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EXECUTIVE COMMITTEE OF
THE MULTILATERAL FUND FOR THE
IMPLEMENTATION OF THE MONTREAL PROTOCOL
Ninety-sixth Meeting
Montreal, 26-30 May 2025
Item 9(d) of the provisional agenda¹

PROJECT PROPOSAL: LEBANON

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) UNDP Individual consideration

¹ UNEP/OzL.Pro/ExCom/96/1

PROJECT EVALUATION SHEET – MULTI-YEAR PROJECTS

Lebanon

PROJECT TITLE	AGENCY
Kigali HFC implementation plan (stage I)	UNDP (lead)

LATEST ARTICLE 7 DATA (Annex F)	Year: 2023	792.48 mt	1,518,706 CO ₂ -eq tonnes
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SECTORAL HFC CONSUMPTION DATA (CO ₂ -eq tonnes) AND ACTIVITIES									
	Aerosol	Foam	Fire-fighting	Air-conditioning and refrigeration				Solvent	Other
				Manufacturing			Servicing		
				Refrigeration	AC	Other			
Latest CP report (2024)			24,311	502,051	162,919		884,658		
KIP stage I activities as agreed (Y/N)				Y	Y		Y		

AVERAGE 2020–2022 HFC CONSUMPTION IN SERVICING	557.0 mt	916,022 CO ₂ -eq tonnes
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BASELINE CONSUMPTION DATA (CO ₂ -eq tonnes)	2020	2021	2022	Average 2020-2022
HFC annual consumption	1,743,012	1,604,665	1,532,493	1,626,723
HCFC baseline (65%)				929,810
HFC baseline				2,556,533

HFC CONSUMPTION ELIGIBLE FOR FUNDING	
Starting point for sustained aggregate reductions	TBD
Previously approved HFC phase-down investment projects	Yes
Aggregate reductions from previously approved projects (CO ₂ -eq tonnes)	n/a

PROJECT DATA AS AGREED		2025*	2026	2027-2028	2029	2030-2031	2032-	2033-2034	2035	Total
Consumption (CO ₂ -eq tonnes)	Montreal Protocol limits	2,556,533	2,556,533	2,556,533	2,300,880	2,300,880	2,300,880	2,300,880	1,789,573	n/a
	Maximum allowable	2,556,533	2,556,533	2,428,706	2,173,053	2,173,053	1,866,269	1,866,269	1,575,516	n/a
	Reduction from baseline (%)	0	0	5.0	15.0	15.0	27.0	27.0	38.4	n/a
Amounts recommended in principle (US \$)	UNDP	Project costs	1,869,792	0	0	2,453,757	0	485,680	0	4,809,229
		Support costs	130,885	0	0	171,763	0	33,998	0	336,646
	Total project costs		1,869,792	0	0	2,453,757	0	485,680	0	4,809,229
	Total support costs		130,885	0	0	171,763	0	33,998	0	336,646
	Total funds		2,000,677	0	0	2,625,520	0	519,678	0	5,145,875

* Recommended for approval at the present meeting

Reduction from remaining consumption eligible for funding in stage I (CO ₂ -eq tonnes)*	1,226,877
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* Includes the reduction of 245,860 CO₂-eq tonnes (112.54 mt) from a previously approved project

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: Status of implementation of the HCFC phase-out management plan and previous HFC-related activities
 - III. HFC consumption overview: HFC consumption levels, trends, and consumption by sector
 - IV. Stage I of the Kigali HFC implementation plan, as submitted: Regulatory framework, phase-down strategy, total stage cost, and implementation plan 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 Lebanon, UNDP as the designated implementing agency has submitted a request for stage I of the Kigali HFC implementation plan (KIP), in the amount of US \$5,251,142, plus agency support costs of US \$367,580, as originally submitted.²
3. The implementation of stage I of the KIP will assist the Government of Lebanon in meeting the target of 35 per cent reduction from its HFC baseline consumption by 1 January 2035.
4. The first tranche of stage I of the KIP being requested at this meeting amounts to US \$2,071,127, plus agency support costs of US \$144,979 for UNDP, as originally submitted, for the period of June 2025 to June 2029.

II. Background

Status of implementation of the HCFC phase-out management plan

5. Table 1 presents information on the HCFC phase-out management plan (HPMP) in Lebanon as of April 2025.

Table 1. HPMP implementation status for Lebanon

	Stage I	Stage II	Stage III
Meetings when HPMP was approved/updated	64 th /70 th /74 th	75 th /86 th	93 rd
Reduction from baseline	17.5% by 2017	62.5% by 2022 and 75% by 2024	100% by 2030
Total project cost (US \$)	2,495,109	4,203,826	1,182,700
Date of completion (actual/planned)	31 December 2017	31 December 2025	31 December 2031

² As per the letter of 29 January 2025 from the Ministry of Environment of Lebanon to UNDP.

Status of implementation of previous HFC-related activities

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

Table 2. Previously approved HFC-related activities in Lebanon

Approval meeting	Project title	Implementing agency	Cost (US \$)	Date of completion
74 th	Survey of ODS alternatives	UNDP	110,000	December 2018
80 th	Enabling activities for HFC phase-down	UNDP	150,000	June 2021
81 st	Conversion from HFC-134a and HFC-404A to R-600a and R-290 in domestic refrigeration at Lematic Industries	UNIDO	1,053,858	December 2020

III. HFC consumption overviewHFC consumption levels

7. Lebanon only imports HFCs for use in firefighting, and the refrigeration and air-conditioning (RAC) manufacturing and servicing sectors. The most consumed substances in 2023 were HFC-134a (46.6 per cent of total HFC consumption in CO₂-equivalent (CO₂-eq) tonnes), R-404A (33.6 per cent), R-410A (8.5 per cent), R-407C (5.6 per cent), R-507A (2.4 per cent), HFC-32 (1.8 per cent), and other HFCs (1.6 per cent). Table 3 presents the country's HFC consumption as reported to the Ozone Secretariat under Article 7 of the Montreal Protocol and the country's HFC baseline.

Table 3. HFC consumption (2020–2024 Article 7 data) and baseline in Lebanon

HFC	GWP	2020	2021	2022	2023	2024*
Metric tonnes (mt)						
HFC-134a	1,430	637.65	548.00	505.00	495.00	500.52
HFC-227ea	3,220	17.50	9.50	5.65	6.15	7.55
HFC-365mfc	794	4.50	0.00	0.00	0.00	0.00
HFC-32	675	37.60	53.00	43.25	41.10	48.95
R-404A	3,922	135.65	132.00	130.00	130.00	130.90
R-407C	1,774	35.48	51.00	47.35	47.55	55.05
R-408A	2,301	0.00	0.00	1.68	1.68	2.35
R-410A	2,088	72.32	70.20	62.00	62.00	69.65
R-507A	3,985	0.00	0.00	9.00	9.00	9.80
Total (mt)		940.70	863.70	803.93	792.48	824.77
CO₂-eq tonnes						
HFC-134a	1,430	911,840	783,640	722,150	707,850	715,744
HFC-227ea	3,220	56,350	30,590	18,193	19,803	24,311
HFC-365mfc	794	3,573	0	0	0	0
HFC-32	675	25,380	35,775	29,194	27,743	33,041
R-404A	3,922	531,965	517,651	509,808	509,808	513,337
R-407C	1,774	62,936	90,466	83,992	84,347	97,650
R-408A	2,301	0	0	3,866	3,866	5,408
R-410A	2,088	150,968	146,543	129,425	129,425	145,394
R-507A	3,985	0	0	35,865	35,865	39,053
Total (CO₂-eq tonnes)		1,743,012	1,604,665	1,532,493	1,518,706	1,573,939
HFC baseline calculation (CO₂-eq tonnes)						
HFC average consumption in 2020–2022					1,626,723	
HCFC baseline (65%)					929,810	
HFC baseline					2,556,533	

* Country programme data

Country programme implementation report

8. The sectoral HFC consumption data provided by the Government of Lebanon 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

9. From 2020 to 2023, a decreasing trend was observed in overall HFC consumption. The country experienced a complex crisis driven by political instability, economic depression and security issues, which have been exacerbated in recent years. The situation was further affected by the COVID-19 pandemic. Although the estimated growth in HFCs could have been in the range of 6 to 9 per cent per year during this period, these challenges significantly impacted the demand for HFC consumption in cooling equipment, leading to a decline in HFC imports in those years.

10. HFCs are used in various refrigeration, air-conditioning and heat-pump applications in the manufacturing and servicing sectors. Lebanon is fully dependent on imports of HFCs and is subject to international market price variations and availability of HFCs and their alternatives.

HFC consumption by sector

11. The RAC manufacturing sector mainly consumes R-404A in commercial refrigeration (10.5 per cent in mt and 21.5 per cent in CO₂-eq tonnes), HFC-134a in commercial refrigeration and chillers (8.4 per cent in mt and 6.2 per cent in CO₂-eq tonnes), R-410A in residential air-conditioning (6.2 per cent in mt and 6.7 per cent in CO₂-eq tonnes), HFC-32 in chillers and transport refrigeration (4.3 per cent in mt and 1.5 in CO₂-eq tonnes), and R-407C in commercial refrigeration (3.9 per cent in mt and 3.6 per cent in CO₂-eq tonnes).³

12. In the servicing sector, HFCs are mainly consumed in mobile air-conditioning (MAC) (51.2 per cent in mt and 38.2 per cent in CO₂-eq tonnes), followed by domestic, commercial, and transport refrigeration (9.5 per cent in mt and 15.6 per cent in CO₂-eq tonnes), residential air-conditioning and chillers (4.4 per cent in mt and 3.6 per cent in CO₂-eq tonnes), and other subsectors, as shown in tables 4 and 5.

