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THE MULTILATERAL FUND FOR THE
IMPLEMENTATION OF THE MONTREAL PROTOCOL
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Montreal, 15-19 December 2023
Item 9(d) of the provisional agenda¹

PROJECT PROPOSAL: CHILE

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

Phase-down

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

¹ UNEP/OzL.Pro/ExCom/93/1

Pre-session documents of the Executive Committee of the Multilateral Fund for the Implementation of the Montreal Protocol are without prejudice to any decision that the Executive Committee might take following issuance of the document.

PROJECT EVALUATION SHEET – MULTI-YEAR PROJECTS

Chile

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

(II) LATEST ARTICLE 7 DATA (Annex F)	Year: 2022	2,556.05 mt	7,089,350 CO ₂ -eq tonnes
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(III) LATEST COUNTRY PROGRAMME SECTORAL DATA (CO₂-eq tonnes)							Year: 2022	
Chemical	Aerosol	Foam	Firefighting	AC and refrigeration		Solvent	Other	Total sector consumption
				Manufacturing				
				AC	Other			
HFC-32						2,025		2,025
HFC-125			2,800					2,800
HFC-134a	41,470					1,107,252		1,148,722
HFC-152a	612							612
HFC-227ea			113,082					113,082
HFC-236fa						28		28
HFC-245fa						11,330		11,330
HFC-43-10mee						1,474		1,474
HFC-23						315		315
R-404A						1,130,651		1,130,651
R-407C						40,596		40,596
R-410A						865,430		865,430
R-507A						3,727,825		3,727,825
HFC-365mfc/ HFC-227ea	1,638	22,418						24,057
R-407F						1,489		1,489
R-417A						6,362		6,362
R-438A						10,761		10,761
R-448A						1,255		1,255
R-449A						317		317
R-454C						33		33
R-455A						155		155
R-513A						29		29
HFC-245fa in imported pre-blended polyol		108,768						108,768
HFC-365mfc/HFC-227ea in imported pre-blended polyol		26,943						26,943

(IV) AVERAGE 2020-2022 HFC CONSUMPTION IN SERVICING	1,933.40 mt	5,305,627 CO ₂ -eq tonnes
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(V) CONSUMPTION DATA (CO₂-eq tonnes)			
Baseline: average 2020-2022 HFC consumption plus 65% of HCFC baseline	6,698,107	Starting point for sustained aggregate reductions	TBD
CONSUMPTION ELIGIBLE FOR FUNDING			
Already approved	0	Remaining	TBD

(VI) ENDORSED BUSINESS PLAN		2023	2024	2025	Total
UNDP	HFC phase-down (CO ₂ -eq tonnes)	0.00	0.00	0.00	0.00
	Funding (US \$)	724,641	0	0	724,641
UNEP	HFC phase-down (CO ₂ -eq tonnes)	0.00	0.00	0.00	0.00
	Funding (US \$)	56,500	0	0	56,500

(VII) PROJECT DATA		2023	2024	2025	2026	2027	2028	2029	Total
Consumption (CO ₂ -eq tonnes)	Montreal Protocol limits	n/a	6,698,107	6,698,107	6,698,107	6,698,107	6,698,107	6,028,296	n/a
	Maximum allowable	n/a	6,698,107	6,698,107	6,698,107	6,698,107	6,698,107	6,028,296	n/a
Amounts requested in principle (US \$)	UNDP	Project costs	752,607		566,133			158,971	1,477,711
		Support costs	52,683		39,629			11,128	103,440
	UNEP	Project costs	123,900		115,900			14,200	254,000
		Support costs	16,107		15,067			1,846	33,020
Amounts recommended in principle (US \$)	Total project costs	876,507		682,033			173,171	1,731,711	
	Total support costs	68,790		54,696			12,974	136,460	
	Total funds	945,297		736,729			186,145	1,868,171	

(VIII) Request for approval of funding for the first tranche (2023)		
Implementing agency	Funds recommended (US \$)	Support costs (US \$)
UNDP	752,607	52,683
UNEP	123,900	16,107
Total	876,507	68,790

Secretariat's recommendation:	Individual consideration
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PROJECT DESCRIPTION

1. On behalf of the Government of Chile, UNDP as the lead implementing agency has submitted a request for stage I of the Kigali HFC implementation plan (KIP), at a total cost of US \$1,868,171, consisting of US \$1,477,711, plus agency support costs of US \$103,440 for UNDP and US \$254,000, plus agency support costs of US \$33,020 for UNEP, as originally submitted.²
2. The implementation of stage I of the KIP will assist Chile in meeting the target of 10 per cent reduction from its HFC baseline consumption by 1 January 2029.
3. The first tranche of stage I of the KIP being requested at this meeting amounts to US \$945,296, consisting of US \$752,607, plus agency support costs of US \$52,683 for UNDP and US \$123,900, plus agency support costs of US \$16,107 for UNEP, as originally submitted, for the period of January 2024 to December 2025.

Background

4. The Government of Chile ratified all the amendments to the Montreal Protocol, including the Kigali Amendment on 19 September 2017. Chile has an HCFC consumption baseline of 87.5 ODP tonnes or 1,232.1 metric tonnes (mt) and is set to completely phase out consumption of HCFCs by 1 January 2030.³

Status of implementation of the HCFC phase-out management plan

5. Stage I of the HPMP for Chile was originally approved at the 63rd meeting⁴ and revised at the 71st meeting⁵ and 76th meeting⁶ to meet the 10 per cent reduction from the baseline by 2015, at a total cost of US \$1,786,455, plus agency support costs, to phase out 22.0 ODP tonnes of HCFCs used in the refrigeration and air-conditioning (RAC) servicing sector. Stage I of the HPMP was completed in December 2018 as stipulated in the Agreement between the Government of Chile and the Executive Committee.
6. Stage II of the HPMP for Chile was approved at the 76th meeting⁷ to meet the 65 per cent reduction from the baseline by 2021, at a total cost of US \$3,394,017, plus agency support costs, to phase out 49.52 ODP tonnes of HCFCs used in the RAC servicing sector and the foam manufacturing sector. Stage II of the HPMP was completed in December 2022 as stipulated in the Agreement between the Government of Chile and the Executive Committee.
7. Currently, Chile is implementing Stage III of the HPMP which was approved at the 88th meeting⁸ to completely phase out HCFC consumption by 2030, at a total cost of US \$1,380,950, plus agency support costs. Stage III of the HPMP will be completed by 1 January 2031, as stipulated in the Agreement between the Government of Chile and the Executive Committee.

Status of implementation of HFC-related activities

8. At the 74th meeting, Chile received funding to conduct a survey on the use of alternatives to ozone-depleting substances (ODSs) (US \$55,000), which was completed in May 2017. At the 80th meeting,

² As per the letter of 21 August 2023 from the Ministry of Environment of Chile to UNDP.

³ Except for those HCFCs allowed for a servicing tail between 2030 and 2040, where required, consistent with the provisions of the Montreal Protocol.

⁴ Decision 63/53

⁵ Annex XI of UNEP/OzL.Pro/ExCom/71/64

⁶ Annex XV of UNEP/OzL.Pro/ExCom/76/66

⁷ Decision 76/37

⁸ Decision 88/55

Chile received funding for implementing enabling activities for HFC phase-down (US \$150,000), which was completed in June 2022. Enabling activities assisted the country *inter alia* in ratifying the Kigali Amendment; raising awareness on HFC phase-down and energy efficiency improvements in RAC equipment among stakeholders; building the capacity of the national ozone unit (NOU) and relevant stakeholders; reviewing codes and standards; preparing harmonized tariff codes for HFCs; reviewing and modifying regulations to include HFCs; developing training to address energy efficiency challenges in the installation of RAC systems; setting up the import/export licensing system for HFCs and HFC alternatives and preparing a national strategy for the introduction of low-global warming potential (GWP) alternative technologies.

