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EXECUTIVE COMMITTEE OF
THE MULTILATERAL FUND FOR THE
IMPLEMENTATION OF THE MONTREAL PROTOCOL
Ninety-fourth Meeting
Montreal, 27–31 May 2024
Items 9(c) and (d) of the provisional agenda¹

PROJECT PROPOSALS: LAO PEOPLE'S DEMOCRATIC REPUBLIC (THE)

This document consists of the comments and recommendations of the Secretariat on the following project proposals:

Phase-out

- HCFC phase-out management (stage II, second tranche) UNEP and UNDP

Phase-down

- Kigali HFC implementation plan (stage I, first tranche) UNEP and UNDP

¹ UNEP/OzL.Pro/ExCom/94/1

PROJECT EVALUATION SHEET – MULTI-YEAR PROJECTS

Lao People’s Democratic Republic (The)

(I) PROJECT TITLE	AGENCY	MEETING APPROVED	CONTROL MEASURE
HCFC phase-out plan (stage II)	UNEP (lead), UNDP	86 th	100% phase-out by 2030

(II) LATEST ARTICLE 7 DATA (Annex C Group I)	Year: 2022	1.43 ODP tonnes
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(III) LATEST COUNTRY PROGRAMME SECTORAL DATA (ODP tonnes)							Year: 2023		
Chemical	Aerosol	Foam	Fire-fighting	Refrigeration		Solvent	Process agent	Lab use	Total sector consumption
				Manufacturing	Servicing				
HCFC-22					1.46				1.46

(IV) CONSUMPTION DATA (ODP tonnes)			
2009-2010 baseline:	2.30	Starting point for sustained aggregate reductions:	5.54
CONSUMPTION ELIGIBLE FOR FUNDING			
Already approved:	2.30	Remaining:	0.00*

* Phase-out of 3.24 ODP tonnes achieved without assistance from the Multilateral Fund.

(V) ENDORSED BUSINESS PLAN		2024	2025	2026	Total
UNEP	ODS phase-out (ODP tonnes)	0.25	0.00	0.25	0.5
	Funding (US \$)	211,423*	0	98,197	309,620*
UNDP	ODS phase-out (ODP tonnes)	0.19	0.00	0.05	0.24
	Funding (US \$)	70,283	0	17,571	87,854

* Includes US \$113,000 for UNEP for additional activities to maintain energy efficiency (decision 89/6).

(VI) PROJECT DATA			2020-2022	2023	2024*	2025-2026	2027-2029	2030	Total
Montreal Protocol consumption limits (ODP tonnes)			1.50	1.50	1.50	0.75	0.75	0.00	n/a
Maximum allowable consumption (ODP tonnes)			1.50	1.50	1.50	0.75	0.75	0.00	n/a
Funding agreed in principle (US \$)	UNEP	Project costs	106,400	87,100	100,000	0	86,900	52,000	432,400
		Support costs	13,832	11,323	13,000	0	11,297	6,760	56,212
	UNDP	Project costs	107,000	64,480	0	0	16,120	0	187,600
		Support costs	9,630	5,803	0	0	1,451	0	16,884
Funds approved by ExCom (US \$)		Project costs	213,400						213,400
		Support costs	23,462						23,462
Total funds recommended for approval at this meeting (US \$)		Project costs			**251,580				251,580
		Support costs			**30,126				30,126

* Funding for 2024 includes US \$100,000, plus agency support costs of US \$13,000 for UNEP, for additional activities to maintain energy efficiency (decision 89/6).

** This includes the second tranche that should have been submitted in 2023.

Secretariat's recommendation:	Blanket approval
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PROJECT DESCRIPTION

1. On behalf of the Government of the Lao People’s Democratic Republic, UNEP as the lead implementing agency has submitted a request for funding for the second tranche of stage II of the HCFC phase-out management plan (HPMP), at a total cost of US \$281,706, consisting of US \$187,100, plus agency support costs of US \$24,323 for UNEP, and US \$64,480, plus agency support costs of US \$5,803, for UNDP.² The submission includes a progress report on the implementation of the first tranche, the verification report on HCFC consumption for 2020 to 2023, a request for funding additional activities to maintain energy efficiency in the refrigeration servicing sector,³ and the tranche implementation plan for 2024 to 2026.

Report on HCFC consumption

2. The Government of the Lao People’s Democratic Republic reported under the country programme (CP) implementation report a consumption of 1.46 ODP tonnes of HCFCs in 2023, which is 37 per cent below the country’s HCFC baseline for compliance. The Article 7 data for 2023 has not been reported yet. The 2019–2023 HCFC consumption is shown in table 1.

Table 1. HCFC consumption in the Lao People’s Democratic Republic (2019–2023 Article 7 data)

HCFC-22	2019	2020	2021	2022*	2023**	Baseline
Metric tonnes (mt)	23.39	25.84	14.96	25.98	26.48	41.93
ODP tonnes	1.29	1.42	0.82	1.43	1.46	2.30

* The country will revise the 2022 consumption to 14.99 mt (0.82 ODP tonnes) based on the verification report.

** CP data.

3. The consumption of HCFC-22 in the Lao People’s Democratic Republic has fluctuated over the years, influenced by several factors. While the transition to alternative technologies like R-410A and HFC-32 in the residential and commercial air-conditioning (AC) sector has led to a decrease in HCFC-22 usage, the 2023 consumption shows an increase due to the low imports in 2021 and 2022 and the economic recovery from the COVID-19 pandemic. HCFC consumption from 2020–2023 is below the maximum allowable consumption as defined in the Agreement with the Executive Committee.

Country programme implementation report

4. Although the Government of the Lao People’s Democratic Republic reported HCFC sector consumption data of 1.43 ODP tonnes (25.98 mt) under the 2022 CP implementation report that is consistent with the data reported under Article 7 of the Montreal Protocol, the verification indicated an import of 0.82 ODP tonnes (14.99 mt) only in 2022 as described in paragraph 5. The Government will revise the CP data for 2022 based on the verification report data.

Verification report

5. The verification report confirmed that the Government was implementing a licensing and quota system for HCFC imports and exports and that the total consumption of HCFCs reported under Article 7 of the Montreal Protocol for 2020 to 2023 was correct (as shown in table 1 above), except for the year 2022, where the verified consumption of 0.82 ODP tonnes (14.99 mt) was lower than that reported under Article 7. The verifier found that data submitted under Article 7 for 2022 was equivalent to the approved annual import permits rather than the actual imported quantities, and one import quota was not fulfilled due

² As per the letter of 11 March 2024 from the Ministry of Natural Resources and Environment of the Lao People’s Democratic Republic to UNEP.

³ In line with decision 89/6, low-volume-consuming countries can include in their HPMPs additional activities for the introduction of alternatives to HCFCs with low or zero global warming potential and for maintaining energy efficiency in the refrigeration servicing sector.

to the unavailability of the HCFC-22 from the export source. The Government has submitted a request to revise the Article 7 data to reflect the actual import in 2022. The verification concluded that the Lao People's Democratic Republic has complied with both the Montreal Protocol reduction schedule of Annex C, Group I substances and the maximum allowable consumption of Annex C, Group I substances for the years 2020 to 2023.

Status of implementation of stage I of the HCFC phase-out management plan

6. Stage I of the HPMP was completed on 1 December 2022. The project completion report was submitted on 1 May 2023.

Progress report on the implementation of the first tranche of stage II of the HCFC phase-out management plan

Legal framework

7. The national ozone unit (NOU) under the Department of Climate Change (DCC) within the Ministry of Natural Resources and Environment (MONRE) is the designated national focal point for the coordination, planning, implementation, and monitoring of Montreal Protocol activities in the country. The National Ozone Steering Committee (NOSC) was established to support the implementation of Montreal Protocol-related activities, and provides advice to the NOU in planning, implementing and monitoring ODS phase-out activities. The NOSC was restructured to include additional stakeholders to support the implementation of the Kigali Amendment.

8. The Ministry of Industry and Commerce (MOIC) is the authority that manages industrial and trade development, including the regulations to control the production, import, and export of chemicals and products through managing the list of industrial chemical substances and issuing the licence for the import and export of controlled substances under the Montreal Protocol. The Customs Department under the Ministry of Finance is responsible for the control of the import and export of controlled substances under the Montreal Protocol in accordance with the national regulations. The Ministry of Labour and Social Welfare and the Ministry of Education are responsible for the Technical and Vocational Education and Training (TVET) programme. The Ministry of Energy and Mines has a mandate to develop and implement policies, regulations and guidelines related to energy efficiency. The Department of Standardization and Metrology under the MOIC has the mandate to establish and enforce standards for products in the domestic market, and it supports the HFC phase-down through developing safety standards related to flammable refrigerant and energy labelling.