Table 4. HFC consumption in Lebanon by sector in mt (2023)

Sector	HFC-134a	R-410A	R-407C	R-507A	R-404A	R-408A	HFC-32	HFC-227ea	Total	Share of total (%)
Manufacturing										
Commercial refrigeration	56.60	0.00	30.85	5.80	83.25	1.20	0.00	0.00	177.70	22.4
Transport refrigeration	0.00	0.00	0.00	0.00	0.00	0.00	7.70	0.00	7.70	1.0
Residential AC	0.00	48.95	0.00	0.00	0.00	0.00	0.00	0.00	48.95	6.2
Commercial chillers	9.75	0.00	0.00	0.00	0.00	0.00	26.60	0.00	36.35	4.6
Firefighting	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.15	6.15	0.8
Subtotal for manufacturing	66.35	48.95	30.85	5.80	83.25	1.20	34.30	6.15	276.85	34.9
Refrigeration and AC servicing										
Refrigeration subsectors										
Domestic	6.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.00	0.8
Commercial	0.00	0.00	16.70	3.20	46.75	0.48	0.00	0.00	67.13	8.5

³ These are percentages of the totals in manufacturing.

Sector	HFC-134a	R-410A	R-407C	R-507A	R-404A	R-408A	HFC-32	HFC-227ea	Total	Share of total (%)
Transport	0.00	0.00	0.00	0.00	0.00	0.00	1.50	0.00	1.50	0.2
Air-conditioning subsectors										
Residential	0.00	9.75	0.00	0.00	0.00	0.00	0.00	0.00	9.75	1.2
Commercial chillers	5.50	3.30	0.00	0.00	0.00	0.00	5.30	0.00	14.10	1.8
Industrial chillers	11.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	11.20	1.4
Mobile	405.95	0.00	0.00	0.00	0.00	0.00	0.00	0.00	405.95	51.2
Subtotal for servicing	428.65	13.05	16.70	3.20	46.75	0.48	6.80	0.00	515.63	65.1
Total	495.00	62.00	47.55	9.00	130.00	1.68	41.10	6.15	792.48	100

Table 5. HFC consumption in Lebanon by sector in CO₂-eq tonnes (2023)

Sector	HFC-134a	R-410A	R-407C	R-507A	R-404A	R-408A	HFC-32	HFC-227ea	Total	Share of total (%)
Manufacturing										
Commercial refrigeration	80,938	0	54,723	23,113	326,473	2,761	0	0	488,009	32.1
Transport refrigeration	0	0	0	0	0	0	5,198	0	5,198	0.3
Residential AC	0	102,183	0	0	0	0	0	0	102,183	6.7
Commercial chillers	13,943	0	0	0	0	0	17,955	0	31,898	2.1
Firefighting	0	0	0	0	0	0	0	19,803	19,803	1.3
Subtotal for manufacturing	94,881	102,183	54,723	23,113	326,473	2,761	23,153	19,803	647,090	42.6
Refrigeration and AC servicing										
Refrigeration subsectors										
Domestic	8,580	0	0	0	0	0	0	0	8,580	0.6
Commercial	0	0	29,623	12,752	183,335	1,105	0	0	226,815	14.9
Transport	0	0	0	0	0	0	1,013	0	1,013	0.1
Air-conditioning subsectors										
Residential	0	20,353	0	0	0	0	0	0	20,353	1.3
Commercial chillers	7,865	6,889	0	0	0	0	3,578	0	18,331	1.2
Industrial chillers	16,016	0	0	0	0	0	0	0	16,016	1.1
Mobile	580,509	0	0	0	0	0	0	0	580,509	38.2
Subtotal for servicing	612,970	27,242	29,623	12,752	183,335	1,105	4,590	0	871,616	57.4
Total	707,850	129,425	84,347	35,865	509,808	3,866	27,743	19,803	1,518,706	100

*Manufacturing and servicing sectors**Domestic refrigeration manufacturing*

13. Lebanon has one manufacturer of domestic refrigerators using R-600a. However, local manufacturing and imports of new domestic refrigerator units operating with HFC-134a refrigerants are not prohibited. Currently, there are no reported imports of HFC-134a-based domestic refrigerators. An estimate of 1.03 million domestic refrigeration units using HFC-134a operate in the market; they also consume very small quantities of HFC-134a for servicing. Although R-600a offers energy efficiency benefits and the

current demand for new units is mostly met by R-600a refrigerators, the addition of new stocks of HFC-134a-based refrigerators remains possible.

Commercial and transport refrigeration manufacturing and servicing and assembling

14. Commercial refrigeration units are used in corner stores, restaurants and small and large supermarkets. Several micro, small and medium enterprises (SMEs) and a few large manufacturers produce and supply the equipment to these market segments. Larger brands often provide their equipment to stores and supermarkets.

15. The three main cooling equipment types used for commercial refrigeration are centralized systems, condensing units, and stand-alone systems. In terms of sales and market stock, stand-alone systems hold the largest share, accounting for approximately 85 per cent of the total number of units. Condensing units and centralized systems are mainly used in the food processing industry, large supermarkets, hotels, and restaurants.

16. In Lebanon, food product supply and distribution systems are crucial to the local economy. However, existing infrastructure issues, compounded by the current crisis, have resulted in low penetration of the food cold chain, which in turn has reduced the demand for HFCs used to service the cooling units.

17. In terms of cooling technology, the commercial refrigeration sector predominantly uses HCFC-22 in old equipment, for servicing only, and HFC-134a and R-404A. However, the share of HFC blends, including R-407C, is rapidly increasing due to their higher energy efficiency. The use of low-global-warming-potential (GWP) refrigerants on a large commercial scale remains limited. Although one enterprise was converted under the HPMP to use R-290, its market share is still limited, and the enterprise primarily exports its products to African countries.

18. There are 22 SMEs (HFC consumption between 1.5 mt and 15.0 mt per annum) and 25 micro-SMEs (HFC consumption of less than 1.5 mt per annum), manufacturing and/or assembling self-contained stand-alone HFC-based commercial refrigeration equipment. There are 10 manufacturers of large-capacity HFC-based equipment, such as condensing units and large cold storage equipment.

Residential and commercial air-conditioning manufacturing and servicing

19. The air-conditioning market in Lebanon includes both local manufacturing and a significant share of imported equipment. Additionally, three local manufacturers produce HFC-based room air conditioners (ACs) and light commercial ACs. In 2019, the country imported air-conditioning systems from China, Italy, Spain, and the United Arab Emirates, with estimated sales reaching approximately 210,000 units. Although the air-conditioning market declined between 2017 and 2024 due to the economic crisis, it is expected to grow once the economic situation stabilizes. This growth will likely be driven by factors such as affordability, weather conditions, and new construction activities.

20. The main refrigerants used in residential air-conditioning are HCFC-22 and R-410A. Most commercial ACs use R-410A and R-407C, including a limited installed base of Variable Refrigerant Flows. However, the recent introduction of HFC-32-based units has led to an increase in HFC-32 consumption. Central air-conditioning systems, which primarily include chillers, also use HFC-134a. There is no reported use of hydrocarbon (HC)-based air-conditioning systems in Lebanon. Furthermore, a limited number of HFO-1234ze-based chillers have been introduced, but their high cost makes large-scale adoption uncertain. It is also noted that the energy efficiency ratios of equipment in the country are significantly below the best available technologies. One enterprise, Lematic Industries, currently manufactures R-410A-based air-conditioning equipment. At the 81st meeting, a project was approved for this enterprise for the conversion from HFC-134a and HFC-404A to R-600a and R-290 in domestic refrigeration (decision 81/63).

Firefighting

21. Currently, only one enterprise uses R-227ea for the refilling and installation of firefighting systems, including flooded systems. The firefighting equipment relies primarily on traditional firefighting fluids and methods, including water and foam. Lebanon's firefighting capabilities are challenged by limited resources, and while these fluids and agents are used, there is often a shortage of modern and specialized firefighting equipment.

Mobile air-conditioning servicing

22. There is no local manufacturing/assembling of private (light) passenger cars in Lebanon. The automotive market includes imports of new cars, used cars, and automotive spare parts. To combat the economic and financial crisis, the Government of Lebanon implemented an increase in import tariffs on vehicles and automotive goods in late 2023. This resulted in a reduction in the car market. Furthermore, in 2024, the Government established tariff exemptions for battery electric vehicles (BEVs) and an 80 per cent tariff reduction for plug-in hybrid-electric vehicles (PHEVs); considering this incentive, the BEVs and PHEVs market could bring more opportunities for the introduction of HFC-134a-based alternative technologies in the MAC sector.

23. HFC-134a is the predominant refrigerant in the MAC sector. As of 2021, there were approximately 1.75 million registered vehicles, with 1 million being 12 years or older. Due to the aging fleet, servicing and leakage rates are high, with nearly 50 per cent, resulting in a significant annual demand for, and imports of, HFC-134a. As the economic impacts reduce the population's capacity to replace old cars, it is expected that HFC-134a demand will remain high.

