Ministry of Environment and Ecological Transition of Senegal to the Secretariat.

Status of implementation of previous HFC-related activities

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

Table 2. Previously approved HFC-related activities in Senegal

Approval meeting	Project title	Implementing agency	Cost (US \$)	Date of completion
75 th	Survey of ODS alternatives at the national level	UNEP	109,550	Jun 2017
80 th	Enabling activities for HFC phase-down	UNEP	137,814	Dec 2021

III. HFC consumption overviewHFC consumption levels

7. Senegal only imports HFCs for use in multiple refrigeration and air-conditioning (RAC) servicing subsectors. The most consumed substances in 2023 were R-404A (34.8 per cent of total HFC consumption in CO₂-equivalent (CO₂-eq) tonnes), HFC-134a (33.3 per cent), R-410A (22.0 per cent), R-507A (5.4 per cent), R-407C (3.4 per cent), and HFC-32 (1.1 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 Senegal (2019–2023 Article 7 data)

HFC	GWP	2019	2020	2021	2022	2023
Metric tonnes (mt)						
HFC-32	675	0.00	1.10	2.50	13.17	35.83
HFC-134a	1,430	404.00	462.96	463.01	465.74	526.78
R-404A	3,921.60	205.00	236.38	238.14	238.65	200.69
R-407C	1,773.85	10.50	19.84	15.60	18.18	43.28
R-410A	2,087.50	68.00	130.43	136.00	176.93	238.61
R-507A	3,985	0.00	15.51	19.23	20.96	30.62
Total (mt)		687.50	866.22	874.51	933.62	1,075.81
CO₂-eq tonnes						
HFC-32	675	0	743	1,688	8,890	24,185
HFC-134a	1,430	577,720	662,033	662,111	666,008	753,295
R-404A	3,921.60	804,010	926,988	933,919	935,890	787,026
R-407C	1,773.85	18,625	35,193	27,681	32,240	76,772
R-410A	2,087.50	141,984	272,273	283,910	369,343	498,098
R-507A	3,985	0	61,807	76,651	83,506	122,021
Total (CO₂-eq tonnes)		1,542,339	1,959,036	1,985,961	2,095,877	2,261,398

Established HFC baseline

8. The Government of Senegal reported the Article 7 data for 2020-2022. The country's HFC consumption baseline was established at 2,786,915 CO₂-eq tonnes by adding 65 per cent of its HCFC baseline (expressed in CO₂-eq tonnes) to its average HFC consumption in 2020-2022, as shown in table 4.

Table 4. HFC baseline calculation for Senegal (CO₂-eq tonnes)

Baseline calculation components	2020	2021	2022
HFC annual consumption	1,959,036	1,985,961	2,095,877
HFC average consumption in 2020--2022	2,013,625		
HCFC baseline (65%)	773,290		
HFC baseline	2,786,915		

Country programme implementation report

9. The sectoral HFC consumption data originally provided by the Government of Senegal in its country programme (CP) implementation report for 2023 was not consistent with the data reported under Article 7 of the Montreal Protocol, as the CP report only recorded imports of 854 mt, while the level of imports reported under Article 7 is 1,075.81 mt. The 2023 data has subsequently been revised. The CP report for the years 2020 to 2022 are also being adjusted in line with the Article 7 data. The Government of Senegal will submit to the Fund Secretariat a correction of the CP report for the years 2020 to 2022 in November 2024.

HFC consumption trends

10. As shown in table 3, HFC consumption increased by 27 per cent (in CO₂-eq tonnes) from 2019 to 2020, remained relatively stable during baseline years and increased by 8 per cent in 2023. The increase in consumption between 2019 and 2020 is attributed to reporting deficiencies in 2019 due to lack of experience reporting HFCs, and the increase in 2023 is attributed to gradual replacement of HCFCs by HFCs in the local market and a reaction by importers to the upcoming HFC consumption freeze and control measures starting in 2024.

HFC consumption by sector

11. HFCs are mainly consumed for servicing in industrial refrigeration (29.0 per cent in mt and 33.9 per cent in CO₂-eq tonnes), followed by transport refrigeration (17.3 per cent in mt and 12.8 per cent in CO₂-eq tonnes), commercial refrigeration (16.9 per cent in mt and 24.2 per cent in CO₂-eq tonnes), residential air-conditioning (AC) (16.5 per cent in mt and 13.8 per cent in CO₂-eq tonnes) and other subsectors (domestic refrigeration, commercial AC and mobile AC (MAC)), as shown in tables 5 and 6.

Table 5. HFC consumption in Senegal in the refrigeration and AC servicing subsectors in mt (2023)

Sector	HFC-32	HFC-134a	R-404A	R-407C	R-410A	R-507A	Total	Share of total (%)
Refrigeration and AC servicing								
Refrigeration subsectors								
Domestic	0.00	29.51	0.00	0.00	0.00	0.00	29.51	2.7
Commercial								
Stand-alone units	0.00	2.22	0.34	0.00	0.00	0.00	2.56	0.2
Condenser units	0.00	4.71	59.70	0.00	0.00	0.00	64.41	6.0
Centralized systems	0.00	3.04	35.02	0.20	76.88	0.00	115.14	10.7
Industrial	0.00	185.42	96.47	0.00	0.00	30.62	312.51	29.0
Transport	0.00	176.73	9.16	0.00	0.00	0.00	185.89	17.3
Air-conditioning subsectors								
Residential	35.83	0.00	0.00	24.18	117.41	0.00	177.42	16.5
Commercial	0.00	26.80	0.00	18.90	44.32	0.00	90.02	8.4
Mobile	0.00	98.35	0.00	0.00	0.00	0.00	98.35	9.1
Total for servicing	35.83	526.78	200.69	43.28	238.61	30.62	1,075.81	100.0

Table 6. HFC consumption in Senegal in the refrigeration and AC servicing subsectors in CO₂-eq tonnes (2023)

Sector	HFC-32	HFC-134a	R-404A	R-407C	R-410A	R-507A	Total	Share of total (%)
Refrigeration and AC servicing								
Refrigeration subsectors								
Domestic	0	42,199	0	0	0	0	42,199	1.9
Commercial								
Stand-alone units	0	3,175	1,333	0	0	0	4,508	0.2

Sector	HFC-32	HFC-134a	R-404A	R-407C	R-410A	R-507A	Total	Share of total (%)
Condensing units	0	6,735	234,120	0	0	0	240,855	10.7
Centralized systems	0	4,347	137,334	355	160,487	0	302,523	13.4
Industrial	0	265,151	378,317	0	0	122,021	765,488	33.9
Transport	0	252,724	35,922	0	0	0	288,646	12.8
Air-conditioning subsectors								
Residential	24,185	0	0	42,892	245,093	0	312,170	13.8
Commercial	0.00	38,324	0	33,526	92,518	0	164,368	7.3
Mobile	0.00	140,641	0	0	0	0	140,641	6.2
Total for servicing	24,185	753,295	787,026	76,772	498,098	122,021	2,261,398	100.0

Refrigeration and air-conditioning servicing sector

12. There are approximately 3,297 RAC and MAC technicians (including 257 women) distributed throughout 674 informal and formal workshops consuming HFCs in Senegal. Additionally, there are seven RAC servicing associations in Senegal, all recognized and supported by the National Ozone Unit (NOU). A total of 17 schools and training institutions offered RAC training to 1,284 students in 2023, including 401 women or approximately 31 per cent of the student population. Senegal initiated the development of its certification programme for technicians during stage II of the HPMP.

