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EXECUTIVE COMMITTEE OF
THE MULTILATERAL FUND FOR THE
IMPLEMENTATION OF THE MONTREAL PROTOCOL
Ninety-fifth Meeting
Montreal, 4–8 December 2024
Item 9(d) of the provisional agenda¹

PROJECT PROPOSAL: GUATEMALA

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) UNIDO and UNEP Individual consideration

¹ UNEP/OzL.Pro/ExCom/95/1

PROJECT EVALUATION SHEET – MULTI-YEAR PROJECTS

Guatemala

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

LATEST ARTICLE 7 DATA (Annex F)	Year: 2023	524.36 mt	1,038,394 CO ₂ -eq tonnes
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SECTORAL HFC CONSUMPTION DATA (CO ₂ -eq tonnes) AND ACTIVITIES									
	Aerosol	Foam*	Fire-fighting	AC and refrigeration				Solvent**	Other***
				Manufacturing			Servicing		
				Refrigeration	AC	Other			
Latest CP report (2023)	0	9,638	0	0	0	0	1,318,484	8,147	6,082
KIP stage I activities as agreed (Y/N)	N	N	N	N	N	N	Y	N	N

*HFCs contained in imported pre-blended polyols (HFC-365mfc=93% and HFC-227ea=7%)

** CustomMix-134 and CustMix-316

*** Glass Manufacturing

AVERAGE 2020-2022 HFC CONSUMPTION IN SERVICING	511.15 mt	1,048,572 CO ₂ -eq tonnes
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BASELINE CONSUMPTION DATA (CO ₂ -eq tonnes)	2020	2021	2022	Average 2020-2022
HFC annual consumption	959,866	885,589	1,326,577	1,057,344
HCFC baseline (65%)				158,626
HFC baseline				1,215,970

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

PROJECT DATA AS AGREED			2024*	2025	2026	2027	2028	2029	Total
Consumption (CO ₂ -eq tonnes)	Montreal Protocol limits		1,215,970	1,215,970	1,215,970	1,215,970	1,215,970	1,094,373	n/a
	Maximum allowable		1,215,970	1,215,970	1,215,970	1,215,970	1,215,970	1,022,667	n/a
	Maximum allowable (%)		100	100	100	100	100	84.1	n/a
Amounts recommended in principle (US \$)	UNIDO	Project costs	251,019	0	0	121,019	0	31,019	403,057
		Support costs	17,571	0	0	8,471	0	2,171	28,213
	UNEP	Project costs	10,000	0	0	85,573	0	30,000	125,573
		Support costs	1,300	0	0	11,124	0	3,900	16,324
	Total project costs		261,019	0	0	206,592	0	61,019	528,630
	Total support costs		18,871	0	0	19,595	0	6,071	44,537
	Total funds		279,890	0	0	226,187	0	67,090	573,167

* Recommended for approval at the present meeting

Reduction from remaining consumption eligible for funding stage I in CO ₂ -eq tonnes	193,303
Secretariat's recommendation:	Individual consideration

PROJECT DESCRIPTION

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

I. Summary of the proposal as submitted

2. On behalf of the Government of Guatemala, UNIDO as the lead implementing agency has submitted a request for stage I of the Kigali HFC implementation plan (KIP), at a total cost of US \$573,317, consisting of US \$400,573, plus agency support costs of US \$28,040 for UNIDO and US \$128,057, plus agency support costs of US \$16,647 for UNEP, as originally submitted.²
3. The implementation of stage I of the KIP will assist the Government of Guatemala in meeting the 15.9 per cent reduction from its HFC baseline consumption by 1 January 2029.
4. The first tranche of stage I of the KIP as initially requested at this meeting amounts to US \$280,852, consisting of US \$235,000 plus agency support costs of US \$16,450 for UNIDO, and US \$26,019 plus agency support costs of US \$3,383 for UNEP, as originally submitted, for the period of January 2025 to December 2027.

II. Background

Status of implementation of the HCFC phase-out management plan

5. Table 1 presents information on the HPMP in Guatemala as of November 2024.

Table 1. HPMP implementation status for Guatemala

	Stage I	Stage II
Meeting when HPMP was approved/updated	64 th	86 th
Reduction from baseline	35% by 2020	100% by 2030
Total project cost (US \$)	475,750	717,500
Date of completion (actual/planned)	31 December 2022	31 December 2031

² As per the letter of 2 August 2024 from the Ministry of Environment and Natural Resources of Guatemala to UNIDO.

Status of implementation of previous HFC-related activities

6. Table 2 presents an overview of activities implemented in Guatemala in the context of the Kigali Amendment that have been funded by the Multilateral Fund.

Table 2. Previously approved HFC-related activities in Guatemala

Approval meeting	Project title	Implementing agency	Cost (US \$)	Date of completion
74 th	Survey of ODS alternatives	UNIDO	70,000	Dec 2016
81 st	Enabling activities for HFC phase-down	UNEP	128,267	Jun 2021

III. HFC consumption overviewHFC consumption levels

7. Guatemala imports HFCs for use in servicing in multiple refrigeration and air-conditioning (RAC) subsectors, manufacturing of glass bottles, solvents, and small amounts contained in pre-blended polyols for use in the polyurethane (PU) foam manufacturing sector. In 2023, the most consumed substances were HFC-134a (38.4 per cent of total HFC consumption in CO₂-equivalent (CO₂-eq) tonnes), R-404A (31.8 per cent), R-410A (13.0 per cent), and other HFCs (16.8 per cent). Table 3 presents the Guatemala's HFC consumption as reported to the Ozone Secretariat under Article 7 of the Montreal Protocol.

Table 3. HFC consumption in Guatemala (2019–2023 Article 7 data)

HFC	GWP	2019	2020	2021	2022	2023
Metric tonnes (mt)						
HFC-134a	1,430	298.75	286.05	278.85	338.45	278.60
HFC-152a	124	10.45	13.08	68.15	0	16.50
R-404A	3,921.6	121.61	66.65	64.37	89.73	84.12
R-407C	1,773.85	6.61	4.21	3.18	9.35	13.44
R-407F	1,824.50	10.90	9.27	8.77	6.39	17.32
R-410A	2,087.5	59.14	63.26	50.41	143.80	64.75
R-448A	1,385.8	0.00	0.23	4.52	0.90	12.02
R-507A	3,985	17.56	25.75	18.32	31.13	15.96
Others*		16.16	15.21	10.43	20.37	21.65
Total (mt)		541.18	483.71	507.00	640.12	524.36
HFCs in imported pre-blended polyols (mt) **		0	0	0	0	10.00
CO₂-eq tonnes						
HFC-134a	1,430	427,213	409,052	398,756	483,984	398,402
HFC-152a	124	1,296	1,622	8,451	0	2,046
R-404A	3,921.6	476,906	261,375	252,433	351,885	329,881
R-407C	1,773.85	11,725	7,468	5,641	16,585	23,846
R-407F	1,824.50	19,887	16,913	16,001	11,659	31,593
R-410A	2,087.5	123,455	132,055	105,231	300,182	135,170
R-448A	1,385.8	0	319	6,264	1,247	16,652
R-507A	3,985	69,977	102,614	73,005	124,053	63,617
Others*		39,204	28,449	19,808	36,982	37,187
Total (CO₂-eq tonnes)		1,169,662	959,866	885,589	1,326,577	1,038,394
HFCs in imported pre-blended polyols (CO ₂ -eq tonnes) **		0	0	0	0	9,638

* Including: HFC-32, R-407A, R-417A, R-422D, R-437A, R-438A, R-449A, R-452A, CustomMix-134 and CustMix-316

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

Established HFC baseline

8. The Government of Guatemala reported the Article 7 data for 2020–2022. Guatemala’s HFC consumption baseline was established at 1,215,970 CO₂-eq tonnes by adding 65 per cent of its HCFC baseline (expressed in CO₂-eq tonnes) to its average HFC consumption in 2020–2022, as shown in table 4.

