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EXECUTIVE COMMITTEE OF
THE MULTILATERAL FUND FOR THE
IMPLEMENTATION OF THE MONTREAL PROTOCOL
Ninety-third Meeting
Montreal, 15-19 December 2023
Items 9(c) and (d) of the provisional agenda¹

PROJECT PROPOSALS: PLURINATIONAL STATE OF BOLIVIA

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) UNIDO and UNEP

Phase-down

- Kigali HFC implementation plan (stage I, first tranche) UNIDO 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) UNIDO

¹ UNEP/OzL.Pro/ExCom/93/1

PROJECT EVALUATION SHEET – MULTI-YEAR PROJECTS

Plurinational State of Bolivia

(I) PROJECT TITLE	AGENCY	MEETING APPROVED	CONTROL MEASURE
HCFC phase-out plan (stage II)	UNIDO (lead), UNEP	87 th	100% phase-out by 2030

(II) LATEST ARTICLE-7 DATA (Annex C Group I)	Year: 2022	1.40 ODP tonnes
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(III) LATEST COUNTRY PROGRAMME SECTORAL DATA (ODP tonnes)								Year: 2022	
Chemical	Aerosol	Foam	Fire-fighting	Refrigeration		Solvent	Process agent	Lab use	Total sector consumption
				Manufacturing	Servicing				
HCFC-22					1.35				1.35
HCFC-141b					0.05				0.05

(IV) CONSUMPTION DATA (ODP tonnes)			
2009-2010 baseline:	6.10	Starting point for sustained aggregate reductions:	6.70
CONSUMPTION ELIGIBLE FOR FUNDING			
Already approved:	6.70	Remaining:	0.00

(V) ENDORSED BUSINESS PLAN		2023	2024	2025	Total
UNIDO	ODS phase-out (ODP tonnes)	0.00	1.34	0.00	1.34
	Funding (US \$)	0	259,646*	0	259,646
UNEP	ODS phase-out (ODP tonnes)	0.00	0.25	0.00	0.25
	Funding (US \$)	0	70,625*	0	70,625

* Includes US \$74,900 for UNIDO and US \$33,900 for UNEP for additional activities to maintain energy efficiency (decision 89/6).

(VI) PROJECT DATA			2021	2022-2023	2024*	2025-2026	2027	2028-2029	2030	Total
Montreal Protocol consumption limits (ODP tonnes)			3.97	3.97	3.97	1.98	1.98	1.98	0	n/a
Maximum allowable consumption (ODP tonnes)			3.97	3.36	3.36	1.98	1.98	0.92	0	n/a
Funding agreed in principle (US \$)	UNIDO	Project costs	141,009	0	232,660	0	147,530	0	45,530	566,729
		Support costs	9,871	0	16,286	0	10,327	0	3,187	39,671
	UNEP	Project costs	24,000	0	72,500	0	9,000	0	15,000	120,500
		Support costs	3,120	0	9,425	0	1,170	0	1,950	15,665
Funds approved by ExCom (US \$)	Project costs		165,009	0						165,009
	Support costs		12,991	0						
Total funds recommended for approval at this meeting (US \$)	Project costs			305,160						305,160
	Support costs			25,711						

* Funding for 2024 is advanced to the 93rd meeting; the requested funding includes US \$60,000, plus agency support costs of US \$4,200 for UNIDO, and US \$40,000, plus agency support costs of US \$5,200 for UNEP, for additional activities to maintain energy efficiency (decision 89/6).

Secretariat's recommendation:	Blanket approval
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PROJECT DESCRIPTION

1. On behalf of the Government of the Plurinational State of Bolivia, UNIDO 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 \$330,871, consisting of US \$232,660, plus agency support costs of US \$16,286 for UNIDO, and US \$72,500, plus agency support costs of US \$9,425 for UNEP.² The submission includes a progress report on the implementation of the first tranche, the verification report on HCFC consumption for 2016 to 2022, a request for funding additional activities to maintain energy efficiency in the refrigeration servicing sector,³ and the tranche implementation plan for 2024 to 2027.

Report on HCFC consumption

2. The Government of the Plurinational State of Bolivia reported a consumption of 1.40 ODP tonnes of HCFCs in 2022, which is 77 per cent below the HCFC baseline for compliance. The 2018-2022 HCFC consumption is shown in table 1.

Table 1. HCFC consumption in the Plurinational State of Bolivia (2018-2022 Article 7 data)

HCFC	2018	2019	2020	2021	2022	Baseline
Metric tonnes (mt)						
HCFC-22	55.28	52.90	29.58	18.58	24.58	88.85
HCFC-141b	0.79	0.14	1.39	0.91	0.41	8.85
HCFC-142b	0.00	0.00	0.00	0.00	0.00	2.57
HCFC-123	0.00	1.45	0.00	0.00	0.00	0.22
HCFC-124	0.00	0.00	0.00	0.00	0.00	1.72
Total (mt)	56.07	54.49	30.97	19.49	24.99	102.21
HCFC-141b in imported pre-blended polyols*	0.18	0.23	0.20	0.62	1.28	5.50**
ODP tonnes						
HCFC-22	3.04	2.91	1.63	1.02	1.35	4.89
HCFC-141b	0.09	0.02	0.15	0.10	0.05	0.97
HCFC-142b	0.00	0.00	0.00	0.00	0.00	0.17
HCFC-123	0.00	0.03	0.00	0.00	0.00	0.00
HCFC-124	0.00	0.00	0.00	0.00	0.00	0.07
Total (ODP tonnes)	3.13	2.95	1.78	1.12	1.40	6.10
HCFC-141b in imported pre-blended polyols*	0.02	0.03	0.02	0.07	0.14	0.61**

* CP data.

** Average consumption between 2007 and 2009.

3. Consumption of HCFC-22, which is used exclusively to service refrigeration and air-conditioning (RAC) equipment, has decreased as a result of the implementation of the activities under stage I of the HPMP and the introduction of non-HCFC-based RAC equipment. The very low consumption from 2020 to 2022 could be attributed to the low level of economic activity caused by the COVID-19 pandemic. HCFC-141b is used exclusively to flush refrigeration circuits and is consumed intermittently, while consumption of HCFC-141b contained in imported pre-blended polyols has decreased as manufacturers are converting to alternatives with their own resources. HCFC-123 is also consumed intermittently by a single user (a thermoelectric plant) to service chillers.

² As per the letter of 6 September 2023 from the Ministry of Environment and Water of the Plurinational State of Bolivia to UNIDO.

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.

Country programme implementation report

4. The Government of the Plurinational State of Bolivia reported HCFC sector consumption data under the 2022 country programme (CP) implementation report that is consistent with the data reported under Article 7 of the Montreal Protocol.

Verification report

5. The verification report confirmed that the Government was implementing a licensing and quota system for HCFC imports and exports and that the total consumption of HCFCs reported under Article 7 of the Montreal Protocol for 2016 to 2022 was correct (as shown in table 1 above). The verification concluded that the Plurinational State of Bolivia maintained compliance with the targets set in its Agreement with the Executive Committee regarding HCFC phase-out under the Montreal Protocol.

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 24 March 2023.

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

Legal framework

7. The licensing and quota system for HCFC imports and exports established under stage I has continued into stage II. Training on HCFC control and identification was carried out through one virtual training session for 206 customs officers (70 women) and two in-person training workshops for 95 customs brokers and officers (32 women). The country ratified the Kigali Amendment on 9 October 2020.

8. The ban on imports of HCFC-based RAC equipment, planned for 1 January 2023, is expected to enter into force by March 2024; nation-wide public consultation workshops were held for 160 participants (31 women) to inform importers, RAC associations, end-users, and government bodies on the specifics of the ban. A meeting was held with the sole importer of HCFC-141b contained in pre-blended polyols in the country to discuss the ban of this import. It was announced that the import of HCFC-141b in pre-blended polyols will be prohibited from 1 January 2024.

Refrigeration servicing sector

9. The following activities were implemented under the first tranche:

- (a) The training curriculum was updated and 10 RAC trainers and 195 technicians (five women) trained in good servicing practices, the safe handling of flammable refrigerants, and maintaining and enhancing energy efficiency;
- (b) An occupational standard for labour competence in domestic refrigeration servicing practices, “worker in domestic refrigeration systems,” was developed and approved, and 22 technicians were certified on the new standard; accreditation of 86 technicians and updated certification of 147 technicians were completed;
- (c) Discussions were held with two enterprises, EMBOL S.A. and Food Company Limited, to implement the leakage reduction projects; sites were prepared for technical diagnosis and the collection of basic data (installed capacity, cooling load and refrigerant consumption) of the refrigeration systems;

- (d) The procurement process has begun for the provision of 15 toolkits for the safe handling of alternative refrigerants to training institutes (e.g., two-stage vacuum pumps, leak detectors, manifold, electronic scale with charge control unit, recovery unit, refrigerant reclaim unit, identifier set); distribution of the equipment is planned for the first quarter of 2024;
- (e) A study tour was carried out in Mexico, where experiences related to their refrigerant recovery, recycling and reclamation (RRR) network were shared as well as proper disposal of RAC equipment. An assessment was carried out by an international expert on the needs for equipment and tools at two reclamation centres and basic tool kits to equip all national RAC associations. Based on the assessment, a list of equipment and tools was developed; a reclamation unit has been procured and is expected to be delivered by end of 2023;
- (f) A pilot project is being implemented at the enterprise Delizia in La Paz, Cochabamba, and Santa Cruz de la Sierra where self-contained freezers charged with locally produced R-290 are being tested and monitored on electricity consumption and thermodynamic parameters. The results will be disseminated among technicians and end-users to raise awareness of benefits of the use of locally produced R-290;
- (g) A workshop was held for 50 technicians and end-users (seven women) to present the preliminary study on nationally produced propane; the Greater University of San Simón tested the locally produced propane (97.5 per cent purity) and presented the results of the study and test; and
- (h) Awareness-raising activities were implemented on the launch of stage II of the HPMP, the launch of the HFC phase-down, and the regulations and procedures for technician certification.

Project implementation and monitoring

10. Project implementation and monitoring were carried out through collaboration between agencies and stakeholders; regular monitoring visits to refrigerant retailers, servicing workshops, customs, and end-users; and the organization of awareness-raising workshops, with the expenditure of US \$20,093 with the following breakdown: US \$2,359 for staff, and US \$17,734 for travel.

Level of fund disbursement

11. As of September 2023, of the US \$165,009 approved so far (US \$141,009 for UNIDO and US \$24,000 for UNEP), US \$90,315 (55 per cent) had been disbursed (US \$75,915 for UNIDO and US \$14,400 for UNEP). The balance of US \$74,694 will be disbursed in 2024.