Domestic, commercial, industrial and transport refrigeration servicing

13. Domestic refrigeration only consumes 1.9 per cent of HFCs in CO₂-eq tonnes, with an estimated 3.6 million units of domestic refrigerators installed in the country and with HFC-134a being the sole HFC-based refrigerant used. The sector includes refrigeration equipment such as refrigerators, chest freezers, and portable cooling systems that are found in residential households, as well as in some commercial buildings. The market is transitioning to R-600a. In 2022, the consumption of R-600a was higher than that of HFC-134a, leading to the conclusion that the number of R-600a refrigerators and freezers may be higher than that of HFC-134a. In addition, in 2024, the Ecofridges Senegal initiative³ aims to provide financial support to 19,200 energy-efficient and environmentally friendly domestic refrigerators or air-conditioners to save 14,000 MWh of electricity consumption in households.

14. Commercial refrigeration stand-alone units mainly use HFC-134a, although R-290 stand-alone units are also available in the market. The market is being sensitized to progressively use R-290-based technology in this application, but it is still uncertain when stand-alone commercial refrigeration will switch completely to this technology.

15. Condensing units and centralized systems are used by hotels, restaurants, and the catering sector as well as supermarkets and convenience stores. The most prevalent refrigerant used in these subsectors is R-404A, followed by R-410A and HFC-134a. For condensing units up to 10 kW, R-600a, R-290, or R-1270 can be used, providing temperatures down to -40°C. These refrigerants can be used with indirect systems up to a 20 kg charge. For larger capacity direct systems, blends with GWPs below 300 like R-454A, R-454C, R-455A, and R-457A can be used, as well as CO₂ and ammonia. For centralized systems, R-290 and R-1270 can be used in indirect systems with transfer fluid.

³ ECOFRIDGES Senegal is a United Nations Environment Programme United for Efficiency (UNEP U4E) project in partnership with the Agency for the Economy and the Control of Energy (AEME), the Directorate of the Environment and Classified Establishments (DEEC), the Basel Agency for Sustainable Energy (BASE), la Société Nationale d'Électricité et du Gaz (Senelec) and La Banque Agricole (LBA). It aims to mobilize investment in energy-efficient and environmentally friendly cooling solutions and recycle old appliances. The initiative is financially supported by K-CEP (Kigali Cooling Efficiency Programme).

Industrial and transport refrigeration

16. Industrial refrigeration includes all the chillers used for cold stores, food and fish product processing, and for comfort use. It consumes mostly HFC-134a, followed by R-404A and R-507A. Agroindustry is the largest sector in Senegal, followed by industry and manufacture, food and beverages, and textiles. In the fisheries sector there is an estimated 103 enterprises that export fish products to the European Union, five processing plants already established and 19 under construction, 128 fishing boats with refrigeration equipment, three cold stores specifically for fishing, and an unspecified number of refrigerated trucks serving the sector. Alternative technologies are based on CO₂ and ammonia plus HFO mixtures and blends.

17. The main economic sectors using refrigerated trucks are agroindustry and fisheries. The fisheries sector accounts for a large portion of the refrigerated trucks, with most processing enterprises owning at least one refrigerated truck and hiring additional ones. The sector consumes large amounts of HFC-134a due to the wear and tear of the systems installed in refrigerated trucks and the condition of the roads on which they travel, leading to a leakage rate of approximately 19 per cent. The average charge of the refrigeration systems in this subsector is 20 kg. Senegal also services trucks from other countries in the region used to transport food products imported through its main port and destined to landlocked countries in the region.

18. The cold chain in Senegal is more advanced than in some of the countries in the subregion due to its geographic location serving as a hub for the import of food products. This position is expected to continue with rising needs as the subregion grows both economically and population-wise.

Residential and commercial air-conditioning

19. Residential and commercial AC combined represent 21.1 per cent of HFC consumption in CO₂-eq tonnes (residential AC, 13.8 per cent and commercial AC, 7.3 per cent). The predominant HFC consumed is R-410A, followed by R-407C, HFC-32 and HFC-134a. Residential AC comprises single-split units prevalent in households and small-to-large commercial establishments (of which 5.3 per cent are HFC-32-based, 18.9 per cent are R-407C-based and 75.8 per cent are R-410A-based). HFC-32 consumption has grown from 1.1 to 35.83 mt in the period from 2019 to 2023. This remains a small portion of consumption compared to R-410A, which is used in older units more prone to leakage. The leakage rate for residential AC is around 7 per cent.

20. The commercial AC sector includes multi-splits, ducted-splits, above 17 kW roof-top AC, AC chillers and centralized systems, commonly found in large office spaces, airports, shopping centres, hotels, hospitals, supermarkets, communications facilities, banks, and hotel function rooms. R-410A and R-407C are the main refrigerants used; HFC-32 is starting to be used within the charge control limits imposed by global safety standards even though no mandatory standards are in place in Senegal.

Mobile air-conditioning servicing

21. The MAC sector provides climate control for small and large vehicles, amounts to 6.2 per cent of the HFC consumption in CO₂-eq tonnes and relies solely on HFC-134a. Cars imported and used in Senegal are usually second-hand with built-in AC units. Garages servicing the MAC sector are spread across the country and the skill level depends on the location and frequency of service, with prevalent use of second-hand parts. The number of technicians servicing the MAC sector is estimated at 157 and the number of MAC servicing garages in the country is uncertain. Import of vehicles with HFO-1234yf is currently at 8 to 10 per cent, and increasing, and consumption of HFO-1234yf in the sector in 2023 was 2.12 mt.

Local installation and assembly subsector

22. There are local assemblers of bespoke equipment in commercial refrigeration. Assembly of units from components that are often second-hand or cannibalized, can take place at a workshop or on site. The assembled equipment is then charged. It is estimated that out of the consumption reported under servicing, 35.9 mt of HFC-134a, 23.5 mt of R-404A, and 12 mt each of R-407A and R-410A are used in the first charge of newly installed systems in commercial and industrial refrigeration and commercial AC.