Stage I of the Kigali HFC implementation plan

Policy, regulatory and institutional frameworks

9. The Ministry of the Environment is responsible for the implementation of the Montreal Protocol in Chile. The NOU coordinates ODS phase-out activities in close cooperation with stakeholders in the public and private sectors through an advisory committee, technical committee, and a strategic committee.

10. Since 2006, Chile has implemented a licensing system for the import and export of ODS, these imports are controlled by the National Customs Service who establishes the maximum import and export volumes of ODS in accordance with the Montreal Protocol targets. In 2019, the ODS licensing system was amended through Decree No. 3/2019 to include HFCs as controlled substances thus complying with the Kigali Amendment.

11. Currently there is an effective quota system for the control of HCFCs, and a system for monitoring the import of HFCs. The quota system for HFCs will come into force on 1 January 2024 and the National Customs Service will distribute the maximum import volumes for these substances at the same level as the compliance targets under the Montreal Protocol. This quota system for HFCs will allocate 80 per cent of the available quotas for a given year and distribute them to importers based on historical import data. Another 18 per cent of the available quotas will be distributed equally among new importers who may not have had historical quotas. The remaining 2 per cent will be held in reserve for any possible adjustments that may be necessary to ensure compliance with the Montreal Protocol. Quotas not used in the first half of the year will be redistributed among interested importers.

12. From January 2024, quotas will be issued in an aggregated figure in CO₂-equivalent (CO₂-eq) tonnes and individual importers have the full flexibility to import the substances required as long as they do not exceed their assigned quota, thereby not exceeding the national targets for HFC consumption in CO₂-eq tonnes.

HFC consumption

13. Chile imports HFCs predominantly for use in the servicing sector. In 2022, Chile consumed R-507A (52.58 per cent of total HFC consumption in CO₂-eq tonnes), HFC-134a (16.20 per cent), R-404A (15.95 per cent), HFC-410A (12.21 per cent), HFC-227ea (1.6 per cent), R-407C (0.57 per cent), HFC-245fa (0.16 per cent) and 15 other HFCs and blends (0.73 per cent).

14. Table 1 presents the country's HFC consumption as reported to the Ozone Secretariat under Article 7 of the Montreal Protocol.

Table 1. HFC consumption in Chile (2019–2022 Article 7 data)

Substance	GWP*	2019	2020	2021	2022	Share of HFC consumption in 2022 (%)
mt						
HFC-134a	1,430	591.65	646.88	683.49	803.29	31.43
HFC-227ea	3,220	40.32	47.82	33.60	35.12	1.37
HFC-245fa	1,030	2.72	6.00	7.00	11.00	0.43
R-404A	3,922	210.76	219.26	178.35	288.32	11.28
R-407C	1,774	48.75	49.08	52.65	22.89	0.90
R-410A	2,088	231.22	215.40	146.89	414.58	16.22
R-507A	3,985	585.26	487.93	666.74	935.46	36.60
Other HFCs/blends	n/a	36.59	11.85	86.26	45.38	1.78
Total	n/a	1,747.26	1,684.22	1,854.98	2,556.05	100.00
CO₂-eq tonnes						
HFC-134a	1,430	846,060	925,038	977,391	1,148,705	16.20
HFC-227ea	3,220	129,818	153,980	108,192	113,086	1.60
HFC-245fa	1,030	2,802	6,180	7,210	11,330	0.16
R-404A	3,922	826,516	859,850	699,417	1,130,676	15.95
R-407C	1,774	86,475	87,053	93,393	40,603	0.57
R-410A	2,088	482,672	449,648	306,633	865,436	12.21
R-507A	3,985	2,332,257	1,944,401	2,656,961	3,727,808	52.58
Other HFCs/blends	n/a	57,087	39,104	108,753	51,706	0.73
Total	n/a	4,763,686	4,465,255	4,957,950	7,089,350	100.00

*Global-warming potential

15. The HFC consumption in Chile has observed a steady increasing trend in 2010-2022; however, there was a decrease in 2020 due to the pandemic and other factors. The consumption of HFCs increased in 2022 by 38 per cent in mt and 43 per cent in CO₂-eq tonnes from 2021, the reasons cited for the increase had to do with a swift economic recovery in 2022, requiring more services and installations based on HFCs coupled with the introduction of HFC-based technology in air conditioners and commercial refrigeration installations as alternatives to HCFCs.

Country programme implementation report

16. The Government of Chile reported its HFC sector consumption data in the 2022 country programme implementation report that is consistent with the data reported under Article 7 of the Montreal Protocol; the CP report also included consumption of 27.95 mt of HFC-365mfc/HFC-227ea in pre-blended polyols and 105.60 mt of HFC-245fa in imported pre-blended polyols.

HFC distribution by sector

17. During the preparation of stage I of the KIP, UNDP and the Government of Chile completed a national survey of HFCs. Data was collected from end users in each sector and adjustments were made after confirmation interviews with technicians and other users which served to validate the initial data collection. Sectoral estimation of the installed capacity was based on detailed information obtained from the results of different evaluations done through the survey, expert consultations, and calculations based on emission

factors from reports of the IPCC⁹ adjusted to the Chilean conditions, including information on the automotive and refrigerated transport sectors. This data was compared to a model developed for Chile and was consulted with specialists in the different HFC-using sectors (technicians, importers of equipment and substances, large users).

18. Chile consumes 96 per cent of HFCs in the RAC servicing sector, the remaining 4 per cent is for small amounts used in the fire suppression, aerosol, and PU foam sectors. The Government has reported that there are approximately 8,000 RAC servicing technicians in the country of whom 2,000 have received training in good refrigeration practices and of whom 1,063 have been certified.

19. HFCs are mainly consumed for servicing in the following subsectors: industrial refrigeration (34.1 per cent in CO₂-eq tonnes and 24.4 per cent in mt), followed by commercial refrigeration including commercial and health centralized systems (26.3 per cent in CO₂-eq tonnes and 19.1 per cent in mt), mobile AC (MAC) (12.1 per cent in CO₂-eq tonnes and 23.6 per cent in mt) and residential AC (9.9 per cent in CO₂-eq tonnes and 13.2 per cent in mt), and other subsectors, as shown in table 2.

Table 2. HFC consumption by sector/HFC consumption in the refrigeration and air-conditioning servicing subsectors (2022)*

Sector	HFC-227ea	HFC-365mfc/ HFC-227ea	HFC-245fa	HFC-134a	R-410A	R-407C	R-507A	R-404A	Total	Share of consumption (%)
Metric tonnes										
RAC subsectors										
Refrigeration										
Commercial Refrigeration	0.00	0.00	0.00	10.51	17.90	2.03	373.43	80.46	484.33	19.1
Industrial refrigeration	0.00	0.00	0.00	1.44	0.00	20.85	562.03	33.34	617.66	24.4
Transport refrigeration	0.00	0.00	0.00	69.26	10.12	0.00	0.00	84.26	163.64	6.5
Air-conditioning										
Residential AC	0.00	0.00	0.00	0.00	334.23	0.00	0.00	0.00	334.23	13.2
Commercial AC	0.00	0.00	0.00	91.40	39.30	0.00	0.00	90.25	220.95	8.7
Industrial AC	0.00	0.00	0.00	2.76	13.02	0.00	0.00	0.00	15.78	0.6
Mobile AC (MAC)	0.00	0.00	0.00	594.99	0.00	0.00	0.00	0.00	594.99	23.5
<i>Subtotal RAC</i>	<i>0.00</i>	<i>0.00</i>	<i>0.00</i>	<i>770.36</i>	<i>414.57</i>	<i>22.88</i>	<i>935.46</i>	<i>288.31</i>	<i>2,431.58</i>	<i>95.90</i>
Other										
Aerosols	0.00	1.70	0.00	32.94	0.00	0.00	0.00	0.00	34.64	1.4
Foams	0.00	23.26	11.00	0.00	0.00	0.00	0.00	0.00	34.26	1.4
Fire suppression	35.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	35.12	1.4
<i>Subtotal other sectors</i>	<i>35.12</i>	<i>24.96</i>	<i>11.00</i>	<i>29.20</i>	<i>0.00</i>	<i>0.00</i>	<i>0.00</i>	<i>0.00</i>	<i>100.28</i>	<i>4.10</i>
Total	35.12	24.96	11.00	803.30	414.57	22.88	935.46	288.31	2535.60	100.00
CO₂-eq tonnes										
RAC subsectors										
Refrigeration										
Commercial refrigeration	0	0	0	15,029	37,366	3,601	1,488,119	315,532	1,859,647	26.3
Industrial refrigeration	0	0	0	2,059	0	36,985	2,239,690	130,746	2,409,480	34.1