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

- 12. The following activities will be implemented between January 2024 and June 2027:
 - (a) Establishing the ban on imports of HCFC-based equipment and HCFC-141b pure and contained in imported pre-blended polyols; and formulating measures for the life-cycle management of RAC equipment/products and controlled substances, including prohibition on venting of HCFCs during the installation, servicing and decommissioning of RAC equipment (UNEP) (US \$10,000);

- (b) Conducting two training workshops for 60 customs, enforcement officers, brokers and importers on the import control and identification of ODS; and developing an electronic licensing system (UNEP) (US \$18,000);
- (c) Provision of equipment (e.g., reclamation units, recovery units, transfer pump, refrigerant identifier, cylinder, vacuum pump) and establishing two refrigerant reclamation centres; and conducting two training workshops on RRR for 20 technicians and end-users (UNIDO) (US \$100,000);
- (d) Conducting four training workshops for 120 technicians in good refrigeration practices, refrigerant recovery and recycling procedures, leak prevention, and low-global-warming-potential (GWP) alternatives to HCFCs (UNIDO) (US \$19,000);
- (e) Two awareness-raising campaigns for end-users on the zero leaks programme and on low-GWP alternatives; formulating a leakage control guide, and disseminating the guide to technicians in installation, servicing and decommissioning of RAC equipment in the commercial and industrial refrigeration sector (UNIDO) (US \$15,000);
- (f) Two awareness meetings to disseminate information on the certification process among technicians and end-users with an aim to certify 200 technicians in the labour competency standard in the RAC servicing sector (UNIDO) (US \$18,000);
- (g) Awareness-raising activities to promote low-GWP, energy-efficient alternatives to HCFCs; and participation in seminars, trade fairs, conferences and exhibitions (UNEP) (US \$4,500);
- (h) Activities to maintain energy efficiency: These activities are described in detail in the following section (UNEP (US \$40,000) and UNIDO (US \$60,000)); and
- (i) Project coordination, monitoring and reporting in the amount of US \$20,660 for staff (US \$14,000) and monitoring visits (US \$6,660) (UNIDO).

Activities to maintain energy efficiency in the refrigeration servicing sector

13. The project related to additional activities for the introduction of low-GWP technologies and for maintaining energy efficiency in the refrigeration servicing sector, submitted in line with decision 89/6, is designed to build the technical capacity of technicians to service equipment with flammable refrigerants while maintaining energy efficiency through training and in equipment, and to inform industries on low-GWP alternatives refrigerants in RAC systems. The description and proposed cost breakdown of activities to maintain energy efficiency in the sector include:

- (a) Identifying spaces for cooperation and dialogue between the national ozone unit (NOU) and the policymakers to improve energy efficiency labelling and minimum energy performance standards (MEPS) in the RAC sector, including coordination with energy efficiency policymakers; defining strategies to improve MEPS in the RAC sector; and training for importers and customs on the inspection of RAC products and energy-efficiency classification based on MEPS and the labelling system (UNEP) (US \$20,000);
- (b) Updating training curricula for vocational training institutes for improving energy efficiency during the installation, maintenance and servicing of RAC equipment (UNIDO) (US \$15,000);

- (c) Four training workshops to train 10 trainers and 80 technicians on procedures to improve energy efficiency during the installation, maintenance and servicing of RAC equipment (UNIDO) (US \$10,000);
- (d) Provision of five sets of training equipment (multimeters, Watt meters, laser thermometers, anemometers, contact thermometers) (UNIDO) (US \$35,000); and
- (e) Conducting an awareness-raising campaign for RAC technicians, importers and end-users on reading the energy-efficiency labelling of RAC equipment, GWP values of refrigerants, and cost and environmental benefits, including the distribution of 3,000 copies of awareness materials; and developing a guide for service technicians on monitoring the performance of RAC systems and improving energy efficiency (UNEP) (US \$20,000).

SECRETARIAT'S COMMENTS AND RECOMMENDATION

COMMENTS

Early submission

14. As per the Agreement between the Government of Bolivia and the Executive Committee, the second tranche of stage II of the HPMP is only due at the 94th meeting in 2024. Noting the substantive progress made in implementing the first tranche and the level of disbursement achieved, and in order to enhance the coordination across the HPMP and the KIP (submitted to the current meeting), as well as minimize the associated reporting and administrative burdens, upon consultation with the Secretariat, UNIDO submitted the request to the present meeting. Based on the Secretariat's review, most of the activities have been completed and the pending activities and balances are mainly related to the equipment procured for training institutions, which is expected to be delivered by the end of 2023; approval of the second tranche will help maintain momentum for the continuous implementation of the HPMP and minimize associated reporting and administrative burdens from additional tranche requests, noting also that after approval of all programmed activities in the Multilateral Fund business plan, there will be sufficient funds for the approval of this tranche.

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

Legal framework

15. The Government of the Plurinational State of Bolivia has already issued HCFC import quotas for 2023 in accordance with the Montreal Protocol control targets.

16. The Secretariat noted that, in decision 87/36(b)(i), the Executive Committee noted the commitment of the Government of the Plurinational State of Bolivia to ban the import of HCFC-based RAC equipment by 1 January 2023; yet the ban will only be legally established in 2024. UNIDO explained that the Government has been working towards establishing the ban. The legal document (Environmental Management Regulations for Ozone-Depleting Substances) for the ban has been drafted and is expected to come into effect in 2024. Meanwhile, the NOU has been communicating with importers and stakeholders on the ban and on the HCFC phase-out by 2030. As a result of the communications, no HCFC-based equipment has been imported in 2023.

17. The Secretariat notes the efforts of the Government and the legislative challenges in establishing the legal ban on the import of HCFC-based equipment, and suggested approving the second tranche on the understanding that UNIDO will submit a progress report on the ban to the 95th meeting if the ban has not been established by then.

Refrigeration servicing sector

18. The Government has been promoting low-GWP technologies under the HPMP and building the capacity of the servicing technicians in servicing with flammable refrigerants. Currently, R-600a technology is available in the country and is slowly penetrating the market. Due to the ban on the import of propane in the country as it was considered a fuel, an R-290 supply is not available in the local market. The Government is working on local production of refrigerant-grade propane to promote R-290-based standalone refrigeration equipment. Training and equipment have been provided to support the adoption of the low-GWP technologies that are flammable, toxic and high-pressure.

Activities to maintain energy efficiency in the refrigeration servicing sector

19. In line with decision 89/6(d), UNIDO and UNEP have included in the tranche implementation plan the specific actions, performance indicators and funding associated with additional activities to maintain energy efficiency. The activities proposed focus on improving the energy efficiency of RAC equipment through preventive maintenance and leakage detection. Implementation of the MEPS and labelling system, and their regular upgrading, are expected to improve the overall energy efficiency level of RAC appliances in the country.

Gender policy implementation

20. The NOU, in its efforts in gender mainstreaming, seeks to ensure that its activities under the HPMP are in line with the country's National Plan for Gender Equality and the Fund's gender mainstreaming policy. During implementation of the first tranche, the gender mainstreaming policy was promoted through the design and implementation of training and other national capacity building activities; and women were encouraged to participate in all the activities in the first tranche.

21. The plan for the second tranche includes gender-related targets and performance indicators. It aims to provide equal opportunities for women and men for all activities conducted under the second tranche. The data on women's participation in the activities of the second tranche will be monitored and collected.

Updated Agreement

22. In view of the additional funding requested for introducing low-GWP technologies and for maintaining energy efficiency in the refrigeration servicing sector, the Agreement between the Government of the Plurinational State of Bolivia 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 87th meeting, as contained in annex I to the present document. The full updated Agreement will be appended to the final report of the 93rd meeting.

Sustainability of the HCFC phase-out and assessment of risks

23. The sustainability of the impacts from the implementation of activities under the HPMP was considered when the project was planned. The licensing and quota system has been enforced to ensure the sustained reduction in HCFC consumption. The issue of import control of substances controlled under the Montreal Protocol has been incorporated into the training of customs officers to ensure its sustainability. The country is working to establish a mandatory technician certification system to ensure the continuous improvement in technicians' capacity in good servicing practices and in handling alternative technologies with competence. The RAC training programmes are being adopted by local vocational training institutes, and the norms and standards for the safe handling of alternative refrigerants have been formulated. A business model has been developed for the refrigerant RRR centre taking into consideration the sustainability of the centre's operation.

24. Frequent changes in national entities has been identified as a risk as it could delay programme implementation and jeopardize compliance. The NOU has been working to ensure continuity of the activities under the HPMP and inform the new authorities on the importance of the project for the country and the ozone layer. Meanwhile, the Government is working to strengthen the regulatory framework for the control of substances controlled by the Montreal Protocol and the products/equipment that depend on them, including a ban on the import of HCFC-based equipment and HCFC-141b contained in pre-blended polyols, to ensure the sustainability of the results achieved in the ODS phase-out.

Conclusion

25. The implementation of activities planned under the first tranche has progressed well. The licensing and quota system has been effectively enforced and the country is in compliance with the control targets in the Agreement. The training activities for customs officers and technicians have been conducted as planned; equipment and tools for training institutions have been procured and delivery is expected by the end of 2023. Establishment of the RRR centres has been initiated, and technical assistance to end-users was provided. The ban on the import of HCFC-based equipment is expected to become effective in the first quarter of 2024, and the ban on the import of HCFC-141b contained in pre-blended polyols has been planned for 1 January 2024. The disbursement rate stands at 55 per cent of the approved funding. The proposed activities to maintain energy efficiency in the refrigeration servicing sector are consistent with decision 89/6.

26. The second tranche of stage II was only due at the 94th meeting of the Executive Committee, in 2024. However, given the level of progress and disbursement achieved so far, the Secretariat considers the approval of the second tranche at the present meeting to be conducive to minimizing associated reporting and administrative burdens from additional tranche requests, ensuring a continued implementation of the phase-out activities, and therefore recommends blanket approval for the tranche since there are adequate funds in the current triennium.

RECOMMENDATION

27. The Fund Secretariat recommends that the Executive Committee:

(a) Note:

- (i) The progress report on the implementation of the first tranche of stage II of the HCFC phase-out management plan (HPMP) for the Plurinational State of Bolivia;
- (ii) The submission of additional activities to maintain energy efficiency in the refrigeration servicing sector in the amount of US \$109,400, consisting of US \$60,000, plus agency support costs of US \$4,200 for UNIDO, and US \$40,000, plus agency support costs of US \$5,200 for UNEP;
- (iii) That the Fund Secretariat has updated the Agreement between the Government of the Plurinational State of Bolivia and the Executive Committee, as contained in annex I to the present document, specifically: Appendix 2-A, to reflect the inclusion of funding for additional activities to maintain energy efficiency in the refrigeration servicing sector referred to in subparagraph (a)(ii) above; and that paragraph 17 has been added to indicate that the updated Agreement supersedes that reached at the 87th meeting; and

28. The Fund Secretariat further recommends blanket approval of the second tranche of stage II of the HPMP for the Plurinational State of Bolivia, and the corresponding 2024-2027 tranche implementation plan, at the funding levels shown in the table below on the understanding that UNIDO will submit a report

on the progress made in establishing the ban on HCFC-based equipment as requested in decision 87/26(b)(i) to the 95th meeting if the said ban has not been established at that time.