Table 4. HFC baseline calculation for Guatemala (CO₂-eq tonnes)

Baseline calculation components	2020	2021	2022
HFC annual consumption	959,866	885,589	1,326,577
HFC average consumption in 2020-2022	1,057,344		
HCFC baseline (65%)	158,626		
HFC baseline	1,215,970		

Country programme implementation report

9. The sectoral HFC consumption data provided by the Government of Guatemala in its country programme (CP) implementation report for 2022 and 2023 are not consistent with the data reported under Article 7 of the Montreal Protocol. Initially, the country reported 49.05 mt of HFC-152a for glass manufacturing in 2022 data but reported that volume as feedstock in the corresponding Article 7 data. In September 2024, the Government of Guatemala resubmitted its Article 7 report to the Ozone Secretariat asking to revert the feedstock use of HFC-152a to regular use for 2022. The change requested for 2022 is related to one of the baseline years and is already submitted to the Ozone Secretariat.

HFC consumption trends

10. The economic impact of the COVID-19 pandemic in Guatemala led to a decline in HFC consumption from 2019 to 2020. However, since 2020, consumption has rebounded because of the country's post-pandemic economic recovery, with industries modernizing and expanding their RAC infrastructure and attending to service demands that went unmet during the pandemic. The phase-out of HCFCs also played a significant role in increasing HFC consumption. Nevertheless, the decrease in HFC consumption from 2022 to 2023 can be attributed to the renewal of the refrigerated transport units with zero leakages, and the shift from HFC-134a domestic and commercial refrigeration equipment and R-410A air conditioners to non-HFC-based alternatives, which has reduced the volume of HFC imports needed for future servicing requirements.

HFC consumption by sector

11. The country does not manufacture RAC equipment. Based on the survey carried out during KIP preparation, HFC uses are for the servicing sector (91.8 per cent in mt and 98.9 per cent in CO₂-eq tonnes), along solvents and glass bottle manufacturing (8.2 per cent in mt and 1.1 per cent in CO₂-eq tonnes). In 2022, HFCs were mainly consumed for servicing in stationary AC (23.4 per cent in mt and 25.0 per cent in CO₂-eq tonnes), followed by domestic refrigeration (22.6 per cent in mt and 16.7 per cent in CO₂-eq tonnes), industrial refrigeration (14.0 per cent in mt and 24.2 per cent in CO₂-eq tonnes), commercial refrigeration (12.0 per cent in mt and 16.4 per cent in CO₂-eq tonnes), mobile air conditioning (MAC) (12.8 per cent in mt and 9.4 per cent in CO₂-eq tonnes) and other subsectors, as shown in tables 5 and 6.

Table 5. HFC consumption in Guatemala by sector in mt (2022)

Sector		HFC-134a	R-404A	R-410A	R-507A	Others*	Total	Share of total (%)
Refrigeration servicing subsectors								
Domestic refrigeration		155.69	0.00	0.00	0.00	0.00	155.69	22.6
Commercial	Stand-alone	33.85	0.90	0.00	0.00	0.00	34.75	5.0
	Condenser units	0.00	8.97	0.00	3.11	5.94	18.02	2.6
	Central systems	0.00	17.95	0.00	6.54	5.68	30.17	4.4
Industrial		20.31	53.84	0.00	18.68	3.33	96.16	14.0
Transport		37.23	8.08	0.00	2.80	0.00	48.11	7.0
AC servicing subsectors								
Stationary AC	Residential	0.00	0.00	120.79	0.00	5.96	126.75	18.4
	Commercial	3.38	0.00	23.01	0.00	8.35	34.74	5.0
Mobile		88.00	0.00	0.00	0.00	0.00	88.00	12.8
Subtotal for servicing		338.46	89.74	143.80	31.13	29.26	632.39	91.8
Other sectors								
Solvents**		0	0	0	0	7.75	7.75	1.1
Glass bottle manufacturing***		0	0	0	0	49.05	49.05	7.1
Total		338.46	89.74	143.80	31.13	86.06	689.19	100
Foam****		0	0	0	0	10.00	0	

* Others for RAC servicing includes: HFC-32, R-407C, R407F, R-417A, R-422D, R-437A, R-438A, R-449A and R-452A

** CustomMix-134 and CustomMix-316

*** HFC-152a

**** HFCs pre-blended polyols: HFC-365mfc=93% and HFC-227ea=7%

Table 6. HFC consumption in Guatemala by sector in CO₂-eq tonnes (2022)

Sector		HFC-134a	R-404A	R-410A	R-507A	Others*	Total	Share of total (%)
Refrigeration servicing subsectors								
Domestic Refrigeration		222,637	0	0	0	0	222,637	16.7
Commercial	Stand-alone	48,406	3,529	0	0	0	51,935	3.9
	Condenser units	0	35,177	0	12,393	10,625	58,195	4.4
	Central systems	0	70,393	0	26,062	11,697	108,152	8.1
Industrial		29,043	211,139	0	74,440	7,812	322,434	24.2
Transport		53,239	31,687	0	11,158	0	96,083	7.2
Air-conditioning servicing subsectors								
Stationary AC	Residential	0	0	252,149	0	11,664	263,813	19.8
	Commercial	4,833	0	48,033	0	16,528	69,395	5.2
Mobile		125,840	0	0	0	0	125,840	9.4
Subtotal for servicing**		483,998	351,924	300,183	124,053	58,326	1,318,484	98.9
Other sectors								
Solvents***		0	0	0	0	8,147	8,147	0.6
Glass bottle manufacturing****		0	0	0	0	6,082	6,082	0.5
Total		483,998	351,924	300,183	124,053	72,555	1,332,713	100
Foam****						9,638		

* Others for RAC servicing includes: HFC-32, R-407C, R407F, R-417A, R-422D, R-437A, R-438A, R-449A and R-452A

** CustomMix-134 and CustomMix-316

*** HFC-152a

**** HFCs pre-blended polyols: HFC-365mfc=93% and HFC-227ea=7%

*Manufacturing sectors**Refrigeration and air-conditioning manufacturing*

12. Since January 2020, there is no consumption of HFCs in RAC manufacturing in Guatemala. The domestic refrigerator producer, Fogel, completed conversion of the insulation foam in domestic and commercial refrigeration equipment, replacing HCFC-141b contained in imported pre-blended polyols and HFC-134a with R-290.

Glass bottle manufacturing

13. HFC-152a consumption has increased in recent years, primarily because of its use as a process agent in the production of glass bottles by one enterprise (VICAL). The CP consumption data for this sector (in metric and CO₂-eq tonnes) for the 2019–2022 period is presented in table 7.