9. The Government of the Lao People's Democratic Republic issued the Ministerial Decision on Management of Controlled Substances under the Montreal Protocol No. 1686 in 2021 to include HFCs in the licensing and quota system for import and export control. The Ministerial Decision also included a ban on the import of HCFC-22- and HCFC-123-based refrigeration and air-conditioning (RAC) equipment as of 1 January 2023. The NOU is working with the MOIC to include this equipment on the list of prohibited items for import and export to further strengthen the enforcement of the ban.

10. In addition to the licensing and quota system for HFCs, the Government adopted the Minimum Energy Efficiency Performance Standard (MEPS) for air conditioners and a labelling system in 2022 for split-type air conditioners with a cooling capacity of less than 12 kW, effective in 2025. Currently, the Department of Energy Efficiency Promotion is finalizing an online platform for the registration of AC products and finalizing the testing methodology.

11. In stage I of the KIP, the Government plans to ban manufacturing equipment using HFCs; and develop regulatory measures to limit the global-warming potential (GWP) value of refrigerants in RAC

equipment that are not covered under the MEPS, such as residential air conditioners, chillers, large refrigeration system and cold storage.

Refrigeration servicing sector

12. The following activities have been conducted:

- (a) Seven stakeholder coordination meetings to strengthen policy and regulations with 98 participants (16 women); continuous implementation of mandatory labelling of HCFC cylinders; one training workshop for 25 trainers (five women), two workshops for 50 customs officers (12 women) and two workshops for 30 importers and brokers on strengthening the trade control of HCFCs, new policies and regulations, and harmonized systems (HS) codes through the ASYCUDA⁴ system; a workshop to strengthen risk profiling to identify mis-declared shipments through post-clearance audits; and the purchase of two refrigerant identifiers;
- (b) Training sessions for 21 master trainers (three women) and four workshops to train 80 technicians (19 women) in good servicing practices and the safe installation and servicing of equipment using flammable refrigerants (HFC-32, R-290, R-600a); discussions with the Department of Skill Development and Employment on planning to integrate good servicing practices into the national competency standard of the training institutes (level 1 and 2) for the development of the technician certification system;
- (c) Purchasing of training equipment to upgrade four vocational training institutes for technician training (e.g., weighing scales, vacuum pump, digital multi-refrigerant gauge manifold, leak detector, digital clamp-on multi-meter, anemometers, nitrogen regulator, oxygen regulator, 35 sets of hand tools and personal protective equipment and 35 fire extinguishers); the NOU is in the process of distributing the tools and equipment to the training centres;
- (d) Public awareness and outreach activities to support the implementation of the ban on HCFC-based equipment, the mandatory labelling of cylinders, the safe handling of flammable refrigerants, promotion of OzonAction tools and materials; and
- (e) Coordination of implementation, monitoring and reporting progress on HPMP activities with no expenses from the project as the cost was covered by the Government.

Project implementation and monitoring

13. The Government requests to reallocate US \$11,600 that was originally planned for project implementation, coordination, monitoring and reporting to the training of customs officers (US \$7,600) and RAC technicians (US \$4,000).

Level of fund disbursement

14. As of March 2024, of the US \$213,400 approved so far (US \$106,400 for UNEP and US \$107,000 for UNDP), US \$147,896 (69 per cent) had been disbursed (US \$60,922 for UNEP and US \$86,974 for UNDP). The balance of US \$65,504 will be disbursed in 2024 to 2025.

⁴ Automated System for Customs Data.

Implementation plan for the second tranche of stage II of the HCFC phase-out management plan

15. The following activities will be implemented between June 2024 and May 2026:
- (a) Holding stakeholder coordination meetings to strengthen policy and regulations: implementing a ban on the use of HCFCs in the manufacturing sector by 1 January 2026; regulating the RAC servicing sector; enforcing the ban on the import of HCFC-based equipment by including HCFC-22 and HCFC-123 RAC equipment in the list of prohibited items for import; conducting three workshops to train 50 customs officers and one workshop to train 30 importers and brokers on strengthening the trade control of HCFCs and the handling of flammable refrigerants and RAC equipment using flammable refrigerants; technical assistance on risk profiling to prevent illegal trade (UNEP) (US \$28,600);
 - (b) Conducting five workshops to train 100 technicians in good servicing practices and the safe installation and servicing of equipment using flammable refrigerants; and one workshop to train 30 engineers in good servicing practices in cold storage and large commercial refrigeration; training 10 assessors for the certification of RAC technicians in good servicing practices, and certifying 40 RAC technicians (UNEP) (US \$27,000);
 - (c) Purchasing a set of equipment and tools for each one of the approximately 80 qualified RAC servicing workshops (including an electronic weigh scale, two-stage rotary vacuum pump, manifold gauge, and micron gauge with LCD display) (UNDP) (US \$64,480);
 - (d) Organizing public awareness and outreach activities to support the implementation of stage II of the HPMP, including design and production of awareness materials and media campaign for targeted groups (UNEP) (US \$9,000);
 - (e) Conducting activities to maintain energy efficiency which are described in detail in the following section (UNEP) (US \$100,000); and
 - (f) Project monitoring (UNEP) (US \$22,500 with the following breakdown: US \$18,000 for staff and consultants and US \$4,500 for travel).

Activities to maintain energy efficiency in the refrigeration servicing sector

16. The project related to energy efficiency, submitted in line with decision 89/6, has been designed to harmonize Montreal Protocol objectives with energy efficiency through regulation enforcement, capacity-building, and awareness-raising activities. Funding is in the amount of US \$100,000 for UNEP. The description and proposed cost breakdown of activities to maintain energy efficiency in the sector include:

- (a) Product registration database and energy labelling: Creating an online registration for air conditioners and conducting a three-day study tour on air conditioner registration, testing laboratories for AC products, verification of testing results, and enforcing MEPS and energy labelling (US \$35,000); and developing a safety standard related to flammable refrigerants and energy labelling to include refrigerant data, including its GWP value and safety information (US \$10,000);
- (b) Capacity-building of stakeholders: Three workshops to train 90 customs and enforcement officers (US \$18,000); two workshops to train 40 importers of air conditioners (US \$10,000); and one pilot training workshop for 25 RAC technicians on the good

servicing practices curriculum that has been updated to include the energy efficiency of air conditioners and regulations related to MEPS and energy labelling (US \$10,000); and

- (c) Outreach and impact assessment: Development of outreach materials to educate consumers on the environmental effects of consumer choices and how to read energy labels (US \$9,000); and a consumer behaviour study to measure the impacts of the outreach project (US \$8,000).

SECRETARIAT'S COMMENTS AND RECOMMENDATION

COMMENTS

Progress report on the implementation of the first tranche of stage II of the HCFC phase-out management plan

Legal framework

17. The Government of the Lao People's Democratic Republic has already issued HCFC import quotas for 2024 at 1.48 ODP tonnes, which is lower than the Montreal Protocol control targets.

18. The responsibility for the implementation of the Montreal Protocol and the NOU was moved within the same Ministry (MONRE) from the Department of Pollution Control and Monitoring to the DCC in 2022. UNEP advised that there was a hand-over process during the transition to the new department, including meetings and orientations to transfer the institutional memory and knowledge from previous programmes and the coordination of stakeholders for HPMP implementation. In addition, UNEP provided in-person capacity-building to the new NOU team and discussed the implementation of the first tranche for stage II of the HPMP to expedite project implementation, and organized meetings to bridge the communication gap between the new NOU team and relevant stakeholders (the Customs Department, training centres and institute, and RAC association).

19. Despite the initial effects of the governmental restructuring, the new NOU resumed project implementation and made progress in the first tranche. Since the new NOU are Government-paid staff, no disbursements were made for project implementation. In view of the challenges in border control to prevent illegal trade, and the challenges linked to the adoption of flammable refrigerant, the Secretariat supports the proposed reallocation of funds to further train customs officers and technicians.

Refrigeration servicing sector

20. The implementation of the first tranche was delayed due to the restructuring of the Government and so the second tranche of stage II of the HPMP, originally scheduled for submission in 2023, is being submitted to the 94th meeting in 2024. The Secretariat noted that the new NOU has been fully on board and supported by UNEP with capacity-building activities and has made significant progress in the implementation of the first tranche.

21. The Secretariat sought clarity on how the Government will regulate the RAC servicing sector with respect to the registration of RAC servicing workshops. UNEP explained that the NOU would liaise with the Ministry of Labour and Social Welfare to make it a mandatory requirement for RAC technicians to be certified by an accredited authority as part of the business registration of RAC servicing workshops, and to further enforce the restriction of refrigerant sales only to certified technicians as part of the permit to import. These regulations will be developed in collaboration with the Ministry of Labour and Social Welfare and the MOIC.

