

**MONTREAL PROTOCOL ON SUBSTANCES THAT
DEplete THE OZONE LAYER**

**REPORT OF THE
TECHNOLOGY AND ECONOMIC ASSESSMENT PANEL**

MAY 2023

**VOLUME 3: ASSESSMENT OF THE FUNDING REQUIREMENT
FOR THE REPLENISHMENT OF THE MULTILATERAL FUND FOR
THE PERIOD 2024-2026**



Montreal Protocol on Substances that Deplete the Ozone Layer
United Nations Environment Programme (UNEP)
Report of the Technology and Economic Assessment Panel
Replenishment Task Force

May 2023

**VOLUME 3: ASSESSMENT OF THE FUNDING REQUIREMENT FOR THE REPLENISHMENT OF
THE MULTILATERAL FUND FOR THE PERIOD 2024-2026**

The text of this report is composed in Times New Roman.

Co-ordination: Suely Carvalho, Bella Maranion, Shiqiu Zhang

Date: May 2023

Under certain conditions, printed copies of this report are available from:

UNITED NATIONS ENVIRONMENT PROGRAMME
Ozone Secretariat
P.O. Box 30552
Nairobi, Kenya

This document is also available in portable document format from the UNEP Ozone Secretariat's website:

<https://ozone.unep.org/science/assessment/teap>

No copyright involved. This publication may be freely copied, abstracted and cited, with acknowledgement of the source of the material.

ISBN: 978-9914-733-88-4

Disclaimer

The United Nations Environment Programme (UNEP), the Technology and Economic Assessment Panel (TEAP) Co-chairs and members, the Technical Options Committees Co-chairs and members, the TEAP Task Forces Co-chairs and members, and the companies and organisations that employ them do not endorse the performance, worker safety, or environmental acceptability of any of the technical options discussed. Every industrial operation requires consideration of worker safety and proper disposal of contaminants and waste products. Moreover, as work continues - including additional toxicity evaluation - more information on health, environmental and safety effects of alternatives and replacements will become available for use in selecting among the options discussed in this document.

UNEP, the TEAP Co-chairs and members, the Technical Options Committees Co-chairs and members, and the TEAP Task Forces Co-chairs and members, in furnishing or distributing this information, do not make any warranty or representation, either express or implied, with respect to the accuracy, completeness, or utility; nor do they assume any liability of any kind whatsoever resulting from the use or reliance upon any information, material, or procedure contained herein, including but not limited to any claims regarding health, safety, environmental effect or fate, efficacy, or performance, made by the source of information.

Mention of any company, association, or product in this document is for information purposes only and does not constitute a recommendation of any such company, association, or product, either express or implied by UNEP, the Technology and Economic Assessment Panel Co-chairs or members, the Technical and Economic Options Committee Co-chairs or members, the TEAP Task Forces Co-chairs or members or the companies or organisations that employ them.

TABLE OF CONTENTS

DISCLAIMERIV

EXECUTIVE SUMMARY	XI
CHAPTER 1 INTRODUCTION.....	1
1.1 Terms of Reference	1
1.2 Scope and Coverage.....	1
1.3 Composition of the Task Force and Activities.....	2
1.4 Overview of the Multilateral Fund for the Implementation of the Montreal Protocol.....	3
1.5 Replenishment of the Multilateral Fund.....	5
1.6 Caveats	6
1.7 Areas of Decision Requiring Further Guidance from Parties	7
CHAPTER 2 FUNDING FOR HCFC PHASE-OUT.....	11
2.1 Background: HCFC Phase-out.....	11
2.2 2023 Status Overview of the HCFC Consumption Sector.....	13
2.3 Overview of HCFC Funding Requirement	16
2.4 Estimated Funding Requirement in the HCFC Consumption Sector.....	17
2.5 Estimated Funding Requirement in the HCFC Production Sector.....	20
2.6 Summary of Total HCFC Funding Requirement for the 2024-2026 Triennium.....	23
CHAPTER 3 ESTIMATED FUNDING REQUIREMENT FOR HFC PHASE-DOWN	25
3.1 Introduction.....	25
3.2 Cost Guidelines and Related Discussions at ExCom	25
3.3 RTF Approach to Estimate Total HFC Phase-down Costs – Methodology.....	25
3.4 Special Needs of LVC and VLVC Countries in Bracket E.....	36
3.5 Kigali HFC Phase-down Management Plan - Preparation and Implementation.....	39
3.6 Enabling Activities.....	40
3.7 HFC Verification.....	42
3.8 Estimated Funding Window for Enhancing or Maintaining Energy Efficiency	42
3.9 Total Estimated Funding Requirement for the HFC Consumption Sector Phase-down for the 2024-2026 Triennium.....	43
CHAPTER 4 HFC PRODUCTION SECTOR AND HFC-23 BY-PRODUCT EMISSION MITIGATION	45
4.1 Introduction.....	45
4.2 Overview of HFC Production and HFC-23 By-product Emission Mitigation.....	45
4.3 Estimating Funding Requirements 2024-2026 FOR HFC Production Phase-down and HFC-23 By-Product Mitigation	49
4.4 Total Funding Requirements for HFC Production Sector Phase-down and HFC-23 Mitigation for the Period 2024-2026.....	53
CHAPTER 5 FUNDING ESTIMATE FOR MAINTAINING AND/OR ENHANCING ENERGY EFFICIENCY WHILE PHASING DOWN HFCS	55
5.1 Introduction.....	55

5.2	Estimated Funding Related to EE Based on Decision 89/6 for LVCs	55
5.3	Approved EE Funding Window in Decision 91/65	55
5.4	Funding Needs for Energy Efficiency in Future Triennia.....	55
5.5	Summary of Funding Needs for Energy Efficiency During HFC Phasedown in the 2024-2026 Triennium.....	56
CHAPTER 6 FUNDING REQUIREMENTS FOR END-OF-LIFE MANAGEMENT AND DISPOSAL		57
6.1	Introduction.....	57
6.2	Criteria for Funding Window	57
6.3	Funding Eligibility and Prioritisation.....	59
6.4	Cost Estimates for Funding the Preparation of National Inventories of Banks of Waste-Controlled Substances and Action Plan, 2024-2026	61
6.5	Cost Estimates for Future Triennia 2027-2029 and 2030-2032	61
CHAPTER 7 FUNDING REQUIREMENTS FOR GENDER MAINSTREAMING		65
7.1	Introduction.....	65
7.2	Gender Policies in other Global Funds	65
7.3	MLF Operational Policy on Gender Mainstreaming: Considerations.....	67
7.4	Implementation of MLF Gender Policy: Challenges Identified by IAs.....	70
7.5	RTF Funding Estimates for Gender Mainstreaming in 2024-2026.....	71
7.6	Additional Guidance to RTF	72
7.7	Gender Mainstreaming in Future Triennia.....	72
CHAPTER 8 FUNDING REQUIREMENTS FOR INSTITUTIONAL STRENGTHENING AND STANDARD ACTIVITIES FOR THE 2024-2026 TRIENNIUM		73
8.1	Introduction.....	73
8.2	Evolution of Institutional Strengthening Policies and Decisions.....	73
8.3	Estimated Funding Requirement for is under HCFC and HFC Regimes in the Period 2024-2026.....	74
8.4	Standard Activities	75
8.5	Summary: Funding Requirements for Institutional Strengthening and Standard Activities for 2024-2026 Triennium.....	78
CHAPTER 9 ESTIMATED TOTAL FUNDING REQUIREMENTS FOR THE 2024-2026 TRIENNIUM.....		79
CHAPTER 10 INDICATIVE FUNDING REQUIREMENT FOR FUTURE TRIENNIA 2027-2029 AND 2030-2032		81
10.1	Overview	81
10.2	HCFC Funding Considerations for Future Triennia.....	81
10.3	HFC Funding Considerations for Future Triennia	82
	IS and Standard Activities	83
REFERENCES 85		
	ANNEX 1: Methodology for HFC Baseline Estimates and Assumptions	92
	ANNEX 2: List of LVC and Non-LVC Countries (for funding purposes)	100

ANNEX 3: Estimation of HCFC Reduction Needed for Eligible Funding (Based on Adjusted Consolidated BP of the MLF 2023-2025).....	102
ANNEX 4: List of Kigali Amendment Ratification and Letters of Intent by Country (as of 3 April 2023)	106
ANNEX 5: Gender Mainstreaming Checklist for Projects.....	109

ACRONYMS

A5	Article 5
AC	Air conditioning
ACC	Additional capital cost
AOC	Additional operating cost
BAT	Best-available technology
BAU	Business-as-usual
BP	Business Plan
CAP	Compliance Assistance Programme
CE	Cost-effectiveness
CFC	Chlorofluorocarbon
CTC	Carbon tetrachloride
EEFT	TEAP Energy Efficiency Task Force (Working Group)
ExCom	Executive Committee of the Multilateral Fund
FERM	Fixed-exchange-rate mechanism
EOL	End-of-life management and disposal
GCF	Green Climate Fund
GEF	Global Environment Facility
GWP	Global Warming Potential
HCFC	Hydrochlorofluorocarbon
HFC	Hydrofluorocarbon
HFO	Hydrofluoroolefin
HPMP	HCFC Phase-out Management Plan
HPPMP	HCFC Production Phase-out Management Plan
ICR	Industrial and Commercial Refrigeration
IOC	Incremental operating costs
IS	Institutional Strengthening
KIPs	Kigali HFC implementation plans
KPPMP	Kigali HFC Production Phase-down Management Plan
LVC	Low-volume consuming
MAC	Mobile Air Conditioning
MEPS	Minimum Energy Performance Standards
MPS	Minimum Performance Standards
MLF	Multilateral Fund
MLFS	Multilateral Fund Secretariat
MMTCO ₂ eq	Million metric tons carbon dioxide equivalent
MtCO ₂ eq	Megatonne carbon dioxide equivalent
MOP	Meeting of the Parties
MYA	Multi-year Agreement
NOO	National Ozone Officer
NOU	National Ozone Unit
NPP	National Phase-out Plans
ODP	Ozone depletion potential
ODS	Ozone-depleting substances
OEWG	Open-Ended Working Group
OS	Ozone Secretariat
PMU	Project Management Unit
PUR	Polyurethane
RACHP	Refrigeration Air-conditioning and Heat-pump
RTF	Replenishment Task Force
RMP	Refrigerant Management Plan
RTOC	Refrigeration, Air Conditioning and Heat Pumps Technical Options Committee
SIDS	Small Island Developing States
TCA	1,1,1-trichloroethane (methyl chloroform)

TEAP	Technology and Economic Assessment Panel
TPMPs	Terminal Phase-out Management Plans
TOR	Terms of reference
TOC	Technical Options Committee
VLVC	Very low-volume consuming
XPS	Extruded Polystyrene

EXECUTIVE SUMMARY

The Montreal Protocol Multilateral Fund (MLF) has been replenished ten times since its initial capitalisation of US\$ 240 million for the period 1991-1993. The replenishments of the MLF are indicated in Table E-1, which include anticipated contributions from the MLF and other sources from the previous triennium, known as “carry-over”, and from interest accruing to the Fund during that triennium. The MLF has also received additional voluntary contributions amounting to over US\$ 25.5 million from a group of donor countries to finance fast-start activities for the implementation of the hydrofluorocarbon (HFC) phase-down¹.

Table ES-1 Replenishments of the MLF (US\$)*

Triennium	Approved	Carry-over	Interest accrued	Total MLF Budget
1994-1996	\$ 455,000,000	\$ 55,000,000	N/A	\$ 510,000,000
1997-1999	\$ 466,000,000	\$ 74,000,000	N/A	\$ 540,000,000
2000-2002	\$ 440,000,000	\$ 35,700,000	N/A	\$ 475,700,000
2003-2005	\$ 474,000,000	\$ 76,000,000	\$ 23,000,000	\$ 573,000,000
2006-2008	\$ 400,400,000	\$ 59,600,000	\$ 10,000,000	\$ 470,000,000
2009-2011	\$ 400,000,000	\$ 73,900,000	\$ 16,100,000	\$ 490,000,000
2012-2014	\$ 400,000,000	\$ 34,900,000	\$ 15,100,000	\$ 450,000,000
2015-2017	\$ 437,500,000	\$ 64,000,000	\$ 6,000,000	\$ 507,500,000
2018-2020	\$ 500,000,000	\$ 34,000,000	\$ 6,000,000	\$ 540,000,000
2021-2023	\$ 475,000,000	\$ 65,000,000	N/A	\$ 540,000,000

* Doesn't include the initial capitalisation of US\$ 240 million for 1991-1993

Since its inception, and as of the 91st meeting of the Executive Committee (ExCom), the MLF has supported 144 A5 parties by approving US\$ 3.98 billion (including support costs) in project funding. As of December 2021, completed projects had phased out 289,332 ODP tonnes (ODPt) of consumption and 204,189 ODPt of production².

The replenishment of the MLF for the 2024-2026 triennium represents a significant milestone in assistance to developing countries to comply with the terms of the Montreal Protocol – for the first time, the MLF will provide financing for the incremental costs of not just the phase-out of ozone-depleting substances (ODS) but also the phase-down of HFCs.

- For Annex C, Group 1, controlled substances (ozone-depleting hydrochlorofluorocarbons or HCFCs), the compliance target for the 2024-2026 triennium is a 67.5% reduction from baseline by 1 January 2025.
 - For the next two triennia 2027-2029 and 2030-2032, the next HCFC phase-out compliance target is a 97.5% reduction from baseline by 1 January 2030. The annual average of 2.5% is restricted to the servicing of refrigeration and air-conditioning equipment existing during 2030-2040 and subject to review in 2025. Decision XXX/2 referring to Annex I of the MOP30 report³, adjusted this part of Article 5 (as well as 2F) to include other uses, i.e., the servicing of fire suppression and fire protection equipment existing on 1 January 2030; solvent applications in rocket engine manufacturing; and topical medical aerosol for applications for the specialised treatment of burns.
- For Annex F controlled substances (HFCs), the compliance targets for the 2024-2026 and next two triennia are as follows:

¹ <http://www.multilateralfund.org/default.aspx>

² UNEP/OzL.Pro/ExCom/91/8

³ <https://ozone.unep.org/treaties/montreal-protocol/meetings/thirtieth-meeting-parties/decisions/annex-i-adjustments>

- Group 1 parties: A 10% reduction from baseline by 1 January 2029 and a 30% reduction from baseline by 1 January 2035.
- Group 2 parties: For the next two triennia 2027-2029 and 2030-2032, a freeze of production and consumption by 1 January 2028 and a 10% reduction from baseline by 1 January 2032.

Decision XXXIV/2 of the Thirty-fourth Meeting of the Parties (MOP-34) provided the terms of reference (TOR) for the work of the Technology and Economic Assessment Panel (TEAP) to prepare a report on the appropriate level of the replenishment of the MLF for the triennium 2024-2026. The parties requested the TEAP to prepare a report for submission to the Thirty-fifth Meeting of the Parties (MOP-35), and to present it to the Open-ended Working Group (OEWG) at its Forty-fifth Meeting (OEWG-45), to enable MOP-35 to take a decision.

The TEAP established a Replenishment Task Force (RTF), with members from TEAP, its Technical Options Committees (TOCs), and other outside experts. In December 2022, RTF attended the 91st meeting of the Executive Committee of the MLF (ExCom-91) to conduct informal discussions with ExCom members, and Bilateral and Implementing Agencies (IAs) present at that meeting.

In this report, the RTF estimated the funding requirements for the 2024-2026 triennium and future triennia informed by the “Consolidated Business Plan of the Multilateral Fund for 2023-2025,”⁴ relevant decisions of the ExCom up to its 91st meeting, and information available through the Multilateral Fund Secretariat (MLFS). The RTF relied on existing cost guidelines under the MLF and, where these remained under discussion in the ExCom, the RTF noted these limitations in its estimates.

HCFC Phase-out

The estimate for the HCFC phase-out funding requirement for the 2024-2026 triennium and beyond is based on Article 5 (A5) parties meeting the upcoming reduction targets. The RTF considered, amongst other information, the adjusted “Consolidated Business Plan of the Multilateral Fund 2023-2025,” to present the costs for activities in the HCFC consumption and production sectors which include the following:

- HCFC consumption sector costs include:
 - Funding for approved HCFC Phaseout Management Plans (HPMPs) (including projects for HCFC-141b Polyols);
 - Funding for project preparation costs;
 - Funding for estimated HPMPs;
 - Funding for energy efficiency (EE); and
 - Funding for verification.
- HCFC production sector funding estimates include:
 - Funding for project preparation, including audit, and
 - Funding for HCFC Production Phaseout Management Plans (HPPMPs), including verification

HFC Phase-down

The RTF undertook several steps including conversions between units [ozone depletion potential (ODP), Global Warming Potential (GWP), metric tonnes, kilograms, and million metric tonnes of carbon dioxide equivalent (MMTCO₂eq)] to calculate the total estimated funding for an HFC phase-down. The RTF will refer to phase-down plans as the “Kigali HFC Implementation Plans” or “KIPs”⁵, and to “Kigali HFC Production Phase-down Management Plans (KPPMPs).

⁴ UNEP/OzL.Pro/ExCom/91/22

⁵ UNEP/OzL.Pro/ExCom/87/IAP/3.para. 188(b)

Estimated funding requirement for the HFC consumption and production sectors include the following:

- HFC consumption sector funding estimates include:
 - Funding for KIPs – approved, project preparation (including additional resources needed for gender mainstreaming activities), estimated (including for the special needs of low-volume consuming countries (LVCs) and very low-volume consuming countries (VLVCs); and a funding window for EE;
 - Funding for enabling activities;
 - Funding for verification, if any.
- HFC production sector and HFC-23 mitigation funding estimates include:
 - Funding for HFC production sector preparation;
 - Funding for KPPMPs, if any;
 - Funding for HFC-23 mitigation project preparation; and
 - Funding for HFC-23 mitigation project approved and investment project proposed.

Separate estimates are included for funding windows for estimated resources for EOL/disposal and funding to maintain or enhance energy efficiency. during the phase-down of HFCs,

As of 3 April 2023, 104 out of 144 A5 parties had ratified the Kigali Amendment. So, the RTF considered a range based on the following two scenarios for the triennium 2024-2026:

- **Low-end scenario:** Calculated HFC baselines for 104 A5 countries that have ratified the Kigali Amendment as of the 3 April 2023 using a range of cost effectiveness factors; and
- **High-end scenario:** All 144 A5 countries ratifying the Kigali Amendment using a range of cost effectiveness factors.

The RTF used agreed cost effectiveness (CE) values, and where these were absent pending further discussion by the ExCom on HFC cost guidelines, the RTF considered available CE values for HCFCs, for the servicing and other sectors for all non-LVC countries in both Group 1 and Group 2 categories under the Kigali Amendment.

The RTF has also included the approved funding window for EE and considered options to address EE in the HFC cost guidelines under preparation. Those options may help parties in finding solutions to quantify and fund energy efficiency improvements at the time of the HFC conversion in the refrigeration and air conditioning (RAC) manufacturing sector and could be detailed in a Supplementary Report if parties may wish so.

The funding window for end-of-life management or disposal of controlled substances was included as a separate line, as it covers not only HFCs but also HCFCs.

For the HFC production sector and HFC-23 by-product emission mitigation, the funding requirement includes HFC production sector project preparation, HFC production sector KPPMPs, HFC-23 by-product emissions mitigation project preparation, and HFC-23 by-product emissions mitigation.

Institutional Strengthening & Standard Activities

The estimated funding requirement includes institutional strengthening (IS) and Standard Activities. The estimated funding requirement for standard activities, such as the UNEP Compliance Assistance Programme (CAP), Core Unit of UNDP, UNIDO and the World Bank, MLFS/ExCom and Treasurer, were based on the Adjusted Consolidated Business Plan of the MLF 2023-2025 and the 2022 and 2023 MLF budget as approved by the ExCom.

Estimated Total Funding Requirements for the 2024-2026 Triennium

The total estimated funding requirement for the replenishment of the MLF in the 2024-2026 triennium, including support costs, is **US\$ 975-1,018 million**⁶ as presented in Tables ES-2 and ES-3 below.

⁶ Note: figures may not sum due to rounding.

Table ES-2. Range of Total Funding Requirement for Replenishment of the MLF 2024-2026 Based on Different Scenarios (US\$)

2024-2026 TRIENNIUM	LOW-END	HIGH-END
SUBTOTAL - HCFC Activities (including energy efficiency)	\$ 363,911,000	\$ 363,911,000
SUBTOTAL - HFC Activities (including gender mainstreaming activities, project preparation, enabling activities and energy efficiency funding window)	\$ 475,491,000	\$ 519,142,000
SUBTOTAL - Funding Window on EOL/Disposal	\$ 13,590,000	\$ 13,590,000
SUBTOTAL - IS & Standard Activities	\$ 121,581,000	\$ 121,581,000
GRAND TOTAL	\$ 974,573,000	\$ 1,018,224,000

Table ES-3. Total funding requirement for the replenishment of the MLF 2024-2026 (US\$)

2024-2026 Triennium Estimated Funding		
HCFC Consumption Sector		
HCFC Approved HPMPs		\$ 116,746,000
HCFC Prep Costs		\$ 170,000
HCFC Estimated HPMPs (including LVCs/VLVCs)		\$ 205,405,000
HCFC Verification		\$ 1,766,000
HCFC Energy Efficiency Special Funding		\$ 11,092,000
Subtotal – HCFC Consumption Sector		\$ 335,179,000
HCFC Production Sector		
HCFC Production Sector Stage I PRP		\$ 148,000
HCFC Production Sector Stage I HPPMP		\$ 5,352,000
HCFC Production Sector Stage II HPPMP		\$ 23,232,000
Subtotal – HCFC Production Sector		\$ 28,732,000
SUBTOTAL - HCFC Activities		\$ 363,911,000
2024-2026 Triennium Estimated Funding	LOW-END	HIGH-END
HFC Consumption Sector		
HFC Approved KIPs	\$ -	\$ -
HFC Prep Costs (including gender mainstreaming)	\$ 16,802,000	\$ 16,802,000
HFC RTF Estimated KIPs	\$ 405,764,000	\$ 449,415,000
HFC Enabling Activities	\$ 1,011,000	\$ 1,011,000
HFC Energy Efficiency Funding Window	\$ 20,000,000	\$ 20,000,000
Subtotal – HFC Consumption Sector	\$ 443,577,000	\$ 487,228,000
HFC Production Sector		
HFC Production Sector Prep		\$ 2,000,000
HFC Production Sector KPPMP RTF Estimated		\$ 20,000,000
HFC-23 Mitigation Prep		\$ 193,000
HFC-23 Mitigation Approved		\$ 1,721,000
HFC-23 Mitigation RTF Estimated		\$ 8,000,000
Subtotal – HFC Production and HFC-23 Sector		\$ 31,914,000
SUBTOTAL - HFC Activities	\$ 475,491,000	\$ 519,142,000

2024-2026 Triennium Estimated Funding	
IS and Standard Activities	
IS	\$ 44,500,000
UNEP CAP	\$ 36,437,000
UNDP, UNIDO, World Bank Core Unit	\$ 18,161,000
MLF Secretariat and ExCom Costs	\$ 20,983,000
Treasurer	\$ 1,500,000
SUBTOTAL - IS & Standard Activities	\$ 121,581,000
2024-2026 Triennium Estimated Funding	
Funding Window on EOL/Disposal	\$ 13,590,000
SUBTOTAL – EOL/Disposal	\$ 13,590,000

CHAPTER 1 INTRODUCTION

1.1 TERMS OF REFERENCE

Decision XXXIV/2 of the Thirty-fourth Meeting of the Parties (MOP-34) provided the terms of reference for the work of the Technology and Economic Assessment Panel (TEAP) to prepare a report on the appropriate level of the replenishment of the Multilateral Fund (MLF) for the triennium 2024–2026. The parties requested the TEAP to prepare a report for submission to the Thirty-fifth Meeting of the Parties (MOP-35), and to present it to the Open-ended Working Group at its Forty-fifth meeting (OEWG-45), to enable MOP-35 to take a decision.

1.2 SCOPE AND COVERAGE

The text of Decision XXXIV/2: “Terms of reference for the study on the 2024–2026 replenishment of the Multilateral Fund for the Implementation of the Montreal Protocol” is as follows:

Recalling the parties’ decisions on previous terms of reference for studies on the replenishment of the Multilateral Fund for the Implementation of the Montreal Protocol on Substances that Deplete the Ozone Layer,

Recalling also the parties’ decisions on previous replenishments of the Multilateral Fund,

1. To request the Technology and Economic Assessment Panel to prepare a report for submission to the Thirty-Fifth Meeting of the Parties to the Montreal Protocol, and to submit it through the Open-ended Working Group of the Parties to the Montreal Protocol at its forty-fifth meeting, to enable the Thirty-Fifth Meeting of the Parties to adopt a decision on the appropriate level of the 2024–2026 replenishment of the Multilateral Fund;
2. That, in preparing the report referred to in paragraph 1 of the present decision, the Panel should take into account, among other things:
 - a) All control measures and relevant decisions agreed upon by the parties to the Montreal Protocol and the Executive Committee of the Multilateral Fund, including paragraphs 9 through 25 of decision XXVIII/2, and the decisions of the Thirty-Fourth Meeting of the Parties and the Executive Committee at its meetings, up to and including its ninety-second meeting, insofar as those decisions will necessitate expenditure by the Multilateral Fund during the period 2024–2026;
 - b) The special needs of low-volume-consuming and very-low-volume-consuming countries;
 - c) The need to allocate resources to enable all parties operating under paragraph 1 of Article 5 of the Montreal Protocol to comply with Articles 2A–2J of the Protocol, and the reductions and extended commitments made by parties operating under Article 5 of the Protocol under approved hydrochlorofluorocarbon (HCFC) phase-out management plans and Kigali hydrofluorocarbon (HFC) implementation plans;
 - d) Decisions, rules and guidelines agreed by the Executive Committee at all its meetings, up to and including its ninety-second meeting, in determining eligibility for the funding of investment projects and non-investment projects;
 - e) The need to allocate resources for activities to maintain and/or enhance energy efficiency while phasing down HFCs including those relating to pilot and demonstration projects, in accordance with any energy efficiency cost guidance developed by the Executive Committee, or, should the Executive Committee not adopt cost guidance in time to be considered in the report, for a scenario for a funding window to support such activities;
 - f) The need to allocate resources for supporting activities related to gender mainstreaming as part of the gender policy of the Multilateral Fund, taking into

- account the implementing agencies' existing policies to promote gender mainstreaming and the mandate set out in Executive Committee decision 84/92;
- g) The need to allocate resources for a funding window for activities to support end-of-life management and disposal of controlled substances in an environmentally sound manner, in accordance with any relevant decisions by the Executive Committee, or, should the Executive Committee not adopt relevant decisions in time to be considered in the report, for a scenario for funding a limited number of demonstration projects;
 - h) A scenario to increase funding for institutional strengthening and the compliance assistance programme to assist parties operating under paragraph 1 of Article 5 to strengthen their national capacities to address challenges associated with implementing the Kigali Amendment;
3. That in estimating the funding requirement associated with the HCFC and HFC targets, the Panel will use a clearly explained compliance-based methodology that is informed by, but independent of, the business plan of the Multilateral Fund, taking into account policy guidance provided by the meeting of the parties and/or the Executive Committee;
 4. That the Panel should provide indicative figures associated with enabling parties operating under paragraph 1 of Article 5 to implement HCFC phase-out management plans and Kigali HFC implementation plans in a coordinated manner. Indicative figures should be provided for a range of typical scenarios, using all relevant data available to the Panel;
 5. That, in preparing the report, the Panel should consult widely, including all relevant persons and institutions and other relevant sources of information deemed useful;
 6. That the Panel should strive to complete the report in good time to enable it to be distributed to all parties two months before the forty-fifth meeting of the Open-ended Working Group;
 7. That the Panel should provide indicative figures for the periods 2027–2029 and 2030-2032 to support a stable and sufficient level of funding, on the understanding that those figures will be updated in subsequent replenishment studies.

1.3 COMPOSITION OF THE TASK FORCE AND ACTIVITIES

The TEAP established a Replenishment Task Force (RTF), with members from TEAP, its Technical Options Committees (TOCs), and other outside experts. The composition of the RTF is as follows:

Co-chairs:

Suely Carvalho (Brazil, TEAP Senior Expert)
 Bella Maranion (USA, TEAP Co-chair)
 Shiqiu Zhang (PRC, TEAP Senior Expert)

Members:

Omar Abdelaziz (Egypt, RTOC Co-chair)
 Jitendra Bhambure, (India, RTOC member)
 Rick Cooke (Canada, MCTOC member)
 Gabrielle Dreyfus (USA, FTOC member)
 Bassam Elassaad (Lebanon, RTOC member)
 Ray Gluckman (UK, RTOC member)
 Marco Gonzalez (Costa Rica, TEAP Senior Expert)
 Mary Najjuma (Uganda, Independent consultant)
 Keiichi Ohnishi (Japan, MCTOC Co-chair)
 Philip Owen (UK, Independent consultant)

Marta Pizano (Colombia, TEAP co-chair)
Fabio Polonara (Italy, RTOC co-chair)
Elisa Rim (USA, UNEP)
John Telesford (Grenada, Independent consultant)
Helen Tope (Australia, MCTOC co-chair)
Viraj Vithoontien (Thailand, Independent consultant)
Helen Walter-Terrinoni (USA, FTOC Co-chair)

In December 2022, several RTF members attended the 91st meeting of the Executive Committee of the MLF (ExCom-91) to conduct informal consultations with ExCom members and bilateral and Implementing agencies present at that meeting. The RTF also took into account any relevant discussions and decisions taken at this meeting that could have potential implications in the preparation of this report.

In February 2023, the RTF met in Montreal hosted by the Multilateral Fund Secretariat (MLFS) to plan its work in response to Decision XXXIV/2. The RTF prepared its report in consultation with MLFS staff, and TEAP and the RTF are grateful for their efforts in support of this report.

1.4 OVERVIEW OF THE MULTILATERAL FUND FOR THE IMPLEMENTATION OF THE MONTREAL PROTOCOL⁷

The Multilateral Fund for the Implementation of the Montreal Protocol was set up by the parties to the Montreal Protocol to assist developing countries to comply with the terms of the Montreal Protocol which sets out a timetable for the phase-out of ozone depleting substances (ODS) in both developed and developing countries. The MLF provides assistance to Article 5 (A5) parties⁸. As stated in the terms of reference of the MLF, and in accordance with paragraph 6 of Article 10 of the Montreal Protocol, contributions to the MLF are made by non-Article 5 (non-A5) parties, based on a scale of contributions decided by the parties at their annual meeting. The annual contribution for each party is based on the United Nations scale of assessment, adjusted to ensure that no one contribution shall exceed 22% of the total. These contributions may be made either in cash, through the use of promissory notes, or bilateral contributions.

The ExCom divides projects into investment and non-investment projects. The MLF provides financing for the incremental costs of the phase-out of substances controlled by the Montreal Protocol including investment projects and the costs of other activities, e.g., institutional strengthening (IS) projects, project preparation, training, and associated activities. The parties to the Montreal Protocol agreed on an indicative list of such costs, which includes:

- Costs involved in supplying substitutes, including converting existing production facilities and equipment or establishing new facilities, paying for patents, designs and royalties, training personnel, adapting technology to local circumstances, retiring existing capital prematurely and importing substitutes
- Costs involved where controlled substances are used in manufacturing, including converting existing equipment and facilities, paying for patents, designs and royalties, training, research and development and paying for raw materials, and
- Costs involved in end use, including prematurely modifying or replacing user equipment, recycling and destroying controlled substances and providing technical assistance to reduce consumption and unintended emissions.

⁷ This section is based on information from the “Policies, Procedures, Guidelines and Criteria of the Multilateral Fund,” available at <http://www.multilateralfund.org/Our%20Work/policy/default.aspx>.

⁸ The MLF provides assistance to countries that are parties to the Montreal Protocol and whose annual per capita consumption and production of CFCs and halons is less than 0.3 kg on the date of entry into force of the Montreal Protocol or any time thereafter until 1 January 1999. The developing countries that meet these criteria are referred to as Article 5 parties.

As per MLF guidelines, projects are approved based on the rules and regulations regarding financing eligible incremental costs agreed by parties.

A party is in compliance when it meets the provisions set out in the Montreal Protocol. The MLF's strategy is based on a compliance-driven business planning approach, in which the level of controlled substance phase-out has been calculated for each country so that resources can be appropriately targeted to parties. This calculation has been made on the basis of an agreed starting point for aggregate reduction in controlled substances. Multi-year agreements (MYAs) are established with parties to assist them in meeting the phase-out targets set out in the Montreal Protocol. Table 1-1 provides a summary of the compliance schedule for the main controlled substances as set out in A5 of the Montreal Protocol.

Table 1-1 Montreal Protocol compliance schedule for main controlled substances for A5 parties⁹

Controlled substance	Compliance Schedule for A5 parties
Annex A – Group I: Chlorofluorocarbons (CFCs)	Freeze at average 1995-1997 level on 1/7/1999; 50% reduction by 1/1/2005; 85% reduction by 1/1/2007; Total phase-out by 1/1/2010
Annex A – Group II: Halons	Freeze at average 1995-1997 level on 1/1/2002; 50% reduction by 1/1/2005; Total phase-out by 1/1/2010
Annex B – Group II: Carbon tetrachloride (CTC)	85% reduction at average 1998-2000 on 1/1/2005; Total phase-out by 2010
Annex B – Group III: Methyl chloroform (TCA)	Freeze at average 1998-2000 level on 1/1/2003; 30% reduction by 1/1/2005; 70% reduction by 1/1/2010; Total phase-out by 1/1/2015
Annex C – Group I: Hydrochlorofluorocarbons (HCFCs)	Baseline is the average of 2009 and 2010 production and consumption Freeze at average 2009-2010 level on 1/1/2013; 10% reduction by 1/1/2015; 35% reduction by 1/1/2020; 67.5% reduction by 1/1/2025; 97.5% reduction by 1/1/2030** ; Total phase-out by 1/1/2040 **The annual average of 2.5% is restricted to the servicing of refrigeration and air-conditioning equipment existing during 2030-2040 and subject to review in 2025. Note that Decision XXX/2 referring to Annex I of the MOP30 report, adjusted this part of Article 5 (as well as 2F) to include other uses, i.e., the servicing of fire suppression and fire protection equipment existing on 1 January 2030; solvent applications in rocket engine manufacturing; and topical medical aerosol for applications for the specialised treatment of burns.
Annex C – Group II: HBFC	Total phase-out by 1/1/1996
Annex C – Group III: Bromochloromethane (BCM)	Total phase-out by 1/1/2002
Annex E: Methyl bromide (Horticultural uses)	Freeze at average 1995-1998 level on 1/1/2002; 20% reduction by 1/1/2005; Total phase-out by 1/1/2015
Annex F: Hydrofluorocarbons (HFCs) (Groups I and II – also emissions)	<u>Group 1 Parties</u> Baseline is average HFC for 2020-2022 + 65% of HCFC baseline Freeze on 1/1/2024 at baseline level; 10% reduction by 1/1/2029; 30% reduction by 1/1/2035 ; 50% reduction by 1/1/2040; 80% plateau by 1/1/2045 <u>Group 2 Parties</u> Baseline is average HFC for 2024-2026 + 65% of HCFC baseline Freeze on 1/1/2028 at baseline level; 10% reduction by 1/1/2032 ; 20% reduction by 1/1/2037; 30% reduction by 1/1/2042; 85% plateau by 1/1/2047

For Annex C, Group 1, controlled substances (hydrochlorofluorocarbons or HCFCs), the compliance target for the 2024-2026 triennium is a 67.5% reduction from baseline by 1 January 2025. For the next

⁹ Freezes and reductions refer to baseline levels. Full details of control measures are published on the Ozone Secretariat's website, including decisions XXVIII/1 and XXVIII/2 regarding the Kigali Amendment.

two triennia 2027-2029 and 2030-2032, the next HCFC phase-out compliance target is a 97.5% reduction from baseline by 1 January 2030. The annual average of 2.5% is restricted to the servicing of refrigeration and air-conditioning equipment existing during 2030-2040 and subject to review in 2025. Decision XXX/2 referring to Annex I of the MOP30 report¹⁰, adjusted this part of Article 5 (as well as 2F) to include other uses, i.e., the servicing of fire suppression and fire protection equipment existing on 1 January 2030; solvent applications in rocket engine manufacturing; and topical medical aerosol for applications for the specialised treatment of burns. For Annex F controlled substances (hydrofluorocarbons or HFCs), the compliance targets for the 2024-2026 and next two triennia are as follows:

- Group 1 parties: In the 2024-2026 triennium, a 10% reduction from baseline by 1 January 2029; for the next two triennia 2027-2029 and 2030-2032, a 30% reduction from baseline by 1 January 2035.
- Group 2 parties: For the next two triennia 2027-2029 and 2030-2032, a freeze of production and consumption by 1 January 2028 and a 10% reduction from baseline by 1 January 2032.

Since its inception and as of ExCom-91, the MLF has supported 144 A5 parties by approving US\$ 3.98 billion (including support costs) in project funding. As of December 2021, completed projects had phased out 289,332 ODP tonnes of consumption and 204,189 ODP tonnes of production¹¹.

1.5 REPLENISHMENT OF THE MULTILATERAL FUND

The MLF has been replenished ten times since its initial capitalisation of US\$ 240 million for the period 1991-1993.

As mandated by the parties, and to facilitate discussions on the replenishment, the TEAP is requested to prepare a study analysing an appropriate replenishment level to finance the Fund’s work over the next triennium. The TEAP presents its report to the OEWG Meeting for the discussion of parties, the result of which may include a request to the TEAP for additional information. The OEWG Meeting forwards a recommendation on the replenishment to the MOP. A final decision on the replenishment budget is taken at the MOP in the final year of the preceding triennium.

The replenishments of the MLF are indicated in Table 1-2, which include anticipated contributions from the MLF and other sources from the previous triennium, known as “carry-over”, and from interest accruing to the Fund during that triennium.

Table 1-2 Replenishments of the MLF (US\$)*

Triennium	Approved	Carry-over	Interest accrued	Total MLF Budget
1994-1996	\$ 455,000,000	\$ 55,000,000	N/A	\$ 510,000,000
1997-1999	\$ 466,000,000	\$ 74,000,000	N/A	\$ 540,000,000
2000-2002	\$ 440,000,000	\$ 35,700,000	N/A	\$ 475,700,000
2003-2005	\$ 474,000,000	\$ 76,000,000	\$ 23,000,000	\$ 573,000,000
2006-2008	\$ 400,400,000	\$ 59,600,000	\$ 10,000,000	\$ 470,000,000
2009-2011	\$ 400,000,000	\$ 73,900,000	\$ 16,100,000	\$ 490,000,000
2012-2014	\$ 400,000,000	\$ 34,900,000	\$ 15,100,000	\$ 450,000,000
2015-2017	\$ 437,500,000	\$ 64,000,000	\$ 6,000,000	\$ 507,500,000
2018-2020	\$ 500,000,000	\$ 34,000,000	\$ 6,000,000	\$ 540,000,000
2021-2023	\$ 475,000,000	\$65,000,000	N/A	\$540,000,000

* Doesn’t include the initial capitalisation of US\$ 240 million for 1991-1993

¹⁰ <https://ozone.unep.org/treaties/montreal-protocol/meetings/thirtieth-meeting-parties/decisions/annex-i-adjustments>

¹¹ UNEP/OzL.Pro/ExCom/91/8

For the last eight replenishments (2000-2002, 2003-2005, 2006-2008, 2009-2011, 2012-2014, 2015-2017, 2018-2020, and 2021-2023), a fixed-exchange-rate mechanism (FERM) was agreed upon at the same MOP that considered the replenishment. The FERM for the previous 2021-2023 period was based on the average United Nations (UN) exchange rate for the six-month period commencing 1 January 2020 (Decision Ex.V/2).¹² The impact of the FERM on the value of resources available to the Fund is monitored by the Treasurer as part of the report on the status of contributions and disbursements to each meeting of the ExCom.

