

EIA Briefing to the 96th Meeting of the Executive Committee of the Multilateral Fund

26-30 May 2025

Introduction

As the Executive Committee (ExCom) convenes for its 96th Meeting, the Montreal Protocol stands at a pivotal moment in its efforts to address climate change and ozone protection. With the challenging dual phase-out of HCFCs and phase-down of HFCs now well under way, and the impacts of the accelerating climate crisis being felt more keenly every year, the need for ambition, transparency and innovation has never been more urgent. In this briefing, EIA highlights key areas for ExCom's consideration, and outlines recommendations on several agenda items including the proposed HCFC Phase-out Management Plans (HPMPs) and Kigali Implementation Plans (KIPs). A summary of EIA's recommendations is provided below, ahead of the main briefing text.

General recommendations:

- **Maximise climate, ozone and other environmental benefits** by prioritising natural refrigerants, urgently pursuing a phase-out of HFC-23 use and aligning phase-down efforts with the Paris Agreement's 1.5°C goal
- **Ensure transparency and ambition** in all ExCom-supported plans, including atmospheric monitoring, data reporting and the use of revolving funds
- **Avoid support for HFC-based technologies** under all funding modalities and instead promote scalable natural refrigerant alternatives

Recommendations for HPMPs and KIPs:

- **Prioritise early and complete phase-out of HCFCs** while avoiding transitions to high- or mid-GWP HFCs, and ensure synergy with future KIP activities
- **Strengthen regulatory frameworks** through bans on high-GWP substances and equipment, robust licensing systems and adoption of standards for natural refrigerants
- **Invest in training and capacity-building**, ensuring technician certification, support for enforcement agencies and alignment with national regulatory systems
- **Promote demonstration and pilot projects** using F-gas-free and not-in-kind technologies
- **Improve data accuracy and standardise projections** to avoid inflated business-as-usual forecasts and ensure KIP targets reflect real consumption needs.

Agenda item 5: Country Programme Data

HCFC Data

As of the closure of its 95th meeting, ExCom had approved Stage I HCFC Phase-out Management Plans (HPMPs) for 145 countries, Stage II Plans for 120 countries and Stage III Plans for 20 countries. Implementation of these HPMPs will result in the phase-out of approximately 84% of the starting point for aggregate reduction of HCFC consumption and 96% of the consumption of HCFC-141b contained in imported pre-blended polyols.

The sectors with the largest remaining HCFC consumption in 2023 were servicing (57%), refrigeration and air conditioning manufacturing (25%) and foams (16.2%). The fact that servicing

still accounts for the largest share of HCFC use is a critical reminder of the urgency of transitioning away from HFC-based technologies under countries' KIPs as early as possible. Pathways that transition from HCFCs to HFC blends in the RAC sector will drive higher levels of HFC consumption for many years to come.

