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EXECUTIVE COMMITTEE OF  
THE MULTILATERAL FUND FOR THE  
IMPLEMENTATION OF THE MONTREAL PROTOCOL  
Ninety-second Meeting  
Montreal, 29 May to 2 June 2023  
Item 9(d) of the provisional agenda<sup>1</sup>

**PROJECT PROPOSAL: CAMEROON**

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)

UNIDO

<sup>1</sup> UNEP/OzL.Pro/ExCom/92/1

Pre-session documents of the Executive Committee of the Multilateral Fund for the Implementation of the Montreal Protocol are without prejudice to any decision that the Executive Committee might take following issuance of the document.

**PROJECT EVALUATION SHEET – MULTI-YEAR PROJECTS**  
**Cameroon**

<b>(I) PROJECT TITLE</b>	<b>AGENCY</b>
Kigali HFC implementation plan (stage I)	UNIDO

<b>(II) LATEST ARTICLE 7 DATA (Annex F)</b>	Year: 2022	1,800.30 mt	3,203,591 CO <sub>2</sub> -eq tonnes
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<b>(III) LATEST COUNTRY PROGRAMME SECTORAL DATA (CO<sub>2</sub>-eq tonnes)</b>								<b>Year: 2022</b>	
Chemical	Aerosol	Foam	Fire-fighting	Refrigeration			Solvent	Other	Total sector consumption
				Manufacturing		Servicing			
				Air-conditioning	Other				
HFC-32						1,688			1,688
HFC-134a						1,666,379			1,666,379
HFC-227ea			14,490						14,490
R-404A						489,416			489,416
R-407C						154,680			154,680
R-410A						859,006			859,006
R-507A						17,933			17,933

<b>(IV) CONSUMPTION DATA (CO<sub>2</sub>-eq tonnes)</b>			
Baseline (average 2020-2022 HFC consumption plus 65% of HCFC baseline):	n/a	Starting point for sustained aggregate reductions:	n/a
<b>CONSUMPTION ELIGIBLE FOR FUNDING</b>			
Already approved:	0	Remaining:	n/a

<b>(V) ENDORSED BUSINESS PLAN</b>		<b>2023</b>	<b>2024</b>	<b>2025</b>	<b>Total</b>
UNIDO	HFC phase-down (CO <sub>2</sub> -eq tonnes)	0.0	0.0	0.0	0.0
	Funding (US \$)	0	280,771	0	280,771

<b>(VI) PROJECT DATA</b>		<b>2023</b>	<b>2024</b>	<b>2025</b>	<b>2026</b>	<b>2027</b>	<b>2028</b>	<b>2029</b>	<b>2030</b>	<b>Total</b>	
Montreal Protocol consumption limits (CO <sub>2</sub> -eq tonnes) (estimated values)		n/a	4,760,203	4,760,203	4,760,203	4,760,203	4,760,203	4,284,183	4,284,183	n/a	
Maximum allowable consumption (CO <sub>2</sub> -eq tonnes) (estimated values)		3,579,012	3,753,448	3,728,532	3,702,578	3,676,624	3,650,670	3,624,716	3,599,555	n/a	
Project costs requested in principle (US \$)	UNIDO	Project costs	355,500	0	0	406,000	0	297,000	0	153,000	1,211,500
	Support costs	24,885	0	0	28,420	0	20,790	0	10,710	84,805	
Total project costs recommended in principle (US \$)		355,500	0	0	406,000	0	297,000	0	153,000	1,211,500	
Total support costs recommended in principle (US \$)		24,885	0	0	28,420	0	20,790	0	10,710	84,805	
Total funds recommended in principle (US \$)		380,385	0	0	434,420	0	317,790	0	163,710	1,296,305	

<b>(VII) Request for approval of funding for the first tranche (2023)</b>		
<b>Implementing agency</b>	<b>Funds recommended (US \$)</b>	<b>Support costs (US \$)</b>
UNIDO	355,500	24,885
<b>Total</b>	<b>355,500</b>	<b>24,885</b>

<b>Secretariat's recommendation:</b>	Individual consideration
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## PROJECT DESCRIPTION

1. On behalf of the Government of Cameroon, UNIDO as the designated implementing agency has submitted a request for stage I of the Kigali HFC implementation plan (KIP), at a total cost of US \$1,211,500, plus agency support costs of US \$84,805.<sup>2</sup>
2. The implementation of stage I of the KIP will assist Cameroon in meeting the target of 10 per cent reduction in HFC baseline consumption by 1 January 2029 by maintaining HFC consumption levels more than 20 per cent below the HFC baseline for all the years of the plan and achieving an overall level of HFC consumption 24 per cent below the HFC baseline by 1 January 2030.
3. The first tranche of stage I of the KIP being requested at this meeting amounts to US \$355,500, plus agency support costs of US \$24,885 as originally submitted, for the period July 2023 to June 2025.

### Background

4. Cameroon ratified all the amendments to the Montreal Protocol, including the Kigali Amendment on 24 August 2021. Cameroon has an HCFC consumption baseline of 88.80 ODP tonnes or 1,414.26 metric tonnes (mt) that will be completely phased out by 1 January 2030.<sup>3</sup>

### Status of implementation of the HCFC phase-out management plan

5. Stage I of the HCFC phase-out management plan (HPMP) for Cameroon was approved at the 64<sup>th</sup> meeting<sup>4</sup> to meet the 20 per cent reduction from the baseline by 2017<sup>5</sup> resulting in the phase-out of 20.50 ODP tonnes of HCFCs (i.e., 9.70 ODP tonnes of HCFC-22 and 10.80 ODP tonnes of HCFC-141b), in the amount of US \$1,182,725, plus agency support costs.
6. Stage II of the HPMP for Cameroon was approved at the 82<sup>nd</sup> meeting<sup>6</sup> to reduce HCFC consumption by 75 per cent of the baseline by 2025, in the amount of US \$1,383,500, plus agency support costs. Stage II of the HPMP will be completed by December 2026, as stipulated in the Agreement between the Government of Cameroon and the Executive Committee.

### Status of implementation of HFC-related activities

7. At the 75<sup>th</sup> meeting, Cameroon received funding to conduct a survey on the use of alternatives to ozone-depleting substances (ODSs) (US \$110,000), which was completed in December 2017. At the 80<sup>th</sup> meeting, Cameroon received funding to implement the enabling activities for HFC phase-down (US \$150,000), which were completed in June 2019. These activities assisted the country *inter alia* in ratifying the Kigali Amendment; updating its licensing system to include HFCs and HFC blends; undertaking a survey on the imports of HFCs and equipment containing them and the related market trends; reporting HFC import data under Article 7 of the Montreal Protocol; identifying capacity-building needs for refrigeration technicians to support the transition to alternatives; analyzing policy options to facilitate HFC phase-down; holding discussions with the Ministry of Energy on the introduction of minimum energy performance standards (MEPS) and labeling requirements; and strengthening the dialogue with energy experts at the national and regional levels.

<sup>2</sup> As per the letter of 27 January 2023 from the Ministry of the Environment, Protection of Nature and Sustainable Development of Cameroon to UNIDO.

<sup>3</sup> Except for those HCFCs allowed for a servicing tail between 2030 and 2040, where required, consistent with the provisions of the Montreal Protocol.

<sup>4</sup> Decision 64/41 and document UNEP/OzL.Pro/ExCom/64/26.

<sup>5</sup> The starting point for Cameroon was reassessed at 77.56 ODP tonnes at the 82<sup>nd</sup> meeting.

<sup>6</sup> Decision 82/59 and document UNEP/OzL.Pro/ExCom/82/43

## **Policy, regulatory, and institutional frameworks**

8. The Ministry of the Environment, Protection of Nature and Sustainable Development (MINEPDED) is the national body responsible for the implementation of the Montreal Protocol. The national ozone unit (NOU), within the Department of Standards and Controls of the MINEPDED, is responsible for collecting and reporting the consumption of controlled substances under the Montreal Protocol, operating the ODS import licensing system, allocating quotas, and keeping records of imports of controlled substances and the equipment containing them. The NOU is responsible for the implementation of all projects approved by the Multilateral Fund.