At the Fifth Extraordinary Meeting of the Parties to the Montreal Protocol (ExMOP-5), 22 July 2022, for the previous 2021-2023 triennium, the parties established a replenishment budget of US\$ 540 million (Decision Ex.V/1)¹³.

1.6 CAVEATS

For this report, the RTF calculated the funding requirements informed by the Adjusted Consolidated BP of the MLF for 2023-2025¹⁴, relevant decisions of the ExCom through its 91st meeting, and information available through the MLFS. The RTF relied on existing cost guidelines under the MLF and, where these remained under discussion in the ExCom (i.e., cost guidelines for HFC phase-down activities), the RTF noted these limitations in its estimates. The RTF estimates and tables cover the period to 2050, where available. Please note that for all tables and figures, totals may not sum exactly due to rounding.

The replenishment of the MLF for the 2024-2026 triennium represents a significant milestone in assistance to developing countries to comply with the terms of the Montreal Protocol – for the first time, the MLF will provide financing for the incremental costs of not just the phase-out of ODS but also the phase-down of HFCs.

- For Annex C, Group 1, controlled substances (ozone-depleting hydrochlorofluorocarbons or HCFCs), the compliance target for the 2024-2026 triennium is a 67.5% reduction from baseline by 1 January 2025.
- For the next two triennia 2027-2029 and 2030-2032, the next HCFC phase-out compliance target is a 97.5% reduction from baseline by 1 January 2030. The annual average of 2.5% was restricted to the servicing of refrigeration and air-conditioning equipment existing during 2030-2040 and subject to review in 2025. Decision XXX/2 referring to Annex I of the MOP30 report¹⁵, adjusted this part of Article 5 (as well as 2F) to include other uses, i.e., the servicing of fire suppression and fire protection equipment existing on 1 January 2030; solvents applications in rocket engine manufacturing; and topical medical aerosol for applications for the specialized treatment of burns.
- For Annex F controlled substances (HFCs), the compliance targets for the 2024-2026 and next two triennia are as follows:
 - Group 1 parties: In the 2024-2026 triennium, a 10% reduction from baseline by 1 January 2029; for the next two triennia 2027-2029 and 2030-2032, a 30% reduction from baseline by 1 January 2035.
 - Group 2 parties: For the next two triennia 2027-2029 and 2030-2032, a freeze of production and consumption by 1 January 2028 and a 10% reduction from baseline by 1 January 2032.

The RTF estimated funding requirements for the 2024-2026 triennium and future triennia take strictly into account the above compliance targets within these periods as requested by the decision. While the RTF recognised that reported consumption could be lower than compliance targets, the RTF calculated

¹² UNEP/OzL.Pro.ExMOP.5/3/Add.1

¹³ UNEP/OzL.Pro.ExMOP.5/3/Add.1

¹⁴ UNEP/OzL.Pro/ExCom/91/22

¹⁵ <https://ozone.unep.org/treaties/montreal-protocol/meetings/thirtieth-meeting-parties/decisions/annex-i-adjustments>

estimated funding needs from the agreed baseline. The RTF estimates were informed by the “Consolidated Business Plan of the Multilateral Fund for 2023-2025”¹⁶, relevant decisions of the ExCom up to its 91st meeting, and information available through the MLFS. The RTF relied on existing cost guidelines under the MLF and, where these remained under discussion in the ExCom, the RTF noted these limitations in its estimates. RTF did not have information to consider other factors that could affect funding such as the impacts of COVID to national HFC policy and regulations development; availability and accessibility of alternatives and technologies; delays in project preparation, approvals, and implementation; the capacity for IAs and developing country institutions to manage two significant programs of compliance under the Montreal Protocol.

1.7 AREAS OF DECISION REQUIRING FURTHER GUIDANCE FROM PARTIES

1.7.1 Requested TOR Clarity Related to Paragraph 4

Decision XXXIV/2, paragraph 4, states the following:

That the Panel should provide indicative figures associated with enabling Article 5 parties to implement HPMPs and KIPs in a coordinated manner. Indicative figures should be provided for a range of typical scenarios, using all relevant data available to the Panel.

Paragraphs 26 to 29 of the note¹⁷ by the Ozone Secretariat on issues for discussion by and information for the attention of the Thirty-Fourth Meeting of the Parties to the Montreal Protocol summarised the discussions on the terms of reference for a study to estimate the funds that would be required to enable A5 parties to achieve compliance with their obligations under the Protocol during the replenishment period 2024-2026. Paragraphs 27 and 28 are listed below:

27. “During the discussion, captured in the report of the forty-fourth meeting of the Open-ended Working Group (UNEP/OzL.Pro.WG.1/44/4, paras. 105 and 106), several representatives mentioned topics that they wished to see addressed in the terms of reference, including the promotion of low-global-warming-potential alternatives; replacement technologies; human resource requirements; the specific needs of low-volume-consuming countries and very-low-volume-consuming countries; the fact that all the elements of decision XXVIII/2 should be considered as compliance obligations; and that the aim should be to build back better after the coronavirus disease (COVID-19) pandemic.
28. The Working Group established a contact group, co-chaired by Mr. Samuel Pare (Burkina Faso) and Ms. Cindy Newberg (United States). The contact group reviewed the text of the previous decision on the terms of reference and managed to reach agreement on certain aspects, including updates to the text and removal of paragraphs that were no longer needed, while other aspects remained in square brackets. The Working Group agreed to forward the draft decision to the Thirty-Fourth Meeting of the Parties for further consideration”.

At the Thirty-fourth Meeting of the Parties, the parties agreed to reconstitute the contact group that had discussed the matter at the forty-fourth meeting of the Open-ended Working Group to continue work on the terms of reference. The TEAP had attended these contact group discussions, as observers, at both the forty-fourth Open-ended Working Group and the thirty-fourth Meeting of the Parties. At a later stage of the meeting, the co-chair of the contact group informed the parties that participation in the group, which had previously been open-ended, would henceforth be open only to parties.

¹⁶ UNEP/OzL.Pro/ExCom/91/22

¹⁷ UNEP/OzL.Pro/ExCom 34/2

Therefore, the TEAP was unable to follow the discussions, including the one that resulted in the final paragraph 4 of the terms of reference, which is unclear to TEAP RTF.

During the 91st ExCom meeting the TEAP held informal consultations with parties, implementing agencies and others related to its terms of reference. The TEAP sought further clarity on the mandate provided in paragraph 4 since the TEAP had missed those discussions finalizing the paragraph, however, those that expressed their views to the TEAP offered limited information and disparate views.

After further considering the discussions at the OEWG and the MOP, to which TEAP was able to participate, and consider previous similar requests to the TEAP, the TEAP is taking the approach to paragraph 4 as a request to consider the remaining opportunities to transition directly to lower GWP technologies through coordination in later stage HPMPs and stage 1 KIPs. Therefore, the first question was “which manufacturing countries still have HPMP stages to submit, with eligible remaining consumption to be addressed”. The MLFS provided the RTF with the information in Table 1-3.

Table 1-3. List of countries that have a HPMP stage to be submitted in the refrigeration and air conditioning (RAC) manufacturing sector¹⁸

Country	Chemical	Consumption in Refrigeration and AC Manufacturing in 2021 (ODP tonnes)	Subsector
Algeria	HCFC-22	1.53	Commercial refrigeration
Argentina	HCFC-22	5.23	Commercial refrigeration
Bangladesh	HCFC-22	15.40	Commercial refrigeration and AC
Brazil	HCFC-22	69.10	AC and commercial refrigeration
China	HCFC-22	3,025.00	AC and ICR
	HCFC-142b	4.23	ICR
	HCFC-123	10.80	ICR
Democratic People's Republic of Korea	HCFC-22	11.50	Commercial refrigeration
Egypt	HCFC-22	82.38	Commercial refrigeration
Iraq	HCFC-22	3.52	AC
Jordan	HCFC-22	0.28	Commercial refrigeration
Saudi Arabia	HCFC-22	303.24	AC and commercial refrigeration
Thailand	HCFC-22	1.88	Commercial refrigeration
Vietnam	HCFC-22	14.63	Commercial refrigeration

The MLFS informed RTF that those countries could have remaining companies to be assisted which were not included in the HPMPs because they had already converted to HFCs, without assistance from the MLF, and could be assisted under the KIP, if eligible. And because the companies are part of the same sector, a coordinated implementation is required to make sure regulatory actions can be placed once all companies have converted to a lower GWP technology.

Important to note that RTF understanding on this approach does not mean integrated implementation, nor less funds to the country, as the projects would be only coordinated under parallel implementation. Important also to note that the Secretariat informed the RTF that there is no detail information on the

¹⁸ Based on the information provided by MLF Secretariat.

companies, nor which are the sectors countries will prioritise under the KIP as countries have the flexibility to choose.

The TEAP RTF seeks confirmation of its understanding of the request from parties under paragraph 4 and/or further clarity on this request.

1.7.2 Gender Mainstreaming and Strengthening Capacity of MLF Institutions

Decision XXIV/2, paragraph 2(f) requests the TEAP to consider the following:

The need to allocate resources for supporting activities related to gender mainstreaming as part of the gender policy of the Multilateral Fund, taking into account the implementing agencies' existing policies to promote gender mainstreaming and the mandate set out in Executive Committee decision 84/92.

In chapter 6 of this report, the RTF has presented estimates for additional project preparation funding to address gender mainstreaming activities in projects to address, including but not limited to, disaggregated data collection on gender and information collection of the needs for training courses addressing gender, the inclusion of gender related issues and opportunities in high level education curricula, gender mainstreaming awareness campaigns, among others; and for preparation of a gender mainstreaming action plan, as part of the KIPs/sector plans. RTF has estimated in chapter 6 project preparation funds, for those preparation activities, additional to the existing project preparation funding for KIPs.

For the information of parties, the RTF provides information extracted from other global funds, such as the Green Climate Fund, The Adaptation Fund and The Global Environment Facility, on their policies related to implementation of gender mainstreaming activities, including funding for those.

RTF has not estimated funding needs to strengthen capacity on gender mainstreaming at MLF institutions such as the IAs and MLFS. RTF requests guidance on that. RTF also seeks guidance from parties related to consideration of needed resources for the implementation of gender mainstreaming suggested activities for future triennia.

1.7.3 Sustainable Financial Flow

As explained in chapter 3.5.2 and informed by the lessons learnt in the implementation of HPMPs, there are challenges related to achieving sustainable financial flow to enable implementation of KIPs activities specifically in LVCs and VLVC countries. RTF would benefit from further guidance, in case scenarios frontloading funding to address this issue is something parties wish us to present in a Supplementary Report. Currently, the RTF Report does not address that as part of the 2024-2026 estimated funding presented.

CHAPTER 2 FUNDING FOR HCFC PHASE-OUT

2.1 BACKGROUND: HCFC PHASE-OUT

The Nineteenth Meeting of the Parties in 2007 agreed to accelerate the phase-out of production and consumption of HCFCs (Decision XIX/6). Table 1-1 and figure 2-1 summarises the reduction steps for A5 parties to complete the accelerated HCFC phase-out of production and consumption in 2030.

HCFCs (Annex C/I) consumption reduction schedule

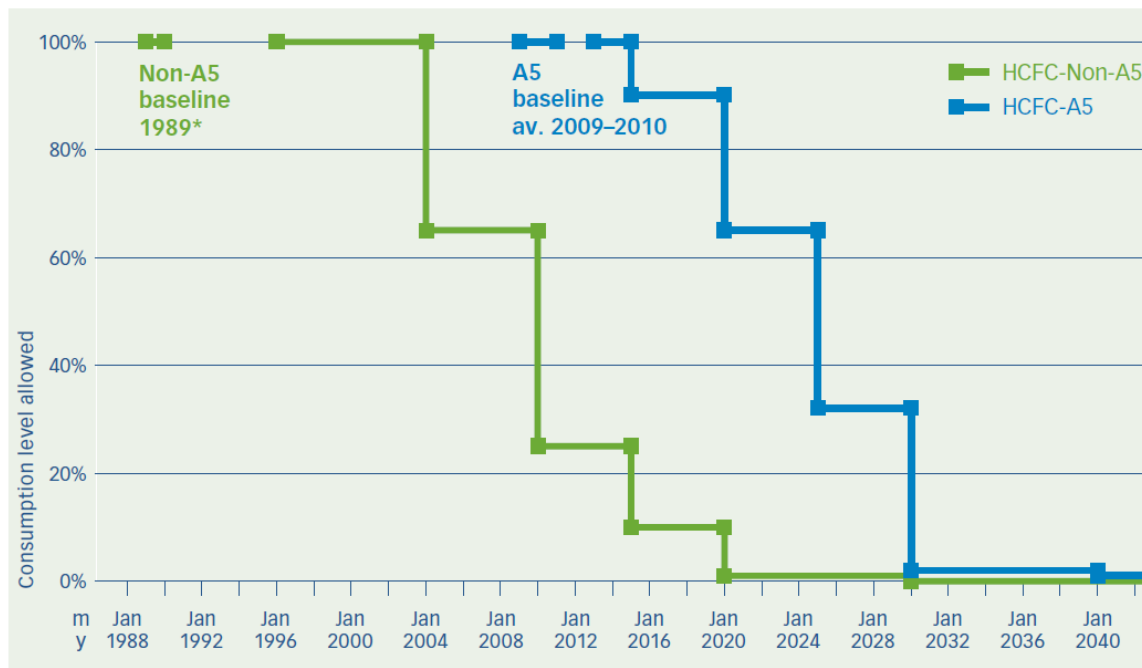


Figure 2-1: Montreal Protocol HCFC Consumption Reduction Schedule

2.1.1 HCFC Phase-out Management Plans (HPMPs)

To meet the compliance schedule, the ExCom adopted guidelines to structure the phase-out. The HCFC Phase-out Management Plans (HPMP) guidelines set out a staged approach to the phase-out of a country's HCFCs within the framework of an overarching strategy¹⁹. Stage I HPMP guidelines²⁰ address how parties would meet the freeze and the 10% reduction. For non-LVC countries, stage I HPMPs could include activities beyond 2015, and this extended phase-out is based on national circumstances and the phase-out approach adopted in those countries. Stage I HPMP for LVC countries addresses 35% reduction up to 2020, with a few exceptions where LVC countries chose to only go to 2015. Stage II HPMP guidelines²¹ address how A5 parties would meet the 35% reduction.²² The ExCom set out the criteria for funding available for A5s and agreed on a structure for determining funding levels which considers, among other things, funding for preparation of HPMPs, overarching strategy, investment projects, sector specific cost effectiveness thresholds, the needs of small and medium-sized enterprises, and the concerns of LVC including VLVC countries. The guidelines also defined the following terms:

¹⁹ UNEP/OzL.Pro/ExCom/54/59

²⁰ UNEP/OzL.Pro/ExCom/56/64

²¹ UNEP/OzL.Pro/ExCom/74/56

²² Projects that accelerate the phase-out of HCFC consumption for LVC countries that had a strong national level of commitment in place to support accelerated phase-out were considered on a case-by-case basis (Executive Committee decision 60/15).

- Cut-off date for eligibility: Not to consider any projects to convert HCFC-based manufacturing capacity installed after 21 September 2007;
- Starting points for aggregate reductions in HCFC consumption: Allowed A5 parties to choose between the most recent Article 7 reported HCFC consumption at the time of the submission of the HPMP and/or the investment project, and the average of consumption forecast for 2009 and 2010, in calculating starting points for aggregate reductions in HCFC consumption; adjusting the agreed starting points for aggregate reductions in HCFC consumption in cases where calculated HCFC baselines based on reported Article 7 data are different from the calculated starting point based on the average consumption forecast for 2009-2010;
- Eligible incremental costs of HCFC phase-out projects: Defined sector specific cost-effectiveness threshold values mainly based on CFC phase-out projects; allowed funding of up to a maximum of 25% above the cost effectiveness threshold for projects when needed for the introduction of low GWP alternatives²³; provided incremental operating cost values for projects in the foams, refrigeration and AC manufacturing, and refrigeration servicing sectors;
- Second-stage conversion: Considered for funding under specific circumstances including necessary to meet the 35% reduction step, most cost-effective option, and/or allowed transition to low-GWP alternatives.

During stage I preparation, parties modified their ODS legislation, regulations, and licensing systems to include HCFCs and thus the cost-structure for funding Stage I HPMP preparation took into account assistance for policy and legislation. No funding was approved for Stage I of HPMP implementation in those A5 parties that had not included HCFC control measures in legislation, regulations and licensing systems. The submission requirements for HPMPs are similar to those that applied to refrigerant management plans (RMPs), terminal phase-out management plans (TPMPs), and national phase-out plans (NPPs) with respect to agreements and review periods. Each stage of HPMP is governed by a multiyear agreement (MYA).

2.1.2 HPMPs Key Concepts and Definitions

- Basic key concepts and terms within HPMP guidelines, MYAs and complimentary decisions are defined below to establish the basis for funding parameters and RTF estimates:
- Baseline: The “baseline” for Montreal Protocol compliance is the average of 2009 and 2010 HCFC production and consumption measured in ODP tonnes.
- Remaining eligible consumption: Remaining “eligible consumption” for funding measured in ODP tonnes is determined on the basis of the starting point of national aggregate consumption²⁴ minus the amount funded by previously approved projects in future MYAs for HPMPs.
- Cost Effectiveness (CE): The CE of an approved project is calculated by dividing the amount of funds disbursed to the enterprise (for the cost of equipment and other associated costs) by the amount of ODS phase-out.
- Non-eligible consumption: There are a number of situations that are ineligible for funding or require reduced funding from the MLF such as non-A5 ownership and exports prepared for

²³ For small and medium-sized enterprises (SMEs) in the foam sector with consumption of less than 20 metric tonnes, the maximum would be up to 40% above the CE threshold under stage II of HPMPs (decision 74/50(c)(ii)).

²⁴ Provisos to decision 35/57 clarify that only the baseline determines compliance with the Montreal Protocol. The ExCom agreed (at ExCom-35) that further funding must be predicated on a commitment by the country to achieve sustainable permanent aggregate reductions in consumption and production, as relevant. In lieu of their baseline, countries have other options to use as a starting point for aggregate reduction in HCFC consumption:

- To establish the starting points for aggregate reductions in HCFC consumption, for those A5 countries that submit projects in advance of their assessed baseline, at the time of submission of either the HCFC investment project or the HPMP, whichever is first submitted for the consideration of the ExCom;
- To allow A5 countries to choose between the most recent reported HCFC consumption under Article 7 of the Montreal Protocol at the time of the submission of the HPMP and/or the investment project, and the average of consumption forecast for 2009 and 2010, in calculating starting points for aggregate reductions in HCFC consumption;
- To adjust the agreed starting points for aggregate reductions in HCFC consumption in cases where calculated HCFC baselines based on reported Article 7 data are different from the calculated starting point based on the average consumption forecast for 2009-2010.

HPMPs must indicate the proportion of foreign (non-A5) ownership and exports in the manufacturing sector.

- LVC countries (and VLVC countries): A5 parties with annual consumption of HCFCs less than 360 metric tonnes and former LVC A5 parties with HCFC consumption in the refrigeration servicing sector only above 360 metric tonnes, subject to certain conditions are eligible for specified funding levels based on their consumption.^{25 26}

2.2 2023 STATUS OVERVIEW OF THE HCFC CONSUMPTION SECTOR

Information in this section is based on the following data provided by the MLFS database report entitled “HPMP Status Summary by HCFC” as of 28 March 2023:

Table 2-1 HPMP Status Summary by HCFC as of March 2023

HCFC	Baseline	Starting Point	Approved	Remaining	%Approved
<i>Total summary by HCFC</i>					
HCFC-123	31.90	30.21	15.41	14.77	51.01%
HCFC-124	26.42	26.14	15.26	10.90	58.38%
HCFC-141	0.94	0.94	0.94	0.00	100.00%
HCFC-141b	10,668.24	10,676.35	10,583.24	92.84	99.13%
HCFC-141bPolyol	0.00	657.00	596.11	54.33	90.73%
HCFC-142b	2,000.80	2,016.80	1,518.89	496.16	75.31%
HCFC-21	0.74	0.74	0.74	0.00	100.00%
HCFC-22	20,424.65	19,851.34	12,796.94	7,053.70	64.46%
HCFC-225	2.82	2.82	1.43	1.39	50.71%
HCFC-225ca	0.42	0.42	0.00	0.42	0.00%
HCFC-225cb	0.68	0.68	0.00	0.68	0.00%
Grand total	33,157.61	33,263.44	25,528.96	7,725.19	76.75%

The total A5 HCFC consumption baseline amounts to 33,158 ODP tonnes. The total A5 baseline is comprised of 62% of HCFC-22 (20,425 ODPt), 32% of HCFC-141b (10,668 ODPt), 6% of HCFC-142b (2,001 ODPt), and 0.2% of all of the following HCFCs combined: HCFC-123 (32 ODPt), HCFC-124 (26 ODPt), HCFC-141 (1 ODPt), HCFC-21 (1 ODPt), HCFC-225 (3 ODPt), and HCFC-225cb (1 ODPt). Below is a table and pie chart of these A5 baseline compositions (Table 2-2, Figure 2-2).

Table 2-2 A5 Baseline and starting point composition

HCFC	Baseline (ODPt)	As a % of Total Baseline	Starting Point (ODPt)	As a % of Total Starting Point
HCFC-22	20,425	61.6%	19,851	60.9%
HCFC-141b	10,668	32.2%	10,676	32.7%
HCFC-142b	2,001	6.0%	2,017	6.2%
Other HCFCs	64	0.2%	62	0.2%
Total	33,158	100.0%	32,606	100.0%
HCFC-141bPolyol	0		657	

²⁵ ExCom Decision 60/44 at UNEP/OzL.Pro/ExCom/60/54

²⁶ ExCom Decision 74/50

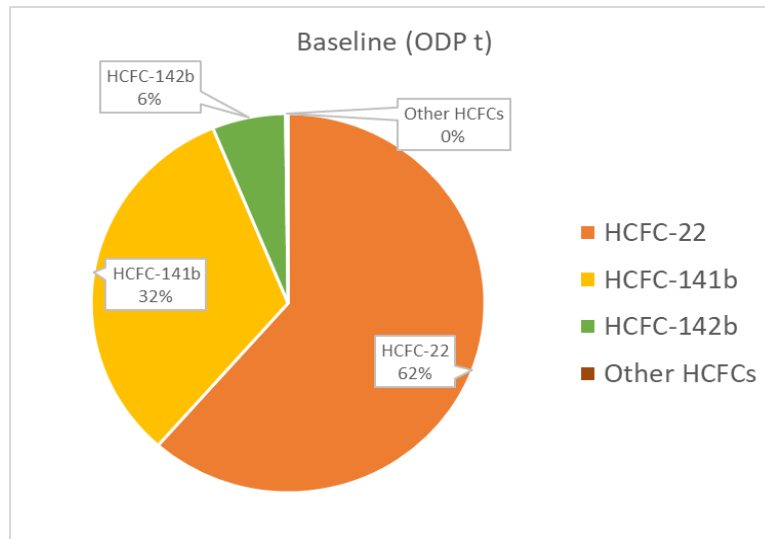


Figure 2-2 A5 Baseline consumption

The baseline and starting point for sustained aggregate reductions are not always the same. There is a difference of 551 ODPt between baseline and starting point as seen in the table below (Table 2-3):

Table 2-3 Difference between baseline and starting point (ODPt)

HCFC	Baseline (ODPt)	Starting Point (ODPt)	Difference (ODPt)
HCFC-22	20,425	19,851	573
HCFC-141b	10,668	10,676	(8)
HCFC-142b	2,001	2,017	(16)
Other HCFCs	64	62	2
Total	33,158	32,606	551
HCFC-141bPolyol	0	657	(657)

The RTF estimate of the cumulative reductions from baseline for all approved HPMPs is 24,933 ODPt (excluding HCFC-141b contained in imported pre-blended polyol), representing an overall reduction of 75% from baseline. The amount also considers the 551 ODP t difference between the baseline and the starting points for the approved HPMPs. The cumulative reductions relative to the baseline by chemical are 63% for HCFC-22, 99% for HCFC-141b, 76% for HCFC-142b, and 53% for other HCFCs (Table 2-4).

Table 2-4 Cumulative reductions from baseline and starting point²⁷ by chemical based on approved funding

HCFC	Baseline (ODP t)	Cumulative Reduction from Baseline		Starting Point (ODP t)	Cumulative Reduction from Starting Point	
		(ODP t)	(%)		(ODP t)	(%)
HCFC-22	20,425	12,797	63%	19,851	12,797	64%
HCFC-141b	10,668	10,583	99%	10,676	10,583	99%
HCFC-142b	2,001	1,519	76%	2,017	1,519	75%
Other HCFCs	64	34	53%	62	34	55%
Total	33,158	24,933	75%	32,606	24,933	76%
HCFC-141bPolyol	NA	NA		657	596	91%

As shown in Table 2-5, the remaining eligible 7,671 ODP t of HCFCs (or 24% of starting point), remain to be phased out and are accounted for within MYAs. The remaining eligible consumption of HCFCs are comprised of 92% of HCFC-22 (7,054 ODPt), 1.2% of HCFC-141b (93 ODPt), 6.5% of HCFC-142b (496 ODPt), 0.4% of Other HCFCs (28 ODPt). There is also 54 ODP tonnes of HCFC-141b in pre-blended polyols that remain to be phased out (which is not included in the baseline but is included in the starting points)²⁸.

Table 2-5 Remaining eligible HCFCs to be phased out

HCFC	Remaining Eligible HCFCs	
	(ODPt)	%
HCFC-22	7,054	92%
HCFC-141b	93	1.2%
HCFC-142b	496	6.5%
Other HCFCs	28	0.4%
Total	7,671	100%
HCFC-141bPolyol	54	

By April 2023, 145 A5 parties²⁹ had received approval and funding for the implementation of stage I HPMPs, of which 89 are LVCs and 56 are non-LVCs³⁰. The list of LVCs and non-LVCs (for funding purposes) is in Annex 2 of this report. 85 HPMPs include commitments to achieve 100% phase-out³¹.

²⁷ Provisos to decision 35/57 clarify that only the baseline determines compliance with the Montreal Protocol. The ExCom agreed (at the ExCom-35) that further funding must be predicated on a commitment by the country to achieve sustainable permanent aggregate reductions in consumption and production, as relevant. In line with their baseline, countries have other options to use as a starting point for aggregate reduction in HCFC consumption:

- To establish the starting points for aggregate reductions in HCFC consumption, for those A5 countries that submit projects in advance of their assessed baseline, at the time of submission of either the HCFC investment project or the HPMP, whichever is first submitted for the consideration of the ExCom;
- To allow A5 countries to choose between the most recent reported HCFC consumption under Article 7 of the Montreal Protocol at the time of the submission of the HPMP and/or the investment project, and the average of consumption forecast for 2009 and 2010, in calculating starting points for aggregate reductions in HCFC consumption;

²⁸ To adjust the agreed starting points for aggregate reductions in HCFC consumption in cases where calculated HCFC baselines based on reported Article 7 data are different from the calculated starting point based on the average consumption forecast for 2009-2010.

²⁹ Excluding Croatia. In 2013, Croatia joined the EU.

³⁰ This includes six non-LVC countries funded as LVC countries (Burkina Faso, Benin, Democratic Republic of the Congo, Ecuador, Gabon and Togo).

³¹ Bahamas, Barbados, Belize, Benin, Bhutan, Bolivia, Bosnia and Herzegovina, Botswana, Brunei Darussalam, Cambodia, Cabo Verde, Chad, Chile, Colombia, Congo DR, Cook Islands (the), Costa Rica, Croatia (now an Article 2 party), Cuba, Dominican Republic (the), Ecuador, El Salvador, Eritrea, Ethiopia, Fiji, Eswatini (the Kingdom of), Gambia (the), Georgia,

In terms of progress towards compliance with the HCFC phase-out schedule, Table 2-6 provides a summary of HPMPs³² which are approved and their reduction targets.

Table 2-6 Cumulative Reductions for Approved HPMPs (as of 3 April 2023)

Cumulative Reductions from Baseline	# of Approved HPMPs
100%	85*
67.5% to 99.9%	25
Less than 67.4%	35
Total of Parties with HPMPs*	145*
*Includes Croatia which has since converted to a non-A5 party by joining the EU.	

In order to estimate the need for funding for the 2024-2026 triennium, the RTF first assessed individual A5 parties' progress with respect to their phase-outs. Annex 3 of this report includes an estimation of the HCFC reductions needed for eligible funding by party, based on the Adjusted Consolidated BP of the MLF 2023-2025. The "stages" of HPMPs were used to align with reduction targets from the HCFC baseline, however, HPMP stages and the associated reduction targets vary greatly between projects. For example, there were eight parties with HPMPs that planned for 100% reduction in "stage I". The variation in reductions is especially obvious in stage II HPMPs, where many parties go beyond the 35% target, with some achieving 100% phase-out. The achievement of 100% reduction from the HCFC baseline in the earlier stages will mean it is unlikely that a party will apply for stage III or stage IV HPMPs. This RTF report has therefore used reduction targets for stage III or stage IV for individual parties, according to their progress in the phase-out.

2.3 OVERVIEW OF HCFC FUNDING REQUIREMENT

The RTF estimate was informed by the "Adjusted Consolidated Business Plan of the Multilateral Fund for 2023-2025"³³, along with approved funding by decisions of the ExCom to present the estimated funding requirements for the following activities in the HCFC consumption and production sectors:

HCFC consumption sector costs include:

- Funding for approved HPMPs (including projects for HCFC-141b Polyols);
- Funding for project preparation costs;
- Funding for estimated HPMPs;
- Funding for energy efficiency; and
- Funding for verification.

HCFC production sector funding estimates include:

- Funding for project preparation, including audit, and
- Funding for HPPMPs, including verification.

Ghana, Grenada, Guatemala, Guyana, Honduras, India, Jamaica, Kenya, Kiribati, Kyrgyzstan, Lao People's Democratic Republic (the), Lesotho, Liberia, Madagascar, Malawi, Maldives, Marshall Islands (the), Mauritius, Micronesia (Federated States of), Moldova, Mongolia, Montenegro, Namibia, Nauru, Nepal, Nicaragua, Niger, Niue, North Macedonia, Oman, Pakistan, Palau, Panama, Papua New Guinea, Paraguay, Rwanda, Saint Lucia, Saint Vincent and the Grenadines, Samoa, Seychelles, Sierra Leone, Solomon Islands, South Africa, Sri Lanka, Sudan, Tanzania (United Republic of), Togo, Tonga, Trinidad and Tobago, Turkiye, Tuvalu, Uganda, Uruguay, Vanuatu, Venezuela, Zambia and Zimbabwe. In addition, while the Agreement between the Executive Committee and Costa Rica specifies a commitment of 97.5%, decision 84/62(a) *inter alia* specifies that the HPMP was approved on the understanding that no more funding would be provided from the Multilateral Fund for the phase-out of HCFCs. Similarly, decision 63/44(b) *inter alia* specifies that the HPMP for Bhutan was approved on the understanding that there would be no more funding eligibility for HCFC phase-out in the country after 2025.

³² "Approved" means the HPMP has been approved for funding by decision of the Executive Committee.

³³ UNEP/OzL.Pro/ExCom/91/22

These estimated costs are discussed and summarised in the following sections.

2.4 ESTIMATED FUNDING REQUIREMENT IN THE HCFC CONSUMPTION SECTOR

2.4.1 HPMP Stages and Reduction Targets Background

To estimate the need for funding for the 2024-2026 triennium, the RTF first assessed individual A5 parties progress with respect to their phase-outs.

2.4.2 Funding for Approved HPMPs

Funding tranches for approved HPMPs have been agreed until 2031. This information is found in the Agreements between countries and the ExCom for the reduction in consumption or production of HCFCs³⁴. The funding tranches in the 2024-2026 triennia of approved HPMPs amount to US\$ 117 million. Table 2-7 summarises the information for the corresponding triennium.

Table 2-7 Funding Tranches of Approved HPMPs

Triennia	Approved HPMP Tranche including support costs (US\$)
2024 – 2026	\$ 116,746,389
2027 – 2029	\$ 14,737,210
2030 – 2032	\$ 5,957,678
Total	\$ 137,441,277

2.4.3 Funding for Project Preparation

For this report, the RTF used the “Adjusted Consolidated Business Plan of the Multilateral Fund 2023-2025,” of US\$ 170,350 for the estimated funding requirement for HCFC project preparation for the 2024-2026 triennium.

2.4.4 Funding for Additional HPMPs to Reach Target Reduction Percentages

Methodology:

The RTF has calculated reductions based on the incremental reduction targets as described in Annex 3 for each country based on its baseline, starting points, cumulative reductions, and remaining eligible tonnage.

- Calculation for non-LVCs (LVCs are according to Decision 74/50(c)(xii))
 - Baseline = Agreed Montreal Protocol baseline
 - Approved cumulative reductions = The cumulative ODP tonnes of all HCFC reductions from approved HPMPs
 - Cumulative reductions from baseline (%) = Approved cumulative reductions (ODP t) divided by baseline (ODP t)
 - If cumulative reduction from baseline is over “target %”, no further calculation is needed.
 - If cumulative reduction from baseline is under “target %”, the difference between the approved cumulative reduction and “target %” is the “remaining additional % needed”
 - The “remaining additional % needed” is multiplied by the baseline (in ODP t) to get the “remaining additional ODP t needed”³⁵.

³⁴ "Updated guide presentation of new stages HPMPs 030723", at <http://www.multilateralfund.org/default.aspx>

³⁵ Note that the remaining consumption eligible for funding may be smaller than “remaining additional ODP t needed.”

- The “remaining additional ODP t needed” is assumed to be HCFC-22 (since HCFC-22 comprises 90% of remaining HCFCs to be phased out) and converted to metric tonnes.
- Metric tonnes are converted to kilograms
- Kilograms are multiplied by each parties’ average cost effectiveness factor for approved HPMPs (for Stage 1 and 2) to estimate the cost to achieve the reduction target.
- Individual country costs are summed up to provide the total HPMP estimated costs per year, and each year is summed to correspond to various triennia.

The RTF uses this methodology to achieve the following funding reduction targets: 67.5% by 2025, 80.5% by 2027, and 100% by 2030.

RTF Estimated Results for 2024-2026 and Future Triennia

2024-2026 Triennium

- To achieve the 67.5% target by 2025, the RTF estimates 37 parties (considering 25 LVC countries are funded according to decision 74/50(c)(xii)) need projects beyond those currently approved.
 - These 37 projects are estimated at US\$ 93 million over one year (not including support costs) in 2024 based on the average cost effectiveness factor for each country.
 - Support costs are estimated to be an additional US\$ 9 million at an average rate of 9.6%.
- To achieve the RTF estimated 80.5% reduction level by 2027, the RTF estimates 56 parties (considering 25 LVC countries are funded according to decision 74/50(c)(xii)) need additional projects beyond those currently approved.
 - These 56 projects are estimated at US\$ 94 million over two years (not including support costs) or US\$ 47 million per year in the years 2025 and 2026 based on the average cost effectiveness factor for each country.
 - Support costs are estimated to be an additional US\$ 4.5 million at an average rate of 9.6%.

Future Triennia

- To achieve 100% target by 2030, the RTF estimates an additional 60 parties need projects beyond those currently approved and those estimated to reach the 80.5% reduction level by 2027.
 - These 60 projects are estimated at US\$ 264 million over 3 years or US\$ 88.1 million per year in the years 2027, 2028, and 2029 based on the average cost effectiveness factor for each country.
 - Support costs are estimated to be an additional US\$ 43.4 million at an average rate of 9.6%.
 - The RTF estimates a total of US\$ 495 million for full phase-out of remaining HCFC consumption through 2040 beyond what is already approved.

Table 2-8 summarises the project funding required to achieve the specified reduction targets.

Table 2-8 RTF Projected funding to reach reduction targets (US\$)

Year	Reduction Targets			
	67.5%	80.5%	100.0%	Support costs
2024	\$ 92,968,787			\$ 8,925,004
2025		\$ 47,222,412		\$ 4,533,352
2026		\$ 47,222,412		\$ 4,533,352
2027			\$ 88,070,956	\$ 8,454,812
2028			\$ 88,070,956	\$ 8,454,812
2029			\$ 88,070,956	\$ 8,454,812
2030				-
Total	\$ 92,986,787	\$ 94,444,824	\$ 264,212,869	\$ 43,356,142

2.4.5 Verification and Technical Assistance

HPMP Verification: A total of US\$ 588,600 for each of 2024 and 2025 (total US\$ 1,177,200) is included in the Adjusted Consolidated BP of the MLF 2023-2025 for HPMP verification. The RTF has used the same annual amount as an estimate for HPMP verification for each year beyond 2025.

Technical Assistance: No requests were included in the 2023-2025 in the BP.

2.4.6 Estimated Funding Related to Energy Efficiency in HPMPs

In the context of HCFC phase-out, Parties agreed in decision XXVIII/2 paragraph 16 to request the ExCom to increase funding available to low-volume-consuming (LVC) countries for maintaining energy efficiency (EE) in the servicing/end-use sector. In decision 89/6 the ExCom established a funding table (Table 2-9) and defined additional activities for inclusion in existing and future HCFC phase-out management plans (HPMPs) for LVC countries in response to paragraph 16 of decision XXVIII/2 and paragraph 2 of decision XXX/5 of the Parties. The ExCom in decision 91/37 decided that decision 89/6 applies to LVC countries that have already completed their HCFC phase-out management plans. Informed by the 2023-2025 MLF Business Plan, RTF estimated EE funding for 2024-2026 to be US\$ 11,091,520, including an average of 9.6% support cost.

Table 2-9. Estimated funding related to EE based on Decision 89/6³⁶ for LVCs

Number of countries	Decision 89/6 Funding Brackets (metric tonnes)	Funding level	Total (US\$)
58	< 120 mt	\$ 100,000	\$ 5,800,000
36	> 120 mt	\$ 120,000	\$ 4,320,000
94 LVCs			\$ 10,120,000
Total (including support costs of 9.6%)			\$ 11,092,000

2.4.7 Total Funding Requirement for the HCFC Consumption Sector (2024-2026)

The total funding requirement for compliance in the 2024-2026 triennium for the consumption sector is US\$ 335 million (Table 2-10) informed by the Adjusted Consolidated BP of the MLF 2023-2025.