24. Lebanon does not assemble buses locally; all local demand is met through imports. Due to the underdeveloped public transport systems, the use of MAC in these systems is low.

Refrigeration and air-conditioning servicing sector

25. There are approximately 3,000 technicians in Lebanon, with a negligible number of females. Of these, about 1,500 to 1,800 technicians work in the RAC servicing sector, while the remaining work in the MAC sector.

26. Servicing of equipment is undertaken by large, authorized service companies and a significant number of small workshops. There are approximately 658 servicing workshops, with 23 per cent for stationary air-conditioning and refrigeration applications and 77 per cent for MAC (offering services for private passenger cars, trucks and buses). A few large-scale RAC servicing establishments have extended their business for commercial/industrial refrigeration installation and servicing, as well as servicing of transport refrigeration systems.

27. The geographical distribution of these workshops is presented in table 6. The number of service technicians in these companies varies from two (in the case of small workshops) to 10 (in the case of large companies).

Table 6. Number of servicing workshops in the MAC and RAC sectors in Lebanon (2023)

Sub-sector	Beirut	North	South	Bekaa	Total
RAC	90	27	25	12	154
MAC	415	45	23	21	504
Total	505	72	48	33	658

28. The economic crisis and large immigration of skilled professionals in recent years have impacted the servicing sector, resulting in a limited number of trained and active servicing technicians. Therefore, adequate support is needed for the sector to service both existing equipment and new equipment using

alternative technologies based on lower/low GWP. This would also facilitate faster adoption of lower-/low-GWP technologies by different end users.

29. The Vocational Training Education (VTE) in Lebanon is under the responsibility of the Ministry of Education and Higher Education (MEHE), through the Directorate General of VTE (DGVTE). The DGVTE administers both public and private VTE schools.

30. Under stage I of the HPMP, one training centre was supported. Stage II assisted three centres by improving their infrastructure and providing typical RAC servicing tools to enhance practical teaching methods. The ongoing stage III is currently assisting the same three centres to further enhance their training and certification capacities by providing dedicated trainer kits, including commercial refrigeration and room air-conditioning benches specifically designed for training purposes, now operating according to international standards. Additionally, a train-the-trainers programme for 15 room air-conditioning trainers is planned to build the capacity for RAC technicians on good servicing practices and reducing leakages.

31. The certification scheme of the vocational schools continues to build the capacity of new technicians, supported by a new training curriculum. Three workshops were conducted for 25 RAC teachers and 209 students, and a RAC servicing technical guidebook was developed and distributed to technicians, teachers, and students. Awareness-raising and capacity-building activities included technical and thematic workshops on HCFC alternatives for end users, importers, and stakeholders in the servicing sector.

32. Vocational schools with training curricula for the room air-conditioning sector are not fully equipped to deliver the highest level of equitable, good practices training. To address this challenge, the national ozone unit (NOU) and the Ministry of Environment have been working closely with DGVTE/MEHE to improve the baseline curricula capacities of vocational schools capable of delivering training related to HCFC-22-based room ACs and commercial refrigeration equipment. In 2021, the curriculum was updated to incorporate environmental and technical measures aligned with the Montreal Protocol.

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

Institutional, policy and regulatory framework

33. The NOU, established within the Ministry of Environment, serves as the focal point for regulatory and policy development for the Montreal Protocol. It sets the policy agenda for the consumption of controlled substances and delineates feasible technologies and approaches, including advising enterprises on controlling growth and phase-out/phase-down as per agreed targets.

34. The Ministry of Environment monitors the imports of controlled substances under the Montreal Protocol through licensed importers. A Ministerial decision in December 2021 introduced a licensing and quota system for HFCs starting from 2023, controlled and monitored by the NOU.

35. The licensing system is a coordinated effort involving the Ministry of Environment, customs, and importers. This system ensures that both the Ministry and customs maintain full authority over the import of controlled substances, ensuring compliance with the Montreal Protocol's regulations.

36. Harmonized systems codes for HFCs for 2022 were approved for use in 2024. The HFC quota system was finalized and is used for the allocation of quotas. The total HFC quotas will be estimated in CO₂-eq tonnes and converted to metric tonnes for individual substances. This process ensures that annual HFC targets are not exceeded.

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

37. The phase-down strategy for stage I of the KIP is multi-faceted, consisting of an approach of portfolios of interventions that, integrated, can provide the tools for Lebanon to achieve 2035 targets in advance of the Montreal Protocol schedule. This includes activities for the conversion of one residential AC manufacturer, Lematic Industries, from R-410A to HFC-32, the conversion of 47 SMEs manufacturing commercial refrigeration equipment and consuming less than 15 mt of HFCs, to R-290-based technologies; capacity-building and training support to the servicing sector, primarily relating to domestic and commercial refrigeration and MAC; enhancement of training capacities of MAC and refrigeration training centres; providing equipment support to service technicians to adopt good service practices and maximize recovery and reuse of refrigerants; strengthening the regulatory framework, including the quota system, to improve HFC control and sustain phase-down; and conducting awareness and outreach activities to sensitize the sector, identifying barriers to the adoption of low-/lower-GWP refrigerant-based technologies, and disseminating information on low-GWP alternative technologies.

38. The Government proposes to assist manufacturers of large-capacity commercial refrigeration equipment at a later stage as low-GWP alternative technologies that can be safely used in such equipment are not available for market adoption at this stage.

39. The consumption of HFCs across various applications is expected to increase due to the country's economic recovery. This increase will primarily be driven by growth in MAC, stationary air-conditioning, as well as domestic and commercial refrigeration. Based on the various actions planned under stage I of the KIP, the Government of Lebanon proposes to control the growth of HFC consumption by achieving a reduction of 15 per cent from the baseline by 2029 and 35 per cent by 2035.

Proposed reductions

40. As previously mentioned, current HFC consumption and recent consumption trends have been influenced by Lebanon's political and economic situation in recent years and consequently, do not reflect realistic HFC consumption levels. Based on inputs received from the industry during the KIP survey while considering the unique situation faced by Lebanon, HFC consumption is estimated to grow at 8 per cent from 2025 to 2028 for a strong economic recovery, and at 4 per cent from 2029 to 2035 when the growth is expected to normalize. Table 7 presents the Montreal Protocol limits, consumption forecast and the proposed HFC consumption reductions for 2025 to 2035.

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

	2025-2028	2029	2030	2031	2032	2033	2034	2035
HFC consumption forecast at an annual growth rate	1,699,854 to 2,141,327	2,226,980	2,316,059	2,408,701	2,505,049	2,605,251	2,709,461	2,817,840
Montreal Protocol HFC consumption limits	2,556,533	2,300,880	2,300,880	2,300,880	2,300,880	2,300,880	2,300,880	1,789,573
HFC consumption levels proposed under the KIP	2,556,533	2,173,053	2,173,053	2,173,053	2,173,053	2,173,053	2,173,053	1,661,746
Proposed reductions from the HFC consumption baseline (%)	0	15	15	15	15	15	15	35

*Calculated based on expected industry growth trends.

Proposed activities

Manufacturing sector

41. Manufacturing sector activities will eliminate HFC consumption in residential air-conditioning and small commercial refrigeration equipment.

42. Estimated conversion costs and activities at Lematic Industries include capital costs prototype and testing (US \$17,500), refrigerant storage and distribution systems (US \$15,000), sheet metal processing modifications (US \$200,000), charging machine along with modification of charging areas and vacuum pumps/industrial leak detectors (US \$249,000), ultrasonic welding machines (US \$25,000), plant fire safety system (US \$15,000), technical assistance, quality inspection and testing area modification and product certification (US \$39,000), and contingencies (US \$56,050), totalling US \$616,550. In line with decision 95/86(a), incremental operating costs were calculated at US \$7.60 per kg (US \$290,161), bringing the total project cost to an estimated US \$906,711, with a cost-effectiveness level of US \$23.75 per kilogram (kg) for the reduction of 38.18 mt of R-410A consumption. However, funding was requested at the cost-effectiveness threshold specified in decision 95/86(a) for residential air-conditioning, i.e., US \$13.60 per kg, for a total of US \$519,235.

43. Conversion costs at the 22 SMEs and the 25 micro-SMEs manufacturing commercial refrigeration equipment with HFC consumption of less than 15.0 mt per annum included capital costs for prototype and testing, refrigerant storage and distribution systems, sheet metal processing modifications, charging machine along with modification of charging areas and vacuum pumps/industrial leak detectors, ultrasonic welding machines, plant fire safety system and technical assistance, quality inspection and testing area modification, product certification, and contingencies.

44. For the 22 SMEs, incremental capital costs for the conversion ranged from US \$31,900 to US \$108,350, since it varied per enterprise based on their baseline equipment. The incremental operating costs were calculated in the amount of US \$431,204 for the consumption reduction of 78.40 mt of HFCs at US \$5.50 per kg (decision 95/86(a)). The funding requested from the Multilateral Fund was calculated at the lower value between actual incremental operating costs and cost-effectiveness value of US \$21.78 per kg in line with decision 95/86(d)(i),⁴ as the total value exceeds this cost-effectiveness threshold. The total amount requested is US \$1,590,357.

45. For the 25 micro-SMEs, the estimated total capital costs for conversion per enterprise, as submitted, amount to US \$36,300. The incremental operating costs were calculated at US \$5.50 per kg (decision 95/86(a)). The funding requested from the Multilateral Fund for the consumption reduction of 16.63 mt of HFCs was calculated at the cost-effectiveness value of US \$41.25 per kg (decision 95/86(e)),⁵ as the total value exceeds this cost-effectiveness threshold. The total amount requested is US \$685,927.