9. The National Ozone Committee is an advisory body to the NOU and comprises key stakeholders involved in phase-down activities. It is composed of representatives of public institutions, private-sector non-governmental organizations and civil society. Its role includes examining issues related to the management of Montreal Protocol controlled substances; participating in the development and implementation of regulatory measures for the control of these substances; monitoring the implementation of programmes and projects to phase down HFCs and phase out ODSs; and participating in outreach and public awareness activities on protecting the ozone layer.

10. The three main parties involved in the process of imports of Montreal Protocol controlled substances in Cameroon are the NOU, the Single Window for Foreign Trade Operations (GUCE) and the Customs Department. Authorization to import HCFCs or HFCs is granted by the NOU to the importer prior to the import taking place through issuance of a licence/technical visa. There is a verification process before the consignment leaves the port to cross-check actual imports against what has been declared as imports. Moreover, the NOU team goes back to the invoices submitted with the licence/visa application to identify individual substances. Cameroon requires importers to provide the NOU with information relating to the quantity imported within 30 days from the date the consignment is released, and to submit a report before a new licence/visa can be issued.

11. Cameroon will issue HFC quotas for 2024, the first year of the HFC consumption freeze. The national quota will be set in accordance with the maximum allowable limits and distributed to importers in accordance with schedules established by the National Ozone Committee. The quota will be issued for each substance in metric tonnes and monitored based on CO<sub>2</sub>-equivalent (CO<sub>2</sub>-eq) tonnes, so that individual importers do not exceed their assigned amounts, thereby not exceeding the national targets for HFC consumption in CO<sub>2</sub>-eq tonnes.

12. Regional regulations by the Central African Economic and Monetary Union that harmonize regulations for importing, marketing, using, and re-exporting ODSs and the equipment containing them have yet to be extended to HFCs, including the adoption of the Harmonized System (HS) updated in 2022.

## **HFC consumption and sector distribution**

13. Cameroon only imports HFCs. In 2022, Cameroon consumed HFC-134a (54.2 per cent of total HFC consumption in CO<sub>2</sub>-eq tonnes), R-125 (31.1 per cent), HFC-143a (9.4 per cent), HFC-32 (4.8 per cent), and HFC-227ea (0.5 per cent). Table 1 presents the country's HFC consumption by commercial substance, as reported under the Article 7 report.

**Table 1. HFC consumption in Cameroon from Article 7 report (2019–2022)**

HFC	GWP	2019	2020	2021	2022	Share of HFC consumption in 2022 (%)
<b>Metric tonnes (*)</b>						
HFC-32	675	258.95	220.95	222.58	228.31	12.7
HFC-125	3,500	339.43	277.69	280.37	284.71	15.8
HFC-134a	1,430	1,387.84	1,350.28	1,197.84	1,215.64	67.5
HFC-143a	4,470	91.52	64.71	65.96	67.15	3.7
HFC-227ea	3,220	4.50	4.50	4.50	4.50	0.3
<b>Total (mt)</b>		<b>2,082.24</b>	<b>1,918.14</b>	<b>1,771.25</b>	<b>1,800.30</b>	<b>100</b>
<b>CO<sub>2</sub>-eq tonnes</b>						
HFC-32	675	174,790	149,142	150,238	154,107	4.8
HFC-125	3,500	1,187,998	971,912	981,295	996,492	31.1
HFC-134a	1,430	1,984,605	1,930,906	1,712,911	1,738,359	54.2
HFC-143a	4,470	409,112	289,263	294,841	300,143	9.4
HFC-227ea	3,220	14,490	14,490	14,490	14,490	0.5
<b>Total (CO<sub>2</sub>-eq tonnes)</b>		<b>3,770,996</b>	<b>3,355,712</b>	<b>3,153,776</b>	<b>3,203,591</b>	<b>100</b>

\* Rounded-off to two decimal places

14. The overall reduction trend in consumption from 2019 to 2021 is due to the slowdown of the economy and trade, which were affected by the COVID-19 pandemic; the growth observed from 2021 to 2022 is due to economic recovery post COVID-19. However, the population of HFC-based equipment installed has been increasing due to the ban on HCFC-22 equipment imports, the relatively slow introduction of non-HFC alternatives in the country and increase in use of HFCs in service, local assembly and installation.

#### *Country programme implementation report*

15. The Government of Cameroon reported HFC sector consumption data under the 2022 country programme (CP) implementation reports that is consistent with the data reported under Article 7 of the Montreal Protocol.

#### Sector distribution of HFCs

16. Fluorinated refrigerants constitute 99.5 per cent of the total tonnage of controlled and alternative substances imported into Cameroon. All alternative refrigerants combined represent 0.5 per cent of total imports. HFCs are used for servicing all refrigeration and air-conditioning (RAC) equipment, and for the installation and assembly of equipment in the commercial sector.<sup>7</sup> The age of the RAC installations and bad servicing practices, such as poor or non-existent leakage repair, venting, and inaccurate charge levels create the conditions for the country's high demand for refrigerants.

17. Based on the survey carried out during preparation of the KIP, in 2021, HFCs were mainly consumed for servicing in commercial refrigeration (61.2 per cent in mt and 58.1 per cent in CO<sub>2</sub>-eq tonnes), followed by air-conditioning (28.4 per cent in mt and 31.9 in CO<sub>2</sub>-eq tonnes), domestic refrigeration (5.4 per cent in mt and 4.3 in CO<sub>2</sub>-eq tonnes), and other sub-sectors as shown in table 2.

<sup>7</sup> Determining the exact number of equipment assembled or installed annually is difficult due to the dynamic characteristics of the commercial sector.

**Table 2. HFC consumption in firefighting and the RAC servicing sub-sectors (2021)**

Sector	HFC-134a	HFC-32	HFC-227ea	R-404A	R-407C	R-410A	R-507	Total	Share of consumption (%)
<b>Metric tonnes</b>									
<b>Firefighting</b>	0.00	0.00	4.50	0.00	0.00	0.00	0.00	4.50	0.3
<i>Subtotal</i>	<i>0.00</i>	<i>0.00</i>	<i>4.50</i>	<i>0.00</i>	<i>0.00</i>	<i>0.00</i>	<i>0.00</i>	<i>4.50</i>	
<b>RAC sub-sectors</b>									
Domestic refrigeration	96.00	0.00	0.00	0.00	0.00	0.00	0.00	96.00	5.4
Commercial refrigeration	984.20	0.00	0.00	110.00	0.00	0.00	0.00	1,094.20	61.2
Industrial refrigeration	2.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.1
Residential air-conditioning (AC)	0.00	16.40	0.00	0.00	86.00	270.00	0.00	372.40	20.8
Other AC	0.00	0.00	0.00	0.00	0.00	135.50	0.00	135.50	7.6
Transport refrigeration	9.00	0.00	0.00	13.00	0.00	0.00	4.00	26.00	1.5
Mobile air-conditioning (MAC)	57.00	0.00	0.00	0.00	0.00	0.00	0.00	57.00	3.2
<i>Subtotal RAC</i>	<i>1,148.20</i>	<i>16.40</i>	<i>0</i>	<i>123.00</i>	<i>86.00</i>	<i>405.50</i>	<i>4.00</i>	<i>1,787.60</i>	
<b>Total (mt)</b>	<b>1,148.20</b>	<b>16.40</b>	<b>4.50</b>	<b>123.00</b>	<b>86.00</b>	<b>405.50</b>	<b>4.00</b>	<b>1,787.60</b>	<b>100.0</b>
<b>CO<sub>2</sub>-eq tonnes</b>									
<b>Firefighting</b>	0.00	0.00	14,490	0.00	0.00	0.00	0.00	14,490	0.5
<i>Subtotal</i>	<i>0.00</i>	<i>0.00</i>	<i>14,490</i>	<i>0.00</i>	<i>0.00</i>	<i>0.00</i>	<i>0.00</i>	<i>14,490</i>	
<b>RAC sub-sectors</b>									
Domestic refrigeration	137,280	0.00	0.00	0.00	0.00	0.00	0.00	137,280	4.3
Commercial refrigeration	1,407,406	0.00	0.00	431,376	0.00	0.00	0.00	1,838,782	58.1
Industrial refrigeration	2,860	0.00	0.00	0.00	0.00	0.00	0.00	2,860	0.1
Residential AC	0.00	11,070	0.00	0.00	152,551	563,625	0.00	727,246	23.0
Other AC	0.00	0.00	0.00	0.00	0.00	282,856	0.00	282,856	8.9
Transport refrigeration	12,870	0.00	0.00	50,981	0.00	0.00	15,940	79,791	2.5
MAC	81,510	0.00	0.00	0.00	0.00	0.00	0.00	81,510	2.6
<i>Subtotal</i>	<i>1,641,926</i>	<i>11,070</i>	<i>0.00</i>	<i>482,357</i>	<i>152,551</i>	<i>846,481</i>	<i>15,940</i>	<i>3,164,815</i>	
<b>Total (CO<sub>2</sub>eq)</b>	<b>1,641,926</b>	<b>11,070</b>	<b>14,490</b>	<b>482,357</b>	<b>152,551</b>	<b>846,481</b>	<b>15,940</b>	<b>3,164,815</b>	<b>100.0</b>