Table 2-10 Funding requirement for HCFC consumption sector 2024-2026 (US\$)

2024-2026 Triennium Estimated Funding	
HCFC Consumption Sector	
HCFC Approved HPMPs	\$ 116,746,000
HCFC Prep Costs	\$ 170,000
HCFC Estimated HPMPs (including LVCs/VLVCs)	\$ 205,405,000
HCFC Verification	\$ 1,766,000
HCFC Energy Efficiency	\$ 11,092,000
Subtotal – HCFC Consumption Sector	\$ 335,179,000

2.5 ESTIMATED FUNDING REQUIREMENT IN THE HCFC PRODUCTION SECTOR

Seven A5 parties produced HCFCs, with the total production reported as 17,806.4 ODpt in 2020, including Argentina, China, Democratic People's Republic of Korea, India, Mexico, Republic of Korea and Venezuela (Bolivarian Republic of) as summarised in Table 2- 11. Table 2-11 provides the production levels of three main HCFCs produced (i.e., HCFC-22, HCFC 141b, HCFC 142b) in A5 parties for the period 2013-2021.

³⁶ "Decision 89/6(c): To provide the following funding, when needed, for the activities identified in subparagraph (b) above, on the understanding that Article 5 countries would have flexibility in using the additional funding to address specific needs that might arise during project implementation relating to introduction of alternatives to HCFCs with low- or zero-GWP refrigerants and for maintaining energy efficiency in the refrigeration servicing sector."

2.5.1 Status Overview of the HCFC Production Sector

By December 2021, completed projects had phased out 204,189 ODPt of production. The total production of HCFC in 2021 was 47.1% below the aggregated production baseline³⁷.

Table 2-11. Production levels of three main HCFCs during 2012-2021 (A7, ODPt)³⁸

Party	Baseline	2013	2014	2015	2016	2017	2018	2019	2020	2021
HCFC-22										
Argentina	224.6	107.3	125.7	134.5	95.8	100.3	65.6	88.3	66.3	56.6
China	29,122.0*	15,866.9	16,497.0	13,391.0	14,086.3	13,445.7	13,636.4	13,598.2	11,042.2	10,011.8
Democratic People's Republic of Korea (the)	27.6	31.8	28.9	27.4	24.8	24.8	24.8	27.0	27.0	24.8
India	2,399.5	1,352.1	1,465.7	1,727.6	1,665.5	1,789.5	1,936.4	1,937.0	1,354.8	1,156.2
Mexico	697.0	317.1	223.5	160.9	166.8	190.1	183.8	134.8	56.7	138.4
Republic of Korea	395.1	357.6	364.7	348.9	240.3	305.6	289.9	271.5	254.3	221.0
Venezuela (Bolivarian Republic of)	123.1	121.2	86.1	37.2	14.3	15.0	1.9	0.0	0.0	0.0
Subtotal HCFC-22	32,988.9	18,153.9	18,791.7	15,827.6	16,293.8	15,871.0	16,138.7	16,056.7	12,801.3	11,608.7
China - HCFC-141b	*	9,583.6	9,560.2	7,246.5	7,278.2	7,076.8	6,321.1	6,101.6	4,623.3	3,545.1
China - HCFC-142b	*	1,102.0	1,076.8	1,224.3	1,110.5	1,115.5	756.3	816.0	418.3	472.3
Total	32,988.9	28,839.6	29,428.7	24,298.4	24,682.6	24,063.3	23,216.1	22,974.3	17,842.9	15,626.2

* The HCFC production baseline is 29,122 ODP tonnes and includes all HCFCs produced by China, mainly HCFC 22, HCFC 141b and HCFC 142b, and to a lesser extent HCFC-123 and HCFC-124.

The ExCom decided to consider the HCFC-22 production in Mexico and Argentina in the context of its discussions on by-product controls for HFC-23 arising from the Kigali Amendment. The issues and estimated funding for HFC-23 mitigation are discussed in Chapter 4 of this report.

Based on the current guidelines and the Agreements between A5 parties that produced HCFCs and the ExCom, the Republic of Korea produces HCFC-22 with production of 221 ODPt and has been urged not to request funding from the MLF³⁹. The Democratic People's Republic of Korea (DPRK) has reported 24.81 ODP tonnes of HCFC production for the year 2021, which is above the production target set in the plan of action in decision XXXII/6. The 69th meeting of the Implementation Committee requested the country to provide an explanation for the deviations as a matter of urgency and no later than 15 March 2023, and, if appropriate, to submit a revised plan of action to ensure its return to compliance with the control measures of the Montreal Protocol for HCFCs in 2023, for consideration by the Implementation Committee at its 70th meeting⁴⁰.

ExCom-91 addressed the implementation of the first tranche of stage II of the HCFC phase-out management plan (HPMP) for the Bolivarian Republic of Venezuela and the revised plan of action for the period from 2022 to 2026, on the understanding that no additional funding from the Multilateral Fund would be provided for the phase-out of production and consumption of HCFCs. "The Government of the Bolivarian Republic of Venezuela commits to issue a ban on the production of HCFC-22 by 1 January 2027"⁴¹.

³⁷ UNEP/OzL.Pro/ExCom/91/8

³⁸ Production data revised by the Ozone Secretariat as of April 4, 2023

³⁹ UNEP/OzL.Pro/ExCom/91/71

⁴⁰ Recommendation 69/4 of document UNEP/OzL.Pro/ImpCom/69/5

⁴¹ UNEP/OzL.Pro/ExCom/91/72

Two HCFC Production Sector projects (India and China's HPPMP) had been submitted and discussed and were included in the Consolidated BP of the MLF for 2021-2023⁴²; only China's HPPMP is included in the Consolidated BP of the MLF for 2023-2025^{43 44}.

2.5.2 Update on HCFC Production Phase-out Management Plans (HPPMPs)

Two parties (India and China) need to address the funding requirements for HCFC production phase-out during 2024-2026.

HPPMP for India:

The BP of the MLF for 2021-2023 submitted to the ExCom-86, gives a total of US \$128,400 for project preparation for the year 2021. A total of US \$5.35 million was included for stage I of the HPPMP for India⁴⁵. A request for a technical audit of the production sector in India was submitted to be considered by the Subgroup on the Production Sector in the margins of the 86th meeting, but there was no further discussions and agreement on approving the request until ExCom 91^{46 47}. As a result, the HPPMP for India was removed from the 2021-2023 business plan due to no consensus to proceed with a technical audit of an HCFC production enterprise in India (decision 86/102).

HPPMP for China:

A total of US\$ 46.46 million for the HPPMP for China, i.e., US\$ 23.23 million for each of the triennium. These values correspond to the Agreement approved at the 87th meeting^{48 49 50 51}.

2.5.3 Total Funding Requirement for the HCFC Production Sector (2024-2026)

Based on the information above, the funding requirements for China, India and DPRK need to be addressed for the Period of 2024-2026 to address the reduction targets.

The RTF estimated funding requirement for the HCFC production sector includes:

- Funding for project preparation, including audits, and,
- HPPMPs, including verification.

Funding for Project Preparation: The RTF estimates a total of US\$ 128,400 for India. for the Project preparation for Stage I of HPPMP, based on the information given by the Consolidated BP of the MLF for 2021-2023⁵², and US\$ 20,000 for project preparation of DPRK during 2024-2026.

⁴² UNEP/OzL.Pro/ExCom/86/25

⁴³ UNEP/OzL.Pro/ExCom/91/22p2

⁴⁴ UNEP/OzL.Pro/ExCom/91/22

⁴⁵ UNEP/OzL.Pro/ExCom/86/25

⁴⁶ The HPPMP for India was removed from the 2021-2023 business plan due to no consensus to proceed with a technical audit of an HCFC production enterprise in India (decision 86/102)

⁴⁷ "Following the discussion, while there was consensus to note the submission of the preliminary data and request for authorization to carry out the technical audit of the HCFC Production Sector in India: Hindustan Fluorocarbons Limited contained in document UNEP/OzL.Pro/ExCom/86/SGP/7, there was no agreement on approving the request for the technical audit of Hindustan Fluorocarbon Limited" (UNEP/OzL.Pro/ExCom/86/98). Noting that there was no consensus to proceed with a technical audit of an HCFC production enterprise in India (see decision 86/102), members requested that the activities relating to the HPPMP for India be removed from the consolidated business plan. (Decision 86/45) (UNEP/OzL.Pro/ExCom/86/100)

⁴⁸ UNEP/OzL.Pro/ExCom/86/98

⁴⁹ UNEP/OzL.Pro/ExCom/87/58

⁵⁰ Post-meeting summary of the 91st meeting of the Executive Committee, available at: <http://www.multilateralfund.org/91/default.aspx>

⁵¹ UNEP/OzL.Pro/ExCom/91/8.

⁵² UNEP/OzL.Pro/ExCom/86/25

Funding for HPPMPs: Two parties (India and China) need to address the funding requirements for HCFC production phase-out during 2024-2026.

- **India:** For the triennium 2024-2026, due to limited information, and the needs for HCFC production phase-out, RTF assumes that ExCom and its subgroup on production will continue to discuss about India’s HPPMP project. RTF estimates the funding requirement for India’s HPPMPs based on the provisional funding listed on the Consolidated BP of the MLF for 2021-2023 (UNEP/OzL.Pro/ExCom/86/25). RTF estimates a total funding requirement of US\$ 5.35 million for the HPPMP Stage I of India (Table 2-12).
- **China:** As China’s HPPMP has been agreed and listed in Consolidated BP of the MLF for 2021-2023, 2023-2025^{53 54}, based on the Report of the Sub-group on the Production on Sector and the agreement between China and ExCom^{55 56}, a total of US\$ 46.46 million for the HPPMP for China, i.e., US \$23.23 million for 2024–2026. These values correspond to the Agreement approved at the 87th meeting⁵⁷. The total funding requirement for the 2024-2026 triennium for the production sector is estimated at US\$ 28.7 million (Table 2-12). RTF notes that the verification costs are included in the agency’s supporting cost of HPPMP and are not a separate item for the production sector.

Table 2-12 Funding requirement for HCFC production sector 2024-2026 (US\$)

2024-2026 Triennium Estimated Funding	
HCFC Production Sector	
HCFC Production Sector Stage I PRP	\$ 148,400
HCFC Production Sector Stage I HPPMP	\$ 5,351,600
HCFC Production Sector Stage II HPPMP	\$ 23,232,000
Subtotal – HCFC Production Sector (including support costs of 5.6%)	\$ 28,732,000

2.6 SUMMARY OF TOTAL HCFC FUNDING REQUIREMENT FOR THE 2024-2026 TRIENNIUM⁵⁸

The total funding requirement for 2024-2026 triennium for HCFC activities is estimated at **US\$ 364 million** and is summarised in Table 2-13.

⁵³ UNEP/OzL.Pro/ExCom/86/25

⁵⁴ UNEP/OzL.Pro/ExCom/91/22p2

⁵⁵ Post-meeting summary of the 91st meeting of the Executive Committee, <http://www.multilateralfund.org/91/default.aspx>

⁵⁶ UNEP/OzL.Pro/ExCom/91/8

⁵⁷ To approve, in principle, stage II of the HPPMP for China for the period 2018–2026 to reduce HCFC production for controlled uses by 67.5 per cent and 71.5 per cent of the baseline, by 2025 and 2026, respectively, in the amount of US \$70,752,000, consisting of US \$67,000,000, plus agency support costs of US \$3,752,000 for the World Bank, and including the sum of US \$23,000,000, plus agency support costs of US \$1,288,000 for the World Bank, already approved in decision 81/71(b); (UNEP/OzL.Pro/ExCom/86/98; UNEP/OzL.Pro/ExCom/87/57)

⁵⁸ IS and Standard Activities are presented in another chapter and not part of this total.

Table 2-13 Total HCFC Funding Requirement 2024-2026 (US\$)

2024-2026 Triennium Estimated Funding	
HCFC Consumption Sector	
HCFC Approved HPMPs	\$ 116,746,000
HCFC Prep Costs	\$ 170,000
HCFC Estimated HPMPs (including LVCs/VLVCs)	\$ 205,405,000
HCFC Verification	\$ 1,766,000
HCFC Energy Efficiency	\$ 11,092,000
Subtotal – HCFC Consumption Sector	\$ 335,179,000
HCFC Production Sector	
HCFC Production Sector Stage I PRP	\$ 148,000
HCFC Production Sector Stage I HPPMP	\$ 5,352,000
HCFC Production Sector Stage II HPPMP	\$ 23,232,000
Subtotal – HCFC Production Sector	\$ 28,732,000
Total HCFC Funding Requirement	\$ 363,911,000

CHAPTER 3 ESTIMATED FUNDING REQUIREMENT FOR HFC PHASE-DOWN

3.1 INTRODUCTION

This chapter reviews the funding needs for HFC phase-down, both investment and non-investment activities, as outlined by Parties in Decision XXVIII/1 adopted at the Thirty-First Meeting of the Parties to the Montreal Protocol.

3.2 COST GUIDELINES AND RELATED DISCUSSIONS AT EXCOM

Decision XXVIII/2 of The Twenty-eighth Meeting of the Parties requests the ExCom to develop within two years guidelines for financing the phase-down of HFC consumption and production, including CE thresholds.⁵⁹ Since its 77th meeting, the ExCom has been discussing matters related to the phase-down of HFCs in A5 parties, including the development of cost guidelines, until its 84th meeting of December 2019. In line with decisions 80/76(b), 81/67(f) and 83/65(d), the 83rd meeting, the ExCom adopted a draft template, which included text agreed by the ExCom for some of the elements of decision XXVIII/2⁶⁰, was discussed at its 84th meeting, December 2019. The general consensus was that the draft guidelines should be submitted to the Committee for consideration at ExCom-85, to avoid the situation that the parties that ratified the Kigali Amendment early do not lose momentum in the implementation of their HFC activities⁶¹. In addition, the ExCom-84 decided that the eligible investment and operating incremental costs, and the CE values of all approved investment projects in the relevant manufacturing sectors and sub-sectors will be discussed at its 86th meeting, based on the MLFS documents prepared and under preparation.

At the 90th meeting, the contact group on draft guidelines achieved progress in its discussion of the cost-effectiveness thresholds for some manufacturing sectors and on the issue of disposal. The group remained inconclusive regarding the starting point for sustained aggregate reductions in HFC consumption and production, and the duration and level of incremental operating costs (IOCs). Additional progress happened at ExCom-91 but the guidelines were not yet finalized to enable RTF to consider in the funding estimates at this Report. Nevertheless, RTF has looked at some documents under negotiation and used some figures presented by the end of the 91st meeting (e.g., working text of the cost-effectiveness thresholds and working funding tables), as an indication of the intention of the ExCom regarding a range of cost levels, as explained in the report. Any Decision taken at the 92nd meeting can be taken into account in the RTF Supplementary Report and estimates revised.

In the absence of final HFC cost guidelines, the RTF has developed its own model to estimate the funding required to phase-down HFCs for the 2024-2026 triennium, based on compliance targets for this triennium, the best available information, established practices, experiences in HCFC phase-out implementation and available decisions, information, and guidance by ExCom.

3.3 RTF APPROACH TO ESTIMATE TOTAL HFC PHASE-DOWN COSTS – METHODOLOGY

The RTF undertook a number of steps including conversions between units (ODS, GWP, mt, kg, and MMTCO₂eq) to calculate the total estimated funding for an HFC phase-down. As decided by the ExCom, the RTF refers to HFC phase-down plans as “Kigali HFC implementation plans” or “KIPs”. A description of the steps taken is as follows:

Step 1: Allocate Countries into “Brackets” Based on HCFC Baseline Consumption

Step 2: Calculate the HFC Baseline

Step 3: Apply Assumptions for Sector Distribution

⁵⁹ Paragraph 10 of decision XXVIII/2.

⁶⁰ UNEP/OzL.Pro/ExCom/84/66

⁶¹ UNEP/OzL.Pro/ExCom/84/75

Step 4: Apply Cost Effectiveness Factors

Step 5: Results for the Estimated Total Cost of a full HFC Phase-down Under the MLF

As of 3 April 2023, 104 out of 144 A5 parties had ratified the Kigali Amendment. So, the RTF considered a range based on the following two scenarios for the triennium 2024-2026:

- **Low-end scenario:** Calculated HFC baselines for 104 A5 countries that have ratified the Kigali Amendment as of the 3 April 2023 using a range of cost effectiveness factors; and
- **High-end scenario:** Calculated HFC baselines for all 144 A5 countries, assuming they will be ratifying the Kigali Amendment by 2026, using a range of cost effectiveness factors.

Step 1: Allocate Countries into “Brackets” Based on HCFC Baseline Consumption

Since equipment and chemical usage varies between countries of different sizes and manufacturing capabilities, to project future consumption and to model the baseline, the RTF first needed to allocate each of the 144 A5 parties into “brackets” in order to estimate projected usage patterns for HFCs. The countries were allocated into different brackets based on their baseline HCFC consumption in metric tonnes. The RTF placed countries into five different brackets (A through E), see Table 3-1.

- Bracket A is based on baseline HCFC consumption over 25,000 mt.
- Bracket B is based on baseline HCFC consumption from 10,001 to 25,000 mt.
- Bracket C is based on baseline HCFC consumption from 2,001 to 10,000 mt.
- Bracket D is based on baseline HCFC consumption from 360 to 2,000 mt.
- Bracket E is based on the list of HCFC LVCs (see Annex 3).

Table 3-1 List of countries per bracket

Bracket (mt HCFCs)	Countries
A: Over 25,000	Group 1: China
B: 10,001 to 25,000	Group 1: Brazil, Mexico, Thailand Group 2: India, Saudi Arabia
C: 2,001 to 10,000	Group 1: Argentina, Colombia, Egypt, Indonesia, Malaysia, Nigeria, Philippines, South Africa, Turkey, Venezuela (Bolivian Republic of), Viet Nam, Yemen Group 2: Iran (Islamic Republic of), Kuwait, Pakistan
D: 360 to 2,000*	Group 1: Afghanistan, Algeria, Bangladesh, Cameroon, Chile, Côte d'Ivoire, Democratic People's Republic of Korea, Dominican Republic, Ghana, Guinea, Jordan, Kenya, Lebanon, Libya, Mauritania, Morocco, Panama, Peru, Senegal, Somalia, Sudan, Syrian Arab Republic, Trinidad and Tobago, Tunisia, Uruguay Group 2: Bahrain, Iraq, Oman, Qatar

E: HCFC LVCs

Group 1: Albania, Angola, Antigua and Barbuda, Armenia, Bahamas, Barbados, Belize, Benin, Bhutan, Bolivia (Plurinational State of), Bosnia and Herzegovina, Botswana, Brunei Darussalam, Burkina Faso, Burundi, Cambodia, Cabo Verde, Central African Republic, Chad, Comoros, Congo, Cook Islands, Costa Rica, Cuba, Democratic Republic of the Congo, Djibouti, Dominica, Ecuador, El Salvador, Equatorial Guinea, Eritrea, Eswatini, Ethiopia, Fiji, Gabon, Gambia, Georgia, Grenada, Guatemala, Guinea Bissau, Guyana, Haiti, Honduras, Jamaica, Kiribati, Kyrgyzstan, Lao People’s Democratic Republic, Lesotho, Liberia, Madagascar, Malawi, Maldives, Mali, Marshall Islands, Mauritius, Micronesia (Federated States of), Mongolia, Montenegro, Mozambique, Myanmar, Namibia, Nauru, Nepal, Nicaragua, Niger, Niue, North Macedonia, Palau, Papua New Guinea, Paraguay, Republic of Moldova, Rwanda, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, Samoa, Sao Tome and Principe, Serbia, Seychelles, Sierra Leone, Solomon Islands, South Sudan, Sri Lanka, Suriname, Timor-Leste, Togo, Tonga, Turkmenistan, Tuvalu, Uganda, United Republic of Tanzania, Vanuatu, Zambia, Zimbabwe

* NOTE: Benin, Gabon, Niger, and Togo received funding for HPMPs as being LVCs. They are classified in this report under Bracket E. Madagascar had its baseline changed and is an LVC.

Step 2: Calculate the HFC Baseline

Parties that have ratified the Montreal Protocol report the import, export, and production of hydrofluorocarbons (HFCs) and hydrochlorofluorocarbon (HCFCs) to the Ozone Secretariat under Article 7 reporting requirements. Parties that have ratified the Kigali Amendment report their HFC data not later than 9 months after the end of the year to which the data relate.

A5 Group 1 parties’ baselines are dependent on 2022 HFC data, which will only be required to be reported to the Ozone Secretariat in September 2023. As a result, there is limited self-reported baseline data available from the parties at this time.

Annex 1 contains the methodology used by the RTF to estimate HFC baselines based on reported HFC consumption and to fill any gaps in data. The methodology is summarised below.

Baseline and Control Measures

The HFC Baseline formula is as follows (in units of MMTCO₂eq):

	HFC Component	HCFC Component
Group 1 =	$\left(100\% \times \frac{HFC\ 2020+HFC\ 2021+HFC\ 2022}{3}\right) +$	$(65\% \times HCFC\ Baseline)$
Group 2 =	$\left(100\% \times \frac{HFC\ 2024+HFC\ 2025+HFC\ 2026}{3}\right) +$	$(65\% \times HCFC\ Baseline)$

Group 1 A5 party baselines are an average of the 2020 through 2022 HFC consumption (production plus import minus export of HFCs) and production weighted by the associated GWPs summarized as total carbon dioxide equivalent (CO₂eq) added to the CO₂eq from the chemicals used to establish HCFC baselines multiplied by 65%.

As of 3 April 2023, 104 out of 144 A5 parties had ratified the Kigali Amendment. Most of the Group 1 parties that have ratified the Kigali Amendment have reported both 2020 and 2021 HFC data. Very few parties have provided 2022 HFC data necessary to calculate the baseline. Most 2022 HCFC and HFC data will likely be reported in September 2023, in the normal reporting cycle.

Group 2 A5 party baselines are calculated the same way, except that the period considered is 2024-2026. As of 3 April 2023, only one (1) A5 Group 2 party has ratified the Kigali Amendment and reported consumption data for 2021 only. The baseline is calculated based on 2024 through 2026 HFC data.

HCFC Component of Formula

The HCFC portion of the HFC baseline is calculated by adding together the average consumption of each HCFC in 2009 and 2010. This average HCFC consumption is multiplied by the HCFC's GWP to provide the total CO₂ equivalent consumed. This is repeated for each HCFC consumed by the party. The total CO₂ equivalent consumed is added together and then multiplied by 65%. The HCFC baseline for each party from 2009 and 2010 was provided by the MLF Secretariat. The total GWP weighted HCFC Baseline was calculated to be 812 MMTCO₂eq.

- Calculated by converting HCFC baseline into GWPs and multiply by 65%
- For each country, converted HCFC baseline (2009-2010 Average):
- From ODP tonnes into metric tonnes by chemical (ODP tonnes ÷ ODP)
- From metric tonnes into GWP weighted metric tonnes (metric tonnes * GWP tonnes)
- From GWP-weighted metric tonnes into million metric tonnes carbon dioxide equivalent (MMTCO₂eq) (GWP tonnes /1,000,000)
- Total GWP-weighted HCFC Baseline = 812 MMTCO₂eq

Addressing HFC Data Gaps

As of 3 April 2023, some parties (<10) had provided sufficient HFC consumption data through Article 7 reporting for 2020, 2021, and 2022 to calculate the HFC portion of their baselines. For those parties that have provided data for all three years, the RTF used the reported data to calculate the HFC portion of baselines by party.

For parties where HFC data was available for 2019 and/or 2020 and/or 2021, data gaps were filled by using national Gross Domestic Product (GDP) growth rates⁶² for earlier and later time periods. Some parties provided data as part of Country Program (CP) data for the MLF. If CP HFC data and A7 HFC data were available, the A7 HFC data was used because of the differences between the data sets for some parties. The CP HFC data and A7 HFC data were not averaged because the A7 data are the official reported record. It should be noted that CP data are reported in blends, while the A7 data are reported by component, so the RTF converted known blends to components to provide a like-for-like comparison. Many new blend combinations were reported through the CP data.

The RTF provides further information on its methodology to address any data gaps in Annex 1 to ensure that the most detailed and complete data are used in developing individual country baseline estimates. Table 3-2 shows the baseline calculation results by country brackets.

Table 3-2: HFC and HCFC Component of Formula in HFC Baseline

	% of HCFC Total GWP	HFC Portion of Baseline Calculation	HCFC Portion of Baseline Calculation		HFC BASELINE (MMTCO ₂ e)
			HCFC Baseline	HCFC Baseline x 65%	
Bracket A	59.28%	570	481	313	883
Bracket B	9.23%	139	75	49	188
B Group 2	8.62%	105	70	45	150
Bracket C	11.77%	112	96	62	174
C Group 2	2.88%	32	23	15	47
Bracket D	4.53%	85	37	24	109
D Group 2	1.13%	21	9	6	27
Bracket E	2.56%	52	21	14	65
Total All	100.00%	1,115	812	528	1,643

⁶² https://www.imf.org/external/datamapper/NGDP_RPCH@WEO/OEMDC/ADVEC/WEOWORLD

Step 3: Apply Assumptions for Sector Distribution for Brackets A-D

HFC consumption by market type for each A5, based on Country Programmes, are estimated for brackets A-D and group sector percentages using the following assumptions (see results in Table 3-3):

- Installed base transition assumptions from HCFCs to HFCs and other products
- Market growth assumptions
- Projected sector conversions
- Differentiation between country brackets
- Differentiation between Group 1 and Group 2 countries

Table 3-3 HFC Consumption by Market Type for Brackets and Country Group*

Sector Breakdown											
	RAC Servicing excluding MAC	Domestic Ref.	ICR	Stationary AC	MAC including Servicing	Foam XPS	Foam PUR	Aerosol	Fire Sup.	Solvents	TOTAL
Bracket A	16.6%	0.8%	17.3%	31.6%	10.7%	2.2%	3.2%	3.3%	14.4%	0.0%	100%
Bracket B	39.1%	0.7%	16.1%	22.3%	13.2%	3.0%	1.2%	4.3%	0.3%	0.0%	100%
B Group 2	33.4%	0.8%	11.3%	21.3%	15.2%	3.5%	2.8%	6.1%	5.6%	0.0%	100%
Bracket C	51.6%	0.3%	7.9%	9.0%	13.2%	2.9%	7.5%	4.1%	3.2%	0.1%	100%
C Group 2	55.6%	0.4%	7.0%	11.1%	14.6%	3.4%	3.3%	4.4%	0.3%	0.0%	100%
Bracket D	58.2%	0.1%	2.5%	2.4%	15.9%	3.3%	10.6%	4.8%	2.2%	0.0%	100%
D Group 2	65.5%	0.1%	2.4%	3.2%	12.7%	4.1%	7.6%	4.1%	0.5%	0.0%	100%

* Industrial and Commercial Refrigeration (ICR), Mobile Air Conditioning (MAC), Extruded Polystyrene (XPS), Polyurethane (PUR)

These estimates for HFC consumption by market type are then applied to each country's baseline. In other words, the HFC baseline is multiplied by the percentages of the HFC consumption by market type. Below is the table 3-4 of the results for each bracket.

Table 3-4 HFC Consumption Estimated for Each Sector in MMTCO₂eq

HFC Consumption Estimates for each sector in MMTCO ₂ eq											
	RAC Servicing excluding MAC	Domestic Ref.	ICR	Stationary AC	MAC including Servicing	Foam XPS	Foam PUR	Aerosol	Fire Sup.	Solvents	TOTAL
Bracket A	146.2	7.1	152.7	278.6	94.6	19.1	28.4	29.2	126.7	0.1	883
Bracket B	73.3	1.2	30.2	41.9	24.8	5.6	2.2	8.0	0.5	0.0	188
B Group 2	50.3	1.1	17.0	32.1	22.9	5.2	4.3	9.2	8.4	0.0	151
Bracket C	89.8	0.6	13.7	15.7	22.9	5.1	13.1	7.2	5.6	0.2	174
C Group 2	26.3	0.2	3.3	5.3	6.9	1.6	1.6	2.1	0.1	-	47
Bracket D	63.3	0.1	2.7	2.6	17.3	3.6	11.5	5.2	2.4	0.0	109
D Group 2	17.6	0.0	0.6	0.9	3.4	1.1	2.0	1.1	0.1	-	27

Then an average GWP is applied for each sector to estimate the consumption in metric tonnes and kilograms. The average GWP is used in order to estimate the portion of the baseline that is attributed to the HCFC portion of the baseline. The average GWPs used are below (Table 3-5).

Table 3-5 The Average GWP

Average GWP											
	RAC Servicing excluding MAC	Domestic Ref.	ICR	Stationary AC	MAC including Servicing	Foam XPS	Foam PUR	Aerosol	Fire Sup.	Solvents	TOTAL
Bracket A	1,491	1,430	2,218	1,264	1,430	1,284	1,521	1,100	3,299	1,640	1,585
Bracket B	2,249	1,430	2,919	1,931	1,430	982	904	840	3,858	1,640	1,860
B Group 2	1,652	1,430	2,376	1,419	1,430	947	1,038	1,020	8,031	1,640	1,554
Bracket C	2,108	1,430	2,759	1,747	1,430	1,082	845	1,021	3,729	1,640	1,700
C Group 2	2,201	1,430	2,845	1,924	1,430	1,064	1,020	1,420	5,467	1,640	1,863
Bracket D	2,414	1,430	2,973	2,022	1,430	1,343	821	1,378	3,254	1,640	1,747
D Group 2	2,296	1,430	2,799	2,027	1,430	995	799	1,215	3,377	1,640	1,751

The HFC consumption estimates are then divided by the average GWP for each sector to estimate consumption in metric tonnes and kilograms. The results for each bracket are below (Table 3-6).

Table 3-6 HFC Consumption Estimates for Each Sector in Metric Tonnes and Kilograms

HFC Consumption Estimates for each sector in metric tonnes											
	RAC Servicing excluding MAC	Domestic Ref.	ICR	Stationary AC	MAC including Servicing	Foam XPS	Foam PUR	Aerosol	Fire Sup.	Solvents	TOTAL
Bracket A	98,031	4,962	68,861	220,471	66,166	14,896	18,640	26,549	38,406	43	557,026
Bracket B	32,597	866	10,332	21,715	17,311	5,703	2,437	9,505	126	6	100,598
B Group 2	30,456	799	7,175	22,633	15,981	5,530	4,128	8,991	1,040	4	96,737
Bracket C	42,605	400	4,963	8,967	16,019	4,732	15,526	7,063	1,515	121	101,910
C Group 2	11,969	121	1,172	2,742	4,832	1,516	1,531	1,456	26	-	25,365
Bracket D	26,237	97	917	1,308	12,071	2,677	14,014	3,777	752	7	61,855
D Group 2	7,653	19	226	428	2,380	1,116	2,552	909	43	-	15,326

HFC Consumption Estimates for each sector in kilograms											
	RAC Servicing excluding MAC	Domestic Ref.	ICR	Stationary AC	MAC including Servicing	Foam XPS	Foam PUR	Aerosol	Fire Sup.	Solvents	TOTAL
Bracket A	98,030,541	4,962,425	68,860,902	220,471,287	66,165,668	14,896,342	18,639,849	26,549,442	38,406,093	43,427	557,025,977
Bracket B	32,596,799	865,555	10,332,026	21,714,517	17,311,108	5,702,759	2,437,235	9,505,477	126,249	6,244	100,597,970
B Group 2	30,456,118	799,052	7,174,643	22,632,878	15,981,037	5,530,403	4,127,596	8,990,879	1,040,260	3,817	96,736,684
Bracket C	42,605,229	400,470	4,962,996	8,967,050	16,018,783	4,731,708	15,525,641	7,063,030	1,514,586	120,837	101,910,330
C Group 2	11,968,875	120,808	1,171,717	2,741,763	4,832,312	1,515,649	1,531,372	1,456,476	26,239	-	25,365,211
Bracket D	26,237,309	96,798	916,553	1,307,600	12,070,855	2,676,654	14,014,218	3,777,002	751,743	6,698	61,855,431
D Group 2	7,652,685	19,043	226,346	427,628	2,380,323	1,115,943	2,552,242	908,831	42,504	-	15,325,544

Step 4: Apply Cost Effectiveness Factors

Brackets A through D

Since there are no agreed cost effectiveness thresholds for Brackets A through D because the HFC guidelines have not been finalized, the RTF based its estimates on cost effectiveness factors from the working text discussed at ExCom-91 as in the Table 3-7 below.

Table 3-7 Proposals for cost-effectiveness factors under discussion at ExCom-91

WORKING TEXT ON THE COST-EFFECTIVENESS THRESHOLDS

Cost-effectiveness (CE) thresholds for the CFC and HCFC phase-out

Sector	National ODS phase-out plans (UNEP/OzL.Pro/ExCom/16/20 para. 32)			HPMPs (decisions 60/44, 62/13 and 74/50)			TEAP (ExMOP 3)	Agreed CE (US \$/kg)
	Baseline substance	Main alternatives introduced	CE threshold (US \$/kg)	Baseline substance	Main alternatives introduced	CE threshold (US \$/kg)		
Domestic refrigeration (refrigerant and PU foam panel components)	CFC-12	HFC-134a R-600a	13.76	n.a.	n.a.	n.a.	8-10 [13.76] (Canada)	13.76
	CFC-11	HCFC-141b cyclopentane		HCFC-141b	Cyclopentane	7.83*,**		
RAC domestic							7-9	
Commercial refrigeration (refrigerant and PU foam panel components)	CFC-12	HFC-134a	15.21	HCFC-22	HFC-32, R-290, HFC-134a, CO ₂ , NH ₃ , cascade systems	15.21*	10-15	[15.21 plus 25% for SMEs] [2] [49] [18**] [*] plus special consideration for small enterprises [-20 mt?]
	CFC-11	HCFC-141b cyclopentane water		HCFC-141b	Cyclopentane, water, MF, methylal, HFC-245fa, reduced HFOs			
Stationary AC (domestic AC manufacturing)	n.a.	n.a.	n.a.	HCFC-22	R-410A, HFC-32, R-290	case-by-case	11-15 Stationary AC	[11][12**][13**][*]
[Stationary AC (commercial)]								[13**] (US) [case-by-case] [15.21-18**] [*] (India)
RAC transportation and industrial							10-15	Case-by-case
Rigid PU foam (including PU foam panel in commercial refrigeration)	CFC-11	HCFC-141b cyclopentane water	7.83	HCFC-141b	Cyclopentane, water, MF, methylal, HFC-245fa, reduced HFOs	7.83*,**	7-9	9**
Flexible PU foam	CFC-11	HCFC-141b cyclopentane water	6.23	HCFC-141b	Cyclopentane, water, MF, methylal, HFC-245fa, reduced HFOs	6.23*,**	7-9	case-by-case
Integral skin	CFC-11	HCFC-141b cyclopentane water	16.86	HCFC-141b	Cyclopentane, water, MF, methylal, HFC-245fa, reduced HFOs	16.86*,**	7-9	case-by-case
XPS foam	CFC-12	HFC-134a	8.22	HCFC-22/ HCFC-142b	HC, CO ₂	8.22*,**	7-9	case-by-case

Sector	National ODS phase-out plans (UNEP/OzL.Pro/ExCom/16/20 para. 32)			HPMPs (decisions 60/44, 62/13 and 74/50)			TEAP (ExMOP 3)	Agreed CE (US \$/kg)
	Baseline substance	Main alternatives introduced	CE threshold (US \$/kg)	Baseline substance	Main alternatives introduced	CE threshold (US \$/kg)		
Aerosol	CFC-12/ CFC-11	HC	4.40	HCFC-22/ HCFC-141b	HC, HFC-134a, HFC-152a, perchlorethylene, HFO	case-by-case	4-6	case-by-case
Fire extinguishing	Halon	ABC dry powder CO ₂	1.48	HCFC-123	No projects approved yet	case-by-case	3-5	case-by-case
Solvent	CFC-113	Heat cleaning, aqueous cleaning, trichlorethylene, HC, others	19.73	HCFC-141b	Iso-paraffin	case-by-case		case-by-case
Solvent	TCA		38.50	n.a.	n.a.	n.a.		case-by-case
Metered dose inhaler (MDI)	CFC-12/ CFC-11	HFC-134a	n.a.	n.a.	n.a.	n.a.		case-by-case
Mobile AC	CFC-12	HFC-134a	n.a.	n.a.	n.a.	n.a.	4-6	case-by-case
Stationary AC (domestic AC manufacturing)	n.a.	n.a.	n.a.	HCFC-22	R-410A, HFC-32, R-290	case-by-case	11-15 Stationary AC	[11][13**][*]
[Stationary AC (commercial)]								[13**] (US) [case-by-case] [15.21-18**] [*] (India)
Other refrigeration and AC manufacturing (heat pumps, transport, chillers, industrial)	CFC-11/ CFC-12 (chillers)	HFC-134a/ HFC-123 (chillers)	n.a.	HCFC-22	R-410A, HFC-32, R-290, CO ₂ , NH ₃ , cascade systems	case-by-case		

[* Funding of up to a maximum of 25 per cent above the cost-effectiveness threshold will be provided for projects when needed for the introduction of low-GWP [non-HFC/non controlled substances] alternatives (decision 60/44(f)(iv)).

** For SMEs in the foam sector [with consumption of less than TBD/20 mt], the maximum would be up to [40/25] per cent above the cost-effectiveness threshold (decision 74/50(c)(iii)).

The cost-effectiveness factors used by the RTF for Brackets A through D are in Table 3-8. Please note that RTF used “Agreed C.E.” for domestic refrigeration line (in green). For other sectors in green (case by case), the average “HPMP C.E.” was used, and if not available, and average value from “TEAP ExMOP3⁶³” range was used, and finally if no figures are available in those columns, the RTF used the average “National ODS Phaseout Plans” column.

⁶³ “TEAP (ExMOP3)” in the working table refers to Decision XXX/2, Annex 1 to TEAP September 2016 report, Volume II. Decision Ex.III/1- Working Group Report on the Climate Benefits and Costs of the Reducing Hydrofluorocarbons under the Dubai Pathway.

Table 3-8 RTF Cost Effectiveness Values Used for Countries in Brackets A to D

	RAC Servicing excluding MAC (\$/kg) HPMP CE	Domestic Ref. (\$/kg) Agreed CE	ICR (\$/kg) HPMP CE	Stationary AC (\$/kg) Avg. TEAP (ExMOP3)	MAC including Servicing (\$/kg) Avg. TEAP (ExMOP3)	Foam XPS (\$/kg) HPMP CE	Foam PUR (\$/kg) Agreed CE	Aerosol (\$/kg) Avg. TEAP (ExMOP3)	Fire Sup. (\$/kg) Avg. TEAP (ExMOP3)	Solvents (\$/kg) Avg. National ODS Phaseout Plans
BRACKETS A-D	\$ 4.80	\$ 13.76	\$ 15.21	\$ 13.00	\$ 5.00	\$ 8.22	\$ 9.00	\$ 5.00	\$ 4.00	\$ 29.12

The results of the total consumption multiplied by the cost effectiveness factors are in the Table 3-9 below. Please note that this is not the total cost of the phasedown. More calculations are needed to adjust for the cost of the phasedown which are laid out in further steps.