46. The summary of the conversion costs in residential air-conditioning and commercial refrigeration is presented in table 8.

⁴ Estimated at 1.32 times US \$16.5 per kg specified in decision 95/86(a).

⁵ Estimated at 2.5 times US \$16.5 per kg specified in decision 95/86(a).

Table 8. Manufacturing sector activities and their costs in stage I of the KIP for Lebanon as submitted

Activity	Substances	Consumption (mt)	Consumption (CO ₂ -eq tonnes)	Alternative	Total funding (US \$)
Conversion of residential air-conditioning manufacturing at Lematic Industries	R-410A	38.18	79,699	HFC-32	519,235
Conversion of 22 SMEs (consumption 1.5 mt – 15.0 mt/yr)	HFC-134a	35.05	50,117	R-290	1,590,357
	R-404A	43.35	170,018		
	Sub-total	78.40	220,135		
Conversion of 25 micro enterprises (consumption < 1.5 mt/yr)	HFC-134a	7.59	10,853	R-290	685,927
	R-404A	8.64	33,879		
	R-408A	0.40	920		
	Sub-total	16.63	45,652		
Total		133.21	345,486	n/a	2,795,519

Note: Replacement of 38.18 mt (79,699 CO₂-eq tonnes) of R-410A with HFC-32 would translate to 34.36 mt (23,194 CO₂-eq tonnes) of HFC-32 consumption.

Servicing sector

47. Activities in the servicing sector proposed for implementation under stage I and the first tranche and their cost breakdown are presented in table 9.

Table 9. Servicing sector activities and their costs in stage I and the first tranche of the KIP for Lebanon as submitted

Activity	Cost (US \$)	
	Stage	First tranche
<i>Strengthening and enforcement of policies and regulations:</i> Strengthening policies and regulatory framework for the control and prohibition of the import, manufacturing and sale of R-410A-based residential ACs, HFC-134a-based domestic refrigerators and HFC-based self-contained commercial refrigeration equipment; assessment of technology trends in the MAC sector and identification of support required for the MAC servicing sector; strengthening regulations and processes for the control and monitoring of HFC imports; training of 45 customs officers and import brokers on HFC import monitoring and reporting procedures and the control of illegal trade; procurement of eight refrigerant identifiers	219,250	139,250
<i>Procurement of equipment for training support:</i> Procurement of 14 MAC trainer units (two HFO-1234yf-based and 12 HFC-134a-based) for training technicians on good service practices; 12 recovery and recycling equipment for the MAC sector; 12 R-600a trainer units for domestic refrigerators; transportation and installation costs	450,589	173,000
<i>Capacity-building for the MAC and domestic refrigeration servicing sectors:</i> Training of 25 MAC servicing trainers and 50 domestic refrigerator servicing trainers on good practices, minimizing leakages, safe servicing and maintenance of equipment, and developing comprehensive training coverage, including soft skills, and content for technicians; training of 150 MAC technicians and 150 service technicians on good service practices, minimizing leakages, and safe servicing and maintenance of equipment; provision of 30 recovery and recycling units for MAC technicians, including supporting tools and accessories; procurement of tools (e.g., refrigerant recovery and recycling units, refrigerant cylinders, weighing scale, servicing tools) to service workshops for the recovery and reuse of refrigerants and safe servicing of flammable refrigerants	1,222,284	0
<i>Awareness and outreach:</i> Awareness campaign for end users including equipment distribution system on HFC-free products in different RAC applications; capacity-building of different stakeholders (e.g., end users,	145,000	45,000

Activity	Cost (US \$)	
	Stage	First tranche
retailers, servicing organizations) on low-GWP alternative technologies and their safe installation and use		
Project management unit (PMU) activities, including project staff (US \$368,500), operational costs (US \$13,000), implementation and monitoring (US \$25,000), and ODS verification (US \$12,000)	418,500	56,500
Total	2,455,623	413,750

Project implementation, coordination and monitoring

48. The NOU, as an implementing partner, will be responsible for planning, implementing, and monitoring all approved activities under stage I of the KIP, in close coordination with UNDP. UNDP will manage and coordinate activities to ensure proper reporting lines and the deployment of joint activities. The PMU, composed of a project manager supported by project assistants and consultants, will oversee the planning and management of project activities, working under the overall supervision of the NOU.

Total cost of stage I of the Kigali HFC implementation plan

49. The budget for stage I has been proposed at US \$5,251,142.

50. The proposed activities and cost of stage I of the KIP are summarized in table 10.

Table 10. Proposed cost of activities to be implemented in stage I of the KIP for Lebanon (US \$)

Activity	Cost (US \$)	
	Stage	First tranche
Manufacturing sector	2,795,519	1,657,377
Servicing sector	2,037,123	357,250
Project implementation, coordination and monitoring	418,500	56,500
Total	5,251,142	2,071,127

Implementation plan for the first tranche

51. The first funding tranche of stage I of the KIP was submitted at a total amount of US \$2,071,127, as shown in table 10 above, to be implemented between June 2025 and June 2029. Detailed information on the activities to be implemented under the first tranche, including adjustments and level of funds agreed are presented in paragraph 73.

SECRETARIAT'S COMMENTS AND RECOMMENDATION

V. Comments

Overarching strategy

52. In line with decision 92/44,⁶ the Government of Lebanon has expressed strong commitment to supporting reductions in HFC consumption in advance of Montreal Protocol targets.⁷ Details of the discussions and the strategy are presented in paragraphs 59 to 69 below.

⁶ The Executive Committee decided that proposals for projects that reduced HFC consumption in advance of Montreal Protocol targets could be considered on a case-by-case basis for countries that had a strong national level of commitment in place to support such reductions.

⁷ As per the letter of 28 January 2025 from the Ministry of Environment of Lebanon to UNDP.

Institutional, policy and regulatory framework

HFC licensing and quota system

53. In line with decision 87/50(g), UNDP has confirmed that Lebanon has an established and enforceable system of licensing and quotas for monitoring HFC imports/exports in place. The Government of Lebanon has issued HFC import quotas for 2025 at 2,556,533 CO₂-eq tonnes, in accordance with the Montreal Protocol targets.

Policies and regulations

54. The Secretariat consulted with UNDP regarding the timing of regulations aimed at reducing HFC consumption in the manufacturing, import, and sale of domestic refrigerators, residential air-conditioning units, and self-contained commercial refrigeration equipment with an HFC charge level of less than 3 kg per unit. After detailed discussions with the Government of Lebanon and considering the timing of conversion projects, UNDP reported that the following dates were agreed upon for prohibiting the import, manufacturing, and sale of the different equipment: from 31 December 2027, for domestic refrigerators using HFC-134a and residential ACs using R-410A; and from 31 December 2032, for small self-contained commercial refrigeration equipment using HFCs with a charge size of less than 3 kg per unit.

Technical and cost-related issues

Residential air-conditioning sector

55. UNDP stated that, after consultations with the industry, the Government of Lebanon has determined that manufacturing HFC-32-based ACs is the optimal strategy, taking into account the performance of HFC-32, the availability and cost of components, and market acceptance. This approach aims to reduce the country's dependence on R-410A-based equipment.

Commercial refrigeration sector

56. Regarding prices of HFC-134a, R-404A, and alternatives (e.g., HFC-32, R-290), UNDP explained that the prices of alternatives presented in the submission were based on negotiated prices available to enterprises. Commercial refrigeration enterprises consuming less than 15 mt per annum lack leverage to negotiate favorable prices for large-volume commercial contracts. Consequently, the refrigerant prices in the proposal differ from those in the CP data.

57. Regarding eligibility conditions for umbrella projects aimed at total sector or subsector phase-out, UNDP explained that the 10 large commercial refrigeration enterprises manufacture large-size units (e.g. condensing units), where implementing low-GWP refrigerant-based technologies is challenging due to safety and economic considerations. However, after extensive consultations with the industry, the Government of Lebanon decided to submit the conversion project for commercial refrigeration enterprises manufacturing small self-contained refrigeration equipment with an HFC charge size of less than 3 kg per unit, as this would reduce their dependence on HFCs. UNDP also confirmed that the umbrella project would include all enterprises in the commercial refrigeration sector or subsector for which cost-effectiveness thresholds had been established, except for the 10 large enterprises manufacturing large-size equipment. It was agreed that Lebanon would submit no further requests for funding from the Multilateral Fund for any enterprise in the commercial refrigeration subsector for equipment with HFC consumption of less than 3 kg per unit, in line with decision 19/32(a). The conversion project for the 10 large enterprises manufacturing equipment with HFC charge level of more than 3 kg per unit would be submitted at a future date.

58. The Secretariat discussed with UNDP various components related to regulatory interventions and the support needed for service technicians. It was agreed that US \$55,000 would be reallocated from

consultancy and related services for policy and regulation development to equipment support for MAC service technicians, as well as additional training for MAC technicians and refrigeration service technicians.

Agreed costs in the manufacturing sector

Residential air-conditioning manufacturing

59. The Secretariat had extensive consultations with UNDP on the various cost items for the air-conditioning manufacturing conversion project at Lematic Industries, considering the cost guidelines specified in decision 95/86 and that the conversion project would result in the adoption of HFC-32, an A2L refrigerant. Detailed discussions focused on the need for different equipment to safely adopt HFC-32 in air-conditioning manufacturing and on incremental operating costs, noting that incremental costs were nil for recently approved conversion projects.

