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EXECUTIVE COMMITTEE OF
THE MULTILATERAL FUND FOR THE
IMPLEMENTATION OF THE MONTREAL PROTOCOL
Ninetieth Meeting
Montreal, 20-23 June 2022
Items 9(a) and (d) of the provisional agenda[1]

PROJECT PROPOSAL: COSTA RICA

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

Phase-out

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

[1] UNEP/OzL.Pro/ExCom/90/1

PROJECT EVALUATION SHEET – MULTI-YEAR PROJECTS

Costa Rica

(I) PROJECT TITLE	AGENCY	MEETING APPROVED	CONTROL MEASURE
HCFC phase out plan (stage II)	UNDP	84th	97.5% by 2030

(II) LATEST ARTICLE 7 DATA (Annex C Group l)	Year: 2020	4.04

(III) LATEST COUNTRY PROGRAMME SECTORAL DATA (ODP tonnes)									Year: 2021
Chemical	Aerosol	Foam	Firefighting	Refrigeration		Solvent	Process agent	Lab use	Total sector consumption
				Manufacturing	Servicing				
HCFC-123									
HCFC-124									
HCFC-141b					0.60				0.60
HCFC-141b in Imported Pre-blended Polyol									
HCFC-142b									
HCFC-22					2.80				2.80

(IV) CONSUMPTION DATA (ODP tonnes)			
2009 - 2010 baseline:	14.10	Starting point for sustained aggregate reductions:	32.19
CONSUMPTION ELIGIBLE FOR FUNDING (ODP tonnes)			
Already approved:	31.84	Remaining:	0.35

(V) BUSINESS PLAN		2022	2023	2024	Total
UNDP	ODS phase-out (ODP tonnes)	3.3	0	2.5	5.8
	Funding (US $)	413,000	0	316,000	729,000

(VI) PROJECT DATA			2019	2020	2021	2022*	2023	2024	2025-2026	2027	2028-2029	2030	Total
Montreal Protocol consumption limits			12.69	9.17	9.17	9.17	9.17	9.17	4.58	4.58	4.58	0.35	n/a
Maximum allowable consumption (ODP tonnes)			12.69	9.17	9.17	9.17	9.17	9.17	4.58	4.58	4.58	0.35	n/a
Projects costs requested in principle (US$)	UNDP	Project costs	187,777	0	385,750	0	0	295,200	0	126,450	0	104,000	1,099,177
		Support costs	13,144	0	27,003	0	0	20,664	0	8,852	0	7,280	76,942
Funds approved by ExCom (US $)		Project costs	187,777	0	0	0	0	0	0	0	0	0	187,777
		Support costs	13,144	0	0	0	0	0	0	0	0	0	13,144
Total funds requested for approval at this meeting (US$)		Project costs				385,750							385,750
		Support costs				27,003							27,003

*The second tranche was expected to be submitted in 2021.

Secretariat's recommendation:	Blanket Approval

PROJECT DESCRIPTION

1. On behalf of the Government of Costa Rica, UNDP as the designated implementing agency has submitted a request for funding for the second tranche of stage II of the HCFC phase-out management plan (HPMP), at the amount of US $385,750, plus agency support costs of US $27,003.[2] The submission includes a final report on the implementation of stage I of the HPMP, a progress report on the implementation of the first tranche of stage II of the HPMP, and the tranche implementation plan for 2022 to 2024.

Final report on the implementation of stage I of the HPMP

Background

2. Stage I of the HPMP for Costa Rica was originally approved at the 64th meeting of the Executive Committee[3] and revised at the 70th meeting[4] at a total cost of US $1,153,523 (US $560,000 for the refrigeration servicing sector and US $593,523 for a project to phase out 14 ODP tonnes of HCFC-141b used in the manufacturing sector) plus agency support costs of US $86,514 to meet the 35 per cent reduction from the baseline by 2020.

3. At its 85th meeting, the Executive Committee requested the Government of Costa Rica and UNDP to submit a final report on the implementation of stage I of the HPMP to the first meeting of the Executive Committee in 2022, along with the required project completion report (decision 85/7).