Table 7. HFC consumption in Guatemala by glass bottle manufacturing as per CP reports

Substance	GWP	Consumption	2019	2020	2021	2022	2023
HFC-152a	124	Metric tonnes	10.45	13.08	68.15	49.05	16.50
		CO ₂ -eq tonnes	1,296	1,622	8,451	6,082	2,046

14. Although the consumption of HFC-152a is expected to increase in coming years, the Government considers that its low GWP makes it possible to continue using it in the medium and long term. As shown in tables 5 and 6, for 2022, the consumption of HFC-152a represented 7.1 per cent of total country consumption in metric tonnes, while only 0.5 per cent in CO₂ eq tonnes.

Polyurethane foam manufacturing

15. The banning of HCFC-141b in bulk and pre-blended polyols came into force in January 2021. PROQUIRSA, S.A. which imported HCFC-141b in pre-blended polyols for the construction of insulation panels for cold rooms is currently importing pre-blended polyols with HFC-365mfc/227ea. Furthermore, a few additional enterprises using HFC-365mfc/227ea in pre-blended polyols were recently identified, and a specific market study for mapping the foam sector will be developed in the current year. Once the market study is complete, the Government will analyze the feasibility of regulating this subsector in the current stage or later.

Refrigeration and air-conditioning servicing sector

16. There are approximately 4,000 technicians (an estimated 2 per cent of whom are women) and approximately 2,000 small and medium servicing workshops consuming HFCs in Guatemala. Ten training centres offer courses related to RAC and MAC to a total of 500 students a year. Furthermore, there is a technician licensing and registration system that was established through Ministerial Agreement 340-2018, and which requests technicians to complete 440 hours of training in authorized companies or training centres. The register shows 622 technicians, 14 refrigeration workshops, and seven accredited training centres. A voluntary labour competency standard, “Good practices for the recovery and charge of refrigerants in RAC systems”, was approved in 2021 and launched in August 2023. However, no technicians have been certified yet under that standard.

Domestic, commercial, industrial and transport refrigeration servicing

17. Domestic refrigerators are used by approximately 85 per cent of all households in the country and by some commercial establishments (e.g., restaurants). An estimated 98 per cent of the domestic refrigerators in the country are based on HFC-134a, while the remaining 2 per cent are R-600a-based.

Around 35 per cent of the installed equipment, especially units older than 10 years, require regular servicing and recharging.

18. Commercial refrigeration equipment in Guatemala includes self-contained plug-in freezers, display cabinets and beverage coolers, condensing units at convenience stores and centralized units in supermarkets. While most self-contained refrigerators are currently HFC-134a-based, R-290 is considered a viable alternative. About 85 per cent of condensing units and centralized systems are charged with HFCs and the remaining 15 per cent use HCFC-22. R-404A and R-507A are used mostly in condensing and centralized units. R-507A is used primarily as a substitute for HCFC-22 in centralized systems. Some factors that drive the high demand for refrigerants in these applications include the size and age of equipment (especially for centralized systems), frequent leaks due to the lack of preventive maintenance, and the lack of refrigerant recovery practices.

19. Most of the industrial refrigeration equipment installed in the country is charged with ammonia; however, HFCs (i.e., HFC-134a, R-404A, and R-507A) are widely used for the servicing and maintenance of refrigeration chambers, process coolers, and, to a lesser extent, distributed systems. Other blends³ that are used in condenser units, centralized systems or industrial refrigeration represent around 9.5 per cent (in mt) of HFCs used in these sectors. Most of the sector's refrigerant consumption is for food processing and distribution and for agro-industrial cold rooms and chambers. The estimated 1,300 HFC-based equipment units operating in the sector have charges with an average of 500 kg; around 10 per cent of those units are serviced each year.

20. Refrigerated transport includes maritime transport vessels, road vehicles and containers used for the distribution of food and pharmaceuticals, with 70 per cent of the sector's equipment based on HCFC-22. Due to intensive use, these applications require frequent refrigerant recharging. The need for cooling in transport and storage is expected to grow in the coming years, entailing a significant increase in the consumption of HFCs and their alternatives.

Residential and commercial air-conditioning servicing

21. In 2022, the stationary AC equipment servicing subsector was the largest consumer of HFCs in the country in terms of metric tonnage and in CO₂-eq tonnes. In terms of metric tonnes, R-410A is the most consumed substance with 89 per cent of the sector's total, followed by other blends (R-417A, R-407C) representing 8 per cent, then HFC-134a at 2 per cent, and the remaining 1 per cent for HFC-32 and R-422D. In 2022, 15 per cent of self-contained and split residential AC stock still operated on HCFC-22, while R-410A equipment represented the other 85 per cent. Around 50 per cent of rooftop, packaged units, and split commercial stock are based mainly on R-410A, while the rest (50 per cent) corresponds to R-22.

Mobile air-conditioning

22. The existing stock of MAC equipment is currently almost entirely based on HFC-134a. Imports and sales of vehicles with AC units based on HFO-1234yf are negligible. Approximately 30 per cent of the estimated 2.4 million vehicles circulating in Guatemala are equipped with AC units. More than 25 per cent of vehicles that are over 10 years old require annual refrigerant recharging, and an estimated 5 per cent of the country's large vehicle fleet is serviced annually.

Local installation and assembly subsector

23. Approximately 1.5 per cent of total HFCs in metric tonnes, primarily R-404A and R-507A, are consumed in servicing of RAC equipment for the assembly and initial charge of new centralized systems

³ R-437A, R-407F, R-438A, R-448A, R-449A, and R-452A in commercial refrigeration and R-417A for industrial refrigeration.

and condensing units in the commercial and industrial refrigeration subsectors, especially in supermarkets and convenience stores, as well as in some cold-room applications. Detailed information on the profile of the installation and assembly enterprises will be collected during implementation of stage I of the KIP.

Solvents

24. “Solkane⁴ 365mfc/227ea” and “Aquion Limpieza⁵” are used as solvents to clean residue from electronic components by one end user. Despite their high price, the use of these solvents is often justified due to their effectiveness in specific applications, such as degreasing and decarbonizing equipment. Currently, there are no alternatives available on the country’s market. UNIDO and the Government will continue to investigate to identify viable options and promote safer and more sustainable solvent alternatives in the future.

Firefighting sector

25. There was no record of HFC-227ea and HFC-236fa imports for firefighting uses in the country. Any company that may need to import HFCs for any refilling of firefighting equipment will be limited to the quota reserved for unexpected circumstances.

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

Institutional, policy and regulatory framework

26. The Ministry of Environment and Natural Resources (MARN), the Montreal Protocol focal point, has established the National Ozone Unit (NOU), operating under the leadership of the Department for the Environmentally Sound Management of Chemical Products and Hazardous Wastes, as the body responsible for directing and executing national action plans and projects related to the Montreal Protocol’s controlled substances.

27. The Government of Guatemala ratified the Kigali Amendment on 24 April 2023. As of 2019, the licensing system to import HFCs is in place and the allocation of quotas started on 1 January 2024. The Government has assigned HFC import quotas at 95 per cent of the HFC baseline (in CO₂-eq tonnes) for traditional importers of refrigerants and has reserved 5 per cent for unexpected circumstances. New tariff codes for HFCs and HFC blends were introduced to improve the control of imports and exports of these substances as of 2023. Furthermore, the Government has established a ban on the import of HCFC-based air-conditioning equipment as of 1 January 2015 and a total ban on the import of HCFC-141b as of 1 January 2021.

28. As of 2022, the Government of Guatemala has adopted three minimum energy performance standards (MEPS) agreed upon among the Central American countries and nine Guatemalan Technical Standards for air conditioners, freezers, household refrigerators and self-contained commercial refrigeration units.