18. There are 6,790 identified technicians (including 415 women), 4,800 of whom work in informal workshops. There are 360 formal workshops, owned by 60 enterprises with several branches, employing 1,970 technicians for an average of 5.5 technicians per workshop and almost 33 technicians per enterprise. There are 2,717 informal workshops with 4,800 technicians for an average of 1.77 technicians per workshop. In addition, there are 335 identified technicians working in 306 workshops for mobile AC (MAC). The technicians in the MAC sector have not received training in good servicing practices under the Multilateral Fund. A brief description of consumption by servicing sub-sector is presented below.

*Domestic, commercial, industrial and transport refrigeration servicing*

19. Domestic refrigeration applications predominantly use HFC-134a (97 per cent) and a few use R-600a (3 per cent) in small fridges and freezers mainly for domestic purposes and in some commercial and health-care facilities for medicine storage. The introduction of R-600a refrigerators is slow due to their price, concerns about refrigerant flammability, and lack of expertise on the part of technicians. There is a lack of information on the number of technicians who are handling domestic appliances and the practices in place. Technicians servicing domestic appliances are mostly in the informal sector and generally do not work on other equipment. The same applies to some of the technicians in commercial refrigeration.

20. The commercial refrigeration sub-sector is the largest HFC consumer among the sub-sectors, even though it does not have the most pieces of equipment. The consumption rates are attributed to the higher average refrigerant charge inside the units, as well as leakage rates since most of the larger commercial refrigeration units are locally assembled, and leakage from the connected components increases with the age of the systems. The commercial refrigeration servicing sector requires HCFC-22 (16 per cent) and HFCs (84 per cent) mainly for servicing supermarket display cases, cold rooms, bakeries, and other food preparation facilities. This sub-sector contains factory-sealed units as well as bespoke refrigeration units assembled in workshops or on site. The sector includes workshops, technicians, and small and medium-sized enterprises (SMEs) designing/assembling and installing equipment using HFC-134a, R-404A and HCFC-22. In most cases, these SMEs act as trusted advisers to the equipment owners in the selection of technology.

21. Industrial refrigeration applications consume 0.1 per cent of the HFCs in the country (in CO<sub>2</sub>-eq tonnes). In industrial refrigeration, the share of ammonia and HCFC-22 is about 80 per cent, while the share of HFCs is about 20 per cent. Among others, these units are generally used in fisheries, the agro-industry, large food processing facilities, the cosmetic industry, and ice makers. These refrigeration units are usually imported and well maintained by dedicated service technicians employed by the facilities where these units are installed.

22. Transport refrigeration only consumes 2.5 per cent of the HFCs in the country (in CO<sub>2</sub>-eq tonnes). The transport refrigeration sub-sector predominantly relies on HFCs (91 per cent), with only 9 per cent use of HCFC-22. The transport refrigeration sub-sector is a relatively large consumer by unit because of excessive wear and tear during road journeys. Additional challenges are the geographical spread of service workshops along transport roads into the country, and the slow introduction of low-global-warming-potential (GWP) alternatives.

#### *Residential and commercial air-conditioning servicing*

23. Residential AC equipment uses HCFC-22 (31 per cent) and HFCs (69 per cent). R-410A-based AC units are rapidly replacing HCFC-22 units. HFC-32-based or R-290-based AC units are scarce. Meanwhile, commercial AC systems use equivalent amounts of HFCs and HCFC-22, and there are still HCFC-based chiller units. Servicing in this sector is provided by relatively larger enterprises. Many of the HPMP activities address technicians working in the AC sector given its extensive use of HCFC-22.

#### *Mobile air-conditioning servicing*

24. This sector, which was not assisted during the HPMP, consumes only HFC-134a and accounts for 2.6 per cent of HFCs in CO<sub>2</sub>-eq tonnes. MAC in Cameroon is prone to leaks and commonly repaired with used parts from other vehicles. Most of the vehicles used in the country are air conditioned, each vehicle is serviced once per year and practically its entire charge is replaced. Servicing practices need to be improved to ensure proper operation of the units, reduce leaks, and recover the refrigerant. Alternatives such as HFO-1234yf are still not available and their introduction will be determined by the AC technology used in cars imported into the country, many of them second-hand vehicles.

#### *Installation and assembly*

25. Cameroon has an assembly sector that addresses both air-conditioning and refrigeration units in various capacities. Local assemblers use both HCFC-22 and HFCs for a variety of products. Cameroon did not set out a distinction of servicing from the assembly in stage I of the KIP. Still, the country could do so for further KIP stages.

*Firefighting applications*

26. In Cameroon, HFC-227ea is used for servicing firefighting applications for refilling and replacing leakages in firefighting central systems used at hydrocarbon storage facilities, refineries, and aluminium manufacturing plants.

*Minimum energy performance standards*

27. Currently, there are no MEPS or labeling requirements in place in Cameroon. The NOU had preliminary discussion with the Ministry of Energy about establishing MEPS for RAC equipment. UNIDO indicated that the German development agency GIZ is working on MEPS within its *Refroidissement respectueux de l'ozone et du climat en Afrique de l'Ouest et Centrale* (Ozone and Climate-Friendly Cooling in West and Central Africa) (ROCA) project.

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

28. Cameroon is proposing three stages for KIP implementation. Stage I is proposed to be implemented simultaneously with the HPMP until 2030. Stage II is expected to cover a period of 10 years (from 2030 to 2040), and stage III is expected to cover a period of five years until 2045.

Estimated HFC baseline and proposed HFC reductions during stage I

29. The Government of Cameroon has reported Article 7 data from 2020 to 2022. By adding 65 per cent of the HCFC baseline (in CO<sub>2</sub>-eq tonnes) to the average HFC consumption in 2020-2022, the estimated HFC baseline is 4,760,203 CO<sub>2</sub>-eq tonnes, as shown in table 3.

**Table 3. Estimated HFC baseline for Cameroon (CO<sub>2</sub>-eq tonnes)**

Baseline component	2020	2021	2022	2020-2022 Average
HFC consumption	3,355,712	3,153,776	3,203,591	3,237,693
HCFC baseline (65%)				1,522,510
HFC estimated baseline				<b>4,760,203</b>

30. The Government of Cameroon and UNIDO projected HFC consumption based on annual average economic growth of 6 per cent. They considered that HFC consumption would follow the same pattern to calculate the level of HFC reductions required to ensure compliance with the Montreal Protocol at different points in time. The estimated HFC consumption shows potential non-compliance with 2029 and 2030 HFC consumption targets, as shown in table 4.