4. Stage I of the HPMP was completed in December 2021, as stipulated in the Agreement between the Government of Costa Rica and the Executive Committee**.** In line with decision 85/7, on behalf of the Government of Costa Rica, UNDP has submitted the final report on the implementation of the work programme associated with the fifth and final tranche of the HPMP and the project completion report to the present meeting.

HCFC consumption

5. The Government of Costa Rica reported under the country programme (CP) implementation report a consumption of 3.40 ODP tonnes of HCFC in 2021, which is 76 per cent below the HCFC baseline for compliance. The 2017-2021 HCFC consumption is shown in Table 1.

Table 1. HCFC consumption in Costa Rica (2017-2021 Article 7 data)

HCFC	2017	2018	2019	2020	2021*	Baseline
Metric tonnes (mt)						
HCFC-22	153.38	138.99	92.96	61.70	50.82	181.88
HCFC-123	0.00	0.00	0	0	0	0.36
HCFC-124	0.14	0.14	0	0	0	3.95
HCFC-141b	15.22	10.88	10.88	6.79	5.47	32.59
HCFC-142b	0.48	0.48	0	0	0	6.17
(Sub-total / Total) (mt)	**169.22**	**150.49**	**103.84**	**68.49**	**56.29**	**224.94**
HCFC-141b in imported pre-blended polyols*	4.49	3.66	3.31	0.86	0	164.64**

[2] As per the letter of 7 April 2022 from the Ministry of Environment and Energy of Costa Rica to UNDP.
[3] Document UNEP/OzL.Pro/ExCom/64/31, and Annex XII of document UNEP/OzL.Pro/ExCom/64/53.
[4] Annex XIX of document UNEP/OzL.Pro/ExCom/70/59.

HCFC	2017	2018	2019	2020	2021*	Baseline
ODP tonnes						
HCFC-22	8.43	7.65	5.11	3.39	2.80	10.00
HCFC-123	0	0	0	0	0	0.01
HCFC-124	0	0	0	0	0	0.09
HCFC-141b	1.67	1.2	1.2	0.75	0.60	3.58
HCFC-142b	0.03	0.03	0	0	0	0.40
(Sub-total / Total) (ODP tonnes)	**10.10**	**8.82**	**6.29**	**4.04**	**3.40**	**14.08**
HCFC-141b in imported pre-blended polyols*	0.49	0.40	0.36	0.09	0	18.11**

* CP data.

** Starting point established in the Agreement with the Executive Committee.

6. HCFC consumption has been decreasing because of the implementation of the import licensing and quota system and other activities related to the HPMP, including capacity building of customs officers and refrigeration technicians. The 2020 and 2021 HCFC consumption was further reduced as a consequence of the economic contraction in the country caused by the COVID-19 pandemic.

7. The significant reduction in consumption of HCFC-141b in imported pre-blended polyols from the starting point was due to the conversion of the largest user of pre-blended polyols in the country; the replacement of locally manufactured discontinuous panels by imported products; the closure of some commercial refrigeration manufacturing enterprises; and the introduction of fully formulated polyols based on HFC-365mfc/ HFC-227ea. Furthermore, the zero consumption of HCFC-141b contained in pre-blended polyols in 2021 is associated with the consequences of the country's economic contraction that prevented regular operation of the last polyurethane (PU) foam manufacturer in the country.

CP implementation report

8. The Government of Costa Rica reported HCFC sector consumption data under the 2020 CP implementation report of 4.14 ODP tonnes and reported a consumption of 4.04 ODP tonnes under Article 7 of the Montreal Protocol. The difference is due to the destruction of HCFCs reported under the Article 7 data. The Article 7 data for 2021 has not been reported yet.

Progress report on the implementation of stage I of the HPMP

Legal framework

9. The Government of Costa Rica has established and is enforcing a licensing and quota system for imports and exports of ODS and ODS-containing equipment, including HCFCs and HFCs (covered in regulation 35676 S-H-MAG-MINAET). The National Ozone Unit (NOU) under the Ministry of Environment and Energy establishes the annual import quotas for HCFCs based on the maximum allowable consumption under the Montreal Protocol, and the Ministry of Foreign Trade issues the licenses according to the total quota set by the NOU. An online system (TICA) was established to facilitate monitoring of ODS imports and other refrigerants (including HFCs) and cross-checking with quotas issued. A ban on imports of HCFC-based equipment has been in place since 1 January 2020 (Executive Decree 37614-MINAE Art. 13). Furthermore, Costa Rica ratified the Kigali Amendment of the Montreal Protocol on 23 May 2018.