	Project title	Project funding (US \$)	Support costs (US \$)	Implementing agency
(a)	HCFC phase-out management plan (stage II, second tranche)	232,660	16,286	UNIDO
(b)	HCFC phase-out management plan (stage II, second tranche)	72,500	9,425	UNEP

PROJECT EVALUATION SHEET – MULTI-YEAR PROJECTS

Plurinational State of Bolivia

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

(II) LATEST ARTICLE 7 DATA (Annex F)	Year: 2022	370.18 mt	736,368 CO ₂ -eq tonnes
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(III) LATEST COUNTRY PROGRAMME SECTORAL DATA (CO ₂ -eq tonnes)								Year: 2022	
Chemical	Aerosol	Foam	Firefighting	AC and refrigeration			Solvent	Other	Total sector consumption
				Manufacturing		Servicing			
				AC	Other				
HFC-134a						351,692			351,692
HFC-32						618			618
HFC-227ea			3,220						3,220
R-404A						251,116			251,116
R-407C						10,824			10,824
R-410A						92,204			92,204
R-417A						1,988			1,988
R-438A						5,118			5,118
R-507A						19,588			19,588

(IV) AVERAGE 2020-2022 HFC CONSUMPTION IN SERVICING	278.60 mt	563,596 CO ₂ -eq tonnes
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(V) CONSUMPTION DATA (CO ₂ -eq tonnes)			
Baseline: average 2020-2022 HFC consumption plus 65% of HCFC baseline	677,884	Starting point for sustained aggregate reductions	[n/a]*
CONSUMPTION ELIGIBLE FOR FUNDING			
Already approved	0	Remaining	[n/a]*

* For countries with 2020-2022 HFC consumption in servicing only and below 360 mt.

(VI) ENDORSED BUSINESS PLAN		2023	2024	2025	Total
UNIDO	HFC phase-down (CO ₂ -eq tonnes)	0	0	0	0
	Funding (US \$)	57,780	0	0	57,780

(VII) PROJECT DATA		2023	2024	2025	2026	2027	2028	2029	2030	Total	
Consumption (CO ₂ -eq tonnes)	Montreal Protocol limits	n/a	677,884	677,884	677,884	677,884	677,884	610,096	610,096	n/a	
	Maximum allowable	n/a	677,884	677,884	677,884	677,884	677,884	610,096	610,096	n/a	
Amounts requested in principle (US \$)	UNIDO	Project costs	153,500	0	0	0	78,500	0	0	25,000	257,000
		Support costs	10,745	0	0	0	5,495	0	0	1,750	17,990
	UNEP	Project costs	40,500	0	0	0	20,000	0	0	7,500	68,000
		Support costs	5,265	0	0	0	2,600	0	0	975	8,840
Amounts recommended in principle (US \$)	Total project costs	194,000	0	0	0	98,500	0	0	32,500	325,000	
	Total support costs	16,010	0	0	0	8,095	0	0	2,725	26,830	
	Total funds	210,010	0	0	0	106,595	0	0	35,225	351,830	

(VIII) Request for approval of funding for the first tranche (2023)		
Implementing agency	Funds recommended (US \$)	Support costs (US \$)
UNIDO	153,500	10,745
UNEP	40,500	5,265
Total	194,000	16,010

Secretariat's recommendation:	Individual consideration – all technical and cost issues resolved
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PROJECT DESCRIPTION

29. On behalf of the Government of the Plurinational State of Bolivia, UNIDO as the lead implementing agency has submitted a request for stage I of the Kigali HFC implementation plan (KIP), at a total cost of US \$480,480, consisting of US \$354,000, plus agency support costs of US \$24,780 for UNIDO, and US \$90,000, plus agency support costs of US \$11,700 for UNEP, as originally submitted.⁴

30. The implementation of stage I of the KIP will assist the Plurinational State of Bolivia in meeting the target of 10 per cent reduction from its HFC baseline consumption by 1 January 2029.

31. The first tranche of stage I of the KIP being requested at this meeting amounts to US \$258,925, consisting of US \$214,000, plus agency support costs of US \$14,980 for UNIDO, and US \$26,500, plus agency support costs of US \$3,445 for UNEP, as originally submitted, for the period of January 2024 to December 2026.

32. 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 \$106,000, plus agency support costs. The project is presented separately from stage I of the KIP, in paragraphs 88 to 102 of the document.

Background

33. The Plurinational State of Bolivia has ratified all amendments to the Montreal Protocol, including the Kigali Amendment on 9 October 2020. The Plurinational State of Bolivia has an HCFC consumption baseline of 6.10 ODP tonnes or 102.21 metric tonnes (mt) and is set to completely phase out consumption of HCFCs by 1 January 2030.⁵

Status of implementation of the HCFC phase-out management plan

34. Stage I of the HCFC phase-out management plan (HPMP) for the Plurinational State of Bolivia was originally approved at the 64th meeting⁶ and revised at the 75th meeting⁷ to meet the 35 per cent reduction from the baseline by 2020, resulting in the phase-out of 2.13 ODP tonnes of HCFCs, at a total cost of US \$315,000, plus agency support costs.

35. Stage II of the HPMP for the Plurinational State of Bolivia was approved at the 87th meeting⁸ to reduce HCFC consumption by 100 per cent of the baseline by 2030, at a total cost of US \$587,229, plus agency support costs. Stage II of the HPMP will be completed by December 2031, as stipulated in the Agreement between the Government of the Plurinational State of Bolivia and the Executive Committee.

Status of implementation of HFC-related activities

36. At the 74th meeting, the Plurinational State of Bolivia received funding to conduct a survey on the use of alternatives to ODS (US \$70,000), which was completed in May 2017. At the 82nd meeting, the country received funding to implement enabling activities for the HFC phase-down (US \$150,000), which were completed in June 2022. These activities assisted the country *inter alia* in ratifying the Kigali Amendment in 2020; issuing an administrative resolution to include in the licensing and quota system for

⁴ As per the letter of 9 August 2023 from the Ministry of Environment and Water of the Plurinational State of Bolivia to UNIDO.

⁵ Except for those HCFCs allowed for a servicing tail between 2030 and 2040, where required, consistent with the provisions of the Montreal Protocol.

⁶ Decision 64/27

⁷ Annex XXVI of UNEP/OzL.Pro/ExCom/75/85

⁸ Decision 87/36

HFCs (including blends) and HFC alternatives; undertaking a survey on the import and use of HFCs and equipment containing them; reporting HFC import data under Article 7 of the Montreal Protocol; identifying capacity-building needs for the refrigeration servicing sector to support the transition to alternatives and analyzing policy options to facilitate HFC phase-down; providing training to broaden the understanding of key stakeholders, servicing and assembly sectors, and end-users on HFC alternatives and on improving energy efficiency; and initiating discussions with the other Government ministries on issues related to implementation of the Kigali Amendment.

Stage I of the Kigali HFC implementation plan

Policy, regulatory and institutional framework

37. The Ministry of Environment and Water is the national body responsible for the implementation of the Montreal Protocol and its Amendments in the Plurinational State of Bolivia. The national ozone unit (NOU) was established within the Ministry to implement activities to phase out ODS.

38. The Government has established an operational licensing and quota system for controlling the import of HFCs through an administrative resolution (VMABCCGDF No. 023/2021). The national import quota for HFCs will be applied starting from January 2024 to meet the HFC consumption freeze. The quota will be issued for each substance in metric tonnes and monitored based on CO₂-equivalent (CO₂-eq) tonnes, so that individual importers do not exceed their assigned amounts, thereby not exceeding the national targets for HFC consumption in CO₂-eq tonnes. The Government is also updating Supreme Decree 27421 to include HFCs in the licensing and quota system. A draft supreme decree proposal has been elaborated for expert review and stakeholder consultation.

HFC consumption

39. The Plurinational State of Bolivia only imports HFCs for use in the servicing sector. In 2022, the country consumed HFC-134a (47.8 per cent of total HFC consumption in CO₂-eq tonnes), R-404A (34.1 per cent), R-410A (12.5 per cent), R-507A (2.7 per cent), and other HFCs (2.9 per cent). Table 2 presents the country's HFC consumption as reported to the Ozone Secretariat under Article 7.

Table 2. HFC consumption in the Plurinational State of Bolivia (2019–2022 Article 7 data)

HFC	GWP*	2019	2020	2021	2022	Share in 2022 (%)	Baseline**
mt							
HFC-134a	1,430	112.53	164.35	113.14	245.94	66.44	174.47
HFC-125	3,500	0.65	0.00	0.00	0.00	0.00	0.00
HFC-152a	124	2.29	0.00	0.00	0.00	0.00	0.00
HFC-32	675	0.00	0.00	0.00	0.92	0.25	0.31
HFC-227ea	3,220	0.00	0.00	0.00	1.00	0.27	0.33
R-404A	3,922	32.95	31.02	29.62	64.03	17.30	41.56
R-407C	1,774	5.65	3.28	0.79	6.10	1.65	3.39
R-410A	2,088	20.54	50.72	35.97	44.17	11.93	43.62
R-417A	2,346	0.00	1.13	0.00	0.85	0.23	0.66
R-438A	2,264	5.65	5.65	0.00	2.26	0.61	2.64
R-507A	3,985	18.42	15.77	14.19	4.92	1.33	11.63
Total (mt)		198.67	271.91	193.71	370.18	100.00	278.60
CO₂-eq tonnes							
HFC-134a	1,430	160,913	235,017	161,784	351,692	47.76	249,498
HFC-125	3,500	2,287	0	0	0	0	0
HFC-152a	124	283	0	0	0	0	0
HFC-32	675	-	0	0	618	0.08	206
HFC-227ea	3,220	-	0	0	3,220	0.44	

HFC	GWP*	2019	2020	2021	2022	Share in 2022 (%)	Baseline**
R-404A	3,922	129,205	121,638	116,168	251,116	34.10	162,974
R-407C	1,774	10,022	5,813	1,403	10,824	1.47	6,013
R-410A	2,088	42,883	105,869	75,083	92,204	12.52	91,052
R-417A	2,346	0	2,651	0	1,988	0.27	1,546
R-438A	2,264	12,794	12,794	0	5,118	0.69	5,971
R-507A	3,985	73,400	62,863	56,558	19,588	2.66	46,336
Total (tCO₂-eq)		431,786	546,645	410,996	736,368	100.00	563,596

* Global warming potential

** Average 2020 to 2022 consumption

40. HFC consumption decreased significantly in 2021 due to the effects of the COVID-19 pandemic. The market recovered after the reopening of activities, and HFC consumption has grown to a higher level in line with what would have occurred in the absence of the pandemic. Based on the imports already received in 2023, HFC consumption is expected to continue to grow.