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

Institutional, policy and regulatory framework

23. The NOU in the Ministry of the Environment and Sustainable Development (MoE) coordinates the implementation of the Montreal Protocol. It is responsible for collecting data and reporting the consumption of controlled substances, operating the licensing system, and supervising the implementation of all projects approved by the Multilateral Fund. The NOU receives technical and advisory support from the National Ozone Committee, which is composed of stakeholders from public institutions, the private sector and civil society. The Committee examines and disseminates policies developed by the NOU, monitors project implementation, and recommend and participates in awareness-raising activities.

24. The Government of Senegal ratified the Kigali Amendment on 31 August 2018, and from January 2023, the import of HFCs and related equipment requires prior authorization, in line with the Kigali Amendment.

25. The Directorate of External Trade in the Ministry for Industry and Trade, together with the Directorate of the Environment and Classified Establishments (DEEC) of the MoE, issues HFC import authorizations to licensed importers. The Directorate General of Customs oversees the registration and control of imports and exports of ODS through a licensing system, and coordinates with the Economic Community of West African States (ECOWAS) for the application of Common External Tariffs.

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

Overarching strategy

26. As submitted, stage I proposes to eliminate 347,678 CO₂-eq tonnes of HFCs, reducing the country's HFC consumption by 12.5 per cent of the baseline.

Proposed reductions

27. The Government of Senegal estimates that in an unconstrained scenario HFC consumption would grow at an average annual rate of 4.1 per cent based on the projected economic and population growth, in addition to the shift away from the HCFC equipment base. Table 7 shows the HFC consumption forecast under an unconstrained scenario as submitted, compared to the Montreal Protocol control measures and the HFC reductions proposed for stage I of the KIP.

Table 7. HFC consumption forecast under unconstrained scenario, Montreal Protocol limits and proposed HFC reductions under stage I (CO₂-eq tonnes)

Particulars	2020-2022*	2024	2025	2026	2027	2028	2029
HFC consumption forecast**	2,013,625	2,156,585	2,242,529	2,331,996	2,425,131	2,522,084	2,623,013
Montreal Protocol HFC consumption limits	n/a	2,786,915	2,786,915	2,786,915	2,786,915	2,786,915	2,508,224
Proposed HFC consumption under the KIP	n/a	2,786,915	2,786,915	2,786,915	2,786,915	2,786,915	2,439,234
Proposed reduction in HFC consumption from baseline (%)	n/a	0	0	0	0	0	12.5

* Forecast is based on the average 2020-2022 consumption rather than 2023, as consumption during the baseline years better represents the local market needs.

**The forecast used an annual growth rate of 4.1 per cent estimated in line with projected economic and population growth. Each year also included an additional estimated 60,406 CO₂-eq tonnes due to the shift away from the HCFC equipment base.

Proposed activities

28. The proposed activities and their costs are presented in table 8.

Table 8. Activities planned for implementation in stage I of the KIP for Senegal (as submitted)

Activities and sub-activities		Cost (US \$)	
		UNEP	UNIDO
Component 1: Strengthening of the regulatory framework			
1.1	<i>Strengthening the HFC licensing and quota system and reporting:</i> Establish and implement an electronic system for issuing licences and quotas, and for registering, controlling and monitoring HFC imports; develop a guide for the import of controlled substances and provide training to customs operators on the updated system.	40,000	
1.2	<i>Strengthening record-keeping and reporting by enterprises and market monitoring:</i> Establish and implement a regulation requiring authorized importers to keep a register of HFCs distributed in the market to support monitoring of HFCs and equipment containing them; undertake a study on illegal trade and how to prevent it; and use the record-keeping system for continuous surveying of HFC uses by subsector.	25,000	
1.3	<i>Capacity-building of customs and other enforcement officers:</i> Train at least 100 customs and other enforcement officers in the prevention and control of illegal HFC trade, with a 20 per cent target for female participation.	20,000	
1.4	<i>Awareness-raising campaigns:</i> Develop targeted awareness-raising activities for stakeholders on project components (e.g., HFC licensing and quota system, reporting requirements for importers, code of practice, certification, energy-efficiency labelling).	50,000	
1.5	<i>Provision of refrigerant identifiers:</i> Distribute 10 identifiers for multiple refrigerants for use by customs and other enforcement agencies.		50,000
<i>Subtotal for component 1:</i>		<i>135,000</i>	<i>50,000</i>
Component 2: Capacity building in the refrigeration servicing sector			
2.1	<i>Strengthening industry associations:</i> Provide technical and institutional support to refrigeration associations to consolidate them into a single national RAC/MAC association to facilitate the coordination of Government policies; increase their participation in KIP activities, and contribute to increasing the formalization of the sector by providing training in local language(s) for informal technicians; and promote women's participation in the process.	20,000	
2.2	<i>Development of codes of practice:</i> Produce and disseminate standardized servicing procedures for RAC and MAC systems, with a focus on promoting recovery, recycling, and reducing emissions of refrigerants.	20,000	
2.3	<i>Extend the certification scheme:</i> Expand the technician certification scheme being developed under the HPMP to also cover the domestic refrigeration and MAC sectors; certify 10 additional certifiers for this purpose; and build a database of potential candidates for certification.	25,000	

Activities and sub-activities		Cost (US \$)	
		UNEP	UNIDO
2.4	<i>Targeted training on servicing in domestic refrigeration, commercial refrigeration and MAC:</i> Train 100 technicians in the safe handling of flammable refrigerants, energy-efficient technologies, and HFC recovery during maintenance and at end-of-life of domestic refrigerators; and train 100 technicians in good servicing practices of recovery, leak reduction and the safe handling of flammable low-GWP alternatives, where applicable, in commercial refrigeration and MAC.	40,000	
2.5	<i>Demand-side management project:</i> (a) <i>Promote demand for low-GWP technologies in residential AC, domestic and stand-alone commercial refrigeration:</i> Develop regulations for the mandatory application of stickers and labels regarding refrigerant type and energy efficiency level on appliances before they reach the market. Implement a plan of action and outreach programmes for consumers and retailers on low-GWP technologies and their benefits; (b) <i>Create a market launch for low-GWP technologies in locally assembled commercial refrigeration and AC equipment:</i> Draft and implement a plan ⁴ to provide subsidies to customers for the purchase of energy-efficient, low-GWP equipment or the replacement of equipment running on high-GWP HFCs; and (c) <i>Prepare the market for potential bans:</i> Assess regulations to ban high-GWP-refrigerant-based equipment and coordinate its introduction with stakeholders from relevant ministries, industry and RAC associations.	225,000	
2.6	<i>Provision of tools and equipment⁵ to workshops and technicians:</i> Provide 20 sets of equipment and tools to facilitate good servicing practices including refrigerant recovery.		120,000
2.7	<i>Demonstration project in commercial refrigeration:</i> Assess, plan and demonstrate, including training, the installation by local installers, operation, servicing and performance of six commercial refrigeration units (cooling and freezing units with capacities between 5 and 17.5 kW) based on hydrocarbons (HC); monitor the performance and energy consumption of the presently installed units up to six months prior to the installation of the new units, and further monitor the new units for up to six months following their installation; assess the results and raise awareness on project results.		150,000
<i>Subtotal for component 2</i>		330,000	270,000
Total for activities in the servicing sector		465,000	320,000
Project coordination and monitoring			
Including international consultants (US \$25,000); national consultants (US \$18,000); consultation meetings (US \$12,000); travel (US \$15,000) and other expenses (US \$5,000)		75,000	
Total cost per agency		540,000	320,000
Total cost		860,000	

Project implementation, coordination and monitoring

29. The NOU will implement the KIP with the same team involved in the implementation of the HPMP, ensuring coordination and synergies wherever possible. The team is composed of five full-time staff (two women and three men) and two part-time staff (two men). For some specific coordination and monitoring activities, assistance on drafting terms of reference for refrigeration-related projects and the finalization of progress reports, assistance from international consultants will be required due to their extensive experience in managing projects in other countries and familiarity with implementing agencies procedures.