⁹ Inter-governmental Panel on Climate Change

Sector	HFC-227ea	HFC-365mfc/HFC-227ea	HFC-245fa	HFC-134a	R-410A	R-407C	R-507A	R-404A	Total	Share of consumption (%)
Transport refrigeration	0	0	0	99,042	21,126	0	0	330,434	450,601	6.4
Air-conditioning										
Residential AC	0	0	0	0	697,705	0	0	0	697,705	9.9
Commercial AC	0	0	0	130,702	82,039	0	0	353,924	566,665	8.0
Industrial AC	0	0	0	3,947	27,179	0	0	0	31,126	0.4
Mobile AC (MAC)	0	0	0	850,836	0	0	0	0	850,836	12.0
<i>Subtotal RAC</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>1,101,615</i>	<i>865,415</i>	<i>40,586</i>	<i>3,727,808</i>	<i>1,130,636</i>	<i>6,866,060</i>	<i>97.23</i>
Other										
Aerosols	0	1,638	0	47,104	0	0	0	0	48,743	0.7
Foams	0	22,418	11,330	0	0	0	0	0	33,748	0.5
Fire suppression	113,086	0	0	0	0	0	0	0	113,086	1.6
<i>Subtotal other sectors</i>	<i>113,086</i>	<i>24,057</i>	<i>11,330</i>	<i>47,104</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>195,578</i>	<i>2.77</i>
Total	113,086	24,057	11,330	1,148,719	865,415	40,586	3,727,808	1,130,636	7,061,638	100.0

* The sectoral data provided for these eight HFCs align with the CP data except for a difference of 0.02 mt due to rounding; the sectoral breakdown was collected from the survey which focused only on these main HFCs used.

Refrigeration and air-conditioning servicing sector

Domestic, commercial, industrial and transport refrigeration servicing

20. There is no reported HFC consumption in domestic refrigeration in Chile as the main refrigerant used in this sector is R-600a. Although a small number of remaining equipment are using HFC-134a these are expected to be replaced with R-600a in the next five years. While there is very little HFC consumption in the domestic refrigeration subsector it is considered necessary to maintain and extend the training of refrigeration technicians for the maintenance of equipment using hydrocarbons as part of stage I of the KIP.

21. The industrial refrigeration sector is the largest consumer of HFCs both in CO₂-eq tonnes (34.1 per cent) and mt (24.4 per cent). This sector is oriented towards food and beverage processing and consumes mainly R-507A (93 per cent of total consumption in the subsector for 2022 in CO₂-eq tonnes) and some smaller quantities of R-404A, R-407C and R-134a.

22. The second largest consumer of HFCs in terms of CO₂-eq tonnes (26.3 per cent) and third most in terms of mt (19.1 per cent) is the commercial refrigeration subsector, which uses primarily R-507A (80 per cent of total consumption in the subsector for 2022 in CO₂-eq tonnes) and R-404A (17 per cent of total consumption in the subsector) and some smaller quantities of R-410A, R-134a, and R-407C. This subsector includes self-contained systems, cold rooms, chillers, and centralised systems in Chile. Self-contained systems and cold rooms are widespread in the country, mainly due to the storage, distribution, and marketing of refrigerated goods (cold chain), which require uninterrupted cooling. The sector also includes refrigeration equipment used in shopping centres, large stores, health laboratories and storage centres.

23. The use of R-507A-based equipment has been growing rapidly and is replacing R-404A-based technologies due to higher efficiency and ease of handling the refrigerant blend. Lower GWP alternatives in these subsectors are either not fully available or the capital cost is very high, such as CO₂ and trans critical CO₂ systems and hydrocarbon-based cascade systems.

24. The refrigerated transport sector consists of refrigerated trucks and containers for the transport of refrigerated and frozen products; this accounts for roughly 6.5 per cent of the consumption in terms of CO₂-eq tonnes and mt and is the sixth largest sector in terms of consumption of HFCs in 2022. HFCs used in this subsector are predominantly R-404A and HFC-134a with some minor use of R-410A. In stage I of the KIP, the most viable alternatives in the sector will be evaluated in order to be implemented in the second stage.

Residential, commercial, and industrial air-conditioning servicing

25. The market for residential AC has grown in Chile especially during the COVID-19 pandemic where demand for mini-split or portable AC units increased for home offices as well as for comfort in homes as temperatures in some parts of the country have been on the rise. The use of HFCs in the residential AC subsector is dominated by R-410A and is the fourth largest subsector in terms of use of HFCs in both CO₂-eq tonnes (13.2 per cent) and mt (9.9 per cent). R-410A equipment is widely used as it is the most economic and energy-efficient replacement for HCFC-22-based equipment.

26. Commercial AC is the fifth largest subsector in terms of HFC consumption in 2022 in both CO₂-eq tonnes (8 per cent) and mt (8.7 per cent). This subsector uses AC equipment in tourism, construction, financial institutions, communication, public entities, and laboratories and other facilities in the health sector. This subsector uses technologies based on HFC-134a, R-404A (which combined account for roughly 86 per cent of total consumption in the subsector for 2022 in CO₂-eq tonnes) and to a lesser degree R-410A (14 per cent of total consumption in the subsector for 2022 in CO₂-eq tonnes).

27. The industrial AC subsector consumes the least of these subsectors both in CO₂-eq tonnes and mt but is fundamental in the mining and agro-industrial sectors, relying mostly on R-410A (87 per cent of total consumption in the sector for 2022 in CO₂-eq tonnes) and HFC-134a (13 per cent of total consumption in the subsector for 2022 in CO₂-eq tonnes). As the relative consumption in the sector is low and there are currently no available alternatives in the market, this sector will be addressed in future stages of the KIP.

Mobile air-conditioning servicing

28. The MAC sector is the fourth largest subsector in terms of its consumption of HFCs in CO₂-eq tonnes (12.0 per cent) and third in mt (23.5 per cent). This subsector was not assisted during the HPMP. The dependence in the automotive sector on HFC-134a is expected to continue for some time as only a negligible quantity of alternatives with R-1234yf are currently being imported; it is therefore necessary to ensure good servicing practices and recovery, recycling, and reuse of refrigerants.

Other subsectors

Aerosols, foams, and fire suppression

29. In Chile there is a small quantity of aerosols manufactured locally containing HFCs as a propellant and/or solvent substance for technical and industrial use as dusters and cleaners. The subsector uses mainly HFC-134a and some HFC-365mfc/HFC-227ea for a total of 0.7 per cent of the HFC consumption in 2022 in CO₂-eq tonnes and 1.4 per cent in mt. This consumption will be addressed in future stages of the KIP as the alternatives that currently exist are expensive.

