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EXECUTIVE COMMITTEE OF  
THE MULTILATERAL FUND FOR THE  
IMPLEMENTATION OF THE MONTREAL PROTOCOL  
Ninety-fourth Meeting  
Montreal, 27-31 May 2024  
Items 9(c) and 9(d) of the provisional agenda<sup>1</sup>

**PROJECT PROPOSALS: PARAGUAY**

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) UNEP and UNDP

Phase-down

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

<sup>1</sup> UNEP/OzL.Pro/ExCom/94/1

## PROJECT EVALUATION SHEET – MULTI-YEAR PROJECTS

## Paraguay

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

(II) LATEST ARTICLE 7 DATA (Annex C Group I)	Year: 2023	10.58 ODP tonnes
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(III) LATEST COUNTRY PROGRAMME SECTORAL DATA (ODP tonnes)								Year: 2023	
Chemical	Aerosol	Foam	Fire-fighting	Refrigeration		Solvent	Process agent	Lab use	Total sector consumption
				Manufacturing	Servicing				
HCFC-22					10.55				10.55
HCFC-123			0.03						0.03
HCFC-141b in imported pre-blended polyols		4.31							4.31

(IV) CONSUMPTION DATA (ODP tonnes)			
2009–2010 baseline:	18.0	Starting point for sustained aggregate reductions:	19.31
CONSUMPTION ELIGIBLE FOR FUNDING			
Already approved:	19.31	Remaining:	0

(V) ENDORSED BUSINESS PLAN		2024	2025	2026	Total
UNEP	ODS phase-out (ODP tonnes)	1.71	0.0	0.0	1.71
	Funding (US \$)	*238,603	0	0	238,603
UNDP	ODS phase-out (ODP tonnes)	3.13	0.0	0.0	3.13
	Funding (US \$)	*368,582	0	0	368,582

\* Including US \$65,281 for UNEP and US \$67,830 for UNDP 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)			11.67	11.67	11.67	5.83	5.83	5.83	0	n/a
Maximum allowable consumption (ODP tonnes)			11.67	11.67	11.67	5.83	5.83	5.83	0	n/a
Funding agreed in principle (US \$)	UNEP	Project costs	109,055	0	213,382	0	143,703	0	77,150	<b>543,290</b>
		Support costs	14,177	0	27,314	0	18,395	0	9,876	<b>69,762</b>
	UNDP	Project costs	101,545	0	341,077	0	264,238	0	39,850	<b>746,710</b>
		Support costs	7,108	0	23,875	0	18,497	0	2,790	<b>52,270</b>
Funds approved by ExCom (US \$)	Project costs	210,600	0	0	0	0	0	0	0	<b>210,600</b>
	Support costs	21,285	0	0	0	0	0	0	0	<b>21,285</b>
Total funds recommended for approval at this meeting (US \$)	Project costs	0	0	554,459	0	0	0	0	0	<b>554,459</b>
	Support costs	0	0	51,189	0	0	0	0	0	<b>51,189</b>

\*Funding for 2024 includes US \$60,000, plus agency support costs of US \$7,680, for UNEP and US \$60,000, plus agency support costs of US \$4,200, for UNDP, for additional activities to maintain energy efficiency (decision 89/6)

<b>Secretariat's recommendation:</b>	Blanket approval
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## PROJECT DESCRIPTION

1. On behalf of the Government of Paraguay, UNEP as the lead implementing agency has submitted a request for funding for the second tranche of stage II of the HCFC phase-out management plan (HPMP), at a total cost of US \$605,648, consisting of US \$213,382, plus agency support costs of US \$27,314, for UNEP and US \$341,077, plus agency support costs of US \$23,875, for UNDP.<sup>2</sup> The submission includes a progress report on the implementation of the first tranche, the verification report on HCFC consumption for 2021 and 2023, a request for funding additional activities to maintain energy efficiency in the refrigeration servicing sector,<sup>3</sup> and the tranche implementation plan for 2024 to 2027.

### Report on HCFC consumption

2. The Government of Paraguay reported a consumption of 10.58 ODP tonnes of HCFCs in 2023, which is 41 per cent below the country's HCFC baseline for compliance. The 2019–2023 HCFC consumption is shown in table 1.

**Table 1. HCFC consumption in Paraguay (2019–2023 Article 7 data)**

HCFC	2019	2020	2021	2022	2023	Baseline
<b>Metric tonnes (mt)</b>						
HCFC-22	262.84	196.64	210.71	177.66	191.71	296.0
HCFC-123	6.45	4.58	3.74	0.91	1.85	15.9
HCFC-124	0	0	0	0	0	7.0
HCFC-141b	0	0	0	0	0	0.5
HCFC-142b	0	0	0	0	0	20.4
<b>Total (mt)</b>	<b>269.29</b>	<b>201.22</b>	<b>214.45</b>	<b>178.57</b>	<b>193.19</b>	<b>339.8</b>
HCFC-141b in imported pre-blended polyols*	33.26	2.54	23.22	13.44	4.31	**12.7
<b>ODP tonnes</b>						
HCFC-22	14.46	10.82	11.59	9.77	10.55	16.3
HCFC-123	0.13	0.09	0.07	0.02	0.03	0.2
HCFC-124	0	0	0	0	0	0.1
HCFC-141b	0	0	0	0	0	0.1
HCFC-142b	0	0	0	0	0	1.3
<b>Total (ODP tonnes)</b>	<b>14.59</b>	<b>10.91</b>	<b>11.66</b>	<b>9.79</b>	<b>10.58</b>	<b>18.0</b>
HCFC-141b in imported pre-blended polyols*	3.66	0.28	2.55	1.48	0.47	**1.4

\* CP data

\*\* Average consumption between 2007 and 2009

3. The gradual decrease in the consumption of HCFCs and pre-blended polyols from 2019 to 2023 is in line with the HPMP targets and as a result of the implementation of HPMP activities. It also reflects the effects of the COVID-19 pandemic on the local economy and the introduction of HFCs and alternative refrigerants with low global-warming potential (GWP). The consumption peak observed in 2021 has been attributed to delayed 2020 orders arriving in that year, while the increased 2023 imports likely reflect market strategies undertaken in advance of the HCFC phase-out target set for 2025.

### *Country programme implementation report*

4. The Government of Paraguay reported HCFC sector consumption data under the 2023 country programme (CP) implementation report that is consistent with the data reported under Article 7 of the Montreal Protocol.

<sup>2</sup> As per the letter of 5 February 2024 from the Ministry of the Environment and Sustainable Development of Paraguay to UNEP.

<sup>3</sup> 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.

*Verification report*

5. The verification report has confirmed that the Government of Paraguay is implementing a licensing and quota system for HCFCs. The verification concluded that the legislative and regulatory framework for the control of ozone-depleting substances (ODSs) was exhaustive, coherent, and capable of guaranteeing compliance with the HCFC phase-out schedule of the Montreal Protocol. Furthermore, the verification report states that both Article 7 and CP data are consistent with the verified consumption for 2021, 2022, and 2023, remaining below the limits established by the Montreal Protocol and the maximum allowed consumption as per the country's Agreement<sup>4</sup> with the Executive Committee for stage II of the HPMP.

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

6. Stage I of the HPMP was completed on 1 September 2022, in line with the extension approved by the Executive Committee by decision 87/42(a). The project completion report was submitted on 17 October 2023.

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

*Legal framework*

7. In addition to banning imports of HCFC-based air conditioners in 2015, the Government imposed a ban on the import and use of HCFC-141b contained in pre-blended polyols, effective as of 1 January 2024, and ratified the Kigali Amendment on 1 November 2018.

*Refrigeration servicing sector*

8. The following activities were implemented in the servicing sector:

- (a) *Technical assistance to strengthen trade control over HCFC-based substances and equipment/products:* The curricula of training courses for customs officers and importers were updated to include measures for the control and monitoring of imports of substances controlled by the Montreal Protocol and products or equipment that contain or depend on them, and to teach techniques to identify HCFC-141b contained in pre-blended polyols; four training workshops on Montreal Protocol controls, international trade restrictions, reduction schedules, licensing systems and the Kigali Amendment were held for 87 customs officials and import brokers, including 24 women; one refrigerant identifier was purchased and delivered to the national ozone unit (NOU); five warehouses in two cities were visited to verify their compliance with the established regulations, with satisfactory results; and four coordination meetings took place between the Customs Agency and the Ozone Department in 2023, resulting in a draft ministerial resolution to ban the import of HCFC-22-based refrigeration equipment that would be effective by 1 January 2026;
- (b) *Technical assistance for the technician certification scheme:* A total of 148 refrigeration and air-conditioning (RAC) technicians were certified in line with the standard on handling refrigerants used in RAC systems; a national standard on the safe use and handling of hydrocarbons (HCs) in small-capacity domestic and commercial refrigeration systems was prepared and approved in January 2023; and terms of reference were drafted for the design and development of an online registration system for RAC technicians certified in any labour competency standard;

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<sup>4</sup> Annex XXII of document UNEP/OzL.Pro/ExCom/87/58

- (c) *Training in good servicing practices:* One woman was hired as an international consultant to support training activities; 137 technicians, including 23 women, were trained in good refrigeration practices, safe handling of HCs and energy efficiency; 107 participants, including seven women, attended technical conferences on good refrigeration practices and the labour competency certification; 200 copies of a manual on good servicing practices were printed and distributed to RAC technicians participating in training workshops; a guide to the safe handling of HCs in domestic refrigeration equipment was formulated, edited, and printed in 300 copies; and two technical schools were equipped with a set of tools and equipment for training purposes, including *inter alia* a recovery unit, filters to recycle refrigerants, cylinders for recovery, pressure gauges, hand tools and vacuum gauges;
- (d) *Refrigerant recovery, recycle and reclaim (RRR) programme:* Agreements for the creation of two additional recovery and recycling (RR) centres and storage centres were signed with two RAC associations; meetings were held with representatives of the National University of Asunción to analyze the possibility of establishing a pilot refrigerant reclaiming centre; a theoretical and practical workshop on good practices and refrigerant recovery techniques was held for 49 RAC technicians (including four women) at one technical school; and two sets of tools and equipment<sup>5</sup> were acquired and will be distributed to the RR centres by July 2024; and
- (e) *Awareness raising and education:* a brochure with information on the technician certification process was designed, printed in 1,000 copies, and delivered to training participants; awareness-raising seminars were held to promote certification in labour-competency standards; the NOU participated in a RAC industry congress by to raise awareness among 139 participants, including 25 women (technicians, end users, students and trainers) on alternative refrigerants with low environmental impact and on the Montreal Protocol by distributing information brochures; and two meetings were held with importers of fire extinguishers to promote alternatives and to verify substances used in fire extinguishers, confirming the ongoing use of HCFC-123.

