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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: SRI LANKA

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

Phase-out

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

Phase-down

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

Energy efficiency

- Pilot project to maintain and/or enhance the energy efficiency of replacement technologies and equipment in the context of HFC phase-down (non-investment activities) UNDP and UNEP

¹ UNEP/OzL.Pro/ExCom/94/1

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

Sri Lanka

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

(II) LATEST ARTICLE 7 DATA (Annex C Group I)	Year: 2022	7.65 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					8.58				8.58
HCFC-123					0.00				0.00
HCFC-141b					0.00				0.00

(IV) CONSUMPTION DATA (ODP tonnes)			
2009-2010 baseline:	13.90	Starting point for sustained aggregate reductions:	13.90
CONSUMPTION ELIGIBLE FOR FUNDING			
Already approved:	9.14	Remaining:	0.00

(V) ENDORSED BUSINESS PLAN		2024	2025	2026	Total
UNDP	ODS phase-out (ODP tonnes)	2.58	0.00	0.47	3.05
	Funding (US \$)	313,724	0	56,924	370,648
UNEP	ODS phase-out (ODP tonnes)	0.75	0.00	0.76	1.51
	Funding (US \$)	96,954	0	98,084	195,038

(VI) PROJECT DATA		2020	2021-2022	2023	2024*	2025	2026	2027-2029	2030	Total	
Montreal Protocol consumption limits (ODP tonnes)		9.04	9.04	9.04	9.04	4.52	4.52	4.52	0.00	n/a	
Maximum allowable consumption (ODP tonnes)		9.04	9.04	9.04	9.04	4.52	4.52	4.52	0.00	n/a	
Funding agreed in principle (US \$)	UNDP	Project costs	216,200	0	293,200	120,000	0	53,200	0	62,400	745,000
		Support costs	15,134	0	20,524	8,400	0	3,724	0	4,368	52,150
	UNEP	Project costs	200,800	0	85,800	0	0	86,800	0	41,600	415,000
		Support costs	26,104	0	11,154	0	0	11,284	0	5,408	53,950
Funds approved by ExCom (US \$)		Project costs	417,000	0	0	0	0	0	0	0	417,000
		Support costs	41,238	0	0	0	0	0	0	0	41,238
Total funds recommended for approval at this meeting (US \$)		Project costs	0	0	0	499,000	0	0	0	0	499,000
		Support costs	0	0	0	40,078	0	0	0	0	40,078

* Funding for 2024 includes US \$120,000, plus agency support costs of US \$8,400, for UNDP, for additional activities to maintain energy efficiency (decision 89/6), and the second funding tranche that was due in 2023.

Secretariat's recommendation:	Blanket approval
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PROJECT DESCRIPTION

1. On behalf of the Government of Sri Lanka, UNDP 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 \$539,078, consisting of US \$413,200, plus agency support costs of US \$28,924, for UNDP and US \$85,800, plus agency support costs of US \$11,154, for UNEP.² The submission includes a progress report on the implementation of the first tranche, 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 Sri Lanka reported under the country programme (CP) implementation report a consumption of 8.58 ODP tonnes of HCFCs in 2023, which is 38.3 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 Sri Lanka (2019-2022 Article 7 data)

HCFC	2019	2020	2021	2022	2023*	Baseline
Metric tonnes (mt)						
HCFC-22	180.18	155.82	155.98	139.14	155.92	218.40
HCFC-123	0.00	0.00	0.00	0.00	0.00	0.00
HCFC-141b	0.00	0.00	0.00	0.00	0.00	16.80
Total (mt)	180.18	155.82	155.98	139.14	155.92	235.20
ODP tonnes						
HCFC-22	9.91	8.57	8.58	7.65	8.58	12.00
HCFC-123	0.00	0.00	0.00	0.00	0.00	0.00
HCFC-141b	0.00	0.00	0.00	0.00	0.00	1.90
Total (ODP tonnes)	9.91	8.57	8.58	7.65	8.58	13.90

* CP data

3. Demand of HCFC-22-based residential air-conditioning is decreasing due to the introduction of alternative technologies such as R-410A and HFC-32 during stage I of the HPMP. The consumption in the last five years is showing an upward trend in sales of HFC-32-based air conditioners. Under commercial air-conditioning, the import of variable refrigerant flow systems operating on R-410A has increased, while some HCFC-22-based systems were replaced with R-407C-based systems. The increase in 2023 is mainly attributed to recovery of economic activities following the COVID-19 pandemic and the resulting increase in servicing of refrigeration and air-conditioning (RAC) equipment in the year.

4. With the penetration of R-404A, R-134a and R-600a technologies, the number of HCFC-based commercial refrigerators is very minimal. The HCFC-22-based industrial refrigeration systems in the food industry and ice plants were gradually replaced with ammonia-driven systems.

Country programme implementation report

5. The Government of Sri Lanka reported HCFC sector consumption data under the 2022 CP implementation report that is consistent with the data reported under Article 7 of the Montreal Protocol.

² As per the letter of 19 March 2024 from the Ministry of Environment of Sri Lanka to UNDP.

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.

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

6. Stage I of the HPMP was completed on 31 December 2021. The project completion report was submitted on 17 October 2022.

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

Legal framework

7. The issue of the ban on imports of HCFC-based equipment is under consultations with different ministries, and a decision on this issue is expected to be taken before the end of 2024. Currently, the Government does not issue recommendations allowing imports of HCFC-based equipment.

8. Two meetings were held with stakeholders (including importers), as well as with customs and the import/export division during the first tranche to discuss and review the licensing and quota system, including some amendments to strengthen the system for better coordination.

9. The national ozone unit (NOU) established a system for checking online approvals of HCFC import and export licenses, and was given access to the Automated System for Customs Data (ASYCUDA). Any consignment that imports/exports refrigerants and equipment through customs requires a mandatory Customs Declaration (CUSDEC). Upon the issuance of the CUSDEC, the NOU reviews the declaration, and issues a recommendation through ASYCUDA, which is mandatory for the legal procedure.

10. The NOU and customs organized one capacity building workshop for 33 customs officers (including eight females) at the cargo clearing points and one training-of-trainers workshop for 15 customs trainers (including four females) covering regulations including quota system for controlling and monitoring HCFCs; one workshop for 36 refrigerant importers (including eight females) to raise awareness on the implementation of the Kigali Amendment, data reporting and record keeping of import data and licensing processes; and one workshop for 29 customs house agents (including 16 females) to strengthen the control mechanism of ODS and non-ODS imports.

11. The customs training module on the Montreal Protocol to be incorporated into the customs training curriculum/handbook has been drafted and is currently under the review of the Customs Authority.

12. With regard to the strengthening of customs operations to control import/export, the NOU is planning to develop guidelines for risk profiling as relevant to substances controlled under the Montreal Protocol in collaboration with UNEP and the World Customs Organization during the second half of 2024.

Refrigeration servicing sector

13. The procurement and distribution of training tools and equipment for nine technical and vocational training institutes under the Tertiary Vocational and Education Commission (TVEC) are under final stage. The revision of national competency standards and curricula of RAC course is underway in close collaboration with TVEC and the National Apprentice and Industrial Training Authority.

14. A good service practice module was developed to include the safe handling of flammable and toxic refrigerants. Based on this, the manuals for the transport refrigeration, mobile air-conditioning, and reefer container sectors have been developed. The modules for stationary RAC equipment are being revised.

15. The NOU organized the following trainings on good service practices and the handling of flammable refrigerants: four workshops in 2022 and 18 workshops in 2023 for 998 air-conditioning technicians, including seven females; two workshops in 2022 and seven workshops in 2023 for 294 RAC technicians (including 30 females) working specifically in commercial and industrial refrigeration and

chillers. Initial preparatory work of a web-based database is ongoing with the support of the University of Moratuwa.

Project implementation and monitoring

16. Of the budget approved for the first tranche under this component (US \$39,000), funds were disbursed for staff and consultants (US \$19,959); travel (US \$2,016); office equipment and supply (US \$1,800); and communication (US \$1,650).

Level of fund disbursement

17. As of February 2024, of the US \$406,550⁴ approved so far (US \$209,930 for UNDP and US \$196,620 for UNEP), US \$228,116 (56 per cent) had been disbursed (US \$165,512 for UNDP and US \$62,604 for UNEP). The balance of US \$178,434 will be disbursed by June 2025.

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

18. The following activities will be implemented between July 2024 and December 2026:
- (a) *Policy, regulations and enforcement:* Continue strengthening the licensing and quota system for HCFCs and products and equipment based on controlled substances; meetings with customs and import/export authorities to strengthen the import/export monitoring; develop, adopt, or revise standards, codes and norms that could facilitate the adoption, operation and servicing of low-global-warming-potential (GWP) refrigerant-based technologies, including a national code of practice for hydrocarbon (HC), ammonia and carbon dioxide (CO₂) use; meetings with stakeholders for issuance of quota; meetings with relevant stakeholders to review and revise regulations/guidelines to strengthen the control and monitoring of HCFCs and HCFC-based equipment; one train-the-trainers workshop for 15 customs trainers; five training workshops for customs officers at the cargo clearing points with 15 participants each for sharing knowledge and on the handling of flammable refrigerants and RAC equipment based on flammable refrigerants in the customs warehouse as well for preparing customs officers for emergency response; two training workshops for forwarding/clearing agents and importers with 25 participants each to update participants on existing and upcoming regulations and control measures, and the use of correct Harmonized Systems codes when submitting documents for clearance; feasibility study on quality controls of imported refrigerants; procurement of five refrigerant identifiers (UNDP) (US \$30,200) and (UNEP) (US \$16,500);
 - (b) *Capacity building of the RAC servicing sector:* 30 training workshops for RAC technicians with 25 participants each on good servicing practices including the installation and servicing of flammable and other potentially hazardous refrigerants, and enhancing/maintaining energy efficiency of RAC equipment; five specific RAC technicians training workshops with 15 participants focusing on commercial and industrial refrigeration and chillers; development of a web-based database of technicians accessible

⁴ At its 86th meeting, following the findings of the verification report that the HCFC consumption in 2016 in Sri Lanka exceeded the target under the Montreal Protocol and the maximum allowable consumption set in the Agreement between the Government of Sri Lanka and the Executive Committee for that year by 0.23 ODP tonnes, the Executive Committee applied, to the first tranche of stage II of the HPMP for Sri Lanka, a reduction in funding as per paragraph 11 and Appendix 7-A of the Agreement between the Government of Sri Lanka and the Executive Committee for stage I of the HPMP, calculated at US \$2,500 for each metric tonne of HCFC consumption over the maximum allowable consumption limit, resulting in a penalty of US \$11,463, consisting of US \$6,270, plus agency support costs of US \$470 for UNDP, and US \$4,180, plus agency support costs of US \$543 for UNEP (decision 86/42(c)).

by the general public with workshops location and competency; recruitment of a legal consultant to develop a proposal for the gradual introduction of technician mandatory certification and registration with the Engineering Council; handover of tools to nine training centres and related workshops; procurement of tools for 90 servicing workshops; review, finalisation and dissemination of the feasibility study on the use of chillers; promote refrigerant recovery and reclamation by providing additional training to the operators of existing centres, monitoring centre operations, and assessing the data reporting issues in relation to reclaimed quantities; provide support to TVET institutes to conduct examinations and practical tests to issue certificates to technicians from the informal sector and complement and improve certification in the RAC and MAC sectors (UNDP) (US \$217,000) and (UNEP) (US \$48,000);

- (c) *Public awareness and outreach*: Development and dissemination of at least two awareness and education materials and organisation of five awareness workshops on training opportunities in the servicing sector and upcoming policy changes including the mandatory certification and registration of technicians; sector-based awareness activities through the development of information materials and five awareness workshops for end users including sector specific stakeholders, engineers and planners, highlighting emerging environmentally friendly and energy efficient alternative technologies to support sound technology choices (UNEP) (US \$21,300);
- (d) *Activities to maintain energy efficiency*: these activities are described in detail in the following section (UNDP) (US \$120,000); and
- (e) *Project monitoring* (UNDP) (US \$46,000) with the following cost breakdown: staff and consultants (US \$34,000); travel (US \$4,000); office equipment and supply (US \$4,000); and communication (US \$4,000).