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

Overarching strategy

29. The Government of Guatemala aims to go beyond the Montreal Protocol targets for HFCs in the stage I of its KIP. The strategy in stage I involves the effective control and reduction of HFC supply and demand, as well as the development of a Kigali refrigerant management programme. This strategy involves strengthening the controls on the HFC imports and sale, equipping training institutions, providing training

⁴ CustMix-134

⁵ CustMix-316

and certification on the handling of available low-GWP technologies (R-600a and R-290) to facilitate their adoption in domestic and commercial stand-alone refrigeration applications, and instituting good servicing practices to reduce HFC-134a consumption in the MAC sector, where no alternatives are available yet. For commercial and industrial refrigeration, stage I proposes to gain additional understanding of the sectors and to strengthen the capacity of technical institutions to provide training to large end users on potential low-GWP alternatives and associated energy efficiency savings, and to develop a zero-leakage initiative approach for the agroindustry users.

Proposed reductions

30. Stage I proposes to eliminate 182,395 CO₂-eq tonnes of HFCs, reducing the country's HFC consumption by 15.9 per cent of its baseline level by 2029. The Government of Guatemala and UNIDO forecasted HFC consumption in an unconstrained scenario based on an annual average growth rate of 3 to 4 per cent and the HFC phased in from HCFC phase-out as shown in table 8.

Table 8. HFC consumption forecast under unconstrained scenario, Montreal Protocol limits and proposed HFC reductions under stage I (CO₂-eq tonnes)

	2023*	2024	2025	2026	2027	2028	2029
HFC consumption forecast	1,038,394	1,486,256	1,543,649	1,603,338	1,665,414	1,729,973	1,797,115
Montreal Protocol HFC consumption limits	n/a	1,215,970	1,215,970	1,215,970	1,215,970	1,215,970	1,094,373
Proposed HFC consumption under the KIP	n/a	1,215,970	1,215,970	1,215,970	1,215,970	1,215,970	1,022,667
Proposed reduction in HFC consumption from baseline (%)	n/a	0	0	0	0	0	15.9

* As per Article 7 data

Proposed activities and total costs

31. The budget for stage I has been established at US \$528,630, as submitted. The proposed activities and their costs are summarized in table 9.

Table 9. Activities planned for implementation in stage I of the KIP for Guatemala (as submitted)

	Project component / Planned activities	Costs (US \$)		
		UNEP	UNIDO	Total
1	Effective control and reduction of supply and demand of HFCs			
1.1	Development of a handbook on HFC controls and related training material for the Customs Department. Organizing two workshops among enforcement agencies and main stakeholders focusing on facilitating knowledge sharing and HFC control strategies for approximately 20 participants.	30,000	0	30,000
1.2	Two-day international workshop in the Central American region for customs officers to exchange information on HFC controls, promote cross-border cooperation and best practices exchange among national ozone officers and customs officers for approximately 20 participants.	10,000	0	10,000
1.3	Design a digital management system platform to monitor the import and use of HFC refrigerants, and mobile applications for reporting the use and sale of refrigerants as of 2028	40,000	0	40,000
1.4	Establishment of a research web platform ⁶ dedicated to registering and disseminating refrigeration innovations and highlighting the benefits of HFC alternatives	0	20,000	20,000

⁶ The platform is aimed at allowing companies to showcase new technologies; provide case studies, articles, and multimedia on the benefits of HFC alternatives; facilitate engagement between manufacturers, policymakers, and

	Project component / Planned activities	Costs (US \$)		
		UNEP	UNIDO	Total
1.5	Acquire and distribute five advanced identifiers to customs offices to detect and verify refrigerant types at the most critical control points ⁷	0	30,000	30,000
Subtotal 1		80,000	50,000	130,000
2	Kigali refrigerant management programme			
2.1	Updating manuals, training programmes and teaching material for servicing technicians working with MAC and domestic and commercial stand-alone refrigeration	0	15,000	15,000
2.2	Development of a competency-based labour standard for handling refrigerants in the MAC sector to allow certification of technicians	0	15,000	15,000
2.3	Conduct three train-the-trainer courses for 10 trainers each, on MAC and on domestic and commercial stand-alone refrigeration	0	30,000	30,000
2.4	Carry out 30 training and certification courses for a total of 600 servicing technicians in good practices for handling R-600a and R-290 in domestic and commercial stand-alone refrigeration and in good practices in MAC	0	30,000	30,000
2.5	Provision of tools and equipment ⁸ for the installation of three specialized training centres for the handling of hydrocarbons (HC) and good practices in recovering HFC-134a	0	180,000	180,000
2.6	Initial coordination and implementation of a zero-leak project ⁹ in an agroindustry facility (Del Monte Farm) by improving their maintenance practices in cold rooms and refrigeration transport shipping of the products; design of a reporting logbook and guideline for end users' control of leaks; organize a workshop for 40 end-user representatives at the end of the project	0	20,000	20,000
2.7	Installing dual cold-room simulators ¹⁰ based on low-GWP refrigerants in one training centre, carrying out two courses for practical training on low-GWP technologies, safety protocols, best practices for reducing refrigerant leaks, and energy efficiency in the commercial and industrial refrigeration sectors, and organizing two related training courses for a total of 40 large end users and instructors	0	50,000	50,000
Subtotal 2		0	340,000	340,000
3	Women in the RAC sector			
3.1	Two events focused on providing information and raising awareness about gender mainstreaming, innovation, low-impact climate alternatives, and energy efficiency in the RAC servicing sector	0	10,573	10,573
Subtotal 3		0	10,573	10,573
Total KIP Activities		80,000	400,573	480,573

environmental groups; offer available courses on the safe use of low-GWP refrigerants; and inform users about regulatory changes and provide compliance tools.

⁷ Two maritime control points (Puerto Quetzal and Santo Tomás de Castilla) and three land control points: Tecun Uman (border with Mexico), El Carmen (border with Mexico), and Agua Caliente (border with Honduras).

⁸ Each set of hands-on equipment for training residential, commercial refrigeration and MAC contains a: refrigerant recovery unit suitable for flammable refrigerants, portable air blower, R-290-based air conditioner, R-600a-based domestic refrigerator with freezer, leak finding detectors, vacuum pump for HC, digital vacuum gauge, digital manifold with micron gauge, electronic refrigerant charging scale, portable nitrogen blowing equipment, recovery and reuse (RR) equipment, vacuum and charging unit for HFC-134a, refillable cylinders for R-290a and R-600a, brazing unit oxygen/acetylene, welding case and Lockring kits, digital clamp-on multimeter, electronic insulation testers, energy monitoring device, various tools, tubes, valves, hoses, adapters, filters, oils and spare parts.

⁹ The project includes acquiring handheld leak detectors for R-404A, spare parts and materials needed for immediate repairs of detected leaks, valves, seals, gaskets and other spare parts.

¹⁰ Specifications: R-290 condensing unit using, 6,000-12,000 BTU/h evaporator, 4 to 8 m³ refrigeration unit, instrumentation panel to measure and store temperature, pressure, and electrical variables of the compressor, safety devices and protection elements including pilot lights for different components' operation. The simulator is expected to be supplied by the Colombian enterprise Thermotar.