⁴ Develop stakeholders meeting, design the programme, determine the participants, determine incentive levels, select customers, prepare the campaign.

⁵ Including inter alia recovery units, leak detectors, vacuum pumps, electronic scales, refrigerant cylinders, standard refrigerant IR sensors, clamp meters, assorted hoses, filter dryers, tube cutters, screwdriver sets, and other tools.

Gender policy implementation

30. During project preparation, gender-disaggregated data was collected, and a gender analysis was performed. This analysis revealed that women play a significant role in Senegal's RAC sector, accounting for 8.2 per cent of the total technician population. Additionally, 18 workshops are owned by women, representing 9 per cent of formal workshops and 2 per cent of informal workshops. Furthermore, the National Network of Refrigeration Women (RENREF), a refrigeration association specifically for female technicians, had 152 members in 2024.

31. In line with decisions 84/92(d), 90/48(c), and 92/40(b), the KIP will continue efforts to integrate gender considerations and collect gender-disaggregated data. The KIP outlines specific activities to address gender gaps, such as including guidance to dispel misconceptions about women's abilities in certain tasks. It identifies key partners responsible for meeting gender targets and indicators, and the NOU will work to raise gender awareness among stakeholders to increase female participation. Targets include 20 per cent women's participation in customs training, prioritizing tools for women technicians, and promoting women's involvement in science, technology, engineering and mathematics and RAC in the secondary education and vocational schools. UNEP will report on all the Multilateral Fund mandatory gender mainstreaming indicators⁶ in KIP progress reports and tranche requests.

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

32. Stage I of the KIP will be implemented in three tranches. The Government of Senegal is committed to implementing the KIP and stages II and III of the HPMP in a coordinated manner to avoid duplication of activities and expand the provision of equipment and training to the RAC and MAC servicing sector. The HPMP offers continuous training programmes for RAC technicians, emphasizing safe practices with alternative refrigerants and raising awareness of the need to transition away from HCFCs and HFCs. Capacity building under the KIP will further strengthen these efforts, extending it to other sectors (e.g., domestic refrigeration and MAC). The curriculum for the training of customs officers will also be enhanced to include HFC-related issues.

Total cost of stage I of the Kigali HFC implementation plan

33. The budget for stage I has been proposed at US \$860,000. The costs of activities in the refrigeration servicing sector have been proposed in line with decision 92/37.

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

34. The first funding tranche of stage I of the KIP, in the total amount of US \$473,000, will be implemented between January 2025 and December 2027 and will include the activities shown in table 9.

Table 9. Activities planned for the first tranche of stage I of the KIP for Senegal (as submitted)

Activities and sub-activities		Cost (US \$)	
		UNEP	UNIDO
Component 1: Strengthening of the regulatory framework			
1.1	<i>Strengthening the HFC licensing and quota system and reporting:</i> Establish the electronic system for issuing licences and quotas, and registering, controlling and monitoring HFC imports; develop the guide for the import of controlled substances and initiate training to customs operators on the updated system.	30,000	
1.2	<i>Strengthening record-keeping and reporting by enterprises and market monitoring:</i> Establish the regulation requiring authorized importers to keep a register of HFCs distributed in the market to support monitoring of HFCs and equipment containing them.	10,000	

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

Activities and sub-activities		Cost (US \$)	
		UNEP	UNIDO
1.3	<i>Capacity building of customs and other enforcement officers:</i> Train the first 20 customs and other enforcement officers (including 20 per cent women) in the prevention and control of illegal HFC trade.	5,000	
1.4	<i>Awareness-raising campaigns:</i> Start targeted awareness-raising activities for stakeholders on project components (e.g., HFC licensing and quota system, reporting requirements for importers' code of practice, certification, energy-efficiency labelling).	20,000	
1.5	<i>Provision of refrigerant identifiers:</i> Procure and distribute 5 identifiers for multiple refrigerants for use by customs and other enforcement agencies.		25,000
<i>Subtotal for component 1:</i>		<i>65,000</i>	<i>25,000</i>
Component 2: Capacity building in the refrigeration servicing sector			
2.1	<i>Strengthening industry associations:</i> Initiate support meetings and capacity-building activities to support refrigeration associations to consolidate them into a single national RAC/MAC association.	8,000	
2.2	<i>Development of codes of practice:</i> Produce and launch the code of practice.	15,000	
2.3	<i>Extend the certification scheme:</i> Assess the current certification system under the HPMP, identify technicians not covered by the certification system, build a database of potential candidates for certification and initiate certification of 10 candidates.	15,000	
2.4	<i>Targeted training for domestic refrigeration servicing:</i> Train 50 technicians in the safe handling of flammable refrigerants, energy-efficient technologies, HFC recovery during maintenance and at the end-of-life of domestic refrigerators; and train 50 technicians in good servicing practices of recovery, leak reduction and safe handling of flammable low-GWP alternatives, where applicable, in commercial refrigeration and MAC.	20,000	
2.5	<i>Demand-side management:</i> (a) <i>Promote demand for low-GWP technologies in residential AC, domestic and stand-alone commercial refrigeration:</i> Develop regulations for the mandatory application of stickers and labels regarding refrigerant type and energy efficiency level on appliances before they reach the market. Implement a plan of action and outreach programmes for consumers and retailers on low-GWP technologies and their benefits; and (b) <i>Create a market launch for low-GWP technologies in locally assembled commercial refrigeration and AC equipment:</i> Draft a plan to provide subsidies to customers for the purchase of energy-efficient, low-GWP equipment or the replacement of equipment running on high-GWP HFCs.	130,000	
2.6	<i>Provision of tools and equipment⁷ to workshops and technicians:</i> Provide 10 sets of equipment and tools to facilitate good servicing practices including refrigerant recovery.		60,000
2.7	<i>Demonstration project in commercial refrigeration:</i> Undertake an initial study on the approach, selected technology by application, potential participants, and provide equipment and components to beneficiaries.		105,000
<i>Subtotal for component 2</i>		<i>188,000</i>	<i>165,000</i>
Total for activities in the servicing sector			
Project coordination and monitoring			
Including international consultants (US \$9,000); national consultants (US \$7,000); consultation meetings (US \$5,000); travel (US \$7,000) and other expenses (US \$2,000)		30,000	
Total cost per agency		283,000	190,000
Total cost		473,000	

⁷ Ibid.