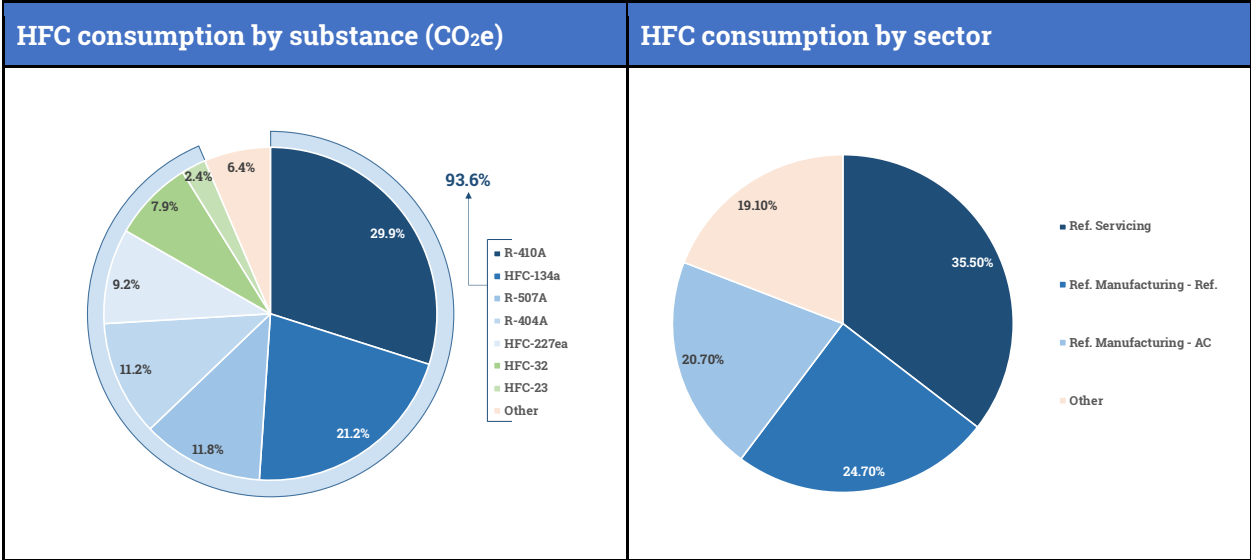
Of the 5,193 ODP tonnes of HCFC consumption remaining, 90% is HCFC-22, a high-GWP ozone depleting substance (ODS), strongly associated with by-product emissions of HFC-23.¹ Although the capture and destruction of by-product HFC-23 emissions is required under the Kigali Amendment, atmospheric observations indicate a significant gap between observed and reported emissions, suggesting, according to one recent scientific study, "a continued and substantial under-reporting of HFC-23 emissions from HCFC-22 production."² EIA reminds all countries still producing HCFC-22 (whether for consumption or feedstock use) of their obligation to eliminate HFC-23 by-product emissions, and urges these countries to ensure use of best practices for abatement.

HFC Data

Reported data show a steady increase in HFC production between 2019-2023, with India's production standing out for its rapid 50% production growth between 2021-2023. To limit the extent of this increase and maximise the climate benefit from the HFC phase-down, EIA reminds all ExCom members that, as the final stages of the remaining HPMPs are drafted, it is crucial for countries to pursue transition pathways which do not rely on the consumption of high- or mid-GWP HFCs or HFC blends.

Total consumption of HFCs across the 120 countries that had submitted country programme (CP) data exceeded 1,200 million CO₂-equivalent tonnes (tCO₂e) in 2023. A breakdown of consumption, by substance and sector, is provided in Figure 1 below.

Figure 1: Breakdown of HFC consumption based on country programme data (2023)



EIA highlights the continued use of HFC-23 as a major concern. In 2023, across just 24 countries, the use of almost 30 million CO₂e tonnes of the substance was reported in CP data (28,577,682 tCO₂e). Reported HFC-23 consumption and emissions continue to be significantly misaligned with

top-down atmospheric findings, which show significant ongoing, unexplained emissions of the substance.

EIA strongly urges all Parties to prioritise the phase-out of HFC-23 consumption. In the meantime, it is crucial that Parties report their HFC-23 consumption and by-product emissions as accurately as possible. Scientific studies have demonstrated that, even in modern facilities operating TEAP recommended destruction technologies, by-product emissions of HFC-23 are not zero.³ With this in mind, we wish to highlight the revised format of CP data reports to all members, noting that these now require explicit reporting of both intentional (including for feedstock uses) and unintentional HFC-23 generation, in line with MOP decision XXXV/7 paragraph (b)(iii).

Refrigerant prices

Table 11 of the CP data report details the average price of HCFCs, high-GWP HFCs and alternatives. Although the range is large, EIA notes that the average price of hydrocarbon (HC) refrigerants is relatively high compared to high-GWP HFCs, but also that it is unclear how this average is calculated. For completeness, EIA notes that it would be helpful for the Secretariat to share additional details on the data used for these calculations, and to include prices of the lower-GWP HFC blends that are being used to substitute HCFCs and high-GWP HFCs.