#### *Project implementation and monitoring*

9. Of the US \$23,000<sup>6</sup> assigned to project coordination, US \$8,000 was disbursed for a technical assistant hired to provide support in project implementation and monitoring, and US \$2,800 to support the monitoring and field visits. The remaining US \$12,200 will be disbursed by December 2024.

#### Level of fund disbursement

10. As of March 2024, of the US \$210,600 approved so far (US \$109,055 for UNEP and US \$101,545 for UNDP), US \$131,322 (62 per cent) had been disbursed (US \$73,644 for UNEP and US \$57,678 for UNDP). The balance of US \$79,278 will be fully disbursed by December 2024.

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

11. The following activities will be implemented between July 2024 and June 2027:

<sup>5</sup> One ½ HP multi-refrigerant recovery unit with filter mode, two-stage vacuum pump, electronic load scale, electronic leak detector for HCFC/HFC, advanced refrigerant identifier, two sets of manifolds and RR pliers, three 26.2 lb cylinders, and spare parts.

<sup>6</sup> At the 87<sup>th</sup> meeting, the Executive Committee approved US \$32,820 for project monitoring and coordination. However, UNEP and the Government of Paraguay agreed to reallocate US \$9,820 initially approved for this purpose to other activities.

- (a) *Technical assistance to strengthen trade control over HCFC-based substances and equipment/products:* Carry out four training courses for 200 customs and other officers and two courses for 50 importers and brokers on HCFC-phase-out schedules, risk profiles, licensing systems and HCFC identification; establish measures to control the intended emissions of refrigerant during equipment installation, servicing and decommissioning, including the development of a leak-prevention guide or tools to promote best practices and responsible refrigerant management; conduct at least one annual meeting with the Customs Department and stakeholders to follow up on the control measures for substances controlled by Montreal Protocol; procure two refrigerant identifiers; and conduct at least three verification visits to importers' and distributors' shops and warehouses to verify their compliance with the established regulations (UNEP) (US \$37,000);
- (b) *Technical assistance for the technician certification scheme:* Design and implement an online registration system for certified technicians and certify at least 200 RAC technicians in labour competency standards (UNEP) (US \$55,000 plus US \$15,000 from the first tranche);
- (c) *Training in good servicing practices:* Conduct training workshops for 400 trainers and technicians on good servicing practices and the safe handling of flammable refrigerants; procure and distribute at least 50 toolkits to RAC technicians and workshops, including at least two kits destined for female technicians; and update a technical manual on good practices for RAC equipment maintenance (UNDP) (US \$168,000 plus US \$18,564 from the first tranche);
- (d) *Refrigerant RRR programme:* Establish one refrigerant reclaiming centre;<sup>7</sup> strengthen the existing four RR centres with additional cylinders, refrigerant identifiers, vacuum pumps and spare parts; conduct two workshops on RR for at least 40 RAC technicians; and conduct training courses for the eight authorized scrapping centres on proper refrigerant recovery during equipment dismantling (UNDP) (US \$113,077 plus US \$25,303 from the first tranche);
- (e) *Awareness raising and education:* Continue to implement the awareness-raising campaign on responsible refrigerant consumption among RAC servicing technicians and end users; conduct at least two seminars or meetings for end users on the environmental impact of refrigerant emissions and the role they can play in mitigating this problem; participate in at least two event such as seminars, trade fairs, guild events, conferences, and exhibitions to disseminate the HCFC phase-out strategy; hold one seminar for users and importers of fire extinguishers to promote alternatives, as well as verification visits to monitor the use of HCFC-123 for this application (UNEP) (US \$37,000 plus US \$8,211 from the first tranche);
- (f) *Activities to maintain energy efficiency:* These activities are described in detail in the following section (UNEP) (US \$60,000) and (UNDP) (US \$60,000); and
- (g) *Project implementation and monitoring:* Continue the coordination and assessment of the HPMP action plan to ensure compliance with the Montreal Protocol, including monitoring visits (US \$16,582) and staff costs (US \$23,000) (UNEP) (US \$27,382 plus US \$12,200 from the first tranche).

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<sup>7</sup> The tentative procurement list includes one multi-refrigerant reclaiming unit, four recovery machines with filter modules, six 100 lb storage tanks and 10 26.2 lb recovery tanks, two vacuum pumps, three sets of manifolds, two electronic load scales, two refrigerant identifiers, recovery pliers and spare parts.

*Activities to maintain energy efficiency in the refrigeration servicing sector*

12. The project related to energy efficiency, submitted in line with decision 89/6, has been designed to encourage the use of energy-efficient cooling technologies with low-GWP refrigerants by providing relevant information to end users, linking policymakers and relevant stakeholders, training technicians in maintaining and improving the energy performance of equipment during servicing, maintenance, and installation, and reinforcing training institutes with appropriate tools for monitoring the energy efficiency of RAC equipment. The description and proposed cost breakdown of activities to maintain energy efficiency in the sector include:

- (a) *Stakeholder dialogue and cooperation:* Hold at least two information sessions for a total of 40 policymakers on promoting RAC equipment based on low-GWP refrigerants, the labelling programme, and the updating or adoption of energy-efficiency standards for RAC equipment, followed by a report with relevant recommendations; define strategies to improve energy-efficiency labelling and minimum energy performance standards (MEPS) for RAC equipment in the form of a report with policy recommendations; and conduct two training workshops for 60 customs and trade authorities on the monitoring and inspection of labelled refrigerant-based products and their energy-efficiency classification (UNEP) (US \$20,000);
- (b) *Capacity building and training:* Carry out a desk study on limiting the energy-efficiency depreciation of RAC equipment during servicing, followed by a report with findings and recommendations and draft curriculum for vocational training institutes and basic technical schools with updates related to energy efficiency; acquire and deliver six toolkits<sup>8</sup> to vocational training institutes and basic technical schools for technician training on determining the performance and energy efficiency of RAC systems; and conduct four training workshops for a total of 80 trainers and technicians on procedures to limit the energy-efficiency depreciation of equipment during servicing (UNDP) (US \$60,000); and
- (c) *Information outreach and awareness raising:* Define strategies and conduct three awareness-building meetings for end users on measures to reduce energy consumption in RAC equipment, followed by a report; design an awareness and outreach campaign for RAC technicians, retailers, and end users on the importance and advantages of offering, maintaining, and using low-GWP alternatives with higher energy-efficiency products; develop two infographics for RAC technicians, importers, and end users on reading energy-efficiency labels and ODP and GWP values of refrigerants, their cost and environmental benefits, to be distributed in 3,000 copies; and design, produce and distribute 1,000 copies of a guide for servicing technicians on RAC systems' performance, including suggested activities for improving energy efficiency (UNEP) (US \$40,000).

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<sup>8</sup> Each consisting of one digital ethernet power meter, clamp ammeter and voltmeter; a refrigeration system analyzer with two clamp thermometers; two pipe clamp thermometers and one infrared thermometer with laser; an anemometer for air velocity, temperature and humidity measure; one thermal imaging camera, and two intelligent wireless pipeline pressure measuring instruments.

## SECRETARIAT'S COMMENTS AND RECOMMENDATION

### COMMENTS

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

##### *Legal framework*

13. The Government of Paraguay has already issued HCFC import quotas for 2024 in accordance with the Montreal Protocol control targets.

14. Regarding additional control measures to ensure the HCFC phase-down, the imports of pure HCFC-141b have ceased since 2017 through denial of import permits. Furthermore, a proposed resolution to ban the import of HCFC-22-based refrigeration equipment has been agreed with the Good Practices Committee,<sup>9</sup> and is currently under consideration by the Ministry of the Environment, to be effective by 1 January 2026.

15. With regard to the establishment and enforcement of regulatory measures to control the intentional venting of refrigerants during equipment installation, servicing and decommissioning, the Government requires further study and consultations with relevant stakeholders. However, awareness-raising activities on avoiding intentional venting are planned under the second tranche of the HPMP.

##### *Refrigeration servicing sector*

16. There is no demand for HCFCs in the servicing of domestic refrigeration and refrigerated transport equipment in Paraguay. Sixty per cent of the country's HCFC-22 consumption is in the commercial and residential air-conditioning sectors, and the remaining 40 per cent is in commercial and industrial refrigeration. In response to the Secretariat's enquiries on the reasons for this, UNEP detailed such factors as equipment lifespan; the cost and commercial availability of alternative technologies, and the training needs of servicing technicians regarding low-GWP alternatives. The activities planned in the second tranche, coordinated with the first tranche of the Kigali HFC implementation plan (KIP) are expected to mitigate these difficulties, particularly with regard to the training and certification of technicians.

17. One of the activities planned in the second tranche involves the strengthening of the country's RR network and the establishment of a refrigerant reclaiming centre. Although the volumes of HCFC-22 recovered and recycled until now are relatively low, a robust RRR network could help mitigate the shortage of HCFC-22 after 2025, reduce the expected demand for HCFC-22 in 2030–2040, and work in an integrated manner with the KIP by also providing reclamation of HFCs. In doing so, the reclaiming of refrigerant will address concerns about refrigerant purity and complete the cycle of good practices and refrigerant recovery.

18. The second tranche proposes an awareness-raising programme for end users on the adoption of low-GWP refrigerants, refrigerant RRR, and the importance of maintaining the currently operating RAC equipment in good working condition to extend its life span until lower-GWP alternatives become available. Together, these measures aim to avoid the transferring of demand for the current uses of HCFC-22 directly to the demand for HFCs.

##### *Activities to maintain energy efficiency in the refrigeration servicing sector*

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

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<sup>9</sup> A consultative body composed of the representatives of the NOU, training institutes, technical universities and the private sector that recommends national policy measures on refrigerant management and alternative technologies to high-level governmental authorities.

energy efficiency. UNEP has also provided a timeline for these activities and has confirmed that a report on progress in their implementation will be included at the time of submission of the next tranche request.