Table 3-9 HFC Consumption Estimates for Each Sector in US Dollars

HFC Consumption Estimates for each sector in US Dollars											
	RAC Servicing excluding MAC	Domestic Ref.	ICR	Stationary AC	MAC including Servicing	Foam XPS	Foam PUR	Aerosol	Fire Sup.	Solvents	TOTAL
Bracket A	\$ 470,546,595	\$ 68,282,969	\$ 1,047,374,322	\$ 2,866,126,730	\$ 330,828,340	\$ 122,447,934	\$ 167,758,642	\$ 132,747,210	\$ 153,624,372	\$ 1,264,389	\$ 5,361,001,505
Bracket B	\$ 156,464,635	\$ 11,910,042	\$ 157,150,120	\$ 282,288,719	\$ 86,555,540	\$ 46,876,680	\$ 21,935,119	\$ 47,527,385	\$ 504,995	\$ 181,806	\$ 811,395,041
B Group 2	\$ 146,189,368	\$ 10,994,953	\$ 109,126,326	\$ 294,227,417	\$ 79,905,184	\$ 45,459,912	\$ 37,148,365	\$ 44,954,395	\$ 4,161,042	\$ 111,137	\$ 772,278,101
Bracket C	\$ 204,505,100	\$ 5,510,461	\$ 75,487,167	\$ 116,571,656	\$ 80,093,916	\$ 38,894,639	\$ 139,730,767	\$ 35,315,152	\$ 6,058,346	\$ 3,518,159	\$ 705,685,362
C Group 2	\$ 57,450,599	\$ 1,662,315	\$ 17,821,822	\$ 35,642,916	\$ 24,161,561	\$ 12,458,636	\$ 13,782,350	\$ 7,282,381	\$ 104,954	\$ -	\$ 170,367,534
Bracket D	\$ 125,939,085	\$ 1,331,947	\$ 13,940,764	\$ 16,998,799	\$ 60,354,273	\$ 22,002,099	\$ 126,127,964	\$ 18,885,011	\$ 3,006,971	\$ 195,014	\$ 388,781,927
D Group 2	\$ 36,732,889	\$ 262,026	\$ 3,442,730	\$ 5,559,162	\$ 11,901,617	\$ 9,173,049	\$ 22,970,174	\$ 4,544,154	\$ 170,016	\$ -	\$ 94,755,816

Bracket E- LVCs

Paragraph 2 (b) of Decision XXXI/1 directs the RTF to “consider the special needs of low volume- and very-low-volume-consuming countries” and also emphasises these special needs in Paragraph 2 (f).

As mentioned, ExCom91 has not agreed on cost guidelines yet, and Document UNEP/OzL.Pro/ExCom/91/72 mentions under item 233 and in prelude to decision 91/64, “The Executive Committee agreed to continue consideration of the level and modalities of funding for HFC phase-down in the refrigeration servicing sector at its 92nd meeting, on the basis of inter alia the working document on the item including the draft recommendation text and working funding tables, contained in Annex XXXI to the present report.”

Table 3-10 below, summarizes different proposals under negotiation as of the 91st ExCom, for potential funding levels for LVC countries for the servicing sector for KIP Stage I.

Table 3-10 Servicing Sector Funding Levels for LVCs for KIP Stage I-A5 and Non-A5 Proposals Under Negotiation, as of 91st ExCom (USD)

WORKING FUNDING TABLES

The different options of funding levels considered by the contact group for both LVC and non-LVC countries to reach the 10 per cent reduction step of HFC phase-down in the servicing sector are presented in tables 1 and 2.

Table 1. Proposed funding levels for LVC countries for the servicing sector for stage I KIP (US\$/kg)

<u>HCFC baseline for the servicing sector (mt)</u>	<u>Funding for HPMP (decision 74/50)</u>	<u>Secretariat documents 88/72 and 89/8/Add.1</u>	<u>Article 2 countries proposal</u>	<u>New proposal from A5 countries</u>	<u>Revised A2 response to group of A5 new proposal (10 per cent reduction from baseline)</u>	<u>[Revised A2 response to group of A5 new proposal (10 per cent reduction from HFC consumption)]</u>
<u>Below 15</u>	<u>58.750</u>	<u>88.125</u>	<u>75.000</u>	<u>117.500</u>	<u>105.000</u>	<u>117.500</u>
<u>15 to 40</u>	<u>75.000</u>	<u>112.500</u>	<u>95.000</u>	<u>150.000</u>	<u>130.000</u>	<u>150.000</u>
<u>40 to 80</u>	<u>80.000</u>	<u>120.000</u>	<u>118.800</u>	<u>160.000</u>	<u>145.000</u>	<u>160.000</u>
<u>80 to 120</u>	<u>90.000</u>	<u>135.000</u>	<u>133.700</u>	<u>180.000</u>	<u>160.000</u>	<u>180.000</u>
<u>120 to 160</u>	<u>95.000</u>	<u>142.500</u>	<u>141.000</u>	<u>190.000</u>	<u>170.000</u>	<u>190.000</u>
<u>160 to 200</u>	<u>100.000</u>	<u>150.000</u>	<u>148.500</u>	<u>200.000</u>	<u>180.000</u>	<u>200.000</u>
<u>200 to 320</u>	<u>160.000</u>	<u>240.000</u>	<u>237.600</u>	<u>320.000</u> <u>368.000</u>	<u>250.000</u>	<u>320.000</u>
<u>320 to 360</u>	<u>180.000</u>	<u>270.000</u>	<u>267.000</u>	<u>360.000</u> <u>375.000</u>	<u>280.000</u>	<u>360.000</u>

Table 3-11 below shows the total cost for the three proposals by A5 and non-A5 Parties (also called A2 parties).

For Bracket E, the table below is derived from the working funding table above to calculate average costs for the 10% reduction from baseline and was used to estimate the costs for LVCs.

Table 3-11 Servicing Sector Total Cost for LVCs- A5 and non-A5 proposals under negotiation, as of 91st ExCom

HCFC baseline for the servicing sector (mt)	New Proposal from A5 countries (US\$)	Revised A2 response to group of A5 new proposal (10% reduction from baseline) (US\$)	RTF Average Cost of A5 and A2 proposals (US\$)	Number of countries	Total Cost based on RTF average (US\$)
Below 15	\$ 117,500	\$ 105,000	\$ 111,250	23	\$ 2,558,750
15 to 40	\$ 150,000	\$ 130,000	\$ 140,000	14	\$ 1,960,000
40 to 80	\$ 160,000	\$ 145,000	\$ 152,500	13	\$ 1,982,500
80 to 120	\$ 180,000	\$ 160,000	\$ 170,000	11	\$ 1,870,000
120 to 160	\$ 190,000	\$ 170,000	\$ 180,000	9	\$ 1,620,000
160 to 200	\$ 200,000	\$ 180,000	\$ 190,000	3	\$ 570,000
200 to 320	\$ 368,000	\$ 250,000	\$ 309,000	11	\$ 3,399,000
320 to 360	\$ 375,000	\$ 280,000	\$ 327,500	10	\$ 3,275,000
Total US \$				94	\$ 17,235,250

The estimated costs for all 94 LVCs amounts to a total of US\$ 17.2 million dollars for the 10% reduction spanning over five years of implementation. RTF has done all calculations based on reductions from the baseline set by the MOP in Kigali, and not from a component of the baseline.

Step 5: Results for the Estimated Total Cost of a full HFC Phase-down Under the MLF

Table 3-12 below provides indicative figures for the total cost of an HFC phase-down for all countries in Brackets A to D, for the Consumption Sector to 80% (Group 1 countries) and 85% (Group 2 countries). For brackets A, B, and C, the figure includes a 15% deduction for exports, foreign/multinational ownership of enterprises and cut-off date. It also includes the total based on the adjusted calculation method for Bracket E.

Table 3-12 Estimated Total Cost of a full HFC Phase-down Under the MLF

	HFC Cost 100% Phaseout	HFC Cost 100% Phaseout minus 15% Exports, Foreign Ownership, & Cutoff Date	HFC BASELINE	HFC Cost Phasedown (80% or 85%)
GRAND TOTAL	\$ 8,476,617,786	\$ 7,303,508,655	1,643	\$ 5,887,607,154
Bracket A	\$ 5,361,001,505	\$ 4,556,851,280	883	\$ 3,645,481,024
Bracket B	\$ 811,395,041	\$ 689,685,785	188	\$ 551,748,628
Bracket B Group 2	\$ 772,278,101	\$ 656,436,385	150	\$ 557,970,928
Bracket C	\$ 705,685,362	\$ 599,832,558	174	\$ 479,866,046
Bracket C Group 2	\$ 170,367,534	\$ 144,812,404	47	\$ 123,090,543
Bracket D	\$ 388,781,927	\$ 388,781,927	109	\$ 311,025,542
Bracket D Group 2	\$ 94,755,816	\$ 94,755,816	27	\$ 80,542,444
Bracket E	\$ 172,352,500	\$ 172,352,500	65	\$ 137,882,000

The totals for Group 1 and Group 2 are totalled in the table below (Table 3-13).

Table 3-13 Estimated Total Cost of a full HFC Phase-down Under the MLF (by groups)

	HFC Cost 100% Phaseout	HFC Cost 100% Phaseout minus 15% Exports, Foreign Ownership, & Cutoff Date	HFC BASELINE	HFC Cost Phasedown (80% or 85%)
Group 1 Countries	\$ 7,439,216,336	\$ 6,407,504,049	1,418	80% \$ 5,126,003,240
Group 2 Countries	\$ 1,037,401,451	\$ 896,004,605	225	85% \$ 761,603,915

For each reduction period, the RTF assumed equally distributed reductions each year as in Table 3-14 below. The total for the % reduction each year will equal 80% for Group 1 and 85% for Group 2. This method ensures that only 80% or 85% of the HFC consumption is funded because it is a phasedown.

Table 3-14 HFC Phasedown Distribution of Reductions

Group 1				Group 2			
Year	Compliance Targets	Amount of Reduction during the time period	% reduction per year	Year	Compliance Targets	Amount of Reduction during the time period	% reduction per year
2024	Freeze	10%	2.00%	2024		10%	
2025			2.00%	2025			1.43%
2026			2.00%	2026			1.43%
2027			2.00%	2027			1.43%
2028			2.00%	2028	Freeze		1.43%
2029	10%	30%	3.33%	2029		1.43%	
2030			3.33%	2030		1.43%	
2031			3.33%	2031		1.43%	
2032			3.33%	2032	10%	2.00%	
2033			3.33%	2033		2.00%	
2034		50%	3.33%	2034		20%	2.00%
2035	30%		4.00%	2035		2.00%	
2036			4.00%	2036		2.00%	
2037			4.00%	2037	20%	2.00%	
2038			4.00%	2038		2.00%	
2039		80%	4.00%	2039		30%	2.00%
2040	50%		6.00%	2040		2.00%	
2041			6.00%	2041		2.00%	
2042			6.00%	2042	30%	11.00%	
2043			6.00%	2043		11.00%	
2044		85%	6.00%	2044		85%	11.00%
2045	80%			2045		11.00%	
2046				2046		11.00%	
2047				2047	85%		
2048				2048			
2049			2049				
2050			2050				

To calculate the 2024-2026 estimated funding for HFC consumption, the RTF uses the above table of equally distributed reductions multiplied by the eligible HFC cost which is the “HFC Cost 100% Phaseout minus 15% Exports, Foreign Ownership, & Cut-off Date” column. This provides the estimated cost for the specified year. The grand total of all these years equals the total cost for the 80% or 85% reduction. Similarly, if multiply the eligible HFC cost column by 80% or 85% the figures match. For the 2024-2026 triennium, Table 3-15 shows the estimated total cost for the HFC consumption is estimated to be US\$ 410 million, which do not include support costs of 9.6%.

Table 3-15 Total Cost for the HFC Consumption for the 2024-2026 Triennium

	2024	2025	2026
GRAND TOTAL	\$ 128,150,081	\$ 140,950,147	\$ 140,950,147
Bracket A	\$ 91,137,026	\$ 91,137,026	\$ 91,137,026
Bracket B	\$ 13,793,716	\$ 13,793,716	\$ 13,793,716
Bracket B Group 2	\$ -	\$ 9,377,663	\$ 9,377,663
Bracket C	\$ 11,996,651	\$ 11,996,651	\$ 11,996,651
Bracket C Group 2	\$ -	\$ 2,068,749	\$ 2,068,749
Bracket D	\$ 7,775,639	\$ 7,775,639	\$ 7,775,639
Bracket D Group 2	\$ -	\$ 1,353,655	\$ 1,353,655
Bracket E	\$ 3,447,050	\$ 3,447,050	\$ 3,447,050

As of 3 April 2023, 104 out of 144 A5 parties had ratified the Kigali Amendment. So, the RTF considered a range for the estimated HFC consumption costs based on the following two scenarios for the triennium 2024-2026:

- **Low-end scenario:** Calculated HFC baselines for 104 A5 countries that have ratified the Kigali Amendment as of the 3 April 2023 using a range of cost effectiveness factors; and
- **High-end scenario:** Calculated HFC baselines for all 144 A5 countries, assuming they will be ratifying the Kigali Amendment by 2026, using a range of cost effectiveness factors.

3.4 SPECIAL NEEDS OF LVC AND VLVC COUNTRIES IN BRACKET E

Paragraph 2 (b) of Decision XXXI/1 directs the RTF to “consider the special needs of low volume- and very-low-volume-consuming countries” and also emphasises these special needs in Paragraph 2 (f).

LVCs and VLVCs face the challenge of sustaining their compliance to eliminate HCFCs while preventing the proliferation of high-GWP HFCs which still rank high as the most feasible alternatives in many countries, as well as starting to reduce the consumption of HFCs from their current levels. This challenge is admittedly not limited to LVCs and VLVCs; however, it is certainly more acute in those countries due to the resources of the countries and the funds available to address this challenge. LVCs level of funding agreed at the ExCom level is linked to their low consumption, while the cost of some activities is fixed irrespective of consumption.

3.4.1 New LVCs challenges identified for the preparation and implementation of KIPs

RTF noted that, the proposed funding limits within LVCs to implement activities in the first stage of the KIP Stage1 are close in value to the budgets received for the preparation of the KIP project document. In addition, the negotiations include a provision for a 10 percent reduction from the HFC baseline and not the KIP baseline which includes a buffer of 65% of the HCFC baseline to enable the countries’ compliance within the first period of implementation. And since there is no decision on this matter, the RTF is calculating funding needs based on HFC reduction from the baseline (which includes 65% of HCFCs) as done by the Montreal Protocol since its creation.

Other challenges in implementation of KIP in Stage I include:

- **Lack of direct policy options that can transform the market:** Options that are currently available to LVCs are mostly on the supply side, such as imposing a quota on imports of

controlled substances. Such options might starve the markets of refrigerants if the quota imposed is aggressive and not synchronized to activities which can reduce consumption.

- **Limited success of early equipment replacement/end user programmes:** Document UNEP/OzL.Pro/ExCom/84/63 lists the number of implemented end user projects up to 2019 as 28 out of a total of 66 equal to 42 percent, with the rest redirected due to decisions 72/17, 72/40, and 73/34. End user projects in LVCs were approved between 2010 and 2013; some of projects to replace HCFC equipment were successfully implemented. Although other end user projects for LVCs were later approved on case-by-case basis, LVCs can benefit from the application of lessons learned from the earlier experience to make these programmes work.
- **Difficulty in implementing policy options on the demand side** which can lead to reduction in future consumption. For example, a ban on equipment import can be imposed; however, such a ban will lead to market confusion and illegal import if the Party has no accessibility to affordable alternative technologies.
- **Low private sector interest in domestic market pull:** The market landscape consisting of small importers who are dependent on imported technologies lead to low private sector interest in domestic market pull to alternative technologies. The absence of influential domestic market leaders leaves the field open to global companies to impose their marketing strategies which often do not coincide with the best interests of the market.
- **Consumer concerns:** Consumers are concerned about safety, cost, and the credibility (reputation) of the suppliers of new technologies. Concerns about safety are related to flammability/toxicity or the proper operation of complex equipment. Concerns about cost are related to dual upgrades to low-GWP and energy efficient technologies like inverters. Concerns about credibility relate to the availability of skilled technicians to install and service the new products as well as the availability of parts and refrigerant replacement.
- **Technicians' accessibility to continuous training:** Outside of the training programmes funded by the MLF, RAC technicians do not have direct (thus affordable) and timely opportunities to improve their capacities for alternative technologies unless foreign manufacturers offer such opportunities.
- **Difficulty in enforcing standards and labelling:** It is more difficult to enforce standards and labelling consistently because markets are fragmented with diversified products from different regions of the world. This could also mean the specifications of the imported equipment might not well fit the local conditions such as local climate conditions and power fluctuations.

3.4.2 Addressing the challenges

Parties will have different approaches to addressing the challenges depending on market maturity and the speed with which activities can be implemented, especially in the regulatory framework. Some of the recommendations that might be applicable across LVCs and VLVCs are:

1) Demand side management, consumer choice awareness:

TEAP Decision XXX/5 Task Force report (2019) states that, “The market transition to energy efficient technologies with lower GWP refrigerants is not only determined by its costs and availability of the products but also on the marketing and communication strategy designed to create the demand amongst the consumers and trigger them to make better-informed purchasing decisions.”

An example of activities in this respect includes customer communication strategies to disseminate information in a continuous manner at the points of purchase; product labelling is an effective way of educating the consumer like consumer choice campaigns; retailer/installer awareness to provide advice to customers when making choices; B2B customers creating a pull-to-market of low-GWP technologies in commercial and industrial refrigeration and commercial air conditioning. A successful initiative that was launched by the Swiss government to encourage business owners to replace commercial refrigeration equipment by providing a subsidy is mentioned in the EETF report for Decision XXXI/7 as Case Study 5.2.

Product bans that reduce future needs for service consumption need to be carefully considered and planned. Before bans can be introduced, markets can benefit from early retirement/end-user programmes to introduce the new technologies for the respective applications and ensure that the proposed alternatives are accessible. Overcoming the challenges linked to end user programmes mentioned above is essential to the success of the programmes.

A rough estimate for the cost of demand side management is around US \$100,000 which is close to the total proposed KIP budget for Stage I for VLVCs.

2) Prioritising the sectoral approach to KIP:

The HPMP approach was straightforward – start with the foam sector based on the “worst first (ODP)”, and which had viable alternatives to HCFC-141b and limited to manufacturing sector. Then tackle manufacturing to reduce the supply of equipment, while continuously building the capacity of the refrigeration servicing sector to reduce one refrigerant (HCFC-22) used in many applications.

The KIP covers more refrigerants and more sub-sectors which requires a different approach to prioritisation; moreover, the same activities can be different for the different sub-sectors, for example training MAC technicians versus training those in the commercial refrigeration sub-sector.

The prioritisation of sub-sectors depends on two factors: the consumption of the sub-sector in CO₂ equivalent terms and the market conditions and readiness to implement the activities. Market readiness includes the accessibility of low-GWP technologies, planning of standards for the safe application of the new technologies, availability of training courses and training institutes, and the presence and degree of expertise of local assemblers/installers. The prioritisation exercise permits allocating the limited funds available in KIP Stage I within the servicing sector in the most effective way to reduce consumption.

3) Providing sufficient funding for the different elements of KIP in the servicing sector:

Activities in the sectoral approach include training, supply of tools, adapting the training material and codes of practice to the sectoral needs, incentive programmes, support to SMEs programmes. Cross sectoral activities are in refrigerant management and the actions under the regulatory framework and control mechanism.

Not all LVCs have a Project Management Unit (PMU) for monitoring and coordination. The creation of these units where they do not exist can facilitate the implementation of activities especially in the HPMP/KIP coordination period until 2030.

Considering that there are potentially up to eight sub-sectors under the Servicing sector, and two cross-sectoral elements, funding proposed would have to provide enough for each sub-sector over a six-year period.

4) Bilateral regional pilot demonstration projects:

Some pilot demonstration projects require large amounts of funding to be executed which are beyond the limited funding linked to consumption levels of a single Party. Regional pilot demonstration projects leveraging existing regional collaborations have proven to be effective.

An example is the collaboration involving 21 countries in Eastern and Southern Africa to formulate harmonised regional MEPS. The objective of the project is to increase the demand and accelerate the uptake of energy efficient quality lighting and appliances products in the Southern African Development Community (SADC) and East African Community (EAC). The total cost of the 5-year project which started in 2019 is US \$6.5 million⁶⁴ with funding mainly by the Swedish International Development Cooperation Agency (SIDA) and in-kind co-financing from UNIDO, SACREEE, EACREEE⁶⁵, and member states as well as investments through Public-Private Development Project (PPDP). There was a delay on the planned targets due to COVID-19 which affected progress greatly.

⁶⁴ The equivalent of €5.9 million

⁶⁵ SACREEE = SADC Centre for Renewable Energy and Energy Efficiency and EACREEE = The East African Centre of Excellence for Renewable Energy and Efficiency

The project represents an average cost of a little bit over US \$300K vs. US \$500K by country if done individually as shown under in the paragraph under *EE funding window* below.

5) LVCs and EE funding window under decision 91/65

With reference to section 5.3, the total amount available is US \$20M. LVCs can submit projects to benefit from this window. There is no special allocation for LVCs nor is the funding linked to consumption.

The decision proposes prioritising the development of national and/or regional MEPS, including a process or mechanism to monitor and assess their implementation. Other priority projects can be for capacity building in the servicing sector.

LVCs can consider the development of regional MEPS among countries in the same economic community to maximize the impact of the limited funding. The countries of the region need to coordinate their approach with the relevant IAs to ensure early submission (please refer to effectiveness of bilateral regional demonstration projects in the section above)

Preparing MEPS requires the availability of market data and the mapping of existing policies and key stakeholders, for example, ministries, standards body, customs, industry associations, civil society entities, etc., to enable the pertinent authorities to issue regulations. The first step would be to conduct an analysis to determine the appropriate tiers for MEPS and labels.

Pursuing all the necessary preparatory steps including a consumer awareness campaign and putting in place a monitoring process, prior steps would need to be taken for coordination. In addition, it is necessary that the authorities champion the work closely, with a highly engaged and responsive industry.

3.5 KIGALI HFC PHASE-DOWN MANAGEMENT PLAN - PREPARATION AND IMPLEMENTATION

3.5.1 Project Preparation Stage 1

Since many countries have already received funding for KIP project prep, the RTF's estimate was informed by the most recent MLF business plan and included estimates for gender mainstreaming, as detailed in Chapter 7.

3.5.2 KIP Stage 1- Challenges related to Sustainable Financial Flow for LVCs

For A-5 Group I Parties, KIP extends until 2045 to phase-down the use of HFCs to 20% of the baseline. The timeline of 21 years between the freeze in 2024 and the last stage of the phase-down in 2045 is longer than the 17 years for the HPMP activities from the freeze of consumption in 2013 to the 2030 date for the complete phase-out of HCFCs, not counting the service tail. Most HPMPs have three stages, an average of approximately less than six years per stage.

Building on the experience from the HPMP for the time needed for the implementation of its activities, it would be reasonable to spread the KIP over three stages extending till 2045. The first stage will be over a period of six years until 2030, in line with the MLF recommendation included in document UNEP/OzL.Pro/ExCom/88/71, for an optimised integration with the last Stages of the HPMP. The KIP Stage I will cover the first two years of the KIP phase-down to 90% of the baseline. Stage II can cover a period of 10 years till 2040 for a phase-down to 50%, and the last stage covers five years till 2045 for a phase-down to 20%.

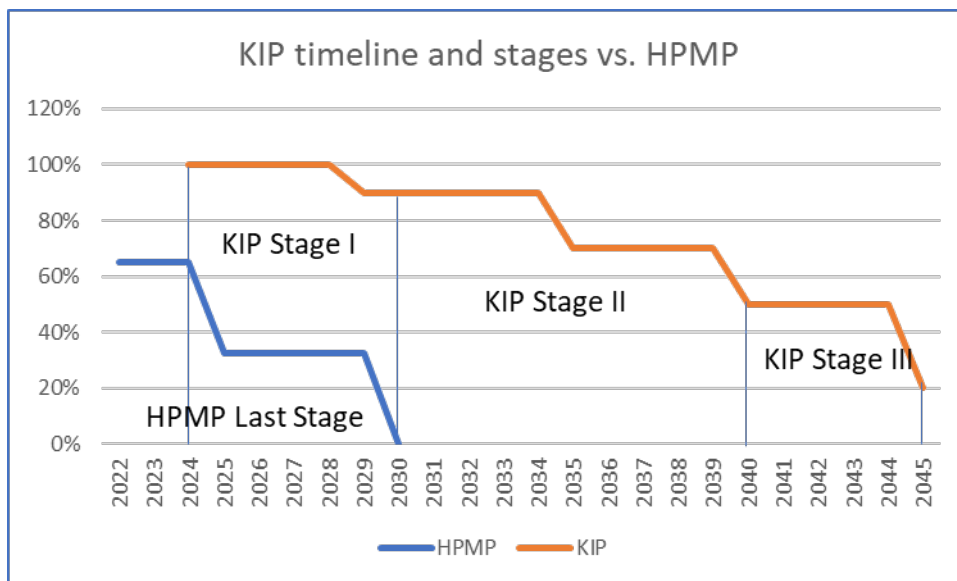


Figure 3-1 Suggested stages and timeline for KIP

For an equal distribution of funding among the three stages times wise, Stage I can constitute up to 28% of the total KIP funding. There are, however, arguments that Stage I should be limited to 10% of the total funding since it covers only the first reduction step of 10%.

Proponents of the 10% argument point to the simultaneous funding available from the last stages of the HPMP as a justification for the limited funding for the Stage, while proponents of the 28% funding point to the importance of early action in order to manage the demand of HFC equipment which will contribute to an earlier phase-down.

For the HPMP, Stage I for LVCs extended till 2020 (refer to section 2.1.1) covering 35% of the budget. The period from 2013 to 2020 for Stage I of the HPMP is almost equivalent in number of years to that the KIP Stage I between 2024 and 2030 which in one aspect justifies setting the funding for Stage I of the KIP above 10% of the total budget to cover early activities.

Early action in the HPMP has also proven effective for non-LVC A5 countries to fund activities in capacity building and managing demand for HCFC-based equipment in order to reduce future service consumption. Stage I in non-LVC countries covered four years in most cases, which is within the 10% reduction phase, and was an average of 15 % of the total funding thus contributing to accelerated reductions in the other stages].

Challenges are presented for parties' information. Nevertheless, RTF only used its compliance model estimates and has not considered frontloading funds for its funding estimates for the 2024-2026 triennium.

Based on the compliance model and the RTF estimates for total cost of the HFC phasedown, all 94 LVCs constitute 3% of the total volume and only 2% of the funding. For this triennia, they would only account for 1.73-2.05% of the estimated funding for KIPs (Table 3-6).

3.6 ENABLING ACTIVITIES

Following the Kigali Amendment in 2016, the MLF received additional voluntary contributions amounting to over US\$ 25.5 million from a group of donor countries to finance fast-start activities for getting countries ready for the ratification and implementation of the HFC phase-down. A total of 117 countries received funding under additional voluntary contributions. In addition, 22 countries received funding for enabling activities under MLF regular budget. There is no funding remaining under the additional voluntary contribution.

Enabling activities included: a) Capacity-building and training for the handling of HFC alternatives in the servicing, manufacturing and production sectors; b) Article 4B licensing; c) Reporting; d) Demonstration projects and e) Development of national strategies.

The development of national strategies and other ratification related activities, can include activities, *inter alia*,

- Mapping current HFC sector situation with a view to also address the non-eligible consumption by multinationals and impact on high-GWP growth.
- Assessing national barriers and opportunities for the use and further uptake of low- and zero-GWP ODS alternatives, including barriers and opportunities to access international markets for uptake of these alternatives for LVCs/VLVCs, especially SIDS (small island developing States)
- Preparing the concept of effective replacement of inventory in RAC sector – replacement with significant energy efficiency improvement
- Identifying linkages between HCFC and HFC reduction schedules, with special attention to certain sectors
- Drafting proposals on financial instruments (end-users' subsidy, economic incentives) to address economic barriers of the introduction of alternatives
- Creating and amending periodically a national register of best available technologies that explicitly includes zero and lower GWP technologies
- Adding activities that are important for HFC phase-down: such as training in sustaining energy efficiency, coordinating with climate ministry in the country
- Joint training workshops by OzonAction and OS (with all Implementing Agencies (IAs))

ExCom Decision 79/46⁶⁶ provided the levels of funding for enabling activities, based on the country's HCFC baseline consumption, as specified below, excluding support costs:

- For HCFC baseline below 1 ODP tonnes, maximum funding for enabling activities was US\$ 50,000;
- For baseline between 1 and 6 ODP tonnes, maximum funding was US\$ 95,000;
- For baseline above 6 and up to 100 ODP tonnes, maximum funding was US\$ 150,000; and
- For baseline above 100 ODP tonnes, the maximum funding for enabling activities was US\$ 250,000.

There are six countries that are still without enabling activities (EA), including three LVCs (Antigua and Barbuda, Barbados, and Central African Republic (CAR)), plus Brazil, Korea DPR, and Yemen. Two countries, Antigua and Barbuda and (CAR) have their EAs included in the 2023-2025 MLF Consolidated Business Plan, and RTF considered those required funds in the 2024-2026 replenishment period, as well as the funding required for the other four countries, which may still include their EAs request in this triennium. All must meet eligibility requirements for funding, such as ratification or letter of intent to ratify sent to the MLFS, as per ExCom Decision 79/46. Estimated funding for EAs is shown in Table 3-17 below:

⁶⁶ UNEP/OzL.Pro/ExCom/79/51

Table 3-17. Estimated Funding for Enabling Activities

Country	Status under the Kigali Amendment**	Letter of Intent to Ratify Sent to MLFS	Estimated Funding for 2024-2026 Triennium (US\$)
Antigua and Barbuda*	-	yes	\$ 53,500
Barbados	Ratified 2018-04-19	yes	\$ 101,650
Brazil	Acceptance 2022-10-19	no	\$ 267,500
CAR*	-	yes	\$ 160,500
Korea DPR	Ratified 2017-09-21	no	\$ 160,500
Yemen	-	no	\$ 267,500
TOTAL			\$ 1,011,150

*Included in the 2023-2025 MLF Consolidated BP but without a final decision on its approval, RTF has considered as to be funded in the 2024-2026 replenishment period. Numbers include 7% support cost.

**Seen at OS site on 16 March 2023: <https://ozone.unep.org/all-ratifications>

3.7 HFC VERIFICATION

Since there are no HFC consumption sector projects currently underway, there is no need for verification activities. the RTF did not include any funding requirement for HFC verification in the 2024-2026 triennium.

3.8 ESTIMATED FUNDING WINDOW FOR ENHANCING OR MAINTAINING ENERGY EFFICIENCY

Decision 91/65⁶⁷ has established a “funding window for pilot projects in the amount of US \$20 million with the possibility of augmenting that funding window at a future meeting to maintain and/or enhance energy efficiency in the context of HFC phase-down as specified in decision XXVIII/2, following the criteria identified in subparagraph(b).”

This amount was used by RTF in the funding estimates for 2024-2026, without considering the possibility of augmentation in this triennium. Chapter 5 of this Report provides examples of approaches in support of energy efficiency that could be useful to inform consideration of the possibility of augmenting the funding window in the future and in ongoing discussions on HFC guidelines.

⁶⁷ UNEP/OzL.Pro/ExCom/91/72

3.9 TOTAL ESTIMATED FUNDING REQUIREMENT FOR THE HFC CONSUMPTION SECTOR PHASE-DOWN FOR THE 2024-2026 TRIENNIUM

Table 3-18 below summarises the total estimated funding requirement for the HFC consumption sector phase-down for the 2024-2026 triennium of US\$ 444-487 million:

Table 3-18: Total Estimated Funding Requirement for the HFC consumption Sector Phase-down for the 2024-2026 Triennium (US\$)

2024-2026 Triennium	LOW-END	HIGH-END
HFC Consumption Sector		
HFC Approved KIPs	\$ -	\$ -
HFC Prep Costs (including gender mainstreaming)	\$ 16,802,000	\$ 16,802,000
HFC RTF Estimated KIPs	\$ 405,764,000	\$ 449,415,000
HFC Enabling Activities	\$ 1,011,000	\$ 1,011,000
HFC Funding Window on Energy Efficiency	\$ 20,000,000	\$ 20,000,000
Subtotal – HFC Consumption Sector	\$ 443,577,000	\$ 487,228,000

CHAPTER 4 HFC PRODUCTION SECTOR AND HFC-23 BY-PRODUCT EMISSION MITIGATION

4.1 INTRODUCTION

Paragraph 6 of Article 2J of the Kigali Amendment states that “Each Party manufacturing Annex C, Group I, or Annex F substances shall ensure that for the twelve-month period commencing on 1 January 2020, and in each twelve-month period thereafter, its emissions of Annex F, Group II, substances generated in each production facility that manufactures Annex C, Group I, or Annex F substances are destroyed to the extent practicable using technology approved by the Parties in the same twelve-month period.” HFC-23 is listed as a controlled (HFC) substance in Annex F, Group II.

HFC-23 is produced as a by-product of HCFC-22 production (for both emissive uses and for feedstock production). HCFC-22 production facilities with Clean Development Mechanism (CDM)⁶⁸ projects installed destruction technologies, however, not all facilities were eligible for CDM projects; a number of facilities may not have installed emission abatement technology. Various emissions mitigation options are available, including closure of HCFC-22 production, on-site incineration of HFC-23, and off-site destruction of HFC-23. Destruction technologies for HFC-23 have been evaluated by TEAP⁶⁹ and approved by parties^{70 71}.

ExCom 89, part II, June 2022, decided to confirm⁷²:

- That HFC-23 by-product was destroyed to the extent practicable in the context of Multilateral Fund-supported projects when up to a maximum of 0.1 kg of HFC-23 by-product was emitted per 100 kg of the relevant Annex C, Group I or Annex F substance produced.
- That HFC-23 by-product controls would be eligible independent of whether the relevant production that generated the HFC-23 was for controlled or for feedstock uses.
- That the term “production” in the context of HFC-23 by-product emission control projects supported by the Multilateral Fund meant the total amount of relevant Annex C, Group I or Annex F substance produced for all uses, including controlled and feedstock uses, irrespective of any subsequent destruction, recycling, and reuse.

4.2 OVERVIEW OF HFC PRODUCTION AND HFC-23 BY-PRODUCT EMISSION MITIGATION

4.2.1 HFC Production

Five A5 parties (Argentina, China, India, the Democratic People’s Republic of Korea and Mexico) have an obligation to report 2021 data on HFCs production and HFC-23 generation under the Kigali Amendment, in which, three parties reporting their HFCs production according to A7 data, China produces 847,673 MT, India produces 26,172 MT, DPRK produces 357 MT in 2021 respectively, Argentina and Mexico have the HFC-23 production of 33.31 MT and 128.52 MT respectively shown in Country Program Data.

4.2.2 HFC-23 By-Product Emission Mitigation

Five parties (Argentina, China, India, the Democratic People’s Republic of Korea and Mexico) have an obligation to report 2021 data on HFC-23 production and generation under the Kigali Amendment.

⁶⁸ <https://cdm.unfccc.int/>

⁶⁹ 2018 TEAP Report, Supplement to the April 2018 Decision XXIX/4 TEAP Task Force Report on Destruction Technologies for Controlled Substances.

⁷⁰ The themes on “Key aspects related to HFC-23 by-product control technologies” (Decision 82/69; 83/44; 84/70; 85/63; 86/94; 87/52).

⁷¹ UNEP May 2020 TEAP Progress Report. Medical and Chemicals Technical Options Committee Progress Report

⁷² UNEP/OzL.Pro/ExCom/89/16

The amount of HFC-23 emissions generated, reported by those countries in 2021 is: Argentina (33.31 MT), China (1,089.95 MT), India (607.6 MT)⁷³, DPRK (8.40 MT) and Mexico (128.52 MT), respectively⁷⁴.

The Parties to the Montreal Protocol had determined that production (and consumption) of controlled substances for feedstock uses should be excluded from control measures, based on the understanding that the controlled substance would be transformed during the manufacture of other chemicals and, therefore, would result in insignificant emissions into the atmosphere⁷⁵.

The decision 89/7 confirmed: That the term “production” in the context of HFC-23 by-product emission control projects supported by the Multilateral Fund meant the total amount of relevant Annex C, Group I or Annex F substance produced for all uses, including controlled and feedstock uses, irrespective of any subsequent destruction, recycling, and reuse; and when approving projects to control HFC-23 by-product emissions from production lines that would continue to produce the relevant Annex C, Group I or Annex F substance after the completion of the project, to invite the relevant A5 country to consider requesting additional funding for independent verification of the HFC-23 by-product generated, destroyed, sold, stored and emitted, under the subsequent stage of its HCFC phase-out management plan, until approval of its Kigali HFC implementation plan, at which time verification would continue under that plan.⁷⁶

Argentina

In 2018, Argentina reported the production of 1,192 tonnes of HCFC-22. ExCom 82/69 estimated the proportion of HFC-23 as about 3.3% of the HCFC-22 produced. According to the documents of ExCom 85, Frio Industrias Argentinas (FIASA) of Argentina produced 1,606 metric tonnes of HCFC-22 in 2019, representing a 35% increase from 2018. Argentina ratified the Kigali Amendment on 22 November 2019 and submitted a project proposal via UNIDO to enable compliance with the HFC-23 by-product control obligations of the Kigali Amendment. The ExCom agreed to defer the consideration of the Key aspects related to HFC-23 by-product control technologies, contained in document UNEP/OzL.Pro/ExCom/86/94, to the 87th meeting, and contained in document UNEP/OzL.Pro/ExCom/87/52 to the 88th meeting. The ExCom considered the project proposal at its 86th⁷⁷ and 87th⁷⁸ meetings. At its 87th meeting, the ExCom *inter alia* approved in principle US \$2,262,630, plus agency support costs of US \$ 158,384 calculated at 7% of the project cost for UNIDO, to enable Argentina to comply with the HFC-23 by-product emission control obligations under the Kigali Amendment to the Montreal Protocol; approve the first tranche of the HFC-23 by-product control emissions for Argentina at the amount of US \$1,527,851, plus agency support costs of US \$106,950 for UNIDO; and requested the Agreement between Argentina and the ExCom be submitted to the 88th meeting.⁷⁹

The implementation of the project for the control of emissions of HFC-23 generated in the production of HCFC-22 at Frio Industrias Argentinas, as submitted by UNIDO and contained in document UNEP/OzL.Pro/ExCom/91/18⁸⁰.

In ExCom-91, the ExCom agreed to consider the draft of agreement on ExCom 88/79 regarding “the blanket approval” with a total funding of individually the project in Argentina on the control of emissions of HFC-23 generated in the production of HCFC-22,⁸¹ with a total agreed funding of US\$ 2,421,014,⁸² while US\$121,000 was listed for 2024 and 2025 in the BP and Adjusted BP for 2023-

⁷³ According the A7 reporting data, the HFC-23 generation of India in 2021 is 607.6MT.