60. Following consultations, it was agreed that the incremental costs would be reduced from US \$519,235 to US \$355,850. The revised costs are mainly attributed to adjustments on sheet metal processing, vacuum pumps with ATEX⁸ specifications, nil incremental operating costs, and some additions related to safety infrastructure and technical support needed for conversion.

Commercial refrigeration manufacturing

61. The Secretariat had consultations with UNDP on the various cost items proposed for the conversion of SMEs consuming between 1.5 mt and 15.0 mt per annum and those consuming less than 1.5 mt per annum, considering the cost guidelines approved in decision 95/86.

62. For the 22 SMEs with an annual HFC consumption between 1.5 mt and 15.0 mt per annum, incremental capital costs for individual enterprises were discussed based on the conversion requirements, keeping in view the baseline equipment and the equipment needed for converting to HC-based technologies. For the 25 micro-SMEs with an annual HFC consumption of less than 1.5 mt per annum, the incremental capital costs were agreed based on the necessary capital equipment and related support (e.g., charging equipment, leak detectors, safety-related infrastructure, technical support, and verification) required for these enterprises to transition to HC-based small commercial refrigeration equipment.

63. In both cases, incremental operating costs of US \$5.5 per kg were agreed, noting that the actual incremental operating costs were much higher due to the higher cost of compressors and components needed for conversion to HC-based equipment.

64. The estimated funding requirements for the SMEs and the micro-SMEs were based on the lower of the following two values: total incremental costs per kg estimated based on the incremental costs for the agreed equipment needed or cost-guideline value approved in decision 95/86(d) and (e) for the SMEs manufacturing commercial refrigeration equipment (i.e., US \$21.78 per kg for enterprises consuming between 1.5 mt and 15 mt of HFCs per annum, and US \$41.25 per kg for enterprises consuming less than 1.5 mt per annum). Thus, the agreed costs for the SMEs and the micro-SMEs are US \$1,465,140 and US \$482,616, respectively.

65. In addition, UNDP and the Secretariat discussed the support needs of those SMEs for the smooth adoption of HC-based technologies over the next 10 years. To facilitate this transition, additional funding of US \$50,000 was agreed upon to provide specific support to manufacturing enterprises and additional capacity-building to encourage end users to safely adopt the equipment.

⁸ A set of European Union regulations that are designed to ensure the safety of products being used in explosive environments.

66. In light of the above discussions, table 11 provides a summary of the agreed conversion costs in residential air-conditioning and commercial refrigeration equipment.

Table 11. Summary of agreed costs, including the calculation steps and reductions, for the manufacturing sector

Activity	Substances	Consumption (mt)	Consumption (CO ₂ -eq tonnes)	As submitted (US \$)	As agreed (US \$)
Conversion of residential air-conditioning manufacturing at Lematic Industries	R-410A	38.18	79,699	519,235	355,850
Conversion of 22 SMEs	HFC-134a R-404A	78.40	220,135	1,590,357	1,465,140
Conversion of 25 micro-SMEs	HFC-134a R-404A R-408A	16.63	45,652	685,927	482,616
Technical assistance		n/a	n/a	0	50,000
Total		133.21	345,486	2,795,519	2,353,606

Agreed costs in the servicing sector

67. The Secretariat noted the Government of Lebanon's request for additional funding for the servicing sector, in line with its strong commitment to achieve a 35 per cent reduction from its baseline consumption by 2035, in advance of the Montreal Protocol targets. Extensive consultations were held with UNDP, considering the cost guidelines specified in decision 92/37(b)(iii) for non-low-volume-consuming countries for servicing, decision 92/44, and the approval of additional funding for the KIP in Malawi⁹ at a level 10 per cent higher than that specified in decision 92/37. The Secretariat also notes that this additional funding would facilitate early actions on HFC consumption reduction and overall reduction of HFC consumption in the service sector.

68. Based on these consultations, the Secretariat agreed with the level of funding, as originally submitted, of US \$2,037,123 for the servicing sector. Table 12 summarizes the calculations for the reductions that would be achieved in this sector. Keeping in view the agreed funding for the servicing sector and the reductions of 345,486 CO₂-eq tonnes in manufacturing, the additional reductions to be achieved in the servicing sector beyond the Montreal Protocol targets are estimated at 214,057 CO₂-eq tonnes, as shown in table 12. To incentivize higher reduction targets, additional funding was calculated at a cost-effectiveness of US \$0.51 per kg (i.e., 10 per cent of the cost-effectiveness specified in decision 92/37(b)(iii)), amounting to US \$66,378. This results in a cost-effectiveness value of US \$5.27 per kg, approximately 3.3 per cent above the US \$5.10 per kg specified in decision 92/37(b)(iii).

Table 12. Summary of calculations of additional costs, including reductions in the servicing sector

Particulars		Values
HFC baseline (CO ₂ -eq tonnes)	a	2,556,533
HFC consumption targets for 2035 as per Montreal Protocol (CO ₂ -eq tonnes)	b	1,789,573
HFC consumption targets for 2035 as agreed (CO ₂ -eq tonnes)	c	1,575,516
Additional HFC consumption reductions in 2035 compared to Montreal Protocol targets (CO ₂ -eq tonnes)*	d=b-c	214,057
Average GWP for HFCs in service sector**	e	1,645
Additional HFC consumption reductions in 2035 compared to Montreal Protocol targets (mt)***	f=d/e	130.15
Funding for additional reductions at cost-effectiveness of US \$0.51/kg**** (US \$)	g	66,378
Funding for the reduction of 386.42 mt at cost-effectiveness of US \$5.1/kg (US \$)	h	1,970,745

⁹ Decision 93/66

Particulars		Values
Total agreed funding for the servicing sector	i=g+h	2,037,123

*The entire increase in reduction is considered to come from the servicing sector.

**Equals to average 2020-2022 HFC consumption in servicing in 916,022 CO₂-eq tonnes divided by 557 mt.

***Round-off

****This value was estimated at 10 per cent higher than cost-effectiveness thresholds for the servicing sector specified in decision 92/37(b)(iii).

69. The revisions in reductions that include additional reductions from 2029 to 2035, are presented in table 13. The final target of 1,575,516 CO₂-eq tonnes represents 61.6 per cent of the baseline and is lower than the HFC component of the baseline (1,626,723 CO₂-eq tonnes).

Table 13. Summary of HFC consumption targets agreed

	2025-2026	2027-2028	2029	2030-2031	2032	2033	2034	2035
Montreal Protocol consumption limits	2,556,533	2,556,533	2,300,880	2,300,880	2,300,880	2,300,880	2,300,880	1,789,573
KIP targets as submitted	2,556,533	2,556,533	2,173,053	2,173,053	2,173,053	2,173,053	2,173,053	1,661,746
KIP targets (revised)	2,556,533	2,428,706	2,173,053	2,173,053	1,866,269	1,866,269	1,866,269	1,575,516
Percentage compared to Montreal Protocol limits	100.0	95.0	94.4	94.4	81.1	81.1	81.1	88.0

Calculation of reductions from HFC consumption from the starting point

70. Based on the cost of activities in the servicing sector, agreed at US \$2,037,123, reductions from the remaining HFC consumption eligible for funding amount to 635,531 CO₂-eq tonnes, as summarized in table 14. Accordingly, the Government of Lebanon has agreed to reduce its 2035 HFC consumption to 1,575,516 CO₂-eq tonnes, representing 61.6 per cent of the country's HFC baseline for compliance. This reduction is higher than the Montreal Protocol compliance targets.

Table 14. Agreed costs and reductions from HFC consumption eligible for funding and 2029 target

Servicing sector		
Average HFC consumption in the servicing sector in baseline years	mt	557.0
	CO ₂ -eq tonnes	916,022
Average GWP of all HFCs consumed in the sector		1,645
Agreed funding	US \$	2,037,123
Agreed cost-effectiveness threshold	US \$/kg	5.27
Reductions from the remaining HFC consumption in the servicing sector	Mt	386.42
	CO ₂ -eq tonnes	635,531
Reductions from all sectors		
Established HFC consumption baseline	CO ₂ -eq tonnes	2,556,533
<i>Reductions from the remaining HFC consumption eligible for funding achieved through conversions in the manufacturing sector</i>	CO ₂ -eq tonnes	345,486
<i>Reductions from the remaining HFC consumption eligible for funding in the servicing sector</i>	CO ₂ -eq tonnes	635,531
<i>Phase in of HFC-32 resulting from conversion in Lematic Industries</i>	CO ₂ -eq tonnes	23,194
Targeted reduction		
2035 target	CO ₂ -eq tonnes	1,575,516

Total project cost

71. At the total cost of US \$4,809,229, stage I of the KIP for Lebanon will result in a reduction of 981,017 CO₂-eq tonnes from the country's HFC consumption eligible for funding, as summarized in table 15. The conversion project approved at the 81st meeting in domestic refrigeration at Lematic Industries will achieve HFC reductions of 245,860 CO₂-eq tonnes. Combined with the reductions to be achieved in stage I of the KIP, total reductions from the country's remaining HFC consumption eligible for funding amount to 1,226,877 CO₂-eq tonnes.