20. The Secretariat received additional information from UNEP that the country had an energy-efficiency compliance infrastructure to support project implementation and to ensure the sustained implementation of the labelling system programme in the long term, and that the Government of Paraguay had previously participated in two international cooperation initiatives<sup>10</sup> funded with non-Multilateral Fund resources, which had contributed to creating the current institutional capacities in the country. Through the current proposal, the institutional dialogue on energy efficiency for the RAC sector will be renewed within the framework of the National Energy Efficiency Committee, seeking to update the current regulations<sup>11</sup> on including information relating to energy efficiency and GWP on the labels of RAC equipment and to formulate mandatory MEPS regulations in the future.

21. Regarding the contribution of proposed activities to promoting low-GWP alternatives and maintaining energy efficiency in the refrigeration servicing sector, UNEP confirmed that the curricula of RAC vocational training institutes would be reviewed in coordination with the ongoing HPMP activities, and that the training material related to the RAC sector would be updated with energy-efficiency concepts to be applied during the servicing of RAC equipment. Furthermore, the tools to be provided to the vocational training institutes are intended to assist both the instructors and technicians in determining the energy performance of RAC equipment, and they have not been previously provided under the HPMP.

#### Gender policy implementation

22. In line with decisions 84/92(d) and 90/48(c), gender mainstreaming was considered in the implementation of all components of stage II of the HPMP. Approximately 80 per cent of NOU staff are women, and female consultants and RAC trainers were hired when possible. Sex-disaggregated data and qualitative information was collected to analyze and track gender issues and promote a gender-balanced recruitment of project personnel. Under the second tranche, the Government will promote the participation of women in all projects with equity and dignity. The collection of sex-disaggregated data and qualitative information will be as follows: number and percentage of men and women who were hired, who received training and who accessed information; number and percentage of training initiatives that include targeted sessions on gender and training initiatives undertaken in collaboration with gender experts; and description of gender-sensitive training/information material.

#### Updated Agreement

23. In view of the inclusion of funding for additional activities to maintain energy efficiency in the refrigeration servicing sector and the accordingly revised funding schedule, the Agreement between the Government of Paraguay 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 87<sup>th</sup> meeting, as contained in annex I to the present document. The full updated Agreement will be appended to the final report of the 94<sup>th</sup> meeting.

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<sup>10</sup> A triangular cooperation project (Paraguay-Uruguay-Germany) resulted in the issuance of a “Guide for the implementation of energy-efficiency labelling in air conditioners in Paraguay” and a “Comparative study of the energy-efficiency labelling system of Paraguay and Uruguay” (12 March 2020), while the “United for Efficiency Country Savings” updated assessment of commercial refrigeration equipment provided a summary of the benefits attained from improving energy efficiency and showed how a market transformation could be obtained through MEPS, product labelling, market monitoring and verification, and financial incentives.

<sup>11</sup> The national standards related to energy efficiency for RAC equipment, currently voluntary, establish the methodology for determining the energy-efficiency category, test methods, and energy-efficiency characteristics. They are applicable to two categories of RAC equipment imported, manufactured, or marketed in the country: self-contained refrigeration appliances and compact or split-type ductless air conditioners with a single indoor unit and a cooling capacity of up to 12.0 kW.

Risks and sustainability of the HCFC phase-out and assessment of risks

24. The sustainability of the HCFC phase-out will be maintained through the strengthening of alliances and relationships with key stakeholders; the continued training and certification in labour competencies of RAC technicians by the training centres; the development of policies and standards that promote the introduction and sustainable use of low-GWP alternative refrigerants and technologies with a correspondent labelling system; ongoing training workshops in good practices; the introduction of energy-efficient alternatives with low environmental impact; strengthening of the existing RR network and establishment of a refrigerant reclaim centre; building awareness among the general public about the country's commitments related to the Montreal Protocol, among other actions; and engaging multiple Government departments and institutions in the formulation and implementation of the HPMP strategy.

25. UNEP assessed that there were no risks related to the country's compliance with the HPMP targets. However, UNDP indicated several controllable risks to the timely implementation of HPMP activities, linked *inter alia* to the strengthening of the regulatory framework for banning HCFC-based technology, the market availability of promoted alternatives, increased prices of tools and equipment (including shipment), and lack of available offers at a national level. Furthermore, changes in Government authorities may impact the normal development of activities with the NOU's partner institutions. UNEP indicated that in order to reduce those delays as much as possible, the implementing agencies and the Government would closely monitor the implementation of the second tranche and see to the timely submission of the following tranches. The Secretariat assesses the project risks as controllable and recommends the approval of the tranche on the understanding that the implementing agencies will monitor potential risks on regular basis.

Conclusion

26. The HCFC consumption from 2020 to 2023 was, for all years, around 40 per cent below the HCFC baseline and below the maximum allowable consumption under the Agreement with the Executive Committee. Despite the challenges posed by the COVID-19 pandemic, the Government of Paraguay, with the assistance of UNEP and UNDP, implemented an extensive set of activities to strengthen the national capacity to control trade in HCFCs and HCFC-based equipment, provided training and certification of RAC technicians on labour competency standards, adopted safety standards to handle flammable refrigerants, improved the refrigerant RR network, and promoted the adoption of alternative technologies among end users. The overall disbursement rate stands at 62 per cent of the approved funding. The proposed activities to maintain energy efficiency in the refrigeration servicing sector are also consistent with the Executive Committee's decision on the matter.

**RECOMMENDATION**

27. The Fund Secretariat recommends that the Executive Committee note:
- (a) The progress report on the implementation of the first tranche of stage II of the HCFC phase-out management plan (HPMP) for Paraguay;
  - (b) The submission of additional activities to maintain energy efficiency in the refrigeration servicing sector in the amount of US \$132,000, consisting of US \$60,000, plus agency support costs of US \$7,680, for UNEP and US \$60,000, plus agency support costs of US \$4,200, for UNDP; and
  - (c) That the Fund Secretariat has updated the Agreement between the Government of Paraguay and the Executive Committee, as contained in annex I to the present document, specifically: Appendix 2-A, based on the inclusion of funding for additional activities to maintain energy efficiency in the refrigeration servicing sector referred to in subparagraph (b)

above; and paragraph 17 that has been added to indicate that the updated Agreement supersedes that reached at the 87<sup>th</sup> meeting.

28. The Fund Secretariat further recommends blanket approval of the second tranche of stage II of the HPMP for Paraguay, and the corresponding 2024—2027 tranche implementation plan, at the funding levels shown in the table below.

	<b>Project title</b>	<b>Project funding (US \$)</b>	<b>Support costs (US \$)</b>	<b>Implementing agency</b>
(a)	HCFC phase-out management plan (stage II, second tranche)	213,382	27,314	UNEP
(b)	HCFC phase-out management plan (stage II, second tranche)	341,077	23,875	UNDP

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

**Paraguay**

<b>PROJECT TITLE</b>	<b>IMPLEMENTING AGENCY</b>
Kigali HFC implementation plan (stage I)	UNDP (lead)

<b>LATEST ARTICLE 7 DATA (Annex F)</b>	<b>Year: 2023</b>	731.16 mt	1,546,758 CO <sub>2</sub> -eq tonnes
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<b>SECTORAL HFC CONSUMPTION DATA (CO<sub>2</sub>-eq tonnes) AND PLANNED ACTIVITIES</b>								
	Aerosol	Foam*	Fire-fighting	AC and refrigeration				Solvent
				Manufacturing			Servicing	
				Refrigeration	AC	Other		
As submitted (2022)	0	14,390	13,363	0	0	0	**1,512,227	0
Latest CP report (2023)	0	11,604	22,690	0	0	0	1,524,068	0
KIP stage I activities as agreed	No	No	No	No	No	No	Yes	No

\* HFCs contained in imported pre-blended polyols

\*\* Excluding the consumption of R-422D, as this substance was not imported during 2017–2021

<b>AVERAGE 2020-2022 HFC CONSUMPTION IN SERVICING</b>	632.94 mt	1,268,178 CO <sub>2</sub> -eq tonnes
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<b>BASELINE CONSUMPTION DATA (CO<sub>2</sub>-eq tonnes)</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>	<b>Average 2020-2022</b>
HFC annual consumption	1,467,204	876,498	1,563,023	1,302,242
HCFC baseline (65%)				382,340
HFC baseline				<b>1,684,582</b>

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

<b>PROJECT DATA AS AGREED</b>		<b>2024*</b>	<b>2025-2026</b>	<b>2027</b>	<b>2028</b>	<b>2029</b>	<b>Total</b>	
Consumption (CO <sub>2</sub> -eq tonnes)	Montreal Protocol limits	1,684,582				1,516,124	n/a	
	Maximum allowable	1,684,582				1,516,124	n/a	
	Maximum allowable (%)	100	100	100	100	90	n/a	
Amounts recommended in principle (US \$)	UNDP	Project costs	235,675	0	188,540	0	47,135	471,350
		Support costs	16,497	0	13,198	0	3,300	32,995
	Total project cost	235,675	0	188,540	0	47,135	471,350	
	Total support costs	16,497	0	13,198	0	3,300	32,995	
Total funds	252,172	0	201,738	0	50,435	504,345		

\* Recommended for approval at the present meeting

Reductions to be achieved in stage I:	168,458 CO <sub>2</sub> -eq tonnes
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<b>Secretariat's recommendation:</b>	Individual consideration (Secretariat presentation not required)
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## PROJECT DESCRIPTION

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

### I. Summary of the proposal as submitted

30. On behalf of the Government of Paraguay, UNDP as the designated implementing agency has submitted a request for stage I of the Kigali HFC implementation plan (KIP), in the amount of US \$471,350, plus agency support costs of US \$32,995, as originally submitted.<sup>12</sup>

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

32. The first tranche of stage I of the KIP being requested at this meeting amounts to US \$235,675, plus agency support costs of US \$16,497 for UNDP, as originally submitted, for the period of June 2024 to May 2027.

### II. Background

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

33. Table 2 presents the status of Paraguay's HCFC phase-out management plan (HPMP) as of April 2024.

**Table 2. HPMP implementation status for Paraguay**

	<b>Stage I</b>	<b>Stage II</b>
Meeting when HPMP was approved	63 <sup>rd</sup>	87 <sup>th</sup>
Reductions from baseline	35% by 2020	67.5% by 2025 and 100% by 2030
<b>Total project cost (US \$)</b>	630,000	1,170,000
<b>Date of completion</b>	31 December 2022	31 December 2031 (planned)

#### Status of implementation of previous HFC-related activities

34. Table 3 presents an overview of activities implemented in Paraguay in the context of the Kigali Amendment that have been funded by the Multilateral Fund.