Implementation plan for the second tranche of stage II of the HCFC phase-out management plan

Activities to maintain energy efficiency in the refrigeration servicing sector

22. In line with decision 89/6(d), UNEP has included in the tranche implementation plan the specific actions, performance indicators and funding associated with additional activities to maintain energy efficiency.

23. The Secretariat discussed the proposed activities and costs with UNEP for more focused implementation and efficient utilization of funding given that the MEPS for air conditioners has already been established. Subsequently, the cost of the study tour was reduced by US \$17,000 (from US \$35,000 to US \$18,000), which was redistributed to technical assistance (US \$7,000) and consultancy for the development of safety standards for flammable refrigerants and energy labelling (US \$5,000), and to training on energy efficiency and labeling (US \$5,000). The updated agreed activities and costs are presented as follows:

- (a) Product registration database and energy labelling: Conducting a three-day study tour on air conditioner registration, recognition of testing laboratories, verification of testing, and enforcing MEPS and energy labelling (US \$18,000); technical assistance on the development of detailed procedures and criteria of acceptance, and on verifying the energy performance of air conditioners (US \$7,000); and development of a safety standard related to flammable refrigerants and energy labelling to include refrigerant data, including its GWP value and safety information (US \$15,000);
- (b) Capacity-building of stakeholders: Three workshops to train 90 customs and enforcement officers (US \$18,000); two workshops to train 40 importers of air conditioners (US \$10,000); and one pilot training workshop for 25 RAC technicians on the good servicing practices curriculum updated to include the energy efficiency of air conditioners and regulations related to MEPS and energy labelling (US \$15,000); and
- (c) Outreach and impact assessment: Development of outreach materials to educate consumers on the environmental effects of consumer choices and how to read energy labels (US \$9,000); and a consumer behaviour study to measure the impacts of the outreach project (US \$8,000).

Gender policy implementation

24. The implementation of the HPMP integrates gender mainstreaming initiatives across various components. The NOU has encouraged women to participate in all HPMP activities including planning, policy and decision-making, brainstorming, and advisory, monitoring and evaluation processes. During the training workshops for technicians and customs officers, the NOU emphasized the participation of female participants and female students were invited to attend the training on good servicing practices. The NOU collected gender-disaggregated data, where possible, to report on achievements under stage II of the HPMP, and discussed gender issues during the meetings and workshops to develop stakeholders' competency in gender mainstreaming and to exchange ideas, experiences and lessons learned in relation to gender mainstreaming. In total, 362 persons participated in project activities under the first tranche, of which 77 (21 per cent) were women. In the second tranche, the aim is to achieve 25 per cent participation by women in project activities.

Updated Agreement

25. As further explained in paragraph 72, the third tranche of the HPMP was moved from 2026 to 2027. In view of the revised funding level due to the inclusion of funding for additional activities to maintain

energy efficiency in the refrigeration servicing sector, shifting of the third tranche to 2027, and the change in monitoring institutions and roles resulted from the Government restructuring, the Agreement between the Government of the Lao People's Democratic Republic and the Executive Committee has been updated. Specifically, Appendix 2-A has been revised, Appendix 5-A has been updated to reflect the new NOU under the Department of Climate Change, and paragraph 17 has been added to indicate that the updated Agreement supersedes that reached at the 86th meeting, as contained in annex I to the present document. The full updated Agreement will be appended to the final report of the 94th meeting.

Sustainability of the HCFC phase-out and assessment of risks

26. To ensure the sustainability of HCFC phase-out, the Government of the Lao People's Democratic Republic has identified several risks and taken mitigation measures. Illegal trade is identified as a risk to achieving compliance due to the challenges in border control and increasingly tightened import quota. The Government has conducted border dialogues to strengthen HCFC trade control, has conducted joint inspections to monitor illegal imported refrigerant in the domestic market, and has established a ban on the import of HCFC-based equipment to reduce the servicing demand. Training for customs officers and awareness-raising activities are also expected to further strengthen import control and reduce illegal trade.

27. Although the Government has banned the import of HCFC-based equipment, the enforcement of the ban can be challenging due to the difficulties in verifying the refrigerant type when importing large HCFC appliances. The NOU is working with the MOIC to include HCFC-based equipment in the lists of prohibited items for import and export and to recommend HCFC-free technologies used in RAC systems as a condition of Environmental Impact Assessment (EIA) approval to supplement the existing regulation.

Conclusion

28. The Government of the Lao People's Democratic Republic has been enforcing its HCFC import and export licensing and quota system and was in compliance with the Montreal Protocol control target for 2020 to 2023. The Government has established a ban on the import of HCFC-based equipment and is making efforts to enforce the ban to achieve a greater reduction in HCFC consumption. The Government restructuring and reallocation of the NOU has delayed the implementation of the first tranche; nevertheless, with the new NOU staff fully on board, the implementation of the HPMP is making progress. The training of technicians and customs officers has been conducted as planned. The second tranche submission also includes additional activities for introducing low-GWP technologies and for maintaining energy efficiency in the refrigeration servicing sector, focusing on the enforcement of MEPS, building the capacity of customs officers, and training technicians in the handling of flammable refrigerants. In view of the progress achieved and the disbursement of 69 per cent in the first tranche, the Secretariat recommends approval of the second tranche.

RECOMMENDATION

29. The Fund Secretariat recommends that the Executive Committee:

(a) Note:

- (i) The progress report on the implementation of the first tranche of stage II of the HCFC phase-out management plan (HPMP) for the Lao People's Democratic Republic;
- (ii) The submission of additional activities to maintain energy efficiency in the refrigeration servicing sector in the amount of US \$100,000, plus agency support costs of US \$13,000, for UNEP;

- (iii) That the Fund Secretariat has updated the Agreement between the Government of the Lao People’s Democratic Republic and the Executive Committee, as contained in annex I to the present document, specifically: Appendix 2-A, based on the revised funding level due to the inclusion of funding for additional activities to maintain energy efficiency in the refrigeration servicing sector referred to in subparagraph (a)(ii) above, and to shift the third tranche to 2027; Appendix 5-A to reflect the new national ozone unit under the Department of Climate Change; and paragraph 17 that has been added to indicate that the updated Agreement supersedes that reached at the 86th meeting; and

30. The Fund Secretariat further recommends blanket approval of the second tranche of stage II of the HPMP for the Lao People’s Democratic Republic, and the corresponding 2024–2026 tranche implementation plan, at the funding levels shown in the table below.

	Project title	Project funding (US \$)	Support costs (US \$)	Implementing agency
(a)	HCFC phase-out management plan (stage II, second tranche)	187,100	24,323	UNEP
(b)	HCFC phase-out management plan (stage II, second tranche)	64,480	5,803	UNDP

PROJECT EVALUATION SHEET – MULTI-YEAR PROJECTS

Lao People’s Democratic Republic (The)

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

LATEST ARTICLE 7 DATA (Annex F)	Year: 2022	173.13 mt	293,334 CO ₂ -eq tonnes
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SECTORAL HFC CONSUMPTION DATA (CO₂-eq tonnes) AND ACTIVITIES

	Aerosol	Foam	Fire-fighting	AC and refrigeration				Solvent	Other
				Manufacturing			Servicing		
				Refrigeration	AC	Other			
As submitted (2022)							296,915		
Latest CP report (2023)							283,415		
KIP stage I activities as agreed (Y/N)							Y		

AVERAGE 2020-2022 HFC CONSUMPTION IN SERVICING	161.11 mt	274,901 CO ₂ -eq tonnes
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CONSUMPTION DATA (CO₂-eq tonnes)	2020	2021	2022	Average 2020-2022
HFC annual consumption	253,660	277,709	293,334	274,901
HCFC baseline (65%)				49,325
HFC baseline				324,226

PROJECT DATA AS AGREED		2024*	2025	2026	2027	2028	2029-2030	Total	
Consumption (CO ₂ -eq tonnes)	Montreal Protocol limits	324,226					291,803	n/a	
	Maximum allowable	324,226					291,803	n/a	
	Maximum allowable (%)	100					90	n/a	
Amounts requested in principle (US \$)	UNEP	Project costs	34,000	0	0	80,000	0	0	114,000
		Support costs	4,420	0	0	10,400	0	0	14,820
	UNDP	Project costs	76,000	0	0	0	0	0	76,000
		Support costs	9,880	0	0	0	0	0	9,880
	Total project costs		110,000	0	0	80,000	0	0	190,000
	Total support costs		14,300	0	0	10,400	0	0	24,700
	Total funds		124,300	0	0	90,400	0	0	214,700

* Recommended for approval at the present meeting.