10. The Government of Costa Rica participated in the development of a mandatory technical regulation by Central American countries (RTCA 23.01.80.21) to establish the Minimum Energy Performance Standards for air conditioner (AC) and heat pump (mini-split and multi-split) manufacturing, imports, or sales in the region. That regulation is in the process of being approved and will be incorporated into the sustainable public procurement requirements of the country.

11. As a result of coordination with the Technical Standards Institute of Costa Rica, 18 national standards for refrigeration systems and heat pumps were revised or adopted to regulate the refrigeration and air-conditioning (RAC) service sector. The set of standards: establishes requirements for the safety of persons and property; provides guidance for the protection of the environment; defines procedures for the operation, maintenance, and repair of refrigerating systems and the recovery of refrigerants; adopts requirements for container cooling systems using flammable refrigerants regarding design, performance and servicing; and sets conditions for the design, installation and dismantling of closed circuit ammonia refrigeration systems, and commercial refrigeration appliances and ice-makers.

Customs officer training

12. A total of 17 customs workshops on ODS legislation, import controls and customs codes were carried out to train 342 customs officers. Three virtual training sessions were held for 139 customs officers to prevent illegal trade in chemical substances, including the Montreal Protocol controlled substances.

Phase-out of HCFC in PU foam in the manufacture of domestic refrigerators

13. In July 2013, Atlas Industrial, SA, a manufacturer of domestic refrigeration equipment with a consumption of 14.00 ODP tonnes of HCFC-141b contained in imported pre-blended polyols, converted to the use of cyclopentane as a blowing agent.

Refrigeration servicing sector

14. Several training activities[5] in the servicing sector resulted in the certification of 1,676 technicians through the Good Practices and Management of Refrigerants cards granted by the Ministry of Environment and Energy. The courses in good practices in RAC are already integrated into the curriculum for the refrigeration speciality of the National Institute of Learning of Costa Rica (INA) and its partner institutions. Four technical schools received 10 R-600a-based domestic refrigeration equipment units for training purposes; and 500 sets of good practice manuals with interactive DVD were distributed among three training institutions.

15. A waste refrigerant collection system was developed in cooperation with technical associations, training institutes, and three special waste management companies. The ODS recovery network received eight refrigerant recovery units, 25 recovery cylinders, and 13 units of 100-lb storage tanks. An agreement was signed between the Ministry of Environment and Energy and a cement kiln plant (HOLCIM) to destroy unwanted refrigerants.

16. The demonstration project to replace an HCFC-22 refrigeration system with an R-717/R-744 (NH_3/CO_2 cascade) system in a cold storage warehouse (Premezclas Industriales para Panadería SA[6]) was implemented in close conjunction with HPMP activities. The replacement technology showed improved energy efficiency, fewer maintenance interventions, less leakage of refrigerants and lower cost of refrigerants. The project phased out 0.64 mt (0.035 ODP tonnes) of HCFC-22. The results of the demonstration project were disseminated to various stakeholders. While the technology has not been

[5] Including 470 RAC technicians trained in good refrigeration practices through courses of 25 to 50 hours according to their previous knowledge; 1,202 servicing technicians attended workshops on alternative refrigerants; 138 technicians trained in the use and handling of hydrocarbon (HC) refrigerants (R-290 and R-600a) in domestic and commercial equipment through 30-hour courses; 210 RAC technicians trained in the use of refrigerants with low-global-warming potential (GWP) including HCs, CO_2 and ammonia; and four online awareness workshops and webinars promoting the use of natural refrigerants and final disposal of refrigerants for a total of 265 students and servicing technicians managing large end-user equipment.

[6] Approved at the 76th meeting and funded outside stage I of the HPMP.

replicated in other end-users due to the investment required, the project raised awareness regarding the low-GWP alternative technology in the country.