**Table 3. Previously approved HFC-related activities in Paraguay**

<b>Approval meeting</b>	<b>Project title</b>	<b>Implementing agency</b>	<b>Cost (US \$)</b>	<b>Date of completion</b>
75 <sup>th</sup>	Survey of ODS alternatives	UNDP	70,000	September 2017
81 <sup>st</sup>	Enabling activities for HFC phase-down	UNDP	150,000	December 2021
		UNEP		June 2022

<sup>12</sup> As per the letter of 2 February 2024 from the Ministry of the Environment and Sustainable Development of Paraguay to UNDP.

### III. HFC consumption overview

#### HFC consumption levels

35. Paraguay imports HFCs for use in multiple refrigeration and air-conditioning (RAC) servicing subsectors and in firefighting, and small amounts contained in pre-blended polyols for use in the polyurethane (PU) foam manufacturing sector. In 2023, the most consumed substances included HFC-134a (37.0 per cent of total HFC consumption in CO<sub>2</sub>-equivalent (CO<sub>2</sub>-eq) tonnes), R-404A (35.4 per cent), and R-410A (22.2 per cent). Table 4 presents HFC consumption as reported under Article 7 to the Ozone Secretariat.

**Table 4. HFC consumption in Paraguay (2019–2023 Article 7 data)**

HFC	GWP	2019	2020	2021	2022	2023	Share of total (%)
<b>Metric tonnes (mt)</b>							
HFC-134a	1,430	338.00	411.92	255.71	350.09	400.13	54.7
R-404A	3,922	74.10	83.65	37.12	131.15	139.79	19.1
R-407C	1,773.85	5.99	8.85	17.40	15.14	0.00	0.0
R-410A	2,088	69.10	180.91	121.29	213.23	164.34	22.5
R-417B	3,026.69	0.00	27.83	17.30	6.21	0.00	0.0
R-422D*	2,728.95	0.00	0.00	0.00	13.00	19.49	2.7
Others**		1.47	10.80	7.66	6.97	7.41	1.0
<b>Total (mt)</b>		<b>488.96</b>	<b>723.96</b>	<b>456.48</b>	<b>735.79</b>	<b>731.16</b>	<b>100</b>
HFCs in imported pre-blended polyols (mt) ***		17.57	13.13	19.08	14.93	12.04	n/a
<b>CO<sub>2</sub>-eq tonnes</b>							
HFC-134a	1,430	483,343	589,045	365,665	500,629	572,186	37.0
R-404A	3,922	290,583	328,042	145,570	514,318	548,212	35.4
R-407C	1,773.85	10,623	15,698	30,865	26,856	0	0.0
R-410A	2,088	144,246	377,650	253,193	445,118	343,068	22.2
R-417B	3,026.69	0	84,233	52,362	18,796	0	0.0
R-422D*	2,728.95	0	0	0	35,476	53,195	3.4
Others**		5,854	72,536	28,843	21,831	30,097	1.9
<b>Total (CO<sub>2</sub>-eq tonnes)</b>		<b>934,649</b>	<b>1,467,204</b>	<b>876,498</b>	<b>1,563,023</b>	<b>1,546,758</b>	<b>100</b>
HFCs in imported pre-blended polyols (CO <sub>2</sub> -eq tonnes)***		16,934	12,655	18,390	14,390	11,604	n/a

\* R-422D: HFC-125=65.1%, HFC-134a=31.5%, and HC-600a=3.4%

\*\* Including HFC-23, HFC-32, HFC-227ea, HFC-236fa, HFC-245fa, R-417A, R-507A, and Custom Mix-317 (HFC-125=47% and HFC-134a=53%)

\*\*\* CP data

#### Established HFC baseline

36. The Government of Paraguay reported its Article 7 data for 2020–2022. The country's HFC consumption baseline has been established at 1,684,582 CO<sub>2</sub>-eq tonnes by adding 65 per cent of its HCFC baseline (expressed in CO<sub>2</sub>-eq tonnes) to its average HFC consumption in 2020–2022, as shown in table 5.

**Table 5. HFC baseline calculation for Paraguay (CO<sub>2</sub>-eq tonnes)**

Baseline calculation components	2020	2021	2022
HFC annual consumption	1,467,204	876,498	1,563,023
HFC average consumption in 2020–2022			1,302,242
HCFC baseline (65%)			382,340
<b>HFC baseline</b>			<b>1,684,582</b>

*Country programme implementation report*

37. The sectoral HFC consumption data provided by the Government of Paraguay in its country programme (CP) implementation report for 2023 is consistent with the data reported under Article 7 of the Montreal Protocol.

HFC consumption trends

38. The reduction of HFC consumption observed in Paraguay from 2020 to 2021 was due to the COVID-19 pandemic and shipment delays. Since 2022, HFC consumption returned to levels above 700 mt, reflecting the increased demand for RAC appliances as well as the results of HCFC phase-out and sustained investments in the building industry. As the country is experiencing economic growth, demand for HFCs is expected to continue rising, posing a challenge to achieving consumption targets by 2029.

HFC consumption by sector

39. The country does not manufacture RAC equipment. Based on the survey carried out during the KIP preparation, HFCs are used for the servicing sector, for refilling of extinguishers and manufacturing of foam is from preblended polyols. HFCs consumption for the servicing of air-conditioning (AC) appliances is higher than for refrigeration equipment. In 2022, HFCs were mainly used in the mobile air-conditioning (MAC) subsector (38.9 per cent of total HFC consumption in mt and 26.3 per cent in CO<sub>2</sub>-eq tonnes), followed by commercial refrigeration (21.7 per cent in mt and 32.8 per cent in CO<sub>2</sub>-eq tonnes), commercial and industrial AC (17.6 per cent in mt and in CO<sub>2</sub>-eq tonnes), as shown in tables 6 and 7.

**Table 6. HFC consumption in Paraguay by sector in mt (2022)**

	HFC-134a	R-404A	R-407C	R-410A	R-417B	R-507A	Others	Total*	Share of total (%)
<b>Refrigeration and air-conditioning sectors</b>									
Domestic refrigeration	15.72	0.00	0.00	0.00	0.00	0.00	0.00	15.72	2.2
Commercial refrigeration	39.10	110.00	7.07	0.23	0.00	0.00	0.00	156.4	21.7
Industrial refrigeration	5.36	16.33	0.00	0.17	0.00	1.13	0.00	22.99	3.2
Refrigerated transport	0.37	2.68	0.00	0.06	0.00	0.00	0.00	3.11	0.4
Residential AC	0.32	0.00	0.00	110.70	0.00	0.00	0.00	111.02	15.4
Commercial and industrial AC	0.74	0.00	7.50	112.92	6.22	0.00	0.00	127.38	17.6
MAC	280.60	0.00	0.00	0.00	0.00	0.00	0.00	280.60	38.9
<b>Subtotal servicing</b>	<b>342.21</b>	<b>129.01</b>	<b>14.57</b>	<b>224.08</b>	<b>6.22</b>	<b>1.13</b>	<b>0.00</b>	<b>717.22</b>	<b>99.4</b>
<b>Other sectors</b>									
Firefighting**	0.00	0.00	0.00	0.00	0.00	0.00	4.15	4.15	0.6
<b>Total</b>	<b>342.21</b>	<b>129.01</b>	<b>14.57</b>	<b>224.08</b>	<b>6.22</b>	<b>1.13</b>	<b>4.15</b>	<b>721.37</b>	<b>100</b>
Foam***	0.00	0.00	0.00	0.00	0.00	0.00	14.93	14.93	n/a

\* Differences between the 2022 reported imports shown in table 4 (top-bottom approach) and the use estimated in this table (bottom-up approach) can be attributed to uncertainties associated with field data and the statistical method. Furthermore, the HFC survey focused only on the most used refrigerants and did not include R-422D, as the imports of this substance started only in 2022.

\*\* HFC-227ea

\*\*\* HFCs in pre-blended polyols

**Table 7. HFC consumption in Paraguay by sector in CO<sub>2</sub>-eq tonnes (2022)**

	HFC-134a	R-404A	R-407C	R-410A	R-417B	R-507A	Others	Total*	Share of total (%)
<b>Refrigeration and air-conditioning service sector</b>									
Domestic Refrigeration	22,480	0	0	0	0	0	0	22,480	1.5
Commercial refrigeration	55,913	431,376	12,541	480	0	0	0	500,310	32.8
Industrial refrigeration	7,665	64,040	0	355	0	4,503	0	76,562	5.0
Refrigerated transport	529	10,510	0	125	0	0	0	11,164	0.7
Residential AC	458	0	0	231,086	0	0	0	231,544	15.2
Commercial and industrial AC	1,058	0	13,304	235,721	18,826	0	0	268,909	17.6
MAC	401,258	0	0	0	0	0	0	401,258	26.3
<b>Subtotal servicing</b>	<b>489,360</b>	<b>505,926</b>	<b>25,845</b>	<b>467,767</b>	<b>18,826</b>	<b>4,503</b>	<b>0</b>	<b>1,512,227</b>	<b>99.1</b>
<b>Other sectors</b>									
Firefighting**	0	0	0	0	0	0	13,363	13,363	0.9
<b>Total</b>	<b>489,360</b>	<b>505,926</b>	<b>25,845</b>	<b>467,767</b>	<b>18,826</b>	<b>4,503</b>	<b>13,363</b>	<b>1,525,590</b>	<b>100</b>
Foam***	0	0	0	0	0	0	14,390	14,390	n/a

\* Differences between the 2022 reported imports shown in table 4 (top-bottom approach) and the use estimated in this table (bottom-up approach) can be attributed to uncertainties associated with field data and the statistical method. Furthermore, the HFC survey focused only on the most used refrigerants and did not include R-422D, as the imports of this substance started only in 2022.

\*\* HFC-227ea

\*\*\* HFCs in pre-blended polyols

#### *Firefighting sector*

40. Several enterprises provide maintenance and recharging services for portable fire-extinguishing equipment in Paraguay. Six of those (Extinguishers Battalion 40 SRL, Paraná Fire Extinguishers SRL, Firemasters SRL, Mare Group SA, Regiment 8 SA and Isopanel SA) import HCFCs and/or HFCs and use them to refill portable fire extinguishers, while halogenated extinguishing agents are used to protect places with electrical or electronic installations. Firemaster SRL is the largest importer of halogenated extinguishing agents that, since 2022, has also started importing FK-5-1-12.<sup>13</sup> The imports of HFCs for use in the fire suppression sector in the 2018–2023 period are presented in table 8.