Activities to maintain energy efficiency in the refrigeration servicing sector

19. Sri Lanka has been making efforts to enhance energy efficiency while sustaining the phase-out of HCFCs and preparing for the phase-down of HFCs in RAC equipment. The country ratified the Kigali Amendment on 28 September 2018.

20. The objective of the project related to energy efficiency, submitted in line with decision 89/6, is to create an enabling environment for the development of minimum energy performance standards (MEPS) in the RAC sector, promote energy-efficient and low-GWP alternatives in RAC equipment and build relevant officers' capacity to adopt and implement MEPS.

21. The project will support the development and implementation of MEPS in residential air-conditioning appliances that would also take into consideration the GWP of the refrigerant and will support the promotion of MEPS to different stakeholders. The proposed project will also develop and strengthen capacity, gather required data, train key stakeholders for expanding MEPS and adopting low-GWP technologies in the RAC sector. The MEPS may be extended to commercial and industrial equipment at a later stage taking into consideration lessons learned.

22. The description and proposed cost breakdown of activities to maintain energy efficiency in the sector are presented in table 2.

Table 2. Additional activities proposed to maintain energy efficiency in the servicing sector

Activity	Particulars	Cost (US \$)
Coordination and collaboration between the NOU and relevant authorities and bodies and capacity building of key stakeholders for MEPS and HCFC phase-out	Technical support through national consultants for data collection of different air-conditioning equipment, their energy consumption and their end-user usage characteristics, analysis of barriers for the adoption of low-GWP commercial air-conditioning equipment, and development of a plan for the adoption of low-GWP technologies and the usage of existing/new equipment in an energy-efficient manner; designing the MEPS regulations for air-conditioning equipment, stakeholder consultations on obtaining inputs and finalising the MEPS regulations, including procedures for their application and monitoring, based on the best regional and international practices	35,000
	Five consultative meetings with about 120-150 national stakeholders on air-conditioning energy consumption aspects and MEPS development	10,000
	Two workshops for capacity building and a field study tour for training national energy efficiency regulatory authorities on the Kigali HFC implementation plan (KIP) (submitted at the present meeting), relevance of refrigerant quality and the importance of undertaking energy efficiency promotion for air conditioning and refrigeration equipment along with the adoption of low-GWP technologies	20,000
	Two training workshops for 80 to 100 officers from standards authorities, customs and other relevant organisations on data collection relating to energy performance of air conditioners and other market data on technology developments including refrigerant quality	20,000
	Training and capacity building of about 60 to 80 servicing technicians and other relevant staff on designing energy efficient equipment in different RAC applications in line with MEPS requirements and installing/maintaining those equipment in an energy efficient manner	15,000
Awareness and outreach programmes	Development and dissemination of outreach materials to promote the introduction of MEPS and labelling systems along with the importance of adoption of low-GWP refrigerants for technicians, servicing workshops, retailers, importers, suppliers, enforcement officers, RAC associations and other relevant agencies. Public awareness programme on MEPS and associated energy savings for the public through various media including print and digital	20,000
Total		120,000

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

23. The Government of Sri Lanka has already issued HCFC import quotas for 2024 at 8.58 ODP tonnes, which is lower than the Montreal Protocol control targets.

Refrigeration servicing sector

24. On recovery and reclamation, UNDP explained that the Government of Sri Lanka has issued a notification in 2019 that a RAC service workshop would be provided with an environment protection license on the condition that it carries recovery equipment. Training is provided to service technicians for

maximising recovery and reuse of HCFC-22. While the non-availability of virgin HCFC-22 could increase recovery and reuse of HCFC-22, over time the availability of HCFC-22 from the existing population of equipment is a key determinant in recovery and reuse of refrigerants.

25. On the feasibility study on chillers using HCFCs, UNDP explained that the study is aimed at reviewing and analysing performance of HCFC-22-based chillers; it would demonstrate that HCFC-free alternatives are more energy efficient and provide information on which low-/lower-GWP options are available to replace HCFC-based chillers. This analysis will also have an impact on the adoption of low-GWP alternatives in place of HFC-134a-based chillers.

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

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

27. UNDP confirmed that there are no other activities being implemented with non-Multilateral Fund-funding sources that could be overlapping with the additional activities to maintain energy efficiency. During the development of the project, the Sri Lanka Standards Institution (SLSI) and Sri Lanka Energy Authority (SEA) were consulted on different project components including those under the pilot project on energy efficiency submitted in line with decision 91/65.⁵

28. Upon request for clarification, UNDP explained that support would be provided for the development and enforcement of MEPS for air conditioners, expected to be completed by 2026, which would indicate the GWP of refrigerants. Further, the MEPS for air conditioners would be updated with support from SLSI and other national stakeholders once in five years based on technical and market needs.

29. The Secretariat requested clarifications on how awareness and outreach activities proposed to be undertaken under this project would not overlap with the activities undertaken under the KIP and/or HPMP activities. UNDP explained that the activities under this project would primarily focus on information outreach on energy efficiency standards and labelling activities in air-conditioning and implementation of MEPS by different national stakeholders. The activities will be planned by the NOU so as to maximise synergies with the outreach activities undertaken in other project activities. The pilot project on energy efficiency, including findings from the project, if available, would be used in different outreach activities undertaken under this project component. Through proper planning and prioritization of implementation of awareness and outreach activities, overlap of activities would be prevented.

30. Further, a green public procurement scheme that is planned under the pilot project on energy efficiency would establish the public sector as frontrunner and this would serve as an example for widespread and sustainable adoption of energy efficiency standards.

31. Overall, the activities submitted in line with decision 89/6(d) would result in faster adoption of energy-efficient air-conditioning equipment and would facilitate fast-track adoption of energy-efficient low-GWP refrigerant-based air conditioners in the country. They would also enable greater awareness on adoption of low-GWP refrigerants, which would in turn promote faster adoption of these products when HCFCs are being replaced in different applications and strengthened capacity of energy efficiency standards authorities in implementation of MEPS.

⁵ Sri Lanka has submitted a request to this meeting for a pilot project to maintain and/or enhance the energy efficiency of replacement technologies and equipment in the context of HFC phase-down in line with decision 91/65; the request is presented in paragraphs 117 to 136 of the document.

Gender policy implementation

32. In line with decisions 84/92(d) and 90/48(c), the Government is taking several measures to implement the Multilateral Fund's operational policy on gender mainstreaming and was able to achieve gender balance in the decision-making process, including in project implementation and monitoring activities and in the project steering committee that overall monitors and guides HPMP implementation. At present, due to the social structure as well as low interest of women to work in the RAC servicing sector, there are very few female RAC technicians. However, the NOU is making efforts to encourage women to join the profession. In addition, specific programmes are held to encourage the participation of women in the implementation of different activities under the HPMP, including in training activities.

Updated Agreement

33. In view of the inclusion of funding for additional activities to maintain energy efficiency in the refrigeration servicing sector and the request for the release of the original second tranche in 2024 instead of 2023, the Agreement between the Government of Sri Lanka and the Executive Committee has been updated. Specifically, Appendix 2-A has been revised 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

34. The Government of Sri Lanka continues to control and monitor the implementation of national regulations relating to HCFC licensing and quotas. Through ongoing training of customs and enforcement officers, the consumption of HCFCs is controlled and is below the targets in the country's Agreement with the Executive Committee. To minimize the risks associated with sustainable HCFC phase-out, the Government would continue to enforce controls on supplies of HCFCs, and implement training for technicians in close collaboration with the RAC association which is expected to build capacity of service technicians on good service practices including recovery and reuse of refrigerants and safe adoption of alternatives; the Government would also continue to implement awareness activities to be further strengthened during the KIP to maximise the adoption of low-GWP alternative-based RAC equipment. The activities planned under the project component pursuant to decision 89/6, once approved and implemented, would further strengthen the adoption of sustainable energy efficient low-GWP alternatives particularly in the air-conditioning sector that is experiencing high growth. The above activities, combined with those under stage I of the KIP as well as the pilot project on energy efficiency, are expected to contribute to the further reduction of HCFC consumption and accelerate the adoption of sustainable alternatives.

Conclusion

35. The Government of Sri Lanka has reduced its consumption of HCFCs to 7.65 ODP tonnes in 2022 which is 55 per cent below the HCFC baseline for compliance and 84.6 per cent below the consumption target for that year. The Government is implementing the licensing and quota system for HCFCs and is working closely with customs and enforcement authorities, including undertaking capacity building activities, on strengthening the implementation of the HCFC licensing and quota system. Though there were challenges faced during the period 2020 to 2022 due to the COVID-19 pandemic and the resulting economic decline, the Government continued to implement steps to achieve sustained HCFC phase-out and the increasing adoption of HCFC and HCFC-free alternatives in RAC applications. Of the total funds approved under the first tranche, 56 per cent was disbursed. Under the second tranche, the Government would continue to implement training activities for service technicians, provide tools and other equipment support to service technicians for implementing good service practices, provide training to customs and enforcement officers for controlling and monitoring HCFC imports and exports and implement awareness and other activities on the implementation of the HPMP and information exchange on RAC equipment

using HCFC-free lower-/low-GWP alternatives. The above activities would facilitate phase-out of HCFC-based equipment and promote the systematic adoption of HCFC-free alternatives.

36. The proposed project being submitted in line with decision 89/6(b) would assist the country in implementing MEPS and labelling programme in air-conditioning applications. During the process of development of MEPS, the capacity of national stakeholders working on implementing energy efficiency standards and labelling on different technologies in air-conditioning and refrigeration would be undertaken, and this will in turn strengthen the capacity of the national authorities in designing and implementing energy standards and other related measures for RAC equipment. Further, this will strengthen the collaboration between the NOU and authorities responsible for the development and implementation of energy efficiency standards in the context of HFC phase-down in the future, thus strengthening implementation of related activities under the KIP.

RECOMMENDATION

37. 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 Sri Lanka;
- (ii) The submission of additional activities to maintain energy efficiency in the refrigeration servicing sector in the amount of US \$120,000, plus agency support costs of US \$8,400, for UNDP;
- (iii) That the Fund Secretariat has updated the Agreement between the Government of Sri Lanka 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 the shifting of the original second tranche funding from 2023 to 2024; and paragraph 17 that has been added to indicate that the updated Agreement supersedes that reached at the 86th meeting.