Level of fund disbursement

17. As of 31 December 2021, of the total funds of US $1,153,523 approved (US $593,523 for the foam conversion project and US $560,000 for the activities in the servicing sector), all of the funds for the foam project had been disbursed, and the balance of US $1,660 from the activities in the servicing sector will be returned to the Multilateral Fund.

Progress report on the implementation of the first tranche of stage II of the HPMP

18. Implementation of the first tranche of stage II was delayed due to the COVID-19 pandemic and started only in July 2021. The main activities that have been carried out include:

(a) A consultant was hired to review the legal framework and draft proposals to support country compliance; a draft Executive Decree to ban the import of HCFC-141b contained in pre-blended polyols is being analysed by the NOU and main country stakeholders;

(b) One study and analysis of the legal conditions was carried out to strengthen the legal framework regulating RAC servicing technicians' activities in the country. As a result, an Executive Decree was drafted requiring formal courses for servicing technicians, and the obtainment of the Good Practices and Management of Refrigerants card granted by the Ministry of Environment and Energy, thus restricting the purchase, possession, and handling of refrigerant gases to technicians with appropriate and demonstrated skills;

(c) The subjects for training workshops on good practices with flammable refrigerants, and refrigerant recovery, recycling, and reclamation were agreed with the refrigeration training institutions. A 30-hour training course[7] for 36 trainers was carried out by an international consultant. In addition, a road map was analysed for establishing a certification process under the National Framework of Qualifications for Professional Technical Education and Training of Costa Rica; and

(d) Survey visits were conducted to nine educational centres to develop technical specifications for instruments, equipment, and tools needed for strengthening the capacity of training institutions to implement their formal RAC courses. The procurement list[8] has been defined, the corresponding bidding process has started, and the delivery of the equipment is expected by August 2022.

[7] Among other subjects, the training course included country regulatory framework for HCFC and HFC, technical and safety considerations for low-GWP alternative refrigerants (ammonia (R-717), CO_2 (R-744), propane (R-290), isobutane (R-600a) and HFOs, secondary, glycols and brines); procedures for handling low-GWP alternative refrigerants during installation, maintenance and disposal; welding test; HCFC-141b alternative cleaning substances; and good practices in the handling of flammable refrigerants in R-290-based ACs and R-600a-based refrigeration equipment.

[8] Including *inter alia* seven recovery units for receiving HCFCs, HFCs, R-410A and R-404; nine 30 lb recovery cylinders; portable charging station for HCs, 17 units of HC-600a-based mini fridges/freezer and 17 units of HC-290-based ACs; zone 1 air blower; nine units of CO_2 fire extinguisher; 31 sets of mechanical manifolds for different refrigerants (R-22, R-134a, R-410A, R-600a, R-290 and R-1270) with appropriate hoses for minimum refrigerant emissions; four electronic leak detectors for detecting halogenated refrigerants and six units for HC refrigerants; 10 vacuum pumps for flammable refrigerants; 32 units of electronic load scales for different quantities of refrigerants; three cylinders of nitrogen and six manifold gauge sets with hoses for transferring nitrogen; and other small instruments, tools, and personal safety equipment.

Project implementation and monitoring

19. Of the total US $18,200 approved in the first tranche for the project implementation and monitoring, US $9,132 was used for the hire of the HPMP project coordinator and local consultants, meetings with main stakeholders, and the preparation of the annual implementation plan and tranche implementation report.

Level of fund disbursement

20. As of 31 March 2022, of the US $187,777 approved so far, US $79,903 (43 per cent) had been disbursed. The balance of US $107,874 will be disbursed by December 2023.