Reduction from stage I in CO ₂ -eq tonnes	32,423
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Secretariat's recommendation:	Individual consideration (Secretariat presentation not required)
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PROJECT DESCRIPTION

31. The present document contains the following sections:
- I. Summary of the proposal as submitted
 - II. Background: Implementation status of the country’s HCFC phase-out management plan and previous HFC-related projects
 - III. HFC consumption: Overview of the country’s HFC consumption levels, trends and sectoral uses
 - IV. Stage I of the Kigali HFC implementation plan, as submitted: Overarching strategy and plan of implementation for the first tranche
 - V. Secretariat’s comments, including the agreed cost of activities
 - VI. Recommendation

I. Summary of the proposal as submitted

32. On behalf of the Government of the Lao People’s Democratic Republic, UNEP as the lead implementing agency has submitted a request for stage I of the Kigali HFC implementation plan (KIP), at a total cost of US \$214,700, consisting of US \$114,000, plus agency support costs of US \$14,820, for UNEP and US \$76,000, plus agency support costs of US \$9,880, for UNDP, as originally submitted.⁵

33. The implementation of stage I of the KIP will assist the Government of the Lao People’s Democratic Republic in meeting the target of a 10 per cent reduction from its HFC baseline consumption by 1 January 2029. The project will be implemented between 2024 to 2030 as originally submitted.

34. The first tranche of stage I of the KIP being requested at the present meeting amounts to US \$124,300, consisting of US \$34,000, plus agency support costs of US \$4,420 for UNEP and US \$76,000 plus agency support costs of US \$9,880 for UNDP, as originally submitted, for the period of June 2024 to December 2027.

II. Background

Status of implementation of the HCFC phase-out management plan

35. Table 2 presents information on the HPMP in the Lao People’s Democratic Republic as of February 2024.

Table 2. HPMP implementation status for the Lao People’s Democratic Republic

	Stage I	Stage II
Meetings when HPMP was approved/updated	63 rd /74 th	86 th
Reduction from baseline	35% by 2020	100% by 2030
Total project cost (US \$)	280,000	520,000
Date of completion (actual/planned)	31 December 2020	31 December 2031

⁵ As per the letter of 2 February 2024 from the Department of Climate Change of the Lao People’s Democratic Republic to UNEP.

Status of implementation of previous HFC-related activities

36. Table 3 presents an overview of activities implemented in the Lao People's Democratic Republic in the context of the Kigali Amendment that have been funded by the Multilateral Fund.

Table 3. Previously approved HFC-related activities in the Lao People's Democratic Republic

Approval meeting	Project title	Implementing agency	Cost (US \$)	Date of completion
74 th	Survey of ODS alternatives	UNEP	40,000	September 2017
81 st	Enabling activities for HFC phase-down	UNEP	54,082*	June 2022

* Of the US \$95,000 approved, only US \$54,082 was disbursed. The remaining funding of US \$40,918 was returned to the Fund.

III. HFC consumption overview

HFC consumption levels

37. The Lao People's Democratic Republic only imports HFCs for use in the refrigeration and air-conditioning (RAC) servicing and fire suppression equipment servicing sectors. The most consumed substances in 2023 were HFC-134a (47.7 per cent of total HFC consumption in CO₂-equivalent (CO₂-eq) tonnes), R-410A (40.4 per cent), R-404A (7.5 per cent), HFC-32 (4.2 per cent), and other HFCs (less than 1 per cent). Table 4 presents the country's HFC consumption as reported to the Ozone Secretariat under Article 7 of the Montreal Protocol.

Table 4. HFC consumption in the Lao People's Democratic Republic (2019–2023 Article 7 data)

HFC	GWP*	2019	2020	2021	2022	2023**
Metric tonnes (mt)						
HFC-32	675.00	4.55	8.05	11.55	15.40	17.57
HFC-134a	1,430.00	72.08	80.24	81.60	85.68	94.52
HFC-227ea	3,220.00	0.00	0.00	1.24	1.37	0.00
R-404A	3,921.60	3.82	4.36	4.36	4.69	5.45
R-407C	1,773.85	0.90	0.68	0.68	0.45	0.34
R-410A	2,087.50	45.2	54.24	62.72	65.54	54.81
R-507A	3,985.00	0.00	0.49	0.00	0.00	0.00
Total (mt)		126.55	148.06	162.15	173.13	172.69
CO₂-eq tonnes						
HFC-32	675.00	3,071	5,434	7,796	10,395	11,860
HFC-134a	1,430.00	103,074	114,743	116,688	122,522	135,164
HFC-227ea	3,220.00	0	0	3,993	4,411	0
R-404A	3,921.60	14,981	17,098	17,098	18,392	21,373
R-407C	1,773.85	1,596	1,206	1,206	798	603
R-410A	2,087.50	94,355	113,226	130,928	136,815	114,416
R-507A	3,985.00	0	1,953	0	0	0
Total (CO₂-eq tonnes)		217,078	253,660	277,709	293,334	283,415

* Global warming potential.

** Country programme (CP) data.

Established HFC baseline and proposed reductions

38. The Government of the Lao People's Democratic Republic reported the Article 7 data for 2020–2022. The country's HFC consumption baseline was established at 324,226 CO₂-eq tonnes by adding 65 per cent of its HCFC baseline (expressed in CO₂-eq tonnes) to its average HFC consumption in 2020–2022, as shown in table 5.

Table 5. HFC baseline calculation for the Lao People's Democratic Republic (CO₂-eq tonnes)

Baseline calculation components	2020	2021	2022
HFC annual consumption	253,660	277,709	293,334
HFC average consumption in 2020-2022			274,901
HCFC baseline (65%)			49,325
HFC baseline			324,226

Country programme implementation report

39. The sectoral HFC consumption data provided by the Government of the Lao People's Democratic Republic in its CP implementation report for 2022 is consistent with the data reported under Article 7 of the Montreal Protocol.

HFC consumption trends

40. HFC consumption has been increasing since 2019 due to the phase-out of HCFCs, economic development in the country and the increased need for cooling. There were a number of new constructions during this period with overseas investment in which HFC-based technologies were used. In addition, the Government established a ban on the import of HCFC-22 and HCFC-123-based RAC equipment effective as of 1 January 2023. In view of the ban, the import of all types of air conditioners (single split, portable, multi-split, ducted split and ducted packaged) where HCFC-22 was used, had been largely replaced by R-410A with some use of HFC-32. There are also increasing imports of HFC-based stand-alone commercial refrigeration units. All the above contributed to the growth of HFC imports.

HFC consumption by sector

41. HFCs are primarily consumed for servicing in the RAC subsector (45.4 per cent in mt and 47.4 per cent in CO₂-eq tonnes), followed by the mobile air-conditioning (MAC) subsector (35.5 per cent in mt and 29.9 per cent in CO₂-eq tonnes), assembly subsector (18.3 per cent in mt and 21.2 per cent in CO₂-eq tonnes) and firefighting subsector (0.8 per cent in mt and 1.5 per cent in CO₂-eq tonnes), as shown in tables 6 and 7.

42. As the most consumed HFCs in the country, R-410A (46.8 per cent in CO₂-eq tonnes) and HFC-134a (41.8 per cent) will be prioritized. R-410A has mainly been used to service residential and commercial air-conditioning (AC) units, while HFC-134a has been used in MAC and chillers. HFC-32 is expected to slowly replace R-410A in the residential AC subsector, whereas HFC-134a is expected to continue to grow with the growth of MAC.

Table 6. HFC consumption in the Lao People's Democratic Republic by sector (2022) (mt)

Sector	HFC-134a	HFC-32	R-404A	R-407C	R-410A	R-507A	HFC-227ea	Total	Share of total (%)
Refrigeration subsectors									
Domestic	5.43	0.00	0.00	0.00	0.00	0.00	0.00	5.43	3.1
Commercial	3.20	0.00	1.54	0.00	0.00	0.12	0.00	4.86	2.8
Industrial	0.00	0.00	0.09	0.00	0.00	0.00	0.00	0.09	0.1
Air-conditioning subsectors									
Residential	0.00	14.71	0.00	0.42	41.04	0.00	0.00	56.17	32.1
Commercial	0.00	0.00	0.00	0.00	10.47	0.00	0.00	10.47	6.0
Chillers	2.27	0.00	0.00	0.00	0.10	0.00	0.00	2.37	1.4
Mobile AC	62.01	0.00	0.00	0.00	0.00	0.00	0.00	62.01	35.5
Subtotal for servicing	72.91	14.71	1.63	0.42	51.62	0.12	0.00	141.40	80.9
Local installation and assembly	13.85	0.21	3.00	0.00	14.97	0.00	0.00	32.02	18.3
Firefighting	0.00	0.00	0.00	0.00	0.00	0.00	1.37	1.37	0.8
Total	86.76	14.91	4.63	0.42	66.59	0.12	1.37	174.79	100