**Table 8. Imports of controlled substances for fire extinguisher refilling (mt)**

Substance	2018	2019	2020	2021	2022	2023
HFC-227ea	0.00	0.00	2.26	4.00	4.15	4.00
HFC-236fa	6.00	0.00	6.00	1.00	0.00	1.00
<b>Total (mt)</b>	<b>6.00</b>	<b>0.00</b>	<b>8.26</b>	<b>5.00</b>	<b>4.15</b>	<b>5.00</b>

#### *Polyurethane foam manufacturing sector*

41. The PU foam sector consumes small amounts of HFCs contained in imported pre-blended polyols for sandwich panels and spray foam application. As there are no systems houses in the country, the industry is supplied by importers of formulated polyols and isocyanates (PU systems), with the main blowing agents being HCFC-141b and HFC-365mfc/227ea. Cyclopentane, HFO, and water-based materials are also locally available.

<sup>13</sup> FK-5-1-12 is a commercial name of dodecafluoro-2-methylpentan-3-one, an alternative fire-extinguishing agent with zero ODP and the GWP of less than or equal to one.

42. There are three importers of pre-blended PU polyols based on HCFCs and HFCs in Paraguay: MV Aceros SA, Tecnimet SA, and Isopanel SA. Tecnimet has a polyisocyanurate foam production line using cyclopentane as a blowing agent, added to the polyols *in situ*. The imports of HCFCs and HFCs contained in pre-blended polyols in the 2018-2023 period are presented in table 9.

**Table 9. Imports of controlled substances contained in pre-blended polyols in Paraguay (mt)**

Substance	2018	2019	2020	2021	2022	2023
HCFC-141b	18.12	33.26	2.54	23.22	13.44	4.31
CustMix-134*	0.00	17.57	13.13	19.08	14.93	12.04

\* HFC-365mfc=93% and HFC-227ea=7%

43. The import of polyols formulated with HCFC-141b has been banned since 1 January 2024, but prohibiting the imports of HFC-based polyols will require a complex consultation process with numerous stakeholders, as well as synchronization with the global supply market for low-GWP blowing agent replacements. Thus, the imports of HFC-based pre-blended polyols are likely to continue in the short term.

#### *Refrigeration and air-conditioning servicing sector*

44. The National Certification Body, operating under the National Institute of Technology, Standardization and Metrology (INTN), offers a voluntary certification process for refrigeration technicians. The certification is based on the INTN Standard for the Good Management of Refrigerants, which verifies theoretical knowledge and practical skills to attest to the labour competency of technicians in the RAC sector. The KIP plans to develop a standard for low-GWP refrigerant management in order to expand the current certification system.

45. The National System for Professional Promotion of the Ministry of Labour offers easily accessible RAC courses, including on good practices, designed to enable technicians at various levels of experience to enhance their skills. The Ministry of Labour has also accredited four centres to provide training in RAC installation and maintenance and to homologate the technicians' empirical knowledge through occupational profiles. Vocational centres and technological colleges offer formal education in the RAC and MAC sectors to skilled technicians and professionals, improving work practices in the RAC servicing sector.

46. There are approximately 3,300 technicians (including 60 women) and 1,300 RAC workshops consuming HFCs in Paraguay. Ten per cent of technicians have been certified under the INTN Standard for the Good Management of Refrigerants. Of all RAC technicians, 2,615 have received vocational or university training, and 685 have gained their knowledge through work experience.

47. A study was undertaken to estimate the number of RAC units installed in the country up to 2022 based on the import registers obtained from the Customs. Recognizing the potential for historical inaccuracies in these figures, the national ozone unit (NOU) collaborated closely with refrigerant and equipment importers as well as with end users to verify the results. The best estimate of the total number of installed units per type of refrigerant and sector is presented in table 10 below. Notably, the highest number of HFC-based units has been recorded in the commercial and industrial AC sector, followed by MAC and residential AC, a trend that aligns with the country's weather conditions.<sup>14</sup>

**Table 10. Estimated inventory of RAC units based on HFC or HC installed up to 2022 in Paraguay**

Type of application	Number of installed equipment units based on a given refrigerant								Total
	HFC-32	HFC-134a	R-404A	R-407C	R-410A	R-507A	R-290	R-600a	
Domestic refrigeration	0	462,405	0	0	0	0	36,782	1,497,967	<b>1,997,154</b>
Commercial refrigeration	42	195,467	34,025	73	1,160	9	40,355	40,923	<b>312,054</b>

<sup>14</sup> In the main cities, average temperature ranges from 19 to 34°C and average humidity from 70 to 80 per cent.

Type of application	Number of installed equipment units based on a given refrigerant								Total
	HFC-32	HFC-134a	R-404A	R-407C	R-410A	R-507A	R-290	R-600a	
Industrial refrigeration	0	5,954	1,476	0	190	7	1220	3,823	<b>12,670</b>
Residential AC	707	3,127	0	0	1,085,193	0	0	0	<b>1,089,027</b>
Commercial and industrial AC	0	9,866	0	104	1,505,624	0	1,701	0	<b>1,517,295</b>
Refrigerated transport	0	248	1,789	0	41	694	234	0	<b>3,006</b>
MAC	0	1,230,674	0	0	0	0	0	0	<b>1,230,674</b>
<b>Total</b>	<b>749</b>	<b>1,907,741</b>	<b>37,290</b>	<b>177</b>	<b>2,592,208</b>	<b>710</b>	<b>80,292</b>	<b>1,542,713</b>	<b>6,161,880</b>

48. Commercial medium- and low-temperature refrigeration equipment is used across the food cold chain and in the health and tourism sectors, with main types of equipment including cold rooms, display refrigerators, ice machines, minibars, conventional refrigerators, industrial refrigerators and wine coolers. Most of the newly installed equipment is based on high-GWP HFC technologies, with some exceptions in the case of domestic refrigeration and stand-alone commercial refrigeration units. HFCs have also been used to replace HCFC-22 in retrofitting medium-temperature cold chambers, as in the case of R-422D imported for that purpose in 2022 and 2023 (13 mt and 177.66 mt, respectively).

49. Ammonia (NH<sub>3</sub>/R-717) and carbon dioxide (CO<sub>2</sub>/R-744) are two alternative refrigerants that are currently available in Paraguay. The industrial refrigeration sector has been using NH<sub>3</sub> for some time, whereas the use of CO<sub>2</sub> is not yet widespread, except for a few commercial refrigeration applications. In 2022, 177.66 mt of HCFC-22 were imported for the servicing of residential AC (60 per cent) and commercial refrigeration (40 per cent) equipment.

#### *Local installation and assembly subsector*

50. Due to time and financial limitations, no local installation and assembly enterprises were identified in the survey conducted during project preparation. However, cold rooms installed in the commercial and industrial refrigeration sectors have been confirmed to be locally assembled with the use of R-404A, which might explain the high demand for this refrigerant when compared against the inventory of R-404A-based equipment in the country. HFC consumption in this subsector is recorded as part of the servicing sector.

#### *Aerosol and solvent manufacturing sectors*

51. HFCs are used neither as propellants in the manufacturing of aerosols, nor as solvents for technical and industrial use in the country. It is likely that a small percentage of aerosols and metered-dose inhalers imported into the country may contain HFCs.

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

#### Institutional, policy and regulatory framework

52. The Ministry of the Environment and Sustainable Development (MADES)<sup>15</sup> regulates the HCFC import/export licensing procedures and issues annual resolutions to grant import quotas for substances controlled under the Montreal Protocol. The General Directorate of Air maintains the register of importers/exporters and authorizes licenses, with assistance from the NOU, which is in charge of reviewing import requests. The electronic licensing system, established in coordination with the National Customs Directorate, was adjusted in December 2023 to include HFCs. HFC import quotas are allocated annually in CO<sub>2</sub>-eq tonnes, as follows: 80 per cent is distributed among the applying importers, 10 per cent is

<sup>15</sup> Former Secretariat of the Environment

earmarked for importers who have failed to obtain quotas, and 10 per cent is reserved for extraordinary cases. Quotas are valid until the end of the calendar year in which they were issued.

53. The Harmonized System (HS) tariff codes for HFCs and HFC blends were introduced in 2012 to better control the imports and exports of these substances. The import of HCFC-based air conditioners has been banned since 2015, and a standard for the safe adoption of RAC equipment based on flammable refrigerants has been established.

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

##### *Overarching strategy*

54. The Government of Paraguay proposes to implement stage I of the KIP in parallel with the HPMP until 2029, in a comprehensive strategy designed to meet the 2024 and 2029 HFC phase-down targets. The strategy includes cross-sectoral activities and focuses on the commercial refrigeration (including health care facilities) and MAC sectors, selected in view of their high impact on the country's HFC consumption and relevance for the economy and population health. The proposal addresses the issues of consumption growth rates and the limited availability of affordable, low-GWP alternatives, which are significant hurdles to the country's compliance. The absence of HFC-based equipment and product-related policies is another barrier in transitioning to low-GWP options.

55. One key component of the KIP proposal for Paraguay is the implementation of the licensing and quota system to control HFC supply, which will be reinforced by the certification system for servicing technicians, demonstration projects and awareness raising. These actions will ensure the safe introduction, installation, and maintenance of new RAC equipment designed for low/zero-GWP refrigerants. The proposed alternative-technology equipment, at a minimum, will maintain energy efficiency and reduce the demand for HFCs. The proposal also includes the reduction of HFC emissions in the MAC sector through refrigerant recovery and recycling (RR) and good practices. Legislation for gradual bans on the imports of HFC-134-based refrigeration equipment and air conditioners charged with R-410A will be in force by the time of the second tranche of the KIP.