38. The Fund Secretariat further recommends blanket approval of the second tranche of stage II of the HPMP for Sri Lanka, 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)	413,200	28,924	UNDP
(b)	HCFC phase-out management plan (stage II, second tranche)	85,800	11,154	UNEP

PROJECT EVALUATION SHEET – MULTI-YEAR PROJECTS

Sri Lanka

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

LATEST ARTICLE 7 DATA (Annex F)	Year: 2022	513.05 mt	1,085,024 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 and CP report (2022)*	4,290			80,459			997,999	148	2,172
KIP stage I activities as agreed (Y/N)							Y		

* 2023 CP data not included as it may be revised and resubmitted in May 2024.

AVERAGE 2020-2022 HFC CONSUMPTION IN SERVICING	440.10 mt	845,482 CO ₂ -eq tonnes
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Baseline calculation components	2020	2021	2022	Average 2020-2022
HFC annual consumption	683,132	947,951	1,085,024	905,369
HCFC baseline (65%)				264,865
HFC baseline				1,170,234

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

PROJECT DATA AS AGREED		2024*	2025-2026	2027	2028	2029	Total	
Consumption (CO ₂ -eq tonnes)	Montreal Protocol limits	1,170,234	1,170,234	1,170,234	1,170,234	1,053,211	n/a	
	Maximum allowable	1,170,234	1,170,234	1,170,234	1,170,234	1,053,211	n/a	
	Maximum allowable (%)	100	100	100	100	90	n/a	
Amounts recommended in principle (US \$)	UNDP	Project costs	136,160	0	61,000	0	20,750	217,910
		Support costs	12,254	0	5,490	0	1,868	19,612
	UNEP	Project costs	81,999	0	29,846	0	12,427	124,272
		Support costs	10,660	0	3,880	0	1,615	16,155
	Total project costs		218,159	0	90,846	0	33,177	342,182
	Total support costs		22,914	0	9,370	0	3,483	35,767
	Total funds		241,073	0	100,216	0	36,660	377,949

* Recommended for approval at the present meeting

Reduction from stage I in CO ₂ -eq tonnes	117,023
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Secretariat's recommendation:	Individual consideration
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PROJECT DESCRIPTION

39. 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

40. On behalf of the Government of Sri Lanka, UNDP as the lead implementing agency has submitted a request for stage I of the KIP, at a total cost of US \$1,085,861, consisting of US \$613,250, plus agency support costs of US \$42,928 for UNDP and US \$380,250, plus agency support costs of US \$49,433 for UNEP, as originally submitted.⁶

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

42. The first tranche of stage I of the KIP being requested at this meeting amounts to US \$481,265, consisting of US \$229,800, plus agency support costs of US \$16,086 for UNDP and US \$208,300, plus agency support costs of US \$27,079 for UNEP, as originally submitted, for the period of July 2024 to June 2027.

43. As part of stage I of the KIP, a pilot project for maintaining and/or enhancing the energy efficiency of replacement technologies and equipment in the context of HFC phase-down, in line with decision 91/65, has also been submitted, at a total amount of US \$245,700, plus agency support costs. The project is presented in paragraphs 117 to 136 of the document.

II. Background

Status of implementation of the HCFC phase-out management plan

44. Table 3 presents information on the HPMP in Sri Lanka as of May 2023.

Table 3. HPMP implementation status for Sri Lanka

	Stage I	Stage II
Meetings when HPMP was approved/updated	62 nd	86 th
Reduction from baseline	35% by 2020	100% by 2030
Total project cost (US \$)	647,866	1,040,000
Date of completion (actual/planned)	31 December 2021	31 December 2031

⁶ As per the letter of 9 February 2024 from the Ministry of Environment of Sri Lanka to UNDP.

Status of implementation of previous HFC-related activities

45. Table 4 presents an overview of activities implemented in Sri Lanka in the context of the Kigali Amendment that have been funded by the Multilateral Fund.

Table 4. Previously approved HFC-related activities in Sri Lanka

Approval meeting	Project title	Implementing agency	Cost (US \$)	Date of completion
74 th	Survey of ODS alternatives	UNEP	35,000	August 2017
87 th	Project preparation for KIP	UNDP/UNEP	170,000	October 2024
93 rd	Preparation of a KIP investment project in the refrigeration manufacturing sector	UNDP	80,000	June 2025
81 st	Enabling activities for HFC phase-down	UNEP	150,000	December 2022

III. HFC consumption overview

HFC consumption levels

46. Sri Lanka only imports HFCs for use in the air-conditioning, refrigeration, health and industrial manufacturing and refrigeration and air-conditioning servicing sectors. The most consumed substances in 2022 were HFC-134a (28.5 per cent of total HFC consumption in CO₂-equivalent (CO₂-eq) tonnes), R-404A (25.1 per cent), R-410A (21.3 per cent), R-507A (20.0 per cent), R-407C (3.3 per cent), HFC-32 (1.5 per cent), and other HFCs (0.3 per cent). Table 5 presents the country's HFC consumption as reported to the Ozone Secretariat under Article 7 of the Montreal Protocol.

Table 5. HFC consumption in Sri Lanka (2019–2022 Article 7 data)

HFC	GWP	2019	2020	2021	2022	2023*
Metric tonnes (mt)						
HFC-134a	1,430	164.50	265.62	279.74	216.08	353.67
HFC-152a	124	14.60	8.76	17.52	17.52	17.52
HFC-23	14,800	0.00	0.00	0.01	0.01	0.01
HFC-32	675	1.00	14.52	27.31	24.02	96.45
HFC-41	92	0.00	0.00	0.01	0.00	0.00
R-404A	3,922	23.94	34.00	73.57	69.44	75.90
R-407A	2,107	0.00	0.00	5.65	0.00	1.72
R-407C	1,774	0.00	10.82	14.95	20.15	13.61
R-407F	1,825	0.00	0.00	0.00	0.57	0.23
R-410A	2,088	0.00	55.38	77.46	110.67	162.25
R-417A	2,346	0.00	0.00	0.00	0.10	7.90
R-507A	3,985	0.00	6.10	9.66	54.50	0.00
R-508B	6,808	0.00	0.00	0.01	0.00	0.00
Total (mt)		204.05	395.18	505.89	513.05	729.25
CO₂-eq tonnes						
HFC-134a	1,430	235,238	379,835	400,028	308,999	505,743
HFC-152a	124	1,810	1,086	2,172	2,172	2,172
HFC-23	14,800	0	0	133	133	133
HFC-32	675	675	9,798	18,435	16,211	65,103
HFC-41	92	0	0	1	0	0
R-404A	3,922	93,899	133,334	288,496	272,306	297,658
R-407A	2,107	0	0	11,905	0	3,632
R-407C	1,774	0	19,191	26,519	35,734	24,138
R-407F	1,825	0	0	0	1,040	412
R-410A	2,088	0	115,595	161,698	231,020	338,687
R-417A	2,346	0	0	0	239	18,532

HFC	GWP	2019	2020	2021	2022	2023*
R-507A	3,985	0	24,293	38,495	217,169	0
R-508B	6,808	0	0	68	0	0
Total (CO₂-eq tonnes)		331,622	683,132	947,951	1,085,024	1,256,212

* CP data

Established HFC baseline

47. The Government of Sri Lanka reported the Article 7 data for 2020-2022. The country's HFC consumption baseline was established at 1,170,234 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 6.

Table 6. HFC baseline calculation for Sri Lanka (CO₂-eq tonnes)

Baseline calculation components	2020	2021	2022	Average 2020-2022
HFC annual consumption	683,132	947,951	1,085,024	905,369
HCFC baseline (65%)				264,865
HFC baseline				1,170,234

Country programme implementation report

48. The sectoral HFC consumption data provided by the Government of Sri Lanka in its CP implementation report for 2022 is consistent with the data reported under Article 7 of the Montreal Protocol.

HFC consumption trends

49. The growth in R-407C and R-410A and R-507A between 2020 and 2022 is due to the fact that commercial air conditioners operating with these substances are old and, consequently, require frequent maintenance.

50. Regarding the growth in R-404A, most of the new commercial, industrial and transport refrigeration systems imported over the last five to six years are based on R-404A. The current consumption level reflects the frequent maintenance and service needs, particularly due to the rise in breakdowns resulting from constant blackouts during the economic crisis faced by the country in 2020 and 2021 as a result of restrictions related to the COVID-19 pandemic.

51. Further, due to the economic crisis, imports of finished/charged cooling equipment (i.e., in which the HFCs contained are not counted as consumption, but would later appear in the servicing sector demand for consumption) were restricted, and many imported goods were not available in the local market. Consequently, there was a shift to prioritize local installation and assembly, and charge was made at client premises. As a result, this consumption is immediately recorded as part of the servicing sector instead of being diluted over the years.⁷

HFC consumption by sector

52. HFCs are mainly consumed for servicing in different RAC applications (92 per cent in mt and in CO₂-eq tonnes); the remaining quantities are consumed in manufacturing applications (8 per cent in mt and in CO₂-eq tonnes).

⁷ If equipment is imported charged, the servicing consumption needs are diluted over the years when equipment requires maintenance.

53. The main manufacturing sectors are commercial and industrial refrigeration (3.9 per cent in mt and 7.1 per cent in CO₂-eq tonnes) using R-404A and HFC-134a, followed by glass manufacturing (3.4 per cent in mt and 0.2 percent CO₂-eq tonnes) using HFC-152a, as shown in tables 7 and 8.

54. The RAC servicing sector mainly consumes HFC-134a, R-410A, R-404A, R-507A. Overall, HFCs are mainly consumed for servicing in the residential and commercial air-conditioning (36.2 per cent in mt and 30.1 per cent in CO₂-eq tonnes), followed by mobile air-conditioning (MAC) (31.9 per cent in mt and 21.5 per cent in CO₂-eq tonnes), commercial, industrial and transport refrigeration (23.1 per cent in mt and 39.8 per cent in CO₂-eq tonnes), and other subsectors, as shown in tables 7 and 8.