Table 7. HFC consumption in the Lao People's Democratic Republic by sector (2022) (CO₂-eq tonnes)

Sector	HFC-134a	HFC-32	R-404A	R-407C	R-410A	R-507A	HFC-227ea	Total	Share of total (%)
Refrigeration subsectors									
Domestic	7,762	0	0	0	0	0	0	7,762	2.6
Commercial	4,580	0	6,035	0	0	482	0	11,098	3.7
Industrial	0	0	353	0	0	0	0	353	0.1
Air-conditioning subsectors									
Residential	0	9,929	0	736	85,675	0	0	96,340	32.4
Commercial	0	0	0	0	21,864	0	0	21,864	7.4
Chillers	3,250	0	0	0	209	0	0	3,459	1.2
Mobile AC	88,669	0	0	0	0	0	0	88,669	29.9
Subtotal for servicing	104,261	9,929	6,388	736	107,748	482	0	229,545	77.3
Local installation and assembly	19,801	139	11,757	0	31,251	0	0	62,948	21.2
Fire fighting	0	0	0	0	0	0	4,411	4,411	1.5
Total	124,063	10,067	18,145	736	138,999	482	4,411	296,904	100

Refrigeration and air-conditioning servicing sector

43. There are approximately 2,000 technicians (including 40 women) and 390 workshops (including the MAC subsector) consuming HFCs in the Lao People's Democratic Republic. Among the servicing workshops, 61 per cent are not registered with the Department of Enterprise Registration and Management (DERM) in the MOIC; 80 per cent of the surveyed servicing workshops do not have proper tools to follow good servicing practices. For the technicians, 44 per cent work in non-registered workshops or work as freelance technicians. Approximately 47 per cent of the technicians work in the stationary RAC sector, 13 per cent work in the MAC sector, and 40 per cent work in both the RAC and MAC sectors. About 45 per cent of the total servicing technicians did not get any formal vocational education before they started working in the sector and only received on-the-job training. A competency-based technician certification system is scheduled to be developed and implemented under stage II of the HPMP.

44. There are three training institutions that provide specific training on RAC and MAC equipment servicing: the Lao-Korea Institute for Skill Development, the Lao-German Technical College, and Pakpasak Technical College. These training institutes have been collaborating with the NOU and RAC association to provide training on good servicing practices for the residential AC sector under stage II of the HPMP. There has been no National Competency Standard (NCS) on good servicing practices for the RAC sector. Each training institute uses its own RAC training curriculum approved by the Department of Skill Development and Employment. Stage II of the HPMP plans to integrate good servicing practices into an NCS to standardize the training curriculum for good servicing practices.

Domestic, commercial, industrial and transport refrigeration servicing

45. The HFC consumption in the domestic, commercial, and industrial refrigeration sectors accounts for 6.4 per cent (in CO₂-eq tonnes) of total HFC consumption in the country. The dominant HFCs used in the subsector are R-404A (60.15 per cent in CO₂-eq tonnes, used in commercial stand-alone units, condensing units, cold storage and industrial refrigeration), followed by HFC-134a (39.85 per cent, used in domestic refrigerators and standalone commercial refrigeration) with the remaining 1.56 per cent being R-507A.

46. Domestic refrigeration accounts for 2.6 per cent of total HFC use in the country. R-290-based domestic refrigerators are being introduced into the market. In 2022, of the 1.03 million domestic refrigerators in operation, 73 per cent used R-134a and 27 per cent used R-600a.

47. Commercial refrigeration accounts for 3.7 per cent of total HFC consumption in the country. Commercial stand-alone units use HFC-134a, R-404A, R-290, R-600a and R-744 while condensing units

are based on HCFC-22 and R-404A, and large-scale ice-making machines only use ammonia. A small number of R-507A stand-alone commercial refrigerators also exist to store vaccines and blood. The survey indicated that R-290 and R-600a-based stand-alone commercial refrigerators are slowly being introduced into the domestic market, but no alternative has been identified for condensing units.

48. Cold storage and industrial refrigeration in the country are based on HCFC-22, R-404A and ammonia. In 2022, there were approximately 1,150 cold storage and industrial refrigeration equipment, most of which were small to medium-sized cold storage. Among these, 55 per cent are based on HCFC-22, 43 per cent on R-404A and 2 per cent on ammonia. The use of HFCs in the subsector has been increasing due to the replacement of HCFC-22-based equipment with R-404A.

Residential and commercial air-conditioning servicing

49. The residential and commercial AC servicing subsector consumes 41 per cent of total HFCs in the country, making it the largest consuming subsector. Within the subsector, R-410A accounts for 88.6 per cent (in CO₂-eq tonnes) and is mainly used in single, multi and ducted split AC with a small percentage coming from ducted central and packaged AC. HFC-32 accounts for 8.2 per cent and is only used in domestic split AC. HFC-134a accounts for 2.7 per cent of use in the subsector and is used solely in chillers.

50. Residential AC (split AC and portable AC) is the largest HFC consumption subsector (in CO₂-eq tonnes) followed by the MAC sector. The refrigerants used in residential AC include HCFC-22, HFC-32, R-407C and R-410A. The survey revealed that no HCFC-22-based single split AC has been imported since 2019. Portable AC units use R-410A. Since 2018, the consumption of R-410A, and HFC-32 to a lesser extent, has increased significantly due to the phase-out of HCFC-22.

51. Commercial AC (multi-split, ducted central and packaged AC) uses HCFC-22 or R-410A (50 per cent each). Refrigerants are used in both the initial charge after installation (56 per cent in weight) and the subsequent servicing (44 per cent). Chillers, ranging from 50 to 500 refrigeration tonnes of capacity, are based on HCFC-22, HFC-134a and R-410A. At the moment, no alternative to HFCs in this subsector is available in the country.

Mobile air-conditioning servicing

52. The MAC sector uses only HFC-134a. In 2022, the MAC sector consumed approximately 62 mt of HFC-134a, accounting for 29.86 per cent of total HFC use (in CO₂-eq tonnes) and is the second largest consumption sector in the country. The survey did not identify any use of HFO-1234yf in MAC systems. The consumption in the subsector has been growing at an annual rate of 10 per cent due to economic growth and is expected to continue to grow in future years.

Local installation and assembly subsector

53. The survey shows that HFCs are used for initial charge after installation of large RAC equipment in various applications including multi-split, ducted AC, packaged and central AC, chillers, condensing units, cold storage facilities and industrial refrigeration equipment. The total amount of refrigerant used for assembly was estimated at 32 mt (62,948 CO₂-eq tonnes) in 2022. The information collected from the survey indicates that the enterprises working in the sector are primarily contracted technicians from overseas to install these large systems. Local technicians are only involved in subsequent maintenance. Therefore, no training activities have been planned in the sector. Stage I of the KIP will aim to prevent the use of high-GWP HFCs in large RAC appliances through the approval of EIAs.

Firefighting

54. There is no manufacturing of portable fire extinguishers in the country. A small quantity of HFC-227ea was imported in 2021 and 2022 and used as fire suppressant in the train system, and there were no imports in 2019, 2020 and 2023. The Lao-China Railway Company imported the substance and managed the installation and servicing of the fire suppression system themselves. The NOU is coordinating with the Department of Railways under the Ministry of Public Works and Transport and seeking further collaboration with the Lao-China Railway company to control the use of HFC-227ea as fire suppressant for the train system.

IV. Stage I of the Kigali HFC implementation plan as submittedInstitutional, policy and regulatory framework

55. Information on the institutional, policy and regulatory framework is available in paragraphs 7 to 11 of the present document.

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

56. The Government of the Lao People's Democratic Republic proposes to adopt a staged approach to phase down HFCs following the Montreal Protocol phase-down schedule. Stage I of the KIP will include a target for a 10 per cent reduction from the HFC baseline by 2029.

57. Stage I will be implemented in coordination with stage II of the HPMP between 2024 and 2030 as originally submitted, focusing on the targets of freezing to the baseline in 2024 and a 10 per cent reduction from the HFC baseline by 2029. The reduction will be achieved by implementing the regulatory bans on the import of R-410A-based domestic AC units to be established by 1 January 2027; strengthening the licensing and quota system to control HFC supply; training and certifying technicians to reduce the demand for HFCs in the RAC and MAC servicing sector; supporting training institutions and industrial associations; and conducting awareness-raising activities to promote the adoption of alternatives to HFCs. Priority will be given to the reduction of R-410A in the domestic AC subsector and R-134a in the MAC sector.