**Table 4. Unconstrained scenario of HFC consumption forecast at 6 per cent growth rate and required reductions (CO<sub>2</sub>-eq tonnes)**

	2022*	2023	2024	2025	2026	2027	2028	2029	2030
HFC consumption growing at an annual rate of 6%	3,203,591	3,395,806	3,599,554	3,815,528	4,044,459	4,287,127	4,544,354	4,817,016	5,106,037
HFC phased in from HCFC phase-out <sup>8</sup>	0	183,206	183,206	183,206	183,206	183,206	183,206	183,206	183,206

<sup>8</sup> It has been estimated assuming that HCFC-22 consumed in commercial refrigeration and air-conditioning will be fully substituted by R-404A and R-410A, respectively and this quantity, in CO<sub>2</sub>-eq tonnes, was equally divided over eight years. This quantity would be in addition to the 6 per cent growth in HFC consumption.



	2022*	2023	2024	2025	2026	2027	2028	2029	2030
Total HFC estimated consumption	3,203,591	3,579,012	3,782,760	3,998,734	4,227,665	4,470,333	4,727,560	5,000,222	5,289,243
Montreal Protocol limit based on the estimated baseline	n/a	n/a	4,760,203	4,760,203	4,760,203	4,760,203	4,760,203	4,284,183	4,284,183
Required HFC reductions	n/a	n/a	0	0	0	0	0	716,039	1,005,060

(\*) As per Article 7 data reported by Cameroon

31. Stage I of the KIP proposes to ensure that HFC consumption remains lower than the Montreal Protocol limits as shown in table 5.

**Table 5. HFC levels proposed by stage I of the KIP for Cameroon (CO<sub>2</sub>-eq tonnes)**

		2023	2024	2025	2026	2027	2028	2029	2030
Montreal Protocol limit according to the baseline		n/a	4,760,203	4,760,203	4,760,203	4,760,203	4,760,203	4,284,183	4,284,183
<b>Estimated HFC consumption under plan</b>		<b>3,579,012</b>	<b>3,753,448</b>	<b>3,728,532</b>	<b>3,702,578</b>	<b>3,676,624</b>	<b>3,650,670</b>	<b>3,624,716</b>	<b>3,599,555</b>
Difference between the Montreal Protocol limits and consumption proposed	CO <sub>2</sub> -eq tonnes	n/a	1,006,755	1,031,671	1,057,625	1,083,579	1,109,533	659,467	684,628
	%	n/a	21	22	22	23	23	15	16
<b>Estimated HFC reductions in 2030 compared to baseline in CO<sub>2</sub>-eq tonnes</b>									<b>1,160,648</b>

32. As shown in table 5, while HFC consumption may not decrease on a year-to-year basis during the period 2023 to 2030, stage I of the KIP would result in sustained reduction of HFC consumption below the Montreal Protocol limits. Through early actions, HFC consumption levels would be around 22 per cent below the HFC baseline between 2024 and 2028, and around 15 per cent below the Montreal Protocol control limit in 2029 and 2030. Overall, the level of consumption to be achieved by Cameroon in 2030 is 1,160,648 CO<sub>2</sub>-eq tonnes (24 per cent) below the baseline level.

### Strategy components

33. Cameroon developed its overarching strategy and proposed funding based on a sectoral approach in RAC servicing and other cross-cutting activities, as well as early activities to avoid the growth of high-GWP HFCs. Cameroon has established its funding needs only for stage I of the KIP, which runs until 2030 to coincide with the elimination of HCFCs as the KIP builds on synergies with the work under the HPMP.

34. Noting that the Kigali Amendment allows for growth in HFC consumption up to a level of 65 per cent the value of the HCFC baseline and that under the unconstrained scenario described in table 5, if no action is taken the consumption in Cameroon could eventually grow to that level, the Government is basing its request for funds for stage I on its needs for a concerted effort to manage HFC growth at a time when it is working on the last two stages of the HPMP to eliminate HCFCs and prevent their replacement by high-GWP HFCs. Rather than allowing uncontrolled growth and request funding for reductions at a future year, Cameroon is proposing a number of early actions to maintain HFC consumption more than 20 per cent below the Montreal Protocol control limits from the first year of the stage.

35. In consultation with stakeholders the Government of Cameroon determined that stage I of the KIP would prioritize three sectors, namely, commercial and domestic refrigeration, residential and other air-conditioning, and MAC. Activities planned under the KIP would primarily relate to reducing

consumption of HFC-134a, R-404A and R-410A. Capacity building, the development of codes for low-GWP technologies, training and curriculum updates, awareness raising for industry stakeholders, end-user programmes, and support for local associations will be implemented to achieve the consumption reduction. In addition, stage I of the KIP includes the refrigerant management component, including the end-of-life management of refrigerants, building on the activities initiated under the HPMP; the policy component aimed at strengthening the regulatory framework and control mechanisms; and the project coordination and monitoring component, including in-depth surveys to measure the results of the activities.

36. Elements of the KIP for Cameroon with their cost breakdown are presented below:

- (a) *Domestic and commercial refrigeration:* Support the existing RAC associations to increase their participation in training and capacity building activities; establish two additional centres of excellence to train 920 servicing technicians in the safe handling of low-GWP refrigerants, and provide basic tools for training on flammable refrigerants; and organize a technology demonstration on low-GWP technologies in the health sector (US \$312,000);
- (b) *Residential and commercial air conditioning:* Train 120 air-conditioning technicians in new technologies with lower-GWP refrigerants, especially in the commercial AC sub-sector; and improve the capacity of SMEs in the commercial AC sector to handle low-GWP technologies in at least three end-users (US \$80,000);
- (c) *MAC:* Assist the MAC sector in ensuring proper servicing operations and leakage reduction in MAC units by providing training to 355 MAC servicing technicians; develop a code of practice; support the creation of a technical association; and plan and promote the recycling of HFC-134a in the MAC sector, including procurement of 32 recycling machines and recovery cylinders (US \$235,500);
- (d) *Firefighting:*<sup>9</sup> Assist this sector by identifying the needs for training, preparing the curriculum for training<sup>10</sup> and conducting sessions in collaboration with the supplier of alternatives, who will co-finance part of the cost (US \$45,000);
- (e) *Refrigerant management:* Assess the economic feasibility of the existing recovery and recycling operation to include refrigerant reclaiming; establish a plan for the sound management of non-reusable refrigerants, including an intermediate containment strategy; and conduct a study on the management of end-of-life of appliances and HFC banks (US \$65,000);
- (f) *Strengthening the regulatory framework and control mechanisms:* Provide support to assess the country's quota system and approach, update the electronic licensing system and add HFC-based equipment to the licensing and quota systems, reinforce the record-keeping and reporting system by enterprises, and conduct an assessment to determine the proper time for restricting or banning the import of different types of RAC equipment, and the necessary enforcement mechanisms; include the revised HS customs codes in the software of the Customs Department and enhance customs' electronic records of HFC imports, improve continuous market monitoring and conduct refrigerant surveys; provide sustained training to 350 customs officers from 75 control posts in addition to the 32 covered by the HPMP, and provide 20 refrigerant identifiers to customs; create a database with different categories of service workshops and trained technicians; develop, revise and adopt standards and labeling of equipment, including in coordination with the regional economic and monetary community (Central African Economic and Monetary Community); conduct

<sup>9</sup> The sector uses HFC-227ea (GWP = 3,220) with available replacements like CO<sub>2</sub> and water.

<sup>10</sup> The training will focus on fire certification, handling, risk assessment and safety, and managing the alternatives.

awareness-raising campaigns and environmental sensitization about the selection of refrigerants that will contribute to the industry's transition towards zero- or low-GWP alternatives (US \$359,000); and

- (g) *Project monitoring and coordination:* Ensure continuous oversight of project activities by the NOU, ongoing communication with the implementing agency, field visits to stakeholders, and regular reviews and preparation of reports (US \$115,000), with the following cost breakdown: international and national consultants (US \$75,000), monitoring travels (US \$30,000), consultation meetings (US \$8,000), and other expenses (US \$2,000).