SECRETARIAT'S COMMENTS AND RECOMMENDATION

V. Comments

Implementation of stage II of the HPMP

35. The Secretariat noted that the second tranche of stage II of the HPMP, due at the 93rd meeting, has been delayed for two meetings, and that at the 94th meeting the Executive Committee urged the Government of Senegal to work with UNEP and UNIDO so that the second tranche could be submitted to the 95th meeting with a revised plan of action to take into account the reallocation of the 2023 and subsequent tranches. UNEP explained that the delays were caused by the political situation in the country and the change of the national ozone officer, but current conditions will allow the continuation of HPMP activities and initiation of the KIP.

36. UNEP also reported that while it was not possible to submit the tranche request to the 95th meeting, two consultants were hired to help expedite implementation, and the following activities have been completed: training of 150 technicians in good servicing practices and the safe handling of HCs, training of 150 customs officers in HCFC control measures and identification of ODS, awareness activities on the HCFC control measures for refrigerant and equipment importers, five workshops for refrigeration associations and the public, and a national workshop for women refrigeration technicians. The Government of Senegal will submit the second tranche request to the 96th meeting, and stage III to the 97th meeting.

37. Noting that there are still activities to be completed, and that the next tranche of the HPMP will be considered at the 96th meeting and stage III at the 97th meeting, the Secretariat and UNEP agreed to downsize the first tranche of the KIP to prioritize the completion of stage II of the HPMP and allow proper simultaneous implementation of all activities planned under the HPMP and the KIP. The Secretariat notes that the structure proposed for the project implementation, coordination and monitoring, to implement both the HPMP and the KIP in coordination, as shown in paragraph 29, will make it possible to expedite outstanding HPMP activities and start KIP activities in 2025.

HFC consumption levels

38. Regarding the HFC consumption increase between 2019 and 2020, UNEP explained that the level of HFC consumption reported in 2020 is consistent with the HFC data survey and reflects the level of annual HFC needs in the country, while the 2019 data was reported earlier and lacked accuracy. HFC consumption data from years prior to 2019 was not available. The Secretariat compared the HFC consumption levels in Senegal during baseline years with other countries in the subregion, taking into consideration their population, economic growth, and electrification rate, and did not find a salient deviation. Furthermore, imports remained stable during three consecutive years (2020-2022), which may be a sign that the imports are being used in the local market, and HFC consumption did not decrease in 2023. In view of this, it seems unlikely that HFC consumption increased in Senegal during baseline years beyond local immediate market needs. Regarding the increase in HFC imports in 2023, UNEP explained that it was due in part to a reaction by importers to the upcoming HFC consumption freeze and control measures starting 2024.

Overarching strategy

Incidence of the HCFC baseline on the HFC baseline and the starting point for sustained reductions in HFC consumption

39. At the 77th meeting, the verification report prepared for the submission of the second tranche of stage I of the HPMP revealed data discrepancies between various sources and identified actual HCFC consumption levels that were lower than those reported. Based on the findings of the verification report, the Government of Senegal, through the relevant agency, endorsed a revision of the starting point and

funding level of stage I of the HPMP. The starting point was adjusted from 36.15 ODP tonnes to 20.96 ODP tonnes,⁸ which better reflected the actual HCFC consumption in the country. This revised value corresponds to 381.09 mt or 689,775 CO₂-eq tonnes of HCFC.

40. At the time, while the starting point was corrected in line with the actual verified consumption, the HCFC consumption during baseline years was not corrected. If the HCFC baseline would have been adjusted, the HCFC component of the HFC baseline would have been 448,353 CO₂-eq tonnes rather than 773,290 CO₂-eq tonnes, and the HFC baseline would be 2,461,974 CO₂-eq tonnes rather than 2,786,915 CO₂-eq tonnes, as shown in table 10.

Table 10. Comparison of the HCFC and HFC baselines

Substance	Established HCFC and HFC baselines	HCFC and HFC baselines if HCFC baseline would have been corrected
<i>HCFC baseline</i>		
HCFC baseline (ODP tonnes)	36.15	20.96
HCFC baseline converted to mt	657.28	381.09
HCFC baseline converted to CO ₂ -eq tonnes	1,189,677	689,775
65% of the HCFC baseline (CO ₂ -eq tonnes)	773,290	448,353
Difference (65% of HCFC baseline in CO ₂ -eq tonnes)		324,937
<i>HFC baseline (CO₂-eq tonnes)</i>		
Average HFC consumption 2020-2022	2,013,625	2,013,625
65% HCFC baseline	773,290	448,353
HFC baseline	2,786,915	2,461,978
Difference in HFC baseline		324,937

41. Upon extensive discussions on ways to account for this adjustment to the HCFC consumption, the Government of Senegal agreed that the 324,937 CO₂-eq tonnes that had been over-reported in the HCFC baseline could be deducted from the starting point for sustained reductions in HFC consumption at no cost to the Multilateral Fund, once the starting point was established. The Secretariat notes that such a deduction would be applicable if the Executive Committee establishes the starting point at the HFC baseline level (i.e., including both the HFC and HCFC components). However, if the Executive Committee establishes the starting point at a different level than the HFC baseline, the deduction will need to be adjusted accordingly on the understanding that it should not be larger than 324,937 CO₂-eq tonnes.

Reductions in HFC consumption

42. Stage I of the KIP, as submitted, proposes a reduction of 12.5 per cent of the HFC baseline. This corresponds to a consumption of 2,439,234 CO₂-eq tonnes in 2029, which is higher than the HFC consumption in 2023 of 2,261,398 CO₂-eq tonnes. Noting that if the HCFC consumption baseline had been adjusted the HFC consumption would be lower, the Secretariat enquired whether the Government of Senegal could commit to HFC consumption levels lower than the HFC baseline. Upon discussions on the issue, the Government of Senegal preferred to maintain HFC consumption as per the Montreal Protocol schedule between 2024 and 2028 and committed to achieving a level of consumption of 2,261,398 CO₂-eq tonnes in 2029, which corresponds to a reduction of 18.9 per cent of the baseline and would not represent an increase from the 2023 consumption.

⁸ Decision 77/55(a)(ii).