Country programme implementation report

41. The Government of the Plurinational State of Bolivia reported HFC sector consumption data in the 2020-2022 country programme implementation reports that is consistent with the data reported under Article 7 of the Montreal Protocol.

HFC distribution by sector

42. In 2022, imports of HFCs accounted for 93.68 per cent of the controlled substances in the Plurinational State of Bolivia, with the remaining 6.32 per cent being HCFCs. Based on the survey carried out during preparation of the KIP, in 2022, HFCs were mainly used for servicing all refrigeration and air-conditioning (RAC) equipment (97.61 per cent) and charging the equipment assembled and installed in the field (2.12 per cent), with a small amount used for servicing fire-suppression equipment (0.27 per cent). For the RAC servicing sector, HFCs are mainly consumed for servicing in domestic refrigeration (27.9 per cent in mt and 20.1 per cent in CO₂-eq tonnes), followed by mobile air-conditioning (25.2 per cent in mt and 18.1 per cent in CO₂-eq tonnes), industrial refrigeration (12.8 per cent in mt and 21.8 per cent in CO₂-eq tonnes), and other subsectors, as shown in table 3.

Table 3. HFC consumption by sector (2022)

Sector	HFC-134a	R-404A	R-410A	R-507A	R-227ea	Others	Total	Share of total (%)
mt								
Refrigeration and air-conditioning servicing								
Refrigeration subsectors								
Domestic	103.29	0.00	0.00	0.00	0.00	0.00	103.29	27.9
Commercial	19.68	18.16	0.00	1.50	0.00	1.13	40.47	10.9
Industrial	9.84	34.58	0.00	2.75	0.00	0.08	47.25	12.8
Transport	9.84	3.84	0.00	0.29	0.00	0.02	13.99	3.8
Air-conditioning subsectors								
Residential	0.00	0.00	21.82	0.00	0.00	7.70	29.52	8.0
Commercial	9.84	0.00	22.35	0.00	0.00	1.20	33.39	9.0
Mobile	93.46	0.00	0.00	0.00	0.00	0.00	93.46	25.2
Subtotal servicing	245.95	56.58	44.17	4.54	0.00	10.13	361.37	97.6

Sector	HFC-134a	R-404A	R-410A	R-507A	R-227ea	Others	Total	Share of total (%)
Other sectors								
Fire suppression equipment servicing	0.00	0.00	0.00	0.00	1.00	0.00	1.00	0.3
Local installation and assembly	0.00	7.46	0.00	0.37	0.00	0.00	7.83	2.1
Subtotal other sectors	0.00	7.46	0.00	0.37	1.00	0.00	8.83	2.4
Total (mt)	245.95	64.04	44.17	4.91	1.00	10.13	370.20	100.0
CO₂-eq tonnes								
Refrigeration and air-conditioning servicing								
Refrigeration subsectors								
Domestic	147,705	0.00	0	0.00	0	0.00	147,705	20.1
Commercial	28,142	71,216	0	5,978	0	2,070	107,406	14.6
Industrial	14,071	135,609	0	10,959	0	147	160,785	21.8
Transport	14,071	15,059	0	1,156	0	37	30,322	4.1
Air-conditioning subsectors								
Residential	0	0	45,549	0	0	14,103	59,652	8.1
Commercial	14,071	0	46,656	0	0	2,198	62,925	8.5
Mobile	133,648	0	0	0	0	0	133,648	18.1
Subtotal servicing	351,708	221,884	92,205	18,093	0	18,555	702,443	95.4
Other sectors								
Fire suppression equipment servicing	0	0	0	0	3,220	0	3,220	0.4
Local installation and assembly	0	29,255	0	1,474	0	0	30,730	4.2
Subtotal other sectors	0	29,255	0	1,474	3,220	0	33,950	4.6
Total (tCO₂-eq)	351,708	251,139	92,205	19,567	3,220	18,555	736,393	100.0

Refrigeration and air-conditioning servicing sector

43. There are approximately 2,600 technicians (including 36 women) and 1,300 workshops servicing 3.5 million RAC units consuming HFCs in the country. Of the 1,300 workshops, approximately 10 per cent provide services to industrial and commercial end-users for large equipment; and the remaining 90 per cent are small workshops servicing residential RAC equipment and mobile air-conditioning (MAC) equipment. Of the total 2,600 technicians, approximately 350 have received training and the remaining 2,250 technicians are from the informal sector and have not received any tools or training on handling flammable refrigerants.

44. There are eight vocational training institutes in the country and two (the University of Gabriel René Moreno and the University of San Simón) will be equipped under stage I of the KIP.

Domestic refrigeration subsector

45. In 2022, 99 per cent of the domestic refrigeration equipment were based on HFC-134a with the remaining 1 per cent based on R-600a. Although the import of R-600a units is growing gradually, HFC-134a technology continues to dominate the market. It is estimated that approximately 2.4 million units of domestic refrigerators are installed. The servicing rate is estimated at 15 per cent due to the aged equipment. The supply of R-600a is available in the country.

Commercial refrigeration subsector

46. In 2022, approximately 98 per cent of the stand-alone commercial refrigeration units were based on HFC-134a with approximately two per cent based on R-290. There are approximately 190,000 HFC-based units operating in the country, and 35 per cent of equipment receive annual maintenance and refrigerant recharges.

47. There are approximately 100 centralized refrigeration systems and 1,200 condensing units in the country; 80 per cent of this equipment are based on HFCs and the rest on HCFC-22. Most of the condensing units and centralized systems are imported, with a small quantity manufactured locally. These systems operate mainly with R-404A (80 per cent), and the remaining stock continues to work with HCFC-22 (20 per cent). Due to the lack of preventive maintenance and high charges of this type of equipment, the demand for refrigerants is high in this sector.

48. Although R-290-based RAC units can be imported into the country, it is prohibited to import R-290 since it is considered an energy resource, which can be produced in the country. This will be addressed in stage I of the KIP to meet the increasing demand for R-290 refrigerant in the country.

Industrial and transport refrigeration subsector

49. For industrial refrigeration, most refrigerants are consumed in cold rooms for food and agroindustry. There are approximately 1,700 systems with industrial applications (chillers, small- and medium-sized systems) with typical charges of 10 kg to 2 mt. Each year, approximately 10 per cent of the equipment receives servicing. The main HFC refrigerants used are R-404A, HFC-134a and R-507A. For the distributed industrial refrigeration systems, the dominant refrigerant is R-717; there are also systems operating with R-404A.

50. The systems used for refrigerated transport are mostly imported equipment. Refrigerated transport includes both small and large vehicles, used mainly for the distribution of food over short distances, and intermodal containers transported by rail or road. There are approximately 3,000 refrigerated road vehicles and containers. The refrigerants used in this subsector are mainly HFC-134a and HFC-404A. Refrigerated transport is vital to maximize the shelf life of fresh and frozen products in the cold chain of food and pharmaceutical products to meet consumer demand. Due to intensive use, these refrigerated trucks require constant refrigerant recharges.

Residential and commercial air-conditioning servicing

51. The residential and commercial air-conditioning servicing subsector represents significant consumption in the country. R-410A has the highest consumption in the subsector, followed by HFC-134a. HFC-32 is starting to penetrate into the Bolivian market. Meanwhile, other substances such as R-438A, R-417A, and R-407C are also used as alternatives to replace HCFC-22 to service existing equipment.

Mobile air-conditioning servicing

52. The number of vehicles in the country has increased rapidly in the last five years (2018 to 2022) and reached 2.5 million in 2022. HFC-134a is the main refrigerant used in servicing MAC equipment. Due to high leakage in these air-conditioning systems, continuous maintenance is required, which leads to high demand for HFC-134a.

Local installation and assembly subsector

53. During the survey conducted for preparation of stage I of the KIP, the survey team interviewed installers and producers of RAC equipment in the country, collected information on the assembly and local

installation subsector and estimated the amount of HFCs used for charging the assembled and installed new equipment. The subsector includes mainly medium- and low-temperature commercial refrigeration equipment, such as condensing units with refrigeration capacities up to 5 refrigeration tons (RT) (refrigerant charges 1–10 kg), and centralized systems 10 to 50 RT (refrigerant charges 200–800 kg). Most of the equipment are found in supermarkets and convenience stores, as well as in some cold room applications. In 2022, two new centralized systems and 130 condensing units were installed, and 7.46 mt of R-404A and 0.37 mt of R-507A were consumed to charge the new systems onsite. Consumption in the subsector is expected to increase as the country's economy develops.

54. There are three main local workshops dedicated to the installation and assembly of commercial and industrial refrigeration equipment: Frio Todo, Teplo Castillo and Global Frio. These local workshops sell equipment and components or manufacture some of the parts to install and service the main supermarket chains and convenience stores, and install and maintain cold rooms for industry in the country. Other more specialized refrigeration equipment is installed directly by importers or international manufacturers.

Fire suppression equipment servicing sector

55. A small amount of HFC-227ea (approximately 1.00 mt) is used for servicing fire suppression equipment, accounting for 0.21 per cent of total consumption.

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

Overarching strategy

56. The strategy for phasing down HFCs in the Plurinational State of Bolivia has been developed in consultation with all stakeholders and industries. The Government is proposing three stages for implementation of the KIP following the Montreal Protocol schedule for HFC phase-down. The implementation periods and reduction targets are as follows:

- (a) To reduce 10 per cent of the baseline by 2029;
- (b) To reduce 50 per cent of the baseline by 2040; and
- (c) To reduce 80 per cent of the baseline by 2045.

57. Stage I will be implemented in coordination with stage II of the HPMP until 2030, focusing on the targets of freezing to the baseline in 2024 and a 10 per cent reduction from the HFC baseline by 2029. The reduction will be achieved by implementing the licensing and quota system to control HFC supply; training and certifying RAC technicians in the proper handling of flammable refrigerants; supporting training institutions and industrial associations; and ensuring refrigerant recovery, recycling and reclamation (RRR) to reduce the demand for HFCs.