Proposed activities

58. The action plan for stage I of the KIP was developed based on the consumption profile of the country to address the barriers to transitioning to lower and low-GWP alternatives by introducing regulatory measures and building the capacity of the servicing sector through the training and certification of technicians. Stage I of the KIP includes the following activities:

- (a) Policy and regulations to support HFC phase-down: Establishment of regulatory measures to limit new demand for high-GWP and energy-inefficient equipment, including a ban on the import of R-410A-based residential AC; a ban on the use of HFCs in all manufacturing sectors; and the inclusion of restrictions on the GWP value of refrigerants in RAC systems installed in buildings and construction projects through initial environmental evaluations/EIAs (UNEP) (US \$4,000);
- (b) Strengthening the monitoring of import control: Conducting two border dialogues with neighbouring countries on the issue of cross-border trading and the prevention of illegal trade, with the participation of five customs officers; one border dialogue will be led by female customs officers (UNEP) (US \$13,000);

- (c) Capacity-building in the MAC servicing sector: Integration of good servicing practices into the NCS and training syllabus in the MAC sector (level 2); training 20 trainers in good servicing practices; training 20 assessors in MAC competency-based assessment, and holding eight training workshops for 160 technicians on good servicing practices (UNEP) (US \$62,000); and providing training equipment⁶ for two MAC training institutions (UNDP) (US \$76,000);
- (d) Capacity-building for the RAC servicing sector: Integration of good servicing practices into the NCS and training syllabus for commercial AC (level 3) and chillers (level 4); training 20 assessors in competency-based assessment of commercial air-conditioning (UNEP) (US \$15,000); and
- (e) Public awareness and outreach: Conducting awareness-raising and communication activities to disseminate information on HFC phase-down, alternatives and safety standards to various stakeholders to gain full cooperation and support for the implementation of stage I of the KIP (UNEP) (US \$5,000).

Project implementation, coordination and monitoring

59. Project coordination, monitoring and reporting will be undertaken by the NOU with the support of UNEP at a total of US \$15,000 for travel to support KIP implementation.

Gender policy implementation

60. In line with the Multilateral Fund's operational policy on gender mainstreaming, the submission has included gender mainstreaming indicators and activities. The NOU will ensure the participation of women in border dialogues for customs officers (at least one border dialogue to be led by a female trainer), and training for servicing technicians in the RAC and MAC sectors during the implementation of stage I of the KIP. The NOU will also encourage women to participate in all activities linked to KIP implementation as trainers, trainees, consultants, or experts to develop the training materials, assessment modules and awareness-raising materials. The project aims to have at least one session during each workshop to discuss gender-specific issues, one message on gender mainstreaming in awareness-raising communications, and improved participation of women in HFC phase-down activities.

Total cost of stage I of the Kigali HFC implementation plan

61. The budget for stage I has been proposed at US \$190,000 solely for the activities in the refrigeration servicing sector in line with decision 92/37. The proposed activities and cost of stage I of the KIP are summarized in paragraphs 58 to 59 of the present document. The implementation of stage I of the KIP for the Lao People's Democratic Republic will result in a reduction of 32,423 CO₂-eq tonnes.

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

62. Stage I of the KIP was developed based on the existing institutional, policy and capacity-building frameworks and progress achieved, and the activities planned under the HPMP to ensure complementarity with the HPMP. It will be implemented in a coordinated manner with stage II of the HPMP in the areas where HCFC phase-out and HFC phase-down are implemented simultaneously. Activities have also been planned under the KIP for the MAC subsector which has not been assisted during HCFC phase-out. A comparison of activities under the HPMP and the KIP is included in annex III to the present document.

⁶ MAC training boards, MAC dual refrigerant recovery/recharging unit, digital multi-refrigerant gauge manifold, leak detector, cylinders and tools.

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

63. The first funding tranche of stage I of the KIP, with a total amount of US \$110,000, will be implemented between June 2024 and December 2027 and will include the following activities:

- (a) Policy and regulations to support HFC phase-down: Consultation meetings with the Ministry of Industry and Commerce, Ministry of Energy and Mines and other relevant ministries on the establishment of a ban on import of R-410A-based residential AC units by 1 January 2027; a ban on the use of HFCs in all manufacturing sectors by 1 January 2026; and the inclusion of restrictions on the GWP value of refrigerants in RAC systems installed in buildings and construction projects through initial environmental evaluation/EIA (UNEP) (US \$4,000);
- (b) Strengthening the monitoring of import control: Conducting one border dialogue with a neighbouring country on the issue of cross-border trading and the prevention of illegal trade with the participation of five customs officers (UNEP) (US \$6,500);
- (c) Capacity-building in the MAC servicing sector: Employing consultants to integrate good servicing practices into the NCS and training syllabus and to develop standard training and assessment modules and materials for the MAC sector; training 20 trainers in good servicing practices; and training 20 assessors in MAC competency-based assessment (UNEP) (US \$12,000);
- (d) Providing training equipment for two MAC training institutions (UNDP) (US \$76,000);
- (e) Capacity-building for the RAC servicing sector: Employing consultants to integrate good servicing practices into the NCS and training syllabus and to develop standard assessment modules for the commercial AC subsector; and training 20 assessors in competency-based assessment of commercial AC (UNEP) (US \$7,000);
- (f) Public awareness and outreach: Awareness-raising and communication activities to disseminate information on HFC phase-down, alternatives and safety standards to various stakeholders (UNEP) (US \$2,000); and
- (g) Project coordination and monitoring will be undertaken by the NOU with the support of UNEP for a total of US \$2,500 for travel to support KIP implementation.

SECRETARIAT'S COMMENTS AND RECOMMENDATION**V. Comments**Overarching strategy

64. In response to a question about whether the Government would consider setting lower targets than the Montreal Protocol schedule in stage I of the KIP to control HFC growth, noting that the 2022 HFC consumption was 10 per cent below the baseline, UNEP clarified that the country is experiencing an increasing trend in HFCs. Due to the uncertainty surrounding alternatives to HFCs used in the major sectors, it might be premature to commit to an advanced phase-down of HFCs under stage I. Nevertheless, the Government will monitor the situation of HFC phase-down and identify appropriate actions if there is a change in national circumstances.

Institutional, policy and regulatory framework

HFC licensing and quota system

65. In line with decision 87/50(g), UNEP has confirmed that the Lao People's Democratic Republic has an established and enforceable system of licensing and quotas for monitoring HFC imports/exports in place. The quota for 2024 has been issued in line with the Montreal Protocol phase-down schedule.

66. The need for training of customs officers in HFC control was discussed. UNEP clarified that the training of customs officers planned under stage II of the HPMP has already covered the control of HFCs. The refrigerant identifiers provided under the HPMP can also be used to inspect and detect the most commonly used HFCs and blends.

67. MEPS and labelling system in the country do not include requirements on the GWP value of refrigerants contained in appliances, as this is controlled through the EIA. A MEPS was developed for split air conditioners, and stakeholders will gain experience in implementation before extending it to other applications.

68. Regarding the regulatory measures to be established to limit the GWP value of refrigerants in RAC equipment that are not covered under the MEPS, UNEP clarified that the GWP value and applications will be assessed during the implementation of the KIP. The NOU, in collaboration with the RAC association, will monitor the situation of market penetration of technologies in the country to determine additional intervention strategies as needed.

Technical and cost-related issues

69. The Secretariat noted that R-600a-based domestic refrigerators have been increasing in the market and queried whether the Government would consider banning the import of HFC-134a-based domestic refrigerators to accelerate the phase-down of HFC-134a. UNEP clarified that the consumption of HFC-134a in this sector is negligible (2.5 per cent of total HFCs in CO₂-eq tonnes). In order to optimize the use of funding, no intervention has been planned under stage I of the KIP to address HFC-134a consumption.

70. Noting the increasing use of hydrocarbons (R-600a and R-290) in domestic refrigerators and stand-alone commercial refrigeration units, the Secretariat inquired about the standard for their safe use. It was clarified that there are general requirements for the safe handling of hazardous substances including petroleum products. The NOU is working with relevant ministries to develop safety standards related to flammable refrigerants and energy labelling. This has been included in the project for "Additional activities for the introduction of alternatives to HCFCs with low or zero-GWP refrigerants and for maintaining energy efficiency in the refrigeration servicing sector" that has been submitted pursuant to decision 89/6 of the Executive Committee.

71. The Secretariat noted that the HFC consumption in the residential AC sector accounts for 32.4 per cent (in CO₂-eq tonnes) of total HFCs and enquired about alternative technologies. UNEP clarified that the import of HFC-32-based units is increasing as an alternative; however, R-290-based AC units are not available in the country. Training and awareness activities have been undertaken to promote the introduction of R-290 AC, but the Lao People's Democratic Republic is a technology recipient country, and there is limited access to R-290 air conditioners because the manufacturers/suppliers have not supplied the products to overseas markets.