Institutional, policy and regulatory framework

HFC licensing and quota system

43. In line with decision 87/50(g), UNEP has confirmed that Senegal has an established and enforceable system of licensing and quotas for monitoring HFC imports/exports in place. Interministerial Decree No. 031160 of 23 September 2021 stipulates that the import of HFCs requires prior authorization from the DEEC and the Directorate of Foreign Trade (under the Ministry of Trade). This authorization is granted within the limits of the annual quota allocated to each importer, and the requested import quantities by substance are subsequently checked for compliance with the CO₂-equivalent limits established by the Montreal Protocol. Import quotas came into effect in 2024 and are allocated among importers by the DEEC, in a similar way to HCFCs in mt. The annual quota for HFCs for 2024 has been established in line with the HFC baseline.

Technical and cost-related issues

Strengthening of the regulatory framework

44. Noting that R-600a-based domestic refrigerators and freezers, and R-290-based stand-alone commercial refrigerators are readily available worldwide, including in countries in the region, the Secretariat and UNEP discussed the possibility that Senegal consider banning the import of (new and used) HFC-based domestic refrigerators and stand-alone commercial refrigerators, as is being done by other countries in the region. UNEP indicated that this equipment is already subject to pre-authorization before importing but Senegal has not yet considered a ban, as several regulatory steps and proper consultation with stakeholders, including other ministries, would be required. Senegal expects to have these consultations as part of the demand-side project proposed under stage I of the KIP to determine a date when these bans could be established.

Capacity building in the refrigeration servicing sector

45. The Secretariat noted that stage I of the KIP did not include activities targeted at reducing HFC consumption in the industrial and transport refrigeration sectors, which together consume 47 per cent of all HFCs in the country and 52 per cent of R-404A. In response and upon discussions with the Government, UNEP proposed several amendments to the submitted activities, to address these sectors while maintaining the same level of funds and HFC reductions originally proposed:

- (a) The budget for the demand-side management project on domestic refrigeration and residential AC was downsized from US \$225,000 to US \$75,000 and the demonstration project of low-GWP technologies in commercial refrigeration (US \$150,000) was removed, noting that a similar type of activity could be formulated for stage III of the HPMP as HCFC-22 is still used in the sector; and
- (b) Stage I of the KIP will also include the preparation of a detailed survey and study to better understand the main HFC uses in the industrial refrigeration and transport refrigeration sectors (US \$25,000); the provision of targeted training and tools for technicians serving the transport refrigeration sector (US \$75,000); and a project to demonstrate R-290-based monoblocs⁹ in cold stores in the fisheries sector, classified under industrial refrigeration (US \$200,000).

⁹ The condensing unit section will be installed outside the main structure and the evaporator section will be installed through an opening in the outside wall, which requires some civil works as well as modification to the set-up and usage of the internal space.

46. On the activities added to stage I of the KIP, UNEP explained that the survey and study on the industrial and transport refrigeration sectors are needed because the survey conducted during the preparation of the KIP did not provide enough data and information on consumption by application and on the stakeholders. This activity will also include workshops for these two sectors to better understand their needs and challenges and obtain information that would assist the other two activities added.

47. The second activity intends to provide tools (10 sets of recovery and recycling units, cylinders, leak detectors, scales and accessories) and training to transport refrigeration garages and workshops to apply best practices and reduce refrigerant leakage through recovery.

48. The demonstration project at cold stores in the fisheries sector intends to replace the use of HFC-134a and R-404A in cold rooms by the use of R-290-based monoblocs units. The project will demonstrate the installation, operation of the systems, technical viability of using HCs in this application, cost implications (investment and operational), environmental benefits, and impact on energy consumption, noting that R-290 refrigeration systems are widely used in Europe and gaining acceptance in other non-Article 5 and Article 5 countries. The project intends to demonstrate three systems operating with temperatures between zero and -20 degrees Celsius, with refrigeration capacities between 15 and 26.8 kW for rooms sized between 580 and 1,080 m³. The beneficiary will cover part of the infrastructure and the civil works, while the project will provide the equipment. The project will also conduct a comparative analysis of the performance and energy usage of both the baseline and newly installed equipment and the findings will be disseminated among a large number of fishery enterprises using similar cold storage and other industrial refrigeration users and technicians. 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.

Calculation of cost and HFC reductions

49. The activities proposed in the servicing sector were agreed with the adjustments described in paragraphs 45 to 48. Based on the agreed costs of US \$785,000 for the servicing sector, and in line with the methodology for converting US \$/kg to US \$/CO₂-eq tonne in the servicing sector described in annex I of document UNEP/OzL.Pro/ExCom/92/46, the reduction from the country's remaining HFC consumption eligible for funding from the servicing sector is 347,678 CO₂-eq tonnes, as summarized in table 11 below. In light of those agreed reductions, plus additional voluntary reductions as explained in paragraph 42, the Government agreed to reduce its 2029 HFC consumption to 2,261,398 CO₂-eq tonnes, a reduction of 18.9 per cent of the country's HFC baseline for compliance.

Table 11. Agreed costs and reductions from HFC consumption eligible for funding from the servicing sector, and 2029 target

Servicing sector		
Average HFC consumption in the servicing sector in baseline years	mt	891.45
	CO ₂ -eq tonnes	2,013,625
Average GWP of HFC consumption in the servicing sector		2,258.82
Agreed funding in the servicing sector	US \$	785,000
Agreed cost-effectiveness threshold	US \$/kg	5.10
Deductions from remaining HFC consumption in servicing	mt	153.92
	CO ₂ -eq tonnes	347,678
Additional deduction from the starting point for adjustment of the HCFC component of the baseline	CO ₂ -eq tonnes	324,937
Funded and voluntary reductions from all sectors and 2029 target		
Established HFC consumption baseline	CO ₂ -eq tonnes	2,786,915
Funded HFC reductions from the servicing sector	CO ₂ -eq tonnes	347,678
Voluntary HFC reductions to reach the proposed target of 2,261,398 CO ₂ -eq tonnes in 2029	CO ₂ -eq tonnes	177,839
Maximum allowable consumption proposed for 2029	CO ₂ -eq tonnes	2,261,398

Total project cost

50. The total cost of stage I of the KIP (without agency support cost) amounts to US \$860,000, including US \$785,000 for the refrigeration servicing sector and US \$75,000 for the PMU, as summarized in table 12 below.