30. HFCs are also used for the manufacture of polyurethane (PU) foam in Chile in relatively small quantities; the sector used 22.4 mt of HFC-365mfc/HFC-227ea and 11 mt of HFC-245fa in 2022 which accounted for only 0.5 per cent of the total HFC consumption in 2022 in CO₂-eq tonnes and 1.4 per cent in mt. HFC consumption in this sector is expected to be eliminated through the regulation of foaming agents used in PU panels for construction, thus eliminating the use of HFCs in the PU sector including those contained in imported pre-blended polyols.

31. HFCs are used in the fire suppression subsector amounting to 1.6 per cent in CO₂-eq tonnes and 1.4 per cent terms of mt of the total HFC consumption in 2022. This consumption is predominantly of HFC-227ea; however, HFC-125 and HFC-236fa are also used in very small quantities amounting to less than 0.01 per cent of the total HFC consumption in 2022 in CO₂-eq tonnes and thus these latter two substances are not shown in table 2 above. Given the small consumption and the current lack of alternatives in this sector, this application will be considered in future stages of the KIP.

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

Overarching strategy

32. The Government of Chile is proposing two stages for the KIP. Stage I would be implemented simultaneously with the HPMP until 2030. Stage II is expected to cover a period of 15 years from 2030 to 2045.

Established HFC baseline and proposed reductions

33. The Government of Chile reported its Article 7 data for 2020-2022. By adding 65 per cent of the HCFC baseline (in CO₂-eq tonnes) to the average HFC consumption in 2020-2022, the established HFC baseline is 6,698,107 CO₂-eq tonnes, as shown in table 3.

Table 3. HFC baseline for Chile (CO₂-eq tonnes)

Baseline calculation	2020	2021	2022
HFC annual consumption	4,465,255	4,957,950	7,089,350
HFC average consumption 2020-2022	5,504,185		
HCFC baseline (65%)	1,193,922		
HFC baseline	6,698,107		

34. The Government of Chile and UNDP forecasted HFC consumption in an unconstrained scenario, which is based on trends for each substance according to their main uses, HCFC phase-out, the potential growth in alternatives to HFCs which are already gradually being incorporated independent of the Kigali Amendment and considering that a large part of the RAC equipment and systems are imported into Chile. In this model a reduction of 12 per cent in HFC consumption for 2023 is forecasted followed by an 8 per cent growth in 2024 and 2025, and growth between 3 to 4 per cent per year from 2026 onward.¹⁰ Based on this, the Secretariat used an average annual growth rate of 2.65 per cent calculated from the various annual growth rates forecasted to present the unconstrained scenario in table 4, which demonstrates that Chile will be at risk of potential non-compliance in 2024 and subsequent years without any actions to reduce growth.

Table 4. Unconstrained scenario of HFC consumption forecast at 2.65 per cent growth and required reductions (CO₂-eq tonnes)

Scenario	2022*	2023	2024	2025	2026	2027	2028	2029
HFC consumption growing at an annual rate of 2.65 per cent	7,089,350	7,277,218	7,470,064	7,668,021	7,871,223	8,079,811	8,293,926	8,513,715
HFCs phased in from HCFC phase-out ¹¹	n/a	78,806	78,806	78,806	78,806	78,806	78,806	78,806

¹⁰ These various rates of growth equal an average annual growth of 2.65 per cent which is used in table 4.

¹¹ Estimated HFC consumption phased in from the HCFCs phased out is based on the stage III HPMP submission for Chile which states that HCFC-22 represents 29 per cent of refrigerants used in the RAC servicing sector and that it remains to be phased out in the various sectors, the percentage of remaining consumption for each sector was calculated and divided across the years to derive the amount of HFCs to be phased in.

Scenario	2022*	2023	2024	2025	2026	2027	2028	2029
Total estimated HFC consumption with unconstrained demand of 2.65 per cent	7,089,350	7,356,024	7,548,870	7,746,827	7,950,029	8,158,617	8,372,732	8,592,521
Montreal Protocol consumption limits	n/a	n/a	6,698,107	6,698,107	6,698,107	6,698,107	6,698,107	6,028,296
Required HFC reductions (under a scenario of 2.65 per cent growth rate in consumption)	n/a	n/a	850,763	1,048,720	1,251,922	1,460,510	1,674,625	2,564,224

* Data from Article 7

35. Based on the analysis presented in table 4, in an unconstrained scenario, Chile would need to undertake activities to reduce HFC consumption by 850,763 CO₂-eq tonnes in 2024 to ensure compliance with the HFC freeze and 2,564,224 CO₂-eq tonnes in 2029 to meet the 10 per cent reduction target. Table 4 also shows that Chile's 2022 HFC consumption is 5.5 per cent above the established baseline, emphasizing urgent actions needed to guarantee reductions to meet compliance.

36. Stage I of the KIP proposes to reduce HFC consumption by 10 per cent in 2029 to meet the reduction from the baseline required under the Kigali Amendment. This will require a 15 per cent reduction from their 2022 HFC consumption.

Proposed activities

37. Chile's overarching strategy is based on the principles of supporting the safe introduction, installation, and maintenance of new energy-efficient equipment based on natural refrigerants and other alternatives with very low or zero global-warming potential (GWP). Stage I of the KIP will aim to reduce the demand for and consumption of HFCs and to ensure the appropriate use of HFC alternatives. To attain these goals stage I of the KIP will focus on activities that strengthen the institutions related to monitoring HFC imports and ensuring compliance with the Kigali Amendment; that increase awareness of HFC-free technologies among end-users, importer, distributors, and technicians; that strengthen the capacities of RAC technicians and end users to introduce alternatives in a sustainable and safe manner that encourage gender mainstreaming; Stage I of the KIP will be implemented in three tranches. The projects have been divided into four main categories and related activities for each project component and the respective costs are presented in table 5.

Table 5. Activities to be implemented in stage I of the KIP

Project component	Planned activities	Agency	Cost (US \$)
<i>Strengthening institutions related to monitoring, verifying, and ensuring compliance with the Kigali Amendment</i>			
Strengthening HFC regulatory framework related to the Kigali Amendment	<ul style="list-style-type: none"> • Identification of new regulatory instruments and/or updates to the existing policy and regulatory framework for the control of HFC imports and HFC containing equipment; • Stakeholder meetings to ensure coordination with climate change policies; • Development of a training programme for relevant institutions supporting the implementation of the KIP on the requirements and legal instruments to control and reduce HFC consumption and subsequent emissions; • Development and implementation of guidelines and standards that support the use of HFC alternatives and the safe handling of flammable refrigerants and promote energy efficiency of RAC equipment and the use of natural refrigerants in RAC systems; 	UNEP	50,000