Established HFC baseline and proposed reductions

58. The Government of the Plurinational State of Bolivia reported its Article 7 data for 2020-2022. By adding 65 per cent of the HCFC baseline (in CO₂-eq tonnes) to the average HFC consumption in 2020-2022, the established HFC baseline is 677,884 CO₂-eq tonnes, as shown in table 4.

Table 4. Established HFC baseline for the Plurinational State of Bolivia (CO₂-eq tonnes)

Baseline calculation	2020	2021	2022
HFC annual consumption	546,645	410,996	736,368
HFC average consumption 2020-2022			564,670
HCFC baseline (65%)			113,214
HFC established baseline			677,884

59. Under the business-as-usual scenario, the Government projected the consumption growth of HFCs at 6 per cent. In addition, the phase-out of 24.99 mt⁹ of HCFCs will result in the phase-in of 44,777 CO₂-eq tonnes of HFCs by 2030; assuming equal distribution in CO₂-eq tonnes each year from 2024-2030, the annual increase in HFC consumption would be 6,238 CO₂-eq tonnes. Table 5 shows the calculated overall increase in HFC consumption in the business-as-usual scenario.

Table 5. HFC consumption forecast under unconstrained scenario and the required reductions (CO₂-eq tonnes)

	2022*	2023**	2024	2025	2026	2027	2028	2029	2030
HFC consumption growing at an annual rate 6 per cent	736,368	780,550	827,383	877,026	929,648	985,426	1,044,552	1,107,225	1,173,659
HFC phased in from HCFC phase-out	0	0	6,397	6,397	6,397	6,397	6,397	6,397	6,397
Total HFC estimated consumption	736,368	780,550	833,780	883,423	936,044	991,823	1,050,949	1,113,622	1,180,055
Montreal Protocol consumption limits	n/a	n/a	677,884	677,884	677,884	677,884	677,884	610,096	610,096
Required HFC reductions	n/a	n/a	155,896	205,539	258,161	313,940	373,065	503,527	569,960

* As per Article 7 data.

** Growth calculated based on 2022 HFC consumption of 736,368 CO₂-eq tonnes.

60. Table 5 shows that in the business-as-usual scenario, the HFC consumption in the country has exceeded the Montreal Protocol control targets for all the years from 2024 to 2030. Therefore, the country needs to take immediate action to reduce HFC consumption starting from 2024 throughout stage I of the KIP in order to remain in compliance with the Montreal Protocol. The Government proposes to follow the Montreal Protocol schedule to reduce 10 per cent of the baseline by 2029 and has set the following control targets for stage I of the KIP as shown in table 6 below.

Table 6. HFC consumption limits proposed in stage I of the KIP for the Plurinational State of Bolivia (CO₂-eq tonnes)

	2024	2025	2026	2027	2028	2029
Montreal Protocol consumption limits	677,884	677,884	677,884	677,884	677,884	610,096
Consumption targets under the KIP	677,884	677,884	677,884	677,884	677,884	610,096
Estimated reductions from baseline by 2029 in CO₂-eq tonnes						10%

61. The strategies for stage I were developed based on national circumstances and in consultation with industrial stakeholders, targeting the subsectors where alternative technologies are technically and economically viable and the subsectors where high-GWP refrigerants are used. The strategic areas to be addressed in stage I of the KIP will focus on the reduction of HFC-134a consumption in domestic refrigeration, stand-alone commercial refrigeration, and MAC subsectors; and the reduction of R-404A and R-507A in condensing units and centralized systems in commercial refrigeration and small- and medium-sized systems for industrial refrigeration. The detailed reduction planned for stage I of the KIP is presented in table 7.

⁹ 2022 data

Table 7: Planned reduction in stage I of the KIP for the Plurinational State of Bolivia

Baseline (HFC)	278.60 mt	Kigali baseline	677,884 CO ₂ -eq tonnes	
HFC reductions from the Montreal Protocol baseline for stage I			First reduction 2029	
			(mt)	(CO ₂ -eq tonnes)
Domestic refrigeration		HFC-134a	27.06	38,692
Commercial refrigeration (stand-alone)			6.42	9,175
Mobile air-conditioning			6.15	8,795
Commercial* and industrial refrigeration**		R-404A	2.56	10,024
		R-507A	0.28	1,109
Total			42.46	67,795
Reduction from Montreal Protocol consumption baseline (%)				10.00

* Condensing units and centralized systems

** Small- and medium-sized systems

Proposed activities

62. The action plan for stage I was developed to remove the barriers to transitioning to low-GWP technologies by strengthening the regulatory framework to control HFC imports; building the capacity of the servicing sector to use flammable, toxic and high-pressure low-GWP refrigerants through the training and certification of technicians; and complementing the refrigerant RRR efforts under the HPMP. Stage I of the KIP includes the following activities:

- (a) Updating Supreme Decree 27421 for HFC import control; establishing an online import monitoring system for HFCs; developing a handbook for customs officers on import control for HFCs; and training 30 customs officers in HFC import control and the prevention of illegal trade (UNEP) (US \$50,000); and providing two refrigerant identifiers for the detection of HFCs (UNIDO) (US \$10,000);
- (b) Undertaking a feasibility study on the national production of refrigerant-grade R-290 and on the revision of an existing regulatory ban¹⁰ to allow the import of R-290 refrigerant in order to remove the barriers to R-290 refrigerant supply (UNIDO) (US \$20,000);
- (c) Collaborating with two training institutions, developing training manuals on the use of flammable refrigerants in stand-alone refrigeration equipment and in MAC subsectors; and training 10 trainers and 300 technicians in the use of flammable refrigerants in stand-alone refrigeration equipment and MAC equipment (UNIDO) (US \$48,000);
- (d) Developing a labour competency standard for the certification of technicians in handling flammable refrigerants in commercial stand-alone refrigeration equipment and in MAC equipment (UNEP) (US \$30,000);
- (e) Providing training tools and equipment to two training institutes (e.g., refrigerant recovery unit, air-conditioning unit, domestic refrigerator, combustible gas detector, vacuuming machine, vacuuming gauge, manifold gauge, recovery cylinders, consumables (filters, sensors)), and to 13 refrigeration associations (e.g., vacuuming and charging machine for flammable refrigerants, welding equipment, portable nitrogen blowing equipment, leak detector, multimeters, recovery and recycling machine, universal HFC-134a master repair kit) (UNIDO) (US \$172,000);
- (f) Designing a programme and drafting a manual for refrigerant RRR at large end-users; and providing two mobile refrigerant reclamation units (UNIDO) (US \$40,000); and

¹⁰ Paragraph 27 of document UNEP/OzL.Pro/ExCom/87/21

- (g) Awareness-raising activities for phasing down HFCs and promoting the use of low-GWP alternatives (UNEP) (US \$10,000).

Project implementation, coordination and monitoring

63. The NOU, in coordination with other Government ministries and stakeholders, will implement the project, monitor progress and prepare the report. The total cost for project monitoring amounts to US \$64,000, and includes one local consultant (US \$35,000), one HFC expert (US \$22,000), one gender specialist to assist the NOU in the implementation of stage I of the KIP (US \$6,000), and two coordination meetings (US \$1,000) (UNIDO).

Gender policy implementation

64. The Government recognizes the importance of gender issues in the implementation of the Montreal Protocol. Building on its success to date, the Government aims to achieve a higher participation of women during the implementation of stage I of the KIP by incorporating a gender perspective into all the activities under the KIP. A gender specialist will conduct a gender assessment of the current situation in the country, identify gaps, and propose a gender action plan. A list of activities and targets have been proposed in the KIP, including hiring female consultants, supervisors, trainers, and designers to develop project activities, strengthening the technical capacities of female technicians through training and the provision of toolkits, and targeted awareness-raising workshops for women. Implementation of the gender mainstreaming policy will be measured using the gender mainstreaming indicators of the Multilateral Fund. Data on women's participation will be collected.

Total cost of stage I of the Kigali HFC implementation plan

65. The total cost for implementing stage I of the KIP has been estimated as US \$444,000 to reduce consumption by 10 per cent of the HFC baseline through activities in the refrigeration servicing sector. No funding is requested for the fire suppression servicing sector.

66. Stage I of the KIP will be implemented between January 2024 and December 2030 in harmony with stage II of the HPMP. Proposed activities and cost are summarized in table 8.

Table 8. Proposed cost of activities to be implemented in stage I of the KIP for the Plurinational State of Bolivia (US \$)

Component	Agency	Total cost	Tranche distribution		
			2023	2026	2028
Policy and regulations					
Updating the Supreme Decree for HFC import control; and establishing an online monitoring system for HFC imports	UNEP	30,000	15,000	10,000	5,000
Developing a handbook and conducting two training courses for 30 customs officers on import control of HFCs	UNEP	20,000	7,500	12,500	0
Provision of two refrigerant identifiers	UNIDO	10,000	5,000	0	5,000
Feasibility study for R-290 refrigerant supply; conducting two workshops to disseminate the results and action plans	UNIDO	20,000	10,000	8,000	2,000
<i>Subtotal</i>		<i>80,000</i>	<i>37,500</i>	<i>30,500</i>	<i>12,000</i>
Refrigerant management - training, equipment and certification					
Developing training manuals for handling flammable refrigerants	UNIDO	12,000	12,000	0	0
A study tour to an international training centre to train two instructors; training 10 trainers in handling flammable refrigerants; and training 300 technicians in the proper handling of flammable refrigerants	UNIDO	36,000	18,000	18,000	0
Providing equipment to two training institutions	UNIDO	120,000	120,000	0	0
Providing equipment to 13 RAC associations	UNIDO	52,000	0	52,000	0

Component	Agency	Total cost	Tranche distribution		
			2023	2026	2028
Developing a labour competency standard for technician certification in handling flammable refrigerants	UNEP	30,000	0	0	30,000
<i>Subtotal</i>		<i>250,000</i>	<i>150,000</i>	<i>70,000</i>	<i>30,000</i>
Refrigerant management - recovery, recycling and reuse					
Designing a programme and drafting a manual for refrigerant RRR at large end-users	UNIDO	7,500	2,500	0	5,000
Purchase of two mobile reclaiming units	UNIDO	32,500	17,500	15,000	0
<i>Subtotal</i>		<i>40,000</i>	<i>20,000</i>	<i>15,000</i>	<i>5,000</i>
Public awareness campaign for phasing down HFCs and promoting the use of low-GWP alternatives	UNEP	10,000	4,000	4,000	2,000
Project management, coordination, monitoring and reporting	UNIDO	64,000	29,000	29,000	6,000
Total		444,000	240,500	148,500	55,000

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

67. The Government of the Plurinational State of Bolivia proposes to implement the KIP in three stages, with stage I synchronized with the implementation of the HPMP. The Government plans to harmonize activities for HCFC phase-out and HFC phase-down where possible to maximize impact. The schedule of HFC phase-down and HCFC phase-out commitments is presented in annex II and the way in which stage I KIP activities are coordinated with those being carried out in stage II of the HPMP is presented in annex III to the present document.