Table 15. Agreed cost of activities to be implemented during stage I of the KIP in Lebanon

Sector	Substance	Phase-out to be achieved				Cost	Cost-effectiveness	
		mt		CO ₂ -eq tonnes			US \$	US \$/kg
		Funded	Non-funded	Funded	Non-funded			
Manufacturing								
Air-conditioning	R-410A	38.18	0	79,699	0	355,850	9.32	4.46
Commercial refrigeration	HFC-134a	42.64	0	60,970	0	1,997,756	21.02	7.52
	R-404A	51.99	0	203,897	0			
	R-408A	0.40	0	920	0			
Servicing	n/a	386.42	0	635,531	0	2,037,123	5.27	3.21
PMU	n/a	n/a		n/a		418,500		
Total		519.63		981,017		4,809,229	9.26	4.90

72. Stage I of the KIP will be implemented in three tranches.

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

73. The agreed plan of action will include the following activities:

- (a) Implementation of the conversion project in residential air-conditioning manufacturing (US \$355,850);
- (b) Initiation of project activities for the conversion of commercial refrigeration equipment in SMEs and micro-SMEs, noting that these projects would be implemented over a five-to-seven-year period (US \$1,100,192);
- (c) Strengthening the licensing and quota system for the control and monitoring of HFC consumption and finalization of policies relating to the prohibition of R-410A-based residential ACs and HFC-134a-based domestic refrigerators; initiating consultations with industry stakeholders and regulatory authorities on the prohibition of HFC-based commercial refrigeration equipment; training of 45 customs and enforcement officers; and procurement of eight refrigerant identifiers (US \$139,250);
- (d) Procurement of five MAC and five R-600a-based domestic refrigeration equipment trainer units for training centres; initiating training activities for MAC and domestic refrigeration technicians noting that the implementation of the training programme and procurement of service tools for supporting technicians would be undertaken during the second tranche (US \$173,000);
- (e) Awareness and outreach activities to promote the adoption of low-GWP technologies (US \$45,000); and
- (f) Project management, coordination and monitoring including verification (US \$56,500).

Co-financing

74. The Government of Lebanon will provide co-financing in the form of in-kind contributions, including human resources (management and officers in the NOU), office space, communication facilities, transportation, and other administrative support for the implementation of KIP activities. Additionally, the Government leverages funding opportunities such as the Cool Up programme, to provide complementary support for project implementation. Manufacturing enterprises receiving assistance are expected to co-finance certain activities beyond the approved cost guidelines to ensure timely and effective implementation of the conversion project.

2025–2027 business plan of the Multilateral Fund

75. UNDP is requesting US \$4,809,229, plus agency support costs, for the implementation of stage I of the KIP for Lebanon. The total value of US \$2,000,677, including agency support costs, requested for the period of 2025–2027, is US \$1,885,406 above the amount in the business plan.

Gender policy implementation

76. To promote assertive actions that enhance women's participation in the servicing sector, the Government of Lebanon will initiate detailed data collection on gender mainstreaming and conduct ongoing diagnoses. This will help identify the necessary actions to advance gender equality in the RAC sector.

77. In line with the Multilateral Fund's operational policy on gender mainstreaming, the NOU will endeavor to ensure the participation of women in customs and technician trainings, as well as SME programmes under stage I of the KIP. Although the NOU staff and environmental officers include women, the exact number of women in RAC servicing is currently unknown. Sensitization activities will focus on the inclusion of women in activities undertaken by the NOU during the KIP. To further strengthen women's participation, the NOU will also sensitize stakeholders involved in the KIP about the gender mainstreaming policy and develop a gender action plan.

Sustainability of the HFC phase-down and assessment of risks

78. To ensure the long-term sustainability of the HFC phase-down, the Government of Lebanon has prioritized the early conversion of enterprises manufacturing residential air-conditioning and small commercial refrigeration equipment. This effort is supported by a well-aligned regulatory framework prohibiting the import and sale of equipment using R-410A in residential ACs and other HFC refrigerants in commercial refrigeration equipment, thereby reducing dependence on HFC consumption in manufacturing. Additionally, the capacity of RAC technicians will be enhanced through expanding the training and certification initiated under the HPMP, promoting safe practices with alternative refrigerants, and extending training to previously uncovered sectors. Service sector training will also promote good practices for minimizing HFC emissions and maximizing HFC recovery and reuse, particularly in MAC and large RAC equipment. To mitigate the risks of technology adoption for SMEs and micro-SMEs, technical support on product design will be provided, along with sharing experiences on adopting low-GWP flammable technologies from similar countries. The NOU and the implementing agency will support the industry in converting their manufacturing facilities in a timely manner, addressing safety aspects and implementing policies and regulations to support product adoption.

79. The Government of Lebanon noted that the economic and political situation in 2023 and 2024 was challenging, leading to a decrease in consumption beyond typical levels. Consequently, it is highly likely to grow in the near future across different RAC applications. To mitigate very high HFC consumption growth and in the country's national interest, the Government would ensure the timely implementation of the HFC quota system, project activities in the manufacturing and servicing sectors, and awareness programmes on adopting low-GWP alternatives. UNDP will provide technical and policy support to ensure

timely implementation of activities. The technology choice for the commercial refrigeration sector has been made considering the availability and cost of components, and the sector's ability to adopt the proposed low-GWP technologies. Strengthened stakeholder engagement, a strong NOU-industry collaborative structure, and regular consultations with regulatory bodies and other national stakeholders will ensure their commitment to KIP activities.

Impact on the climate

80. The activities proposed, including efforts to promote low-GWP alternatives and refrigerant recovery and reuse 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 2035, Lebanon will have reduced its emissions by approximately 981,017 CO₂-eq tonnes of HFCs, calculated as the difference between the HFC baseline for compliance and the 2035 consumption level proposed, assuming that all consumed HFCs would eventually have been emitted.

Draft Agreement

81. A draft Agreement between the Government of Lebanon and the Executive Committee for stage I of the KIP is contained in annex I to the present document.

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

82. The KIP will build upon the existing institutional, policy, and capacity-building frameworks developed under the HPMP, and other projects implemented under the Montreal Protocol. The KIP will address sectors that have not been targeted since the completion of the CFC phase-out, specifically domestic refrigeration and MAC. The HPMP will focus on the remaining activities related to HCFC phase-out, primarily in air-conditioning applications. The KIP may encounter greater challenges due to the flammability of many alternatives, an issue that was not fully addressed under the HPMP. Additionally, the KIP will need to manage a greater variety of substances and blends compared to the HPMP. This challenge will be addressed through an integrated approach for implementing HPMP and KIP activities for training, capacity-building, and other outreach measures to facilitate the cost-effective and safe adoption of alternatives. Annex II summarizes the simultaneous implementation of activities under the HPMP and the KIP.

VI. Recommendation

83. The Executive Committee may wish to consider:

- (a) Approving, in principle, stage I of the Kigali HFC implementation plan (KIP) for Lebanon for the period 2025–2035 to reduce HFC consumption by 38.4 per cent of the country's baseline, in the amount of US \$4,809,229, plus agency support costs of US \$336,646, for UNDP;
- (b) Noting:
 - (i) That the Government of Lebanon will establish its starting point for sustained aggregate reductions in HFC consumption based on guidance provided by the Executive Committee;
 - (ii) That, once the Executive Committee provides the guidance referred to in subparagraph (b)(i), reductions from the country's remaining HFC consumption eligible for funding will be determined in line with this guidance;

- (iii) 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);
- (c) Also noting:
 - (i) The strong commitment of the Government of Lebanon to support reductions in HFC consumption in advance of the Montreal Protocol targets;
 - (ii) That, in line with decision 81/63, stage I of the KIP includes an additional US \$1,053,858, plus agency support cost of US \$73,770, for UNIDO, related to the project approved at the 81st meeting to phase out 78.46 metric tonnes (mt) (112,198 CO₂-equivalent (CO₂-eq) tonnes) of HFC-134a and 34.08 mt (133,662 CO₂-eq tonnes) of R-404A in the manufacture of domestic and commercial refrigeration equipment at Lematic Industries;
 - (iii) That the Government of Lebanon would prohibit the import, manufacturing, and sale of HFC-134a-based domestic refrigerators and R-410A-based residential air conditioners, from 31 December 2027; and HFC-based small self-contained commercial refrigeration equipment with a charge size of less than 3 kg per unit, from 31 December 2032;
 - (iv) That the Government of Lebanon would submit no further requests for funding from the Multilateral Fund for any enterprise in the commercial refrigeration subsector for equipment with HFC consumption of less than 3 kilograms per unit, in line with decision 19/32(a);
- (d) Approving the draft Agreement between the Government of Lebanon and the Executive Committee for the reduction in consumption of HFCs in accordance with stage I of the KIP, contained in annex I to the present document; and
- (e) Approving the first tranche of stage I of the KIP for Lebanon and the corresponding tranche implementation plan, in the amount of US \$1,869,792, plus agency support costs of US \$130,885, for UNDP.