Project component	Planned activities	Agency	Cost (US \$)
	<ul style="list-style-type: none"> Updating of national standards for HFC-consuming subsectors such as for use of alternatives in PU foam application and use of HFCs as solvents and propellants, among others 		
Support to customs officers in control of HFC trade	<ul style="list-style-type: none"> Three training workshops for a total of 60 customs and enforcement officers on the prevention of illegal trade of HFCs and other ODS; Three workshops for a total of 60 customs brokers and importers on the regulatory framework applicable to HFCs and other ODS, identification and tariff codes for HFCs; Updating of the handbook for customs officers to include new information on the control of HFCs and other ODS; Development and implementation of a software application for the conversion of metric units of HFCs and HFC blends into CO₂ equivalent tonnes; Purchase of four refrigerant identifiers for HFCs and blends delivered to customs 	UNEP	71,000
<i>Strengthening national capacities for the safe and sustainable use of HFC-alternatives</i>			
Update of the curricula of professional technical institutions on RAC	<ul style="list-style-type: none"> Evaluation of the current programmes and identification of requirements for the incorporation of alternatives with low-GWP into training programmes; Updating of the curriculum of the professional technical institutions for programmes in RAC; Programme to train the trainers of professional technical institutions on the new curriculum. 	UNDP	44,000
Strengthening education and technical training in natural refrigerants	<ul style="list-style-type: none"> Identification of equipment needs in training centres; Acquisition and delivery of 20 sets of didactic modules, equipment, and tools¹² and monitoring of use; and Equipping one training centre with transcritical CO₂ module for commercial refrigeration uses 	UNDP	728,680
RAC technician training and certification	<ul style="list-style-type: none"> Assessment of the current certification programme to update labour competencies and ensure alignment with the new curriculum developed for professional RAC training programmes; Training programme and certification for at least 300 RAC technician and support for a limited number of technicians to complete the certification An awareness raising campaign to promote the certification process targeting end users encouraging them to hire certified servicing technicians; Development of an online registry for service technicians; and Procurement of 60 toolkits to support good servicing practices in the safe handling of commercial refrigeration equipment that operate with hydrocarbon (HC) refrigerant¹³ 	UNDP	204,603
Support for good practices in the management of refrigerant gases in the service of MAC	<ul style="list-style-type: none"> Identification of and support to 80 large MAC servicing workshops; Development of training material on best practice guidelines and a poster on the application of good practices for the MAC sector; Development of a training programme including theoretical and practical components and implementation of one training session for 18 trainers and 25 technician training workshops in good practices for the MAC sector for a total of 500 technicians; 	UNDP	343,000

¹² Including at minimum two R-290 air-conditioning training units, two R-600a domestic refrigeration units with double door and inverter systems, two R-290 medium temperature vertical commercial refrigeration units; two R-290 low temperature horizontal commercial refrigeration units; one R-290 cold room unit; four electronic leak detectors for HFCs and HC; and four first-aids kits.

¹³ Including vacuum pumps, manifolds for HC, hoses with ball valve for HC, precision load scales, leak detectors and digital vacuum gauges.

Project component	Planned activities	Agency	Cost (US \$)
	<ul style="list-style-type: none"> Equipping six training centres with recovery and recycling (RR) machines for MAC systems and provision of 50 MAC workshops with RR equipment¹⁴ 		
<i>Promote and disseminate the use of HFC-free, low-GWP RAC technologies</i>			
Awareness-raising and information dissemination	<ul style="list-style-type: none"> An awareness raising and information dissemination programme with a focus on behavioural change in consumers and end-users involving: <ul style="list-style-type: none"> A study of perceptions and knowledge regarding HFCs among end-users, importers, distributors, technicians, installers, and RAC training centers; Development of a communications strategy and implementation of a strategic marketing campaign including the updating of the NOU website, development of a logo, social media marketing, an institutional relations strategy, press management, development of audio-visual materials; and the identification of spokespersons; Outreach activities for target groups such as seminars and training workshops on the national plan for HFC phase-down and the Kigali Amendment implementation, HFC control and regulatory updates; and An evaluation of the campaign 	UNEP	100,000
<i>Consideration of the operational gender policy throughout KIP implementation</i>			
Gender mainstreaming	<ul style="list-style-type: none"> Updating and implementation of the gender action plan for Chile and identification of gender gaps in the RAC sector; A gender assessment to identify objectives, activities, targets, and indicators for the systematic integration of gender issues into the KIP implementation; An awareness-raising and training workshop for stakeholders to facilitate gender mainstreaming in the KIP activities; Design and production of gender-relevant awareness raising materials 	UNEP	33,000
<i>Subtotal</i>			<i>1,574,283</i>
Project implementation, coordination, and monitoring	<ul style="list-style-type: none"> Preparation of tranche reports, annual performance reports, verification reports, and monitoring of activities 	UNDP	157,428
Grand Total			1,731,711

Project implementation, coordination, and monitoring

38. The monitoring activities will build upon the mechanisms established under the implementation of the HPMP, where the NOU monitors activities, reports progress, and collaborates with stakeholders to phase out HFCs with supervision from UNDP at a cost of US \$157,428 to be allotted for consultants and technical experts (US \$126,428), monitoring (US \$15,000), and verification reports (US \$16,000).

Gender policy implementation

39. Gender mainstreaming was a consideration in the development of stage I of the KIP and constitutes a separate component. The component includes engaging a gender specialist to assist the NOU in undertaking a gender assessment in the RAC sector, identification of barriers, and how to increase the

¹⁴ Including recovery and reclamation machine, refrigerant pump, two-way gauges, humidity equipment, among other tools.

participation of women; motivational workshops to encourage the participation of women in the RAC sector; developing a gender strategy and gender action plan as part of the HFC control plan for Chile; and the promotion of women in hiring practices throughout the implementation of the KIP. A total of US \$33,000 has been requested to assist in these activities as indicated in table 5 above.

Total cost of stage I of the Kigali HFC implementation plan

40. The Government of Chile proposes to implement the KIP in stages, with stage I going until 2030 simultaneously with the HPMP. The budget for stage I was proposed at US \$1,731,711 to meet the 10 per cent reduction step in HFC consumption in 2029. Based on the cost established at US \$5.1/kg for the phase-out of HFCs in the servicing sector in line with decision 92/37, the requested funding is associated with a phase-out of HFCs that is higher than the 10 per cent reduction required for stage I of the KIP in CO₂-eq-tonnes.

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

41. The Government of Chile is committed to harmonizing the implementation of HPMP and KIP activities to the extent possible, on the understanding that both multi-year projects will be governed by separate agreements between the country and the Executive Committee. While activities under stage III of the HPMP will include promoting the replacement of technologies that use HCFC-22 with low-GWP, energy-efficient and zero ODP alternatives, activities that will be implemented in parallel under stage I of the KIP (i.e., certification, training, improvement of facilities for training technicians, etc.) will be coordinated and focused on those that require new interventions in addition to those being implemented under the HPMP.

42. Stage I of the KIP will be implemented in three tranches. The schedule of HFC phase-down and HCFC phase-out commitments, and the activities and associated cost of stage I of the KIP and stage III of the HPMP are presented in annexes I and II, respectively, to the present document.

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

43. The first funding tranche of stage I of the KIP in the total amount of US \$876,507 will be implemented between January 2024 and December 2025 and will include the following activities:

- (a) *Strengthening institutions related to monitoring, verifying, and ensuring compliance with the Kigali Amendment:* review of current regulatory framework, consultation meetings and preparation of proposals to update, adjust and/or create new regulatory measures; initial activities to develop guidelines or standards for HFC-using subsectors and dissemination activities; training of 20 customs and enforcement officers and 20 customs agents and brokers; purchase of 4 refrigerant identifiers; initiate development of an application for calculating HFC imports (UNEP) (US \$53,400);
- (b) *Strengthening national capacities for the safe and sustainable use of HFC-alternatives:*
 - (i) Evaluation of the current curriculum of the professional technical institutions for programmes in RAC and identification of the requirements for incorporation of alternatives with low-GWP into training programme; engagement of a national specialist to formulate the revised curriculum, and required topics; and implementation of one train the trainers programme (UNDP) (US \$30,800);
 - (ii) Identification of equipment needs in training centres; acquisition and delivery of 20 sets of didactic modules, equipment, and tools¹⁵ and monitoring of use; and

¹⁵ Ibid

equipping one training centre with a transcritical CO₂ module for commercial refrigeration uses (UNDP) (US \$437,208);