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

68. The first funding tranche of stage I of the KIP, in the total amount of US \$240,500, will be implemented between January 2024 and December 2026 and will include the following activities:

- (a) Employing a legal consultant to assess the Supreme Decree; reviewing the procedures for HFC quota controls; hiring a national consultant to update the online import monitoring system for HFCs; updating the training materials and conducting training for 15 customs officers, clearance agents and laboratory staff on HFC import control and the prevention of illegal trade of HFCs (UNEP) (US \$22,500); procurement of one refrigerant identifier for customs; conducting a feasibility study to identify the national supply of R-290 refrigerant (UNIDO) (US \$15,000);
- (b) Signing agreements with two training institutions, and hiring an international expert to develop training manuals for the safe use of flammable refrigerants in the RAC and MAC sectors; conducting a study tour to an international training centre to train two instructors; and training 10 trainers and 60 technicians in the use of flammable refrigerants in the RAC and MAC sectors (UNIDO) (US \$30,000);
- (c) Providing tools and equipment for two training institutes (e.g., refrigerant recovery unit, air-conditioning unit, domestic refrigerator, combustible gas detector, vacuuming machine, vacuuming gauge, manifold gauge, recovery cylinders, consumables (filters, sensors)) (UNIDO) (US \$120,000);
- (d) Developing a draft action plan for the promotion of HFC refrigerant RRR activities; and purchasing two mobile reclaiming units to provide services for large end-users and providing training in the use of the unit (UNIDO) (US \$20,000);
- (e) Recruiting a communication specialist to design and implement a media campaign and disseminate information to Government institutions on HFC controls, the circular economy, climate change and energy efficiency (UNEP) (US \$4,000); and

- (f) Project coordination and monitoring (UNIDO) (US \$29,000), covering consultants (US \$28,000) and monitoring visits and coordination meetings (US \$1,000).

SECRETARIAT'S COMMENTS AND RECOMMENDATION

COMMENTS

69. The Secretariat reviewed stage I of the KIP for the Plurinational State of Bolivia in light of the existing policies and guidelines of the Multilateral Fund, including decision 92/37,¹¹ stage II of the HPMP, and the 2023-2025 business plan of the Multilateral Fund.

Policy, regulatory and institutional frameworks

HFC licensing and quota system

70. Decision 87/50(g) requests the bilateral and implementing agencies, when submitting stage I of the KIPs, to include confirmation that the country has established an enforceable national system of licensing and quotas for monitoring HFC imports/exports, consistent with decision 63/17. Accordingly, the Government confirmed that the licensing system for HFCs and HFC blends has been established through an administrative Resolution (VMABCCGDF No. 023/2021). The quota for 2024 will be issued starting from 1 January 2024 at the level of 677,884 CO₂-eq tonnes, in compliance with the Montreal Protocol control target.

Regulatory measures to support the transition to low-GWP technologies

71. Banning the import of HFC-134a-based domestic refrigerators was discussed given that R-600a-based domestic refrigerators are available on the market and the technology is mature. The Government considers it premature to prohibit the import of R-134a-based refrigerators in stage I but agreed to explore the possibility of restricting HFC-134a-based domestic refrigeration equipment through the implementation of a mandatory minimum energy performance standard (MEPS) and labelling system which is endorsed by Supreme Decree No. 4393 and is being enforced by the Ministry of Hydrocarbons and Energy. Coordination with other Government departments on upgrading the MEPS and labelling system to include information on the refrigerant GWP will be carried out by the NOU.

72. Regarding the feasibility study on the R-290 supply, it was clarified that the study will involve a technical and operational evaluation by oil production companies and authorities to analyze the possibility of supplying R-290 through local production. If this is not feasible, the necessary steps will be taken to enable the importation of quality-controlled R-290 into the country, in coordination with the National Customs of Bolivia and the Vice Ministry of Tax Policy.

Technical and cost-related issues

73. The Secretariat queried the alternative technologies to be considered for the planned reduction in the commercial and industrial refrigeration subsectors. There is limited availability of low-GWP alternatives in the country for these subsectors, and efforts are still required to develop the system components and safety standards needed to support their adoption. It was clarified that the initial reduction step is to reduce the demand for R-404A and R-507A through leakage control, preventive maintenance, the training of technicians and awareness-raising about the importance of preventing leaks to maintain the energy performance of RAC equipment. These activities, in conjunction with the pilot project to improve

¹¹ Decision on the level and modalities of funding for HFC phase-down in the refrigeration servicing sector.

energy efficiency proposed under decision 91/65, will help accelerate the penetration of low-GWP technologies in the market.

74. The certification of technicians was proposed under both stage II of the HPMP and stage I of the KIP. It was clarified that the certification of technicians under the HPMP focuses on good practices in the installation, maintenance, and servicing of RAC equipment in general; while the programme under the KIP focuses on strengthening the competency of technicians in servicing residential and commercial stand-alone equipment and equipment in the MAC sector with flammable refrigerants, which will achieve a higher degree of specialization in the sectors where HFC reductions are planned.

Total project cost

75. The Plurinational State of Bolivia has an average HFC consumption of 278.6 mt in the servicing sector in the baseline years (2020-2022). In line with the guidelines on eligible incremental costs in the refrigeration servicing sector for stage I of the KIPs for low-volume-consuming countries (decision 92/37), the eligible funding for the Plurinational State of Bolivia is US \$325,000. Accordingly, the total funding requested was adjusted to US \$325,000, and activities planned for the KIP were revised as shown in table 9.

Table 9. Agreed cost of activities in stage I of the KIP for the Plurinational State of Bolivia (US \$)

Component	Agency	Total Cost	Tranche distribution		
			2023	2027	2030
Policy and regulations					
Updating the Supreme Decree for HFC import control; and establishing an online monitoring system for HFC imports	UNEP	25,000	15,000	7,500	2,500
Developing a handbook and conducting two training courses for 30 customs officers on import control of HFCs	UNEP	20,000	7,500	12,500	0
Provision of two refrigerant identifiers	UNIDO	10,000	5,000	0	5,000
Feasibility study for R-290 refrigerant supply; conducting two workshops to disseminate the results and action plans	UNIDO	10,000	10,000	0	0
<i>Subtotal</i>		65,000	37,500	20,000	7,500
Refrigerant management - training, equipment and certification					
Developing training manuals for handling flammable refrigerants	UNIDO	10,000	10,000	0	0
A study tour to an international training centre to train two instructors; training 10 trainers in handling flammable refrigerants; and training 300 technicians in the proper handling of flammable refrigerants	UNIDO	36,000	13,500	4,500	18,000
Providing equipment to two training institutions	UNIDO	105,000	105,000	0	0
Providing equipment to 13 RAC associations	UNIDO	52,000	0	52,000	0
Developing a labour competency standard for technician certification in handling flammable refrigerants	UNEP	15,000	15,000	0	0
<i>Subtotal</i>		218,000	143,500	56,500	18,000
Refrigerant management - recovery, recycling and reuse					
Purchase of two mobile reclaiming units	UNIDO	15,000	0	15,000	0
<i>Subtotal</i>		15,000	0	15,000	0
Public awareness campaign for phasing down HFCs and promoting the use of low-GWP alternatives	UNEP	8,000	3,000	0	5,000
Project management, coordination, monitoring and reporting	UNIDO	19,000	10,000	7,000	2,000
Total		325,000	194,000	98,500	32,500

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

76. The first funding tranche of stage I of the KIP was adjusted accordingly: the funding was reduced from US \$240,500 to US \$194,000, with the following activities to be implemented between January 2024 and December 2027:

- (a) Employing a legal consultant to assess the Supreme Decree; reviewing the procedures for HFC quota controls; hiring a national consultant to update the online import monitoring

system for HFCs; updating the training materials and conducting training for 15 customs officers, clearance agents and laboratory staff on HFC import control and the prevention of illegal trade of HFCs (UNEP) (US \$22,500); procurement of one refrigerant identifier for customs; and conducting a feasibility study to identify the national supply of R-290 refrigerant (UNIDO) (US \$15,000);

- (b) Signing agreements with two training institutions; hiring an international expert to develop training manuals for the safe use of flammable refrigerants in the RAC and MAC sectors; conducting a study tour to an international training centre to train two instructors; training 10 trainers and 60 technicians in the use of flammable refrigerants in the RAC and MAC sectors (UNIDO) (US \$23,500); and developing a labour competency standard for technician certification in the handling of flammable refrigerants (UNEP) (US \$15,000);
- (c) Providing tools and equipment for two training institutes (e.g., refrigerant recovery unit, air-conditioning unit, domestic refrigerator, combustible gas detector, vacuuming machine, vacuuming gauge, manifold gauge, recovery cylinders, consumables (filters, sensors)) (UNIDO) (US \$105,000);
- (d) Recruiting a communication specialist to design and implement a media campaign and disseminate information to Government institutions on HFC controls, the circular economy, climate change and energy efficiency (UNEP) (US \$3,000); and
- (e) Project coordination and monitoring at a total cost of US \$10,000, covering consultants and staff (US \$8,000) and monitoring visits and consultation meetings (US \$2,000).

Tranche distribution

77. The funding tranches under the KIP were originally planned in 2023, 2026 and 2028, while the funding tranches in stage II of the HPMP were planned in 2021, 2024, 2027 and 2030. In order to synchronize the tranches under the two multi-year agreements to reduce the administrative cost and workload associated with tranche submissions and noting that the Government has submitted the 2024 tranche of the HPMP to the current meeting, the funding tranches under the KIP were adjusted to 2023, 2027 and 2030 in synchronization with the HPMP. After this adjustment, the total number of funding tranches to be requested for stage I of the KIP and stage II of the HPMP will be reduced from five to three tranches. Since the implementation period for the first tranche of the KIP will be four years, and US \$105,000 of the funding for the first tranche will be used for purchasing training equipment, the first tranche was agreed at US \$194,000 (59.7 per cent of the total funding).

Impact on the climate

78. The activities proposed, including training of technicians in good refrigeration servicing practices, safe handling of flammable refrigerants, and provision of tools and equipment for training and refrigerant RRR, as well as promoting low-GWP alternatives, indicate that the implementation of stage I of the KIP will reduce refrigerant emissions into the atmosphere, resulting in climate benefits. A preliminary calculation of the impact on the climate of the activities in the KIP indicates that the Plurinational State of Bolivia will achieve an annual emission reduction of 67,788 CO₂-eq tonnes of HFCs when the final target in stage I of the KIP is achieved, calculated based on the difference between the HFC baseline and the final target set in stage I.