Agenda item 9(d): Projects recommended for individual consideration

Kigali Implementation Plans: Proposed consumption and data concerns

A total of nine Stage I KIPs have been submitted for consideration at ExCom96. EIA welcomes these submissions and is pleased to note that six¹ contain commitments to reducing HFC consumption ahead of Montreal Protocol targets by 2030. Nonetheless, EIA notes that, according to the Secretariat:

Few KIPs have included a final target that is below the country's most recently reported HFC consumption. If climate benefits were estimated based on the country's most recent consumption, almost all KIP stages approved so far would have an estimated climate disbenefit, which would not reflect the emissions that were avoided from the implementation of the KIP.⁴

While EIA recognises that some avoided emissions should be taken into account, EIA urges all ExCom members to accelerate implementation of the Kigali Amendment and maximise its climate benefits wherever possible, in order to achieve real reductions this decade which are needed to align with the Paris Agreement's goal of limiting global warming to 1.5°C.⁵

Proposed consumption under Stage I KIPs

Only three of the KIPs submitted to this meeting include 2029 targets that will deliver reductions relative to actual HFC consumption during the baseline period (2020–2022). EIA commends Bosnia and Herzegovina, Georgia and Moldova for their proposed phase-down schedules, which commit to reductions of 3%, 10% and 6% from their respective baseline average HFC consumption by 2029.

EIA also appreciates the commitments made by Egypt, Indonesia, Lebanon and Morocco to achieve additional reductions in advance of the second phase-down step. The phase-down schedule

¹ Egypt, Indonesia, Lebanon, Guinea and Georgia propose 2029 consumption limits that are between 15-22% below the countries' HFC baselines (see Table 1). Morocco proposes a consumption limit in 2030 that is 30% below the country's HFC baseline (see UNEP/OzL.Pro/ExCom/96/48).

proposed by Lebanon is the most long-term of any Stage I KIP to date, outlining annual consumption limits until 2035, at which point the country aims to limit HFC consumption to 38% below its baseline level (3% below its average HFC consumption during the baseline years).

Nonetheless, despite the plans submitted, HFC consumption will continue to grow during this decade. Indeed, by 2029, permissible HFC consumption across the nine countries that have submitted KIPs to this meeting will be 20% greater than the level of average consumption they reported during the baseline years.ⁱⁱ EIA recognises that a rise in HFC consumption in some sectors may be unavoidable during the concluding phase of HCFC phase-out. Nevertheless, in many sectors—including domestic and commercial RACHP, where phasing out HFCs now avoids locking-in future servicing demand—viable alternatives are increasingly available. EIA therefore urges all A5 countries to align the final stages of their HCFC phase-outs with a firm resolve to avoid HFC use wherever possible.

Table 1: Comparison between HFC baseline, average consumption 2020-2022 and proposed HFC consumption in 2029 (CO₂-eq tonnes)

Country	Kigali baseline	Average HFC consumption 2020-2022*	Reported consumption 2023*	Proposed HFC consumption in 2029	% difference between proposed HFC consumption in 2029 and...	
					... Kigali baseline (%)	... average consumption 2020-2022 (%)
Morocco[†]	2,134,520	1,250,957	6,270,836	1,921,068	-10%	54%
Lebanon	2,556,533	1,626,723	1,518,706	2,173,053	-15%	34%
Egypt	19,290,350	13,218,970	14,890,881	16,387,179	-15%	24%
Indonesia	23,370,721	17,072,730	1,535,575	19,865,113	-15%	16%
Sri Lanka	1,170,234	905,369	1,156,405	1,053,211	-10%	16%
Guinea	1,826,976	1,343,328	1,704,662	1,510,050	-17%	12%
Bosnia & Herzegovina	1,066,653	993,054	1,854,872	959,988	-10%	-3%
Republic of Moldova	521,391	501,390	452,288	469,252	-10%	-6%
Georgia	813,152	700,520	846,456	630,468	-22%	-10%

Notes:

 Countries highlighted blue have proposed plans that reduce or limit consumption ahead of the minimum required for Montreal Protocol compliance.