Annex I

DRAFT AGREEMENT BETWEEN THE GOVERNMENT OF LEBANON AND THE EXECUTIVE COMMITTEE OF THE MULTILATERAL FUND FOR THE REDUCTION IN CONSUMPTION OF HYDROFLUOROCARBONS IN ACCORDANCE WITH STAGE I OF THE KIGALI HFC IMPLEMENTATION PLAN

(Period: 2025–2035)

Purpose

1. This Agreement represents the understanding of the Government of Lebanon (“the Country”) and the Executive Committee with respect to the reduction of controlled use of Annex F substances set out in Appendix 1-A (“The Substances”) to a sustained level of 1,575,516 CO₂-equivalent (CO₂-eq) tonnes by 1 January 2035 in compliance with the Montreal Protocol schedule and the terms of this Agreement.
2. The Country agrees to meet the annual consumption limits of Annex F substances as set out in row 1.2 of Appendix 2-A (“The Targets, and Funding”) in this Agreement as well as in the Montreal Protocol reduction schedule for Annex F substances mentioned in Appendix 1-A. The Country accepts that, by its acceptance of this Agreement and performance by the Executive Committee of its funding obligations described in paragraph 3, it is precluded from applying for or receiving further funding from the Multilateral Fund in respect to any consumption of Annex F substances that exceeds the level defined in row 1.2 of Appendix 2-A as the final reduction step under this Agreement for Annex F substances specified in Appendix 1-A, and in respect to any consumption of Annex F substances that exceeds the level[s] defined in row[s] 4.1.3 [and 4.2.3] (remaining consumption eligible for funding).
3. Subject to compliance by the Country with its obligations set out in this Agreement, the Executive Committee agrees, in principle, to provide the funding set out in row 3.1 of Appendix 2-A to the Country. The Executive Committee will, in principle, provide this funding at the Executive Committee meetings specified in Appendix 3-A (“Funding Approval Schedule”).
4. The Country agrees to implement this Agreement in accordance with stage I of the Kigali HFC implementation plan (“the Plan”) as approved. In accordance with subparagraph 5(b) of this Agreement, the Country will accept independent verification of the achievement of the annual consumption limits of Annex F substances set out in row 1.2 of Appendix 2-A of this Agreement. The aforementioned verification will be commissioned by the relevant bilateral or implementing agency.

Conditions for funding release

5. The Executive Committee will only provide the Funding, in accordance with the Funding Approval Schedule, when the Country satisfies the following conditions at least 10 weeks in advance of the applicable Executive Committee meeting set out in the Funding Approval Schedule:
 - (a) That the Country has met the Targets set out in row 1.2 of Appendix 2-A for all relevant years. Relevant years are all years since the year in which this Agreement was approved. Years for which there are no due country programme implementation reports at the date of the Executive Committee meeting at which the funding request is being presented are exempted;
 - (b) That the meeting of these Targets has been independently verified for all relevant years, unless the Executive Committee decided that such verification would not be required;
 - (c) That the Country had submitted a Tranche Implementation Report in accordance with Appendix 4-A (“Format of Tranche Implementation Reports and Plans”) covering each

previous calendar year; that it had achieved a significant level of implementation of activities initiated with previously approved tranches; and that the rate of disbursement of funding available from the previously approved tranche was more than 20 per cent; and

- (d) That the Country has submitted a Tranche Implementation Plan in accordance with Appendix 4-A covering each calendar year until and including the year for which the Funding Approval Schedule foresees the submission of the next tranche or, in case of the final tranche, until completion of all activities foreseen.

Monitoring

6. The Country will ensure that it conducts accurate monitoring of its activities under this Agreement. The institutions set out in Appendix 5-A (“Monitoring Institutions and Roles”) will monitor and report on implementation of the activities in the previous Tranche Implementation Plans in accordance with their roles and responsibilities set out in the same appendix.

Flexibility in the reallocation of funds

7. The Executive Committee agrees that the Country may have the flexibility to reallocate part or all approved funds, according to the evolving circumstances, to achieve the smoothest reduction of consumption and phase-down of Annex F substances specified in Appendix 1-A, in accordance with the following considerations:

- (a) Reallocations categorized as major changes must be documented in advance, either in a Tranche Implementation Plan as foreseen in subparagraph 5(d) above, or as a revision to an existing Tranche Implementation Plan to be submitted 10 weeks prior to any meeting of the Executive Committee, for its approval. Major changes would relate to:
 - (i) Issues potentially concerning the rules and policies of the Multilateral Fund;
 - (ii) Changes that would modify any clause of this Agreement;
 - (iii) Changes in the annual levels of funding allocated to the individual bilateral or implementing agencies for the different tranches;
 - (iv) Provision of funding for activities not included in the current endorsed Tranche Implementation Plan, or removal of an activity in the Tranche Implementation Plan, with a cost greater than 30 per cent of the total cost of the last approved tranche;
 - (v) Changes in alternative technologies, on the understanding that any submission for such a request would identify the associated incremental costs, the potential impact on the climate, and any differences in CO₂-eq tonnes to be phased down if applicable, as well as confirm that the Country agrees that potential savings related to the change of technology would accordingly decrease the overall funding level under this Agreement;
- (b) Reallocations not categorized as major changes may be incorporated into the approved Tranche Implementation Plan, under implementation at the time, and reported to the Executive Committee in the subsequent Tranche Implementation Report;
- (c) Any enterprise included in the Plan that would be found to be ineligible under the policies of the Multilateral Fund (i.e., due to foreign ownership or establishment after the applicable

cut off date) would not receive financial assistance. This information would be reported as part of the Tranche Implementation Plan; and

- (d) Any remaining funds held by the bilateral or implementing agencies or the Country under the Plan will be returned to the Multilateral Fund upon completion of the last tranche foreseen under this Agreement.

8. Specific attention will be paid to the execution of activities in the refrigeration servicing sector included in the Plan, in particular that the Country may use the flexibility available under this Agreement to address specific needs that might arise during project implementation.

Bilateral and implementing agencies

9. The Country agrees to assume overall responsibility for the management and implementation of this Agreement and of all activities undertaken by it or on its behalf to fulfil the obligations under this Agreement. UNDP has agreed to be the lead implementing agency (the “Lead IA”) in respect of the Country’s activities under this Agreement. The Country agrees to evaluations, which might be carried out under the monitoring and evaluation work programmes of the Multilateral Fund or under the evaluation programme of the Lead IA taking part in this Agreement.

10. The Lead IA will be responsible for ensuring coordinated planning, implementation and reporting of all activities under this Agreement, including but not limited to the independent verification as per subparagraph 5(b). The role of the Lead IA is contained in Appendix 6-A. The Executive Committee agrees, in principle, to provide the Lead IA with the fees set out in row 2.2 of Appendix 2-A.

Non-compliance with the Targets in the Agreement

11. Should the Country, for any reason, not meet the Targets for the elimination of Annex F substances set out in row 1.2 of Appendix 2-A or otherwise does not comply with this Agreement, then the Country agrees that it will not be entitled to the Funding in accordance with the Funding Approval Schedule. At the discretion of the Executive Committee, funding will be reinstated according to a revised Funding Approval Schedule determined by the Executive Committee after the Country has demonstrated that it has satisfied all its obligations that were due to be met prior to receipt of the next tranche of funding under the Funding Approval Schedule. The Country acknowledges that the Executive Committee may reduce the amount of the Funding by the amount set out in Appendix 7-A (“Reductions in Funding for Failure to Comply”) in respect of each CO₂-eq kg of reductions in consumption not achieved in any one year. The Executive Committee will discuss each specific case in which the Country did not comply with this Agreement and take related decisions. Once decisions are taken, the specific case of non-compliance with this Agreement will not be an impediment for the provision of funding for future tranches as per paragraph 5 above.

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

13. The Country will comply with any reasonable request of the Executive Committee and the Lead IA to facilitate implementation of this Agreement. In particular, it will provide the Lead IA with access to the information necessary to verify compliance with this Agreement.

Date of completion

14. The completion of the Plan and the associated Agreement will take place at the end of the year following the last year for which a maximum allowable total consumption level has been specified in Appendix 2-A. Should at that time there still be activities that are outstanding, and which were foreseen in the last Tranche Implementation Plan and its subsequent revisions as per subparagraph 5(d) and

paragraph 7, the completion of the Plan will be delayed until the end of the year following the implementation of the remaining activities. The reporting requirements as per subparagraphs 1(a), 1(b), and 1(d) of Appendix 4-A will continue until the time of the completion of the Plan unless otherwise specified by the Executive Committee.

Validity

15. All conditions set out in this Agreement are undertaken solely within the context of the Montreal Protocol and as specified in this Agreement. All terms used in this Agreement have the meaning ascribed to them in the Montreal Protocol unless otherwise defined herein.

16. This Agreement may be modified or terminated only by mutual written agreement of the Country and the Executive Committee of the Multilateral Fund.