Tranche distribution and cost adjustments

72. The Secretariat noted that the funding as submitted for stage I of the KIP was frontloaded, with 90 per cent of the funds requested for the 2024-2026 period. In line with decision 93/105, the Secretariat

considered the tranche distribution proposed by UNIDO on a case-by-case basis. The number of tranches were optimized to synchronize with the HPMP, and the second tranche of the KIP and third tranche of the HPMP were moved to 2027. The dual-tranche modality is consistent with the tranche distribution modalities for KIPs proposed in document UNEP/OzL.Pro/ExCom/94/59. In the event that the country does not comply with the maximum allowable consumption target for any year following the approval of the last tranche, the issues would be considered in line with Appendix 7-A of the future KIP Agreement (“Reductions in funding for failure to comply with the targets in the Agreement”), noting that any reduction in funding, if applicable, would be applied at the time of approval of stage II of the KIP. The first tranche was agreed as submitted.

Total project cost

73. The total cost of stage I of the KIP for the Lao People’s Democratic Republic has been agreed as submitted at US \$190,000. This is in line with decision 92/37. The implementation of stage I of the KIP will result in a reduction of annual emissions of 32,423 CO₂-eq tonnes.

Co-financing

74. The co-financing of stage I of the KIP for the Lao People’s Democratic Republic will be in the form of an in-kind contribution from the Government for staff support, office space, telecommunications, and administrative procedures for the implementation of activities.

2024–2026 business plan of the Multilateral Fund

75. UNEP and UNDP are requesting US \$190,000, plus agency support costs, for the implementation of stage I of the KIP for the Lao People’s Democratic Republic. The total value of US \$124,300, including agency support costs, requested for the period of 2024–2026, is US \$49,706 higher than the amount in the business plan.

Sustainability of the HFC phase-down and assessment of risks

76. As part of KIP preparation, the potential risks have been analyzed and measures to mitigate these risks have been considered when developing activities and plans under stage I to ensure the successful implementation of the KIP and the sustainability of the results achieved.

77. Potential risks identified include potential non-compliance due to economic growth; challenges in adopting low-GWP technologies to achieve HFC reduction due to the lack of awareness of benefits and the high price of alternative technologies; and lack of equipment for refrigerant recovery and lack of confidence in using the recovered refrigerants.

78. To address these potential risks, the Government has established an operational licensing and quota system for HFCs and commits to enforcing it to ensure that the import of HFCs will stay below the maximum allowable targets set in the Agreement with the Executive Committee to mitigate the risk of non-compliance attributed to HFC growth due to economic growth. The border dialogues for the prevention of illegal trade and the awareness-raising activities targeting importers will support the control of HFCs. Regulatory measures and awareness-raising activities have been planned to promote low-GWP energy-efficient alternatives to HFCs to support their import and adoption. The establishment of bans on imports of R-410A-based air conditioners will support the adoption of low-GWP technologies. Capacity-building activities planned under the KIP will address the capacity to ensure the smooth implementation of the activities and sustained results in HFC reduction. The Government plans to develop national inventories of banks of used or unwanted controlled substances and a plan for the collection and disposal of such substances including refrigerant recycling, reclamation, and end-of-cycle destruction.

Impact on the climate

79. The activities proposed, including regulatory measures to restrict the use of high-GWP refrigerants, the training of technicians in good servicing practices including refrigerant recovery and reuse, and efforts to promote low-GWP alternatives, indicate that the implementation of stage I of the KIP will reduce HFC emissions into the atmosphere, resulting in climate benefits. While the Secretariat is not able to provide an estimate of the overall climate benefits of the KIP at the present meeting,⁷ by 2029 the Lao People's Democratic Republic will have reduced the country's annual emissions by approximately 32,423 CO₂-eq tonnes of HFCs, calculated as the difference between the HFC baseline for compliance and the 2029 target, assuming that all HFCs consumed will be eventually emitted.

Draft Agreement

80. A draft Agreement between the Government of the Lao People's Democratic Republic and the Executive Committee for stage I of the KIP has not been prepared as the Agreement template is still under consideration by the Executive Committee.

81. If the Executive Committee so wishes, the funds for stage I of the KIP for the Lao People's Democratic Republic 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, once the Agreement template has been approved.

VI. Recommendation

82. The Executive Committee may wish to consider:

- (a) Approving, in principle, stage I of the Kigali HFC implementation plan (KIP) for the Lao People's Democratic Republic for the period 2024–2030 to reduce HFC consumption by at least 10 per cent of the country's baseline by 2029, in the amount of US \$214,700, consisting of US \$114,000, plus agency support costs of US \$14,820, for UNEP and US \$76,000, plus agency support costs of US \$9,880, for UNDP, as reflected in the schedule contained in annex II to the present document;
- (b) Approving the first tranche of stage I of the KIP for the Lao People's Democratic Republic and the corresponding tranche implementation plan, in the amount of US \$124,300, consisting of US \$34,000, plus agency support costs of US \$4,420, for UNEP and US \$76,000, plus agency support costs of US \$9,880, for UNDP; and
- (c) Requesting the Government of the Lao People's Democratic Republic, UNEP, UNDP and the Secretariat to finalize the draft Agreement between the Government of the Lao People's Democratic Republic and the Executive Committee for the reduction in consumption of HFCs, including the information contained in the annex referred to in subparagraph (a) above, and to submit it to a future meeting once the KIP Agreement template has been approved by the Executive Committee.

⁷ As noted in document 94/14, Overview of issues identified during project review, the Secretariat was in the process of developing a methodology to estimate the avoided emissions from the implementation of HFC phase-down projects supported by the Multilateral Fund.

Annex I

TEXT TO BE INCLUDED IN THE UPDATED AGREEMENT BETWEEN THE GOVERNMENT OF THE LAO PEOPLE'S DEMOCRATIC REPUBLIC AND THE EXECUTIVE COMMITTEE OF THE MULTILATERAL FUND FOR THE THE REDUCTION IN CONSUMPTION OF HYDROCHLOROFLUOROCARBONS IN ACCORDANCE WITH STAGE II OF THE HCFC PHASE-OUT MANAGEMENT PLAN

(Relevant changes are in bold font for ease of reference)

17. This updated Agreement supersedes the Agreement reached between the Government of the Lao People's Democratic Republic and the Executive Committee at the 86th meeting of the Executive Committee.

APPENDIX 2-A: THE TARGETS, AND FUNDING

Row	Particulars	2020*	2021-2022	2023	2024	2025	2026	2027	2028-2029	2030	Total
1.1	Montreal Protocol reduction schedule of Annex C, Group I substances (ODP tonnes)	1.50	1.50	1.50	1.50	0.75	0.75	0.75	0.75	0.00	n/a
1.2	Maximum allowable total consumption of Annex C, Group I substances (ODP tonnes)	1.50	1.50	1.50	1.50	0.75	0.75	0.75	0.75	0.00	n/a
2.1	Lead IA (UNEP) agreed funding (US \$)	106,400	0	87,100	100,000	0	0	86,900	0	52,000	432,400
2.2	Support costs for Lead IA (US \$)	13,832	0	11,323	13,000	0	0	11,297	0	6,760	56,212
2.3	Cooperating IA (UNDP) agreed funding (US \$)	107,000	0	64,480	0	0	0	16,120	0	0	187,600
2.4	Support costs for Cooperating IA (US \$)	9,630	0	5,803	0	0	0	1,451	0	0	16,884
3.1	Total agreed funding (US \$)	213,400	0	151,580	100,000	0	0	103,020	0	52,000	620,000
3.2	Total support cost (US \$)	23,462	0	17,126	13,000	0	0	12,748	0	6,760	73,096
3.3	Total agreed costs (US \$)	236,862	0	168,706	113,000	0	0	115,768	0	58,760	693,096
4.1.1	Total phase-out of HCFC-22 agreed to be achieved under this Agreement (ODP tonnes)										1.50
4.1.2	Phase-out of HCFC-22 to be achieved in stage (ODP tonnes)										0.80
4.1.3	Remaining eligible consumption for HCFC-22 (ODP tonnes)										0.00
4.2.1	Total phase-out of HCFC-141b in pre-blended polyols agreed to be achieved under this Agreement (ODP tonnes)										0.00
4.2.2	Phase-out of HCFC-141b in pre-blended polyols to be achieved in the previously stage (ODP tonnes)										3.24**
4.2.3	Remaining eligible consumption for HCFC-141b in pre-blended polyols (ODP tonnes)										0.00

* Date of completion of stage I as per stage I Agreement: 31 December 2021.