Table 7. HFC consumption in Sri Lanka by sector in mt (2022)

Sector	HFC-134a	HFC-152a	HFC-32	HFC-23	R-404A	R-407C	R-410A	Others	Total	Share of total (%)
Manufacturing										
Commercial refrigeration	0.65	0.00	0.00	0.00	2.30	0.00	0.00	0.00	2.95	0.6
Industrial refrigeration	0.00	0.00	0.00	0.00	17.15	0.00	0.00	0.00	17.15	3.3
Transport refrigeration	0.00	0.00	0.00	0.00	0.83	0.00	0.00	0.00	0.83	0.2
Aerosol/MDI* manufacturing	3.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.00	0.6
Solvent	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.01	0.0
Others (aluminosilicate glass manufacturing)	0.00	17.52	0.00	0.00	0.00	0.00	0.00	0.00	17.52	3.4
Subtotal for manufacturing	3.65	17.52	0.00	0.01	20.28	0.00	0.00	0.00	41.46	8.1
Refrigeration and air-conditioning servicing										
Refrigeration subsectors										
Domestic	4.22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.22	0.8
Commercial	4.32	0.00	0.00	0.00	13.12	0.00	0.00	0.67	18.11	3.5
Industrial	9.72	0.00	0.00	0.00	29.03	0.00	0.00	54.50	93.25	18.2
Transport	0.00	0.00	0.00	0.00	7.01	0.00	0.00	0.00	7.01	1.4
Air-conditioning subsectors										
Residential	0.00	0.00	24.02	0.00	0.00	0.00	57.09	0.00	81.11	15.8
Mobile	163.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	163.50	31.9
Commercial	30.67	0.00	0.00	0.00	0.00	20.15	53.58	0.00	104.40	20.3
Subtotal for servicing	212.43	0.00	24.02	0.00	49.16	20.15	110.67	55.17	471.60	91.9
Total	216.08	17.52	24.02	0.01	69.44	20.15	110.67	55.17	513.06	100

* MDI: metered-dose inhaler

Table 8. HFC consumption in Sri Lanka by sector in CO₂-eq tonnes (2022)

Sector	HFC-134a	HFC-152a	HFC-32	HFC-23	R-404A	R-407C	R-410A	Others	Total	Share of total (%)
Manufacturing										
Commercial refrigeration	930	0	0	0	9,020	0	0	0	9,949	0.9
Industrial refrigeration	0	0	0	0	67,255	0	0	0	67,255	6.2
Transport refrigeration	0	0	0	0	3,255	0	0	0	3,255	0.3

Sector	HFC-134a	HFC-152a	HFC-32	HFC-23	R-404A	R-407C	R-410A	Others	Total	Share of total (%)
Aerosol/MDI manufacturing	4,290	0	0	0	0	0	0	0	4,290	0.4
Solvent	0	0	0	148	0	0	0	0	148	0.0
Others (aluminosilicate glass manufacturing)	0	2,172	0	0	0	0	0	0	2,172	0.2
Subtotal for manufacturing	5,220	2,172	0	148	79,530	0	0	0	87,070	8.0
Refrigeration and air-conditioning servicing										
Refrigeration subsectors										
Domestic	6,035	0	0	0	0	0	0	0	6,035	0.6
Commercial	6,178	0	0	0	51,451	0	0	1,275	58,904	5.4
Industrial	13,900	0	0	0	113,844	0	0	217,183	344,927	31.8
Transport	0	0	0	0	27,490	0	0	0	27,490	2.5
Air-conditioning subsectors										
Residential	0	0	16,214	0	0	0	119,175	0	135,389	12.5
Mobile	233,805	0	0	0	0	0	0	0	233,805	21.5
Commercial	43,858	0	0	0	0	35,743	111,848	0	191,449	17.6
Subtotal for servicing	303,775	0	16,214	0	192,786	35,743	231,024	218,458	997,999	92.0
Total	308,994	2,172	16,214	148	272,316	35,743	231,024	218,458	1,085,069	100

* The total values presented in this table are slightly different from the data presented in table 5 above due to rounding.

Manufacturing sector

Domestic refrigeration manufacturing

55. There are three local domestic refrigerator manufacturers which converted, with their own resources, to HC-600a. Hence, since 2022, there is no manufacturing of domestic refrigerators based on HFCs. The local market may also be supplied by imported domestic refrigerators and domestic freezers (high-end models) which usually use HC-600a.

Commercial, industrial and transport refrigeration manufacturing

56. There are about 12-15 enterprises manufacturing HFC-based equipment under the commercial and industrial refrigeration sector and one enterprise manufacturing refrigerated vans and light-duty trucks, large trucks, and containers units. The main HFCs used are R-404A and HFC-134a.

Manufacturing of metered-dosed inhalers

57. There is one local manufacturer using HFC-134a as propellant for MDIs. The enterprise was established in 2019, and from the years 2020-2022 it carried limited manufacturing of MDIs, as a pilot basis, while it was honoring its contractual MDI import commitments with international suppliers. However, in 2023, the enterprise started a full-scale manufacturing operation. The detailed assessment of the 2020-2023 manufacturing operations and HFC use will be determined by the manufacturing sector plan which will be presented to the 95th meeting.

Air-conditioning manufacturing

58. All the demand for air-conditioning was met by imports of air conditioner units up to 2022. However, in 2023, two local manufacturers established manufacturing lines for room air-conditioning

equipment using HFC-32; this information would be appropriately reflected in the revised 2023 CP data report.

Manufacturing of aluminosilicate glasses

59. One indigenous enterprise uses HFC-152a in the production of aluminosilicate glasses, as a catalyst to avoid the formation of alkalines. In 2022, the enterprise used 17.52 mt (2,172 CO₂-eq tonnes) for this manufacturing process.

Manufacturing of electronic products/semiconductors – solvents sectors

60. In 2022, the KIP preparation survey found a one-time, limited use of 9 kg of HFC-23 in one local enterprise manufacturing electronic products. A license for 18 kg was issued in 2023. Given the unusual demand and characteristics of the supply chain of HFC-23, while consumption for that specific use needs to be addressed, the consumption levels are not expected to grow exponentially.

Mobile air-conditioning manufacturing

61. There is no local manufacturing of private (light) passenger cars, hence no local manufacturing of MAC units. However, the country undertakes assembling of sport utility vehicles with imported components/parts from other Article 5 countries. The project preparation for the manufacturing sector will further assess if MAC systems are assembled and charged in Sri Lanka or if they are imported. The country also assembles buses locally and related information will be obtained during the ongoing survey of manufacturing activities.

Refrigeration and air-conditioning servicing sector

62. There are approximately 11,700 technicians consuming HFCs in Sri Lanka. Of these, about 8,500 technicians focus on service of stationary equipment, while some 3,200 provide services to MAC equipment. There is also an estimate of 1,500 technicians operating independently (which include informal, seasonal and technicians that may provide services both to stationary and MAC units). From the UNEP survey of 50 servicing workshops, all the enterprises are involved in the repair and maintenance of different RAC equipment. Of these, only 20 per cent are involved in installation and commissioning of RAC systems. About 82 per cent of the enterprises specialize in the servicing of ducted split central air-conditioning systems; 24 per cent also offer services for industrial refrigerators. A smaller proportion, 3 per cent, is involved in services related to condensing units.

63. There are approximately 3,043 workshops consuming HFCs in Sri Lanka; 85 per cent are for stationary RAC equipment and about 20 per cent for MAC units. During the survey, it was noted that a few large-scale RAC servicing establishments had extended their business for installation and servicing of commercial/industrial refrigeration as well as servicing of transport refrigeration systems.

Domestic refrigeration servicing

64. Sri Lanka has approximately 5.1 million households and the domestic refrigeration penetration is estimated at 60 per cent (3.06 million refrigerators) according to the Department of Census and Statistics Data (2022). However, the introduction of HC-600a-based units that started in 2014 allowed the rapid adoption of new units either replacing older CFC-12-based units or being the preferred option for buyers acquiring their first refrigerator. Surveys indicated a high degree of reliability on HFC-134a-based units, with only about 1.5 per cent of the units in use requiring maintenance, on average. As a result, this sector only required 4.22 mt of HFC-134a to service the faulty units in 2022.

65. It is estimated that installed stocks of HFC-134a-based units represent about 44 per cent of the total refrigerators in use. Given that there are no new HFC-134a-based units being introduced, the demand for HFCs for this servicing application is expected to grow to a negligible rate.

Commercial, industrial and transport refrigeration servicing

66. Commercial, industrial and transport refrigeration equipment are imported and to a limited extent, locally manufactured.

67. The commercial refrigeration applications include equipment used in convenience/food/grocery stores, supermarkets, factories and small industries, non-food retail, education, office building, hospitals, and hotels. R-404A is the dominant refrigerant, followed by HFC-134a. The demand for R-404A-based equipment is expected to grow faster than that for HFC-134a-based equipment.

68. This sector is also witnessing the limited introduction of HC-290 and HC-600a in applications where charges can be kept below 250g (such as reach-in freezers, bottle coolers, standalone displays, vending machines and chest freezers). However, condensing units and larger applications are still based on non-flammable refrigerants.

69. The industrial refrigeration applications include equipment for cold rooms (such as large condensing units or central racks), blast freezers, milk coolers and process chillers, fisheries storage rooms, and ice plants. The refrigerants used are HCFC-22, HFC-134a, R-404A, R-507A and, to a lesser extent and in areas where zoning and safety allows, R-717 (ammonia). The survey report also indicates that the use of HFC-based equipment would experience a rapid growth given their ease of use and lower costs.

70. According to the records of the Department of Fisheries and Aquatic Resources, there are approximately 36 freezer vessels operated under four enterprises for harvesting fish. All these freezer vessels have cold rooms and/or blast freezers and the majority operate on HCFC-22 and R-404A.

71. Cold chain transportation refers to the refrigerated vans, trucks, and containers (reefers) equipped with refrigeration units which can control the temperature inside the compartment in order to protect the products' safety and freshness. According to the sector information, it is estimated that over 1,500 freezer trucks are operating in Sri Lanka. Approximately 10 per cent of freezer trucks are still operated with HCFC-22 and the rest of freezer trucks are operated with either HFC-134a or R-404A.

Residential and commercial air-conditioning servicing

72. Air-conditioning systems are used in residential and commercial comfort cooling; they are also used in food stores/groceries, supermarkets, industrial facilities, non-food retail shops, office buildings, and various other facilities. The residential room air-conditioning sector includes equipment of window and split types. However, survey data revealed that the number of window air conditioners is insignificant (not more than 10 per cent of the market), and they are based on HCFC-22. HFCs are used in split-type of RAC units.

73. Due to awareness raised during the implementation of the HPMP on improved energy efficiency performance of these equipment, and the awareness of manufacturers, importers, and distributors regarding non-ODS-based energy-efficient air conditioners, the split air-conditioning market has quickly shifted to use R-410A as the preferred refrigerant. However, with the conversion of main international suppliers to HFC-32, a rapid uptake of HFC-32-based units was also noticed.

74. Hence, it is expected that the use of R-410A-based units will decline, while the use of HFC-32-based units will increase due to superior technical properties of the equipment. However, the survey identified concerns from the local market regarding the flammability of HFC-32-based units and,

therefore, their adoption would be dependent upon the implementation of capacity building programmes to support this transition in a safe manner.

75. Split air conditioners with a large capacity containing R-410A dominate the sector followed by units containing HFC-32 and R-407C. Market surveys show that variable refrigerant flow systems are exclusively operating with R-410A.

76. Most of the large cooling capacity chillers are operating with HFC-134a. However, chillers operating with HCFC-22 and HCFC-123 are also found in hotels and the industrial sector (as process chillers). Given the high level of specialization required for the operation and servicing of chillers, relatively new installed based (less than seven years in general) and tightness controls, the level of leakage of HFC-based chillers is negligible.

Mobile air-conditioning servicing

77. The MAC servicing sector using HFC-134a is one of the largest HFC consuming sector, hence is of critical importance in Sri Lanka's HFC phase-down implementation. It is also important to note that a number of used cars may be imported for local sale with no charge (either due to leakage occurred by the use of the previous owner, or during the transportation process), hence the demand of HFC-134a attributed to the servicing sector also includes the "initial charge" of imported used cars.

78. According to the Ministry of Transport and Highways, Sri Lanka has 1.85 million of passenger cars, buses, and trucks. A proportion of these require air-conditioning. With the improvement of the country's economic conditions, the import of new and used cars is expected to resume and the stocks of air-conditioned cars will also experience growth.

79. A large majority of the motor vehicles are fitted with MAC systems operating with HFC-134a (99.7 per cent). It is estimated that there may be 300-400 cars operating with HFO-1234yf, but data is not readily available as all these cars were imported by individual people (not through the agent of car makers).