Total cost of stage I of the Kigali HFC implementation plan

37. The Government of Cameroon proposes to implement the KIP in three stages, with stage I being implemented simultaneously with the HPMP until 2030. The budget for stage I has been established at US \$1,211,500. In the absence of cost funding guidelines, the funding request is based on the best available estimate for each activity based on Cameroon's experience in implementing the same or similar activities.

38. The proposed activities and costs for stage I of the KIP are summarized in table 6.

**Table 6. Cost of activities to be implemented in stage I of the KIP**

Activity	Cost by sector (US \$)				Total cost (US \$)
	Refrigeration	AC	MAC	Firefighting	
<i>Activities addressing the priority sectors</i>					
Support for RAC associations	10,000		10,000		20,000
Provision of tools for training	20,000		20,000		40,000
Technician training	168,000	45,000	130,500	45,000	388,500
Planning and promoting recovery and recycling			50,000		50,000
Development of codes of practice			25,000		25,000
SME programmes		35,000			35,000
Technology demonstration in the health sector	114,000				114,000
<b>Sub-total for activities addressing priority sectors</b>	<b>312,000</b>	<b>80,000</b>	<b>235,500</b>	<b>45,000</b>	<b>672,500</b>
<b>Activity</b>					<b>Cost (US \$)</b>
<i>Activities common to all sectors</i>					
<i>Refrigerant management</i>					
Assessment of the economic feasibility of reclamation facilities					35,000
Establish sound management of non-reusable refrigerants					15,000
Study on the management of end-of-life of appliances and HFC banks					15,000
<b>Sub-total for refrigerant management</b>					<b>65,000</b>
<i>Regulatory framework and control mechanisms</i>					
Strengthening the HFC licensing and quota system, including assessment on restriction/banning the import of RAC equipment					36,000
Strengthening record-keeping and reporting by enterprises					10,000
Provision of refrigerant identifiers to customs					70,000
Training 350 customs officers and enforcement officers, developing a curriculum					95,000
Strengthening HFC import records by customs					15,000
Improving continuous market monitoring, and conducting surveys					50,000
Categorizing service workshops					23,000
Coordinating standards and labeling schemes					20,000

Awareness-raising and environmental sensitization	40,000
<b>Sub-total for the regulatory framework and control mechanisms</b>	<b>359,000</b>
Coordination and management of KIP implementation	115,000
<b>Total for stage I of the KIP</b>	<b>1,211,500</b>

*Simultaneous implementation of HCFC phase-out and HFC phase-down*

39. The Government of Cameroon included in its submission information related to the simultaneous implementation of the HPMP and the KIP, including its commitment to harmonize activities for the phase-out of HCFCs and phase-down of HFC consumption to the extent possible, on the understanding that both multi-year agreements would be governed by separate agreements between the country and the Executive Committee. The Government identified activities that could be implemented in an integrated manner minimizing expenses and logistical costs, and activities that would need to be implemented in parallel.

40. Activities that could be implemented in an integrated manner include the procurement of tools; some regulatory measures; training and certification of technicians; training of customs officers; strengthening technical schools and refrigeration associations; refrigerant management strategies; adopting standards and codes of practice to facilitate the safe adoption of flammable and/or toxic low-GWP refrigerants; and project coordination.

41. Activities that would need to be implemented in parallel include awareness-raising campaigns specific to sectoral activities, SME programmes, technology demonstration programmes, training activities for specific sectors such as MAC and domestic refrigeration, and the distribution of basic equipment and service tools including recovery/recycling units for those sectors.

42. Stage I of the KIP will be implemented in four tranches. The schedule of HFC phase-down and HCFC phase-out commitments, and of the KIP and HPMP tranches is presented in Annex I.

*Gender policy implementation<sup>11</sup>*

43. The main barriers identified to greater participation by women in the different KIP activities are an inadequate capacity at the national level to implement gender mainstreaming activities; stakeholders' awareness of gender issues was limited; women were not showing interest in joining RAC activities; there was no clear guidance on what gender activities could be proposed and included in project activities; and there was a lack of dedicated funds specifically to implement the gender mainstreaming policy in Multilateral Fund projects. The NOU's plan for addressing these barriers includes consultation at the regional network meetings on maximizing women's participation in KIP activities; pooling efforts with other departments of the ministry to add a gender specialist and additional funding for gender-awareness activities; and coordinating with the relevant ministries to promote women already working in the industry and to encourage the participation of women in the RAC sector.

44. Furthermore, the NOU of Cameroon would undertake different steps to maximize the participation of women in customs training and technician training and some female trainers would be engaged as role models in the implementation under stage I of the KIP. In the course of implementation of the KIP, the NOU will collect gender disaggregated data; include the gender dimension in the selection of beneficiaries for end-user activities; ensure the participation of women in the training for customs officers and RAC technicians and demonstration projects; promote the participation of women in the RAC programmes in secondary and vocational schools; encourage women working in the field of refrigeration to join RAC

<sup>11</sup> In line with decision 84/92(d), decision 90/48(c) encouraged bilateral and implementing agencies to continue ensuring that the operational gender mainstreaming policy was applied to all projects, taking into consideration the specific activities presented in table 2 of document UNEP/OzL.Pro/ExCom/90/37.

associations; remove any misconceptions that exist about women's abilities in performing certain tasks through a dedicated chapter in the Code of Practices, and sensitize stakeholders to the gender policy of the Multilateral Fund. The environmental sensitization activities include a special focus on women's inclusion, and gender will be considered in the recruitment of international and national consultants.

Activities planned for the first tranche of stage I

45. The first funding tranche of stage I of the KIP in the total amount of US \$355,500 will be implemented between July 2023 and June 2026 and will include the following activities:

- (a) *Domestic and commercial refrigeration:* Support the existing RAC associations to increase their participation in training and capacity-building activities; establish two additional centres of excellence to train at least 276 servicing technicians in the safe handling of low-GWP refrigerants, and provide basic tools for training on flammable refrigerants; and organize a technology demonstration on low-GWP technologies in the health sector (US \$138,750);
- (b) *Residential and commercial air conditioning:* Train at least 40 air-conditioning technicians in new technologies with lower-GWP refrigerants, especially in the commercial AC sub-sector (US \$15,000);
- (c) *MAC:* Support the creation of a technical association; and hold planning meetings with stakeholders on the recycling of HFC-134a in the MAC sector (US \$10,750);
- (d) *Firefighting:* Assist this sector by identifying the needs for training and preparing the curriculum for training (US \$7,500);
- (e) *Refrigerant management:* Assess the economic feasibility of the existing recovery and recycling operation to include refrigerant reclaiming (US \$10,000);
- (f) *Strengthening the regulatory framework and control mechanisms:* Provide support to assess the country's system and approach, update the electronic licensing system and add HFC-based equipment to the licensing and quota systems, reinforce the record-keeping and reporting system by enterprises; conduct an assessment to determine the proper time for restricting or banning the import of different types of RAC equipment and the necessary enforcement mechanisms; include the revised HS customs codes in the software of the Customs Department and enhance customs' electronic records of HFC imports, improve continuous market monitoring and conduct refrigerant surveys; provide sustained training to 135 customs officers from 75 control posts, and provide 10 refrigerant identifiers to customs; engage in consultations to create a database with different categories of service workshops and trained technicians; review standards and labeling of equipment; and conduct awareness-raising campaigns and environmental sensitization about the selection of refrigerants that will contribute to the industry's transition towards zero- or low-GWP alternatives (US \$144,750); and
- (g) *Project coordination and monitoring (US \$28,750):* Including international and national consultants (US \$18,750), travel (US \$7,500), consultation meetings (US \$2,000), and other costs (US \$500).

## SECRETARIAT'S COMMENTS AND RECOMMENDATION

### COMMENTS

46. The Secretariat reviewed stage I of the KIP in light of existing policies and guidelines of the Multilateral Fund, stage II of the HPMP, and the 2023 to 2025 business plan of the Multilateral Fund. Furthermore, decision 91/38 allows to consider stage I of the KIPs on a case-by-case basis and without setting a precedent for the cost guidelines or stage I of KIPs.