Implementation plan for the second tranche of stage II

21. The following activities will be implemented between April 2022 and June 2024:

(a) *Strengthening the legal and institutional framework to control HCFCs*: implementing a ban on imports of HCFC-141b contained in pre-blended polyols to be effective as of 1 January 2024; organizing six workshops for importers and other stakeholders on the legal framework for achieving total HCFC phase-out (US $20,000);

(b) *Phase-out of HCFC-141b in pre-blended polyols in PU foam manufacturing:* conversion of "Refrigeracion Omega" to replace the consumption of 6.24 mt (0.69 ODP tonnes) of HCFC-141b contained in imported pre-blended polyols with HFO-1233zd (US $68,177 from the first tranche);

(c) *Strengthening the refrigerant recovery, recycling and reclamation (RRR) network*: preparing a training manual and organizing five workshops in RRR techniques for 100 students and RAC servicing technicians; developing a business model for establishing the recovery and reclaim scheme at the country level; procurement of equipment[9] (one reclaim station, a refrigerant recovery and recycling unit, two refrigerant recovery machines, a gas chromatograph, two ODS identifiers, and 10 units of 30 lb cylinders) to set up one RRR station (US $104,350);

(d) *Promoting good servicing practices:* five workshops on good practices and handling of flammable refrigerants for 100 RAC servicing technicians, and designing and printing one poster on good practices for participants of the training workshops (US $25,500);

(e) *Developing a certification system for RAC servicing*: development of 10 certifiers and testing the system for a group of 25 technicians; procedures, guidelines for RAC technicians, examples of tests, and other informative tools; conduct six awareness workshops to promote the certification of RAC technicians in different cities of the country for a total estimated number of 120 participants (US $40,000);

(f) *Strengthening formal education in technical institutes*: completing the acquisition and delivery of equipment and tools to improve nine technical institutions and conducting two follow-up visits per year to each centre (US $64,500);

(g) *Promoting low-GWP alternatives in supermarkets and hotels*: training of the technical staff of 20 hotels and providing advice on replacement of RAC systems with low-GWP alternatives; conducting five workshops on the new trends for RAC systems in the sector for supermarket chains in five different locations in the country, for a total of

[9] Regarding the refrigerant reclaim, recycling and recovery equipment proposed under the project, UNDP confirmed that the refrigerant reclaiming is only intended for receiving HCFCs.

100 participants (US $30,600);

(h) *Phasing out the use of HCFC-141b in the cleaning of RAC equipment:* acquisition of 20 nitrogen kits; conducting four workshops for 160 technicians in the use of alternatives as a cleaning agent (US $30,800);

(i) *Public awareness-raising activities on HCFC phase-out:* eight awareness presentations to be conducted in technical colleges to introduce the HPMP to 150 RAC students; six technical visits with 20 students each to demonstrate the RAC system operation with natural refrigerants; information outreach through digital platforms (Ministry of Environment and Energy and UNDP websites and social media), presentations at seminars on demand, and participating in meetings of the Chamber of Industries, the association of refrigeration, and end-users for promoting low-GWP alternative technology (US $30,000); and

(j) *Project implementation and monitoring*: (US $40,000) activities to be conducted include employing one consultant (US $26,600), conducting meetings with stakeholders (US $6,700), and preparing the annual implementation report and tranche implementation report and other contingencies (US $6,700).

SECRETARIAT'S COMMENTS AND RECOMMENDATION

COMMENTS

Progress report on the implementation of the first tranche of the HPMP

Legal framework

22. The Government of Costa Rica has already issued HCFC import quotas for 2022 at 4.14 ODP tonnes, which is lower than the Montreal Protocol control targets and the allowable consumption as per the Country's Agreement with the Executive Committee. The 2022 quota exceeds actual imports for 2021 because importers were unable to import the agreed amounts in 2021, given the world container crisis during that year.

PU foam sector

23. The conversion of "Refrigeracion Omega" to replace the consumption of HCFC-141b contained in imported pre-blended polyols with HFO-1233zd did not start due to the enterprise's market contraction in the 2020-2021 period due to COVID-19. The enterprise reactivated its production line in 2022 and is currently fulfilling existing production commitments before starting the trials with the alternative pre-blended polyol. UNDP indicated that the project would be implemented during the second tranche, and that the Government of Costa Rica would establish the ban on imports of HCFC-141b contained in imported pre-blended polyols once the conversion at "Refrigeracion Omega" has been completed. The Secretariat understands the specific circumstances of the enterprise and the impact of the COVID-19 pandemic and considers the timeframe provided by UNDP for the completion of the project reasonable. However, noting the delay in initiating the conversion and in the consequent promulgation of the ban until the project is completed, the Secretariat will revaluate the situation based on the tranche implementation report to be submitted with the third tranche request where details on the conversion of "Refrigeration Omega" including level of disbursement and progress in the promulgation of the ban will be included.