	Project component / Planned activities	Costs (US \$)		
		UNEP	UNIDO	Total
	Project coordination and monitoring	48,057	0	48,057
Grand Total		128,057	400,573	528,630

Project implementation, coordination and monitoring

32. The NOU and UNEP will monitor activities, report on progress, and work with stakeholders to phase out HFCs. The cost of those activities for UNEP amounts to US \$48,057, which includes project consultants (US \$38,000), and monitoring visits (US \$10,057).

Gender policy implementation

33. In line with decisions 84/92(d), 90/48(c) and 92/40(b), meaningful inclusion of women in the RAC sector will be encouraged under the KIP through the creation of a favourable environment. This will include facilitated access to opportunities and good working conditions, as well as strengthening the technical capacities of female technicians through training courses and providing tools and equipment. The KIP plans to train at least one female customs trainer and five female customs officers (out of a total of 20 officers to be trained), to ensure that a female communication specialist is hired, to provide training to four female RAC trainers (out of a total of 10 instructors) and at least 10 female technicians (out of a total of 340 technicians), and to certify at least 10 female RAC technicians (out of a total of 100) in the safe handling of flammable refrigerants. Furthermore, tranche reports will include gender-responsive activities undertaken, knowledge products on gender, good practices and lessons learned, and the allocation of financial resources for gender activities.

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

34. Stage II of the HPMP and stage I of the KIP will be implemented simultaneously. The KIP envisions further implementation of the quota system for HFCs; strengthening the controls on HFC imports and sale and the training of customs officers; certifying technicians using the labour competency standard for the safe handling of flammable refrigerants established under the HPMP; expanding the certification system to MAC servicing; and equipping training institutes. For industrial refrigeration, an initiative adopted in the HPMP for commercial refrigeration will be replicated during stage I of the KIP in order to gain additional understanding of the sector, enhance a zero-leak initiative within agroindustry, and strengthen the capacity of technical institutions to provide training to large end users on potential low-GWP alternatives and associated energy efficiency savings. Stage I of the KIP does not include any refrigerant recovery, recycling and reclaiming activities further to those being implemented under the HPMP.

35. Stage I of the KIP will be implemented in three tranches.

Total project cost

28. The budget for stage I has been proposed at US \$528,630. The costs of activities in the refrigeration servicing sector have been proposed in line with decision 92/37 applicable to non-low-volume-consuming countries. The proposed activities and cost of stage I of the KIP are summarized in table 9 above.

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

36. The first funding tranche of stage I of the KIP, in the total amount of US \$261,019, will be implemented between January 2025 and December 2027 and will include the following activities:

- (a) *Effective control and reduction of supply and demand of HFCs*: Develop a handbook on HFC controls¹¹ and related training material for the Customs Department (UNEP) (US \$10,000);
- (b) *Kigali refrigerant management programme*:
 - (i) Update manuals, training programmes and teaching material for servicing technicians working with MAC and domestic and commercial stand-alone refrigeration (UNIDO) (US \$15,000);
 - (ii) Conduct three train-the-trainer courses for 10 trainers each, on MAC, and domestic and commercial stand-alone refrigeration (UNIDO) (US \$30,000);
 - (iii) Provide tools and equipment for the installation of three specialized training centres for the handling of HC and for good practices in recovering HFC-134a (UNIDO) (US \$180,000);
 - (iv) Initiate coordination of the zero-leak project in an agroindustry facility (Del Monte Farm) by improving their maintenance practices in cold rooms and refrigeration transport shipping of their products (UNIDO) (US \$10,000); and
- (c) *Project coordination and monitoring* (UNEP) (US \$16,019): Consultant recruitment (US \$12,700) and compliance monitoring visits (US \$3,319).

SECRETARIAT'S COMMENTS AND RECOMMENDATION

V. Comments

Overarching strategy

37. In line with decision 92/44, the Government of Guatemala has expressed a strong commitment to supporting reductions in HFC consumption in advance of the Montreal Protocol targets.¹²

Adjustments to Article 7 data

38. The national HFC consumption levels quoted in the submission were based on the survey carried out in preparation for the KIP and CP data reports. During the review process, the Secretariat noted the lack of consistency among the 2022 and 2023 CP data and the corresponding Article 7 data regarding HFC-152a. UNIDO explained that the NOU had doubts about the use of HFC-152a in the chemical process to manufacture glass bottles, and after consultations with the manufacturer (VICAL), the NOU started to report the use of HFC-152a as feedstock. Without an independent audit of the manufacturing process confirming the use as feedstock and given that other countries had reported such use as a process agent, the Secretariat asked UNIDO to discuss a potential revision of the 2022 and 2023 Article 7 data with the Government.

39. On 19 September 2024 the country submitted a request to the Ozone Secretariat to revise its reported Article 7 data for 2022 and 2023, to 1,332,659 CO₂-eq tonnes, and 1,038,394 CO₂-eq tonnes,

¹¹ The manual will contain regulations and procedures for controlling HFC imports, including guidelines for compliance and enforcement measures for institutions, brokers and importers, emphasizing practical applications and case studies for effective implementation.

¹² As per the letter of 14 November 2024 from the Ministry of Environment and Natural Resources of Guatemala to UNIDO.

respectively, which would result in a revised HFC baseline level of 1,217,997 CO₂-eq tonnes. Accordingly, stage I of the KIP is recommended under the established baseline (1,215,970 CO₂-eq tonnes) and on the understanding that the revised data once decided by the Meeting of the Parties will be incorporated into the future KIP stage I Agreement between the Government of Guatemala and the Executive Committee once the Agreement template has been approved.

HFC consumption levels

40. The country's HFC consumption reached 524.36 mt (1,038,394 CO₂-eq tonnes) in 2023, approximately 15 per cent below the HFC baseline level of 1,215,970 CO₂-eq tonnes. HFC consumption in Guatemala fluctuated between 2019 and 2022 at 541.18 mt, 483.71 mt, 507.00 mt, and 640.12 mt, respectively, followed by a reduction in 2023 with a consumption within the same range as in 2021.

41. The Secretariat enquired about the reasons for the fluctuations, whether current imports were to serve regular refrigerant needs, and whether Guatemala would re-export HFCs, to other countries in the common market of Central America which would not be accounted for in the country consumption reports. UNIDO reported that Guatemala did not re-export HFCs to other countries in the region and that the increase in 2020-2022 consumption was caused inter alia by the post-pandemic economic recovery, infrastructure expansion and equipment modernization, specific unmet servicing demands due to the pandemic and the phase-out of HCFCs. However, UNIDO acknowledged that supply-chain adjustments caused by the pandemic might have led to increased procurement of HFCs in 2022, as companies sought to secure sufficient stock to meet anticipated demand and avoid potential shortages. The exact volume of additional refrigerant procurement in 2022 varies by company based on individual supply-chain strategies and market demand projections.

42. Noting that the HFC consumption reported in 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 in previous meetings of the Executive Committee, the Secretariat and UNIDO agreed that the Government of Guatemala would continue to monitor the situation 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 Guatemala and the Executive Committee, could be revised as necessary when the Committee considered the second tranche of the KIP.

Institutional, policy and regulatory framework

HFC licensing and quota system

43. In line with decision 87/50(g), UNIDO has confirmed that Guatemala has an established and enforceable licensing system and quotas for monitoring HFC imports/exports. The HFC import quotas issued for 2024, amounting to 95 per cent of the maximum allowable consumption stated in the Agreement between the Government and the Executive Committee, are to be distributed among enterprises, with the remaining 5 per cent reserved for unexpected circumstances. All HFC quotas per importer are provided by specific substance in metric tons and their CO₂-eq tonnes. UNIDO has also confirmed that since 2023 the Customs Department's electronic codification system, based on the seventh edition of the Harmonized System, is up to date and allows for the identification of all imported HFC blends, as well as other blends that may contain HFCs and HFOs.