#### Overarching strategy

47. The Kigali Amendment allows for growth in HFC consumption up to a baseline level. However, to avoid such a growth, the Government of Cameroon is requesting funds for stage I of the KIP to sustainably reduce HFC growth, and take other actions to minimise substitution of HCFCs with HFCs during HPMP implementation.

48. In line with decision 87/50(g)(iii), the proposal includes the following early actions to limit the growth of HFCs: adoption of better servicing practices that would help reduce the wasting of HFCs, and reduce demand for equipment using these substances through a combination of awareness raising, policies for the adoption of low-/lower-GWP refrigerant-based alternatives, and end-user incentive programmes to showcase better equipment performance. Furthermore, the Government would implement policies keeping in view market factors and technology trends relating to alternatives in order to achieve sustainable reductions in HFC consumption. The HFC consumption levels proposed in stage I of the KIP, which are substantially lower than the limits applicable under the Kigali Amendment for all the years in the Agreement, reflect this approach.

#### *Proposed HFC consumption targets*

49. The estimated baseline for Cameroon is 4,760,203 CO<sub>2</sub>-eq tonnes based on the reported HFC consumption for 2020, 2021 and 2022. Stage I of the KIP proposes to limit the growth in HFC consumption by restricting the switching of consumption from HCFC to high-GWP HFCs. Based on the estimated values in table 5, the country's HFC consumption will increase from 3.58 million of CO<sub>2</sub>-eq tonnes in 2023 to 3.75 million of CO<sub>2</sub>-eq tonnes in 2024. After that, there would be a sustained reduction of approximately 25,000 CO<sub>2</sub>-eq tonnes per year to reach 3.60 million of CO<sub>2</sub>-eq tonnes in 2030. Based on these estimated values, this proposal would help the Government of Cameroon to maintain the HFC consumption levels between 21 and 23 per cent below the estimated baseline between 2024 and 2028, and 24 per cent below the estimated baseline in 2029 and 2030.

50. The Secretariat notes that under an unconstrained demand growth of 6 per cent, as presented by UNIDO, and under a more conservative growth scenario of 4.5 per cent,<sup>12</sup> the expected consumption in 2029 and 2030 would be higher than Montreal Protocol limits, and consequently there would be a potential risk for non-compliance if no actions were taken. Any delays in approval of the KIP and implementation of KIP activities would result in an increase in consumption of HFCs in the country and could pose compliance risks in subsequent years. Furthermore, if no action is taken currently to control HFC consumption growth, the HFC consumption could grow to higher levels and as a result, additional resources may be needed to ensure compliance with the 10 per cent reduction, and this could pose additional implementation challenges to the country in achieving the 10 per cent Montreal Protocol reduction target in 2029.

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<sup>12</sup> Real GDP growth in Cameroon is projected at 4.3 per cent in 2023 and should average 4.5 per cent in the medium term. International Monetary Fund, Press Release No 23/64 (March 8, 2023).

*Starting point for sustained reductions in HFC consumption*

51. As shown in table 3 above, the estimated baseline for HFC consumption is 4,760,203 CO<sub>2</sub>-eq tonnes. The methodology to calculate the starting point for sustained reductions in HFC consumption is still under discussion. The Secretariat notes that the starting point will be established once the Executive Committee decides on the methodology for determining the starting point.

HFC licensing and quota system

52. Decision 87/50(g) requests the bilateral and implementing agencies, when submitting stage I of the KIPs, to include confirmation that the country has an established and enforceable national system of licensing and quotas for monitoring HFC imports/exports in place, consistent with decision 63/17. Accordingly, the Government of Cameroon established a licensing system for HFCs, blends and equipment containing them, adopted in September 2017 (Decision no. 004/MINEPDED/CAB). Because the institutional and legislative capacity for the quota system is already in place, the Government of Cameroon will be in a position to promptly issue import quotas for HFCs to each of registered importers, starting in 2024.

Technical and cost-related issues

53. In the absence of cost guidelines, the Secretariat is presenting for the Executive Committee's consideration the level of costs for stage I of the KIP for Cameroon as submitted. Activities proposed are in accordance with similar project activities for consumption reduction and relevant to a sustained HFC phase-down. Furthermore, the Secretariat notes that Cameroon falls in the category of non-low-volume-consuming (LVC) countries, based on its HCFC baseline of 603.60 mt in the servicing sector, with HFC consumption only in the servicing and local installation and assembly sectors. The amount requested<sup>13</sup> in the proposal for stage I of the KIP is based on country's need for early actions towards the HFC phase-down and with the understanding that the reductions in remaining consumption eligible for funding associated with this stage would be adjusted based on the guidelines that would be approved by the Executive Committee for the servicing sector for non-LVC countries.

*Consumption of HFCs in servicing*

54. The Secretariat reviewed the consumption levels of HFCs in the country in different applications and noted that charge levels and service frequency for recharge with refrigerants were high compared to the typical servicing requirements, mainly in domestic refrigeration, commercial refrigeration and residential air-conditioning applications. UNIDO explained that the high consumption was linked to the use of refrigerants for initial charge when installing equipment; flushing and cleaning using HFCs in the servicing sector; inaccurate levels of refrigerant charge in domestic refrigeration equipment; and possible stockpiles of different refrigerants. The Secretariat also understands that an estimate of refrigerant consumption for initial charge is not available. Given the above, the Secretariat notes that UNIDO will conduct a survey, as part of the first tranche implementation, for assessing the country's actual HFC uses in different applications in the servicing sector.

*Technology demonstration project for R-600a domestic refrigerators in the health sector*

55. The Secretariat requested additional information on the need for the technology demonstration project for the adoption of R-600a-based domestic refrigerators in health care applications, noting that R-600a is widely used around the world as a cost-effective refrigerant in domestic refrigerators. UNIDO replied that, currently, HFC-134a-based domestic refrigerators are widely used in the country and the proposed end-user demonstration project would improve the visibility of R-600a domestic refrigerators in

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<sup>13</sup> US \$1,211,500 plus agency support costs of US \$84,805

the market, resulting in their accelerated adoption in the country. The project will provide assistance to beneficiaries to use R-600a-based domestic refrigerators in the health sector. The Government also proposes to coordinate activities under this project with the MEPS and labeling programmes for RAC applications, and to define a timeline for imposing a ban on the import and sale of HFC-134a-based domestic refrigeration applications. The Secretariat considers that this project would facilitate greater adoption of R-600a-based refrigerators in the country and would contribute to reduction in HFC consumption growth.

*Recovery and reuse of refrigerants in the MAC sector*

56. On the recovery and reuse of refrigerants in the MAC sector, UNIDO reported that while the recovery and reuse of HFC-134a may be common in large MAC servicing companies, these practices are limited in the small/informal sector. The current project proposal includes activities to support the more widespread adoption of recovery and reuse of HFC-134a. The Secretariat notes that promoting recovery and recycling is a meaningful activity that can reduce HFC-134a consumption in MAC servicing.

*Regulations on the import and use of HFC-134a and R-404A-based equipment*

57. The Secretariat also had detailed discussions with UNIDO on prohibiting the installation, import and sale of R-404A-based equipment in all applications and HFC-134a-based equipment in domestic refrigeration, noting that the status of availability of alternatives in these applications makes such prohibitions cost-effective, and that they would result in sustained HFC consumption reduction. After consulting the Government, UNIDO confirmed that it is early to define specific dates. However, discussions at national level would continue to engage with the national stakeholders to implement restrictions/bans on the import, sale and installation of equipment using these refrigerants. While specific dates for the prohibitions are difficult to commit to at this stage, the Government would take steps to implement these regulations based on technology trends and market factors for equipment using HFC-134a and R-404A, and draw on the experiences of other countries that have implemented similar measures. UNIDO further reported that the Government would continue to explore the possibility of promoting the adoption of low-GWP alternatives through green procurement policies.