Table 12. Agreed cost of activities to be implemented during stage I of the KIP in Senegal

Activities and sub-activities		Cost (US \$)		First tranche (US \$)
		UNEP	UNIDO	
Component 1: Strengthening of the regulatory framework				
1.1	Strengthening the HFC licensing and quota system and reporting	40,000		30,000
1.2	Strengthening record-keeping and reporting by enterprises and market monitoring	25,000		10,000
1.3	Capacity building of customs and other enforcement officers	20,000		5,000
1.4	Awareness-raising campaigns	50,000		20,000
1.5	Provision of refrigerant identifiers		50,000	
Subtotal for component 1:		135,000	50,000	65,000
Component 2: Capacity building in the refrigeration servicing sector				
2.1	Strengthening industry associations	20,000		8,000
2.2	Development of codes of practice	20,000		15,000
2.3	Extend the certification scheme	25,000		5,000
2.4	Training on servicing in domestic refrigeration, commercial refrigeration and MAC	40,000		20,000
2.5	Demand-side management project	75,000		25,000
2.6	Provision of tools and equipment for training		120,000	60,000
2.7	Demonstration project in commercial refrigeration		Removed	
2.8	Preparation of survey and study on industrial and transport refrigeration		25,000	17,500
2.9	Demonstration project at cold stores in the fisheries sector (industrial refrigeration)		200,000	
2.10	Training and tools for the transport refrigeration sector		75,000	50,000
Subtotal for component 2		180,000	420,000	200,500
Total for activities in the servicing sector		315,000	470,000	265,500
Project coordination and monitoring		75,000		30,000
Total cost per agency		390,000	470,000	
Total US \$		860,000		295,500

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

51. Stage I of the KIP will be implemented in three tranches. The first tranche was downsized noting that there are still activities to be completed under the HPMP, as well as a tranche and a new stage to be submitted in 2025. The reduction of the first tranche of the KIP was achieved by removing the demonstration project in commercial refrigeration and downsizing the demand-side project. Of the three new activities, the survey and the provision of tools will start in the first tranche, while the demonstration project in industrial refrigeration will only be implemented in the second tranche. The first tranche for the remaining activities remains as submitted. The schedule of HFC phase-down and HCFC phase-out commitments, and the activities and associated cost of stage I of the KIP and stage II of the HPMP are presented in annexes I and II, respectively, to the present document.

Exemption for high-ambient-temperature parties

52. Senegal 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

any specific subsector or use where suitable alternatives do not exist¹⁰ and in its paragraph 35 indicates that the amount of Annex F substances that are subject to the HAT exemption are not eligible for funding under the Multilateral Fund while they are exempted for that party.

53. While Senegal had initially indicated its intention to request the HAT exemption, on 26 September 2024, the Government notified the Ozone Secretariat that it was withdrawing its request for the HAT exemption.

Co-financing

54. The Government of Senegal is undertaking efforts to identify possible sources of co-financing within the government. For activities such as the strengthening of industry associations, and the strengthening of records by customs and enterprises, the Multilateral Fund assistance represents seed funding to initiate these mechanisms which are expected to continue self-financed once the projects are completed.

55. Senegal is also benefiting from other supporting activities such as the EcoFridges Senegal programme, which aims to provide financial support to replace 19,200 old HFC-based domestic refrigerators and air conditioners with energy-efficient ones. In addition, Senegal is implementing a bilateral project with the Government of Canada (US \$250,000) aiming to strengthening a Centre of Reference in Dakar, supporting it to become a regional centre for neighboring countries and supporting the training of refrigeration technicians and equipment. The support includes inter alia equipment, promotion of alternative technologies and sharing of experience on policies and regulations. These activities provide co-financing and substantial support to the implementation of the activities proposed under the KIP.

2024-2026 business plan of the Multilateral Fund

56. UNEP and UNIDO are requesting US \$860,000, plus agency support costs, for the implementation of stage I of the KIP for Senegal. The total value of US \$326,265, including agency support costs, requested for the period of 2024–2026, is US \$126,005 above the amount in the business plan.

Sustainability of the HFC phase-down and assessment of risks

57. Senegal has integrated the Kigali Amendment into its national regulations. The HFC phase-down activities will be sustained over time with the implementation and strengthening of policies such as the licensing and quota system for HFCs, the strengthening of customs capabilities to control HFCs through training, the development and implementation of technician certification scheme, the adoption of the code of practice and permanent cooperation with the local industry associations to ensure their support and active participation in HFC phase-down. Senegal will actively engage with the West African Economic and Monetary Union (UEMOA) to advocate for a harmonized regional policy that extends the ban of HFC-based equipment across all member states, thereby minimizing the risk of non-compliant equipment entering through regional trade channels. The demand side management component intends to reduce the demand for HFC-based equipment, reducing future service consumption of HFCs.

Impact on the climate

58. The activities proposed, including the strengthening of the licensing and quota system, developing of a code of practice, extending the technicians' certification scheme, providing equipment and tools for good servicing practices, and demonstrating low-GWP technologies in the industrial refrigeration sector, indicate that the implementation of stage I of the KIP will reduce refrigerant emissions into the atmosphere, resulting in climate benefits. While the Secretariat is not able to provide an estimate of the avoided

¹⁰ Exempted equipment for HAT are multi-split air conditioners (commercial and residential); split ducted air conditioners (commercial and residential); and ducted commercial packaged (self-contained) air-conditioners.

emissions from the implementation of the KIP at the present meeting, Senegal, by 2029, will have reduced its annual HFC emissions by approximately 347,678 CO₂-eq tonnes, calculated as the difference between the HFC baseline for compliance and the 2029 target, assuming that all consumed HFCs would eventually have been emitted.

Draft Agreement

59. A draft Agreement between the Government of Senegal 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.

60. If the Executive Committee so wishes, the funds for stage I of the KIP for Senegal 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

61. The Executive Committee may wish to consider:

- (a) Approving, in principle, stage I of the Kigali HFC implementation plan (KIP) for Senegal for the period 2024-2029 to reduce HFC consumption by 18.9 per cent of the country's baseline by 2029, in the amount of US \$943,600, consisting of US \$390,000, plus agency support costs of US \$50,700, for UNEP and US \$470,000, plus agency support costs of US \$32,900, for UNIDO, as reflected in the schedule contained in annex I to the present document;
- (b) Noting:
 - (i) The strong commitment of the Government of Senegal to support reductions in HFC consumption in advance of the Montreal Protocol targets;
 - (ii) That the Government of Senegal will establish its starting point for sustained aggregate reductions in HFC consumption based on guidance provided by the Executive Committee;
 - (iii) That, once the cost guidelines for HFC phase-down are agreed by the Executive Committee, reductions from the country's remaining HFC consumption eligible for funding will be determined in line with these guidelines;
 - (iv) That the reductions from the country's remaining HFC consumption eligible for funding referred to in subparagraph (b)(ii) above will be deducted from the starting point referred to in subparagraph (b)(i);
 - (v) That an additional reduction of up to 324,937 CO₂-eq tonnes associated to an adjustment to the HCFC component of the HFC baseline will be deducted from the starting point;
- (c) Further noting that upon completion of the end-user demonstration project in industrial refrigeration 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);

- (d) Approving the first tranche of stage I of the KIP for Senegal and the corresponding tranche implementation plan, in the amount of US \$326,265, consisting of US \$168,000, plus agency support costs of US \$21,840, for UNEP and US \$127,500, plus agency support costs of US \$8,925, for UNIDO; and
- (e) Requesting the Government of Senegal, UNEP, UNIDO and the Secretariat to finalize the draft Agreement between the Government of Senegal 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 SENEGAL