Limiting the offer of HFC-based equipment

44. Noting that R-600a-based domestic refrigerators and R-290-based commercial stand-alone refrigerators were locally available and had proven to be viable in replacing units based on HFC-134a, the Secretariat explored whether the Government had considered regulatory measures to ban, within the implementation period of stage I of the KIP, the import of new HFC-based equipment in these two subsectors. UNIDO explained that, so far, only 2 per cent of the country's refrigerators were R-600a-based and around 25 per cent of commercial stand-alone units are based on R-290. UNIDO added that the Government of Guatemala considered that it was premature to ban imports of HFC-based equipment at this stage due to market implications, including the availability and affordability of refrigeration options for consumers. However, the Government would continue assessing the market penetration of the R-290 and R-600a technologies during stage I and potentially propose regulatory measures to ban new HFC-based equipment during stage II.

Technical and cost-related issues*Certification of servicing technicians*

45. The Secretariat consulted UNIDO on the connection between the technicians to be trained and certified through stage II of the HPMP and related activities proposed in stage I of the KIP. UNIDO explained that the KIP approach enhances the capacity of training centres and includes the MAC sector. The KIP will upgrade HPMP activities to provide specialized training, equipping, and certification for RAC technicians. This initiative aims to train and certify 600 technicians in handling new alternatives for domestic and commercial appliances and MAC systems, while 1,000 technicians will be certified in good refrigeration practices. Additionally, in response to the Secretariat's consultation on when technician certification would become mandatory, UNIDO indicated that the certification system would begin by June 2025, and that the country needed to reach a critical mass of certified technicians to mandate the labour competency certification. UNIDO added that a thorough analysis of the existing regulatory framework was already in progress to identify necessary changes, and strategic dialogues with the relevant authorities were actively advancing efforts to make certification mandatory.

Technical assistance to end users

46. Regarding the proposed procurement of one low-GWP dual cold-room simulator to be installed and used for training purposes at a selected vocational school, UNIDO clarified that the main goal of that activity was to demonstrate the process of controlling the temperature and relative humidity of commercial and industrial cold rooms based on single compressors charged with R-290. Furthermore, the planned end-user training will emphasize energy efficiency, safety protocols, and best practices for reducing refrigerant leaks.

47. Stage I of the KIP includes a zero-leak project in an agroindustrial facility (Del Monte Farm) using R-404A by enhancing maintenance practices for cold rooms and refrigerated transport, including the development of a reporting logbook guideline for users. The industry will provide a team to work on leak detection, repairs, and maintenance under the guidance of the external experts as in-kind contribution. The industry is likely to cover operational expenses related to the project, such as electricity, logistics for the installation of monitoring systems, and ongoing maintenance efforts and financial support to cover additional upgrades to equipment or further training for their employees. The demonstration project includes a comparative analysis of the HFC and energy use over a one-year period, using the kits to evaluate the performance and energy efficiency of RAC systems acquired under the HPMP, alongside proper monitoring, recording, and documentation of results.

48. The Secretariat queried Del Monte Farm's selection for this project given its multinational capital origin, to which UNIDO explained that the proposed initiative targets maintenance improvements and

capacity building in refrigeration rather than direct investment. Del Monte's significant influence in the refrigeration sector positions it to set industry standards and benefit local companies. Its commitment to cold chain improvements makes it an ideal partner, as collaborating with Del Monte will leverage its resources and serve as a model for several other agroindustry players, maximizing the initiative's impact. UNIDO added that while it is not possible to provide an exact number at this stage, the demonstration of tangible benefits such as reduced HFC emissions, energy savings, and improved system efficiency could encourage similar companies in the sector to follow suit.

49. In line with decision 92/36(g), the Secretariat requested UNIDO, upon completion of the project, submit a final report on its implementation, including the HFC phase-out and energy efficiency gains achieved.

Reductions associated with the funds approved

50. Based on the agreed costs of US \$480,573 for the servicing sector, and in line with the methodology for converting US \$/kg to US \$/CO₂-eq tonne in the servicing sector described in annex I of document UNEP/OzL.Pro/ExCom/92/46, the reduction from Guatemala's remaining HFC consumption eligible for funding from the servicing sector is 193,303 CO₂-eq tonnes, as summarized in table 10 below. In light of those agreed reductions, the Government agreed to reduce its 2029 HFC consumption to 1,022,667 CO₂-eq tonnes, a reduction of 15.9 per cent of Guatemala's HFC baseline for compliance.

Table 10. Agreed costs and reductions from HFC consumption eligible for funding from the servicing sector, and 2029 target

Servicing sector		
Average HFC consumption in the servicing sector in baseline years	Mt	511.15
	CO ₂ -eq tonnes	1,048,572
Average GWP of HFC consumption in the servicing sector		2,051.40
Agreed funding	US \$	480,573
Agreed cost-effectiveness threshold	US \$/kg	5.10
Reductions from remaining HFC consumption in servicing	Mt	94.23
	CO ₂ -eq tonnes	193,303
Reductions from all sectors and 2029 target		
Established HFC consumption baseline	CO ₂ -eq tonnes	1,215,970
<i>HFC reductions from the servicing sector</i>		<i>193,303</i>
2029 proposed target in the KIP	CO ₂ -eq tonnes	1,022,667

Project management unit

51. Funding for the project management unit was agreed at US \$48,057 for UNIDO instead of UNEP (see paragraph 53 below), calculated at 10 per cent of the project costs, with the following cost breakdown: US \$38,000 for the hiring of consultants and US \$10,057 for monitoring visits.

Total project cost

52. At the total cost of US \$480,573 for the servicing sector, stage I of the KIP for Guatemala will result in a reduction of 193,303 CO₂-eq tonnes from Guatemala's HFC consumption eligible for funding, as summarized in table 10 above.

Tranche distribution under stage I of the Kigali HFC implementation plan

53. 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 I to the present document, while activities to be implemented under the HPMP and the KIP are listed in annex II. As a result of the discussions held by the Secretariat with UNEP and UNIDO about the role of the lead

implementing agency, UNIDO was confirmed as the lead agency instead of UNEP. Consequently, there was a reallocation of the requested budget for the project management unit between the lead and cooperating agencies. Furthermore, the Government reassigned other project components from UNIDO to UNEP. The requested and agreed funds are as shown in table 11.