* "Average HFC consumption 2020-2022" and "Reported consumption 2023" are based on Article 7 reported data at time of KIP submission, i.e., they do not reflect requested revisions.

[†] Although Morocco's proposed consumption limit for 2029 is only 10% below the country's baseline, its proposed consumption limit for 2030 represents a 30% reduction (see UNEP/OzL.Pro/ExCom/96/48).

ⁱⁱ Combined average HFC consumption (2020-2022) across the nine countries that submitted KIPs to this meeting was 37.6 MtCO₂e. Based on the proposed consumption limits for 2029, combined HFC consumption across these nine countries in 2029 could be as high as 45 MtCO₂e.

Data fluctuations and BAU forecasts

Fluctuations in reported consumption continue to frustrate a clear understanding of many countries' actual HFC consumption needs. Three of the countries that submitted KIPs to this meeting have requested revisions to their 2020-2022 consumption data, all of which would result in increases to their baselines if approved by the Implementation Committee.ⁱⁱⁱ Meanwhile, several other proponent countries reported significantly varying and/or anomalously large increases in annual HFC consumption during the baseline period (most significantly Indonesia, which reported a 213% increase in consumption between 2021-2022).

While it is acknowledged that the Covid-19 pandemic disrupted trade and supply chains during the baseline years, other factors—such as absent licensing systems, weak monitoring practices, incomplete or inaccurate surveys and acknowledged stockpiling—have also contributed to the observed fluctuations within A7 reported data, to varying degrees across countries. While EIA appreciates that the ExCom has developed the “Cambodia text” in response to this challenge—a clause which can be added to approved KIPs to ensure that HFC consumption is reviewed upon submission of the second tranche request—we remain concerned that data uncertainty may contribute to some “business-as-usual” (BAU) scenarios over-estimating projected HFC growth, resulting in less ambitious phase-down schedules being proposed.⁶

In the KIPs submitted to the present meeting, BAU projections for annual growth in HFC consumption range from as low as 2% annually to as high as 9%. In some cases, these projections are based on international statistics (e.g., World Bank economic growth forecasts^{iv}), whereas in others they are based on “industry expectations”^v or remain otherwise unexplained.^{vi} Indeed, within one KIP submitted to this meeting, over-estimation has already been demonstrated, as Indonesia's CP data shows that the country's HFC consumption in 2024 was more than 2 million CO₂e tonnes lower than the country's BAU scenario had forecast. EIA recognises that BAU scenarios can be a useful tool when considering appropriate phase-down targets. However, considering the ongoing challenges around baseline data, and the subjectivity with which projected consumption is being calculated at present, we recommend that the ExCom establish a consistent approach to projecting HFC consumption growth, which can be applied fairly across all A5 countries.

HPMPs and KIPs: Review of proposed activities

Alignment between HPMPs and KIPs is a critical consideration. As such, this section reviews the key activities proposed across the four first tranche HPMP requests^{vii} and nine Stage I KIP requests submitted to this meeting, drawing out shared priorities, synergies and areas of divergence. Many countries are simultaneously undertaking final HCFC phase-out and initial HFC phase-down, making it imperative that the two processes reinforce each other. For countries such as Antigua and Barbuda, Haiti and Iran—that have not yet ratified the Kigali Amendment—this alignment cannot yet be fully achieved. EIA urges these countries to ratify the amendment promptly to enable coordinated implementation of Stage I KIPs alongside HPMP Stage II or III activities.

ⁱⁱⁱ These three countries are Bosnia & Herzegovina, Guinea and Morocco. In the case of Morocco, the proposed revision would more than double the country's baseline.

^{iv} E.g., in the KIP for Bosnia & Herzegovina.

^v E.g., in the KIP for Lebanon.

^{vi} E.g., in the KIP for Morocco.

^{vii} Submitted by Antigua and Barbuda (Stage II), Armenia (Stage III), Haiti (Stage II) and the Islamic Republic of Iran (Stage III).