Local installation and assembly subsector

80. As mentioned above, in 2021 and 2022, Sri Lanka faced an economic crisis which impacted the RAC sector and resulted in restrictions on imports of finished/charged cooling equipment. To address the growing demand for such equipment in 2021, 2022 and, possibly 2023, the country opted to expand the local assembly and installation sector.

81. Further, in 2023, as per the import license issued, the demand for HFCs is expected to continue to increase due to the greater need for servicing of RAC equipment, an increase in the installation of cooling equipment including refrigerant charging of those imported equipment where the refrigerants have leaked (e.g., imported cars with MAC units) and growth in the manufacturing of MDIs and HFC-32-based air-conditioners.

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

Institutional, policy and regulatory framework

82. Sri Lanka established a licensing system for the import of HFCs in 2020. In April 2024, the cabinet approved the quota system for HFCs; the details of quota allocations are under review by the relevant national stakeholders.

83. The NOU has the overall responsibility for the management and implementation of the Montreal Protocol activities and the fulfilment of the country's obligations under its Agreement with the Executive Committee with respect to all activities undertaken.

84. For the KIP, the project steering committee is expanded to include the Ministry of Health, the Ministry of Labour, the Ministry of Power, the Ministry of Defence, and the Climate Change Secretariat. The committee is chaired by the Secretary of the Ministry of Environment. The current institutional arrangements are the key main agencies that will play an essential role in the implementation of the Montreal Protocol activities.

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

Overarching strategy

85. The phase-down strategy for stage I is multi-faceted, consisting of an approach of portfolios of interventions that, integrated, can provide the tools for Sri Lanka to achieve the 2024 freeze and the 2029 10 per cent reduction targets by supporting the conversion of manufacturing enterprises that use HFCs (sector plan to be submitted to the 95th meeting); strengthen the national regulatory frameworks, including the quota system, to improve HFC control and sustain phase-down; improve training capacities of training centres that deliver training to MAC and room air-conditioning technicians to capacitate them on HFC containment and alternative technologies to HFCs; improve capacities of technicians by delivering new MAC trainings (after years of lacking assistance in this sector) and widen the outreach of the air-conditioning sector by providing training to technicians not covered under stages I and II of the HPMP; implement a pilot project targeting the dairy sector to demonstrate safe operations of low-GWP alternative technologies and avoid R-404A-based equipment in those applications; and deliver awareness and outreach activities to sensitize the sector, identify barriers to the adoption of low-/lower-GWP refrigerant-based technologies and disseminate information on low-GWP alternative technologies.

86. The consumption of HFCs in different applications is expected to increase due to the country's economic recovery. In the absence of any action to address reduction, by 2045, HFC consumption levels are estimated to increase more than 25 times the levels in 2022. This would be mainly driven by growth in MAC, stationary air-conditioning and domestic as well as commercial refrigeration equipment. Based on the different actions planned to be taken under stage I of the KIP, the Government of Sri Lanka proposes to control the growth of HFC consumption and achieve targets in line with the Montreal Protocol.

Proposed activities

Refrigeration manufacturing sector

87. A project preparation for the sector was approved at the 93rd meeting (table 4) that will allow the Government of Sri Lanka to undertake the individual assessment of each enterprise to obtain detailed data and design investment projects to support HFC elimination in the sector. The development of the manufacturing sector plan is in progress. The detailed surveys and facilities assessment are currently being carried out and information will be available as part of the KIP manufacturing sector plan to be submitted to the 95th meeting. These activities will allow end users to access low-GWP alternatives and reduce the pressure over the servicing sector needs in the coming years.

Servicing sector

88. The different elements of the KIP for Sri Lanka with their cost breakdown are presented below:

- (a) *Strengthening of the policy, institutional and strategic frameworks*: Update of one compendium of the regulatory framework to support stakeholders on information relating to relevant rules, regulation and procedures, and as supporting documentation on customs training; update of the customs officers training module to include all framework required for the control of HFCs including proposed ban of import, local manufacturing and new installation of HFC-134a-based domestic refrigerators; assessment of the room

air-conditioning sector to prepare the country to issue a ban on the import of R-410A-based room air conditioners; market assessment on alternatives and growth trends for the MAC sector to understand the needs of the sector and actions needed in future under the KIP (UNDP) (US \$59,000);

- (b) *Policy, regulations, and enforcement:* Conduct a desk study for the development of a comprehensive recording and reporting system for importers, distributors, and service providers to identify and address the gaps in existing regulations relating to HFCs; development of an integrated module for online reporting and data management covering the HFC supply chain and regulatory agencies, for importers, distributors, and RAC/MAC service providers; and training on operational and maintenance requirement of the new system and processes relating to HFCs to the proper recording and managing of data (UNEP) (US \$163,500);
- (c) *Procurement of equipment:* Procurement of two MAC (HFC-134a and HFO-1234yf), two HC-600a-based domestic refrigeration, and two HFC-32-based room air-conditioning trainer units, for training technicians on the safe use of flammable refrigerants and good service practices (UNDP) (US \$82,500);
- (d) *Capacity building for the room air-conditioning servicing sector:* Training of 1,250 servicing sector technicians to improve maintenance and servicing practices and reduce leakages; training of 30 master trainers in the safe handling of A2L room air conditioners (UNDP) (US \$317,000);
- (e) *Capacity building for the MAC servicing sector:* Development of knowledge materials (i.e., handbooks, guidelines, code of practices, infographics, posters) to include specific technologies and alternative refrigerants and codes of good servicing practices, including safety guidelines; trainings programmes for about 70 MAC technicians, including training of trainers with international experts (UNEP) (US \$96,000);
- (f) *Technical assistance for the introduction of HFC alternatives:* Introduction of HFC alternatives through pilot demonstration projects on the use of R-290-based milk chillers for the small-scale dairy sector to demonstrate the benefits of using this technology including savings in energy consumption, operational aspects relating to installation and maintenance costs; publication and sharing of the results and outcomes of the pilot project with the targeted sector's stakeholders; training of trainers in the dairy sector on the use of R-290-based milk chillers (UNDP) (US \$54,250); and
- (g) *Awareness and outreach:* Five annual social media campaigns, including development of materials (infographics, videos, apps, posters), targeting the general public to raise awareness on available low-GWP and energy efficient equipment to promote ozone and climate friendly choices; eight Ozone2Climate seminars and booths to raise awareness among building managers, refrigeration engineers, and architects, in collaboration with the refrigerant and air-conditioning engineers' chapter of the Institute of Engineers, the Energy managers association, and the Sri Lankan Chapter of the American Society of Heating, Refrigerating and Air-Conditioning Engineers; one awareness meeting to promote South-South cooperation with the Maldives on technician certification, professional technician licenses programme, and Refrigerant Driving Licence programme (UNEP) (US \$80,000).

Project implementation, coordination and monitoring

89. The NOU, as an implementing partner (IP), will be responsible for the planning, implementation, and monitoring of all approved activities under stage I of the KIP in close coordination with UNDP and

UNEP, who will handle management and coordination of activities to ensure the proper reporting lines and deployment of joint activities. The project steering committee (project board) that will be created will review performance based on established monitoring and evaluation metrics and high-level implementation issues to ensure quality delivery of results. The budget for the PMU amounts to US \$141,250, including US \$100,500 for UNDP and US \$40,750 for UNEP, with the following cost breakdown:

Table 9. PMU costs as submitted for stage I of the KIP for Sri Lanka

Budget item	UNDP (US \$)	UNEP (US \$)	Total (US \$)
Staff/consultants	65,500	30,000	95,500
Gender expert	8,000	0	8,000
Project coordination	800	4,750	5,550
Official mission	10,200	6,000	16,200
Independent verification	16,000	0	16,000
Total	100,500	40,750	141,250

Gender policy implementation

90. Sri Lanka launched its “National Policy on Gender Equality and Women's Empowerment” in 2023. The policy aims to ensure equal rights and opportunities for women and girls in all spheres and structures of the Government as well as in the public and private workplace, community, family and within the civic space. Other key policies that integrate gender equality and women’s empowerment include the National Policy on Decent Work in Sri Lanka (2006).

91. Historically, the RAC sector has been male dominated, as women systemically encounter various barriers, including societal stereotypes, cultural norms, and a lack of encouragement to pursue technical careers in RAC. As of the latest available data, women participation in the RAC sector is persistently limited (only 0.7-1 per cent of the workforce).

92. Under the HPMP, the NOU has implemented training programmes, mentorship initiatives, and advocacy campaigns to dismantle gender barriers, empowering women to actively pursue and excel in RAC careers.

93. The KIP will continue to build on the momentum gained under the HPMP. During the preparation of stage I of the KIP, due consideration was given to the operational policy on gender mainstreaming of the Multilateral Fund to incorporate it in all aspects of the plan. When hiring external and technical support for the KIP preparation a priority was given to female candidates. A specific gender plan is included under the PMU. In response to decisions 84/92 and 92/40, the mandatory requirements and performance indicators⁸ were included in stage I of the KIP. The aim is to ensure there are equal opportunities for women to build a career in the RAC sector and create a safe place for female participation.

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

94. The activities planned to be implemented under the KIP will be coordinated with the service sector activities under the HPMP which is under implementation. Specifically, the training and technical support under the KIP would focus on the refrigeration sector, the MAC sector and servicing of equipment using flammable refrigerants in a safe manner. The HPMP activities would focus on service sector training mainly relating to air-conditioning applications and other activities that relate to HCFC phase-out. Since these activities will be overall monitored by the NOU, any opportunities for sharing information or implementation plan adjustments to address specific issues (e.g., sharing good practices, addressing specific issue relevant to the KIP/HPMP that could be learnt from the other activities) would be appropriately

⁸ Annex XXII of document UNEP/OzL.Pro/ExCom/92/56.

utilized. Further, given the large number of RAC service technicians, the activities would be planned to maximise the outreach of training programmes on good service practices and safe servicing of alternatives.

Total cost of stage I of the Kigali HFC implementation plan

95. The budget for stage I has been proposed at US \$993,500. This includes the costs of activities in the refrigeration servicing sector, which have been proposed in line with decision 92/37. The request for the manufacturing sector will be submitted to the 95th meeting.

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

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

Component	UNDP	UNEP	Total
Strengthening of the policy, institutional and strategic frameworks	59,000	0	59,000
Policy, regulations, and enforcement	0	163,500	163,500
Procurement of equipment	82,500	0	82,500
Capacity building for the room air-conditioning servicing sector	317,000	0	317,000
Capacity building for the MAC servicing sector	0	96,000	96,000
Technical assistance for the introduction of HFC alternatives	54,250	0	54,250
Awareness and outreach	0	80,000	80,000
Subtotal – Servicing sector	512,750	339,500	852,250
PMU	100,500	40,750	141,250
Total	613,250	380,250	993,500

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

97. The first funding tranche of stage I of the KIP, in the total amount of US \$438,100, will be implemented between July 2024 and June 2027 and will include the following activities:

- (a) *Strengthening of the policy, institutional and strategic frameworks*: Assessment of the room air-conditioning sector for the control of R-410A; ban on new HFC-134a-based domestic refrigerators; update of the compendium of Montreal Protocol related rules; update of the training module for customs officers to include HFCs and related bans; market assessment of the MAC sector; formulation and introduction of regulations for mandatory recording and reporting; strengthening of customs operations; development of a grading system for service shops (UNDP) (US \$9,000) and (UNEP) (US \$107,500);
- (b) *Procurement of equipment*: Procurement of two MAC (HFC-134a and HFO-1234yf), two HC-600a-based domestic refrigeration, and two HFC-32-based room air-conditioning trainers units (UNDP) (US \$82,500);
- (c) *Training in the room air-conditioning sector*: Training of 30 trainers; training of 1,250 technicians on good service practices and safe adoption of alternatives (UNDP) (US \$94,500);
- (d) *Capacity building of the MAC servicing sector*: Assessment of training needs of the MAC sector and development of training materials on good service practices including recovery and reuse of HFC-134a; training of at least 35 MAC technicians (UNEP) (US \$48,000);
- (e) *Technical assistance for the introduction of HFC alternatives*: Planning for the distribution of 15 R-290-based milk coolers, and preparing and sharing the final report on project

implementation and monitoring process (UNDP) (no funds);

- (f) *Awareness and outreach*: Stakeholders' meetings and workshops; awareness workshops and O2Climate seminar; South-South cooperation workshops; social media campaigns (UNEP) (US \$36,500); and
- (g) Project coordination and monitoring (UNDP) (US \$43,800) and (UNEP) (US \$16,300).