##### *Proposed activities*

56. Stage I of the KIP aims to lay the groundwork for the RAC servicing sector to facilitate the required reduction steps in the country's HFC consumption. The following activities have been proposed for implementation under stage I, as submitted:

- (a) *Supporting the development of an institutional and public policy framework and strengthening HFC controls:* Drafting regulations on gradual import bans on HFC-134a-based refrigeration equipment and R-410A-based AC equipment, including an impact assessment; conducting two workshops for 30 stakeholders from the firefighting and PU foam sectors to follow up on their HFC use and identify available and affordable alternatives; developing and implementing a multimedia campaign to raise awareness among key stakeholders and the public on low-GWP alternatives; adjusting the HFC licensing system and HFC import register according to the future revision of HS custom codes in 2026; conducting four training courses on the revised requirements for the imports of HFCs and HFC-based equipment, and on the detection and prevention of potential cases of illegal trade for at least 80 customs and enforcement officers, customs brokers and importers; having at least two customs officers participate in a regional workshop/border dialogue to exchange experiences and information with officers from other countries on illegal trade prevention (US \$38,000);

- (b) *Enhancing national capacity in the safe use of low/zero-GWP technologies in the servicing sector:* Preparing and conducting six workshops for 120 RAC technicians on the safe use of isobutane and propane in RAC systems; developing at least two national labour competency standards on the safe use of hydrocarbons (HCs)<sup>16</sup> as refrigerants in the RAC sector; promoting the new labour competency standards and certifying 60 RAC technicians (US \$64,500);
- (c) *Providing technical assistance to decrease the demand for high-GWP refrigerants in the health sector:* Developing and implementing a training programme for 50 decision makers and key stakeholders to promote the use of low-GWP technologies at health facilities and energy-efficiency improvements; disseminating and promoting the results of a case study on the energy performance of RAC equipment installed at a public health facility; preparing recommendations and criteria for prioritizing RAC equipment based on low-GWP refrigerants in public procurement processes, and disseminating those recommendations among approximately 80 relevant stakeholders (US \$60,000);
- (d) *Promoting the use of low-GWP refrigerants in commercial refrigeration:* Formalizing agreements with two end users for projects to demonstrate the use of low-GWP systems in new cold-room installations in the country's food chain; evaluating and selecting the technology; designing and installing new cold rooms; training the technicians in charge of the installation and maintenance of those systems; organizing four workshops for trainers, technicians and end users on the application of low-GWP refrigerants in the food chain; monitoring the new systems' thermal and energy performance; systematizing the experience, including the identification of technical, commercial, and gender barriers to replicability; and disseminating project results (US \$98,000);
- (e) *Promoting reductions in HFC emissions:* Promoting good practices in the handling of refrigerants in MAC servicing, including the selection of 20 workshops offering diverse maintenance services; developing training material, guidelines and posters on the application of good practices and procedures in the sector; completing the identification of formal and informal workshops to create a database for the MAC servicing sector; developing a national labour competency standard on the appropriate use of HFCs and other refrigerants in the MAC sector; organizing four training workshops on good practices for 80 MAC technicians; procuring and providing RR equipment and tools<sup>17</sup> to three vocational training institutions to implement good practices in MAC servicing; strengthening the recovery, recycling and reclaim (RRR) network by equipping six collection centres with toolkits for HFCs,<sup>18</sup> reinforcing the infrastructure of the refrigerant reclaim centre,<sup>19</sup> providing technical support for equipment installation and training, and raising awareness on RRR (US \$153,000); and
- (f) *Gender mainstreaming throughout KIP implementation:* Assessing the potential for increasing the participation of women in various roles within the RAC sector; formulating and implementing an action plan to promote gender equity and inclusion within KIP

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<sup>16</sup> R-600a in domestic refrigeration applications and R-290 in commercial refrigeration.

<sup>17</sup> Including three portable recovery units for MAC, six 30 lb recovery cylinders, three 123 lb cylinders for non-reusable refrigerant, leak detectors, vacuum pump, digital vacuum gauge, and 20 acidity kits.

<sup>18</sup> Each toolkit consisting of three refrigerant recovery and recycling units, standard recovery cylinders (30 units of 30 lbs and 12 units of 100 lbs), nine digital vacuum gauges, six manifold kits for HFCs, three vacuum pumps, an HFC leak detector and a tank weighing scale.

<sup>19</sup> Including three standard recovery cylinders (250 lb), an air analyser, a set of nitrogen pressure gauges, a nitrogen cylinder, a digital vacuum gauge, a cylinder cleaning machine and a cleaning tool set, one tank weighing scale, an analytical laboratory balance, Karl Fischer moisture content-determination equipment and accessories, a chlorine detection package, and laboratory reagents and accessories.

projects, including the required resources and indicators; conducting two training workshops for at least 20 participants each from institutions involved in the implementation of the KIP and other relevant stakeholders; and designing, printing and disseminating 500 copies of a publication aimed at raising awareness on the gender policy of the Multilateral Fund, to be distributed at each project initiative and during other activities developed by MADES (US \$15,000).

*Project implementation, coordination and monitoring*

57. This aspect of the KIP will involve preparing two verification reports (US \$16,000), hiring national consultants (US \$18,000), organizing annual meetings and monitoring-related travel (US \$6,000), and materials (US \$2,850) (for a total of US \$42,850).

*Gender policy implementation*

58. In line with decisions 84/92(d), 90/48(c) and 92/40(b), the Multilateral Fund's operational policy on gender mainstreaming will be applied to all activities implemented under the KIP with the support of a dedicated consultant. The NOU will work on removing barriers to women's entry into the servicing sectors and maximizing the participation of women in KIP activities; collect gender-disaggregated data, including on the selection of recipients of tools and equipment and candidates for certification; encourage women to work in the refrigeration sector; and sensitize stakeholders to the gender policy of the Multilateral Fund. All mandatory gender mainstreaming indicators<sup>20</sup> will be used in KIP progress reports and tranche requests.

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

59. Stage I of the KIP will be implemented in three tranches. The schedule of HFC phase-down and HCFC phase-out commitments and of the KIP and HPMP tranches is presented in annex II to the present document. The Government of Paraguay is committed to harmonizing the implementation of HPMP and KIP activities to the extent possible, on the understanding that separate agreements between the country and the Executive Committee will govern both multi-year projects. The activities to be implemented simultaneously under the HPMP and the KIP are listed in annex III to the present document.

60. The main activities of stage II of the HPMP, addressing *inter alia* strengthening the control of trade in HCFCs and HCFC-based equipment and products, improving the capacity of technicians in good servicing practices, strengthening the technical training centres with equipment and tools, implementing the technician certification strategy based on labour competency standards, establishing one reclaiming centre and strengthening the four existing refrigerant RR centres, and promoting the adoption of low-GWP alternative technologies, will be carried out simultaneously with and complemented by analogous activities implemented under stage I of the KIP. The NOU and UNDP will closely monitor the implementation of the KIP and the HPMP to avoid overlapping activities and to obtain the best value for money in both projects.

61. Because HFC phase-down involves multiple refrigerants, both pure and blended, which had not been previously controlled under the Montreal Protocol, as well as the adoption of flammable, low-GWP alternatives to HFCs requiring particular conditions for use, the KIP will ensure that RAC technicians receive appropriate training on these technologies in updated courses on good refrigeration practices and in the demonstration projects on the advantages of adopting low-GWP, energy-efficient technologies at cold-chain end users. The KIP will also assist the new MAC servicing subsector.

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<sup>20</sup> Listed in annex XXII of UNEP/OzL.Pro/ExCom/92/56.

Total cost of stage I of the Kigali HFC implementation plan

62. The budget for stage I of the KIP has been proposed at US \$471,350. The costs of activities in the refrigeration servicing sector have been proposed in line with decision 92/37. The proposed activities and cost of stage I of the KIP are summarized in paragraphs 56 and 57.

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

63. The first funding tranche of stage I of the KIP, in the total amount of US \$235,675, will be implemented between June 2024 and May 2027 and will include the following activities:

- (a) *Supporting the development of an institutional and public policy framework and strengthening HFC controls:* Drafting regulations on the gradual import bans on HFC-134a-based refrigeration equipment and R-410A-based AC equipment, including an impact assessment; conducting two workshops for 30 stakeholders from the firefighting and PU foam sectors to follow up on their HFC use and identify available and affordable non-HFC alternatives; developing and implementing a multimedia campaign to raise awareness among key stakeholders and the public on low-GWP alternatives; adjusting the HFC licensing system and HFC import register according to the future revision of HS custom codes in 2026; conducting two training courses on the revised requirements on the imports of HFCs and HFC-based equipment, and on the detection and prevention of potential cases of illegal trade for at least 40 customs and enforcement officers, customs brokers and importers (US \$19,000);
- (b) *Enhancing national capacity in the safe use of low/zero-GWP technologies in the servicing sector:* Preparing and conducting three workshops for 60 technicians on the safe use of isobutane and propane in RAC systems; and developing at least two labour competency standards on the safe use of HCs as refrigerants in the RAC sector<sup>21</sup> (US \$32,150);
- (c) *Providing technical assistance to decrease the demand for high-GWP refrigerants in the health sector:* Developing and implementing a training programme for 50 decision makers and key stakeholders to promote the use of low-GWP technologies at health facilities and energy-efficiency improvements; and preparing recommendations and criteria for prioritizing RAC equipment based on low-GWP refrigerants in public procurement processes and disseminating those recommendations among approximately 80 relevant stakeholders; (US \$30,000);
- (d) *Promoting the use of low-GWP refrigerants in commercial refrigeration:* Formalizing agreements with two end users for projects to demonstrate the use of low-GWP systems in new cold-room installations in the country's food chain; evaluating and selecting the technology (US \$12,000);
- (e) *Promoting reductions in HFC emissions:* Promoting good practices in the handling of refrigerants in MAC servicing, including the selection of 20 workshops offering diverse maintenance services; developing training material, guidelines and posters on the application of good practices and procedures in the sector; completing the identification of formal and informal workshops to create a database for the MAC servicing sector; organizing two training workshops on good practices for 40 MAC technicians; procuring and providing RR equipment and tools to three vocational training institutions to implement good practices in MAC servicing; and strengthening the refrigerant RR network

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<sup>21</sup> R-600a in domestic refrigeration applications and R-290 in commercial refrigeration.

by acquiring toolkits for HFCs for six collection centres, providing technical support for equipment installation and training, and raising awareness (US \$113,600);

- (f) *Gender mainstreaming throughout KIP implementation*: Assessing the potential for increasing the participation of women in various roles within the RAC sector; formulating an action plan with the objective of promoting gender equity and inclusion within KIP projects, including the required resources and indicators; conducting one training workshop for at least 20 participants from institutions involved in the implementation of the KIP and other relevant stakeholders; and designing, printing and disseminating 250 copies of a publication aimed at raising awareness on the gender policy of the Multilateral Fund, to be distributed at each project initiative and during other activities developed by MADES (US \$7,500); and
- (g) *Project coordination and monitoring*: Preparing a verification report (US \$8,000), hiring national consultants (US \$9,000), organizing annual meetings and monitoring-related travel (US \$3,000), and materials (US \$1,425) (for a total of US \$21,425).