Training, regulatory reform and servicing interventions under HPMPs should lay the groundwork for a swift and sustainable transition under KIPs. Demonstration projects piloting natural refrigerants or NIK technologies should be linked to long-term conversion strategies. Institutional frameworks established under HPMPs—particularly those related to licensing, customs enforcement and technician certification—must be leveraged and expanded under KIPs to ensure continuity and effectiveness.

Strengthening regulatory frameworks

Strengthening legal and regulatory frameworks is a central component across all HPMP and KIP submissions. Under the four first-tranche HPMPs, activities include the revision and enhancement of licensing and quota systems to ensure effective enforcement of HCFC phase-out commitments. Antigua and Barbuda and Iran propose updating standards to facilitate the safe use of flammable refrigerants, such as HCs, including new codes for transport and handling.

In parallel, the nine Stage I KIPs also prioritise regulatory strengthening. All countries propose updates to HFC licensing and quota systems, and several outline bans on high-GWP equipment. In particular, Egypt and Indonesia have proposed notable measures. Egypt commits to banning the manufacture and import of R-410A-based residential air conditioners and HFC-based domestic and standalone commercial refrigeration equipment by 2029. Similarly, Indonesia will prohibit imports and production of HFC-based domestic refrigerators and standalone commercial refrigeration equipment by the same date.

While these proposed bans are welcome, some regulatory measures under KIPs remain underdeveloped. For example, Indonesia's GWP threshold of 700 for residential and light air-conditioning is relatively weak and could be strengthened or brought forward as a step towards implementing a lower threshold. Moreover, the continued manufacture of HFC-23-based ultra-low-temperature freezers is problematic and should be fully phased out. Across both HPMPs and KIPs, EIA encourages countries to introduce clear timelines for the implementation of bans and associated regulations. This will create market certainty, limit the risk of equipment dumping, and support sustainable transitions to low-GWP alternatives.

Training and capacity building

Training and capacity building form another core area of activity across HPMPs and KIPs. In the submitted HPMPs, technical training for servicing technicians focuses on the safe handling of flammable and toxic refrigerants, leak prevention and energy efficiency practices. Armenia, for example, proposes the development of infrastructure to support the reuse of cylinders, paired with technician training on recovery and reuse practices. Haiti includes training to support the creation of recovery and recycling centres, contributing to a broader refrigerant lifecycle management strategy.

KIP proposals similarly incorporate technician training, with an emphasis on natural refrigerants and refrigerant recovery. Morocco's KIP stands out for its well-integrated approach proposing training, curriculum development, the establishment of a refrigerant recovery, recycling and reclamation (RRR) facility, and a certification system to be implemented by 2026. This holistic approach is commendable. However, some KIPs fall short in providing sufficient detail or institutional support for their training plans. Bosnia and Herzegovina's plan, for example, lacks clarity around the development of the regulatory framework needed to implement technician

certification. To be effective, training must be accompanied by supportive policy, adequate equipment provision and a long-term commitment to institutional development.

In both HPMPs and KIPs, customs training also features prominently. Several plans propose workshops and the provision of inspection equipment to enhance border control and prevent illegal trade. EIA supports these efforts and highlights the importance of coordination between licensing systems and customs authorities to ensure robust enforcement.

Demonstration and pilot projects

Demonstration and pilot projects are included in both HPMPs and KIPs and play a key role in accelerating the uptake of low-GWP and not-in-kind (NIK) technologies. Iran's HPMP includes two innovative pilot projects. The first will involve ammonia-based refrigeration demonstrations across 15 manufacturers and 10 service providers. The second will pilot two-stage evaporative coolers suited to dry climates, which offer energy savings of up to 75% compared to conventional HCFC-based systems and use no HFCs or HCFCs. Both projects aim to support long-term regulatory reform and industry transformation and are highly replicable across A5 countries.