⁷⁴ The data for Argentina, China, DPRK and Mexico is cited from the Country Programme Data and Prospects for Compliance . UNEP/OzL.Pro/ExCom/91/8

⁷⁵ UNEP/OzL.Pro/ExCom/89/13

⁷⁶ UNEP/OzL.Pro/ExCom/89/16

⁷⁷ UNEP/OzL.Pro/ExCom/86/95

⁷⁸ UNEP/OzL.Pro/ExCom/87/53

⁷⁹ UNEP/OzL.Pro/ExCom/87/IAP/3

⁸⁰ UNEP/OzL.Pro/ExCom/91/72

⁸¹ Ibid.

⁸² UNEP/OzL.Pro/ExCom/88/77

2025. ExCom 91 further requests UNIDO to report to the 92nd meeting on this project with implementation delays (91/72ri)⁸³.

China

China has a large number of HCFC-22 producing plants, some of which were in operation for at least three years before 2004 and were equipped under the CDM with incineration units that incinerated part or all of the HFC-23 by-product.

Since 2008 China has banned the construction and expansion of HCFC-22 production facilities for controlled use. Meanwhile, China supports the incineration and conversion of HFC-23 produced by valid HCFC-22 production capacities recognised by then Ministry of Environmental Protection before April 27, 2015, when *Supplementary Circular on Strict Control of New, Reconstruction and Expansion of HCFCs Production Facilities* was issued. From 2014 to 2019, China had provided financial subsidies for the operation of HFC-23 destruction facilities of the HCFC-22 manufacturers.

In September 2021, China issued a notification requiring the destruction, to the extent practicable, of HFC-23 by-product from HCFC-22 and HFC production facilities. The ExCom 91 invites China, through the World Bank, to provide an update to the second meeting of the ExCom in 2023 with the most recent information on HFC-23 generation, destruction, and emissions in China, and any relevant regulatory or implementation updates.⁸⁴

According to the 2021 Country Programme (CP) data, China's HCFC-22 production was 10,120.6 ODP tonnes. As there is no updated detailed information available at plants level, this RTF 2023 report cited the information from its previous RTF 2020, Table 4-1 provides data on 11 HCFC-22 production plants in China that applied for government subsidies, with production of HCFC-22 of 598,098 t. Of these, eight smaller plants have an annual output between 9,000 and 40,000 t HCFC-22, two medium plants between 90,000 and 100,000 t HCFC-22, and the largest plant has an annual output around 200,000 t HCFC-22⁸⁵.

UNEP/OzL.Pro/ExCom/84/74, paragraph 12, indicates: "The verification report had included national information on the management of HFC-23 by-product generated in all HCFC-22 feedstock production lines established after 2010. In 2018, 99.8 per cent of the HFC-23 generated at all HCFC-22 production plants, including the integrated facilities, had been incinerated or collected, stored and sold, and 0.22 per cent had been vented."

⁸³ UNEP/OzL.Pro/ExCom/91/72

⁸⁴ UNEP/OzL.Pro/ExCom/91/71

⁸⁵ TEAP, "Assessment of the funding requirement for the replenishment of the Multilateral Fund for the period 2021-2023 (Volume 6)," September 2021.

Table 4-1 Amounts of HCFC-22 and HFC-23 produced as well as HFC-23 incinerated in plants that received subsidies in 2018 in China

Producer	HCFC-22 production (MT)	HFC-23 production (MT)	% of HFC-23 formed	Incinerated HFC-23 (MT)
Dongyue Chemical Co (Shandong)	207,043.5	4,244.93	2.05	4,244.88
Quhua Co (Zhejiang)	91,298.0	2,072.23	2.27	2,065.15
Meilan (Jiangsu)	101,469.9	2,803.39	2.76	2,803.18
3F Changsu (Jiangsu)	39,312.3	1,135.27	2.89	1,134.82
ZhongHao ChenGuang (Sichuan)	34,868.6	890.6	2.55	884.79
Linhai Limin Chemical (Zhejiang)	25,750.2	525.3	2.04	524.8
Arkema Changshu (Jiangsu)	37,942.7	724.7	1.91	722.38
Sanmei Chemical (Zhejiang)	13,977.2	344.88	2.47	340.01
Jinhua Yonghe (Zhejiang)	24,185.0	496.37	2.05	450.55
Lanxi Juhua (Zhejiang)	25,551.5	704.38	2.76	424.95
Pengyou Chemical (Zhejiang)	9,459.8	210	2.22	218.24
Average	/		2.32	
Totals	610,858.70	14,152.05	/	13,813.75

Data Sources: Based on the information from China's National Development and Reform Commission⁸⁶

Democratic People's Republic of Korea

The HCFC-22 production facilities in the DPR of Korea have not had a CDM project and have not built destruction facilities. The RTF has assumed that HFC-23 is vented at these two facilities at the level of 3% HCFC-22 production.

India

In India, 5 HCFC-22 production facilities have implemented a CDM project, of which two still in operation by April 2017 and October 2018.⁸⁷ India specified that the destruction facilities continue to be operated after the expiration of the CDM projects. In 2016, India made a commitment to eliminate HFC-23 and further clarified that companies are expected to internalise the cost of this environmental externality and create sufficient storage facility to manage production plant down time.

UNDP's business plan submitted to ExCom 91 included one project preparation and one HFC-23 emissions control investment project for India amounting to US \$43,000 in 2023 and US \$8 million in 2024, respectively.⁸⁸

⁸⁶

<https://so.ndrc.gov.cn/s?siteCode=bm04000007&token=&qt=%E6%B0%A2%E6%B0%9F%E7%A2%B3%E5%8C%96%E7%89%A>), and China's Ministry of Ecology and Environment (<http://www.mee.gov.cn/qwjs2019/?searchword=%E6%B0%A2%E6%B0%9F%E7%A2%B3%E5%8C%96%E7%89%A9>)

⁸⁷ TEAP RTF 2017.

⁸⁸ UNEP/OzL.Pro/ExCom/91/22

Mexico

In 2018, Mexico reported the production of 7,718 tonnes of HCFC-22, with a 1.96 % ratio of HFC-23 as a by-product.⁸⁹ In Mexico, HFC-23 by-product from HCFC-22 production is partially emitted (and/or separated for a specific use) or destroyed. One destruction facility attached to a Quimobásicos plant (CDM project from 2006) was operating in 2015. Mexico ratified the Kigali Amendment on 25 September 2018 and submitted a project proposal via UNIDO to enable compliance with the HFC-23 by-product control obligations of the Kigali Amendment. The ExCom agreed to defer consideration of the documents on key aspects related to HFC-23 by-product control technologies⁹⁰ to the 87th meeting and then to the 88th meeting. At its 86th meeting, the ExCom considered the project proposal⁹¹ and approved, in principle, US\$ 3,833,384, plus agency support cost of US\$ 268,337.⁹² At its 87th meeting, the ExCom approved the Agreement.

ExCom 91 further requested UNIDO to report to the 92nd meeting on this project with implementation delays (91/72)⁹³.

4.3 ESTIMATING FUNDING REQUIREMENTS 2024-2026 FOR HFC PRODUCTION PHASE-DOWN AND HFC-23 BY-PRODUCT MITIGATION

All five HFC producers — Argentina, China, India, the Democratic People’s Republic of Korea, and Mexico — have ratified the Kigali Amendment. Thus, the RTF estimated the funding requirements for HFC production sector phase-down and HFC-23 mitigation for the 2024-2026 period covering all five parties.

4.3.1 HFC production sector phase-down plans preparation and KPPMPs

For the five parties produces HFCs (including HFC-23), two parties, Argentina and Mexico only reported HFC-23 by product generation, three parties produce and report HFCs other than HFC-23, China (HFC-32, HFC-41, HFC-125, HFC-134a, HFC-143a, HFC-152a, HFC-227ea, HFC-236ea, HFC-236fa, HFC-245fa), India (HFC-32, HFC-125, HFC-134a) and DPRK (HFC-134a) . HFC-23 mitigation funding requirements is being discussed in 4.3.2.

The funding estimation in 4.3.1 only covers the three parties producing HFCs, other than HFC-23 phase-down.

For project preparation:

- A total of US\$ 2,000,000 for the preparation of HFC production sector phase-down plans, based on potentially funding for production sector audits in the three parties.

For KPPMPs:

- A total of US\$ 20 million is estimated for KPPMPs, in case the three parties submit their KPPMPs proposal for the 2024-2026 period for consideration, which covers China (HFC-32, HFC-41, HFC-125, HFC-134a, HFC-143a, HFC-152a, HFC-227ea, HFC-236ea, HFC-236fa, HFC-245fa), India (HFC-32, HFC-125, HFC-134a) and DPRK (HFC-134a).

4.3.2 HFC-23 by-product mitigation

Five parties (Argentina, China, India, the Democratic People’s Republic of Korea and Mexico) produce and report HFC-23 by-production and generation. HFC-23 phase-out plan of Argentina and Mexico had submitted and approved. China, India and DPRK need to consider the project preparation and project implementation during 2024-2026 triennium.

⁸⁹ UNEP/OzL.Pro/ExCom/84/72

⁹⁰ UNEP/OzL.Pro/ExCom/86/94 and UNEP/OzL.Pro/ExCom/87/52

⁹¹ UNEP/OzL.Pro/ExCom/86/96

⁹² UNEP/OzL.Pro/ExCom/86/100

⁹³ UNEP/OzL.Pro/ExCom/91/72

4.3.2.1 Project preparation costs

US\$ 43,000 for project preparation of HFC-23 emissions mitigation in India is included in the Consolidated BP of the MLF 2023-2025.⁹⁴ RTF estimate project preparation cost for India amount to US\$43,000 during 2024-2026, in case this cost is not approved 2023, and assumes no additional preparation cost needed for India.

RTF estimates US\$ 150,000 of HFC-23 mitigation preparation costs for the 2024-2026 period for China and DPRK, if both parties are planning to prepare projects.

4.3.2.2 HFC 23 mitigation projects proposed in the 2024-2026 triennium

RTF estimates US\$ 8 million for HFC-23 mitigation project based on the business plan submitted by UNDP to ExCom 91⁹⁵.

4.3.2.3 HFC-23 mitigation projects already approved and agreed: Argentina and Mexico

- 1) **Project Approved - Argentina:** On behalf of Argentina, UNIDO has submitted project proposal options to control and phase-out HFC-23 emissions at Frio Industrias Argentinas (FIASA). The Agreement between the Argentina and the ExCom will be submitted to the 88th meeting. At the 87th meeting the ExCom inter alia approved in principle, US\$ 2,262,630, plus agency support costs of US\$ 158,384 for UNIDO, to enable Argentina to comply with the HFC-23 by-product emission control obligations under the Kigali Amendment; requested the Secretariat, in cooperation with UNIDO, to prepare a draft Agreement for consideration at the 88th meeting; and approved the first tranche of the project in the amount of US\$ 1,527,851, plus agency support costs of US\$ 106,950.

In ExCom-91, the ExCom agreed to consider the draft of agreement on ExCom 88/79 regarding “the blanket approval” with a total funding of individually the project in Argentina on the control of emissions of HFC-23 generated in the production of HCFC-22, with a total agreed funding of US\$ 2,421,014 , while US\$120,650 was listed for 2024 and 2025 in the BP and Adjusted BP for 2023-2025.

RTF uses the cost agreed by Argentina and the ExCom (88/77), to estimate the funding requirements (Table 4-2).

- 2) **Project Approved - Mexico:** On behalf of Mexico, UNIDO has submitted project proposal options to control and phase-out HFC-23 emissions at Quimobásicos⁹⁶.

The 86th ExCom approved, in principle, US\$ 3,833,384, plus agency support costs of US\$ 268,337 for UNIDO, to enable the Mexico to comply with the HFC-23 by-product emission control obligations under the Kigali Amendment to the Montreal Protocol⁹⁷. The Agreement between Mexico and the ExCom of the MLF for the destruction of emission of HFC-23 generated in the production of HCFC-22 in Quimobasicos approved at the 87th meeting, a maximum amount of US\$ 2,995,047, out of the total funding specified in Appendix 1 A, was associated with IOCs and would be divided into annual tranches to be provided to the country upon verification of the quantity of HFC-23 by-product destroyed.

RTF uses the cost agreed by Mexico and the ExCom (87/IAP/3)⁹⁸ to estimate the funding requirements (Table 4-2).

⁹⁴ UNEP/OzL.Pro/ExCom/91/22

⁹⁵ UNDP's business plan submitted to ExCom 91 included one HFC-23 emissions control investment project for India amounting to US \$8 million in 2024.

⁹⁶ UNEP/OzL.Pro/ExCom/84/72

⁹⁷ UNEP/OzL.Pro/ExCom/86/100

⁹⁸ UNEP/OzL.Pro/ExCom/87/IAP/3

The total funding requirement for HFC-23 mitigation Project approved and agreed for Argentina and Mexico, estimated to be US\$ 6,522,735, has a combined investment and operating cost of US\$ 6,096,014 plus agency support cost of US\$ 426,721 from 2021 to January 2031 (Table 4-2).

Table 4-2 HFC-23 By-Product Mitigation Costs Estimated for Argentina and Mexico 2021-2030 (US\$)

	Cost item	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	Total
By Country												
Mexico	Total agreed investment+ operating costs	483,058	-	492,160	374,381	473,131	433,131	414,381	374,381	414,381	374,380	3,833,384
	Total agency support costs	33,814	-	34,451	26,207	33,119	30,319	29,007	26,207	29,007	26,206	268,337
	Total agreed costs for Mexico	516,872	-	526,611	400,588	506,250	463,450	443,388	400,588	443,388	400,586	4,101,721
Argentina	Total approved investment + operating	1,527,851	-	-	112,757	112,757	101,853	101,853	101,853	101,853	101,853	2,262,630
	Total agency support costs	106,950	-	-	7,893	7,893	7,130	7,130	7,130	7,129	7,129	158,384
	Total approved costs for Argentina	1,634,801	-	-	120,650	120,650	108,983	108,983	108,983	108,982	108,982	2,421,014
Total HFC-23 Mitigation Costs Estimated for Argentina and Mexico 2021-2030												
Total funding requirement	Total investment + operating for Mexico and Argentina	2,010,909		492,160	487,138	585,888	534,984	516,234	476,234	516,234	476,233	6,096,014
	Total agency support costs	140,764		34,451	34,100	41,012	37,449	36,137	33,337	36,136	33,335	426,721
	TOTAL	2,151,673		526,611	521,238	626,900	572,433	552,371	509,571	552,370	509,568	6,522,735

4.4 TOTAL FUNDING REQUIREMENTS FOR HFC PRODUCTION SECTOR PHASE-DOWN AND HFC-23 MITIGATION FOR THE PERIOD 2024-2026

4.4.1 Total funding requirement for 2024-2026

Based on the discussion from section 4.1-4.3, the total funding required for the HFC production sector phase-down and HFC-23 the triennium 2024-2026 are summarised by Table 4-3, including (1) US\$ 2,000,000 for HFC production sector plans preparation at the high end; (2) US\$ 20 million funding requirement for Kigali HFC Production Phase-down Management Plan (KPPMPs) at a high end in case the three countries (China, India and DPRK) submit their KPPMPs proposal for the 2024-2026 period; (3) US \$193,000 for project preparation of HFC-23 emissions mitigation (including India, China and DPRK); (4) US\$ 1,720,571 for HFC-23 mitigation project approved and agreed for Argentina and Mexico; (5) US\$8 million for proposed HFC-23 emissions control investment project of India.

The total funding requirement for the 2024-2026 triennium for the HFC production and HFC-23 mitigation is estimated to **US\$ 31.9 million**.

Table 4-3 HFC Production Sector Phase-down and HFC-23 Mitigation Funding Requirements for the triennium 2024-2026 (US\$)

2024-2026 Triennium	
HFC Production Sector	
HFC Production Sector Prep	\$ 2,000,000
HFC Production Sector KPPMP	\$ 20,000,000
HFC-23 Mitigation Prep	\$ 193,000
HFC-23 Mitigation Approved (Argentina and Mexico)	\$ 1,721,000
RTF estimated HFC-23 investment project	\$ 8,000,000
Subtotal – HFC Production and HFC-23 Sector	\$ 31,914,000

CHAPTER 5 FUNDING ESTIMATE FOR MAINTAINING AND/OR ENHANCING ENERGY EFFICIENCY WHILE PHASING DOWN HFCs

5.1 INTRODUCTION

Parties asked TEAP to look at “the need to allocate resources for activities to maintain and/or enhance energy efficiency while phasing down HFCs including those relating to pilot and demonstration projects, in accordance with any energy efficiency cost guidance developed by the ExCom, or, should the ExCom not adopt cost guidance in time to be considered in the report, for a scenario for a funding window to support such activities.”

After MOP-35, the ExCom met at its 91st meeting and agreed on Decision 91/65 established a funding window for pilot projects in the amount of US\$ 20 million with the possibility of augmenting that funding window at a future meeting to maintain and/or enhance EE in the context of HFC phase-down as specified in decision XXVIII/2, following the criteria identified in subparagraph (b) of the decision.

In responding to the parties’ mandate, the RTF interpreted Decision XXXIV/2 (paragraphs 2(a) and 2(e)) to cover the following EE-related items when taking into consideration all relevant decisions agreed upon by the parties to the Montreal Protocol and the ExCom:

- 1) Decision 89/6 established a funding table and defined additional activities for inclusion in existing and future HPMPs for LVC countries in response to paragraph 16 of decision XXVIII/2 and paragraph 2 of decision XXX/5 of the Parties – as described in chapter 2, section 2.4.6.
- 2) Decision 91/65 established a funding window for pilot projects in the amount of US \$20 million with the possibility of augmenting that funding window at a future meeting to maintain and/or enhance EE in the context of HFC phase-down as specified in decision XXVIII/2, following the criteria identified in subparagraph (b) of the decision’ – as described below in section 5.3.

5.2 ESTIMATED FUNDING RELATED TO EE BASED ON DECISION 89/6 FOR LVCS

In the context of HCFC phase-out, Parties agreed in decision XXVIII/2 paragraph 16 to request the ExCom to increase funding available to LVCs for maintaining energy efficiency in the servicing/end-use sector. In decision 89/6 the Executive Committee established a funding table (Table 2-9) and defined additional activities for inclusion in existing and future HPMPs for LVCs in response to paragraph 16 of decision XXVIII/2 and paragraph 2 of decision XXX/5 of the Parties. The ExCom in decision 91/37 decided that decision 89/6 applies to LVCs that have already completed their HPMPs. Funding estimates can be found under HCFC Funding Estimates, in chapter 2, section 2.4.6.

5.3 APPROVED EE FUNDING WINDOW IN DECISION 91/65

Decision 91/65⁹⁹ has established a “funding window for pilot projects in the amount of US\$ 20 million with the possibility of augmenting that funding window at a future meeting to maintain and/or enhance EE in the context of HFC phase-down as specified in decision XXVIII/2, following the criteria identified in subparagraph(b)”. RTF has included US\$ 20 million in the funding requirements for 2024-2026 triennium, without considering possible augmentation.

5.4 FUNDING NEEDS FOR ENERGY EFFICIENCY IN FUTURE TRIENNA

As mentioned, RTF has not considered the possibility of augmentation of the funding window in this triennium. Nevertheless, in the Supplement to the TEAP 2023 Progress Report, parties can find the response to Decision XXXIV/3: “Enabling enhanced access and facilitating the transition to energy-efficient and low- or zero-global-warming technologies”. RTF notes that this Supplement to the TEAP

⁹⁹ UNEP/OzL.Pro/ExCom/91/72

2023 Progress Report includes information on two approaches developed by the Energy Efficiency Working Group created to respond to Decision XXXIV/3. The approaches estimate EE costs that may be useful for parties to consider in developing HFC guidelines. These approaches are summarised below:

1. Approach A: indicative incremental costs. This approach uses an incremental cost approach for capital and operating costs based on available projects and previous data published in TEAP EETF reports. See the TEAP 2023 Progress Report for an indicative example for estimating the possible additional costs for improving the EE of domestic refrigerator compressors alongside a refrigerant transition using this approach.
2. Approach B: efficiency improvement-linked incentive. This approach links the EE funding to the level of efficiency improvement, compared with the best-available technology (BAT), as well as the beneficiary’s current portfolio of products and ability to produce high EE products; e.g., their product development capacity, testing facilities, and intellectual properties. The EE funding would be divided into additional capital cost (ACC), additional operating cost (AOC), and Capacity Building. The ACC and AOC are the additional cost associated with EE during the conversion costs and are separate from the ICC and IOC. The level of funding will then be dependent on the proposed EE level compared with the lowest EE and BAT. See the TEAP 2023 Progress Report for a comparison of cases using Approach A and B for two potential beneficiary enterprises with different needs (small – medium – and large vs. their technology advancement level). This indicative example illustrates how an efficiency-linked incentive approach compares with an incremental cost approach in terms of calculating the funding requirement for different levels of energy efficiency improvement.

These approaches can be considered, and more information provided if parties are interested, as part of the RTF Supplementary Report.

5.5 SUMMARY OF FUNDING NEEDS FOR ENERGY EFFICIENCY DURING HFC PHASEDOWN IN THE 2024-2026 TRIENNIUM

Table 5-1 summarizes funding needs, taking into consideration the approved funding window (dec 91/65), without considering the possibility of augmentation.

TABLE 5-1: FUNDING NEEDS FOR ENERGY EFFICIENCY IN 2024-2026 (US\$)

Funding Window for Energy Efficiency	
Dec 91/65	\$ 20,000,000
Total US\$ (with support costs)	\$ 20,000,000

1

CHAPTER 6 FUNDING REQUIREMENTS FOR END-OF-LIFE MANAGEMENT AND DISPOSAL

6.1 INTRODUCTION

In Decision XXXIV/2, on the terms of reference for the study on the 2024–2026 replenishment of the Multilateral Fund, the paragraph (2)(g) asks the TEAP to consider:

“The need to allocate resources for a funding window for activities to support end-of-life management and disposal of controlled substances in an environmentally sound manner, in accordance with any relevant decisions by the ExCom or, should the ExCom not adopt relevant decisions in time to be considered in the report, for a scenario for funding a limited number of demonstration projects;”

At their 28th meeting in 2016, in Decision XXVIII/2, paragraph 24, parties requested the ExCom to consider funding the cost-effective management of stockpiles of used or unwanted controlled substances, including destruction.

ExCom has discussed the disposal of unwanted controlled substances from its 78th meeting in 2017, in the context of the development of the cost guidelines for the phase-down of HFCs. These discussions continued at ExCom’s 82nd, 83rd and 84th meetings, where at the 84th meeting, ExCom requested the Secretariat to prepare a synthesis report¹⁰⁰ describing best practices and ways for the ExCom to consider operationalizing paragraph 24 of decision XXVIII/2.

The report¹⁰¹ was subsequently considered and discussed by ExCom at its 89th meeting, during which support was expressed for the development of a framework for countries to develop inventories of banks of controlled substances to facilitate identification of possible future actions, including disposal.

Discussions continued at the 90th meeting, at which, in decision 90/49 (b) it was decided to provide flexibility for A5 countries to include, in HPMPs and first stage KIPs, activities related to the environmentally sound management of used or unwanted controlled substances, including disposal, and (c), where the ExCom requested the Secretariat to develop criteria for a funding window to provide A5 countries with assistance to prepare an inventory of banks of used or unwanted controlled substances and to develop a plan for their collection, transport, and disposal (including consideration of recycling, reclamation, and cost-effective destruction).

ExCom considered the report¹⁰² from the Secretariat and the proposed criteria for the funding window at its 91st meeting and decided (decision 91/66):

- (b) *To establish a funding window for the preparation of national inventories of banks of used or unwanted controlled substances and a plan for the collection, transport and disposal of such substances, including consideration of recycling, reclamation and cost-effective destruction.*

Decision 91/66 also agreed criteria for the preparation, within the funding window, of those national inventories of banks of used or unwanted controlled substances and plans for their collection, transport, and disposal as below.

6.2 CRITERIA FOR FUNDING WINDOW

Decision 91/66 agreed criteria and funding for the preparation of national inventories of used or unwanted controlled substances and plans for their collection, transport, and disposal, within the funding window, as follows:

¹⁰⁰ UNEP/OzL.Pro/ExCom/86/90

¹⁰¹ UNEP/OzL.Pro/ExCom/89/9

¹⁰² UNEP/OzL.Pro/ExCom/91/66

- (a) *To note the criteria for a funding window for an inventory of banks of used or unwanted controlled substances and a plan for the collection, transport and disposal of such substances contained in document UNEP/OzL.Pro/ExCom/91/66;*
- (c) *To agree to the following criteria for the preparation of national inventories of banks of used or unwanted controlled substances and a plan for the collection, transport and disposal of such substances, including consideration of recycling, reclamation and cost-effective destruction:*
 - (i) *That the development of national inventories and plans would take into account the guidance provided in paragraphs 16 to 32 of document UNEP/OzL.Pro/ExCom/91/66;*
 - (ii) *That those Article 5 countries that made use of the flexibility provided under decision 90/49(b) to include the preparation of an inventory and plan in their refrigeration servicing sector plans under their HCFC phase-out management plans (HPMPs) or Kigali HFC implementation plans (KIPs) would not receive funding for such activities under the funding window referred to in subparagraph (b) above;*
 - (iii) *That projects under the funding window referred to in subparagraph (b) above would be submitted for the consideration of the Executive Committee as of the 93rd meeting up to and including the 97th meeting, on the understanding that they would be included in the relevant business plans before their approval;*
 - (iv) *That the national inventories and resulting action plan should be completed within 24 months of the date of approval by the Executive Committee;*
 - (v) *That the preparation of the national inventories and plans would ensure the following:*
 - a. *That the national inventory and plan would be coordinated with the development and/or implementation of national plans to phase-out/down controlled substances and would take into account existing national legislation and policies related to the environmentally sound management of chemical and unwanted controlled substances;*
 - b. *That the concept, methodology and approach to be taken for the preparation of the national inventory/action plan, including consultations with relevant stakeholders to help verify data collection, would be clearly described;*
 - c. *That national plans that might include, in addition to approaches for the collection, transport storage and disposal, specifically the destruction of waste-controlled substances, would contain a description of a potential business model detailing the arrangements with the various stakeholders and the private sector commitment and involvement in those activities, from waste collection to eventual destruction;*
 - d. *That the final plan would also contain a description of the policies and regulations describing the roles and obligations of manufacturers and distributors, including any recovery, recycling and reclamation programmes;*
 - e. *That, where the national plans identified export for destruction as the most cost-effective disposal option, they would contain an indication that national legislation and policies that were consistent with the requirements of the relevant conventions, particularly in relation to the transboundary movement of those wastes, needed to be in place;*
 - f. *That the national plan would include consideration of the development of regulations under national phase-out/phase-down plans (i.e., HPMPs or KIPs) on refrigerant recovery, recycling and reclamation that would support the actions identified for the collection, transport, storage and disposal of those used and unwanted waste-controlled substances;*

- (d) To agree on funding for the preparation of national inventories of banks of used or unwanted controlled substances, including consideration of recycling, reclamation and cost-effective destruction within the framework described in paragraphs 16 to 32 document UNEP/OzL.Pro/ExCom/91/66, as indicated in the table below:

HCFC baseline (ODP tonnes)	Funding for the preparation of national inventories of banks of waste-controlled substances and national action plan (US \$)
<i>Below 1</i>	70,000
<i>Between 1 and 6</i>	80,000
<i>Above 6 and up to 100</i>	90,000
<i>Above 100</i>	100,000

The Funding window fits within the replenishment period covered by this report (2024-2026), with projects to be submitted for consideration by ExCom from the 93rd meeting (2023) to the 97th meeting (2025), and with the expectation that national inventories and resulting action plans should be completed within 24 months of ExCom approval.

Decision 91/66 does not pre-empt future possible ExCom decisions, including on disposal, which would likely require separate funding steps. Considerations for potential future funding steps are considered further in Section 6.5.

6.3 FUNDING ELIGIBILITY AND PRIORITISATION

Taking into consideration paragraph 33 of UNEP/OzL.Pro/ExCom/91/66, decision 91/66 expects that the funding window would support interested A5 countries in developing national inventories of banks and national plans, indicating that any interested A5 country might be eligible for funding.

Taking into consideration paragraph 22 of UNEP/OzL.Pro/ExCom/91/66, decision 91/66 also expects that all sectors where controlled substances are used would be included in the data collection process to understand the scope of the banks and to prioritise sectors where actions can be initiated in a cost-effective manner. As noted in UNEP/OzL.Pro/ExCom/91/66, results from pilot ODS disposal projects indicated that the cost for the collection of foam and their destruction, while possible in some destruction facilities, may be prohibitive and not affordable, although this would be assessed as part of the development of national inventories and action plans. This indicates that banks related to a variety of sectors might be included, e.g., refrigeration, air conditioning, foams, fire protection.

Notwithstanding, decision 91/66 outlines possible circumstances and/or prior funding for activities that might exclude some A5 countries from receiving funding under the funding window. The following sections outline the criteria for funding eligibility included in decision 91/66 and the feedback received from IAs on their interpretation of the funding eligibility and prioritisation, as instructed.

6.3.1 A5 countries that made use of the flexibility provided under decision 90/49(b)

Decision 91/66 (c)(ii) states that those A5 countries that made use of the flexibility provided under decision 90/49(b)¹⁰³, to include the preparation of an inventory and plan in their refrigeration servicing

¹⁰³ ExCom Decision 90/49(b) *To provide flexibility for Article 5 countries to include, in the following plans, activities related to the environmentally sound management of used or unwanted controlled substances, including disposal, taking into account paragraphs 19 to 24 of document UNEP/OzL.Pro/ExCom/89/9 and lessons learned from previous ODS disposal projects, including in relation to the integration with hazardous waste rules and regulations:*

- i. *Refrigeration servicing sector plans under HCFC phase-out management plans (HPMPs), on the understanding that proposals for undertaking such activities would be submitted to the Executive Committee, either as part of new stages of HPMPs or subsequent tranches of approved stages of HPMPs;*
- ii. *Stage I of Kigali HFC implementation plans;*

sector plans under their HCFC phase-out management plans (HPMPs) or Kigali HFC implementation plans (KIPs), would not receive funding for such activities under the funding window.

It is worth noting that the flexibility provided under decision 90/49(b) is potentially more limited in scope than what has been intended as scope under the funding window established in decision 91/66. Funding window criteria for national inventories and action plans are applicable to all controlled substances and all sectors, while prioritising those actions that are cost-effective.

In response to decision 90/49(b), North Macedonia has approved funding for a refrigeration servicing sector plan under its HPMP, which includes sound refrigerant waste management.^{104,105} While the HPMP applies to a refrigerant management plan and for HCFCs only, the funding window is relevant to all controlled substances (e.g., HFCs, halons) and to all sectors (foams, fire protection). This would not appear to preclude North Macedonia from considering activities not addressed within its refrigeration servicing sector plan of its HPMP that might otherwise be considered within the criteria of decision 91/66.

6.3.2 *Prioritisation of countries who have not previously received funding under decision 58/19*

Decision 91/66 notes criteria included in UNEP/OzL.Pro/ExCom/91/66, paragraphs 33-38. Taking into consideration paragraph 34, priority will be provided to those countries who have not previously received funding under decision 58/19, relating to *Interim guidelines for the funding of demonstration projects for the disposal of ODS* and previous ODS disposal pilot demonstration projects.

Notwithstanding, no country that received funding for ODS disposal pilot demonstration projects would appear to be excluded from eligibility for funding in the funding window.

The ExCom approved 17 project preparation funding requests between the 54th and the 73rd meetings (2008 to 2014) that resulted in fully developed pilot demonstration projects for ODS waste management and disposal in 11 projects for 9 countries, two regional projects, and two for technical assistance, with a total funding of US\$ 10,305,832. Approvals were given for project preparation for ODS disposal demonstration projects and ODS disposal demonstration project implementation.

While these projects were approved between 9 and 15 years ago, there were challenges observed on project preparation as shown in UNEP/OzL.Pro/ExCom/89/9. It took an average of 40 months before final projects were submitted for consideration of ExCom, and the information that needed to be included in the proposals was not easy to obtain. There were delays in getting agreement with the country on the approach for ODS disposal, and the survey and aggregation of already collected ODS took longer than expected.

6.3.3 *Survey of implementing agencies on eligibility and other factors*

The RTF could not verify the number of parties planning to take advantage of the funding window; however, the majority of IAs, who responded to an RTF questionnaire on ExCom decision 91/66, believe that all parties handled by them will do so. Limited access to alternative funding, for updated inventories needed to prepare a national plan, supports this view.

IAs indicated that the agreed funding levels might not provide sufficient funds to cover all aspects included in the criteria, such as covering all applications, or that the funding provided covers limited activities that need additional support for end-of-life management and disposal of controlled substances. They would do an assessment of all activities under the HPMPs and KIPs that could have

¹⁰⁴ UNEP/OzL.Pro/ExCom/88/57

¹⁰⁵ UNEP/OzL.Pro/ExCom/88/79

an impact on the action plan, specifically linking to energy efficiency objectives such as equipment replacement programs, which could generate larger amounts of collected waste-controlled substances.

Regarding eligibility, IAs believe that countries that undertook demonstration projects for ODS disposal, which were approved and completed a long time ago, would need to undertake an updated, comprehensive inventory for HCFCs and HFCs in the present, and include different applications and the additional preparation of an action plan.

6.3.4 Countries considered eligible for funding under decision 91/66

Based on these considerations, the RTF has included all 144 countries in its calculation of the maximum funding under decision 91/66, as shown in Table 6-1 in section 6.4 below, considering the following:

- The funding window criteria for national inventories and action plans are applicable to all controlled substances and all sectors, despite those A5 countries that made use of the flexibility provided under decision 90/49(b),
- While paragraph 34 of UNEP/OzL.Pro/ExCom/91/66 prioritises those countries that have not previously received funding under decision 58/19, countries that have received funding are still eligible.
- The historic period in which the previous projects were implemented under decision 58/19,
- The input from IAs.

6.4 COST ESTIMATES FOR FUNDING THE PREPARATION OF NATIONAL INVENTORIES OF BANKS OF WASTE-CONTROLLED SUBSTANCES AND ACTION PLAN, 2024-2026

The following Table 6-1 estimates the maximum funding under the funding window established in decision 91/66, based on the inclusion of all 144 countries, using the funding bands specified in the decision, and assuming all funding commitments will fit within this replenishment period.

Table 6-1 Maximum funding under the funding window established in decision 91/66

HCFC baseline (ODPt) Group	Decision 91/66 Funding (US\$)	Total No. of countries by Group	Total Funding by Group (US\$)
Below 1	\$ 70,000	22	\$ 1,540,000
Between 1 and 6	\$ 80,000	36	\$ 2,880,000
Above 6 and up to 100	\$ 90,000	62	\$ 5,580,000
Above 100	\$ 100,000	24	\$ 2,400,000
Total without support costs (US\$)		144	\$ 12,400,000
TOTAL with support cost of 9.6% (US\$)			\$ 13,590,000

6.5 COST ESTIMATES FOR FUTURE TRIENNA 2027-2029 AND 2030-2032

The funding under Decision 91/66, for the preparation of national inventories of banks of used or unwanted controlled substances and plans for their collection, transport, and disposal, will be allocated in the 2024-2026 triennium. Additional funding to support the implementation of these plans, when completed, would require future funding decisions based on those plans. Consequently, no cost estimate has been undertaken for potential funding in future triennia. Nevertheless, the RTF has outlined below the scope of possible cost elements that could be addressed in future triennium funding of EOL management and disposal of banks.

The importance of EOL management under the Montreal Protocol, particularly in the context of servicing and refrigerant conservation, has recently been noted in the conclusions of the 2022 RTOC Assessment Report, such as:

- Refrigerant conservation is an effective part of reducing consumption of virgin refrigerants and limiting emissions. The creation of a market mechanism with financial incentives for recovery and recycling is essential to sustain a circular economy.
- While the Montreal Protocol explicitly encourages parties to minimize emissions, refrigerant banks are currently not explicitly managed or controlled as an obligation for Parties under by the Protocol.
- The potential to change the economic viability/affordability of destruction exists with the strengthening of source based Extended Producer Responsibility (EPR) schemes, the imposition of usage fees, and by directing carbon finance revenues back to the refrigeration servicing sector.

Table 6-2 below presents a scoping framework for possible funding for future triennia beyond the current funding window. The Table is divided into two investment components and a third covering institutional and technical assistance support, as follows:

- Component 1 covers investment in capture and collection of ODS/HFC at source from the operating and retiring bank of RACHP equipment, including additional technician equipment and labour required to capture and transport recovered material to refrigeration servicing operation bases.
- Component 2 covers investment at refrigeration servicing operation bases or centralized EOL storage facilities, including secure storage capacity and supporting equipment.
- Component 3 covers additional institutional and regulatory strengthening to facilitate and incentivize EOL management at the national level, fully develop ODS/HFC bank estimates and EOL availability predictions over time, address capacity limitations related to potential regional cooperation and export transactions, technical assistance for future in-country investment in reclaim and refrigerant blend separation, and identification of destruction options.