Refrigeration servicing sector

24. UNDP reported that the country suffered from the impact of the COVID-19 pandemic because of the government-imposed mandatory teleworking. Hence, the planned activities were redirected and adjusted to be carried out remotely with a consequent slowdown in the pace of HPMP implementation. In 2020-2021, priority was given to completing stage I and obtaining the signature of documents for implementation of the first tranche of stage II. Stage II started in the second half of 2021, and a revised plan of action for completing the first tranche has been submitted.

25. In response to the question on the potential ban on the import of HCFC-141b, UNDP explained that it has not yet been possible due to difficulty in accessing alternative cleaning agents. Instead, the Government is promoting the use of dry nitrogen as a blowing agent and reducing the annual quotas for imports of HCFC-141b.

26. The Secretariat asked whether the reclaiming unit to be procured will serve for HCFCs, HFCs and blends. In response, UNDP explained that although recovery equipment acquired recovers both HCFCs and HFCs, the reclaim equipment will be used for HCFC-22 because the RRR networks for HFCs are much more complex and costly than those for single component refrigerants like R-22.

Gender policy implementation

27. In line with decision 84/92(d),[10] the NOU is encouraging the participation of women in the RAC sector. During the second tranche, women's participation will be promoted when organizing training workshops and outreach activities, and gender disaggregated data will be collected and reported in the third tranche request.

Sustainability of the HCFC phase-out

28. Implementation of the licensing and quota system ensures that the import of HCFCs is controlled and monitored. The HCFC quota system is enforced, and a ban on the import of HCFC-based equipment is in place. The long-term sustainability of the RAC training is assured since good practices are included in the country's regular courses on refrigeration. New subjects (i.e., energy efficiency, safe handling of flammable refrigerants, and low-GWP alternatives) will be incorporated into the refrigeration training curriculum as part of third-tranche implementation. Furthermore, the information outreach and targeted awareness-raising campaigns will support the transition to low-GWP technologies. By combining HCFC licensing and quota system enforcement, the PU foam conversion project, and continued training of servicing technicians and end-users, the country will achieve sustainable phase-out of HCFCs.

Conclusion

29. The Secretariat notes that Costa Rica is in compliance with the Montreal Protocol and the Agreement with the Executive Committee and that its 2021 HCFC consumption is 76 per cent below the baseline level, and further notes the efforts made by the Government for timely completion of stage I of the HPMP. The overall disbursement rate for the first tranche of stage II of the HPMP is 43 per cent, and activities under the tranche, despite initial delays caused by the COVID-19 pandemic, are now advancing with the development of legislation, training for trainers, and the procurement of equipment to strengthen the refrigeration training institutes. The activities planned under the second tranche will further strengthen the refrigeration servicing sector and ensure the long-term sustainability of stage II of the HPMP.

[10] Decision 84/92(d) requested bilateral and implementing agencies to apply the operational policy on gender mainstreaming throughout the project cycle.

RECOMMENDATION

30. With regard to stage I of the HPMP for Costa Rica, the Executive Committee may wish to note the final report on the implementation of stage I of the HCFC phase-out management plan (HPMP) for Costa Rica (decision 85/7), submitted by UNDP and contained in document UNEP/OzL.Pro/ExCom/90/24.

31. With regard to stage II of the HPMP for Costa Rica, the Fund Secretariat recommends that the Executive Committee take note of:

(a) The progress report on the implementation of the first tranche of stage II of the HPMP for Costa Rica; and

(b) The commitment of the Government of Costa Rica to complete the polyurethane foam conversion project in Refrigeracion Omega during the second tranche of stage II of the HPMP and to promulgate the ban on imports of HCFC-141b contained in imported pre-blended polyols upon completion of the conversion.

32. The Fund Secretariat further recommends blanket approval of the second tranche of stage II of the HPMP for Costa Rica, at the funding level shown in the table below.

	Project title	**Project funding (US $)**	**Support cost (US $)**	**Implementing agency**
(a)	HCFC phase-out management plan (stage II, second tranche)	385,750	27,003	UNDP