Table 11. Activities for implementation in stage I of the KIP for Guatemala as requested and agreed

	ACTIVITIES	As requested (US \$)			Agreed (US \$)		
		UNEP	UNIDO	Total	UNEP	UNIDO	Total
1	Effective control and reduction of supply and demand of HFCs						
1.1	Development of a handbook on HFC controls and workshops for customs and enforcement officers	30,000	0	30,000	30,000	0	30,000
1.2	Border dialogues	10,000	0	10,000	10,000	0	10,000
1.3	Digital management system platform	40,000	0	40,000	40,000	0	40,000
1.4	Web platform on low-GWP alternatives	0	20,000	20,000	20,000	0	20,000
1.5	Acquire and distribute ODS identifiers to customs offices	0	30,000	30,000	0	30,000	30,000
	<i>Subtotal 1</i>	<i>80,000</i>	<i>50,000</i>	<i>130,000</i>	<i>100,000</i>	<i>30,000</i>	<i>130,000</i>
2	Kigali refrigerant management plan						
2.1	Updating manuals and training programmes	0	15,000	15,000	0	15,000	15,000
2.2	Competency-based labour standard	0	15,000	15,000	15,000	0	15,000
2.3	Train-the-trainer courses	0	30,000	30,000	0	30,000	30,000
2.4	Technicians training courses	0	30,000	30,000	0	30,000	30,000
2.5	Provide tools and equipment to three specialized training centres on HC	0	180,000	180,000	0	180,000	180,000
2.6	Implement a zero-leak project in an agroindustry	0	20,000	20,000	0	20,000	20,000
2.7	Training equipment on low-GWP	0	50,000	50,000	0	50,000	50,000
	<i>Subtotal 2</i>	<i>0</i>	<i>340,000</i>	<i>340,000</i>	<i>15,000</i>	<i>325,000</i>	<i>340,000</i>
3	Women in the RAC						
3.1	Awareness-raising	0	10,573	10,573	10,573	0	10,573
	<i>Subtotal 3</i>	<i>0</i>	<i>10,573</i>	<i>10,573</i>	<i>10,573</i>	<i>0</i>	<i>10,573</i>
	Project monitoring and coordination	48,057	0	0	0	48,057	48,057
	TOTAL	128,057	400,573	528,630	125,573	403,057	528,630

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

54. The total cost of US \$251,019 for the first tranche and the expected outputs remained the same between the initial submission and the agreed funding with the reallocation of US \$16,019 from UNEP to UNIDO to support the project management unit, since UNIDO is the lead implementing agency.

Co-financing

55. The country will provide in-kind contribution, covering office space and other logistical aspects, the use of the existing websites of the Government and personnel support whenever required during the implementation of stage I of the KIP. Furthermore, plumbing, electrical and civil works will be provided by the beneficiaries of the training centres; The Government of Guatemala and UNIDO have expressed willingness to explore other co-financing possibilities in the implementation of stage I of the KIP.

2024–2026 business plan of the Multilateral Fund

56. UNIDO and UNEP are requesting US \$528,630, plus agency support costs, for the implementation of stage I of the KIP for Guatemala. The total value of US \$279,890, including agency support costs, requested for the period of 2024–2026, is not part of the endorsed business plan.

Sustainability of the HFC phase-down and assessment of risks

57. HFC consumption levels during 2020 and 2021 were lower than in 2019 due to the economic effects of the COVID-19 pandemic. Noting that the demand for HFCs continues to grow, and in order to mitigate the risk of non-compliance, stage I of the KIP focuses on the comprehensive application of the HFC quota and licensing system, the training of customs officials, and the introduction of regulations on HFC-containing RAC equipment, while prioritizing sectors where technically and economically viable alternatives exist. The HFC reductions proposed for the stage, while going beyond the 10 per cent target established by the Montreal Protocol, can be achieved.

58. The safety risks associated with the use of low-GWP flammable refrigerants as the preferred alternatives to HFCs in the domestic and commercial self-contained refrigeration equipment will be addressed. Support will be provided to public technical schools in the form of workstations and simulators, to be used in courses on handling flammable refrigerants taught to the servicing technicians. Furthermore, technicians will be certified using the labour competency standard for good practices and the safe handling of flammable refrigerants, established under the HPMP, and there would be specific requirements under the certification for domestic refrigeration and stand-alone commercial refrigeration as proposed in the KIP.

59. The Government of Guatemala will support sustained HFC reductions through the application of the HFC quota system and import controls, and regulatory measures on RAC equipment imports, while the Ministry of Environment will sign suitable agreements with vocational schools, customs authorities, and other relevant stakeholders to continue providing the required training for HFC controls and the adoption of alternatives.

Impact on the climate

60. The activities proposed, including regulatory measures to restrict the imports of high-GWP refrigerants, the training of technicians in good servicing practices in MAC and in handling low-GWP alternatives in domestic and commercial refrigeration units, the zero-leak pilot project in the agroindustry facility 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. A calculation of the impact on the climate of the activities in the KIP indicates that by 2029, Guatemala will have reduced its emissions by approximately 193,303 CO₂-eq tonnes of HFCs, calculated as the difference between the HFC baseline for compliance and the 2029 target, assuming that all consumed HFCs would eventually have been emitted.

Draft Agreement

61. A draft Agreement between the Government of Guatemala 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.

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

VI. Recommendation

63. The Executive Committee may wish to consider:

- (a) Approving, in principle, stage I of the Kigali HFC implementation plan (KIP) for Guatemala for the period 2024–2029 to reduce HFC consumption by 15.9 per cent of the country's baseline by 2029, in the amount of US \$573,167, consisting of US \$403,057, plus agency support costs of US \$28,213, for UNIDO and US \$125,573, plus agency support costs of US \$16,324, for UNEP, as reflected in the schedule contained in annex I to the present document, on the understanding that the schedule, in particular rows 1.1 and 1.2, will be revised accordingly based on the recommendation of the Implementation Committee on the revision of the consumption data in the baseline years;
- (b) Noting the strong commitment of the Government of Guatemala to support reductions in HFC consumption in advance of the Montreal Protocol targets;
- (c) Noting also:
 - (i) That the Government of Guatemala will establish its starting point for sustained aggregate reductions in HFC consumption based on guidance provided by the Executive Committee;
 - (ii) That, once the cost guidelines for HFC phase-down are agreed by the Executive Committee, reductions from Guatemala's remaining HFC consumption eligible for funding will be determined in line with these guidelines;
 - (iii) That the reductions from Guatemala'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 project included in stage I of the KIP, UNIDO will submit a final report on the implementation of this project, including the HFC phase-out and energy-efficiency gains achieved, in line with decision 92/36(g);
- (d) Noting further:
 - (i) That the Government of Guatemala 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 Guatemala and the Executive Committee, will be revised, if appropriate, when the Committee considers the second tranche of the KIP;
- (e) Approving the first tranche of stage I of the KIP for Guatemala and the corresponding tranche implementation plan, in the amount of US \$279,890, consisting of US \$251,019, plus agency support costs of US \$17,571, for UNIDO and US \$10,000, plus agency support costs of US \$1,300, for UNEP; and

- (f) Requesting the Government of Guatemala, UNIDO, UNEP and the Secretariat to finalize the draft Agreement between the Government of Guatemala 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 GUATEMALA**

Kigali HFC implementation plan (stage I)

Row	Particulars	2024	2025	2026	2027	2028	2029	Total
1.1	Montreal Protocol reduction schedule of Annex F substances (CO ₂ -eq tonnes)	1,215,970	1,215,970	1,215,970	1,215,970	1,215,970	1,094,373	n/a
1.2	Maximum allowable total consumption of Annex F substances (CO ₂ -eq tonnes)	1,215,970	1,215,970	1,215,970	1,215,970	1,215,970	1,022,667	n/a
2.1	Lead IA (UNIDO) agreed funding (US \$)	251,019	0	0	121,019	0	31,019	403,057
2.2	Support costs for Lead IA (US \$)	17,571	0	0	8,471	0	2,171	28,213
2.3	Cooperating IA (UNEP) agreed funding (US \$)	10,000	0	0	85,573	0	30,000	125,573
2.4	Support costs for Cooperating IA (US \$)	1,300	0	0	11,124	0	3,900	16,324
3.1	Total agreed funding (US \$)	261,019	0	0	206,592	0	61,019	528,630
3.2	Total support costs (US \$)	18,871	0	0	19,595	0	6,071	44,537
3.3	Total agreed costs (US \$)	279,890	0	0	226,187	0	67,090	573,167