Similarly, Egypt's KIP presents a strong portfolio of demonstration projects, including residential air-conditioning using R-290 heat pumps, deep-sea cooling for commercial buildings and direct-indirect evaporative cooling systems. Egypt also proposes to transition the metered dose inhaler (MDI) sector to low-GWP propellants, such as R-290. These activities signal a commitment to sectoral transformation beyond business-as-usual transitions. Sri Lanka, meanwhile, proposes a demonstration project for a high-altitude test chamber using non-HFC technologies. Given the extremely high GWP of HFC-23, EIA strongly supports this initiative and urges the adoption of HC-based alternatives over HFOs, which are associated with PFAS-related concerns.

Demonstration projects under both HPMPs and KIPs provide important opportunities to trial innovative approaches and promote awareness and acceptance of alternatives. They should be carefully designed to ensure scalability, to avoid fluorinated refrigerants where possible and to produce publicly available data to inform replication.

Manufacturing conversion projects (KIPs only)

Addressing HFC use in manufacturing sectors during Stage I KIPs is critical to securing long-term climate benefits, and to preventing further market entrenchment of high-GWP technologies. EIA therefore welcomes the inclusion of manufacturing conversion projects by all five countries with manufacturing sectors that have submitted KIPs to this meeting.

EIA commends Egypt's Stage I KIP for its proposed sector-wide conversions in domestic and commercial refrigeration, and for being the first KIP to seek a total phase-out of HFCs from its manufacturing of PU and XPS foams. Notably, these conversions will largely move to HCs and CO₂, with bans planned on the import and use of key HFCs to ensure sustainability. However, EIA encourages Egypt to reconsider its proposal to convert some commercial refrigeration lines to an HFO blend, noting again the associated issues of PFAS pollution and fluorochemical production emissions, as well as the cost and accessibility issues that come with relying on patented fluorochemicals.

Like Egypt, Lebanon also proposes a broad conversion strategy. While the residential AC sector will shift from R-410A to HFC-32, the commercial refrigeration sector is set for conversion to R-290

across 47 micro and small enterprises. These conversions are backed by bans on the manufacture and import of domestic refrigerators using HFC-134a and residential ACs using R-410A from 31 December 2027, and on small self-contained commercial refrigeration equipment using HFCs from 31 December 2032.

Indonesia's Stage I KIP includes manufacturing conversions in two key sectors: domestic refrigeration and train (rail) MAC. In domestic refrigeration, six enterprises will convert from HFC-134a to R-600a, whereas for MAC, a pilot project will support the conversion of one manufacturer from R-407C to R-454C, an HFO blend. While the refrigeration conversion to HCs is commendable, the choice of R-454C in MAC is less ideal. Moreover, the long timeline for a sector-wide phaseout—stretching to 2035—raises concerns about the urgency and ambition of the plan. Stronger commitments will therefore be needed in future stages to align with best practices and climate goals.

Agenda item 10(b): Update on the operationalisation of the energy efficiency revolving fund for end-users

At its 95th meeting, the ExCom adopted Decision 95/87(f)-(i), establishing a funding window of US \$40 million for two energy-efficiency end-user projects using a revolving fund mechanism (EERF) and providing up to US \$100,000 for the preparation of up to five EERF proposals (for submission at the present meeting). In response, the World Bank has submitted four US \$100,000 requests for a total of US \$400,000 to prepare EERF project proposals in four countries, namely Grenada, Mexico, Thailand and Türkiye.⁷ UNDP has also submitted a US \$200,000 request to prepare a multi-country EERF project proposal in Colombia, Ghana and Jordan.⁸ The sectors proposed for the revolving fund are outlined in Annex 1. EIA makes the following observations:

First, the funding window should not support the transition to HFC-based technologies. In addition to their direct emissions, HFCs (and HFOs) result in significant industrial emissions during production and have harmful impacts on human health and the environment, with many being themselves, or degrading into, known PFAS.⁹ Natural refrigerants are widely available in most applications and across all geographic regions, with the energy efficiency of natural-refrigerant-based equipment proven in numerous settings.¹⁰ The EERF funding window would be better used to transition to energy-efficient technologies relying on future-proof refrigerants that are not being phased down under the Kigali Amendment or other potential legislation.