Sustainability of the HFC phase-down and assessment of risks

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

80. The Government commits to enforcing the licensing and quota system to ensure that the import of HFCs will stay below the maximum allowable targets set in the Agreement with the Executive Committee to mitigate the risk of non-compliance attributed to HFC growth due to economic recovery from the COVID-19 pandemic. The training of customs officers and the development of policies to control HFC-based equipment in sectors where low-GWP technologies are already technically and economically available will also support the control of HFC imports and reduce the demand for HFC refrigerants.

81. The current legal provisions that classify propane gas as an energy source and prohibit its import are a risk to the implementation of the KIP, as commercial refrigeration equipment that use R-290 already exist in the market and will continue to be imported into the country. The R-290 refrigerant is needed to service the equipment. To mitigate the risk, a study has been proposed to evaluate the feasibility of local production of refrigerant-grade propane in the country. The subsequent action to remove the ban was also considered.

82. There is also a risk associated with the lack of adequate training and tools for handling flammable refrigerants for servicing domestic and commercial refrigeration equipment. To address this, the refrigerant management component (training in good servicing practices, provision of tools and equipment) will be implemented during stage I in close collaboration with the associations of RAC technicians from different regions of the country.

Co-financing

83. Currently no co-funding source has been identified. The Government of the Plurinational State of Bolivia and UNIDO will continue to explore the opportunities for co-financing to contribute to the implementation of stage I of the KIP.

2023-2025 business plan of the Multilateral Fund

84. UNIDO and UNEP are requesting US \$325,000, plus agency support costs, for the implementation of stage I of the KIP for the Plurinational State of Bolivia. The total value of US \$210,010, including agency support costs, requested for the period of 2023–2025, is US \$152,230 above the amount in the business plan.

Draft Agreement

85. A draft Agreement between the Government of the Plurinational State of Bolivia 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.

86. If the Executive Committee so wishes, the funds for stage I of the KIP for the Plurinational State of Bolivia 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.

RECOMMENDATION

87. The Executive Committee may wish to consider:

- (a) Approving, in principle, stage I of the Kigali HFC implementation plan (KIP) for the Plurinational State of Bolivia for the period 2023–2030 to reduce HFC consumption by 10 per cent of the country’s baseline in 2029, in the amount of US \$351,830, consisting of US \$257,000, plus agency support costs of US \$17,990 for UNIDO, and US \$68,000, plus agency support costs of US \$8,840 for UNEP, as reflected in the schedule contained in annex II of the present document;
- (b) Approving the first tranche of stage I of the KIP for the Plurinational State of Bolivia, and the corresponding tranche implementation plan, in the amount of US \$210,010, consisting of US \$153,500, plus agency support costs of US \$10,745 for UNIDO, and US \$40,500, plus agency support costs of US \$5,265 for UNEP; and
- (c) Requesting the Government of the Plurinational State of Bolivia, UNIDO, UNEP and the Secretariat to finalize the draft Agreement between the Government of the Plurinational State of Bolivia 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

88. On behalf of the Government of the Plurinational State of Bolivia, UNIDO 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 \$106,000, plus agency support costs of US \$9,540, as originally submitted.¹²

Status of implementation of energy efficiency-related activities funded by the Multilateral Fund

89. Under the implementation of the enabling activities for the implementation of the Kigali Amendment for HFC phase-down, the national ozone unit (NOU) organized training, coordination and awareness-raising activities on HFC phase-down, improving energy efficiency and promoting low-global-warming-potential (GWP) alternatives. These include: three twinning workshops with energy efficiency policymakers to link energy efficiency with Montreal Protocol objectives in support of the Kigali Amendment; raising awareness on the advantage of energy efficient refrigeration and air-conditioning (RAC) equipment; and training technicians on energy efficiency improvement in general.

Energy efficiency pilot project

90. Information on the country's status of ratification to the Kigali Amendment; the policy, regulatory and institutional framework for the implementation of the Montreal Protocol; HFC consumption and its distribution by sector; the established HFC baseline; and relevant activities from the request for stage I of the KIP and the first tranche submitted to the current meeting, is available in paragraphs 29 to 87 of the present document.

Policy, regulatory and institutional framework

91. The Ministry of Hydrocarbons and Energy is the national body that manages energy efficiency. The Government has enacted Supreme Decree No. 29466 (dated 5 March 2008), which created the National Energy Efficiency Program to establish policies and implement projects to ensure efficient and effective use of energy with the participation of all relevant stakeholders. The Bolivian Institute for Standardization and Quality (INBORCA) is the national standardization organization in the country. Energy efficiency and labelling standards have been established for stationary air-conditioning equipment and domestic refrigeration equipment.

Project objective

92. The Government of the Plurinational State of Bolivia has established the minimum energy efficiency standard (MEPS) for domestic refrigeration equipment (NB 87003:2021) and stationary air-conditioning equipment (NB 87004:2013). A request has also been submitted to the present meeting for funding additional activities for the introduction of alternatives with low or zero GWP and for maintaining energy in the servicing sector under decision 89/6 to cover the upgrading of MEPS.¹³

93. The energy efficiency pilot project is designed to promote energy efficiency of RAC equipment to enhance the climate and environmental benefits. The project aims to enhance coordination among the key

¹² The project proposal has originally been included in the KIP. See paragraphs 29 to 32 above.

¹³ See paragraph 13.

national stakeholders when promoting energy efficient alternative technologies with low-GWP and build capacity of the RAC servicing sector in handling alternative refrigerants and maintaining the energy efficiency of installed RAC equipment.

Proposed activities

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

- (a) Conducting a study tour to a non-Article-5 country to learn about their experiences in energy efficiency management in the RAC industry (US \$9,000);
- (b) Procuring a didactic module training system for training in energy efficiency of R-744-based commercial refrigeration systems (including semi-hermetic compressors for low temperature (subcritical 7 kW) and medium temperature (transcritical 22kW), evaporators, flash gas valves and safety valves, ejector, heat exchangers, flash tank, oil separator and reservoir, high pressure ejectors, desuperheater, pressure transducers, temperature probes, electronic controllers, R-744 refrigerant), and developing training materials and providing practical training sessions on the didactic module training system for instructors (US \$51,000);
- (c) Conducting two practical training courses for 30 trainers and large end-users on energy efficiency calculation using the didactic module (US \$20,000);
- (d) Conducting a field study to identify a demonstration project for conversion from HFC to low-GWP alternatives (US \$10,000); and
- (e) Implementing one demonstration project in a selected supermarket for maintaining and enhancing energy efficiency, including diagnosing causes for low energy performance; identifying sources of leakage; training RAC technicians in preventive maintenance and leak detection; and reinforcing good practices in installation, commission, operation and maintenance in the commercial refrigeration sector (US \$16,000).

Total cost of the pilot project

95. The total cost of the project to maintain and enhance the energy efficiency of replacement technologies and equipment in the context of HFC phase-down amounts to US \$106,000, plus agency support costs, and will be implemented between January 2024 and December 2026.

SECRETARIAT'S COMMENTS AND RECOMMENDATIONS

COMMENTS

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

97. In line with decision 91/65, confirmation from the Government of the Plurinational State of Bolivia has been received: that the NOU will coordinate with relevant energy efficiency authorities and national standards bodies to facilitate consideration of refrigerant transition when developing energy efficiency standards in the relevant sectors/applications; that, if the Plurinational State of Bolivia has mobilized or is 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 the 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 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

98. The activities proposed for reducing leakage and improving the energy efficiency of existing systems in the commercial refrigeration sector, in combination with the training and awareness activities, will incentivize opportunities for the adoption of more energy-efficient components and good practices in the design, installation, and servicing of commercial refrigeration systems to avoid the continued growth in use of controlled substances.

Technical and cost-related issues

99. The Secretariat noted that the field study to identify a demonstration project for conversion from HFC to low-GWP alternatives (US \$10,000) is not an eligible activity under decision 91/65(b)(i), and was therefore removed from the pilot project. The funding for a study tour (US \$9,000) was merged with the training of technicians. The total cost was agreed at US \$96,000 to implement the pilot project for maintaining and enhancing energy efficiency of replacement technologies for the Plurinational State of Bolivia, as shown in table 10 below.

Table 10. Total cost of the energy efficiency pilot project for the Plurinational State of Bolivia as agreed

Activities	Cost (US \$)
Establishing a didactic module for training in maintaining and enhancing energy efficiency of commercial refrigeration equipment using R-744 technology	51,000
Developing training materials and training 45 teachers and large end-users on energy efficiency calculation and correct handling new refrigerants focusing on transcritical CO ₂ technology in standalone residential and commercial equipment	29,000
Implementing one demonstration project in a selected supermarket for maintaining and enhancing energy efficiency, including diagnosing causes for low energy performance; identifying sources of leakage; training RAC technicians in preventive maintenance and leak detection; and reinforcing good practices in installation, commission, operation, and maintenance in the commercial refrigeration sector	16,000
Total	96,000

Agreed cost of the pilot project

100. The cost of the project was agreed at US \$96,000, plus agency support costs of US \$8,640 for UNIDO.

Sustainability of the pilot project and assessment of risks

101. The technical assistance for leakage reduction and energy efficiency improvement will support the development of technician capacity in designing, installing, maintaining and operating commercial refrigeration systems with reduced leakage and improved energy efficiency. The pilot project has included an awareness-raising component to disseminate the results to end-users, highlighting the economic and environmental benefits of leakage control and preventive maintenance to promote a greater adoption of the practices.

RECOMMENDATION

102. The Executive Committee may wish to consider:

- (a) 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 the Plurinational State of Bolivia, in the amount of US \$96,000, plus agency support costs of US \$8,640 for UNIDO, noting:
 - (i) That the Government of the Plurinational State of Bolivia has committed to the conditions referred to in decision 91/65(b)(iv)b. to (b)(iv)d.; and
 - (ii) That the project would be operationally completed no later than 31 December 2026, 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 UPDATED AGREEMENT BETWEEN THE GOVERNMENT OF THE PLURINATIONAL STATE OF BOLIVIA 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 the Plurinational State of Bolivia and the Executive Committee at the 87th meeting of the Executive Committee.