SECRETARIAT'S COMMENTS AND RECOMMENDATION

V. Comments

Overarching strategy

98. On the consumption trends of HFCs, UNDP explained that the challenges and restrictions caused by the COVID-19 pandemic and the ensuing economic crisis impacted the country's HFC consumption levels up to 2022. As a result, the HFC consumption reported under Article 7 for 2022 is possibly lower than the actual consumption for that year. Keeping in view the above, the Government is taking cautious steps on committing to HFC consumption reduction and would like to explore potential ways to maximize opportunities for the adoption of low-GWP alternatives to HFCs particularly in air-conditioning and refrigeration applications.

99. The Kigali Amendment allows for growth in HFC consumption up to a baseline level. However, to avoid such a growth, the Government of Sri Lanka is requesting funds for stage I of the KIP to sustainably reduce HFC growth to reach consumption levels of 10 per cent below the HFC baseline by 2029; further, when future tranches of stage II of the HPMP are submitted, the Government would take other actions to minimise substitution of HCFCs with high-GWP HFCs during HPMP implementation.

100. 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 including recovery and reuse of HFCs, which would help reduce HFC emissions during servicing, maintenance and end-of-life disposal of equipment; training on the safe use of HFC alternative refrigerants including flammable alternatives that would be increasingly used in RAC sector; control and monitoring of HFC consumption levels; awareness raising and promotion of activities for the adoption of low-/lower-GWP refrigerant-based alternatives; demonstration of the use of low-GWP refrigerant-based technologies in specific sectors like the dairy sector to educate users on policies and demonstrate the benefits of adopting those technologies to avoid increasing demand for HFCs wherever feasible. The Government would prohibit the import of HFC-134a-based domestic refrigerators by 1 January 2029 and would continue consultations with national stakeholders to assess the timing of prohibition of R-410A-based air conditioners. Specific dates for the adoption of regulations for prohibiting the import and sale of HFC-based equipment other than domestic refrigerators would be decided upon after stakeholders' consultations and keeping in view the market factors and technology trends relating to alternatives in order to achieve sustainable reductions in HFC consumption. It was also agreed that UNDP would continue to report on the status of implementation of regulations for the adoption of low-/lower-GWP refrigerant-based alternatives in different applications and the impact of existing activities on the reduction in imports of HFC-based equipment, when submitting future tranche implementation reports under the KIP.

101. The Secretariat had detailed consultations with UNDP on the reduction targets proposed to be achieved under stage I of the KIP keeping in view the country's HFC consumption patterns and trends. UNDP confirmed that the Government at this stage is not in a position to commit to a reduction target greater than 10 per cent of its HFC baseline consumption; further, when the investment projects relating to the manufacturing sector for HFC phase-down are submitted to the 95th meeting, based on the project structure and impact, additional emission reductions would be allocated and the targets proposed in the current stage I would be revised.

Institutional, policy and regulatory framework*HFC licensing and quota system*

102. In line with decision 87/50(g), UNDP has confirmed that Sri Lanka has an established and enforceable system of licensing for monitoring HFC imports/exports. The quota system details relating to the allocation process among importers is at the final stages of approval. Upon approval, the quotas for HFCs in line with the KIP targets would be allocated to the importers. During the interim period, the Government is not issuing HFC import quotas and the demand for HFCs are being fulfilled by available quantities of different HFCs in the country.

Technical and cost-related issues

103. As funding for project preparation for the manufacturing sector was approved at the 93rd meeting, the survey process is underway for the development of the sector plan, which is expected to cover commercial and industrial refrigeration manufacturing and, if feasible, HFC-152a use in glass manufacturing. Projects for other applications such as MDI manufacturing would be submitted under future stages of the KIP.

104. Regarding the demonstration project that is proposed to be implemented for the dairy sector, UNDP explained that the project's main objective is to promote the adoption on a larger scale of energy-efficient R-290-based technologies in chilling units. This would be achieved through demonstrating the use and benefits of R-290-based milk chilling units to dairy farmers in view of avoiding the adoption of HFC-based (e.g., R-404A-based) equipment. Further, demonstration of the safe use of HC-based technology in these applications and the additional benefits in terms of energy efficiency would be publicised through awareness and other relevant programmes for promoting the adoption of low-GWP technologies in other pertinent commercial applications (e.g., stand-alone commercial refrigeration equipment).

Total project cost

105. The Secretariat had consultations with UNDP on project activities and funding in accordance with decision 92/37. After consultations with the Government, UNDP provided a revised budget for stage I as shown in table 11.

Table 11. Agreed cost of activities to be implemented during stage I of the KIP in Sri Lanka (US \$)

Component	Agency	As submitted (US \$)	Revised (US \$)
Strengthening of the policy, institutional and strategic frameworks	UNDP	59,000	30,000
Policy, regulations, and enforcement	UNEP	163,500	54,098
Procurement of equipment	UNDP	82,500	70,410
Capacity building for the room air-conditioning servicing sector	UNDP	317,000	86,000
Capacity building for the MAC servicing sector	UNEP	96,000	51,000
Technical assistance for the introduction of HFC alternatives	UNDP	54,250	0
Awareness and outreach	UNEP	80,000	19,174
Subtotal – Servicing sector		852,250	310,682
PMU	UNDP	100,500	31,500
PMU	UNEP	40,750	0
Subtotal – PMU		141,250	31,500
Total		993,500	342,182
Total UNDP		613,250	217,910
Total UNEP		380,250	124,272

106. Based on the agreed costs of US \$310,682 for the servicing sector, and in line with the methodology for converting US \$/kg to US \$/CO₂-eq tonne in the servicing sector described in annex I of document UNEP/OzL.Pro/ExCom/92/46, the reduction from the country's remaining HFC consumption eligible for funding from the servicing sector is 117,023 CO₂-eq tonnes. Table 12 provides information on the agreed costs and reductions from HFC consumption eligible for funding from the servicing sector, and 2029 target.

Table 12. Agreed costs and reductions from HFC consumption eligible for funding from the servicing sector, and 2029 target

Servicing sector		
Average HFC consumption in the servicing sector in baseline years	mt	440.10
	CO ₂ -eq tonnes	845,482
Average GWP of HFC consumption in the servicing sector		
Agreed funding	US \$	310,682
Agreed cost-effectiveness threshold	US \$/kg	5.10
Reductions from remaining HFC consumption in servicing	mt	60.92
	CO ₂ -eq tonnes	117,023
Established HFC consumption baseline		
	CO ₂ -eq tonnes	1,170,234
<i>Reductions in remaining HFC consumption eligible for funding from manufacturing sector conversions</i>	<i>CO₂-eq tonnes</i>	-
<i>Reductions in remaining HFC consumption eligible for funding from the servicing sector</i>	<i>CO₂-eq tonnes</i>	117,023
2029 target	CO ₂ -eq tonnes	1,053,211

107. Stage I of the KIP will be implemented in three tranches. The schedule of HFC phase-down and HCFC phase-out commitments and of the KIP and HPMP tranches is presented in annex II to the present document, while activities to be implemented under the HPMP and the KIP are listed in annex III.

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

108. The first funding tranche of stage I of the KIP has been revised to US \$218,159 (US \$136,160 for UNDP and US \$81,999 for UNEP), and will include the following activities:

- (a) *Strengthening of the policy, institutional and strategic frameworks*: Study for the development of policies relating to the control of imports of R-410A-based room air-conditioners; development of regulations to ban HFC-134a-based domestic refrigerators; market assessment for regulations on the use of alternatives in MAC applications and other measures; development of regulations for mandatory recording and reporting of HFCs; development of a grading system for servicing establishment and strengthening of customs and enforcement officers capacity (covering at least 40 customs officers) on controls related to HFCs (UNDP) (US \$9,000) and (UNEP) (US \$39,098);
- (b) *Procurement of equipment*: Procurement of trainer units for MAC technicians, domestic refrigeration technicians and air-conditioning technicians (UNDP) (US \$70,410);
- (c) *Training in the RAC sector*: Training of 20 trainers and 136 RAC technicians including those servicing domestic refrigeration, and commercial refrigeration, on good service practices and safe adoption of alternatives (UNDP) (US \$41,000);
- (d) *Capacity building of the MAC servicing sector*: Assessment of training needs of the MAC sector and development of training materials on good service practices including recovery and reuse of HFC-134a (UNEP) (US \$33,000);

- (e) *Awareness and outreach*: Awareness and outreach workshops and stakeholders' meeting covering the service sector, relevant national regulatory institutions, importers and other relevant stakeholders on the KIP and adoption of low-GWP alternatives (UNEP) (US \$9,901); and
- (f) Project management, monitoring and reporting (UNDP) (US \$15,750) including the following cost breakdown: staff and consultants (US \$11,250), travel (US \$500), verification and others (US \$4,000).

Co-financing

109. The Government of Sri Lanka will provide in-kind contributions in the form of administrative support (managers and officers in the NOU), office space, communication and transportation facilities and other administrative facilities.

110. The Government of Sri Lanka also developed a national cooling plan with funds from the Kigali Cooling Efficiency Program (K-CEP). This plan has provided a basis for promoting energy efficiency in Sri Lanka, which will help during the implementation of the KIP. Such funding opportunities like Cool Coalition and other bilateral funding will be explored to support the KIP.

2024-2026 business plan of the Multilateral Fund

111. UNDP and UNEP are requesting US \$342,182, plus agency support costs, for the implementation of stage I of the KIP for Sri Lanka. The total value of US \$241,073, including agency support costs, requested for the period of 2024–2026, is US \$108,500 above the amount in the business plan.