Second, EIA considers the UNDP's request better value for money, noting that it covers multiple countries and proposes to leverage existing initiatives. Regarding the World Bank's requests, given the implementing agency's extensive experience with energy efficiency and revolving funds, EIA suggests exploring whether the requested funds could be scaled back to US \$75,000 each. This would allow more EERF project proposals to be considered without the need to eliminate the candidacy of any given country at this stage. In both cases, EIA recommends greater specificity regarding sectors and candidate technologies to strengthen the viability of the proposals and aid ExCom's assessment.

Third, and relatedly, ExCom would benefit from providing clarifying guidance to the World Bank and UNDP on the criteria that will be used to evaluate EERF project proposals. The criteria should clearly indicate that HFC-based technologies are ineligible for several reasons, notably, because the transition to HCs and natural refrigerants in A5 Parties reduces their risk of non-compliance with the Kigali Amendment, while alleviating the pressure of the HFC phase-down on their overall

economy. Avoiding HFCs also eliminates the burden of end-of-life recovery and destruction and avoids known impacts on human health and the environment.

Agenda item 13: Options for a funding modality to support pilot projects to enhance regional atmospheric monitoring

It has been seven years since the identification, in 2018, of the unexpected spike in CFC-11 emissions that began in 2012.¹¹ Establishing a funding window for pilot projects to enhance atmospheric monitoring is a welcome step, following multi-year discussions about the gaps in atmospheric monitoring. Enhanced atmospheric monitoring is imperative to ensure the sustained phase-out of ODS, and to resolve the ongoing uncertainty surrounding higher-than-expected atmospheric concentrations of HFC-23 and other controlled substances.

The Secretariat's paper recommends a funding window with a budget of US \$10 million. The scope would establish three stationary monitoring stations, and flask sampling and laboratory analysis in one region. This includes initial preparatory flask sampling to validate site selection, five years of operational costs, training and technical assistance, and international calibration standards and conference for sharing lessons learned. The estimated costs assume two of the three stations would be built at sites with existing infrastructure.

The proposed budget and scope described in the Secretariat's paper is a good start, but EIA stresses that they are likely insufficient to resolve existing regional monitoring gaps. Furthermore, the current proposal does not provide scope for piloting new, innovative and potentially more cost-effective approaches to atmospheric monitoring. The available technologies and tools to monitor emissions and atmospheric concentrations are expanding rapidly, and it is imperative that the Montreal Protocol community be well-informed about other potential approaches offering better cost-effectiveness, or which have the potential to yield more targeted and timely data on sources of unexpected emissions.

Therefore, while EIA supports expanded coverage through additional monitoring stations, and largely agrees with the Secretariat's recommended scope and activities, we also recommend expanding the budget and scope to further include:

- flexibility for considering additional pilot projects on a case-by-case basis, including: proposals for projects that would monitor and analyse emissions based on other existing sources of data (such as satellites), and; proposals for projects using other innovative technologies to monitor controlled substances;
- the commissioning of a study on other available data, technologies and approaches to cost-effectively enhancing bottom-up regional atmospheric monitoring, beyond flask sampling and fixed high-frequency stations.

Finally, EIA emphasises the importance of making all data from projects supported by the MLF openly available and transparent.

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Annex A: Proposed Sectors for EE Revolving Fund

Country	Proposed Sector
Grenada	Sea-water air-conditioning (SWAC) systems at four identified locations, and additional locations to be identified during project preparation
Mexico	Commercial, and public sector building for both refrigeration and large- and medium-sized AC installations
Thailand	Consumers and end users in the residential and commercial sectors, including commercial refrigerators and freezers, household air conditioners, and large-scale AC systems used in industries and commercial buildings
Türkiye	Heating ventilation and air-conditioning (HVAC) systems, including ACs and heat pumps, in public buildings as part of comprehensive energy efficiency interventions
Colombia	RAC applications in hotels and resorts, small- and medium-sized enterprises in cooling services, tourism supply chains, technicians and service providers, and supermarkets and retail enterprises
Ghana	
Jordan	