## SECRETARIAT'S COMMENTS AND RECOMMENDATION

### V. Comments

#### Overarching strategy

64. Stage I of the KIP involves activities to address the challenges in the RAC and MAC servicing sectors according to the country's priorities and resource availability, in coordination with activities implemented under stage II of the HPMP.

#### HFC consumption levels

65. The country's HFC consumption reached 731.16 mt (1,546,758 CO<sub>2</sub>-eq tonnes) in 2023, which is approximately 8 per cent below the HFC baseline level of 1,684,582 CO<sub>2</sub>-eq tonnes. HFC consumption in Paraguay fluctuated between 2019 to 2022 at 488.96 mt, 723.96 mt, 456.48 mt, and 735.79 mt, respectively, followed by apparent stabilization in 2023 with consumption (731.16 mt) within the same range as in 2022. The Secretariat enquired about the reasons for the fluctuations and whether current imports were to serve regular refrigerant needs. UNDP explained that the 2020 HFC import volumes corresponded to the importers' placing HFC orders before the COVID-19 pandemic, based on the country's economic growth expectations at the time. Due to the negative impact of the COVID-19 pandemic, HFC balance was carried over to 2021. Furthermore, in 2021, delays in the international supply chain and increased freight costs negatively impacted the country's HFC imports. On this basis, UNDP considered that the spike in consumption in 2022 and 2023 served regular refrigerant needs. However, there is still uncertainty regarding the country's actual consumption levels and potential stockpiling in view of the 2024 freeze target.

66. Noting that the HFC consumption reported in 2021 and 2022 may not be representative of the local market's regular consumption needs but rather reflect transitory fluctuations, and in line with similar cases discussed in KIP proposals considered at the 93<sup>rd</sup> meeting of the Executive Committee, the Secretariat and UNDP agreed that the Government of Paraguay would continue to monitor it in order to understand the extent to which consumption reported in baseline years was representative of the local market's needs and to assess future HFC demand, and that it would provide that analysis when submitting the second tranche of the KIP. Accordingly, the maximum allowable consumption limits for the remaining years of stage I of the KIP, as contained in Appendix 2-A to the future Agreement between the Government of Paraguay and the Executive Committee, would be revised as necessary when the Committee considered the second tranche of the KIP.

## Institutional, policy and regulatory framework

### *HFC licensing and quota system*

67. In line with decision 87/50(g), the Government of Paraguay has established and is implementing a licensing and quota system for HFCs, with import quotas to be provided to importers in CO<sub>2</sub>-eq tonnes, with the flexibility to import any HFC within their assigned quota limit. The maximum HFC quota for 2024 is 1,684,479 CO<sub>2</sub>-eq tonnes. The country has allocated the quota in a way that is projected to meet its HFC phase-down commitments while taking steps to reduce the risk of unforeseen circumstances resulting in non-compliance.

### Technical and cost-related issues

68. After discussions with the Secretariat on the activities proposed in the firefighting and PU foam sectors, UNDP confirmed that the Government of Paraguay would control the consumption of HFCs in firefighting by allocating HFC quotas, and that it would resubmit relevant activities under stage II of the KIP. Furthermore, UNDP asked to reinforce the multimedia campaign to raise awareness among key stakeholders and the public on low-GWP alternatives with US \$6,000, initially requested to organise two workshops on alternative technologies in the firefighting and PU foam sectors but then removed from the proposal. Therefore, the total budget for supporting the development of an institutional and public policy framework and strengthening HFC controls remains at US \$38,000.

69. Regarding the MAC sector, UNDP informed the Secretariat that the currently operational ban on the imports of vehicles older than 10 years from the manufacture date has indirectly contributed to reducing the leakages of HFC-134a. Strengthening the capacities and promoting the certification of MAC technicians, along with good servicing practices and RR training, is expected to further limit HFC demand in this sector.

70. The KIP proposal includes two pilot projects to adopt low-GWP technologies in new cold rooms in the food chain for demonstration and promotion. In justifying the added value of this activity, UNDP pointed out the availability of efficient and low-GWP technologies in refrigeration systems and assessed the project as a significant opportunity to help reduce demand for HFCs. Given that HFC-based cold rooms are widely used in food storage warehouses, the meat industry, frozen products for export, and agricultural applications, including storing fruits and vegetables, the pilot projects would have high potential replicability. During the first tranche, the Government will select enterprises through a transparent and fair process that considers their capacity to provide co-financing and their commitment to the project' goals. The technology will be selected on a case-by-case basis, and UNDP will provide details regarding equipment capacity and the monitoring protocol to ensure that the performance and energy use of the new equipment is properly collected and documented for dissemination among other end users, in order to encourage them to replicate the transition. The selected beneficiaries will be listed in the request for the second tranche of stage I of the KIP. In line with decision 92/36(g), UNDP was requested to report, upon completion of this project, on the achieved HFC phase-out and energy-efficiency gains.

### Total project cost

71. At a total cost of US \$471,350, stage I of the KIP for Paraguay includes US \$428,500 for activities in the servicing sector and US \$42,850 for project implementation, coordination and monitoring. To calculate the reductions from the country's remaining HFC consumption eligible for funding associated with activities in the servicing sector, the Secretariat used the methodology for converting US \$/kg to US \$/CO<sub>2</sub>-eq tonnes described in annex I of document UNEP/OzL.Pro/ExCom/92/46.<sup>22</sup> The average HFC

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<sup>22</sup> Paper on the starting point for sustained aggregate reductions based on discussions at the 91<sup>st</sup> meeting in the contact group on the cost guidelines for the phase-down of HFCs (decision 91/64(a)).

consumption in the country's servicing sector during the baseline years was 632.94 mt or 1,268,178 CO<sub>2</sub>-eq tonnes, resulting in a cost-effectiveness of US \$2.55/CO<sub>2</sub>-eq tonnes. At this level, funds requested for the implementation of activities in Paraguay's servicing sector correspond to the phase-out of 168,458 CO<sub>2</sub>-eq tonnes of HFCs, i.e., 10 per cent of the baseline.

72. Stage I of the KIP will be implemented in three tranches. The schedule of HFC phase-down and HCFC phase-out commitments and of the KIP and HPMP tranches is presented in annex II to the present document.

#### 2024-2026 business plan of the Multilateral Fund

73. UNDP is requesting US \$471,350, plus agency support costs, for the implementation of stage I of the KIP for Paraguay. The total value of US \$252,172, including agency support costs, requested for the period of 2024–2026, is US \$252,063 above the amount in the business plan.

#### Sustainability of the HFC phase-down and assessment of risks

74. The main challenges for implementing the KIP in Paraguay are the structure of HFC consumption in the servicing sector and the revival of the economy through tourism, combined with the limited penetration of low/zero-GWP refrigerants in major sectors. The advocacy and enabling activities for adopting low-GWP technologies at end users and enabling the RRR network in the RAC sector at large will complement the application of the HFC quota system.

75. The Government of Paraguay is committed to ensuring the sustainability of activities implemented under stage I of the KIP over time with the strengthening of regulations, including new labour competency standards for RAC and MAC servicing technicians and the gradual banning of HFC-based equipment. The close monitoring of all activities by the NOU and UNDP will allow the implementation of risk management plans, if needed.

#### Impact on the climate

76. The activities proposed, including regulatory measures to restrict the use of high-GWP refrigerants, the training of technicians in good servicing practices and refrigerant RR, and efforts to promote low-GWP alternatives, indicate that the implementation of stage I of the KIP will reduce HFC refrigerant emissions into the atmosphere, resulting in climate benefits. While the Secretariat is not able to provide an estimate of the avoided emissions from the implementation of the KIP at the present meeting,<sup>23</sup> by 2029 Paraguay will have reduced its annual emissions by approximately 168,458 CO<sub>2</sub>-eq tonnes of HFCs, calculated as the difference between the HFC baseline for compliance and the 2029 target, assuming that all HFCs consumed would eventually be emitted.

#### Draft Agreement

77. A draft Agreement between the Government of Paraguay 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.

78. If the Executive Committee so wishes, the funds for stage I of the KIP for Paraguay 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.

<sup>23</sup> As noted in document 94/14, Overview of issues identified during project review, the Secretariat is in the process of developing a methodology to estimate the avoided emissions from the implementation of HFC phase-down projects supported by the Multilateral Fund.

## **VI. Recommendation**

79. The Executive Committee may wish to consider:

- (a) Approving, in principle, stage I of the Kigali HFC implementation plan (KIP) for Paraguay for the period 2024-2029 to reduce HFC consumption by 10 per cent of the country's baseline by 2029, in the amount of US \$471,350, plus agency support costs of US \$32,995, for UNDP, as reflected in the schedule contained in annex II to the present document;
- (b) Noting:
  - (i) That the Government of Paraguay will establish its starting point for sustained aggregate reductions in HFC consumption based on the guidance provided by the Executive Committee;
  - (ii) That, once the cost guidelines for HFC phase-down are agreed by the Executive Committee, reductions from the country's remaining HFC consumption eligible for funding will be determined in line with these guidelines;
  - (iii) That the reductions from the country's remaining HFC consumption eligible for funding, referred to in subparagraph (b)(ii) above, will be deducted from the starting point referred to in subparagraph (b)(i);
  - (iv) That upon completion of the end-user technology demonstration project in the commercial refrigeration sector included in stage I of the KIP, UNDP will submit a final report on the implementation of the project, including the HFC phase-out and energy-efficiency gains achieved, in line with decision 92/36(g);
- (c) Noting also:
  - (i) That the Government of Paraguay will continue to monitor HFC consumption to understand the extent to which consumption reported in baseline years is representative of the local market's needs and to assess future HFC demand, and that it will provide this analysis when submitting the second tranche of its KIP;
  - (ii) That, on the basis of the information provided in subparagraph (c)(i) above, the maximum allowable consumption limits for the remaining years of stage I of the KIP, as contained in Appendix 2-A to the future Agreement between the Government of Paraguay and the Executive Committee, will be revised, if appropriate, when the Committee considers the second tranche of the KIP;
- (d) Approving the first tranche of stage I of the KIP for Paraguay and the corresponding tranche implementation plan, in the amount of US \$235,675, plus agency support costs of US \$16,497, for UNDP; and
- (e) Requesting the Government of Paraguay, UNDP and the Secretariat to finalize the draft Agreement between the Government of Paraguay 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.