Estimation of the overall level of costs for stage I

58. In the absence of cost guidelines, the Secretariat is presenting for the Executive Committee's consideration the level of costs for stage I of the KIP for Cameroon at US \$1,211,500, as submitted, with a reallocation of funds among activities listed below and shown in table 7:

- (a) *Inclusion of a component on end-of-life management of HFC-based equipment:* UNIDO, after consultations with the Government, confirmed that they would exclude this project component (US \$65,000) from the KIP and submit a proposal outside the KIP for the development of an inventory of banks of used or unwanted controlled substances and a plan for the collection, transport and disposal of such substances in accordance with decision 91/66 at a future date, and the budget has been reallocated to other activities;
- (b) *Projects to support the strengthening of associations:* The Secretariat discussed the need to allocate separate funding for the refrigeration and MAC sector associations, noting that the servicing agencies might not have separate associations. UNIDO, in consultation with the Government, agreed to combine the activities for refrigeration association strengthening;
- (c) *Project for equipment support for training:* The Secretariat requested additional information on the tools needed for training of technicians in the refrigeration and MAC sectors. UNIDO mentioned that while a general list of tools had been identified, the specific



list of tools for training would be discussed in consultation with the NOU during KIP implementation. After further discussions with the NOU, it was agreed that the total funds budgeted under the component would instead be used to optimize and identify tools for refrigeration and MAC servicing based on the needs identified with industry representatives;

- (d) *Training of technicians in the air-conditioning sector:* The Secretariat requested clarification on the reason for the inclusion of a budget of US \$45,000 for training technicians in the air-conditioning servicing sector, as training activities for technicians in the servicing sector were already being implemented under the HPMP. UNIDO explained that the HPMP training activities related to training for commercial AC servicing technicians in good practices and skills for working with low-GWP technologies in that sector;
- (e) *Project for technical support for SMEs:* The Secretariat had discussions with UNIDO on the design of the SME project, noting that it addressed support for three end-users only, and further noting that the impact of such a project during stage I of the KIP was not clear. Based on the discussions, UNIDO agreed to remove this project component (US \$35,000) and reallocate the budget to other activities; and
- (f) *Projects for demand-side management of HFCs:* After discussions about different project cost components and adjustments, the activity relating to promoting the adoption of low-GWP technologies was submitted. UNIDO proposed to include a project component on promoting demand for low-GWP technologies in the RAC sector, as well as outreach programmes to facilitate the adoption of regulations to ban high-GWP refrigerant-based equipment. This includes the preparation of a plan of action and outreach programmes for consumers and retailers on low-GWP technologies and their benefits and an incentive programme for commercial and industrial refrigeration air-conditioning equipment to replace high-GWP refrigerant-based equipment with low-GWP refrigerant-based equipment. The Secretariat noted that this programme would support consultations on the implementation of regulations aimed at reducing demand for high-GWP HFC-based equipment through a combination of policies and incentives for the adoption of low-GWP technologies by a limited set of end-users. On the levels of incentives that would be provided to the enterprises under this programme and the intended impact, UNIDO explained that the incentive would be about 15 to 25 per cent of the cost of equipment based on low-GWP refrigerant technologies (US \$100,000).

59. Based on the above, the revised costs of the different components of stage I of the KIP for Cameroon are presented in table 7. A detailed overview of activities and costs under the HPMP and the KIP is presented in Annex II. The reductions in HFC consumption eligible for funding will be determined based on the cost-effectiveness threshold for the refrigeration servicing sector for non-LVC countries, once agreed by the Executive Committee. For reference, based on the difference between the country's estimated baseline and proposed target, the reduction would correspond to 1,160,648 CO<sub>2</sub>-eq tonnes; based on 2020-2022 average HFC consumption, this would correspond to a reduction of 656 mt of HFCs. In the absence of cost guidelines, the Secretariat is presenting for the Executive Committee's consideration the level of costs for stage I of the KIP for Cameroon as submitted.

**Table 7. Revised cost of stage I of the KIP for Cameroon (US \$)**

Activity	Cost by sector					Total cost
	Refrigeration	AC	MAC	Firefighting	Cross-sectoral	
<i>Activities addressing the priority sectors</i>						
Support for RAC associations					20,000	20,000
Provision of tools for training					40,000	40,000
Technician training	168,000	45,000	130,500	45,000		388,500
Planning and promoting recovery and recycling					50,000	50,000
Development of codes of practice			25,000			25,000
SME programmes		0				0
Technology demonstration in the health sector	114,000					114,000
<b>Sub-total for activities addressing priority sectors</b>	<b>282,000</b>	<b>45,000</b>	<b>155,500</b>	<b>45,000</b>	<b>110,000</b>	<b>637,500</b>
<b>Activity</b>						<b>Cost (US \$)</b>
<i>Activities common to all sectors</i>						
<i>Refrigerant management</i>						
Assessment of the economic feasibility of reclamation facilities						0
Establish sound management of non-reusable refrigerants						0
Study on the management of end-of-life of appliances and HFC banks						0
<b>Sub-total for refrigerant management</b>						<b>0</b>
<i>Regulatory framework and control mechanisms</i>						
Strengthening the HFC licensing and quota system, including assessment on restriction/banning the import of RAC equipment						36,000
Strengthening record-keeping and reporting by enterprises						10,000
Provision of refrigerant identifiers to customs						70,000
Training 350 customs officers and enforcement officers, developing a curriculum						95,000
Strengthening HFC import records by customs						15,000
Improving continuous market monitoring, and conducting surveys						50,000
Categorizing service workshops						23,000
Coordinating standards and labeling schemes						20,000
Demand-side management						100,000
Awareness-raising and environmental sensitization						40,000
<b>Sub-total for the regulatory framework and control mechanisms</b>						<b>459,000</b>
Coordination and management of KIP implementation						115,000
<b>Total for stage I of the KIP</b>						<b>1,211,500</b>

Revised action plan for the first tranche

60. The revised action plan includes initiation of activities relating to training of technicians, capacity building of RAC association and technical institutions, initiation of implementation of recovery and recycling programme in the MAC sector, technology demonstration project for domestic refrigerators, support for implementation regulations for controlling and monitoring HFCs including quota system and project management and monitoring, as submitted. Furthermore, for reducing the demand of HFCs, outreach programme for consumers and retailers on low-GWP technologies and their benefits and development of a detailed plan of action for implementing the incentive programme would be undertaken.

Sustainability of the HFC phase-down and assessment of risks

61. The commitment and activities under stage I of the KIP will be sustained over time with the implementation and strengthening of the licensing and quota system for HFCs; continuous consultations

with importers and other stakeholders on promoting the adoption of low-GWP alternatives to HFCs in different applications; and the continuous monitoring of all implemented activities.

62. UNIDO provided information on the assessment of project implementation risks conducted for stage I of the KIP, indicating that a coordinated roadmap of activities by UNIDO, the NOU and industry stakeholders would help ensure sufficient and timely funding and implementation.

63. Given that the current HFC consumption is 67 per cent of the total HFC baseline, if early actions are adopted, the potential risk of non-compliance is expected to be low and will be further mitigated by the implementation of a robust licensing and quota system for HFCs to control supply, as well as activities aimed at reducing demand for HFCs implemented under the KIP.

64. Although specific regulations to prohibit the use of HFCs have yet to be implemented in Cameroon, UNIDO mentioned that the Government would work closely with different stakeholders to minimize any growth in consumption of high-GWP HFCs. Furthermore, stage I includes project activities such as training and capacity building for adopting good service practices and safe use of low-GWP alternatives, awareness and information outreach programmes on low-/lower-GWP alternatives and end-user incentive programmes for the accelerated adoption of low-GWP alternatives.

65. The risk of technologies promoted through the KIP not being accessible to the country will be mitigated by engaging importers and distributors in the awareness and outreach activities on low-/lower-GWP alternatives, and by facilitating their access to alternative technologies.

66. The risk of delays in activities requiring regional coordination (e.g., regional regulations) will be mitigated by the implementing agencies facilitating dialogue among the NOUs of the member states, and by including national representatives of the regional bodies on the Steering Committee.