Sustainability of the HFC phase-down and assessment of risks

112. The Government of Sri Lanka would implement the activities planned under the KIP in coordination with the HPMP activities to maximize synergies between the two plans particularly as it relates to training and capacity building of the service sector and awareness and outreach programmes. The Government would consult national stakeholders on the implementation of regulations to control and monitor HFCs including enforcement of HFC quota system, implementation of prohibition of import of HFC-134a-based domestic refrigerators by 1 January 2029, and would evaluate options for the prohibition of import of R-410A-based air-conditioners. These regulatory interventions are expected to result in the reduction in dependence on HFC-based equipment in these applications as well as a reduction in consumption of these substances. Training and capacity building activities implemented for the servicing of domestic and commercial refrigeration equipment and MAC units, including capacity building for the servicing of equipment using flammable low-GWP alternatives, would result in the reduction in use of HFCs as well as faster adoption of those alternatives. Training activities undertaken under the HPMP with targeted complementary support through the KIP on the adoption of flammable refrigerants would also facilitate the reduction in use of HFCs in air-conditioning applications. Furthermore, activities planned under the pilot project to maintain and/or enhance the energy efficiency of replacement technologies and equipment in the context of HFC phase-down (decision 91/65) and those to maintain energy efficiency in the refrigeration sector (decision 89/6) would facilitate the adoption of low-GWP refrigerant-based RAC equipment.

Impact on the climate

113. The activities proposed, including regulatory measures to restrict the use of high-GWP refrigerants, training of technicians in good servicing practices and refrigerant recovery and reuse, and efforts to promote low-GWP alternatives, indicate that the implementation of stage I of the KIP will reduce HFC refrigerant emissions into the atmosphere, resulting in climate benefits. While the Secretariat is not able to provide an

estimate of the avoided emissions from the implementation of the KIP at the present meeting,⁹ by 2029 Sri Lanka will have reduced its annual emissions by approximately 117,023 CO₂-eq tonnes of HFCs, calculated as the difference between the HFC baseline for compliance and the 2029 target, assuming that all HFCs consumed would be eventually emitted.

Draft Agreement

114. A draft Agreement between the Government of Sri Lanka 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.

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

VI. Recommendation

116. The Executive Committee may wish to consider:

- (a) Approving, in principle, stage I of the Kigali HFC implementation plan (KIP) for Sri Lanka for the period 2024-2029 to reduce HFC consumption by 10 per cent of the country's baseline by 2029, in the amount of US \$377,949, consisting of US \$217,910, plus agency support costs of US \$19,612, for UNDP and US \$124,272, plus agency support costs of US \$16,155, for UNEP, as reflected in the schedule contained in annex II to the present document;
- (b) Noting:
 - (i) That the Government of Sri Lanka will establish its starting point for sustained aggregate reductions in HFC consumption based on guidance provided by the Executive Committee;
 - (ii) That, once the cost guidelines for HFC phase-down are agreed by the Executive Committee, reductions from the country's remaining HFC consumption eligible for funding will be determined in line with these guidelines;
 - (iii) That the reductions from the country's remaining HFC consumption eligible for funding referred to in subparagraph (b)(ii) above will be deducted from the starting point referred to in subparagraph (b)(i);
- (c) Noting also:
 - (i) That the Government of Sri Lanka would implement a prohibition on import and manufacturing of HFC-134a-based domestic refrigerators from 1 January 2029;
 - (ii) That the Government of Sri Lanka would continue to monitor its HFC consumption to understand the extent to which reported consumption in baseline years was representative of the local market's needs and to assess what future HFC

⁹ As noted in document 94/14, 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.

demand would be, and would provide that analysis when submitting the second tranche of its KIP;

- (iii) That, on the basis of the information provided in subparagraph (c)(ii) above, the maximum allowable consumption limits for the remaining years of stage I of the KIP, as contained in Appendix 2-A to the future Agreement between the Government of Sri Lanka and the Executive Committee would be revised when the Committee considered the second tranche of the KIP;
 - (iv) That the manufacturing sector plan to address HFC consumption in certain applications would be submitted for the consideration of the Executive Committee at its 95th meeting; and
 - (v) That UNDP would continue to report, on behalf of the Government of Sri Lanka, on the status of implementation of regulations for the adoption of low-/lower-global-warming-potential refrigerant-based alternatives in different applications and the impact of existing activities on the reduction in imports of HFC-based equipment, when submitting future tranche implementation reports under the KIP;
- (d) Approving the first tranche of stage I of the KIP for Sri Lanka and the corresponding tranche implementation plan, in the amount of US \$241,073, consisting of US \$136,160, plus agency support costs of US \$12,254, for UNDP and US \$81,999, plus agency support costs of US \$10,660, for UNEP; and
- (e) Requesting the Government of Sri Lanka, UNDP, UNEP and the Secretariat to finalize the draft Agreement between the Government of Sri Lanka 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.

**PILOT PROJECT TO MAINTAIN AND/OR ENHANCE THE ENERGY EFFICIENCY
OF REPLACEMENT TECHNOLOGIES AND EQUIPMENT IN THE CONTEXT
OF HFC PHASE-DOWN (NON-INVESTMENT ACTIVITIES)**

PROJECT DESCRIPTION

Background

117. On behalf of the Government of Sri Lanka, UNDP has submitted, in line with decision 91/65, a request for a pilot project to maintain and/or enhance the energy efficiency of replacement technologies and equipment in the context of HFC phase-down (non-investment activities), in the amount of US \$245,700, plus agency support costs of US \$22,113, as originally submitted.

Energy efficiency pilot project

118. Sri Lanka ratified the Kigali Amendment on 28 September 2018 and has implemented a licensing system for controlling and monitoring HFCs in line with the Kigali Amendment requirements. Paragraphs 52 to 54 of the present document provides details of the HFC consumption pattern. Furthermore, information on relevant activities from the request for stage I of the KIP and the first tranche submitted to the current meeting, is available in paragraphs 88 to 97 of the present document.

Policy, regulatory and institutional framework

119. In Sri Lanka, there are two types of labels being issued namely, Energy Efficiency Ratings and Minimum Energy Performance; both labels indicate the energy performance of equipment that will inform the consumers of the cost of operation of the equipment in terms of energy consumption levels. Domestic refrigerators are provided an energy efficiency rating label through a voluntary scheme; the labels for single-split type room air-conditioners are under development.

120. Specific energy use in end-user activities were expected to be reduced by 10 per cent from the 2015 levels by 2023 as part of the national energy efficiency improvement and conservation programme. Minimum energy performance standards (MEPS) for light-emitting diodes and energy labelling for air conditioners, personal computers, refrigerators, ceiling fans, linear fluorescent lamps/ballasts and induction motors started to be enforced by mid-2020 and the energy efficiency improvement in these products form a part of the overall energy efficiency improvement and conservation programme. In 2021, Sri Lanka also launched its National Cooling Action Plan to cover the entire cooling sector through policy interventions in different thematic areas.

121. Sri Lanka also launched an energy efficiency building code to encourage energy-efficient design or retrofit of commercial buildings, of industrial facilities excluding the process energy use, and of large-scale housing developments, to provide criteria and minimum standards for energy efficiency in the design of new facilities or retrofits of buildings, their equipment and systems within the purview of this code and to provide methods for determining compliance with them, and to encourage energy efficient designs that exceed these criteria and minimum standards.

Project objective

122. The pilot project proposal on energy efficiency seeks to improve the deployment of energy-efficient room air-conditioning and condensing unit models using R-290 as a refrigerant to improve the understanding of consumers on energy-efficient operations of the equipment, and the service sector on the safe adoption of R-290-based equipment; this is aligned with the long-term KIP strategy in terms of facilitating the adoption of low-GWP refrigerant-based energy-efficient alternatives in air-conditioning and commercial refrigeration applications.

Proposed activities

123. The following activities have been proposed to be implemented in 36 months:

- (a) *Strengthening the institutional and strategic frameworks for energy efficiency in the cooling sector*: Creation of one inter-ministerial consultation mechanism; organization of at least three oversight meetings; development of one green/energy efficiency procurement standards for cooling equipment, including the recruitment of an international expert for advisory and report writing, consultation meetings with stakeholders and awareness workshops (US \$60,000);
- (b) *Introduction of energy-efficient and low-GWP room air conditioners based on R-290 piloted in buildings*: Replacement of 60 splits room air conditioners at selected buildings; development of training materials for the RAC sector and organization of training for at least 50 RAC technicians; continuous monitoring to identify potential faults and leakages and take corrective maintenance steps; organization of two technical awareness workshops on the performance of the equipment and processes of predictive maintenance (US \$114,300); and
- (c) Introduction of energy-efficient and low-GWP condensing units based on R-290 piloted in small retail and convenience stores and markets: Replacement of 30 condensing units; development of training materials for the refrigeration sector and delivery of model training to at least 70 refrigeration technicians; continuous monitoring to anticipate potential faults and leakages and take corrective maintenance steps; organization of two technical awareness workshops on the performance of the equipment and processes of predictive maintenance (US \$71,400).

Total cost of the pilot project

124. The total cost of the project to maintain and/or enhance the energy efficiency of replacement technologies and equipment in the context of HFC phase-down amounts to US \$245,700, plus agency support costs, and will be implemented between July 2024 and June 2027.

SECRETARIAT'S COMMENTS AND RECOMMENDATIONS**Comments**

125. The Secretariat has reviewed the project proposal in light of the activities described under decisions 89/6 and 91/65.

126. In line with decision 91/65, confirmation has been obtained from the Government of Sri Lanka that the NOU will coordinate with relevant energy-efficiency authorities and national standards bodies to facilitate the consideration of refrigerant transition when developing energy efficiency standards in the relevant sectors/applications; that, if Sri Lanka has mobilized or were to mobilize funding from sources other than the Multilateral Fund for energy-efficiency components when phasing down HFCs, the project will not result in the duplication of activities among those funded by the Multilateral Fund and those funded from other sources; that information on project progress, results and key learning will be made available, as appropriate; and that the date of completion of the project will be set as no more than 36 months after the date of approval by the Executive Committee and that a detailed project report will be submitted to the Executive Committee within six months of the date of completion of the project.

Policy, regulatory and institutional framework

127. The Secretariat requested clarifications relating to the component on policy and institutional coordination and how this would be implemented to avoid duplication with the activities related to energy efficiency submitted and planned under decision 89/6. UNDP explained that the planned activities under this component of the pilot project would mainly assist the relevant authorities, namely, the Sustainable Energy Authority (SEA) (from the Ministry of Power and Energy) and the Sri Lanka Standards Institution, to have a full understanding of refrigerant transition in different applications under the KIP and of the need for ongoing coordination and support to harmonize the development of standards that include provisions relating to the Kigali Amendment. This would result in establishing a project implementation advisory and oversight board to oversee implementation of energy efficiency standards, including refrigerant quality. This activity would thus result in an institutional mechanism that would monitor implementation of different activities relating to energy efficiency during the KIP on an ongoing basis. Further, guidelines for green procurement are being proposed to be used by different ministries to encourage the adoption of low-GWP energy-efficient technologies in different applications. The activities planned under the project pursuant to decision 89/6 relate to capacity building of different stakeholders and training and other information outreach activities relating to the implementation of MEPS in air-conditioning applications. These activities would strengthen the institutional coordination specifically with the energy efficiency standards and enforcement authorities in relation to air-conditioning applications. Thus, these two projects cover different activities which could share information, as needed, to improve the project implementation effectiveness.

128. On the complementarity of activities under these two projects, UNDP explained that the primary focus of the pilot project is to demonstrate the energy efficiency of low-GWP technologies in the commercial refrigeration sector and the air-conditioning sector and how these technologies can be safely implemented. Though in the air-conditioning sector, HFC-32-based technologies are expected to increase in the new future, implementation of this project can result in higher adoption of R-290-based air conditioners for certain end-users (e.g., users requiring small capacity air-conditioning systems).