Table 6-2 Scoping framework for indicative costs for EOL ODS/HFC management for 2027-2029 triennium

Process step	Elements	Indicative Cost Elements	Remarks
Component 1: Investment in ODS/HFC capture and collection at source from RAC operating and retiring bank of equipment			
1(a) Provision of additional technician equipment/tools	<ul style="list-style-type: none"> Recovery machines, recovery cylinders, associated tools, refrigerant quality identifiers 	<ul style="list-style-type: none"> US\$ 1,000 per kit for recovery. US\$ 5,000 per identifier 	<ul style="list-style-type: none"> Technician equipment required for EOL /ODS/HFC capture/ retention
1(b) Labour/logistics associated with collection and return of EOL material	<ul style="list-style-type: none"> Technician time to recover, collect and return material to servicing operation base shop (RRR centre) 	<ul style="list-style-type: none"> Labour recovery cost by major applications: –e.g., Residential AC unit (US\$45) 	<ul style="list-style-type: none"> Technician activities integrated with servicing calls/equipment maintenance Early retirement programmes, enhanced by e.g., EE initiatives, could increase the demand for recovery and reclamation
Component 2: Investment in collected EOL testing, storage capacity			
Operational, secure storage capacity for accumulated EOL ODS/HFC	<ul style="list-style-type: none"> Floor space sufficient to house: <ul style="list-style-type: none"> At least two shipping containers to accumulate consolidated EOL ODS/HFCs inclusive of workspace; Working refrigerant container storage (range of sizes); Laboratory/testing equipment; Reclamation and blend separation (potential future additions) as needed. 	<ul style="list-style-type: none"> Cost not covered within existing servicing infrastructure if it is not readily available. 	<ul style="list-style-type: none"> Variable locations ideally within existing servicing operations and/or dedicated centralized secure warehousing facility serving multiple servicing operators.
Testing equipment	<ul style="list-style-type: none"> Evaluate recovered EOL ODS/HFC samples to determine whether it is waste or treatable for reuse 	<ul style="list-style-type: none"> Refrigerant identifiers (US\$ 5,000/unit) Gas Chromatography (GC) equipment (US\$ 45K to 50K) Cost per GC analysis (US\$ 500) 	<ul style="list-style-type: none"> Done at a servicing operator and/or centralized shop with at least short-term secure storage capacity
Capacity for consolidation in larger containers cylinders for transportation	<ul style="list-style-type: none"> Provision for equipment to support bulk storage prior to shipping for destruction or reclamation/reprocessing 	<ul style="list-style-type: none"> Larger containers/ISO tanks. Refrigerant transfer/purging equipment and tools (US\$1,500/set) Materials handling equipment. 	<ul style="list-style-type: none"> Funding variable with circumstances and partnerships with others (chemical distributors/ waste managers) Funding is needed for at least the initial larger containers in case of exchange, if exchanges arranged with chemical distributors

Component 3: Institutional strengthening and technical assistance			
Policy & regulatory development	<ul style="list-style-type: none"> • Harmonization with national waste management regulation to accommodate EOL ODS/HFCs. • Capacity to manage waste import/export in accordance with international practice (Basel Convention) as required • Fiscal measures that would operationally support sustained capture and consolidation 	<ul style="list-style-type: none"> • National experts • International expert advice 	<ul style="list-style-type: none"> • Additional support typically provided for these activities through NOUs
Updating bank inventories and EOL management plan	<ul style="list-style-type: none"> • Further elaboration of initial bank inventory work to cover whole bank of in-service equipment and predictive analysis to estimate the rate it reaches EOL inclusive of national capability to maintain it and update the initial EOL management plan. 	<ul style="list-style-type: none"> • National experts • International expert advice 	<ul style="list-style-type: none"> • The initial funding window needs to ensure the dynamics of the whole banks is included in decision making. • Potential support from bilateral and other international initiatives (GIZ/COPA)
Reclamation/blend separation feasibility assessment	<ul style="list-style-type: none"> • Evaluation of the feasibility/sustainability of in-country reclamation and potentially blend separation 	<ul style="list-style-type: none"> • National experts • International expert advice 	<ul style="list-style-type: none"> • Preparation work for future investment funding windows in some countries with sufficient economies of scale or as part of regional initiatives
Destruction option evaluation	<ul style="list-style-type: none"> • Assessment of options appropriate to individual country situations for environmentally sound destruction, such as: <ul style="list-style-type: none"> – Evaluation of existing national capability (i.e., cement kilns, other industrial process options). – Development of appropriately scaled national facilities – Investigation of regional cooperation and/or involvement of the chemical supply chain – Identification of sustainable financing mechanism and other international funding 	<ul style="list-style-type: none"> • Commercial hazardous waste chemical destruction US \$2-3/kg (assumes economies of scale) are potentially achievable. <ul style="list-style-type: none"> • Range of destruction costs, as demonstrated in MLF pilot projects: US \$5 to \$20/kg 	<ul style="list-style-type: none"> • Potential development of down-sized variants of approved technologies • Increased access to extended producer responsibility (EPR) schemes involving partnerships with supply chain players. • Carbon financing through voluntary carbon markets, carbon taxes, direct trading of carbon credits. • GEF, international/bilateral climate funds, and/or other developing financing initiatives addressing the issue are potential contributors.

CHAPTER 7 FUNDING REQUIREMENTS FOR GENDER MAINSTREAMING

7.1 INTRODUCTION

Paragraph 2(f) of Decision XXXIV/2 requests the Replenishment Task Force to consider, “the need to allocate resources for supporting activities related to gender mainstreaming as part of the gender policy of the Multilateral Fund, taking into account the implementing agencies’ existing policies to promote gender mainstreaming and the mandate set out in ExCom decision 84/92.”

In trying to address the mandate given by Parties, the RTF looked at *the 1997 agreed conclusions of the United Nations Economic and Social Council (ECOSOC) to address mainstreaming a gender perspective into all policies and programmes in the United Nations system*¹⁰⁶, and defined gender mainstreaming as: “The process of assessing the implications for women and men of any planned action, including legislation, policies or programmes, in all areas and at all levels. Gender mainstreaming — also called gender integration or Integrated Gender-based Approach (IGA) — does not simply consist in equal numbers of women and men participating in activities or programs developed (numerical parity); it goes beyond parity and expects to evaluate the effects of any action and consider the experiences and interests, both of women and men taking part in a program, project or activity and include them in the relevant processes, so that they are given equal opportunities. It is a strategy to make all their needs and experiences be an integral part of the design, execution, monitoring and evaluation of policies, initiatives and programs, ensuring that they equally benefit from development processes.”

In order to better address the mandate given in Paragraph 2(f) of Decision XXXIV/2, TEAP RTF has looked at gender policies of other global funds in addition to the MLF gender policy.

7.2 GENDER POLICIES IN OTHER GLOBAL FUNDS

Gender policies and associated budget needs existing in other global funds, such as the GEF, The Adaptation Fund and The Green Climate Fund were reviewed. Those funds, in their gender transformative policies, require that, in compliance with the Environmental and Social Policy and Gender Policy of “the fund”, and associated budget are required in all projects at project entry level.

7.2.1 Global Environment Facility, The GEF

The GEF¹⁰⁷ indicates the need to “generate and share knowledge on good practice, methodologies and lessons learned on promoting Gender Equality and the Empowerment of Women (GEWE) related to the GEF’s areas of work. “The GEF Policy on Gender Equality commits the GEF Secretariat and GEF Agencies to “generate and share knowledge on good practice, methodologies and lessons learned on promoting GEWE related to the GEF’s areas of work.” This means that, in addition to GEF Agency reporting as part of the monitoring obligations to GEF Secretariat, GEF Agencies are also encouraged to actively generate and share knowledge on good practices, methodologies, and lessons learned on promoting GEWE. In publications or presentations on GEF-financed activities, GEF Agencies should try to showcase their gender mainstreaming experiences in project development and implementation and share them broadly, for example, in public events and conferences. Gender results are also encouraged to be integrated into regular means of communications (e.g., newsletters, progress reports, social media channels, and websites). Other important means of communicating information on gender issues and results are through workshops, webinars, or the dissemination of best practices.”

¹⁰⁶ ECOSOC 1997. Resolution 2004/4 . Review of Economic and Social Council agreed conclusions 1997/2 on mainstreaming the gender perspective into all policies and programmes in the United Nations system <https://www.un.org/en/ecosoc/docs/2004/resolution%202004-4.pdf>

¹⁰⁷ page 19 of GEF Gender Guidelines, Dec 2018 http://www.thegef.org/sites/default/files/documents/Monitoring_Agency_Compliance_Policy_SDPL04.pdf

The GEF's Policy on Gender Equality and GEF's Policy on Stakeholder Engagement require that GEF Agencies provide the following in the Program Framework Document (PFD) and Project Identification Form (PIF), which are submitted for Work Program entry or CEO Approval:

- Indicative information on gender considerations relevant to the proposed activity, and any measures to address these, including the process to collect sex-disaggregated data and information on gender.
- Description of any consultations conducted during project development, as well as information on how stakeholders will be engaged in the proposed activity and means of engagement throughout the project/ program cycle.

The GEF Enabling Activity projects provide financing for the preparation of a plan, strategy, or national program to fulfil the commitments under the Conventions that the GEF serves, including national communication or reports to the Conventions.

Similarly, many GEF-financed medium- and full-size projects include activities that focus on developing and preparing national policies or strategies and, as such, do not work directly with beneficiaries on the ground.

These plans and strategies provide an essential opportunity to recognize, build capacity, and to develop actions to advance GEWE (Gender equality and women' empowerment).

Some possible actions to include in these national documents include the following:

- request that gender experts review draft plans and strategies;
- ensure that any background and stocktaking exercises associated with development of the plans and strategies adequately account for the different roles for women and men;
- ensure that women are effectively engaged as members of stakeholder groups consulted during development of the strategies and plans;
- consider including gender-disaggregated data collection and/or gender-specific indicators; and
- consider how national gender policies can be incorporated into sectoral strategies and action plans.

7.2.2 The Adaptation Fund

“The Fund's gender policy and its mandates are an integral part of the Fund's strategic focus and underlying theory of change. Without a commitment to gender equality, the Fund's vision, goal and desired impact cannot be realized. The Fund's gender policy builds on the existing gender policies and gender action plans of other climate funds. For the elaboration of the Fund's Gender Policy and its update, the Gender Mainstreaming Policy of the Global Environment Facility (GEF) and its Gender Equality Action Plan (GEAP), its updated Policy on Gender Equality and the GEF Gender Implementation Strategy were considered”¹⁰⁸.

The policy will be implemented throughout the Fund's operational processes with guidelines to be issued by the Secretariat for the benefit of the Fund's external partners, Designated Authorities (DAs) and Implementing Entities (IEs). Fund IEs will be required to undertake an initial project/programme-specific gender assessment with a view to establishing a gender baseline, describing gender differences, analysing gender-differentiated impacts and risks as per the ESP process (“do no harm”), and to detailing opportunities to pro-actively address gender gaps given their inter sectionalities as well as to promote the empowerment of women and girls for the proposed activity (“do good”).

Fund IEs will articulate corresponding gender-responsive measures addressing differential gender needs, equitable participation and equitable distribution of benefits, resources and rights as part of the overall project/programme, ideally as a project/programme-specific gender action plan; they will be

¹⁰⁸ https://www.adaptation-fund.org/wp-content/uploads/2016/04/OPG-Annex-4_GP-and-GAP_approved-March2021pdf-1.pdf

required to select gender-responsive indicators, collect gender-disaggregated data, and to design gender-responsive implementation, results measurement and monitoring arrangements.

Fund projects and programmes will be screened for gender responsiveness at various stages of the project cycle, including the processes of review, endorsement and approval of the project proposals, monitoring and evaluation by the relevant Fund bodies and external partners (the Secretariat, the Project and Programme Review Committee, the Ethic and Finance Committee, DAs and IE, independent evaluators selected by IE and the Adaptation Fund Technical Evaluation Reference Group (AF-TERG)). Stakeholders should be meaningfully and comprehensively consulted in a gender-responsive way throughout the project/programme life cycle”¹⁰⁹.

The Adaptation Fund gender policy indicates that a “gender assessment should be conducted before designing the project and should not be seen as one-time elaboration, but as an iterative process with regular updates and adjustments as needed throughout the project/programme cycle, and to describe the consultative process, including the list of stakeholders consulted, undertaken during project preparation, with particular reference to vulnerable groups, including gender considerations, in compliance with the Environmental and Social Policy and Gender Policy of the Adaptation Fund”¹¹⁰.

7.2.3 Green Climate Fund, GCF

“GCF’s gender-responsive approach is captured in the GCF Gender Policy, which was adopted by the Fund’s governing body in 2015 and updated in 2019. GCF provides guidance to Accredited Entities submitting funding proposals on the type of gender documentation required during the project planning, preparation and development stage.

This entails an initial gender and social assessment that must be included with the funding proposal. The assessment includes a snapshot of the gender equality situation in the region, country or project area; the gender issues that may be relevant to the proposed project; and the opportunities to bring about positive change for both women and men.

Accredited Entities are also requested to submit a gender and social inclusion action plan at the project preparation stage—the plan should indicate the gender-responsive activities the project will undertake; provide relevant gender-performance indicators; sex-disaggregated targets; timelines; responsibility lines; and a budget against each proposed activity”¹¹¹.

The Green Climate Fund instructions related to costs approval process, indicate that when looking at costs, “calculate the approximate budgetary allocation for undertaking each activity taking into consideration both material costs as well as costs of associated staffing resources, for example a gender consultant”. The costs must be reflected in the full project/programme budget.

7.3 MLF OPERATIONAL POLICY ON GENDER MAINSTREAMING: CONSIDERATIONS

In order to respond to Decision XXXIV/2 para 2(f), the RTF reviewed related ExCom documents and identified the following points that needed consideration.

First, through Decision 84/92, the ExCom approved an operational policy on gender mainstreaming for projects funded by the MLF. The operational policy sets out three areas of action for bilateral and implementing agencies:

¹⁰⁹ https://www.adaptation-fund.org/wp-content/uploads/2016/04/OPG-Annex-4_GP-and-GAP_approved-March2021pdf-1.pdf

¹¹⁰ https://www.adaptation-fund.org/wp-content/uploads/2022/02/AF-Final-Version_clean16Feb2022.pdf

¹¹¹ <https://www.greenclimate.fund/sites/default/files/document/simplified-approval-process-annex-4-gender-assessment-and-action-plan.pdf>

- Developing tools to facilitate gender mainstreaming in the review/approval process, reporting, monitoring, and evaluation systems of the Multilateral Fund, including the tracking and reporting on activities and results of gender mainstreaming
- Considering and addressing gender equality and women's empowerment systematically in all projects
- Delivering capacity building for bilateral and implementing agencies' partners and A5 countries to facilitate gender mainstreaming, and effective use of the identified strategic entry points to promote gender equality and women's empowerment in all projects financed by the Multilateral Fund.

The areas of action for bilateral and implementing agencies is clearly set out. Nevertheless, funds are not specifically (that is not earmarked) allotted for the bilateral and IAs.

All implementing agencies have gender mainstreaming guidelines in place and have made efforts to implement these within Montreal Protocol projects and activities. However, approach, guidelines and policies currently derive from the central mandates of the agencies and in consequence may vary, sometimes substantially. How to execute the policy regarding delivering capacity building for bilateral and Implementing agencies? How to build and evaluate gender relevant capacity needs, for project development, implementation and evaluation for IAs, and other MLF stakeholders?

The MLF policy emphasises the importance of gender mainstreaming in projects and requests bilateral and IAs to apply it throughout the project cycle, beginning with projects proposed for consideration at the 85th meeting. Further, it asks that when available, gender-relevant information is provided in reports of ongoing projects approved before the 85th meeting. At the 84th ExCom meeting, the Secretariat was asked to review the implementation of the gender mainstreaming policy and to prepare a report for consideration at the 89th meeting. This was deferred to the 90th meeting when ExCom members discussed the need for incorporating gender mainstreaming into all projects including HPMPs, develop gender indicators and possibly engage gender specialists. Through Decision 90/47, the ExCom requested the MLF Secretariat to conduct more in-depth analysis in relation to the application of the operational gender mainstreaming policy and present it to the ExCom at its 92nd meeting and provide an update at the last meeting of 2024. Bilateral and implementing agencies were requested to provide a report on key gender mainstreaming results as part of their annual progress reports in 2023. The MLF Secretariat was requested to develop improved project requirements with respect to gender mainstreaming, including indicators, outputs and outcomes as well as results provided by the agencies, followed by an overall update on the implementation of the Fund's gender mainstreaming policy in the last meeting of 2024¹¹².

At present there are no ExCom decisions regarding gender relevant information required for the preparation of KIPs. At least none based in properly designed gender responsive projects, and with indicators to enable addressing gender mainstreaming and evaluating results. And no decision for earmarked gender funding in KIPs. There are though, categories of activities to be included in the submission of HPMP tranches, as in Table 7-1, below.

¹¹² UNEP/OzL.Pro/ExCom/90/40 [http://www.multilateralfund.org/90/Report of the ninetieth meeting of the Executive C/1/9040.pdf](http://www.multilateralfund.org/90/Report%20of%20the%20ninetieth%20meeting%20of%20the%20Executive%20C/1/9040.pdf)

Table 7-1: Categories of activities included in the submissions of tranches and new HPMPs at the 85th to 88th ExCom meetings (Decision 84/92)¹¹³

	Key area	Description of activities
Data collection	Data and statistics	Collection of sex-disaggregated data and/or qualitative information to analyse gender issues, establishment of baselines and/or tracking participation in HPMP activities.
	Gender indicators	Developing gender mainstreaming indicators or selecting gender indicators to be used.
Developing strategies and planning	Study (policy review)	A study, needs/gap assessment, or policy review would be conducted to define priority actions for the future.
	Consultation	Advice, input, or partnership with a women/gender-focused ministry, group, association, or gender unit in partner organizations would be sought.
	Expert recruitment	A gender expert with specific gender knowledge or a dedicated staff/consultant with gender related tasks incorporated in their job description was recruited.
	Gender considerations	A holistic approach will be used in the next stage or tranche to look at all aspects of the HPMP for opportunities to integrate gender mainstreaming. The submission described applying “gender considerations” or “gender sensitive approach” to HPMP implementation, in the policy, planning and decision making for the next stage or tranche.
Providing equal opportunity	Gender balanced recruitment	Recruitment aims to include females and/or to work toward a gender balance for project personnel and/or gender balanced representation in project boards and steering committees.
	Training topic/materials	Incorporating gender aspects into training sessions and/or training materials or gender mainstreaming training for staff and consultants (presentation of sex-disaggregated data, presentation of different effects of chemicals on women and men, presentation of policy on gender or gender mainstreaming concepts).
	Women only training	A RAC technician training workshop exclusively for female technicians during the implementation of HPMP.
	Stakeholder engagement	Outreach to key stakeholders’ groups (technical schools, RAC associations, industry groups, ministries) to discuss strategies for encouraging gender participation, gender mainstreaming indicators and to inform of the gender mainstreaming policy.
Building capacity	Incentives	Some form of financial or equipment incentive to encourage women to pursue RAC studies in vocational schools or an award and recognition of women in the field.
	Training targets	Specific measurable targets for female participation in activities.
	Promotion as trainers or professional	Plans to encourage and promote female trainers in HPMP activities and/or vocational schools or promoting female professionals in the RAC field (including importers, customs officials, business owners, etc.).
	Outreach and awareness raising	Encourage women's participation in HPMP activities and training workshops.

¹¹³ UNEP/OzL.Pro/ExCom/84/73.

	Key area	Description of activities
	Communications	Considerations would be given to gender sensitive communications. Ex. "Communication and awareness activities will be targeted to women"; "introduction of gender-sensitive language in communications"; "visuals of women and men where applicable".
Participation of women	Gender participation staff/decision making (outcome)	Data to illustrate an already obtained level of gender participation in the last tranche of the HPMP activities regarding staff, trainers, consultants, or decision makers.
Monitoring, evaluation and sharing	Monitoring and evaluation	Identified activities to be undertaken in terms of specific reporting on gender issues and progress made to address these (quantitatively and/or qualitatively) and/or evaluation of results, in addition to requirements for reporting in the HPMP.
	Lessons learned	Discussion of gender issues during thematic workshops to share experiences and lessons learned on gender mainstreaming.
Budgeting	Budget allocation	Includes those submissions that specifically identified specific activities with budget allocations for gender mainstreaming activities.

The list of activities and actions required does not include additional funding for implementation of the above activities in HPMPs. For Kigali Implementation Plans, KIPs, even though there was progress in the HFC guideline at ExCom, it has not been finalized yet.

It is important to note that the MLF Secretariat has updated and revised the guides for project preparation, for submissions of tranches and for institutional strengthening requests and continues to work towards revising and detailing the MLF gender policy, as per ExCom request. The updated format approved at the 91st ExCom for institutional strengthening projects, addresses gender mainstreaming and includes a checklist to help assess compliance with the operational policy. Nevertheless, gender responsive indicators, targets and baseline data to monitor gender equality results are yet to be developed and not yet available, nor any indicative costs for such required activities. The ExCom checklist to help complying with the operational policy is presented in Annex 5 of this Report and in the Annex 1 of Document UNEP/OzL.Pro/ExCom/84/73¹¹⁴.

7.4 IMPLEMENTATION OF MLF GENDER POLICY: CHALLENGES IDENTIFIED BY IAS

The checklist with many substantive questions only emphasises the need of building capacity and/or recruiting a gender specialist/ consultant (unless the IA or the NOU have this specialist in-house) to properly gather information asked and analyse local situation before responding. And, if a project is not properly designed to respond to those questions, it will be impossible to answer and measure any gender relevant impact once finalized.

Agencies identified challenges in applying gender mainstreaming policy in projects for example:¹¹⁵

- MLF-supported projects are highly technical and often difficult to identify entry points.
- Resources approved for existing projects are already allocated to specific activities, and there is little room to include new activities to mainstream gender except for those that could be

¹¹⁴ UNEP/OzL.Pro/ExCom/84/73

¹¹⁵ Multilateral Fund 2022. Report on the review of the implementation of the operational policy on gender mainstreaming for multilateral fund-supported projects (Decision 84/92). UNEP/OzL.Pro/ExCom/90/37 <http://www.multilateralfund.org/90/Agenda%20item%2010%20Report%20on%20the%20review%20of%20the%20impleme/1/9037.pdf>

done without additional resources (i.e., identifying women participants and resource speakers for trainings).

- An integrated and comprehensive approach needs to be taken to identify gaps in knowledge and capacity to implement gender-responsive actions and interventions for projects funded by the MLF.
- Lack of capacity for implementing gender mainstreaming activities from some agencies' Montreal Protocol units (no gender specialists) and at the country level means that gender considerations are often left out in project design, and eventual implementation. Gender training for both agencies and project staff to include gender into project design is thus necessary.
- No clear guidance on what gender activities could be proposed and included in project activities especially for those approved prior to the 84th meeting, thus making it complicated to report on those.
- Limited awareness from stakeholders in beneficiary countries of gender issues and insufficient knowledge of how to effectively mainstream gender in respective policies and plans which hampered a broader integration of these activities at the national level, especially for LVCs.
- Lack of concrete best-practice examples that would help to identify opportunities to ensure effective gender mainstreaming.
- Lack of dedicated MLF gender specialist specifically to implement the MLF gender mainstreaming policy in projects; enhanced collaboration and the involvement of gender advisers and gender focal points in the design of projects, in surveys and other data collection instruments, should be supported.

7.5 RTF FUNDING ESTIMATES FOR GENDER MAINSTREAMING IN 2024-2026

Because the level and extent to which countries/NOUs and IAs are addressing gender mainstreaming currently seems very variable and dependent on financial resources, if available, it may be best to clearly indicate “whether and to what extent the gender has to be viewed as an on-time elaboration or it should be an iterative process with regular updates through the project cycle” (ref: Adaptation Fund). If the latter is the intent, parties may wish to consider assigning a dedicated budget line for the preparation and future implementation of the gender action plans as part of the KIPs.

In the absence of this guidance, RTF estimated:

- Funding in 2024-2026, for the preparation of KIPs, additional and earmarked for gender actions, such as, for the collection of sex-disaggregated data and qualitative information to analyse and track gender issues. In addition, a gender action plan, describing strategies and planning for gender activities, considering that, activities must provide equal opportunity to men and women and include a communication strategy, capacity building on gender, and include monitoring, evaluation and information sharing related to gender, making sure the results framework include gender responsive indicators, targets and baseline data to monitor gender equality results. Estimates were based on agreed funding bands specified in Decision 91/66 (as used for EOL chapter). All countries are assumed to apply within this replenishment period, including Group 2 countries.

Table 7-2: Funding requirement for Gender Mainstreaming 2024-2026

HCFC baseline (ODP Tonnes)	US \$	Total No. of countries by bracket	2024-2026 Additional Project Preparation Funds Earmarked for Gender Mainstreaming Total Funding by bracket (US\$)
Below 1	\$ 70,000	22	\$ 1,540,000
Between 1 and 6	\$ 80,000	36	\$ 2,880,000
Above 6 and up to 100	\$ 90,000	62	\$ 5,580,000
Above 100	\$ 100,000	24	\$ 2,400,000
Total without support costs (US\$)		144	\$ 12,400,000
Total with support costs of 9.6% (US\$)			\$ 13,590,000

7.6 ADDITIONAL GUIDANCE TO RTF

As mentioned, the updated format approved at the 91st ExCom for institutional strengthening projects, addresses gender mainstreaming and includes a checklist to help assess compliance with the operational policy. Nevertheless, gender responsive indicators, targets and baseline data to monitor gender equality results are yet to be developed and not yet available, nor any indicative costs for such required activities. Therefore, NOUs can use the check list as a tool to assess compliance, but funding estimates to execute the gender policy were not specified.

In addition, no decision exists regarding the need, if the case, for funding capacity building at the MLF institutions, such as, IAs, MLFS and UNEP CAP. Therefore, RTF requests parties to clarify if any estimate is requested for designated funding to strengthen their capacity. RTF will consider any additional guidance in its supplementary report.

7.7 GENDER MAINSTREAMING IN FUTURE TRIENNA

If approved KIPs would have designated and additional budget lines for gender related actions, project/sector plans approved would have to indicate those, and estimated costs would be based on HFC Guidelines.

Actions would be for instance, but not limited to, funding training women in higher education classes, in different sectors, such designers, engineers; scholarships for vocational schools for girls as part of servicing sector activities, procurement of proper tooling for training women, safety and operations material (proper size gloves, helmets etc.). And funding to implement a communication strategy for gender equality and empowerment of women, among others etc.

Without a requirement to earmark funding for those activities, not all countries will be able to properly respond to gender required actions and will not prioritise it. In addition, without proper planning at project development stage, data collection will be meaningless and gender impact not measured.

RTF was unable to estimate future funding due to lack of guidance, but an example of a GCF Gender Action Plan with a budget (for a project in a sector which is familiar to the Montreal Protocol, as it involves cooling and energy efficiency), can be found in the GCF site and in the added reference¹¹⁶.

¹¹⁶ FP194: Programme for Energy Efficiency in Buildings (PEEB) Cool. Albania, Argentina, Costa Rica, Djibouti, Indonesia, Mexico, Morocco, Nigeria, North Macedonia, Sri Lanka, Tunisia. AFD B. 34/02/ADD.04 28 September 2022 October 22, 2022). (<https://www.greenclimate.fund/sites/default/files/document/gap-fp194.pdf>)

CHAPTER 8 FUNDING REQUIREMENTS FOR INSTITUTIONAL STRENGTHENING AND STANDARD ACTIVITIES FOR THE 2024-2026 TRIENNIUM

8.1 INTRODUCTION

This section presents the funding requirements for Institutional Strengthening (IS) and Standard Activities for the 2024-2026 triennium. The funding approved for IS support has played a paramount role in establishing and maintaining the capacity of national ozone units throughout the 35 years of implementation of the Montreal Protocol. The Standard Activities (SA) of the are part of the administrative regime established by the parties to support the implementation of their obligations under the Montreal Protocol. These activities comprise the operations of the ExCom and the MLFS, including monitoring, evaluation, and treasurer functions; UNEP's Compliance Assistance Programme (CAP), and the Core Unit funding for Implementing Agencies (UNDP, UNIDO and the World Bank).

This institutional support is recognised as one of the major factors sustaining the success of the Montreal Protocol and, the culture of effective implementation of obligations continues to consolidate the global efforts to protect the ozone layer and the significant contributions to avoid millions of tons of CO₂ equivalent of greenhouse gases.

8.2 EVOLUTION OF INSTITUTIONAL STRENGTHENING POLICIES AND DECISIONS

As of the 91st ExCom in December 2022, and according to the MLF inventory of approved projects, the ExCom has approved a total of US\$ 177,622,075 including agency support costs of US\$ 8,675,340, for IS projects, equivalent to 4.46% of the total funding approved under the Multilateral Fund for projects and activities.

The ExCom approved for the first time IS projects at its 6th meeting (February 1992) where it set up the initial rules for this category of support to A5 parties.¹¹⁷ At its 19th meeting (May 1996), the ExCom discussed funding levels for the renewal of IS projects and decided *inter alia*, that initial renewals would be at the same level of funding per year as the first approval for two years and would be conditional on a report on progress and an articulated plan of future action. Subsequently the level of funding for IS was increased in December 2001 by 30% to assist A5 parties to implement the strategic planning of the MLF (decision 35/57c)¹¹⁸.

At its 74th meeting the ExCom decided to “approve all IS projects and renewals at a level 28% higher than the historically agreed level, with a minimum level of IS funding of US\$ 42,500 per year, to continue support for compliance with the Montreal Protocol and to address the challenges related to the phase-out of HCFCs in line with the objectives of decision XIX/6 and the transition to alternatives that minimized environmental impact; and to review IS, including funding levels, at the first ExCom meeting in 2020” (Decision 74/51).¹¹⁹

At the 89th meeting, the ExCom considered document UNEP/OzL.Pro/ExCom/89/4, which provided a review of IS projects including funding levels,¹²⁰ and decided to continue reviewing the existing format for terminal reports and requests for renewal of IS funding; and deferred consideration of the review of IS projects, including funding levels, to the 91st meeting on the basis of a working text resulting from the contact group discussions¹²¹ (Decision 89/3(b) and (c)).

Due to its importance, the ExCom has kept the IS Programme under close review. The vital role played by NOUs under this programme is well acknowledged by all stakeholders and IS has been

¹¹⁷ UNEP/OzL.Pro/ExCom/7/30

¹¹⁸ UNEP/OzL.Pro/ExCom/35/67

¹¹⁹ UNEP/OzL.Pro/ExCom/74/56

¹²⁰ This document was prepared in response to decision 74/51(d)(ii), *inter alia*, to review IS including funding levels, at the first Executive Committee meeting in 2020.

¹²¹ Annex I of document UNEP/OzL.Pro/ExCom/89/16

instrumental in building national capacity for the implementation of the Protocol. It is also acknowledged that National Ozone Officers operating under this programme have facilitated compliance with obligations under the Protocol, provided systematic liaison with the Montreal Protocol institutions and sustained the important networking function of ozone officers at subregional and regional levels.

At its 91st meeting in 2022, the ExCom decided “to approve the revised format for terminal reports and requests for the extension of IS funding and the corresponding performance indicators and requested A5 countries to use the revised format as of the first meeting of the ExCom in 2023. The ExCom also approved an increase in funding for all IS projects and renewals at a level 38% higher than that agreed at the 74th meeting, with a minimum level of funding of US \$60,000 per year. Additionally, the duration of IS renewal implementation phases was extended from two to three years beginning with proposals submitted from the 92nd meeting onward. The MLFS was requested to update the guide for preparation of IS renewal requests, and to submit a report on the review of the revised format no later than the second meeting of 2028, and a further review of IS projects, including funding levels, no later than the second meeting of 2029.” (Decision 91/63)¹²²

Decision 91/63 considers the activities that A5 countries would need to undertake to initiate implementation of the Kigali Amendment and meet the first control measures for phasing down HFCs during the period 2022–2030, while continuing implementation of HCFC phase-out management plans.

8.3 ESTIMATED FUNDING REQUIREMENT FOR IS UNDER HCFC AND HFC REGIMES IN THE PERIOD 2024-2026

Since the adoption of the Kigali Amendment by the Meeting of the Parties in 2016, the ExCom has held continued discussions on IS challenges and has taken a series of decisions to update this important programme, taking into account the activities that A5 parties need to undertake to meet the first control measures for phasing down HFCs during the period 2022–2030, while continuing implementation of HCFC phase-out management plans.

The ExCom in its last decision on IS, Decision 91/63, decided to approve all IS projects and renewals at a level 38% higher than that agreed at the 74th meeting, with a minimum level of IS funding of US \$60,000 per year, and to extend the duration of IS renewal implementation phases from the current two years to three years for IS renewal proposals submitted from the 92nd meeting onwards. Hence all IS projects submitted during 2023 will include the increased level of funding for IS and the new extended period of three years, i.e., 2023-2025. And consequently, all IS projects not included in the year 2023 will be submitted in the year 2024 to cover the totality of IS projects at the new levels of funding approved by Decision 91/63 so that all IS projects will be already covered in 2025, and therefore, no requests expected in 2025.

The funding level committed to IS in 2023 corresponds to US\$27,860,444, as informed by the MLF 2023-2025 Consolidated Business Plan presented to the 91st ExCom meeting. Taking into consideration ExCom Decision 91/63, RTF has estimated that the total funding for the triennium 2024-2026 is US\$44,500,340. It corresponds to US\$ 16,639,896 million in 2024 for the first group of IS projects extended for three years (2024 through 2026) and US\$ 27,860,44 million in 2026 for the remaining parties, to complete the extension of all IS projects for a three-year period. For 2026, the RTF has used the amount of US\$ 27,860,444, same figure as the year 2023 for a new period of three years, following current practice and ExCom policy decisions.

All IS project costs include agency support costs, with exception of IS projects that fall under UNEP, that does not receive support cost for IS as it is covered by the CAP agreement.

¹²² UNEP/OzL.Pro/ExCom/9163

Based upon the above considerations the RTF presents in Table 8-1, the funding requirements for the Institutional Strengthening Programme based on the ExCom Decisions 91/63 and informed by the 2023-2025 Consolidated Business Plan, as presented to ExCom-91. The estimated total funding requirement for the 2024-2026 triennium for IS is estimated to be **US\$ 44.5 million**.

TABLE 8-1: 2024-2026 Institutional Strengthening Estimated Funding Requirements (US\$)

	2024	2025	2026	TOTAL
Institutional Strengthening	16,639,896	0	27,860,444	44,500,340

8.4 STANDARD ACTIVITIES

8.4.1 UNEP Compliance Assistance Programme (CAP)

UNEP OzonAction has been functioning since 1991. A major transformation of the programme was agreed in early 2000 when the programme was regionalized in UNEP’s five regional offices and established regional hubs. That resulted in creating the Compliance Assistance Programme (CAP), whose activities are over and above the global information clearing house. OzonAction provides services and assistance to A5 parties, through a regional presence to ensure and sustain countries compliance obligations under the Montreal Protocol. CAP has also assisted countries to establish licensing and quota systems and prevent illegal trade. CAP supports 143 A5 parties, including 48 classified by the UN as Least Developed Countries (LDCs) and 38 countries classified as Small Island Development States (SIDS).

UNEP implements a compliance driven information clearing-house, awareness raising and capacity building activities such as national, regional and global information exchange on alternative technologies and policy development. UNEP CAP is responsible for the regional and sub-regional network of National Ozone Officers (NOO). The regional network of NOOs has become a unique and singularly successful platform for not only NOOs but also other agencies like Implementing Agencies, Bilateral donors, Ozone Secretariat, MLF Secretariat and the Assessment Panels to reach out to and foster the much-needed compliance and policy dialogues between all the stakeholders of the Montreal Protocol at the national and regional level. The regional network meetings of NOOs provide a potent platform for training purposes, exchange of lessons learn and successful practices.

The coordination function carried out at the network meetings, may prove even more important as the need to maximize both ozone and climate benefits to maintain or enhance energy efficiency in the transition to zero or low GWP technologies.

Over the years, the participation in the regional network meetings of the institutions established by the Montreal Protocol, have provided ample opportunities for ozone officers to review the decisions of the MOP and ExCom, learn about key technical and financial issues under the Montreal Protocol and exchange issues and best practices related to their specific regions. The exchange of information, experiences and knowledge between NOOs facilitated relevant consultations with the private sector and key stakeholders, including civil society.

The NOU interacts on an ongoing basis with the private sector for various activities, including regulatory development, importation of refrigerants and equipment, data collection, allocation of quotas and licenses and training and technology deployment.

The efforts of coordination at the national level between the NOUs and the institutions responsible for energy issues and energy efficiency have also been enhanced with their interaction at the national and regional levels. Most A5 parties are now facing critical choices in policy and technology to meet and sustain the HCFC phase-out compliance targets while preparing the new KIPs, and NOUs are increasingly needing to consider the selection of technologies and refrigerants in the context of their national and regional energy efficiency policies.

The ExCom has kept the CAP under review to strengthen its operations, provide the necessary resources and ensure the efficient delivery of its services to the A5 parties.

The UNEP CAP overall costs, according to the figures in the consolidated Business Plan presented at the ExCom-91, are US\$ 11,788,350 for 2024, US\$12,142,003 for 2025 and US\$12,506,263 for 2026, including 8% of agency support cost.

Consistent with an annual increase of 3% specified by the ExCom, the total funding requirements for each year of the triennium and the total estimate cost for the 2024-2026 period are presented in Table 8-2. The total funding requirement for the period is estimated at **US\$ 36.4 million**.

TABLE 8-2: 2024-2026 Compliance Assistance Programme (CAP) Funding Requirements (US\$)

	2024	2025	2026	TOTAL
CAP Funding Requirements	11,788,350	12,142,003	12,506,263	36,436,616

8.4.2 Core Unit Funding for UNDP, UNIDO and the World Bank

The administrative cost regime provides for the staffing levels of UNDP, UNIDO and the World Bank to be maintained by core unit funding, which is additional to the implementing agency fees applied to projects. The core unit budgets for UNDP, UNIDO and the World Bank were first approved at the 38th meeting of the ExCom, the agency support costs associated with project proposals were also adjusted in the same meeting.

The main duties of the Core Unit include “reviewing project applications and preparing project proposals; coordinating with representatives from the Governments, establishing legal agreements and terms of reference for subcontracts; submission of project reports, business plans, project proposals on behalf of A5 parties, reports on specific on-going projects, project completion reports for consideration by the ExCom, addressing all issues raised by the Secretariat; mobilizing additional resources for implementation of approved projects when required, processing contractual and accounting project documents, and undertaking bidding process, following up on implementation status, including country visits if there is evidence of undue delays or difficulties; and participating in meetings of the ExCom, and of the LFS” . In addition, implementing agencies also participate in regional CAP meetings at their own cost.

The current administrative cost regime applicable to UNDP, UNIDO and the World Bank consists of annual core unit funding allowing an annual increase of up to 0.7% subject to annual review, and agency support costs, including IS renewals and project preparation. The current graduated scale used for UNDP, UNIDO and the World Bank varies from 6.5% to 9% of the project cost. (Decision 67/15)

In its 88th meeting, the ExCom decided to maintain the existing administrative cost regime for the bilateral and implementing agencies during the 2021 and 2023 triennium, and requested the Secretariat to present, at the last meeting of 2023, the analysis of the administrative cost regime and core unit funding, taking into consideration relevant decisions by the ExCom, including those taken up prior to the last meeting of 2023, on the basis of which the Committee would decide whether the administrative cost regime used for the 2021–2023 triennium should be maintained for the triennium 2024–2026. (Decision 88/74). This replenishment report will be considered by the parties at the 45th OEWG in July 2023 and the 35th Meeting of the Parties, in October 2023. Both meetings are scheduled before the 93rd ExCom meeting, which is scheduled for December 2023.

The RTF discussed with the Secretariat and the IAs on matters related to the administrative cost regime, specifically, the core unit costs. The Secretariat provided all necessary information, documents and clarifying comments as requested by the RTF. Two IAs also provided comments on their expectations with regards to the ongoing revision of the administrative cost regimen, including the

core unit cost. One expressed its agencies' needs of a higher increase on the core unit cost while the other currently viewed the 0.7 % increased as sufficient to cover core unit funding, however both cautioned that the increased funding needs for IAs' support to A5 during the implementation of the Kigali Amendment, at the same time HCFCs are eliminated, are yet to be fully determined. The expected workload increase was described in document 91/67 presented by the MLFS at the 91st ExCom meeting in 2022¹²³.

RTF has also looked into the potential need for capacity building on gender mainstreaming of MLF institutions, including IAs. The funding, for instance to have a gender specialist in the core unit of IAs, was not considered by the RTF, but could be estimated and presented at the Supplementary Report if parties wish so.