Annex I

**TEXT TO BE INCLUDED IN THE UPDATED AGREEMENT BETWEEN THE GOVERNMENT OF PARAGUAY 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 revised Agreement supersedes the Agreement reached between the Government of Paraguay and the Executive Committee at the 87<sup>th</sup> 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)	11.67	11.67	11.67	5.83	5.83	5.83	5.83	0	n/a	
1.2	Maximum allowable total consumption of Annex C, Group I substances (ODP tonnes)	11.67	11.67	11.67	5.83	5.83	5.83	5.83	0	n/a	
2.1	Lead IA (UNEP) agreed funding (US \$)	109,055	0	<b>213,382</b>	0	143,703	0	0	77,150	<b>543,290</b>	
2.2	Support costs for Lead IA (US \$)	14,177	0	<b>27,314</b>	0	<b>18,395</b>	0	0	<b>9,876</b>	<b>69,762</b>	
2.3	Cooperating IA (UNDP) agreed funding (US \$)	101,545	0	<b>341,077</b>	0	264,238	0	0	39,850	<b>746,710</b>	
2.4	Support costs for Cooperating IA (US \$)	7,108	0	<b>23,875</b>	0	18,497	0	0	2,790	<b>52,270</b>	
3.1	Total agreed funding (US \$)	210,600	0	<b>554,459</b>	0	407,941	0	0	117,000	<b>1,290,000</b>	
3.2	Total support costs (US \$)	21,285	0	<b>51,189</b>	0	<b>36,892</b>	0	0	<b>12,666</b>	<b>122,032</b>	
3.3	Total agreed costs (US \$)	231,885	0	<b>605,648</b>	0	<b>444,833</b>	0	0	<b>129,666</b>	<b>1,412,032</b>	
4.1.1	Total phase-out of HCFC-22 agreed to be achieved under this Agreement (ODP tonnes)										10.63
4.1.2	Phase-out of HCFC-22 to be achieved in the previous stage (ODP tonnes)										5.32
4.1.3	Remaining eligible consumption for HCFC-22 (ODP tonnes)										0.00
4.2.1	Total phase-out of HCFC-123 agreed to be achieved under this Agreement (ODP tonnes)										0.20
4.2.2	Phase-out of HCFC-123 to be achieved in the previous stage (ODP tonnes)										0.00
4.2.3	Remaining eligible consumption for HCFC-123 (ODP tonnes)										0.00
4.3.1	Total phase-out of HCFC-124 agreed to be achieved under this Agreement (ODP tonnes)										0.10
4.3.2	Phase-out of HCFC-124 to be achieved in the previous stage (ODP tonnes)										0.05
4.3.3	Remaining eligible consumption for HCFC-124 (ODP tonnes)										0.00
4.4.1	Total phase-out of HCFC-141b agreed to be achieved under this Agreement (ODP tonnes)										0.96
4.4.2	Phase-out of HCFC-141b to be achieved in the previous stage (ODP tonnes)										0.45
4.4.3	Remaining eligible consumption for HCFC-141b (ODP tonnes)										0.00
4.5.1	Total phase-out of HCFC-142b agreed to be achieved under this Agreement (ODP tonnes)										1.14
4.5.2	Phase-out of HCFC-142b to be achieved in the previous stage (ODP tonnes)										0.46
4.5.3	Remaining eligible consumption for HCFC-142b (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 PARAGUAY**

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

Row	Particulars	2024	2025	2026	2027	2028	2029	Total
1.1	Montreal Protocol reduction schedule of Annex F substances (CO <sub>2</sub> -eq tonnes)	1,684,582	1,684,582	1,684,582	1,684,582	1,684,582	1,516,124	n/a
1.2	Maximum allowable total consumption of Annex F substances (CO <sub>2</sub> -eq tonnes)	1,684,582	1,684,582	1,684,582	1,684,582	1,684,582	1,516,124	n/a
2.1	Lead IA (UNDP) agreed funding (US \$)	235,675	0	0	235,675	0	47,135	<b>471,350</b>
2.2	Support costs for Lead IA (US \$)	16,497	0	0	13,198	0	3,299	<b>32,995</b>
13.1	Total agreed funding (US \$)	235,675	0	0	235,675	0	47,135	<b>471,350</b>
3.2	Total support costs (US \$)	16,497	0	0	13,198	0	3,299	<b>32,995</b>
3.3	Total agreed costs (US \$)	252,172	0	0	201,738	0	50,434	<b>504,345</b>

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

Row	Particulars	2024	2025	2026	2027	2028	2029	2030	Total
1.1	Montreal Protocol reduction schedule of Annex C, Group I substances (ODP tonnes)	11.67	5.83	5.83	5.83	5.83	5.83	0.00	n/a
1.2	Maximum allowable total consumption of Annex C, Group I substances (ODP tonnes)	11.67	5.83	5.83	5.83	5.83	5.83	0.00	n/a
2.1	Lead IA (UNEP) agreed funding (US \$)	153,382	0	0	143,703	0	0	77,150	<b>483,290</b>
2.2	Support costs for Lead IA (US \$)	19,940	0	0	18,681	0	0	10,030	<b>62,828</b>
2.3	Cooperating IA (UNDP) agreed funding (US \$)	281,077	0	0	264,238	0	0	39,850	<b>686,710</b>
2.4	Support costs for Cooperating IA (US \$)	19,675	0	0	18,497	0	0	2,790	<b>48,070</b>
3.1	Total agreed funding (US \$)	434,459	0	0	407,941	0	0	117,000	<b>1,170,000</b>
3.2	Total support costs (US \$)	39,615	0	0	37,178	0	0	12,819	<b>110,897</b>
3.3	Total agreed costs (US \$)	474,074	0	0	445,119	0	0	129,819	<b>1,280,897</b>

## Annex III

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

Category of activity	HPMP – stage II		KIP – stage I		HPMP+KIP combined cost (US \$)
	Activity	Cost (US \$)	Activity	Cost (US \$)	
Updating the legal framework	Banning the imports of HCFC-141b for PU foam manufacturing and including HFCs in the ODS import licensing system	10,000	Drafting regulations on gradual import banning on HFC-134a-based refrigeration and R-410A-based AC	8,000	<b>18,000</b>
Customs and enforcement officer training	Training of 750 customs and other officers on refrigerant identification and RAC equipment controls, and of 250 importers and brokers on the updated regulations and revised HS codes	39,000	Training of 80 customs and other officers and brokers on the application of the updated regulations	12,000	<b>51,000</b>
Prevention of illegal trade	Periodic verification visits to the importers' and distributors' shops and warehouses to verify compliance with the established regulations	20,000	Border dialogue to exchange data and experiences with other Latin American countries	7,000	<b>27,000</b>
Provision of ODS identifiers	Procurement of 4 refrigerant identifiers and 8 basic units to detect HCFC-141b in pre-blended polyols	20,000	n/a	0	<b>20,000</b>
Awareness raising for end users in the firefighting and PU foam sectors	5 seminars on low-GWP technologies in commercial refrigeration applications	40,000	Awareness campaign targeting key stakeholders and end-users on the KIP activities	11,000	<b>51,000</b>
	5 seminars for users of fire extinguishers to promote alternatives and monitoring the use of HCFC-123	41,790	n/a	0	<b>41,790</b>
Gender mainstreaming	Implementation of the gender mainstreaming policy in the HPMP	0	Implementation of the gender mainstreaming policy in the KIP	15,000	<b>15,000</b>
Technician training	Training of 1,500 RAC technicians on good practices (flushing, RR and handling flammable refrigerants)	126,698	Training of 80 MAC technicians on good practices and RR	60,000	<b>186,698</b>
Technician certification	Completion of a national labor competency standard on good refrigeration practices	26,000	Development of 3 certification standards for R-600, R-290 and MAC	31,000	<b>57,000</b>
	Certification of 1,000 RAC technicians	100,000	Training of 60 technicians on the safe use of R-600 and R-290 in RAC systems under new standards	28,000	<b>128,000</b>
	An awareness campaign to promote the technician certification scheme	39,500	An awareness campaign to promote the updated certification scheme	5,500	<b>45,000</b>

Category of activity	HPMP – stage II		KIP – stage I		HPMP+KIP combined cost (US \$)
	Activity	Cost (US \$)	Activity	Cost (US \$)	
	Design of an online registration system for certified technicians	30,000	n/a	0	<b>30,000</b>
Provision of tools and equipment	Provision of 4 sets of training equipment for good practices in RAC servicing to a vocational school	120,955	Provision of equipment and tools to three vocational schools for training on RR and good practices in MAC	21,750	<b>142,705</b>
	Provision of toolkits for 100 RAC technicians	186,086	n/a	0	<b>186,086</b>
RRR	Organization of 4 training workshops on RRR equipment	23,000	Technical support for installing and using RRR equipment	10,000	<b>33,000</b>
	Strengthening of the 2 existing RR centres with equipment and establishment of 2 additional centres	68,256	Strengthening of the RR network with toolkits for HFCs for 6 collection centres	41,850	<b>110,106</b>
	Establishment of a refrigerant reclaim centre	124,795	Reinforcing the infrastructure of the refrigerant reclaim centre to incorporate HFCs	19,400	<b>144,195</b>
	Training and provision of toolkits for 8 scrapping centres to ensure proper refrigerant recovery during equipment dismantling	36,920	n/a	0	<b>36,920</b>
Technical support to the health sector to promote energy efficiency and the use of low-GWP technologies	n/a	0	Training for 50 decision makers; and carrying out of a case study to improve maintenance services and energy efficiency	40,000	<b>40,000</b>
	n/a	0	Development of criteria for including low-GWP refrigerants in public procurement processes and dissemination of recommendations to ca. 80 stakeholders	20,000	<b>20,000</b>
Technology demonstration	n/a	0	Implementation of 2 low-GWP demonstration projects for new cold-room installations, monitoring of the systems' thermal and energy performance and dissemination of results	98,000	<b>98,000</b>
Coordination and monitoring	Implementation of and reporting on stage II of the HPMP	117,000	Implementation and monitoring of activities and reporting on stage I of the KIP	42,850	<b>159,850</b>
<b>Total</b>		<b>1,170,000</b>		<b>471,350</b>	<b>1,641,350</b>
<b>Percentage of total (%)</b>		<b>71</b>		<b>29</b>	<b>100</b>