129. On product registry for facilitating the import and sale of low-GWP refrigerant-based energy-efficient technologies, UNDP explained that the Government is not considering it at this stage mainly because a large part of the local demand is met by importing of equipment, and importers may shift their suppliers based on economic and supply chain issues. Hence, the NOU would need to undertake a more detailed analysis to understand the viability of this proposal. UNDP also clarified that the NOU proposes to first launch the green procurement standards during stage I of the KIP and would analyze the possibility of a product registry during stage II.

130. UNDP informed that there are no energy efficiency projects in the cooling sector under development or implementation with funding from non-Multilateral Fund resources. In the past, the NOU has supported a pilot programme initiated by SEA on the replacement of HFC-134a-based domestic refrigerators with R-600a-based domestic refrigerators and a feasibility study on the use of alternatives in chillers. A project was implemented in 2014 to establish a laboratory for testing energy efficiency of refrigerators with support from the Asian Development Bank. Further, even in the context of projects funded by the Global Environment Facility under the climate change focal area, funds are allocated to other areas such as greening energy generation and e-mobility, and no resources are allocated to energy efficiency in the context of RAC applications. The NOU, through the different institutional mechanisms, will closely coordinate with national stakeholders to avoid duplication and maximize complementarity of activities that could have linkages with the current project.

Technical and cost-related issues

131. The Secretariat requested clarifications on how the distribution of units for commercial refrigeration and air-conditioning were finalized. UNDP explained that the distribution of the equipment to

be operated and tested for performance, both condensing units and air-conditioning equipment, was based on the variations in the weather conditions in different parts of the country and usage characteristics. The energy performance of the equipment would be measured on a real-time basis through internet connected systems that allow for remote monitoring; the results of the demonstration projects would be widely publicized during the KIP, and this is expected to accelerate the adoption of low-GWP technologies in the country.

132. Following consultations between the Secretariat and UNDP on the project costs relating to online monitoring of performance of air-conditioning equipment and costs relating to site visits, performance assessment and report preparation for outreach on project performance, the total cost for the pilot project for maintaining and enhancing energy efficiency of replacement technologies for Sri Lanka, was agreed as submitted, at US \$245,700, with the following revised distribution.

Table 13. Total cost of the energy efficiency pilot project for Sri Lanka as agreed (US \$)

Activities	As submitted	As agreed
Strengthening the institutional and strategic frameworks for energy efficiency in the cooling sector	60,000	60,000
Introduction of energy-efficient and low-GWP room air conditioners based on R-290 piloted in buildings	114,300	110,400
Introduction of energy-efficient and low-GWP condensing units based on R-290 piloted in small retail and convenience stores and markets	71,400	75,300
Total	245,700	245,700

133. In line with decision 91/65, the project would be completed no later than May 2027 (i.e., 36 months from the date of approval).

Agreed cost of the pilot project

134. The cost of the project was agreed at US \$245,700, plus agency support costs of US \$22,113 for UNDP.

Sustainability of the pilot project and assessment of risks

135. The pilot project activities would help the Government of Sri Lanka in establishing an institutional coordination mechanism for ongoing implementation guidance and monitoring and maximizing synergies between KIP activities and energy-efficiency activities. The pilot project would also promote a better understanding of the benefits of using low-GWP energy-efficient equipment in room air-conditioning and condensing units in commercial refrigeration which, over time, is expected to reduce dependence on HFC-based equipment and catalyze the adoption of non-HFC-based technologies. These activities would have synergies with activities under stage I of the KIP and beyond, particularly relating to the development of policies and regulations to reduce dependence on HFCs in commercial refrigeration and residential air-conditioning applications. Further, the implementation of green procurement guidelines will further accelerate the market adoption of low-GWP refrigerant-based energy-efficient technologies in the country.

Recommendation

136. The Executive Committee may wish to consider approving the pilot project to maintain and/or enhance the energy efficiency of replacement technologies and equipment in the context of HFC phase-down (non-investment activities) for Sri Lanka, in the amount of US \$245,700, plus agency support costs of US \$22,113 for UNDP, noting:

- (a) That the Government of Sri Lanka has committed to the conditions referred to in decision 91/65(b)(iv)b. to (b)(iv)d.; and

- (b) That the project would be operationally completed no later than May 2027, and a detailed project report would be submitted to the Executive Committee within six months of the date of completion of the project.

Annex I

TEXT TO BE INCLUDED IN THE AGREEMENT BETWEEN THE GOVERNMENT OF SRI LANKA AND THE EXECUTIVE COMMITTEE OF THE MULTILATERAL FUND FOR 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 Sri Lanka 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	2027-2029	2030	Total
1.1	Montreal Protocol reduction schedule of Annex C, Group I substances (ODP tonnes)	9.04	9.04	9.04	9.04	4.52	4.52	4.52	0.00	n/a
1.2	Maximum allowable total consumption of Annex C, Group I substances (ODP tonnes)	9.04	9.04	9.04	9.04	4.52	4.52	4.52	0.00	n/a
2.1	Lead IA (UNDP) agreed funding (US \$)	216,200	0	0	413,200	0	53,200	0	62,400	745,000
2.2	Support costs for Lead IA (US \$)	15,134	0	0	28,924	0	3,724	0	4,368	52,150
2.3	Cooperating IA (UNEP) agreed funding (US \$)	200,800	0	0	85,800	0	86,800	0	41,600	415,000
2.4	Support costs for Cooperating IA (US \$)	26,104	0	0	11,154	0	11,284	0	5,408	53,950
3.1	Total agreed funding (US \$)	417,000	0	0	499,000	0	140,000	0	104,000	1,160,000
3.2	Total support cost (US \$)	41,238	0	0	40,078	0	15,008	0	9,776	106,100
3.3	Total agreed costs (US \$)	458,238	0	0	539,078	0	155,008	0	113,776	1,266,100
4.1.1	Total phase-out of HCFC-22 agreed to be achieved under this agreement (ODP tonnes)									9.14
4.1.2	Phase-out of HCFC-22 to be achieved in the previous stage (ODP tonnes)									2.86
4.1.3	Remaining eligible consumption for HCFC-22 (ODP tonnes)									0.00
4.2.1	Total phase-out of HCFC-141b agreed to be achieved under this agreement (ODP tonnes)									0.00
4.2.2	Phase-out of HCFC-141b to be achieved in the previous stage (ODP tonnes)									1.9
4.2.3	Remaining eligible consumption for HCFC-141b (ODP tonnes)									0.00

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

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 SRI LANKA**

Kigali HFC implementation plan (stage I)

Row	Particulars	2024	2025-2026	2027	2028	2029	Total
1.1	Montreal Protocol reduction schedule of Annex F substances (CO ₂ -eq tonnes)	1,170,234	1,170,234	1,170,234	1,170,234	1,053,211	n/a
1.2	Maximum allowable total consumption of Annex F substances (CO ₂ -eq tonnes)	1,170,234	1,170,234	1,170,234	1,170,234	1,053,211	n/a
2.1	Lead IA (UNDP) agreed funding (US \$)	136,160	0	61,000	0	20,750	217,910
2.2	Support costs for Lead IA (US \$)	12,254	0	5,490	0	1,868	19,612
2.3	Cooperating IA (UNEP) agreed funding (US \$)	81,999	0	29,846	0	12,427	124,272
2.4	Support costs for Cooperating IA (US \$)	10,660	0	3,880	0	1,615	16,155
3.1	Total agreed funding (US \$)	218,159	0	90,846	0	33,177	342,182
3.2	Total support costs (US \$)	22,914	0	9,370	0	3,483	35,767
3.3	Total agreed costs (US \$)	241,073	0	100,216	0	36,660	377,949

HCFC phase-out management plan (stage II)

Row	Particulars	2020	2021-2022	2023	2024	2025	2026	2027-2029	2030	Total
1.1	Montreal Protocol reduction schedule of Annex C, Group I substances (ODP tonnes)	9.04	9.04	9.04	9.04	4.52	4.52	4.52	0.00	n/a
1.2	Maximum allowable total consumption of Annex C, Group I substances (ODP tonnes)	9.04	9.04	9.04	9.04	4.52	4.52	4.52	0.00	n/a
2.1	Lead IA (UNDP) agreed funding (US \$)	216,200	0	293,200	0	0	53,200	0	62,400	625,000
2.2	Support costs for Lead IA (US \$)	15,134	0	20,524	0	0	3,724	0	4,368	43,750
2.3	Cooperating IA (UNEP) agreed funding (US \$)	200,800	0	85,800	0	0	86,800	0	41,600	415,000
2.4	Support costs for Cooperating IA (US \$)	26,104	0	11,154	0	0	11,284	0	5,408	53,950
3.1	Total agreed funding (US \$)	417,000	0	379,000	0	0	140,000	0	104,000	1,040,000
3.2	Total support costs (US \$)	41,238	0	31,678	0	0	15,008	0	9,776	97,700
3.3	Total agreed costs (US \$)	458,238	0	410,678	0	0	155,008	0	113,776	1,137,700

Annex III

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

Category of activity	HPMP – stage II		KIP – stage I		HPMP+KIP combined cost (US \$)
	Activity	Cost (US \$)	Activity	Cost (US \$)	
Policy, regulations and strengthening enforcement	Policy review and amendment of regulations relating to HCFCs	24,000			24,000
			Introduction of regulations for mandatory reporting	15,000	15,000
	Training of customs and enforcement officers	49,500			49,500
	Technical assistance for strengthening ODS-risk profiling	10,000			10,000
			Development of the integrated HFC supply chain and regulatory agencies' online data reporting system	11,598	11,598
	Procurement of refrigerant identifiers	25,000			25,000
			Ban on use of R-134a in domestic refrigeration for new and imported equipment	10,000	10,000
			Assessment of room AC sector to control use of R-410A	10,000	10,000
			Market assessment for MAC sector	10,000	10,000
			Workshop registration streamlining and development of grading system for RAC/MAC workshops	27,500	27,500
Capacity building of RAC servicing sector	Procurement of training equipment for six training centres	150,000			150,000
			MAC trainers kit	35,500	35,500
			Room AC trainers kit	20,500	20,500
			Domestic refrigerators trainers kit	14,410	14,410
	Procurement of tools for RAC technicians	240,000			240,000
	Training of RAC technicians on good practices and handling of flammable refrigerants	147,000			147,000
		Technicians training (HFC-32 application/tech driven training/TOT)	86,000	86,000	

Category of activity	HPMP – stage II		KIP – stage I		HPMP+KIP combined cost (US \$)
	Activity	Cost (US \$)	Activity	Cost (US \$)	
			Sector specific training for MAC technicians in the MAC sector	51,000	51,000
	Integration of code of good practices into TVET system and certification of RAC technicians	104,000			104,000
	Technical assistance to reclamation centres	12,000			12,000
	Technical assistance for chillers	12,000			12,000
	Revive RAC association	4,500			4,500
Public awareness and outreach	Development and dissemination of awareness and education materials on HCFC phase-out	50,000			50,000
	Sector-based activity related to HCFC phase-out	50,000			50,000
			Targeted awareness material development, stakeholder engagement meetings and outreach workshops, social media campaign related to HFC phase-down	19,174	19,174
Coordination and monitoring	Project management, coordination and monitoring	162,000	Project management, coordination and monitoring	31,500	193,500
Total		1,040,000		342,182	1,382,182
Percentage of total (%)		75.2		24.8	100