Given that the core unit funding has been under close review by the ExCom since its adoption i.e. Decisions 84/61 and 86/92, also given that it is intertwined with other policy issues and technical matters related to the overall administrative cost regime to be reviewed at the 93rd ExCom (end of 2023), and taking into consideration previous decisions by the ExCom for ensuring that the overall administrative cost ratio remain within the historical average or lower i.e. Decision 64/6C9 (iii), TEAP RTF estimated the cost of the annual core unit funding following the current cost regimen of a 0.7 % annual increase.

RTF notes that the ExCom approved core unit funding in 2022 for 2023 core unit costs for UNDP of US\$2,142,835, UNIDO of US \$2,050,407, and the World Bank of US \$1,735,000 (decision 91/62). The 2023-2025 Consolidated Business Plan included estimated figures for Core Units amounting to US\$ 5,969,740 (2023).

The TEAP RTF estimated a funding requirement of US\$6,011,529 (for 2024), US\$ 6,053,610 (for 2025) and US\$6,095,985 (for 2026). Hence the total funding is estimated at **US\$ 18.1 million** for the triennium 2024-2026 as shown in Table 8-3.

TABLE 8-3: 2024-2026 Core Unit Funding requirements of UNDP, UNIDO and the World Bank (US\$)

Years	2024	2025	2026	TOTAL
0.7% annual increased Core Unit Funding	6,011,529	6,053,610	6,095,985	18,161,124

8.4.3 Operating Costs of the MLFS, the ExCom, and Monitoring and Evaluation

The funding required for the operating costs of the ExCom and the MLFS, including the monitoring and evaluation task, was estimated through close consultations with the MLFS, in adherence to ExCom policies and procedures, and with the planning horizon of the consolidated 2023-2025 Business Plan. As in previous replenishment cycles, no major changes are expected to the operating budget level of the MLF Secretariat and the ExCom. The Panel used the figures from the BP as presented to ExCom-91 and projected the funding requirements based on an annual increase of 3% for staff costs as per the usual practice for staff salaries in the administrative regimen of the United Nations. ExCom-91 agreed to a budget of US\$ 7,737,326 for 2023, including the cost of the Treasurer, the last tranche of the Knowledge Management System and the creation of two new staff positions at the professional level (P4). The total funding requirements for the MLFS, the cost of Monitoring and Evaluation and the ExCom is presented in Table 8-4 for the 2024-2026 triennium and is estimated at **US\$ 21 million**.

¹²³ UNEP/OzL.Pro/ExCom/91/67

TABLE 8-4: 2024-2026 Funding Requirements of the ExCom, the MLFS including Monitoring & Evaluation (US\$)

	2024	2025	2026	TOTAL
Secretariat/ExCom/ Monitoring & Evaluation	7,202,023	6,816,624	6,964,604	20,983,251

8.4.4 Costs for the Treasurer

The Fund Treasurer is responsible for *receiving and administering pledged contributions from non-Article 5 countries, and disbursing funds to the Secretariat and the implementing agencies, based on the decisions of the Executive Committee.*

The Treasurer attends each meeting of the ExCom and is responsible for preparing several documents: the status of contributions and disbursements (for each meeting); the accounts of the MLF as well as the reconciliation of the accounts (on an annual basis); and any document requested by the ExCom or by the MOP.

As in the previous triennium, and due to the agreement reached with the MLF, and in absence of a new decision regarding the costs for the Treasurer, RTF has budgeted it at US\$ 0.5 million per year for a total funding requirement of **US\$ 1.5 million** for the 2024-2026 triennium (Decision 62/66) as in Table 8-5.

TABLE 8-5: 2024-2026 Funding Requirements of the Treasurer (US\$)

	2024	2025	2026	TOTAL
Treasurer	500,000	500,000	500,000	1,500,000

8.5 SUMMARY: FUNDING REQUIREMENTS FOR INSTITUTIONAL STRENGTHENING AND STANDARD ACTIVITIES FOR 2024-2026 TRIENNIUM

The estimated total funding requirement for the 2024-2026 triennium for institutional strengthening and standard activities is **US\$ 121.5 million**, as shown in Table 8-6.

Table 8-6: Funding Requirement for IS & Standard Activities (US\$)

2024-2026 Triennium	Estimated Funding
Institutional Strengthening	\$ 44,500,000
UNEP Compliance Assistance Programme	\$ 36,437,000
UNDP, UNIDO, World Bank Core Unit	\$ 18,161,000
MLF Secretariat, ExCom, and M&E	\$ 20,983,000
Treasurer	\$ 1,500,000
SUBTOTAL - IS & Standard Activities	\$ 121,581,000

CHAPTER 9 ESTIMATED TOTAL FUNDING REQUIREMENTS FOR THE 2024-2026 TRIENNIUM

The total estimated funding requirement for the replenishment of the MLF in the 2024-2026 triennium, including support costs, is US\$ 975-1,018 million¹²⁴ as presented in Table 9-1 and Table 9-2 below.

Table 9-1. Range of Total Funding Requirement for Replenishment of the MLF 2024-2026 Based on Different Scenarios (US\$)

2024-2026 TRIENNIUM	LOW-END	HIGH-END
SUBTOTAL - HCFC Activities (including energy efficiency)	\$ 363,911,000	\$ 363,911,000
SUBTOTAL - HFC Activities (including gender mainstreaming activities, project preparation, enabling activities and energy efficiency funding window)	\$ 475,491,000	\$ 519,142,000
SUBTOTAL - Funding Window on EOL/Disposal	\$ 13,590,000	\$ 13,590,000
SUBTOTAL - IS & Standard Activities	\$ 121,581,000	\$ 121,581,000
GRAND TOTAL	\$ 974,573,000	\$ 1,018,224,000

Table 9-2. Total funding requirement for the replenishment of the MLF 2024-2026 (US\$)

2024-2026 Triennium Estimated Funding		
HCFC Consumption Sector		
HCFC Approved HPMPs		\$ 116,746,000
HCFC Prep Costs		\$ 170,000
HCFC Estimated HPMPs (including LVCs/VLVCs)		\$ 205,405,000
HCFC Verification		\$ 1,766,000
HCFC Energy Efficiency Special Funding		\$ 11,092,000
Subtotal – HCFC Consumption Sector		\$ 335,179,000
HCFC Production Sector		
HCFC Production Sector Stage I PRP		\$ 148,000
HCFC Production Sector Stage I HPPMP		\$ 5,352,000
HCFC Production Sector Stage II HPPMP		\$ 23,232,000
Subtotal – HCFC Production Sector		\$ 28,732,000
SUBTOTAL - HCFC Activities		\$ 363,911,000
2024-2026 Triennium Estimated Funding	LOW-END	HIGH-END
HFC Consumption Sector		
HFC Approved KIPs	\$ -	\$ -
HFC Prep Costs (including gender mainstreaming)	\$ 16,802,000	\$ 16,802,000
HFC RTF Estimated KIPs	\$ 405,764,000	\$ 449,415,000
HFC Enabling Activities	\$ 1,011,000	\$ 1,011,000
HFC Energy Efficiency Funding Window	\$ 20,000,000	\$ 20,000,000
Subtotal – HFC Consumption Sector	\$ 443,577,000	\$ 487,228,000
HFC Production Sector		
HFC Production Sector Prep		\$ 2,000,000
HFC Production Sector KPPMP RTF Estimated		\$ 20,000,000
HFC-23 Mitigation Prep		\$ 193,000
HFC-23 Mitigation Approved		\$ 1,721,000
HFC-23 Mitigation RTF Estimated		\$ 8,000,000
Subtotal – HFC Production and HFC-23 Sector		\$ 31,914,000
SUBTOTAL - HFC Activities	\$ 475,491,000	\$ 519,142,000

¹²⁴ Note: figures may not sum due to rounding.

2024-2026 Triennium Estimated Funding	
IS and Standard Activities	
IS	\$ 44,500,000
UNEP CAP	\$ 36,437,000
UNDP, UNIDO, World Bank Core Unit	\$ 18,161,000
MLF Secretariat and ExCom Costs	\$ 20,983,000
Treasurer	\$ 1,500,000
SUBTOTAL - IS & Standard Activities	\$ 121,581,000
2024-2026 Triennium Estimated Funding	
Funding Window on EOL/Disposal	\$ 13,590,000
SUBTOTAL – EOL/Disposal	\$ 13,590,000

CHAPTER 10 INDICATIVE FUNDING REQUIREMENT FOR FUTURE TRIENNA 2027-2029 AND 2030-2032

10.1 OVERVIEW

Decision XXXIV/2, paragraph 7, requested the TEAP to “provide indicative figures for the periods 2027–2029 and 2030-2032 to support a stable and sufficient level of funding, on the understanding that those figures will be updated in subsequent replenishment studies.”

The RTF estimated funding, based on compliance methodology, for future triennia 2027-2029 and 2030-2032 is shown in Table 10-1. Considerations for future triennia are discussed in sections below.

Table 10-1: INDICATIVE FUNDING REQUIREMENT FOR 2027-2029 AND 2030-2032

Triennium	ESTIMATED RANGE	
2027-2029	\$ 933,000,000	\$ 992,000,000
2030-2032	\$ 820,000,000	\$ 893,000,000

10.2 HCFC FUNDING CONSIDERATIONS FOR FUTURE TRIENNA

10.2.1 HCFC Consumption Sector

Earlier in this report, the RTF noted that the replenishment of the MLF for the 2024-2026 triennium represents a significant milestone in assistance to developing countries to comply with the terms of the Montreal Protocol – for the first time, the MLF will provide financing for the incremental costs of not just the phase-out of ODS and the phase-down of HFCs. Continuing into the next two triennia, 2027-2029 and 2030-2032, the compliance targets are the following:

- For Annex C, Group 1, controlled substances (HCFCs), the next HCFC phase-out compliance target is a 97.5% reduction from baseline by 1 January 2030.

To achieve 100% target by 2030, the RTF estimates an additional 60 parties need projects beyond those currently approved and those estimated to reach the 80.5% reduction level by 2027.

- These 60 projects are estimated at US\$ 264 million over 3 years or US\$ 88.1 million per year in the years 2027, 2028, and 2029 based on the average cost effectiveness factor for each country.
- Support costs are estimated to be an additional US\$ 43.4 million at an average rate of 9.6%.
- The RTF estimates a total of US\$ 495 million for full phase-out of remaining HCFC consumption through 2040 beyond what is already approved.

Table 2-8 of this report, reproduced below (Table 10-2), summarises the project funding required for future triennia to achieve the specified reduction targets for the HCFC consumption sector.

Table 10-2. RTF Projected funding to reach reduction targets (US\$)

Year	Reduction Targets			Support costs
	67.5%	80.5%	100.0%	
2024	\$ 92,968,787			\$ 8,925,004
2025		\$ 47,222,412		\$ 4,533,352
2026		\$ 47,222,412		\$ 4,533,352
2027			\$ 88,070,956	\$ 8,454,812
2028			\$ 88,070,956	\$ 8,454,812
2029			\$ 88,070,956	\$ 8,454,812
2030				-
Total	\$ 92,986,787	\$ 94,444,824	\$ 264,212,869	\$ 43,356,142

10.2.2 HCFC Production Sector

To achieve 100% target by 2030, additional efforts are needed for three countries (China, India and DPRK) to address their reduction and phasing-out of the production.

As stated previously, there are no agreements and decisions made for funding of DPRK and India, and some issues are still pending. RTF's estimation for future triennia does not include the funding for these two countries.

At the 69th ExCom Meeting in 2013, China's Stage I HPPMP was agreed on the condition that total cost for the entire China HCFC HPPMP does not exceed US\$ 385 million, inclusive of all project costs, but excluding agency support costs¹²⁵. Based on the practice of 2013-2019, agency support costs for the HPPMPs amounted to approximately 5.6% of the project funding (US\$ 21.6 million), the RTF estimated the total HPPMP envelope to be US\$ 406,560,000.

Since a total of US\$ 124,608,000 had been disbursed during 2013-2018, US\$ 46,464,000 has been/will be disbursed during 2021-2023 and 2024-2026, US\$ 235,488,000 remains of the project envelope. With a 10% holdback of US\$ 40,656,000 until after final verification, the remaining envelope is reduced further to US\$ 194,832,000.

This implies that a maximum funding requirement for HCFC production sector (China only, excluding India and DPRK) for the year of 2027-2029 amounts to **US\$ 194,832,000**.

10.3 HFC FUNDING CONSIDERATIONS FOR FUTURE TRIENNIA

10.3.1 HFC Consumption Sector

For Annex F controlled substances (HFCs), the compliance targets for the next two triennia are as follows:

- Group 1 parties: For the next two triennia 2027-2029 and 2030-2032, a 30% reduction from baseline by 1 January 2035.
- Group 2 parties: For the next two triennia 2027-2029 and 2030-2032, a freeze of production and consumption by 1 January 2028 and a 10% reduction from baseline by 1 January.

The RTF estimated funding requirements for the 2024-2026 triennium and future triennia take strictly into account the above compliance targets within these periods as requested by the decision. While the RTF recognised that reported consumption could be lower than compliance targets, the RTF calculated estimated funding needs from the agreed baseline. The RTF estimates were informed by the "Consolidated Business Plan of the Multilateral Fund for 2023-2025"¹²⁶, relevant decisions of the ExCom up to its 91st meeting, and information available through the MLFS. The RTF relied on existing cost guidelines under the MLF and, where these remained under discussion in the ExCom, the RTF noted these limitations in its estimates. RTF did not have information to consider other factors that could affect funding such as the impacts of COVID to national HFC policy and regulations development; availability and accessibility of alternatives and technologies; delays in project preparation, approvals, and implementation; the capacity for IAs and developing country institutions to manage two significant programs of compliance under the Montreal Protocol.

The RTF did not estimate funding in future triennia for activities related to energy efficiency, EOL management and disposal, and gender mainstreaming, needing further guidance from parties in order to do so.

¹²⁵ UNEP/OzL.Pro/ExCom/69/40

¹²⁶ UNEP/OzL.Pro/ExCom/91/22

- As discussed in Chapter 5 of this report, “Funding Estimate for Maintaining and/or Enhancing Energy Efficiency while Phasing Down HFCs,” section 5.4, the RTF has not considered the possibility of augmentation of the funding window in this triennium or future triennia. The RTF summarised some approaches to consider costs related to energy efficiency during the phasedown of HFCs as detailed in the Decision XXXIV/3 Supplement to the 2023 TEAP Progress Report.
- As discussed in Chapter 6, “Funding Requirements for EOL Management and Disposal,” section 6.5, the RTF allocated the funding under Decision 91/66, for the preparation of national inventories of banks of used or unwanted controlled substances and plans for their collection, transport, and disposal, in the 2024-2026 triennium. Additional funding to support the implementation of these plans, when completed, would require future funding decisions based on those plans. Consequently, no cost estimate has been undertaken for potential funding in future triennia. Nevertheless, the RTF provides information on the scope of possible cost elements that could be addressed in future triennia related to EOL management and disposal of banks.
- As discussed in Chapter 7, “Funding Requirements for Gender Mainstreaming,” section 7.7, the RTF has not considered funding in the 2024-2026 triennium or future triennia for implementation of action plans related to gender mainstreaming activities, if, and in case, the ExCom decides to approve such plans. The RTF seeks further guidance from parties on the consideration of future funding related to gender mainstreaming activities.

10.3.2 HFC Production Sector and HFC-23 Mitigation

The estimation for future triennium does not include possible funding requirements for HFC production in China, DPRK and India due to limited information, audits in process and pending issues.

RTF estimates the funding requirements for future triennium for Argentina and Mexico only (Table 10-3), based on the information in Table 4-2. The HFC-23 mitigation funding requirements for triennia 2027-2029 and 2030-2032 are **US\$ 1.6 million and US\$ 0.51 million**, respectively.

Table 10-3. HFC-23 Mitigation Funding Requirements for Future Triennia (US\$)

	2027-2029	2030-2032
HFC-23 Mitigation Approved (Argentina and Mexico)	\$ 1,614,312	\$ 509,568
Subtotal – HFC Production and HFC-23 Sector	\$ 1,614,312	\$ 509,568

IS AND STANDARD ACTIVITIES

These funding requirements recognise that institutional strengthening is to be reviewed and revised funding levels will be introduced with effect from 2029 (Decision 91/63); moreover, that core unit costs are to be addressed in the 93rd ExCom recognising the wide variety of tasks that fall on implementing agencies (detailed in paragraph 21 of ExCom91/67). In addition, RTF assumed that the UNEP CAP would also increase by 3% in both triennia, to reflect increasing staff costs. Finally, that the budget for UNDP, UNIDO, World Bank Core Units as well as the MLF Secretariat, will rise by 3% in both triennia to reflect increasing staff costs.

The estimated total funding requirement for the 2027-2029 and 2030-2032 triennia for institutional strengthening and standard activities is estimated to be **US\$ 127 million and US\$ 135 million, respectively**, as shown in Table 10-4.

Table 10-4. Funding Requirement for IS & Standard Activities in Future Triennia (US\$)

	2027-2029	2030-2032
Institutional Strengthening and Standard Activities		
Institutional Strengthening	\$ 44,500,000	\$ 44,500,000
UNEP Compliance Assistance Programme	\$ 39,815,263	\$ 43,507,190
UNDP, UNIDO, World Bank Core Unit	\$ 19,407,342	\$ 21,206,927
MLF Secretariat Costs and ExCom	\$ 22,172,701	\$ 24,228,709
Treasurer	\$ 1,500,000	\$ 1,500,000
SUBTOTAL - IS & Standard Activities	\$ 127,395,306	\$ 134,942,826

REFERENCES

Adaptation Fund 2021	https://www.adaptation-fund.org/wp-content/uploads/2016/04/OPG-Annex-4_GP-and-GAP_approved-March2021pdf-1.pdf
Adaptation Fund 2022	https://www.adaptation-fund.org/wp-content/uploads/2022/02/AF-Final-Version_clean16Feb2022.pdf
China's Ministry of Ecology and Environment	Publicity Report on Disposal and Verification Report for HFC-23, various years http://www.mee.gov.cn/qwjs2019/?searchword=%E6%B0%A2%E6%B0%9F%E7%A2%B3%E5%8C%96%E7%89%A9
China's National Development and Reform Commission	Disposal and Verification Report for HFC-23, various years; https://so.ndrc.gov.cn/s?siteCode=bm04000007&token=&qt=%E6%B0%A2%E6%B0%9F%E7%A2%B3%E5%8C%96%E7%89%A9
ECOSOC 1997	Resolution 2004/4 . Review of Economic and Social Council agreed conclusions 1997/2 on mainstreaming the gender perspective into all policies and programmes in the United Nations system https://www.un.org/en/ecosoc/docs/2004/resolution%202004-4.pdf
GEF 2018	Gender Guidelines, Dec 2018 http://www.thegef.org/sites/default/files/documents/Monitoring_Agency_Compliance_Policy_SDPL04.pdf
GIZ, 2017	Guidelines to conduct an ODS inventory
Green Climate Fund 2019	Gender Action Plan of the GCF 2020–202. https://www.greenclimate.fund/sites/default/files/document/gender-action-plan.pdf
Green Climate Fund 2019	Gender Policy. https://www.greenclimate.fund/sites/default/files/document/gcf-gender-policy.pdf
ICF 2018	ODS Destruction in the United States and Abroad. Prepared for US EPA. EPA 430-R-18-001
IEA	Energy efficiency and economic stimulus. https://www.iea.org/articles/energy-efficiency-and-economic-stimulus . 8 April 2020
The International Monetary Fund (IMF) 2022	Report provides data to estimate growth rates by country in Gross Domestic Product (GDP) annually. Available at: https://www.imf.org/external/datamapper/NGDP_RPCH@WEO/OEMDC/ADVEC/WEOWORLD
IHS Markit	IHS Markit's Chemical Economics Handbook. https://ihsmarkit.com/products/fluorocarbons-chemical-economics-handbook.html
KCEP	NDCs Facility at KCEP. https://www.k-cep.org
MCTOC	MCTOC 2018 Assessment Report. https://ozone.unep.org/sites/default/files/2019-04/MCTOC-Assessment-Report-2018.pdf
MLF IMP	Post-meeting summary of the 84th meeting of the Executive Committee of the Multilateral Fund for the Implementation of the Montreal Protocol
MLF 2019	HCFC phase-out management plans and HCFC production phase-out management plans (December 2019)

MLF 2020	Executive Committee Primer – 2020: An introduction to the Executive Committee of the Multilateral Fund for the Implementation of the Montreal Protocol. http://www.multilateralfund.org/aboutMLF/executivecommittee/Shared%20Documents/2020%20Primer.pdf .
MLF 2020	Factsheets and final reports for demonstration projects on low-global-warming-potential alternatives to HCFC technologies. http://www.multilateralfund.org/Our%20Work/DemonProject/default.aspx .
MLF 2020	Executive Committee Primer – 2020
MLF 2020	Report on ODS approved for phase-out in HPMPs by Article 5 country and HCFC (As of December 2020)
MLF 2021	HCFC phase-out management plans and HCFC production phase-out management plans (June 2021): http://www.multilateralfund.org/Our%20Work/policy/Shared%20Documents/HPMPs-HPPMPs%2085.pdf
MLF 2022	"Policies, Procedures, Guidelines and Criteria of the Multilateral Fund", (as at December 2022) http://www.multilateralfund.org/Our%20Work/policy/default.aspx
MLF 2022	Factsheets and final reports for demonstration projects on low-global-warming-potential alternatives to HCFC technologies
MLF 2022	Policies, procedures, guidelines and criteria http://www.multilateralfund.org/Our%20Work/policy/Shared%20Documents/Policy91-Introduction.pdf
MLF 2022	Report on the review of the implementation of the operational policy on gender mainstreaming for multilateral fund-supported projects (Decision 84/92).
Omar Abdelaziz, Nigel Cotton 2021	“Technoeconomic evaluations for energy efficient domestic low GWP refrigeration technologies”, International Journal of Refrigeration, Volume 132, 2021, Pages 255-262
MOP Decisions	https://ozone.unep.org/meetings?field_date_range_end_value%5Bmin%5D=1980-01-01&field_date_range_end_value%5Bmax%5D=2020-12-31&field_meeting_type_value%5BMOP%5D=MOP
OzonAction 2019	Demonstration of a Regional Strategy for ODS Waste Management and Disposal in the ECA Region
Ozone Secretariat	https://online.ozone.unep.org/t/teap-replenishment-task-force-report-assessment-of-the-funding-requirements-for-the-replenishment-of-the-multilateral-fund-for-2021-2023/19
SACREEE EACREEE	The East African Centre of Excellence for Renewable Energy and Efficiency
TEAP, 2018	Volume 5: Decision XXIX/10 Task Force Report on issues related to energy efficiency while phasing down hydrofluorocarbons
TEAP/FTOC, 2020	TEAP/FTOC Progress Report May 2020
TEAP/MCTOC, 2018	Decision XXIX/4 TEAP Task Force Report on Destruction Technologies for Controlled Substances, April 2018
TEAP/MCTOC, 2020	TEAP/MCTOC Progress Report May 2020
TEAP/RTOC, 2021	TEAP 2021: Report of the Refrigeration Technical Options Committee Vaccines Cold Chain Subcommittee – Addendum to the TEAP 2021 Progress Report, September 2021. https://ozone.unep.org/system/files/documents/TEAP-RTOC-technical-note-vaccines-cold-chain.pdf

TEAP RTF, 2018	2018 TEAP Report, Supplement to the April 2018 Decision XXIX/4 TEAP Task Force Report on Destruction Technologies for Controlled Substances.
TEAP RTF 2021	Assessment of the funding requirement for the replenishment of the Multilateral Fund for the period 2021-2023 (Volume 6)
U4E 2017	Accelerating the Global Adoption of Climate-Friendly and Energy-Efficient Refrigerators. https://united4efficiency.org/resources/accelerating-global-adoption-energy-efficient-refrigerators 2017
U4E 2022	Country Savings Assessments Methodology and Assumptions https://united4efficiency.org/resources/u4e-country-savings-assessments-methodology-and-assumptions/ 2022
UN 1997	Statement from the Workshop on Gender Mainstreaming. https://www.un.org/womenwatch/daw/news/mainstvw.htm
UNEP/OzL.Pro.19/7	Report of the Nineteenth Meeting of the Parties to the Montreal Protocol on Substances that Deplete the Ozone Layer. 21 September 2007
-UNEP/OzL.Pro.29/8	Report of the combined Eleventh meeting of the Conference of the Parties to the Vienna Convention for the Protection of the Ozone Layer and the Twenty-Ninth Meeting of the Parties to the Montreal Protocol on Substances that Deplete the Ozone Layer 2018
UNEP/OzL.Pro.32/7	Report of the Executive Committee of the Multilateral Fund for the Implementation of the Montreal Protocol to the Thirty-second Meeting of the Parties
UNEP/OzL.Pro.32/8	https://ozone.unep.org/system/files/documents/COP-12-i-6_MOP-32-8E.pdf
UNEP/OzL.Pro.32/8/Add.1	https://ozone.unep.org/system/files/documents/COP-12-i-6-Add1_MOP-32-8-Add-1E.pdf . 2 December, 2020
UNEP/OzL.Pro/ExCom/7/30	Report of the 7th meeting of the Executive Committee
UNEP/OzL.Pro/ExCom/16/20	Report of the 16th meeting of the Executive Committee of the Multilateral Fund. 17 March 1995
UNEP/OzL.Pro/ExCom/16/20	Report of the Sixteenth Meeting of the Executive Committee of the Multilateral Fund. 17 March 1995
UNEP/OzL.Pro/ExCom 34/2	Secretariat Activities. 21 June 2001
UNEP/OzL.Pro/ExCom/35/67	Report of the 35th Meeting of the Executive Committee. 28 January 2002
UNEP/OzL.Pro/ExCom/45/55	Report of the Forth-Fifth Meeting of the Executive Committee of the Multilateral Fund. 8 April 2005
UNEP/OzL.Pro/ExCom/54/59	Report of the Fifth-Fourth Meeting of the Executive Committee of the Multilateral Fund. 23 April 2008
UNEP/OzL.Pro/ExCom/56/64	Report of the Fifty-Sixth Meeting of the Executive Committee of the Multilateral Fund. 12 November 2008
UNEP/OzL.Pro/ExCom/60/15	Overview of Issues Identified During Project Review. Executive Committee of the Multilateral Fund document 60/15. 19 March 2010
UNEP/OzL.Pro/ExCom/60/54	Report of the Sixtieth Meeting of the Executive Committee Summary of decisions of the 60th Meeting of the Executive Committee
UNEP/OzL.Pro/ExCom/63/59	Executive Committee of the Multilateral Fund. Report of the Production Sector Sub-Group. 7 April 2011
UNEP/OzL.Pro/ExCom/63/60	Executive Committee of the Multilateral Fund. Report of the Sixty-Third Meeting of the Executive Committee. 26 May 2011

UNEP/OzL.Pro/ExCom/68/5	2012-2014 Business plans and tranche submission delays. 2 November 2012
UNEP/OzL.Pro/ExCom/69/40	Executive Committee of the Multilateral Fund. Report of the Sub-group on the Production Sector. 19 April 2013
UNEP/OzL.Pro/ExCom/71/42	Executive Committee of the Multilateral Fund. Project Proposal: Montenegro. 8 November 2013
UNEP/OzL.Pro/ExCom/74/50	Executive Committee of the Multilateral Fund. Draft Criteria for Funding HCFC Phase-out in the Consumption Sector for Stage II of HCFC Phase-out Management Plans (Decision 73/64). 15 April 2015
UNEP/OzL.Pro/ExCom/74/51	Executive Committee of the Multilateral Fund. Review of Funding of Institutional Strengthening Projects (Decision 61/43(b)). April 2015
UNEP/OzL.Pro/ExCom/74/56	Report of the 74th meeting of the Executive Committee
UNEP/OzL.Pro/ExCom/78/7	Executive Committee of the Multilateral Fund. Information Relevant to the Development of the Cost Guidelines for the Phase-Down of HFCS in Article 5 Countries: Institutional Strengthening. 6 March 2017
UNEP/OzL.Pro/ExCom/79/46	Executive Committee of the Multilateral Fund. Development of the Cost Guidelines for the Phase-down of HFCs in Article 5 Countries: Draft Criteria for Funding (Decision 78/3). 5 June 2017
UNEP/OzL.Pro/ExCom/79/50	Executive Committee of the Multilateral Fund. Report of the Sub-Group on the Production Sector. 7 July 2017
UNEP/OzL.Pro/ExCom/79/51	Executive Committee of the Multilateral Fund. Report of the 79th meeting of the Executive Committee of the Multilateral Fund. 10 July 2017
UNEP/OzL.Pro/ExCom/81/58	Executive Committee of the Multilateral Fund. Report of the Eighty-First Meeting of the Executive Committee. 22 June 2018
UNEP/OzL.Pro/ExCom/82/11	Executive Committee of the Multilateral Fund. Final Report of the Evaluation of the Refrigeration Servicing Sector. 16 November 2018
UNEP/OzL.Pro/ExCom/82/45	Executive Committee of the Multilateral Fund. Project Proposals: China. 16 November 2018
UNEP/OzL.Pro/ExCom/82/63	Executive Committee of the Multilateral Fund. Annex I (Analysis of the duties and costs associated with project management units and the extent to which agencies passed on administrative duties to other institutions (decision 79/41(f)) . 10 November 2018
UNEP/OzL.Pro/ExCom/82/64	Executive Committee of the Multilateral Fund. Preliminary report on all aspects related to the refrigeration servicing sector that support the HFC phase-down. 2 November 2018
UNEP/OzL.Pro/ExCom/82/68	Executive Committee of the Multilateral Fund. Cost-Effective Options for Controlling HFC-23 by-Product Emissions. 1 November 2018
UNEP/OzL.Pro/ExCom/82/69	Executive Committee of the Multilateral Fund. Key Aspects Related to HFC-23 By-Product Control Technologies: Options Related to the Control of HFC-23 by-Product Emission in Argentina (Decision 81/68). 14 November 2018
UNEP/OzL.Pro/ExCom/83/39	Executive Committee of the Multilateral Fund. Review of the administrative cost regime: analysis by country of project management units, institutional strengthening, and implementing agencies, including activities and funding under the compliance assistance programme, core units and other elements of the administrative cost regime, and information on national level independent verification (decision 82/82(b)). 3 May 2019
UNEP/OzL.Pro/ExCom/83/40	Executive Committee of the Multilateral Fund. Paper on Ways to Operationalize Paragraph 16 of Decision XXVIII/2 and Paragraph 2 of Decision XXX/5 of the Parties (Decision 82/83(c)). 29 April 2019

UNEP/OzL.Pro/ExCom/83/44	Executive Committee of the Multilateral Fund. Key Aspects Related to HFC-23 By-Product Control Technologies 11 May 2019
UNEP/OzL.Pro/ExCom/84	Executive Committee of the Multilateral Fund. Post-meeting summary of the 84th meeting of the Executive Committee of the Multilateral Fund for the Implementation of the Montreal Protocol 2019
UNEP/OzL.Pro/ExCom/84/9/Rev.1	Executive Committee of the Multilateral Fund. Country Programme Data and Prospects for Compliance. 21 November 2019
UNEP/OzL.Pro/ExCom/84/26	Executive Committee of the Multilateral Fund. Consolidated Business Plan of the Multilateral Fund for 2020-2022. 20 November 2019
UNEP/OzL.Pro/ExCom/84/63	Executive Committee of the Multilateral Fund. Report on End-User Incentive Schemes Funded Under the Approved HPMPs (Decision 82/54). 2019
UNEP/OzL.Pro/ExCom/84/65	Executive Committee of the Multilateral Fund. Analysis of the Implications of Parallel or Integrated Implementation of HCFC Phase-out and HFC phase-down Activities (DECISION 81/69). 19 November 2019
UNEP/OzL.Pro/ExCom/84/66	Executive Committee of the Multilateral Fund. Development of the Cost Guidelines for the Phase-down of HFCs in Article 5 Countries: Draft Criteria for Funding (Decision 83/65), 15 Nov. 2019.
UNEP/OzL.Pro/ExCom/84/70	Executive Committee of the Multilateral Fund. Key Aspects Related to HFC-23 By-Product Control Technologies (Decisions 83/66 and 83/67). 29 November 2019
UNEP/OzL.Pro/ExCom/84/71	Executive Committee of the Multilateral Fund. Key Aspects Related to HFC-23 By-Product Control Technologies: Argentina (Decision 83/66). 28 November 2019
UNEP/OzL.Pro/ExCom/84/72	Executive Committee of the Multilateral Fund. Key Aspects Related to HFC-23 By-Product Control Technologies: Mexico (Decision 83/67). 1 December 2019
UNEP/OzL.Pro/ExCom/84/73	Draft Operational Policy on Gender Mainstreaming for Multilateral Fund-supported Projects (Decision 83/68(C))
UNEP/OzL.Pro/ExCom/84/74	Executive Committee of the Multilateral Fund. Report of the Sub-Group on the Production Sector, 20 December 2019
UNEP/OzL.Pro/ExCom/84/75	Executive Committee of the Multilateral Fund. Report of the Eighty-fourth Meeting of the Executive Committee. 20 Dec. 2019
UNEP/OzL.Pro/ExCom/85/63	Executive Committee of the Multilateral Fund. Key Aspects Related to HFC-23 By-Product Control Technologies (Decisions 83/67(D), 84/90 and 84/91). 8 May 2020
UNEP/OzL.Pro/ExCom/85/IAP/3	Executive Committee of the Multilateral Fund. Report of the intersessional approval process established for the 85th meeting. 8 June 2020
UNEP/OzL.Pro/ExCom/85/64	Executive Committee of the Multilateral Fund. Key Aspects Related to HFC-23 By-Product Control Technologies: Argentina (Decision 84/90) . 8 May 2020
UNEP/OzL.Pro/ExCom/85/65	Executive Committee of the Multilateral Fund. Key Aspects Related to HFC-23 By-Product Control Technologies: Mexico (Decision 84/91). 7 May 2020
UNEP/OzL.Pro/ExCom/86/25	Executive Committee of the Multilateral Fund. Consolidated Business Plan of the Multilateral Fund for 2021–2023. 16 February 2021
UNEP/OzL.Pro/ExCom/86/57	Project proposal: Kenya
UNEP/OzL.Pro/ExCom/86/90	A synthesis report describing best practices and ways for the Executive Committee to consider operationalizing paragraph 24 of Decision XXVIII/2)

UNEP/OzL.Pro/ExCom/86/92	Paper on ways to operationalize paragraph 16 of decision XXVIII/2 and paragraph 2 of decision XXX/5 of the Parties (decision 84/88)
UNEP/OzL.Pro/ExCom/86/94,	Executive Committee of the Multilateral Fund. Key Aspects Related to HFC-23 by-Product Control Technologies (Decisions 84/90 AND 84/91). 21 December 2020
UNEP/OzL.Pro/ExCom/86/95	Key aspects related to HFC-23 by-product control technologies: Argentina (decision 84/90). 26 January 2021
UNEP/OzL.Pro/ExCom/86/96	Executive Committee of the Multilateral Fund. Key Aspects Related to HFC-23 by-Product Control Technologies (Decisions 84/91). 21 December 2020
UNEP/OzL.Pro/ExCom/86/98	Executive Committee of the Multilateral Fund. Report of the Sub-Group on the Production Sector, 7 April 2021
UNEP/OzL.Pro/ExCom/86/100	Executive Committee of the Multilateral Fund. Report of the Eighty-sixth Meeting of the Executive Committee. 28 June 2021
UNEP/OzL.Pro/ExCom/87	Executive Committee of the Multilateral Fund. Adjusted consolidated business plan 2021-2023. http://www.multilateralfund.org/87/default.aspx
UNEP/OzL.Pro/ExCom/87/47	Executive Committee of the Multilateral Fund. Analysis of the Level and Modalities of Funding for HFC Phase-Down in the Refrigeration Servicing Sector (Decision 83/65 (b) and 84/86 (ii)), June 2021
UNEP/OzL.Pro/ExCom/87/52	Executive Committee of the Multilateral Fund. Key Aspects Related to HFC-23 by-Product Control Technologies (Decisions 86/95 and 86/96). 18 June 2021
UNEP/OzL.Pro/ExCom/87/53	Executive Committee of the Multilateral Fund. Key Aspects Related to HFC-23 by-Product Control Technologies: Argentina (Decision 86/95). 9 June 2021
UNEP/OzL.Pro/ExCom/87/54	Executive Committee of the Multilateral Fund. Key Aspects Related to HFC-23 by-Product Control Technologies: Mexico (Decision 86/96). 8 June 2021
UNEP/OzL.Pro/ExCom/87/57	Executive Committee of the Multilateral Fund. Report of the Sub-Group on the Production Sector, June 2021
UNEP/OzL.Pro/ExCom/87/58	Report of the eighty-seventh meeting of the Executive Committee
UNEP/OzL.Pro/ExCom/87/96	Executive Committee of the Multilateral Fund. Country Programme Data and Prospects for Compliance.
UNEP/OzL.Pro/ExCom/87/CRP.3	Executive Committee of the Multilateral Fund. Draft Decision on Agenda Item 13: Draft Guidelines for the Preparation of HFC Phase-down Plans for Article 5 Countries (Decision 86/93)
UNEP/OzL.Pro/ExCom/87/IAP/2/Add.1	Executive Committee of the Multilateral Fund. Agreement Between the Government of Mexico and the Executive Committee of the Multilateral Fund for the Decisions of HFC-23 Generated in the Production in of HCFC-22 in Quimobasicos.
UNEP/OzL.Pro/ExCom/87/IAP/3	Executive Committee of the Multilateral Fund. Report of the Intersessional Approval Process and Online Meetings for the 87 th Meeting. 30 July 2021
UNEP/OzL.Pro/ExCom/88/57	Project proposals: North Macedonia
UNEP/OzL.Pro/ExCom/88/77	Key aspects related to HFC-23 by-product control technologies. 1 November 2021
UNEP/OzL.Pro/ExCom/88/79	Report of the eighty-eighth meeting of the Executive Committee
UNEP/OzL.Pro/ExCom/89/9	Synthesis report describing best practices and ways for the Executive Committee to consider operationalizing paragraph 24 of decision XXVIII/2 (decision 84/87(b))

UNEP/OzL.Pro/ExCom/89/13	Key aspects related to HFC-23 by-product control technologies
UNEP/OzL.Pro/ExCom/89/16	Report of Part II of the Eighty-Ninth Meeting of the Executive Committee.
UNEP/OzL.Pro/ExCom/90/37	Report on the review of the implementation of the operational policy on gender mainstreaming for Multilateral Fund-supported projects (decision 84/92(e))
UNEP/OzL.Pro/ExCom/90/40	Report of the ninetieth meeting of the Executive Committee
UNEP/OzL.Pro/ExCom/91	Post-meeting summary of the 91st meeting of the Executive Committee. http://www.multilateralfund.org/91/default.aspx
UNEP/OzL.Pro/ExCom/91/8	Country Programme Data and Prospects for Compliance
UNEP/OzL.Pro/ExCom/91/22	Consolidated Business Plan of the Multilateral Fund for 2023–2025
UNEP/OzL.Pro/ExCom/91/22p2	Consolidated Business Plan of the Multilateral Fund for 2023–2025
UNEP/OzL.Pro/ExCom/91/63	Criteria for pilot projects to maintain and/or enhance energy efficiency of replacement technologies and equipment in the context of HFC phase-down (decision 90/50(b)(i))
UNEP/OzL.Pro/ExCom/91/66	Criteria for a Funding Window for an Inventory of Banks of Used or Unwanted Controlled substances and a Plan for the Collection, Transport and Disposal of Such Substances (Decision 90/49(C))
UNEP/OzL.Pro/ExCom/91/67	Analysis related to the capacity of the Multilateral Fund institutions to address HFC phase-down (decision 89/4)
UNEP/OzL.Pro/ExCom/91/71	Report of the Sub-Group on the Production Sector
UNEP/OzL.Pro/ExCom/91/72	Report of the Ninety-First Meeting of the Executive Committee
UNEP/OzL.Pro.ExMOP.5/3/Add.1	Decisions adopted by the Fifth Extraordinary Meeting of the Parties to the Montreal Protocol on Substances that Deplete the Ozone Layer
UNFCCC	https://edm.unfccc.int/
UNIDO CERA 2023	https://www.unido.org/cera

ANNEX 1: METHODOLOGY FOR HFC BASELINE ESTIMATES AND ASSUMPTIONS

Parties that have ratified the Kigali Amendment to the Montreal Protocol report the import, export, and production of hydrofluorocarbons (HFCs) and hydrochlorofluorocarbon (HCFCs) to the Ozone Secretariat under Article 7 reporting requirements. The list of parties that have ratified Kigali is changing rapidly. As of 3 April 2023, 103 A5 parties in Group 1 and one A5 parties in Group 2¹²⁷ had ratified the Kigali Amendment.