- (iii) An assessment of the current certification programme to update labour competencies and ensure alignment with the new curriculum developed for professional RAC training programmes (UNDP) (US \$20,460);
- (iv) Identification of 80 large MAC servicing workshops, development of training materials and a poster on the application of good servicing practices for the MAC sector; development of a training programme including theoretical and practical components and implementation of one train the trainers programme and six technician training workshops in good servicing practices for the MAC sector for a total of 120 technicians; equipping six training centres with RR machines for MAC systems, provide 25 MAC workshops with RR equipment¹⁶ (UNDP) (US \$205,800);
- (c) *Promote and disseminate the use of HFC-free, low-GWP RAC technologies:* initiate the study of perceptions and knowledge regarding HFCs among end-users, importers, distributors, technicians, installers, and RAC training centers; develop the communication strategy and messaging; outreach activities for target groups such as seminars and/or training workshops on the national plan for HFC phase-down (UNDP) (US \$54,000);
- (d) *Consideration of the operational gender policy throughout KIP implementation:* hiring a consultant to initiate work on gender assessment, objectives, activities, and indicators, and identification of gender gaps for the RAC sector (UNEP) (US \$16,500);
- (e) *Project implementation, coordination, and monitoring:* including the preparation of the tranche implementation report, annual performance reports, verification reports, and monitoring of activities. Funding will be allocated as follows: US \$45,000 for a consultant, US \$8,000 for a verification report and US \$5,339. for monitoring activities (UNDP) (US \$58,339).

SECRETARIAT'S COMMENTS AND RECOMMENDATION

COMMENTS

44. The Secretariat reviewed stage I of the KIP for Chile in light of the existing policies and guidelines of the Multilateral Fund, including decisions 91/38¹⁷ and 92/37,¹⁸ stage III of the HPMP, and the 2023-2025 business plan of the Multilateral Fund.

HFC consumption

45. HFC consumption in Chile had been increasing at an average annual growth rate of 13 per cent in CO₂-eq tonnes (11 per cent in mt) between 2010-2018, and at 0.3 per cent in CO₂-eq tonnes (3 per cent in mt) between 2019-2021, a decrease that was attributed to the COVID-19 pandemic and the political situation in Chile. The consumption in 2022 increased by 43 per cent from 2021 in CO₂-eq tonnes (38 per cent in mt), exceeding the established baseline level by 6 per cent. The Secretariat further observed notable

¹⁶ Ibid

¹⁷ In the absence of the cost guidelines for HFC phase-down, to consider HFC individual investment projects and stage I of KIPs on a case-by-case basis, without setting a precedent for the cost guidelines or any future HFC individual investment projects and stage I of KIPs.

¹⁸ Level and modalities of funding for HFC phase-down in the refrigeration servicing sector.

increases in HFC-134a (18 per cent in CO₂-eq tonnes), R-404A (62 per cent), R-410A (182 per cent), and R-507A (40 per cent) from 2021 to 2022, high-GWP HFCs which increased the overall HFC consumption in CO₂-eq tonnes. UNDP noted that the increase in 2022 is consistent with the economic recovery from the COVID-19 pandemic and the improving political situation which was also demonstrated in the country's GDP which showed a -6.1 per cent annual growth in 2020 and 11.6 per cent annual growth in 2021¹⁹ and growth of 2.4 per cent in 2022; thus the 2022 consumption is showing a similar upward trajectory in consumption from the previous years.

46. The Secretariat considers it important to continue monitoring the country's HFC consumption behavior over the coming years to determine whether the high imports reported in 2022 are representative of the local market's regular consumption needs or whether this increase will taper off, expecting that by the time the next tranche request is submitted in 2026, the availability of data on longer term HFC consumption trends will provide more clarity on the issue.

Overarching strategy

47. The implementation of stage I of the KIP focuses on meeting reductions in HFC consumption by establishing the basis to control HFCs through quotas and the licensing system, and by avoiding the use of HFCs with high GWP as alternatives. Because HFC consumption in 2022 is above the baseline, Chile has proposed additional activities that would support the country to meet the freeze in HFC consumption at the baseline in 2024 and the subsequent 10 per cent reduction from the baseline in 2029. The main approach in stage I is designed to strengthen the capacity of stakeholders and enhance awareness about alternatives to facilitate the transition to energy-efficient, low-GWP technologies for the RAC servicing sector, especially for applications that currently use high-GWP HFCs (i.e., commercial, and industrial refrigeration subsectors). The Government of Chile trusts that support for these activities in stage I will expedite actions from various stakeholders to reduce HFCs and thus allow the country to ensure compliance.

Established HFC baseline, starting point for sustained reductions in HFC consumption and reductions associated with stage I

48. The Government of Chile, based on its average HFC consumption reported under Article 7 for 2020-2022 and its 65 per cent of its HCFC baseline, has an established HFC baseline of 6,698,107 CO₂-eq tonnes. The baseline is lower than the reported HFC consumption in 2022 of 7,089,350 CO₂-eq tonnes. In order for the country to meet the HFC compliance requirements in 2024 and 2029, additional funding is requested beyond the required 10 per cent reduction (i.e., 669,811 CO₂-eq tonnes) for stage I of the KIP. Chile has requested funding amounting to US \$1,574,283 (with additional PMU costs of US \$157,428 bringing the total cost of stage I of the KIP to US \$1,731,711) which when calculated at the agreed cost-effectiveness threshold of US \$5.1/kg in line with decision 92/37(b)(iii)²⁰ should have an associated reduction of 847,086 CO₂-eq tonnes. The country has agreed to deduct 847,086 CO₂-eq tonnes from the starting point²¹ for sustained reductions in HFC consumption after stage I associated with the funding level. The Secretariat notes that the starting point will be established once the Executive Committee decides on the methodology for determining the starting point.

49. The Secretariat noted UNDP's explanation that the frontloaded funding is necessary for the country to meet the compliance targets since the reported consumption of HFCs in 2022 is already higher than the

¹⁹ World Bank national accounts data, and OECD National Accounts data files, GDP growth (annual %) – Chile, <https://data.worldbank.org/indicator/NY.GDP.MKTP.KD.ZG?locations=CL>

²⁰ The HFC reduction required to meet the 10 per cent compliance target would be 669,811 CO₂-eq tonnes or 244.08 mt of HFCs and in line with decision 92/37, at US \$5.1/kg the associated funding for this level of reduction in CO₂-eq tonnes is of US \$1,244,822; Chile's current request of US \$1,574,283 is equivalent to a reduction of 847,086 CO₂-eq tonnes or 308.68 mt of HFCs.

²¹ The methodology to calculate the starting point under the cost guidelines for HFC phase-down is still under discussion; the starting point for Chile will be established once the Executive Committee decides on this methodology.

estimated HFC baseline of the country, in CO₂-eq tonnes. The Secretariat further noted that the Government of Chile is currently not in a position to make additional commitments in its Agreement for reductions beyond the 10 per cent reduction target for 2029 since the current regulations governing the quota system for HFCs have been set in accordance with these targets. However, the country commits that the HFC reductions associated with the funding level for stage I will be deducted from its remaining eligible consumption once the starting point is agreed.

Policy, regulatory and institutional frameworks

HFC licensing and quota system

50. In line with decision 87/50(g), the Government of Chile confirmed that the country had an established and enforceable national system of licensing and quotas for monitoring HFC imports/exports in place. The licensing system for ODS was revised to include controls for HFCs and blends in 2019, and HFC imports are now controlled albeit without quotas. The Government will start issuing import quotas for HFCs in 2024 at a level of 6,698,107 CO₂-eq tonnes, consistent with the reductions proposed under stage I of the KIP.

Technical and cost-related issues

51. The Secretariat noted the approach by the Government of Chile to structure stage I of the KIP around four main strategic areas and had the following observations outlined below for some individual activities, during the review of the KIP proposal, acknowledging that the country has flexibility in prioritizing activities according to national circumstances.