APPENDIX 2-A: THE TARGETS, AND FUNDING

Row	Particulars	2021	2022	2023-2024	2025-2026	2027	2028-2029	2030	Total	
1.1	Montreal Protocol reduction schedule of Annex C, Group I substances (ODP tonnes)	3.97	3.97	3.97	1.98	1.98	1.98	0	n/a	
1.2	Maximum allowable total consumption of Annex C, Group I substances (ODP tonnes)	3.97	3.36	3.36	1.98	1.98	0.92	0	n/a	
2.1	Lead IA (UNIDO) agreed funding (US \$)	141,009	0	232,660	0	147,530	0	45,530	566,729	
2.2	Support costs for Lead IA (US \$)	9,871	0	16,286	0	10,327	0	3,187	39,671	
2.3	Cooperating IA (UNEP) agreed funding (US \$)	24,000	0	72,500	0	9,000	0	15,000	120,500	
2.4	Support costs for Cooperating IA (US \$)	3,120	0	9,425	0	1,170	0	1,950	15,665	
3.1	Total agreed funding (US \$)	165,009	0	305,160	0	156,530	0	60,530	687,229	
3.2	Total support costs (US \$)	12,991	0	25,711	0	11,497	0	5,137	55,336	
3.3	Total agreed costs (US \$)	178,000	0	330,871	0	168,027	0	65,667	742,565	
4.1.1	Total phase-out of HCFC-22 agreed to be achieved under this Agreement (ODP tonnes)									3.00
4.1.2	Phase-out of HCFC-22 to be achieved in the previous stage (ODP tonnes)									1.89
4.1.3	Remaining eligible consumption for HCFC-22 (ODP tonnes)									0.00
4.2.1	Total phase-out of HFC-124 agreed to be achieved under this Agreement (ODP tonnes)									0.00
4.2.2	Phase-out of HFC-124 to be achieved in the previous stage (ODP tonnes)									0.07
4.2.3	Remaining eligible consumption for HFC-124 (ODP tonnes)									0.00
4.3.1	Total phase-out of HCFC-141b agreed to be achieved under this Agreement (ODP tonnes)									0.97
4.3.2	Phase-out of HCFC-141b to be achieved in the previous stage (ODP tonnes)									0.00
4.3.3	Remaining eligible consumption for HCFC-141b (ODP tonnes)									0.00
4.4.1	Total phase-out of HCFC-142b agreed to be achieved under this Agreement (ODP tonnes)									0.00
4.4.2	Phase-out of HCFC-142b to be achieved in the previous stage (ODP tonnes)									0.17
4.4.3	Remaining eligible consumption for HCFC-142b (ODP tonnes)									0.00
4.5.1	Total phase-out of HCFC-141b contained in imported pre-blended polyols agreed to be achieved under this Agreement (ODP tonnes)									0.60
4.5.2	Phase-out of HCFC-141b contained in imported pre-blended polyols to be achieved in the previous stage (ODP tonnes)									0.00
4.5.3	Remaining eligible consumption for HCFC-141b contained in imported pre-blended polyols (ODP tonnes)									0.00

Annex II

SCHEDULE OF HFC PHASE-DOWN AND HCFC PHASE-OUT COMMITMENTS AND FUNDING TRanches UNDER THE KIGALI HFC IMPLEMENTATION PLAN AND THE HCFC PHASE-OUT MANAGEMENT PLAN FOR THE PLURINATIONAL STATE OF BOLIVIA

Kigali HFC implementation plan (stage I)

Row	Particulars	2023	2024	2025	2026	2027	2028	2029	2030	Total
1.1	Montreal Protocol reduction schedule of Annex F substances (CO ₂ -eq tonnes)	n/a	677,884	677,884	677,884	677,884	677,884	610,096	610,096	n/a
1.2	Maximum allowable total consumption of Annex F substances (CO ₂ -eq tonnes)	n/a	677,884	677,884	677,884	677,884	677,884	610,096	610,096	n/a
2.1	Lead IA (UNIDO) agreed funding (US \$)	153,500	0	0	0	78,500	0	0	25,000	257,000
2.2	Support costs for Lead IA (US \$)	10,745	0	0	0	5,495	0	0	1,750	17,990
2.3	Cooperating IA (UNEP) agreed funding (US \$)	40,500	0	0	0	20,000	0	0	7,500	68,000
2.4	Support costs for Cooperating IA (US \$)	5,265	0	0	0	2,600	0	0	975	8,840
3.1	Total agreed funding (US \$)	194,000	0	0	0	98,500	0	0	32,500	325,000
3.2	Total support costs (US \$)	16,010	0	0	0	8,095	0	0	2,725	26,830
3.3	Total agreed costs (US \$)	210,010	0	0	0	106,595	0	0	35,225	351,830

HCFC phase-out management plan (stage II)

Row	Particulars	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	Total
1.1	Montreal Protocol reduction schedule of Annex C, Group I substances (ODP tonnes)	3.97	3.97	3.97	3.97	1.98	1.98	1.98	1.98	1.98	0.00	n/a
1.2	Maximum allowable total consumption of Annex C, Group I substances (ODP tonnes)	3.97	3.36	3.36	3.36	1.98	1.98	1.98	1.98	0.92	0.00	n/a
2.1	Lead IA (UNIDO) agreed funding (US \$)	141,009	0	232,660	0	0	0	147,530	0	0	45,530	566,729
2.2	Support costs for Lead IA (US \$)	9,871	0	16,286	0	0	0	10,327	0	0	3,187	39,671
2.3	Cooperating IA (UNEP) agreed funding (US \$)	24,000	0	72,500	0	0	0	9,000	0	0	15,000	120,500
2.4	Support costs for Cooperating IA (US \$)	3,120	0	9,425	0	0	0	1,170	0	0	1,950	15,665
3.1	Total agreed funding (US \$)	165,009	0	305,160	0	0	0	156,530	0	0	60,530	687,229
3.2	Total support costs (US \$)	12,991	0	25,711	0	0	0	11,497	0	0	5,137	55,336
3.3	Total agreed costs (US \$)	178,000	0	330,871	0	0	0	168,027	0	0	65,667	742,565

Annex III

**IMPLEMENTATION OF BOTH THE HCFC PHASE-OUT MANAGEMENT PLAN
AND THE KIGALI HFC IMPLEMENTATION PLAN IN THE PLURINATIONAL STATE OF BOLIVIA**

Category of activity	HCFC phase-out management plan (HPMP) Stage II		Kigali HFC implementation plan (KIP) Stage I		Combined cost for HPMP+KIP (US \$)
	Activity*	Cost (US \$)	Activity	Cost (US \$)	
Strengthening of the legal and institutional framework for trade control	Development and implementation of an electronic licensing system	32,000	Updating the Supreme Decree for HFC import control; and establishing an online monitoring system for HFC imports	25,000	87,000
	Eight training courses for customs and stakeholders (30 participants each) on control of ODS and detection of counterfeit refrigerants		Developing a handbook and conducting two training courses for 30 customs officers on import control of HFCs	20,000	
	Continued participation in the informal Prior Informed Consent platform (iPIC)		Provision of two refrigerant identifiers	10,000	
		0	Feasibility study for R-290 refrigerant supply; conducting two workshops to disseminate the results and actions plans	10,000	10,000
	Formulation of measures on the management of RAC equipment, products, and controlled substances throughout their lifecycle	26,500		0	26,500
	Development of a ban on the import of HCFC-based equipment by 1 January 2023			0	
	Five consultation meetings with Government representatives, refrigeration association, importers, service workshops and end-users on ODS regulations and enforcement			0	
Technical assistance to strengthen and upgrade the training programme on good refrigeration practices and alternative refrigerants with non-ODP and low-GWP	Two train-the-trainer courses on good refrigeration servicing practices and management of alternative refrigerants (30 participants each)	172,000	A study tour to an international training centre to train two instructors; training 10 trainers in handling flammable refrigerants; and training 300 technicians in the proper handling of flammable refrigerants	36,000	375,000
	Twenty technical seminars (30 participants each) on good refrigeration practices and management of alternative refrigerants				

Category of activity	HCFC phase-out management plan (HPMP) Stage II		Kigali HFC implementation plan (KIP) Stage I		Combined cost for HPMP+KIP (US \$)	
	Activity*	Cost (US \$)	Activity	Cost (US \$)		
	Development of a standard training programme for educational institutes		Developing training manuals for handling flammable refrigerants	10,000		
	Development of standards for the safe handling of flammable, toxic, and high-pressure alternative refrigerants			0		
	Establishment of one or two specialized training centres for the safe handling of flammable refrigerants			Provision of equipment for two training institutions		105,000
	Procurement of 16 toolkits (two of which are for female technicians) for the safe handling of alternative refrigerants to training institutes			Provision of equipment for 13 RAC Associations		52,000
Sustainable accreditation, certification by labour competencies, and registration of RAC servicing technicians	Formulation and validation of standard for labour competency in good refrigeration practices and in safe handling of flammable refrigerants	40,000	Developing labour competency standard for technician certification in handling flammable refrigerants	15,000	55,000	
	Design an electronic certification database			0		
	Design and issue at least 800 licences (carnets) for certified RAC technicians			0		
	Four awareness meetings on the certification process			0		
	A campaign to disseminate information on the certification process			0		
Development of the refrigerant RRR network	Assessment of RRR network needs and development of business plan for its sustainability	160,380		0	175,380	
	Equipment and supplies for two reclaiming centres		Purchase of two mobile reclaiming units for large end-users	15,000		
	Three training workshops on good RRR practices (50 participants each)			0		
	A study tour to a country in the region with established RRR centres			0		
Technical assistance to RAC end-users	Two "Zero Leaks" pilot projects to promote end-user leak reduction	91,000		0	91,000	

Category of activity	HCFC phase-out management plan (HPMP) Stage II		Kigali HFC implementation plan (KIP) Stage I		Combined cost for HPMP+KIP (US \$)
	Activity*	Cost (US \$)	Activity	Cost (US \$)	
	Formulation of a leak control guide				
	Two pilot demonstration projects using low-GWP alternatives at end-users				
	At least two meetings to disseminate results of pilot projects to stakeholders				
Dissemination and awareness-raising for HCFC phase-out	A campaign designed to raise awareness and disseminate information on responsible HCFC consumption	22,000	Public awareness campaign for phasing down HFCs and promoting the use of low-GWP alternatives	8,000	30,000
	Printing of at least 5,000 brochures and other materials on HCFC phase-out				
	Participation in at least seven events to raise awareness for HCFC phase-out				
Project implementation and monitoring	Two local consultants assisting the NOU in HPMP monitoring and assessment	28,000	Project management, coordination, monitoring and reporting on KIP-related activities	19,000	60,120
	Implementation and monitoring visits to ensure the sustainability of the activities implemented	13,120			
Total		585,000		325,000	910,000
Percentage of total (%)		64		36	100

* Excludes additional activities to maintain energy efficiency under decision 89/6.