Baseline and Control Measures

Kigali A5 Group 1 party baselines are an average of the 2020 through 2022 HFC consumption (production plus import minus export of HFCs) and production weighted by the associated global warming potentials (GWPs) summarized as total carbon dioxide equivalent (CO₂eq) added to the CO₂ eq from the chemicals used to establish HCFC baselines multiplied by 65%.

Kigali A5 Group 2 party baselines are calculated the same way, except that the period considered is 2024-2026.

HFC Baseline Formula

$$\text{Group 1} = \left(100\% \times \frac{\text{HFC 2020} + \text{HFC 2021} + \text{HFC 2022}}{3}\right) + (65\% \times \text{HCFC Baseline})$$

$$\text{Group 2} = \left(100\% \times \frac{\text{HFC 2024} + \text{HFC 2025} + \text{HFC 2026}}{3}\right) + (65\% \times \text{HCFC Baseline})$$

The baselines periods and control targets for both Group 1 and 2 are shown below.

Table A1-1 Baseline periods and control targets

	<i>A5 Group 1</i>	<i>A5 Group 2</i>
Baseline	2020-2022	2024-2026
Formula	Average HFC consumption	Average HFC consumption
HCFC	65% baseline	65% baseline
Freeze	2024	2028
1st step	2029 – 10%	2032 – 10%
2nd step	2035 – 30%	2037 – 20%
3rd step	2040 – 50%	2042 – 30%
4th step	2045 – 80%	2047 – 85%

Data Gaps

Most of the Group 1 parties that have ratified the Kigali Amendment have reported both 2020 and 2021 HFC data. Very few parties have provided 2022 HFC data necessary to calculate the baseline. Most 2022 HCFC and HFC data will likely be reported in September 2023, in the normal reporting cycle.

Article 7: Reporting of data....

Each Party shall provide to the Secretariat statistical data on its production, imports and exports of each of the controlled substances

– in Annex B and Groups I and II of Annex C for the year 1989;

¹²⁷ Group 1: Article 5 parties not part of Group 2; Group 2: Bahrain, India, the Islamic Republic of Iran, Iraq, Kuwait, Oman, Pakistan, Qatar, Saudi Arabia and the United Arab Emirates. Available at: <https://ozone.unep.org/treaties/montreal-protocol/annex-f-hydrofluorocarbons>

- in Annex E, for the year 1991,
- in Annex F, for the years 2011 to 2013, except that Parties operating under paragraph 1 of Article 5 shall provide such data for the years 2020 to 2022, but those Parties operating under paragraph 1 of Article 5 to which subparagraphs (d) and (f) of paragraph 8 of Article 5 applies shall provide such data for the years 2024 to 2026;

or the best possible estimates of such data where actual data are not available, not later than three months after the date when the provisions set out in the Protocol with regard to the substances in Annexes B, C, E and F respectively enter into force for that Party.

3. *Each Party shall provide to the Secretariat statistical data on its annual production (as defined in paragraph 5 of Article 1) of each of the controlled substances listed in Annexes A, B, C, E and F and, separately, for each substance,*

- *Amounts used for feedstocks,*
- *Amounts destroyed by technologies approved by the Parties, and*
- *Imports from and exports to Parties and non-Parties respectively,*

for the year during which provisions concerning the substances in Annexes A, B, C, E and F respectively entered into force for that Party and for each year thereafter. Each Party shall provide to the Secretariat statistical data on the annual amount of the controlled substance listed in Annex E used for quarantine and pre-shipment applications. Data shall be forwarded not later than nine months after the end of the year to which the data relate.

Although some Group 2 parties have reported 2020 and 2021 HFC data, the baseline is calculated based on 2024 through 2026 HFC data. Most Group 2 parties have not ratified the Kigali amendment or reported 2020 and 2021 HFC data.

The RTF has analyzed several datasets, as noted in Table A1-1 below to ensure that the most detailed and complete data are used in developing baseline estimates. None of the datasets contain more than 60% of the data needed to develop baselines for all parties.

Some parties provided data as part of Country Program (CP) data for the MLF while others reported d A7 (Reporting of Data) HFC data. Some parties reported both sets, and others have not been required to report at all because they have not yet ratified or are participating in the Group 2 commitment.

Table A1-2 Examples of data gaps

Data Sets	Data gaps	More data gaps
2022 OS A7 Chemical Reporting	2022 data Some 2021 and Some 2020 data	> 60 parties missing data for some chemicals reported through Country Program data, some missing all data
2023 OS A7 Chemical Reporting	2022 data Some 2021 and Some 2020 data	<ul style="list-style-type: none"> ➤ 60 parties missing data for some chemicals reported through Country Program data, some missing all data ➤ >100 data points / >700 used in 2021
2023 Country Program Blends	2022 data Some 2021 and Some 2020 data	37 parties did not report through OS A7 or Country Program data
2023 OS A7 Total CO ₂ eq by party	90% 2022 data	Uncertain as to whether chemicals are missing in OS A7 data or comparison to Country Program
2023 OS A7 Chemical Reporting	90% 2022 data Some 2021 and Some 2020 data	<ul style="list-style-type: none"> ➤ 30 parties missing data ➤ Most 2022 data missing ➤ Some missing 2020 and 2021 data

Parties with complete data sets

Some parties (<10) have provided sufficient data for 2020, 2021, and 2022 to calculate the HFC portion of their baselines. For those parties that have provided data for all three years, the RTF used that data to calculate the HFC portion of baselines by party.

Table A1-3 HFC Reported Data by year (MMCO₂eq)

2018	0.0
2018, 2019, 2021	0.0
2019 only	1.2
2020 and 2021	1495.1
2020 only	0.3
2021 only	74.6
2022 only	0.2
All data	25.8
(blank)	292.5

Addressing Data Gaps

Parties with A7 reporting A7 HFC data available for 2019, 2020, and/or 2021

For parties where HFC data was available for 2019 and/or 2020 and/or 2021, data gaps were filled by using the national Gross Domestic Product (GDP) growth rates to estimate consumption¹²⁸ for earlier and later time periods.

Table A1-4 Parties with A7 reporting A7 HFC data available for 2019, 2020, and / or 2021 but not all three years to estimate the HFC portion of the baseline

Available data	Missing data	Filling the Gap
Example 1: 2019 OS A7 data for Group 1 party	2020-2022	2019 increased by cumulative Gross Domestic Product (GDP) by year
100 tonnes; 1.03 GDP	2020 = 103 tonnes 2021 = 106.09 2022 = 109.27	HFC Contribution to Baseline = 106.12 tonnes
Example 2: 2021 OS A7 data for Group 2 party	2024-2026	2021 increased by cumulative Gross Domestic Product (GDP) by year
100 tonnes; 1.03 GDP	2024 = 109 tonnes 2025 = 112.55 2026 = 115.9	HFC Contribution to Baseline = 112.6 tonnes

¹²⁸ Real GDP growth (Annual percent change) per the International Monetary Fund (IMF) by [nationhttps://www.imf.org/external/datamapper/NGDP_RPCH@WEO/OEMDC/ADVEC/WEOWORLD](https://www.imf.org/external/datamapper/NGDP_RPCH@WEO/OEMDC/ADVEC/WEOWORLD)

For parties that provided both Country Program (CP) data and A7 HFC data, the A7 HFC data were used, CP HFC data and A7 HFC data were not averaged

because the A7 data are the official reported record. It should be noted that CP data are reported in blends, while the A7 data are reported by component, so the RTF converted known blends to components to provide a like-for-like comparison. Many new blend combinations were reported through the CP data.

Available data	Missing data	Filling the Gap
R-410A 100 tonnes CP data	Chemical data	50 tonnes R-32, 50 tonnes R-125
R-404A 100 tonnes CP data	Chemical data	44 tonnes R-125, 52 tonnes R-143A. 4 tonnes R-134A
HFC-245fa 50 tonnes OS A7 data	Nothing	50 tonnes 245fa

Table A1-5 Examples for filling data gaps or a Group 1 and a Group 2 party

Country program reported in blends; OS A7 data reported in chemicals: CP blends converted to chemical components and then treated the same as OS A7 data.

Parties that have not yet been required to report

For parties that have not yet reported any data through A7 reporting system or Country Programme data, an estimate of the HFC contribution to their HFC baseline was created based on their HCFC usage reported in their HCFC baseline. The HCFC baseline number was increased based on the IMF GDP number by year to create an HCFC “business as usual” (BAU) case. The A7 reported value for that HCFC was subtracted from the HCFC BAU case to estimate the HFC consumption for each year through the HFC baseline period. For Group 1 parties, the estimates ran through 2022; for Group 2 parties, the estimates were made through 2026. These HFC estimates were used to approximate the volumes of HFC used during the baseline years to establish the HFC portion of the baseline.

Available data	Missing data	Filling the Gap
HCFC data from 2010 through 2021	HFC data for 2020, 21, 22	<ol style="list-style-type: none"> 1. Grow HCFC Data from 2010 to 2020, 2021, 2022 by GDP 2. Subtract HCFC data from 2020 and 2021 3. Convert to HFC data per previously agreed upon assumptions
	or HFC data for 2024, 2025, 2026	<ol style="list-style-type: none"> 1. Grow HCFC Data through 2026 by GDP 2. Reduce by compliance target for HCFC use 3. Convert to HFC data per previously agreed upon assumptions

	HCFC-22		HCFC-141b	HCFC-142b
	Commercial Refrigeration	AC	FBA	XPS
HFC-125	12%	33%		
HFC-134a	3%			5%
HFC-143	0%			
HFC-143a	12%			
HFC-23	0%			
HCFC-22				
HFC-32	7%	33%		
hfc-245FA			30%	
hfc-365MFC			10%	
HFC-152a				2%

Table A1-6 Filling data gaps for parties that have not yet been required to report: HCFC conversion factors to HFCs

For parties that have not reported any HFC data for any baseline year, the RTF used the year over year change in national Gross Domestic Product (GDP)¹²⁹ to extrapolate available reported HCFC baseline data to estimate the market growth for refrigerants and foam blowing agents from 2010 through baseline years, as a business as usual (BAU) case. Actual HCFC data was subtracted from the projected BAU case for the baseline years for Group 1 parties. Then the conversion factors from HCFCs to HFCs in **Table A1-6** was used to estimate HFC consumption in 2020, 2021, and 2022 based on the converted BAU HCFC case less continued use of HCFC. An example is shown in Table A1-7.

For Group 2 parties, the BAU case was adjusted by the minimum compliance obligation for HCFCs in 2025 (65% reduction compared to baseline). It was assumed that the only remaining use of HCFCs in that timeframe would be for HCFC-22 rather than for foams or other uses.

Available data	Missing data	Filling the Gap
100 Tonnes HCFC-22	HFC data	For refrigeration: 12 tonnes HFC-125 3 tonnes HFC-134a 12 tonnes HFC-143a 7 tonnes HFC-32
		For Air conditioning: 33 tonnes HFC-125 33 tonnes HFC-32

¹²⁹ The [International Monetary Fund \(IMF\)](https://www.imf.org/external/datamapper/NGDP_RPCH@WEO/OEMDC/ADVEC/WEOWORLD) 2022 Report provides data to estimate growth rates by country in Gross Domestic Product (GDP) annually. Available at: https://www.imf.org/external/datamapper/NGDP_RPCH@WEO/OEMDC/ADVEC/WEOWORLD

Parties with negative GDPs

IMF estimates of GDPs include four parties with negative growth factors. The RTF believes that this is unlikely to portray long-term demand and used a growth factor of 3% to better represent long-term performance.

Results

Using the available data and the methodologies described above, the estimated HFC consumption and the total of all HFC baselines for parties are shown by bracket in Table A1-8.

Country Brackets	HFC Contribution to HFC baseline 2023 RTF Report	Estimated HFC Baseline
A	569.9	1051.2
B	139.0	213.9
B - Group 2	105.0	175.0
C	111.8	207.4
C - Group 2	32.2	55.5
D	88.7	127.6
D - Group 2	20.9	30.0
E	44.0	61.0
Grand Total	1111.4	1921.6

Estimated servicing compared to use of refrigerants in new equipment

The 2020 RTF estimated servicing apportioned based on Country Bracket and as an apportionment of HCFC-22 usage as follows.

- Servicing (apportionment of HCFC-22 replacement)
 - 25% of refrigerants are used for servicing in Bracket A countries
 - 50% of refrigerants are used for servicing in Bracket B and C countries
 - 75% of refrigerants are used for servicing in Bracket D countries
 - 100% of refrigerants are used for servicing for Bracket E countries ¹³⁰

The CP data showed a slight variation to the apportionment from the previous report as follows. Please note that the CP dataset is incomplete, and this distribution could be modified in the future with additional available data.

- Servicing (apportionment of HCFC-22 replacement)
 - 25% of refrigerants are used for servicing in Bracket A countries
 - 50% of refrigerants are used for servicing in Bracket B countries
 - 75% of refrigerants are used for servicing in Bracket C countries
 - 98% of refrigerants are used for servicing for Bracket D and E countries ¹³¹

It is important to note that the CP data do not differentiate between the use of refrigerant for mobile air conditioning for servicing and for new equipment. This volume is grouped together in a single reported volume by party. This is consistent with the way that the RTF calculated refrigerant use in the last 2020 RTF report. The results are shown in Table A1-9.

¹³⁰ A5 Countries are divided per level of HCFC consumption and Brackets were defined in Table 3-1

¹³¹ A5 Countries are divided per level of HCFC consumption and Brackets were defined in Table 3-1

Category	Servicing	Domestic Ref.	ICR	Stationary AC	MAC	Foam XPS	Foam PUR	Aerosol	Fire Sup.	Solvents
Bracket A	16.6%	0.8%	17.3%	31.6%	10.7%	2.2%	3.2%	3.3%	14.4%	0.0%
Bracket B	39.1%	0.7%	16.1%	22.3%	13.2%	3.0%	1.2%	4.3%	0.3%	0.0%
B Group 2	33.4%	0.8%	11.3%	21.3%	15.2%	3.5%	2.8%	6.1%	5.6%	0.0%
Bracket C	51.6%	0.3%	7.9%	9.0%	13.2%	2.9%	7.5%	4.1%	3.2%	0.1%
C Group 2	55.6%	0.4%	7.0%	11.1%	14.6%	3.4%	3.3%	4.4%	0.3%	0.0%
Bracket D	58.2%	0.1%	2.5%	2.4%	15.9%	3.3%	10.6%	4.8%	2.2%	0.0%
D Group 2	65.5%	0.1%	2.4%	3.2%	12.7%	4.1%	7.6%	4.1%	0.5%	0.0%
Bracket E	59.2%	0.0%	0.3%	0.3%	15.1%	4.2%	12.8%	5.2%	2.8%	0.0%

Table A1-9 Market share of sectors using HFCs weighted by GWP

Note that Mobile Air Conditioning (MAC) data include both servicing and refrigerant charged in new vehicles

ANNEX 2: LIST OF LVC AND NON-LVC COUNTRIES (FOR FUNDING PURPOSES)

Countries Funded as LVCs – 94							
1	Albania	25	Democratic Republic of the Congo (funded as LVC)	49	Liberia	73	Saint Kitts and Nevis
2	Angola	26	Djibouti	50	Madagascar (changed baseline and is now an LVC country)	74	Saint Lucia
3	Antigua and Barbuda	27	Dominica	51	Malawi	75	Saint Vincent and the Grenadines
4	Armenia	28	Ecuador (funded as LVC)	52	Maldives	76	Samoa
5	Bahamas	29	El Salvador	53	Mali	77	Sao Tome and Principe
6	Barbados	30	Equatorial Guinea	54	Marshall Islands	78	Serbia
7	Belize	31	Eritrea	55	Mauritius	79	Seychelles
8	Benin (funded as LVC)	32	Eswatini	56	Micronesia (Federated States of)	80	Sierra Leone
9	Bhutan	33	Ethiopia	57	Mongolia	81	Solomon Islands
10	Bolivia (Plurinational State of)	34	Fiji	58	Montenegro	82	South Sudan
11	Bosnia and Herzegovina	35	Gabon (funded as LVC)	59	Mozambique	83	Sri Lanka
12	Botswana	36	Gambia	60	Myanmar	84	Suriname
13	Brunei Darussalam	37	Georgia	61	Namibia	85	Timor-Leste
14	Burkina Faso (funded as LVC)	38	Grenada	62	Nauru	86	Togo (funded as LVC)
15	Burundi	39	Guatemala	63	Nepal	87	Tonga
16	Cambodia	40	Guinea Bissau	64	Nicaragua	88	Turkmenistan
17	Cabo Verde	41	Guyana	65	Niger	89	Tuvalu
18	Central African Republic Liberia	42	Haiti	66	Niue	90	Uganda
19	Chad	43	Honduras	67	North Macedonia	91	United Republic of Tanzania
20	Comoros	44	Jamaica	68	Palau	92	Vanuatu
21	Congo	45	Kiribati	69	Papua New Guinea	93	Zambia
22	Cook Islands	46	Kyrgyzstan	70	Paraguay	94	Zimbabwe
23	Costa Rica	47	Lao People's Democratic Republic	71	Republic of Moldova		
24	Cuba	48	Lesotho	72	Rwanda		

Countries Funded as Non-LVCs – 50							
1	Afghanistan	14	Egypt	27	Mauritania	40	South Africa
2	Algeria	15	Ghana	28	Mexico	41	Sudan
3	Argentina	15	Guinea	29	Morocco	42	Syrian Arab Republic
4	Bahrain	17	India	30	Nigeria	43	Thailand
5	Bangladesh	18	Indonesia	31	Oman	44	Trinidad and Tobago
6	Brazil	19	Iran (Islamic Republic of)	32	Pakistan	45	Tunisia
7	Cameroon	20	Iraq	33	Panama	46	Turkey
8	Chile	21	Jordan	34	Peru	47	Uruguay
9	China	22	Kenya	35	Philippines	48	Venezuela (Bolivarian Republic of)
10	Colombia	23	Kuwait	36	Qatar	49	Viet Nam
11	Côte d'Ivoire	24	Lebanon	37	Saudi Arabia	50	Yemen
12	Democratic People's Republic of Korea	25	Libya	38	Senegal		
13	Dominican Republic	26	Malaysia	39	Somalia		

**ANNEX 3: ESTIMATION OF HCFC REDUCTION NEEDED FOR ELIGIBLE FUNDING
(BASED ON ADJUSTED CONSOLIDATED BP OF THE MLF 2023-2025)**

	Starting Point (ODPt)	Cumulative Reduction (ODPt)	Cumulative Reduction %	Additional % needed for 67.5% reduction (Stage III)	Additional % needed for 80.5% reduction (2026)	Additional % needed for 100% reduction (Stage IV)
Afghanistan	23.60	15.93	67.5%	0.0%	13.0%	19.5%
Albania	6.00	4.05	67.5%	0.0%	13.0%	19.5%
Algeria	30.20	14.48	47.9%	19.6%	32.6%	19.5%
Angola	15.95	10.77	67.5%	0.0%	13.0%	19.5%
Antigua and Barbuda**	0.30	0.03	10.0%	57.5%	70.5%	19.5%
Argentina	377.51	198.72	52.6%	14.9%	27.9%	19.5%
Armenia	7.00	4.66	66.6%	0.9%	13.9%	19.5%
Bahamas	4.81	4.81	100.0%	0.0%	0.0%	0.0%
Bahrain	51.28	48.53	94.6%	0.0%	0.0%	5.4%
Bangladesh	72.65	48.54	66.8%	0.7%	13.7%	19.5%
Barbados	3.69	3.69	100.0%	0.0%	0.0%	0.0%
Belize	2.80	2.80	100.0%	0.0%	0.0%	0.0%
Benin	23.80	23.80	100.0%	0.0%	0.0%	0.0%
Bhutan	0.31	0.30	97.7%	0.0%	0.0%	2.3%*
Bolivia	6.10	6.10	100.0%	0.0%	0.0%	0.0%
Bosnia and Herzegovina	4.70	4.70	100.0%	0.0%	0.0%	0.0%
Botswana	11.00	11.00	100.0%	0.0%	0.0%	0.0%
Brazil	1,327.30	685.36	51.6%	15.9%	28.9%	19.5%
Brunei Darussalam	6.10	6.10	100.0%	0.0%	0.0%	0.0%
Burkina Faso	18.00	6.30	35.0%	32.5%	45.5%	19.5%
Burundi	2.10	0.73	34.8%	32.7%	45.7%	19.5%
Cambodia	15.00	15.00	100.0%	0.0%	0.0%	0.0%
Cameroon	77.56	54.01	69.6%	0.0%	10.9%	19.5%
Cabo Verde	0.25	0.25	100.0%	0.0%	0.0%	0.0%
Central African Republic**	12.00	4.20	35.0%	32.5%	45.5%	19.5%
Chad	16.10	16.10	100.0%	0.0%	0.0%	0.0%
Chile	87.50	87.50	100.0%	0.0%	0.0%	0.0%
China	18,865.44	15,001.63	79.5%	0.0%	1.0%	19.5%
Colombia	225.54	224.80	99.7%	0.0%	0.0%	0.3%
Comoros	0.14	0.05	35.7%	31.8%	44.8%	19.5%
Congo	10.14	3.55	35.0%	32.5%	45.5%	19.5%
Congo, DR	17.00	17.00	100.0%	0.0%	0.0%	0.0%
Cook Islands - PIC	0.05	0.05	100.0%	0.0%	0.0%	0.0%
Costa Rica	14.08	13.74	97.6%	0.0%	0.0%	2.4%*
Cote d'Ivoire	63.80	22.33	35.0%	32.5%	45.5%	19.5%
Croatia	7.50	8.10	100%	0.0%	0.0%	0.0%
Cuba	16.88	16.88	100.0%	0.0%	0.0%	0.0%
Djibouti	0.70	0.24	34.3%	33.2%	46.2%	19.5%
Dominica	0.23	0.08	34.8%	32.7%	45.7%	19.5%
Dominican Republic	51.20	51.20	100.0%	0.0%	0.0%	0.0%
Ecuador	23.48	23.48	100.0%	0.0%	0.0%	0.0%
Egypt	386.27	288.07	74.6%	0.0%	5.9%	19.5%
El Salvador	11.68	11.68	100.0%	0.0%	0.0%	0.0%

	Starting Point (ODPt)	Cumulative Reduction (ODPt)	Cumulative Reduction %	Additional % needed for 67.5% reduction (Stage III)	Additional % needed for 80.5% reduction (2026)	Additional % needed for 100% reduction (Stage IV)
Equatorial Guinea	2.50	0.87	34.8%	32.7%	45.7%	19.5%
Eritrea	1.09	1.09	100.0%	0.0%	0.0%	0.0%
Ethiopia	5.50	5.50	100.0%	0.0%	0.0%	0.0%
Fiji	5.73	5.73	100.0%	0.0%	0.0%	0.0%
Gabon	30.20	10.57	35.0%	32.5%	45.5%	19.5%
Gambia	1.50	1.50	100.0%	0.0%	0.0%	0.0%
Georgia	5.21	5.21	100.0%	0.0%	0.0%	0.0%
Ghana	57.30	57.30	100.0%	0.0%	0.0%	0.0%
Grenada	0.58	0.58	100.0%	0.0%	0.0%	0.0%
Guatemala	8.30	8.30	100.0%	0.0%	0.0%	0.0%
Guinea	7.51	2.63	35.0%	32.5%	45.5%	19.5%
Guinea-Bissau	2.83	0.99	35.0%	32.5%	45.5%	19.5%
Guyana	1.80	1.80	100.0%	0.0%	0.0%	0.0%
Haiti**	3.60	1.26	35.0%	32.5%	45.5%	19.5%
Honduras	19.90	19.90	100.0%	0.0%	0.0%	0.0%
India	1,608.20	1,608.20	100.0%	0.0%	0.0%	0.0%
Indonesia	403.92	219.33	54.3%	13.2%	26.2%	19.5%
Iran	380.50	326.77	85.9%	0.0%	0.0%	14.1%
Iraq	108.38	74.78	69.0%	0.0%	11.5%	19.5%
Jamaica	10.58	10.58	100.0%	0.0%	0.0%	0.0%
Jordan	82.98	58.99	71.1%	0.0%	9.4%	19.5%
Kenya	33.41	33.41	100.0%	0.0%	0.0%	0.0%
Kiribati - PIC	0.05	0.05	100.0%	0.0%	0.0%	0.0%
Korea, DPR	78.00	20.03	25.7%	41.8%	54.8%	19.5%
Kuwait	418.60	324.26	77.5%	0.0%	3.0%	19.5%
Kyrgyzstan	4.10	4.10	100.0%	0.0%	0.0%	0.0%
Lao, PDR	2.30	2.30	100.0%	0.0%	0.0%	0.0%
Lebanon	73.53	61.21	83.2%	0.0%	0.0%	16.8%
Lesotho	1.54	1.54	100.0%	0.0%	0.0%	0.0%
Liberia	5.30	5.30	100.0%	0.0%	0.0%	0.0%
Libya	113.66	83.28	73.3%	0.0%	7.2%	19.5%
North Macedonia	1.80	1.80	100.0%	0.0%	0.0%	0.0%
Madagascar	17.10	17.10	100.0%	0.0%	0.0%	0.0%
Malawi	10.80	10.80	100.0%	0.0%	0.0%	0.0%
Malaysia	515.76	258.09	50.0%	17.5%	30.5%	19.5%
Maldives	3.70	3.70	100.0%	0.0%	0.0%	0.0%
Mali	15.00	5.20	34.7%	32.8%	45.8%	19.5%
Marshall Islands - PIC	0.22	0.22	100.0%	0.0%	0.0%	0.0%
Mauritania	6.60	4.46	67.6%	0.0%	12.9%	19.5%
Mauritius	8.00	8.00	100.0%	0.0%	0.0%	0.0%
Mexico	1,208.00	945.10	78.2%	0.0%	2.3%	19.5%
Micronesia - PIC	0.14	0.14	100.0%	0.0%	0.0%	0.0%
Moldova, Rep	1.00	1.00	100.0%	0.0%	0.0%	0.0%
Mongolia	1.40	1.40	100.0%	0.0%	0.0%	0.0%
Montenegro	0.80	0.80	100.0%	0.0%	0.0%	0.0%
Morocco	59.89	43.20	72.1%	0.0%	8.4%	19.5%
Mozambique	8.69	3.04	35.0%	32.5%	45.5%	19.5%

	Starting Point (ODPt)	Cumulative Reduction (ODPt)	Cumulative Reduction %	Additional % needed for 67.5% reduction (Stage III)	Additional % needed for 80.5% reduction (2026)	Additional % needed for 100% reduction (Stage IV)
Myanmar	4.30	1.50	34.9%	32.6%	45.6%	19.5%
Namibia	8.40	8.40	100.0%	0.0%	0.0%	0.0%
Nauru - PIC	0.01	0.01	100.0%	0.0%	0.0%	0.0%
Nepal	1.27	1.27	100.0%	0.0%	0.0%	0.0%
Nicaragua	6.74	6.74	100.0%	0.0%	0.0%	0.0%
Niger	15.98	15.98	100.0%	0.0%	0.0%	0.0%
Nigeria	344.90	246.07	71.3%	0.0%	9.2%	19.5%
Niue - PIC	0.01	0.01	100.0%	0.0%	0.0%	0.0%
Oman	31.47	31.47	100.0%	0.0%	0.0%	0.0%
Pakistan	248.11	246.44	99.3%	0.0%	0.0%	0.7%*
Palau - PIC	0.16	0.16	100.0%	0.0%	0.0%	0.0%
Panama	24.78	24.78	100.0%	0.0%	0.0%	0.0%
Papua New Guinea	3.40	3.40	100.0%	0.0%	0.0%	0.0%
Paraguay	19.31	19.31	100.0%	0.0%	0.0%	0.0%
Peru	26.88	18.14	67.5%	0.0%	13.0%	19.5%
Philippines	162.87	69.59	42.7%	24.8%	37.8%	19.5%
Qatar	86.08	72.08	83.7%	0.0%	0.0%	16.3%
Rwanda	4.10	4.10	100.0%	0.0%	0.0%	0.0%
Saint Kitts and Nevis	0.50	0.18	36.0%	31.5%	44.5%	19.5%
Saint Lucia	1.09	1.09	100.0%	0.0%	0.0%	0.0%
Saint Vincent and the Grenadines	0.28	0.28	100.0%	0.0%	0.0%	0.0%
Samoa - PIC	0.25	0.25	100.0%	0.0%	0.0%	0.0%
Sao Tome and Principe	0.15	0.05	33.3%	34.2%	47.2%	19.5%
Saudi Arabia	1,468.69	703.29	47.9%	19.6%	32.6%	19.5%
Senegal	20.96	14.15	67.5%	0.0%	13.0%	19.5%
Serbia	8.37	5.64	67.4%	0.1%	13.1%	19.5%
Seychelles	1.40	1.40	100.0%	0.0%	0.0%	0.0%
Sierra Leone	1.67	1.67	100.0%	0.0%	0.0%	0.0%
Solomon Islands - PIC	1.93	1.93	100.0%	0.0%	0.0%	0.0%
Somalia	16.42	5.75	35.0%	32.5%	45.5%	19.5%
South Africa	369.64	369.64	100.0%	0.0%	0.0%	0.0%
South Sudan	1.64	0.57	34.8%	32.7%	45.7%	19.5%
Sri Lanka	13.90	13.90	100.0%	0.0%	0.0%	0.0%
Sudan	50.60	50.60	100.0%	0.0%	0.0%	0.0%
Suriname	1.98	0.69	34.8%	32.7%	45.7%	19.5%
Eswatini	1.70	1.70	100.0%	0.0%	0.0%	0.0%
Syrian Arab Republic	135.03	108.07	80.0%	0.0%	0.5%	19.5%
United Republic of Tanzania	1.70	1.70	100.0%	0.0%	0.0%	0.0%
Thailand	927.52	517.52	55.8%	11.7%	24.7%	19.5%
Timor Leste	0.50	0.39	78.0%	0.0%	2.5%	19.5%
Togo	20.00	20.00	100.0%	0.0%	0.0%	0.0%
Tonga - PIC	0.14	0.14	100.0%	0.0%	0.0%	0.0%
Trinidad and Tobago	46.00	46.00	100.0%	0.0%	0.0%	0.0%

	Starting Point (ODPt)	Cumulative Reduction (ODPt)	Cumulative Reduction %	Additional % needed for 67.5% reduction (Stage III)	Additional % needed for 80.5% reduction (2026)	Additional % needed for 100% reduction (Stage IV)
Tunisia	40.66	27.47	67.6%	0.0%	12.9%	19.5%
Turkiye	609.80	613.40	100.6%	0.0%	0.0%	0.0%
Turkmenistan	6.80	4.59	67.5%	0.0%	13.0%	19.5%
Tuvalu - PIC	0.09	0.09	100.0%	0.0%	0.0%	0.0%
Uganda	0.20	0.20	100.0%	0.0%	0.0%	0.0%
Uruguay	23.33	23.33	100.0%	0.0%	0.0%	0.0%
Vanuatu - PIC	0.28	0.28	100.0%	0.0%	0.0%	0.0%
Venezuela	206.94	206.94	100.0%	0.0%	0.0%	0.0%
Vietnam	221.21	115.84	52.4%	15.1%	28.1%	19.5%
Yemen	158.20	63.28	40.0%	27.5%	40.5%	19.5%
Zambia	5.00	5.00	100.0%	0.0%	0.0%	0.0%
Zimbabwe	17.80	17.80	100.0%	0.0%	0.0%	0.0%

* Additional reductions needed to reach 100% effectively zero and no further funding is estimated

** HPMP was cancelled for this party; RTF estimated funding methodology remained unchanged for these countries since RTF was unable to estimate remaining balances to be returned and status of reduction as of cancellation of HPMP.

**ANNEX 4: LIST OF KIGALI AMENDMENT RATIFICATION AND LETTERS OF INTENT
BY COUNTRY (AS OF 3 APRIL 2023)**

**Total Ratified: 104
Total Letters of Intent to Ratify: 142
Total A5 Countries: 144**

Ratified	Letters of Intent	Country
	1	Afghanistan
1	1	Albania
	1	Algeria
1	1	Angola
	1	Antigua and Barbuda
1	1	Argentina
1	1	Armenia
	1	Bahamas
	1	Bahrain (Group 2)
1	1	Bangladesh
1	1	Barbados
	1	Belize
1	1	Benin
1	1	Bhutan
1	1	Bolivia (Plurinational State of)
1	1	Bosnia and Herzegovina
1	1	Botswana
1		Brazil
	1	Brunei Darussalam
1	1	Burkina Faso
1		Burundi
1	1	Cabo Verde
1	1	Cambodia
1	1	Cameroon
	1	Central African Republic
1	1	Chad
1	1	Chile
1	1	China
1	1	Colombia
1	1	Comoros
1	1	Congo
1	1	Cook Islands
1	1	Costa Rica
1	1	Côte d'Ivoire
1	1	Cuba
1	1	Democratic People's Republic of Korea
	1	Democratic Republic of the Congo
	1	Djibouti
	1	Dominica
1	1	Dominican Republic
1	1	Ecuador
	1	Egypt
1	1	El Salvador
1	1	Eswatini
	1	Equatorial Guinea
1	1	Eritrea
1	1	Ethiopia
1	1	Fiji
1	1	Gabon
1	1	Gambia

Ratified	Letters of Intent	Country
	1	Georgia
1	1	Ghana
1	1	Grenada
	1	Guatemala
1	1	Guinea
1	1	Guinea Bissau
	1	Guyana
	1	Haiti
1	1	Honduras
1	1	India (Group 2)
1	1	Indonesia
	1	Iran (Islamic Republic of) (Group 2)
	1	Iraq (Group 2)
	1	Jamaica
1	1	Jordan
	1	Kenya
1	1	Kiribati
	1	Kuwait (Group 2)
1	1	Kyrgyzstan
1	1	Lao People's Democratic Republic
1	1	Lebanon
1	1	Lesotho
1	1	Liberia
	1	Libya
	1	Madagascar
1	1	Malawi
1	1	Malaysia
1	1	Maldives
1	1	Mali
1	1	Marshall Islands
	1	Mauritania
1	1	Mauritius
1	1	Mexico
1	1	Micronesia (Federated States of)
1	1	Mongolia
1	1	Montenegro
1	1	Morocco
1	1	Mozambique
	1	Myanmar
1	1	Namibia
1	1	Nauru
	1	Nepal
1	1	Nicaragua
1	1	Niger
1	1	Nigeria
1	1	Niue
1	1	North Macedonia
	1	Oman (Group 2)
	1	Pakistan (Group 2)
1	1	Palau
1	1	Panama
	1	Papua New Guinea
1	1	Paraguay
1	1	Peru
1	1	Philippines
	1	Qatar (Group 2)
	1	Republic of Moldova

Ratified	Letters of Intent	Country
1	1	Rwanda
	1	Saint Kitts and Nevis
1	1	Saint Lucia
1	1	Saint Vincent and the Grenadines
1	1	Samoa
1	1	Sao Tome and Principe
	1	Saudi Arabia (Group 2)
1	1	Senegal
1	1	Serbia
1	1	Seychelles
1	1	Sierra Leone
1	1	Solomon Islands
1	1	Somalia
1	1	South Africa
	1	South Sudan
1	1	Sri Lanka
	1	Sudan
	1	Suriname
1	1	Syrian Arab Republic
	1	Thailand
	1	Timor-Leste
1	1	Togo
1	1	Tonga
1	1	Trinidad and Tobago
1	1	Tunisia
1	1	Turkiye
1	1	Turkmenistan
1	1	Tuvalu
1	1	Uganda
1	1	United Republic of Tanzania
1	1	Uruguay
1	1	Vanuatu
1	1	Venezuela (Bolivarian Republic of)
1	1	Viet Nam
		Yemen
1	1	Zambia
1	1	Zimbabwe

ANNEX 5: GENDER MAINSTREAMING CHECKLIST FOR PROJECTS¹³²

PROJECT COMPONENT	QUESTION	ANSWER		
		Yes	No	Partially
Project preparation	Does the project concept include consideration of (a) the different situations of women and men, and (b) the impacts the project will have on these different societal groups?			
	Does the project explicitly address one or more of the identified gender issues/ gender-differentiated project impacts? Please describe how, and if not provide an explanation.			
Data and statistics	Where applicable, does the project require the collection of sex-disaggregated data and qualitative information to analyze and track gender issues?			
Results framework	Are outcomes, outputs and activities designed to meet the different needs and priorities of women and men?			
	Does the results framework include gender responsive indicators, targets and baseline data to monitor gender equality results?			
Budget	Has the budget taken into account allocations for the proposed gender activities (e.g., capacity building activities for female technicians)?			
Stakeholders and participation	Are women/gender-focused Ministries, groups, associations or gender units in partner organizations consulted/included in the project?			
	Does the project ensure that both women and men can provide inputs, access and participate in project activities (e.g., through outreach / invitations of female technicians to participate in capacity building activities)?			
Gender capacities	Has a gender expert been recruited or does the project staff have gender knowledge and have gender related tasks incorporated in their job descriptions?			
	Will project staff and stakeholders be sensitized to gender (e.g., through completion of UN Women online training courses)?			

¹³² UNEP/OzL.Pro/ExCom/84/73 9

PROJECT COMPONENT	QUESTION	ANSWER		
		Yes	No	Partially
Implementation arrangement	Is there gender-balanced recruitment of project personnel and gender balanced representation in project boards and steering committees?			
Monitoring and evaluation	Does the monitoring and evaluation of the project require specific reporting on gender issues and progress made to address these (quantitatively and qualitatively)?			