Awareness and dissemination to support the Kigali HFC implementation plan

52. In explaining why an extensive awareness and information campaign was a necessary priority for stage I of the KIP, UNDP reiterated that one major challenge identified during the preparation of the KIP in pushing forward the reductions in the use of HFCs and alternatives was the lack of knowledge and information of the various stakeholders on the benefits of such a transition. This observation supported the need for a structured approach to influence attitude changes in importers of substances and equipment, end users and in the servicing sector. This will lay the foundation for creating and building the capacity of the different stakeholders by signalling the importance of HFC reduction and their impact on the climate, thus emphasizing the benefits of changing to energy-efficient and low-GWP alternatives.

Update of the curricula of professional technical institutions on refrigeration and air-conditioning

53. In clarifying the objectives of this component, UNDP explained that these revisions will be for the official curricula for technical vocational education and training (TVET) institutes in Chile that offer courses in RAC servicing and not for the technician training programme which is a separate component of stage I. The NOU will work closely with the Ministry of Education and with the counterparts of educational centers, to ensure that updating the curricula is carried out according to the procedures of the Ministry of Education and will be implemented appropriately. These educational centres will also be supported through the training programme for TVET instructors which would support the technician certification programme.

Strengthening of education and technical training in natural refrigerants

54. UNDP explained that while the component on the revision of the training curriculum described in paragraph 53 above provides the theoretical framework for the training programmes for technicians, this component sets out the practical aspects where equipment and tools and the subsequent training of technicians using the new curriculum will be carried out.

55. With regard to the provision of new teaching equipment (training modules) for the educational and technical training centres, UNDP clarified that during KIP preparation it was evident that these training centres needed this equipment to strengthen their capacity to train technicians on the management and safe use of hydrocarbon and CO₂ refrigerants which are being more broadly used in Chile. Providing equipment to educational and training centres outside the main capital will also give technicians cost-effective and accessible training options.

56. The Secretariat noted that the KIP included a proposal to establish a specialty training institute to be equipped with modern equipment for CO₂ transcritical refrigeration (US \$260,000) and asked how many technicians and users would benefit from this investment. UNDP pointed out that the training centre will support the sustainability of work with CO₂ and guarantee the technical capacity to provide maintenance and installation services for transcritical CO₂ systems. The centre is expected to provide adequate and quality training for technical personnel and service technicians to be ready for this technology. UNDP further noted that at least 10 per cent of the total number of technicians in Chile, including installers and designers, could benefit from this equipment, since transcritical CO₂ is becoming the alternative technology of choice in the country not only for supermarkets but for other commercial refrigeration applications. To date, there are around 30 installations that are currently in the design stages to transition to transcritical CO₂ refrigeration applications, and in future most supermarkets and distribution centres as well as cold service facilities are poised to convert to this technology.

RAC technician training and certification

57. UNDP clarified that the changes expected in the labour competencies to support the technician certification would include the handling of HC refrigerants with charges higher than 150 grams, including the use of HC in self-contained equipment in commercial refrigeration. It is also proposed that additional certification requirements will be designed for technicians who will specialize in servicing equipment using transcritical CO₂, to include installation and design.

Support for good practices in the management of refrigerant gases in the service of mobile air-conditioning equipment

58. UNDP explained that this component will support training on good servicing practices for MAC technicians since the recovery and reuse of HFC-134a is not common in Chile, and due to the lack of an alternative replacement for this refrigerant in vehicles, containment and reuse are important activities. The current proposal includes the provision of tools to 50 MAC servicing workshops to reduce consumption of new refrigerants in this sector. In explaining whether there is an effective MAC RR programme in Chile, UNDP clarified that this programme does not currently exist, however, as the KIP will support the provision of equipment to 50 MAC workshops, the creation of an RR network will be included as an output for this component. The proposal was revised accordingly.

Total project cost

59. The total cost for stage I of the KIP was maintained at US \$1,731,711 for the deduction of 847,086 CO₂-eq tonnes from the country's remaining HFC consumption eligible for funding. Based on the 2020-2022 average HFC consumption, this would correspond to a deduction of 308.68 mt of HFCs.

60. The overall cost of activities to be implemented in the first tranche remained as originally submitted at the amount of US \$876,507.

Impact on the climate

61. The activities proposed, including efforts to promote low-GWP alternatives and technician training in good servicing practices, indicate that the implementation of stage I of the KIP will reduce the emissions

of HFCs into the atmosphere, resulting in climate benefits. A calculation of the impact on the climate of the activities in the KIP indicates that the Chile will achieve an emission reduction of 669,811 CO₂-eq tonnes²² of HFCs from its baseline when the final target in stage I of its KIP is achieved, calculated as the difference between the HFC baseline and the final target set in stage I.

Sustainability of the HFC phase-down and assessment of risks

62. The Government of Chile is committed to ensuring that the activities under stage I of the KIP will be sustained over time with the implementation of the quota system for HFCs, continuous market monitoring including surveys and close monitoring of all the activities being implemented under the KIP.

63. UNDP provided a detailed risk assessment of stage I of the KIP and identified challenges including the potential risk for non-compliance because of the growth in consumption reported in 2022 which is higher than the country's baseline, thus signalling the urgency and importance in the implementation of the activities under stage I. UNDP also noted that to counter the possible delays in implementation that may be caused by slow procurement, advance identification of equipment specifications and the use of regional long-terms agreements will be done to ensure the timely procurement.

64. UNDP also reported that consultations with stakeholders and industry demonstrated that they fully support the activities designed in the KIP as those would support a quick transition and promote the use of low-GWP and natural refrigerants, as the way to reduce consumption. This is important as one challenge identified is how to substantially reduce the demand for HFCs in a market with high growth rates in the cooling sector combined with limited market penetration of low-GWP alternatives.

65. UNDP also confirmed that quotas for imports of HFCs will be established in 2024 putting in place the necessary controls on the amounts of substances that may be imported to support compliance with the targets of the Montreal Protocol.

Co-financing

66. The government of Chile will provide in-kind co-financing through the provision of personnel, office, legal support, communications, and administration. Beneficiary institutions will contribute with their time, management, and the cost of transporting the equipment to be received.

2023-2025 business plan of the Multilateral Fund

67. UNDP and UNEP are requesting US \$1,731,711, plus agency support costs, for the implementation of stage I of the KIP for Chile. The total value of US \$945,297, including agency support costs, requested for the period of 2023–2025, is US \$164,154 above the amount in the business plan.

Draft Agreement

68. A draft Agreement between the Government of Chile 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.

69. If the Executive Committee so wishes, the funds for stage I of the KIP for Chile 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.

²² This is the actual reduction of the country for stage I of the KIP, as described in paragraph 48.