** The phase-out was achieved without assistance from the Multilateral Fund.

APPENDIX 5-A: MONITORING INSTITUTIONS AND ROLES

1. The Department of **Climate Change (DCC)** of the Ministry of Natural Resources and Environment will be responsible for the overall project monitoring of all activities under the Plan. The national ozone unit (NOU) will be responsible for the planning, coordination, implementation of daily work of the project implementation. It will also assist the Government and non-government organizations, to streamline their activities for smooth implementation of the projects. The NOU will submit annual progress reports on the status of the implementation to the Lead IA and the Cooperating IA to monitor implementation progress of the Plan.

Annex II

**SCHEDULE OF HFC PHASE-DOWN AND HCFC PHASE-OUT COMMITMENTS AND FUNDING TRANCHES
UNDER THE KIGALI HFC IMPLEMENTATION PLAN AND THE HCFC PHASE-OUT MANAGEMENT PLAN
FOR THE LAO PEOPLE'S DEMOCRATIC REPUBLIC**

Kigali HFC implementation plan (stage I)

Row	Particulars	2024	2025	2026	2027	2028	2029	2030	Total
1.1	Montreal Protocol reduction schedule of Annex F substances (CO ₂ -eq tonnes)	324,226	324,226	324,226	324,226	324,226	291,803	291,803	n/a
1.2	Maximum allowable total consumption of Annex F substances (CO ₂ -eq tonnes)	324,226	324,226	324,226	324,226	324,226	291,803	291,803	n/a
2.1	Lead IA (UNEP) agreed funding (US \$)	34,000	0	0	80,000	0	0	0	114,000
2.2	Support costs for Lead IA (US \$)	4,420	0	0	10,400	0	0	0	14,820
2.3	Cooperating IA (UNDP) agreed funding (US \$)	76,000	0	0	0	0	0	0	76,000
2.4	Support costs for Cooperating IA (US \$)	9,880	0	0	0	0	0	0	9,880
3.1	Total agreed funding (US \$)	110,000	0	0	80,000	0	0	0	190,000
3.2	Total support costs (US \$)	14,300	0	0	10,400	0	0	0	24,700
3.3	Total agreed costs (US \$)	124,300	0	0	90,400	0	0	0	214,700

HCFC phase-out management plan (stage II) (remaining tranches only)*

Row	Particulars	2023**	2024	2025	2026	2027	2028	2029	2030	Total
1.1	Montreal Protocol reduction schedule of Annex C, Group I substances (ODP tonnes)	1.50	1.50	0.75	0.75	0.75	0.75	0.75	0.00	n/a
1.2	Maximum allowable total consumption of Annex C, Group I substances (ODP tonnes)	1.50	1.50	0.75	0.75	0.75	0.75	0.75	0.00	n/a
2.1	Lead IA (UNEP) agreed funding (US \$)	87,100	100,000	0	0	86,900	0	0	52,000	238,900
2.2	Support costs for Lead IA (US \$)	11,323	13,000	0	0	11,297	0	0	6,760	31,057
2.3	Cooperating IA (UNDP) agreed funding (US \$)	64,480	0	0	0	16,120	0	0	0	16,120
2.4	Support costs for Cooperating IA (US \$)	5,803	0	0	0	1,451	0	0	0	1,451
3.1	Total agreed funding (US \$)	151,580	100,000	0	0	103,020	0	0	52,000	255,020
3.2	Total support costs (US \$)	17,126	13,000	0	0	12,748	0	0	6,760	32,508
3.3	Total agreed costs (US \$)	168,706	113,000	0	0	115,768	0	0	58,760	287,528

* As per the Agreement to be updated at the present meeting.

** Funding requested at the present meeting.

Annex III

**SIMULTANEOUS IMPLEMENTATION OF THE HCFC PHASE-OUT MANAGEMENT PLAN
AND THE KIGALI HFC IMPLEMENTATION PLAN IN THE LAO PEOPLE'S DEMOCRATIC REPUBLIC**

Component	HPMP Stage II	Agency	Cost (US \$)	KIP Stage I	Agency	Cost (US \$)		
Strengthening policy and regulations	Licensing and quota system to support the sustained HCFC phase-out	UNEP	141,000					
	Banning the establishment of manufacturing capacity using HCFCs			Banning the use of HFCs in all manufacturing sectors by 1 January 2026	UNEP	2,000		
	Banning on the import of HCFC-22- and HCFC-123-based RAC equipment as of 1 January 2023			Banning the import of R-410A single split air conditioners by 1 January 2027				
	Mandatory labelling of HCFC containers							
	Regulatory support for certification of technicians							
	Registration of servicing workshops							
	Joint inspection on labelling of refrigerant containers and sales							
	Training of 325 customs officers, importers and brokers in the control of ODS import and prevention of illegal trade					Organizing two border dialogues for 10 customs officers with neighbouring countries on the issue of cross-border trading	UNEP	13,000
	Provision of five refrigerant identifiers			UNDP	25,000			
	Product registration database and energy labelling: Creating an online registration for air conditioners and conducting a three-day study tour on air conditioner registration, recognition of testing laboratories, verification of testing, and enforcing MEPS and energy labelling; and developing a safety standard related to flammable refrigerants and energy labelling to include refrigerant data, including its GWP value and safety information			UNEP	45,000	Inclusion of restrictions on the GWP value of refrigerants used in RAC systems in Initial Environmental Evaluation / Environmental Impact Assessment	UNEP	2,000
Three workshops to train 90 customs and enforcement officers on MEPS and energy efficiency labelling; two workshops to train 40 importers of air conditioners	UNEP	28,000						
Capacity-building for RAC servicing technicians	Upgrading training curriculum; conducting 15 workshops to train 300 servicing technicians on good practices in servicing room AC systems and safe handling of flammable alternative technologies	UNEP	86,400					
	Conducting two workshops to train 30 technicians in servicing large commercial refrigeration equipment and cold storage facilities							
	Developing and implementing mandatory certification for technicians through integrating good servicing practices into the national qualification framework in the Technical and Vocational Education and Training (TVET) system							
					Reviewing and assisting TVET Authority and training institutes to integrate good servicing practices into NCS and training syllabus - level 3 (commercial air conditioner)	UNEP	4,000	
					Developing a standardized assessment module for commercial air conditioners and conducting one assessor's workshop to train 20 assessors on competency-based assessment	UNEP	7,000	

Component	HPMP Stage II	Agency	Cost (US \$)	KIP Stage I	Agency	Cost (US \$)
				Reviewing and assisting TVET Authority and training institutes to integrate good servicing practices into NCS and training syllabus - level 4 (chiller)	UNEP	4,000
	One pilot training workshop for 25 RAC technicians on the good servicing practices curriculum that has been updated to include the energy efficiency of air conditioners and regulations related to MEPS and energy labelling (US \$10,000)	UNEP	10,000			
Capacity-building for mobile air-conditioning (MAC)				Developing a package of standardized training modules and materials for MAC good servicing practices and conducting one five-day training-of-trainers workshop with 20 trainers	UNEP	11,000
				Review and assist TVET Authority and training institutes to integrate good servicing practices into NCS and training syllabus - level 2 (MAC)	UNEP	4,000
				Developing a standardized assessment module for MAC and conducting one assessor's workshop to train 20 assessors on competency-based assessment	UNEP	7,000
				Conducting eight training workshops for MAC servicing technicians on good servicing practices to train 160 MAC technicians	UNEP	40,000
Provision of equipment to servicing workshops and training institutions to strengthen the capacity of servicing sector	Providing equipment and tools (e.g., weighing scales, two-stage rotary vacuum pump, manifold gauge, and micro gauge) to 100 registered large servicing workshops and certified technicians to incentivize participation in the technician's certification scheme and to enable good servicing practices in servicing and installation of RAC equipment;	UNDP	162,600			
	Providing training equipment (e.g., 32 air conditioners in rack unit, nitrogen cylinders, leak detectors, various tools) to upgrade five professional training institutes in provinces for technicians' training					
				Improvement of physical capacities of MAC TVET through acquisition of MAC training equipment to training centers	UNDP	76,000
Public awareness-raising and information dissemination	Public awareness and outreach programme to raise awareness on activities implemented under stage II	UNEP	30,000	Awareness-raising and communication to relevant stakeholders under KIP Stage I with consideration of gender mainstreaming	UNEP	5,000
	Informing mandatory labelling requirements;					
	Informing the availability of non-HCFC, low-GWP alternative refrigerants and energy-efficient RAC equipment					
	Dissemination of safety information on flammable refrigerants	UNEP	17,000			
	Development of outreach materials to educate consumers on the environmental effects of consumer choices and how to read energy labels; and a consumer behaviour study to measure the impacts of the outreach project					
Project implementation, coordination and monitoring	Project implementation, coordination and monitoring for HPMP	UNEP	75,000	Project implementation, coordination and monitoring for KIP	UNEP	15,000
Total			620,000			190,000
Percentage of total (%)			77			23