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)	2,786,915	2,786,915	2,786,915	2,786,915	2,786,915	2,508,224	n/a
1.2	Maximum allowable total consumption of Annex F substances (CO ₂ -eq tonnes)	2,786,915	2,786,915	2,786,915	2,786,915	2,786,915	2,261,398	n/a
2.1	Lead IA (UNEP) agreed funding (US \$)	168,000	0	0	138,000	0	84,000	390,000
2.2	Support costs for Lead IA (US \$)	21,840	0	0	17,940	0	10,920	50,700
2.3	Cooperating IA (UNIDO) agreed funding (US \$)	127,500	0	0	317,500	0	25,000	470,000
2.4	Support costs for Cooperating IA (US \$)	8,925	0	0	22,225	0	1,750	32,900
3.1	Total agreed funding (US \$)	295,500	0	0	455,500	0	109,000	860,000
3.2	Total support costs (US \$)	30,765	0	0	40,165	0	12,670	83,600
3.3	Total agreed costs (US \$)	326,265	0	0	495,665	0	121,670	943,600

HCFC phase-out management plan (stage II - remaining tranches) (stage III is planned for submission at the 97th Executive Committee meeting)

Row	Particulars	2024	2025	2026	2027	2028	2029	2030	Total
1.1	Montreal Protocol reduction schedule of Annex C, Group I substances (ODP tonnes)	23.50	11.75	11.75	11.75	11.75	11.75	0.00	n/a
1.2	Maximum allowable total consumption of Annex C, Group I substances (ODP tonnes)	13.62	6.81	[TBD]	[TBD]	[TBD]	[TBD]	0.00	n/a
2.1	Lead IA (UNEP) agreed funding (US \$)	179,500	58,500	[TBD]	[TBD]	[TBD]	[TBD]	[TBD]	[TBD]
2.2	Support costs for Lead IA (US \$)	23,335	7,605	[TBD]	[TBD]	[TBD]	[TBD]	[TBD]	[TBD]
2.3	Cooperating IA (UNIDO) agreed funding (US \$)	95,000	0	[TBD]	[TBD]	[TBD]	[TBD]	[TBD]	[TBD]
2.4	Support costs for Cooperating IA (US \$)	8,550	0	[TBD]	[TBD]	[TBD]	[TBD]	[TBD]	[TBD]
3.1	Total agreed funding (US \$)	274,500	58,500	[TBD]	[TBD]	[TBD]	[TBD]	[TBD]	[TBD]
3.2	Total support costs (US \$)	31,885	7,605	[TBD]	[TBD]	[TBD]	[TBD]	[TBD]	[TBD]
3.3	Total agreed costs (US \$)	306,385	66,105	[TBD]	[TBD]	[TBD]	[TBD]	[TBD]	[TBD]

Annex II

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

Stage II of the HPMP			Stage I of the KIP		Combined cost (US \$)
Strategic lines	Activities	Cost (US \$)	Activities	Cost (US \$)	
Policy and regulatory instruments			Establish and implement an electronic system for issuing licences and quotas, and registering, controlling and monitoring HFC imports; develop a guide for import of controlled substances	40,000	40,000
			Establish and implement a regulation requiring authorised importers to keep a register of HFCs distributed in the market; use the record-keeping system for continuous survey of HFC uses by subsector; and study on illegal trade prevention	25,000	25,000
	Conduct 30 training workshops for customs officers and other law enforcement agencies. Introduce an ozone module into the curriculum of the National Customs training school.	100,000	Train at least 100 customs and other enforcement officers in prevention and control of illegal HFC trade, with a 20 per cent target in female participation.	20,000	120,000
	Update regulation to ban the use of HCFC-141b for flushing (end 2024), imports of second-hand HCFC based equipment (end 2024) and HCFC emission/venting control measures (end 2023).	5,000			5,000
	Organize six workshops for dissemination of updated regulations	25,000			25,000
			Provision 10 identifiers for multiple refrigerants for use by customs and other enforcement agencies	50,000	50,000
Capacity building in the refrigeration servicing sector	Strengthening of the RAC associations through annual workshops for all associations from each of the 14 regions on the HPMP activities and to share lessons	30,000	Technical and institutional support to refrigeration associations to consolidate a single national RAC/MAC association, and contribute to increase formalization of the sector by providing training in local language(s) for informal technicians and promote women participation in the process	20,000	50,000
			Development and dissemination of codes of practice for RAC and MAC systems, with focus on promoting recovery, recycling, and reducing emissions of refrigerants	20,000	20,000
	Facilitate the establishment of a certification scheme for the RAC servicing sector. Certify a	30,000	Expand the technicians' certification scheme being developed under the HPMP to also cover the domestic refrigeration and	25,000	55,000

Stage II of the HPMP			Stage I of the KIP		Combined cost (US \$)
Strategic lines	Activities	Cost (US \$)	Activities	Cost (US \$)	
	pilot list of 25 technicians at the end of the process.		MAC sectors, certify 10 additional certifiers for this purpose and build a data base of potential candidates for certification.		
	Conduct 50 training sessions for 1,200 RAC technicians on good servicing practices	158,000	Training on servicing in domestic refrigeration, commercial refrigeration and MAC: train 100 technicians on safe handling of flammable refrigerants, energy efficient technologies, and HFC recovery during maintenance and end-of-life of domestic refrigerators; train 100 technicians on good servicing practices for recovery, leak reduction and safe handling of flammable low-GWP alternatives in commercial refrigeration and MAC.	40,000	198,000
	Provision of toolkits and upgrade tools for hydrocarbons handling, additional identifiers	67,000	Provision of 20 sets of equipment and tools to technicians to facilitate good servicing practices	120,000	187,000
			Demand side management project: Promote demand for low-GWP technologies in residential AC, domestic and stand-alone commercial refrigeration; create a market launch for low-GWP technologies in locally assembled commercial refrigeration and AC equipment; and prepare the market for potential bans on high-GWP refrigerant-based equipment	75,000	75,000
			Survey and study on industrial and transport refrigeration	25,000	25,000
			Demonstration project at cold stores in the fisheries sector (industrial refrigeration)	200,000	200,000
			Training and tools for the transport refrigeration sector	75,000	75,000
	Support the establishment of refrigerant recovery and re-use scheme, incl set up of one reclaim centre	55,000			55,000
	Technical assistance to promote R-290 uptake in the country: assessment of operation and awareness raising program	40,000			40,000
	Certified trainer program for hydrocarbon-based equipment	25,000			25,000
Public awareness and gender	Media campaigns and other dissemination actions to support the timely phase-out of HCFCs and facilitate the introduction of HCFC-free products	included in activities above	Awareness campaigns on KIP activities; campaign to encourage women participation in the RAC sector; promotion of good practices in KIP implementation, including incorporation of gender perspective	50,000	50,000
Project management and coordination		50,000	Project management and coordination	75,000	125,000
Total for stage I of the HPMP		585,000	Total for stage I of the KIP	860,000	1,445,000