RECOMMENDATION

70. The Executive Committee may wish to consider:

- (a) Approving, in principle, stage I of the Kigali HFC implementation plan (KIP) for Chile for the period of 2023-2030 to reduce HFC consumption by 10 per cent of the country's baseline in 2029 in the amount of US \$1,868,171, consisting of US \$1,477,711, plus agency support costs of US \$103,440 for UNDP and US \$254,000, plus agency support costs of US \$33,020 for UNEP, as reflected in the schedule contained in annex I of the present document;
- (b) Noting the implementation of stage I of the KIP would result in the reduction of 308.68 metric tonnes or 847,086 CO₂-eq tonnes;
- (c) Further Noting:
 - (i) That the Government of Chile will establish its starting point for sustained aggregate reductions in HFC consumption based on guidance provided by the Executive Committee;
 - (ii) That, once the cost guidelines for HFC phase-down are agreed by the Executive Committee, the reductions from the country's remaining HFC consumption eligibility 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) above will be deducted from the starting point referred to in subparagraph (c)(i);
- (d) Approving the first tranche of stage I of the KIP for Chile, and the corresponding tranche implementation plan, in the amount of US \$945,297, consisting of US \$752,607, plus agency support costs of US \$52,683, for UNDP and US \$123,900, plus agency support costs of US \$16,107, for UNEP; and
- (e) Requesting the Government of Chile, UNDP, UNEP, and the Secretariat to finalize the draft Agreement between the Government of the Chile 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

**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 Chile**

Kigali HFC implementation plan (stage I)

Row	Particulars	2023	2024	2025	2026	2027	2028	2029	Total
1.1	Montreal Protocol reduction schedule of Annex F substances (CO ₂ -eq tonnes)	n/a	6,698,107	6,698,107	6,698,107	6,698,107	6,698,107	6,028,296	n/a
1.2	Maximum allowable total consumption of Annex F substances (CO ₂ -eq tonnes)	n/a	6,698,107	6,698,107	6,698,107	6,698,107	6,698,107	6,028,296	n/a
2.1	Lead IA (UNDP) agreed funding (US \$)	752,607	0	0	566,133	0	0	158,971	1,477,711
2.2	Support costs for Lead IA (US \$)	52,6823	0	0	39,629	0	0	11,128	103,440
2.3	Cooperating IA (UNEP) agreed funding (US \$)	123,900	0	0	115,900	0	0	14,200	254,000
2.4	Support costs for Cooperating IA (US \$)	16,107	0	0	15,067	0	0	1,846	33,020
3.1	Total agreed funding (US \$)	876,507	0	0	682,033	0	0	173,171	1,731,711
3.2	Total support costs (US \$)	68,790	0	0	54,696	0	0	12,974	136,460
3.3	Total agreed costs (US \$)	945,297	0	0	736,729	0	0	186,145	1,868,171

HCFC phase-out management plan (stage and III)

Row	Particulars	2023	2024	2025	2026	2027	2028	2029	2030	Total
1.1	Montreal Protocol reduction schedule of Annex C, Group I substances (ODP tonnes)	56.88	56.88	28.44	28.44	28.44	28.44	28.44	0	n/a
1.2	Maximum allowable total consumption of Annex C, Group I substances (ODP tonnes)	30.62	30.62	28.44	28.44	28.44	2.19	2.19	0	n/a
2.1	Lead IA [(lead IA)] agreed funding (US \$)	0	400,000	0	0	200,000	0	96,500	0	993,500
2.2	Support costs for Lead IA (US \$)	0	28,000	0	0	14,000	0	6,755	0	69,545
2.3	Cooperating IA (UNEP) agreed funding (US \$)	0	155,000	0	0	75,000	0	42,450	0	387,450
2.4	Support costs for Cooperating IA (US \$)	0	20,150	0	0	9,750	0	5,519	0	50,369
3.1	Total agreed funding (US \$)	0	555,000	0	0	275,000	0	138,950	0	1,380,950
3.2	Total support costs (US \$)	0	48,150	0	0	23,750	0	12,274	0	119,914
3.3	Total agreed costs (US \$)	0	603,150	0	0	298,750	0	151,224	0	1,500,864

Annex II

**IMPLEMENTATION OF BOTH THE HCFC PHASE-OUT MANAGEMENT PLAN (HPMP)
AND THE KIGALI HFC IMPLEMENTATION PLAN (KIP) IN Chile**

Category of activity	HPMP – stage III		KIP – stage I		Combined cost for HPMP+KIP (US \$)
	Activity	Cost (US \$)	Activity	Cost (US \$)	
Strengthening inspection capacity at the National Customs Service	<ul style="list-style-type: none"> - Two courses for trainers - 12 courses for customs officials - Eight trainings on use of identifiers - Purchase of five identifiers and one laboratory supplies package - Expert support for Tariff Codes Classification - Expert support for Illicit Traffic Detection - Three courses for Customs agents and stakeholders 	71,700	<ul style="list-style-type: none"> - Three training courses for custom officers and stakeholders to update in the new regulations for HFCs - Three training courses for importers to update in new regulations for HFCs - Development of an App to support customs control and importers on the conversion of amounts of HFC from Mt to CO₂-eq and vice-versa 	71,000	142,700
Updating regulations for controlled products	<ul style="list-style-type: none"> - Updated SIRO to include support and maintenance process 	40,367	Development of standards and policies to control HFCs and equipment containing HFCs	50,000	90,367
Implementing Cold Facilities registration tool/process	<ul style="list-style-type: none"> - Cold installation module implemented in SIRO system or PRTR 	47,700	N/A	0	47,700
Promotion of public procurement consistent with the Montreal Protocol requirements	<ul style="list-style-type: none"> - Activity financed by in-kind contribution of the Ministry of Environment 	0	N/A	0	0
Training in good refrigeration practices	<ul style="list-style-type: none"> - Eight best refrigeration practices courses/year - Four leaks/alternatives courses per year - one specific course/year - one training of trainers' course - three self-study courses (elaboration) - one self-study course (implementation) - Five conventions 	201,181	<ul style="list-style-type: none"> - New curricula for RAC training programme developed - 15 additional training courses with the new curricula (300 technicians trained) - 60 technicians provided with specific tools for HC management. 	204,603	405,784
Certification of RAC technicians	<ul style="list-style-type: none"> - Women certification support through 100 subsidies to women. - New profile in labour competencies 	57,600	<ul style="list-style-type: none"> - Four workshops to agree the new subjects in the training curricula - One train-the-trainers course in the new curricula - National consultancy to develop the new curricula 	44,000	101,600

Category of activity	HPMP – stage III		KIP – stage I		Combined cost for HPMP+KIP (US \$)
	Activity	Cost (US \$)	Activity	Cost (US \$)	
Strengthening of educational and technical training centres	N/A	0	- Acquisition and delivery of 20 sets of didactic modules, equipment, and tools and monitoring of use for 20 training centres - Equipping one training centre with transcritical CO ₂ module for commercial refrigeration uses	728,680	728,680
Zero leaks Programme	- Four pilot programmes zero-leaks three training courses	124,660	N/A	0	124,660
Technical assistance to RRR centres	- 200 recovery cylinders four refrigerant analysis sets	122,002	N/A	0	122,002
Public awareness and sensibilization programme	- Data base developed, annual key messages, updates to website, digital brochure, two videos developed, implementation of awareness campaign, strategic partnerships, interviews with end users, promotion of technician training courses, information notes on women participation in technician training and in the RAC sector, social media dissemination, development of a communication strategy, award to enterprises with best practice, promotion of reclamation and recycling activities, workshop for of reclamation and recycling, annual celebrations related to ozone layer.	61,730	- Identification of audiences - Creation of key messages - Creation of communicational concept - Awareness campaign - Outreach with target groups - Performance evaluation	100,000	161,730
MAC sector training programme	N/A	0	- 80 service and maintenance MAC system workshops identified with high volume of service - Six training centres equipped with the recovery and recycling machines for MAC. - One train-the-trainers course for at least 18 instructors - Training workshops in good servicing practices for the MAC sector carried out (500 technicians trained)	343,000	343,000

Category of activity	HPMP – stage III		KIP – stage I		Combined cost for HPMP+KIP (US \$)
	Activity	Cost (US \$)	Activity	Cost (US \$)	
			- 50 service and maintenance MAC system workshops with RR capabilities		
Gender mainstreaming	- Gender considerations	18,000	- Gender assessment to identify objectives, activities, targets, and indicators for the systematic integration of gender issues into the KIP	33,000	51,000
Monitoring programme	- Ozone Unit assistance, verification reports and monitoring	53,895	- Support project implementation, two verification reports, and monitoring	157,428	211,323
Total	N/A	798,835	N/A	1,731,711	2,530,546
Percentage of total (%)	N/A	32	N/A	68	100