#### Impact on the climate

67. The activities planned by Cameroon, including its efforts to promote low-GWP alternatives, as well as refrigerant recovery and reuse, indicate that the implementation of stage I of the KIP will reduce the emission of refrigerants into the atmosphere, resulting in climate benefits. A calculation of the impact on the climate of the activities in the KIP indicates that by 2030, Cameroon will have avoided approximately 3.69 million CO<sub>2</sub>-eq tonnes of HFCs, calculated as the difference between the business-as-usual scenario and the HFC reduction scenario presented in table 4.

#### Co-financing

68. UNIDO explained that co-financing under stage I of the KIP would include counterpart funding for programmes relating to demand-side management for the adoption of low-GWP technologies and in-kind time and resource support from the beneficiaries.

#### 2023-2025 business plan of the Multilateral Fund

69. UNIDO is requesting US \$1,211,500, plus agency support costs of US \$84,805, for the implementation of stage I of the KIP for Cameroon. During the period 2023–2025, the total funding proposed in stage I of the KIP is US \$380,385 including agency support costs, which is US \$99,614 above the corresponding amount included in the business plan.

### Draft Agreement

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

71. If the Executive Committee so wishes, the funds for stage I of the KIP for Cameroon 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 draft Agreement template has been approved.

### **RECOMMENDATION**

72. In the absence of the HFC cost guidelines, the Secretariat has prepared, on an exceptional basis, the following recommendation for the consideration of the Executive Committee.

73. [The Executive Committee may wish to consider:

- (a) Whether to approve, in principle, stage I of the Kigali HFC implementation plan (KIP) for Cameroon for the period 2023–2030 to reduce HFC consumption by at least [24 per cent] of the country's estimated baseline in 2030, in the amount of [US \$1,211,500], plus agency support costs of [US \$84,805] for UNIDO;
- (b) Noting:
  - (i) That the Government of Cameroon will establish its starting point for sustained aggregate reductions in HFC consumption on the basis of guidance provided by the Executive Committee;
  - (ii) That once the cost guidelines for HFC phase-down that determine the level and modalities of funding for the servicing sector for Article 5 countries are agreed by the Executive Committee, the reductions from the country's remaining HFC consumption eligible for funding will be determined in line with those guidelines;
  - (iii) That the reductions from the country's remaining HFC consumption eligible for funding referred to in sub-paragraph (ii) above would be deducted from that starting point referred to in sub-paragraph (i);
- (c) Whether to approve the first tranche of stage I of the KIP for Cameroon, and the corresponding tranche implementation plan, in the amount of [US \$380,385], consisting of [US \$355,500], plus agency support costs of [US \$24,885] for UNIDO; and
- (d) Requesting the Government of Cameroon, UNIDO, and the Secretariat to finalize the draft Agreement between the Government of Cameroon and the Executive Committee for the reduction in consumption of HFCs and submit it to a future meeting once the draft Agreement template is approved by the Executive Committee.]

## Annex I

**SCHEDULE OF HFC AND HCFC COMMITMENTS AND FUNDING TRanches FOR CAMEROON  
UNDER THE KIGALI HFC IMPLEMENTATION PLAN AND THE HCFC PHASE-OUT MANAGEMENT PLAN**

**Kigali HFC implementation plan (stage I)**

Row	Particulars	2023	2024	2025	2026	2027	2028	2029	2030	Total
1.1	Montreal Protocol reduction schedule of Annex F (CO <sub>2</sub> -eq tonnes)	n/a	4,760,203	4,760,203	4,760,203	4,760,203	4,760,203	4,284,183	4,284,183	n/a
1.2	Maximum allowable total consumption of Annex F (CO <sub>2</sub> -eq tonnes)	3,579,012	3,753,448	3,728,532	3,702,578	3,676,624	3,650,670	3,624,716	3,599,555	n/a
2.1	Lead IA (UNIDO) agreed funding (US \$)	355,500	0	0	406,000	0	297,000	0	153,000	1,211,500
2.2	Support costs for Lead IA (US \$)	24,885	0	0	28,420	0	20,790	0	10,710	84,805
3.1	Total agreed funding (US \$)	355,500	0	0	406,000	0	297,000	0	153,000	1,211,500
3.2	Total support costs (US \$)	24,885	0	0	28,420	0	20,790	0	10,710	84,805
3.3	Total agreed costs (US \$)	380,385	0	0	434,420	0	317,790	0	163,710	1,296,305

**HCFC phase-out management plan (stages II and III)**

Row	Particulars	2023	2024	2025	2026	2027	2028	2029	2030	Total
1.1	Montreal Protocol reduction schedule of Annex C (ODP tonnes)	57.72	57.72	28.86					0	
1.2	Maximum allowable total consumption of Annex C (ODP tonnes) <sup>1</sup>	24.80	22.20	22.20						
2.1	Lead IA (UNIDO) agreed funding (US \$)	0	0	79,000						
2.2	Support costs for Lead IA (US \$)	0	0	5,530						
3.1	Total agreed funding (US \$)	0	0	79,000						
3.2	Total support costs (US \$)	0	0	5,530						
3.3	Total agreed costs (US \$)	0	0	79,000	TBD					

<sup>1</sup> Stage II of the HPMP has established target up to 2025.



## Annex II

**IMPLEMENTATION OF BOTH THE HCFC PHASE-OUT MANAGEMENT PLAN (HPMP)  
AND THE KIGALI HFC IMPLEMENTATION PLAN (KIP) IN CAMEROON (US \$)**

Area of work	HPMP		HPMP stage III Estimated cost	KIP		Combined cost
	Activity	Cost		Activity	Cost	
Supporting associations			100,000	Supporting industry associations in refrigeration and in air-conditioning (AC)	20,000	120,000
Provision of tools				Provision of tools for refrigeration, AC and mobile air-conditioning (MAC) training	40,000	40,000
Training of refrigeration technicians				20 training sessions for 920 technicians	168,000	168,000
Training of AC technicians	Training of 810 technicians. 17 workshops	265,000	318,000	6 training sessions for 125 technicians	45,000	628,000
Training of MAC technicians				15 training sessions for 335 technicians	130,500	130,500
Training of firefighting technicians				4 training sessions	45,000	45,000
Centres of excellence	Procurement of recovery and recycling (R&R) equipment for 10 service workshops and 7 training institutes (10 regions)	69,256	210,000	Promoting R&R for the MAC sector	50,000	329,256
Development of code of practice	For AC and refrigeration & updating curricula	36,000	20,000	For MAC sector	25,000	81,000
Small and medium-sized enterprises programmes	Programme in commercial refrigeration	390,000		Demand-side management	100,000	490,000
Technology demonstration			357,000	Technology demonstration in the health sector	114,000	471,000
Strengthening licensing	Update of the national regulatory framework and quota system for HCFC	103,000	50,000	Quota system for HFCs	36,000	189,000
Strengthening record keeping			120,000	Reporting by enterprises	10,000	130,000
Provision of tools to customs	Provision of 15 refrigerant identifiers	60,000	200,000	20 refrigerant identifiers	70,000	330,000
Training of customs officers	Training of 220 customs officers	147,575	250,000	Training 350 customs and enforcement officers	95,000	492,575
Strengthening records by customs				Records of HFC imports	15,000	15,000
Improving monitoring				Conducting surveys	50,000	50,000
Workshops				Categorizing workshops	23,000	23,000

Area of work	HPMP		HPMP stage III	KIP		Combined cost
	Activity	Cost	Estimated cost	Activity	Cost	
Certification of technicians			100,000		0	100,000
Standards & labeling				Coordinating with regional communities	20,000	20,000
Awareness			280,000*	Various campaign to support programmes	40,000	320,000
Coordination & monitoring		115,000	115,000		115,000	345,000
<b>Grand total</b>		<b>1,185,831</b>	<b>2,120,000</b>		<b>1,211,500</b>	<b>4,517,331</b>
<b>Percentage of total</b>		<b>26.3%</b>	<b>46.9%</b>		<b>26.8%</b>	<b>100%</b>