APPENDICES

APPENDIX 1-A: THE SUBSTANCES

Substances	Starting point for aggregate reductions in consumption
To be determined	

APPENDIX 2-A: THE TARGETS, AND FUNDING*

Row	Particulars		2025	2026	2027-2028	2029	2030-2031	2032	2033-2034	2035	Total
1.1	Montreal Protocol reduction schedule of Annex F substances	%	freeze	freeze	freeze	10	10	10	10	15	n/a
		CO ₂ -eq tonnes	2,556,533	2,556,533	2,556,533	2,300,880	2,300,880	2,300,880	2,300,880	1,789,573	n/a
1.2	Maximum allowable total consumption of Annex F substances	Reduction in %	0	0	5.0	15.0	15.0	27.0	27.0	38.4	n/a
		CO ₂ -eq tonnes	2,556,533	2,556,533	2,428,706	2,173,053	2,173,053	1,866,269	1,866,269	1,575,516	n/a
2.1	Lead IA (UNDP) agreed funding (US \$)		1,869,792	0	0	2,453,757	0	485,680	0	0	4,809,229
2.2	Support costs for Lead IA (US \$)		130,885	0	0	171,763	0	33,998	0	0	336,646
3.1	Total agreed funding (US \$)		1,869,792	0	0	2,453,757	0	485,680	0	0	4,809,229
3.2	Total support costs (US \$)		130,885	0	0	171,763	0	33,998	0	0	336,646
3.3	Total agreed costs (US \$)		2,000,677	0	0	2,625,520	0	519,678	0	0	5,145,875
4.	To be determined										

* Noting that 78.46 mt (112,198 CO₂-eq tonnes) of HFC-134a and 34.08 mt (133,662 CO₂-eq tonnes) of R-404A would be deducted from the starting point for sustained aggregate reduction in HFCs once it has been established (decision 81/63).

APPENDIX 3-A: FUNDING APPROVAL SCHEDULE

1. Funding for the future tranches will be considered for approval at the first meeting of the year specified in Appendix 2-A.

APPENDIX 4-A: FORMAT OF THE TRANCHE IMPLEMENTATION REPORTS AND PLANS

1. The submission of the Tranche Implementation Report and Plans for each tranche request will consist of four parts:

- (a) A narrative report, with data provided by tranche, describing the progress achieved since the previous report, reflecting the situation of the Country in regard to phase-down of Annex F substances, how the different activities contribute to it, and how they relate to each other, including, where applicable, activities related to energy efficiency approved in the context of HFC phase-down pursuant to decision 91/65. The report should include the amount of Annex F substances consumption reduced as a direct result of the implementation of activities, by substance, the alternative technology used and the related phase in of alternatives, to allow the Secretariat to inform the Executive Committee on the resulting change in climate relevant emissions. The report should also include quantitative information on the activities implemented and further highlight the successes, experiences, and challenges related to the different activities included in the Plan, reflecting any changes in the circumstances in the Country, and providing other relevant information. The report should also include information on and justification for any changes vis-à-vis the previously submitted Tranche Implementation Plan(s), such as delays, use of flexibility for the reallocation of funds during implementation of a tranche as provided for in paragraph 7 of this Agreement, or other changes;
- (b) An independent verification report on the Plan's results and the consumption of Annex F substances, as per subparagraph 5(b) of the Agreement. If not decided otherwise by the Executive Committee, such a verification of consumption data must be provided with each tranche request, covering all relevant years for which a verification report has not yet been acknowledged by the Committee, as specified in subparagraph 5(a) of the Agreement;
- (c) A written description of the activities to be undertaken during the period covered by the requested tranche including quantitative information, highlighting implementation milestones, the time of completion and the interdependence of the activities, and taking into account experiences made and progress achieved in the implementation of earlier tranches; the data in the Plan will be provided by calendar year. The description should include a reference to the overall Plan and progress achieved, as well as any possible changes to the overall Plan that are foreseen. The description should also specify and explain in detail such changes to the overall Plan. This description of future activities can be submitted as a part of the same document as the narrative report under subparagraph 1(a) above; and
- (d) An Executive Summary of about five paragraphs, summarizing the information contained in subparagraphs 1(a) to 1(c) above.

APPENDIX 5-A: MONITORING INSTITUTIONS AND ROLES

1. The national ozone unit (NOU) of the Ministry of Environment will be responsible for the overall monitoring of all activities under the Plan. The NOU will oversee the planning, coordination, and daily implementation of the project. Additionally, it will assist the Government and non-Government

organizations in streamlining their activities to ensure smooth project implementation. The NOU will submit annual progress reports on the implementation status to the Lead IA to facilitate monitoring of the Plan's progress.

2. The NOU, in collaboration with the Ministry of Environment, which serves as the licensing authority for import and export permits, will monitor the annual consumption of HFCs and other ODS. The Lebanese Customs will oversee and regulate the import and export of these substances at entry points. Additionally, the NOU will coordinate with HFC and other ODS importers to gather essential data for periodic statistical reconciliation.

3. The NOU will also monitor the implementation of capacity-building activities, such as RAC technician training and customs and enforcement officers training, in collaboration with relevant agencies.

APPENDIX 6-A: ROLE OF THE LEAD IMPLEMENTING AGENCY

1. The Lead IA will be responsible for a range of activities, including at least the following:
 - (a) Ensuring performance and financial verification in accordance with this Agreement and with its specific internal procedures and requirements as set out in the Country's Plan;
 - (b) Assisting the Country in the preparation of the Tranche Implementation Reports and Plans as per Appendix 4-A;
 - (c) Providing independent verification to the Executive Committee that the Targets have been met and associated tranche activities have been completed as indicated in the Tranche Implementation Plan, consistent with Appendix 4-A;
 - (d) Ensuring that the experiences and progress are reflected in the updates to the overall Plan and in the future Tranche Implementation Plans, consistent with subparagraph 1(c) of Appendix 4-A;
 - (e) Fulfilling the reporting requirements of the Tranche Implementation Reports and Plans and of the overall Plan as specified in Appendix 4-A for submission to the Executive Committee;
 - (f) In the event that the last funding tranche is requested one or more years prior to the last year for which a consumption target had been established, annual Tranche Implementation Reports and, where applicable, verification reports on the current stage of the Plan should be submitted until all activities foreseen had been completed and HFC consumption targets had been met;
 - (g) Ensuring that appropriate independent technical experts carry out the technical reviews;
 - (h) Carrying out the required supervision missions;
 - (i) Ensuring the presence of an operating mechanism to allow for an effective and transparent implementation of the Tranche Implementation Plan and accurate data reporting;
 - (j) In case of reductions in funding for failure to comply in accordance with paragraph 11 of the Agreement, to determine, in consultation with the Country, the allocation of the reductions to the different budget items and to the funding of the Lead IA;
 - (k) Ensuring that disbursements made to the Country are based on the use of the indicators;

- (l) Providing assistance with the policy, management and technical support when required; and
- (m) Timely releasing funds to the Country/participating enterprises for completing the activities related to the project.

2. After consultation with the Country and taking into account any views expressed, the Lead IA will select and mandate an independent entity to carry out the verification of the Plan's results and of the consumption of Annex F substances mentioned in Appendix 1-A, as per subparagraph 5(b) of the Agreement and subparagraph 1(b) of Appendix 4-A.

APPENDIX 7-A: REDUCTIONS IN FUNDING FOR FAILURE TO COMPLY WITH THE TARGETS IN THE AGREEMENT

1. In accordance with paragraph 11 of the Agreement, the amount of funding provided may be reduced by US \$9.8 per CO₂-eq tonne of consumption beyond the level defined in row 1.2 of Appendix 2-A for each year in which the Target specified in row 1.2 of Appendix 2-A has not been met, on the understanding that the maximum funding reduction would not exceed the funding level of the tranche being requested. Additional measures might be considered in cases where non-compliance extends for two consecutive years. Where the country has failed to comply with the Agreement due to illegal trade, the reduction in funding would not be applied if the illegally traded controlled substances are seized and subsequently confiscated, destroyed, exported, or returned to the country of origin.

Annex II

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

Category of activity	HPMP – stage III		KIP – stage I		HPMP+KIP combined cost (US \$)
	Activity	Cost (US \$)	Activity	Cost (US \$)	
Phase-out of activities in manufacturing	Technical assistance for phasing-out HCFCs in commercial refrigeration	53,136	Phase-out of manufacturing in residential air-conditioning and commercial refrigeration sectors	2,353,606	2,406,742
Strengthening of policies and licensing system	Development of regulations for controlling and monitoring HCFCs and regulations to prohibit manufacturing equipment using HCFCs	70,000	Strengthening of policies and regulations for HFC monitoring and control and development of regulations to reduce dependence on HFCs	60,000	130,000
Training of customs officers	Training of customs and enforcement officers on regulations relating to HCFCs	97,500	Training of enforcement officers on HFC-related policies and regulations	104,250	201,750
Provision of tools	Provision of tools for training technicians for servicing air-conditioners	278,064			278,064
Support for training centres			Equipment support for training centres for training technicians on good practices for MAC and refrigeration equipment	450,589	450,589
Training of refrigeration technicians			Training support for refrigeration equipment technicians on good service practices and safe adoption of alternatives	153,000	153,000
Training of air-conditioning technicians	Training of trainers and service technicians on good service practices	187,500			187,500
Training of MAC technicians and refrigeration technicians			Training support for MAC technicians on good service practices	135,500	135,500
Strengthening of service sector with equipment support			Provision of tools for service technicians for good service practices in MAC and refrigeration	988,784	988,784

	HPMP – stage III		KIP – stage I		HPMP+KIP combined cost (US \$)
Category of activity	Activity	Cost (US \$)	Activity	Cost (US \$)	
Awareness	Awareness and outreach activities for adoption of low-GWP alternatives to replace HCFCs and promoting gender sensitive approaches for HPMP implementation	389,000	Awareness and outreach activities for adoption of low-GWP alternatives to reduce growth in HFC consumption	145,000	534,000
Coordination and monitoring	Project management and coordination of HPMP activities	107,500	Project management and coordination of KIP activities	418,500	526,000
Total		1,182,700		4,809,229	5,991,929
Percentage of total (%)		19.7		80.3	100