HCFC phase-out management plan (stage II)

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)	5.4	5.4	5.4	2.7	2.7	2.7	2.7	0.00	n/a
1.2	Maximum allowable total consumption of Annex C, Group I substances (ODP tonnes)	5.4	5.4	5.4	2.7	2.7	2.7	2.7	0.00	n/a
2.1	Lead IA (UNIDO) agreed funding (US \$)	242,900	0	0	0	58,500	0	0	91,500	522,500
2.2	Support costs for Lead IA (US \$)	17,003	0	0	0	4,095	0	0	6,405	36,575
2.3	Cooperating IA (UNEP) agreed funding (US \$)	76,000	0	0	0	43,000	0	0	33,000	195,000
2.4	Support costs for Cooperating IA (US \$)	9,880	0	0	0	5,590	0	0	4,290	25,350
3.1	Total agreed funding (US \$)	318,900	0	0	0	101,500	0	0	124,500	717,500
3.2	Total support costs (US \$)	26,883	0	0	0	9,685	0	0	10,695	61,925
3.3	Total agreed costs (US \$)	345,783	0	0	0	111,185	0	0	135,195	779,425

Annex II

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

Category of activity	HPMP Stage II		KIP Stage I		HPMP+KIP combined cost (US \$)
	Activity	Cost (US \$)	Activity	Cost (US \$)	
Strengthening the framework for HCFC phase-out/ HFC phase-down	Establish and enforce: - a ban on the use of HCFC-141b, - a mandatory record-keeping practices and schedules for leakage checks, - regulation to restrict the import of RAC equipment based on energy efficiency criterion; - policies on the life-cycle approach to managing substances controlled by the Montreal Protocol	35,000	Establish a research web platform centre dedicated to register and disseminate refrigeration innovation and to highlight the benefits of HFC alternatives	20,000	55,000
Training of customs officers	Improve the licensing and quota system based on the recommendations of the verification report; Conduct 10 training courses for customs and enforcement inspectors on import controls on Montreal Protocol substances and the equipment containing them, each for approximately 30 participants; Develop of an online customs training module of HCFC controls	80,000	Design a customs handbook on HFC controls, training course, and arrangement of two workshops for customs officers, institutions, brokers, and importers	30,000	110,000
Institutional coordination and prevention of the illegal trade of controlled substances	n/a	0	Collaborate with other countries and international organizations to improve customs control Organize a two-day border dialogue with at least four countries of the region	10,000	10,000
Strengthening of record-keeping	n/a	0	Design a Digital management system platform for monitoring import, and use of HFC refrigerants Develop mobile applications for reporting the use and sale of refrigerants	40,000	40,000
Provision of tools to customs	n/a	0	Acquire and distribute five Refrigerant identifiers for critical customs control points	30,000	30,000
Strengthening the RAC technician certification process	Establish regulations for mandatory RAC technician certification based on labor competencies; Develop at least two labor competence standards for the safe handling of flammable/toxic refrigerants; Evaluate and certify 1,000 RAC servicing technicians according to a labor competency standard;	30,000	Elaborate a competence labor standard for handling refrigerants in the MAC sector Arrange training and certification courses in three specialized training centres for 30 participants	45,000	75,000

Category of activity	HPMP Stage II		KIP Stage I		HPMP+KIP combined cost (US \$)
	Activity	Cost (US \$)	Activity	Cost (US \$)	
Strengthening the training programme for RAC technicians	Develop a standard programme on good refrigeration practices and safe handling of non-ODP/low-GWP alternative refrigerants to the curricula of the vocational institutes; Develop a manual on good refrigeration practices and a risk assessment guide on the safe handling of flammable refrigerants; Train 20 trainers every three years in good practices and handling of alternative refrigerants; Organize 20 technical seminars on good refrigeration practices for a total of 600 technicians;	180,500	Design a training program, manuals, and teaching materials for servicing technicians working with MAC and domestic and commercial stand-alone refrigeration Arrange three train of trainers' courses	45,000	225,500
Centres of excellence	n/a	0	Provide tools and equipment for the installation of three specialized training centres for the handling of HC and good practices in recovering HFC-134a	180,000	180,000
Upgrading the RRR network	Review the status of the existing national network and needs assessment; Develop a business model to strengthen and make sustainable the RRR network; Establish one refrigerant reclaiming centre in southern Guatemala where the food industry sector (large HCFC consumer) is located; Purchase tools and equipment, including a reclaiming unit, a recovery unit, storage and recovery tanks, refrigerant identifier, moisture tester, cylinder cleaning and testing equipment, and spare parts; Organize two study tours to a Latin American country to learn about the operating model of RRR centres with similar characteristics;	112,400	n/a	0	112,400
Technical assistance and demonstration projects for end-users	Develop a refrigerant leakage control guide; Establish an online technical support centre for end-users; Implement at least one "Zero Leaks" project to provide technical assistance to reduce leakage at an end-user with high refrigerant consumption; Implement at least one demonstration project to replace HCFC-22 equipment by low-GWP-based equipment at one end-user; and meetings to disseminate the results of pilot projects.	67,000	Acquire and instal a dual cold room simulators based on low-GWP refrigerants in one training centre and arranging two training courses for end-users Implement a zero-leak project in Del Monte Farms to produce melons and bananas by improving their maintenance practices in cold rooms and refrigeration transport-based HFCs for shipping of the products. Design a reporting logbook guideline for end-users	70,000	137,000

Category of activity	HPMP Stage II		KIP Stage I		HPMP+KIP combined cost (US \$)
	Activity	Cost (US \$)	Activity	Cost (US \$)	
Additional activities to maintain energy efficiency under decision 89/6	Improve energy efficiency labelling and MEPS applied to the RAC sector	20,000	n/a	0	20,000
	Strengthen awareness on the labelling programme and the use of RAC equipment with the highest efficiency and low-GWP refrigerants	20,000	n/a	0	20,000
	Strengthening and development of capacities to evaluate, maintain and improve the energy efficiency of existing RAC equipment	60,000	n/a	0	60,000
Dissemination and awareness-raising	Carry-out campaigns to raise awareness on HCFC phase-out and activities under the HPMP relevant to RAC instructors and technicians, end-users, customs, and enforcement officers; development and distribution of educational brochures on inter alia recovery and recycling practices, technicians' certification and proper decommissioning of HCFC-based equipment The NOU will participate in relevant trade fairs, exhibitions and conferences related to HCFC phase-out	40,000	Organize two events focused on providing information and raising awareness about gender mainstreaming, innovation, low-impact climate alternatives, and energy efficiency in the RAC servicing sector	10,573	50,573
Project coordination, monitoring and reporting	Hiring of two local experts to implement HPMP activities, monitor trends in the use of HCFC and substitutes, and report on project progress; and regular compliance monitoring visits to RRR centres, customs, end-users and technical institutes to follow up on activities	72,600	Hire two temporary local experts working in coordination with the two full-time national consultants of the NOU	48,057	120,657
TOTAL		717,500		528,630	1,246,130
Percentage (%)		57.6		42.4	100