environmental investigation agency

CLIMATE

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BRIEFING

EIA BRIEFING TO THE 98th MEETING OF THE EXECUTIVE COMMITTEE OF THE MULTILATERAL FUND

INTRODUCTION

This year the Montreal Protocol community marks a decade since the adoption of the Kigali Amendment. The 10-year Kigali anniversary is a significant milestone, but comes at a time of accelerating climate breakdown, ongoing threats to ozone layer recovery and a wider weakening in multilateral cooperation.

As the Executive Committee (ExCom) convenes for its 98th Meeting, EIA calls on members to recommit to the goals of the Montreal Protocol and its Kigali Amendment and to step up their ambition to meet the urgent challenge of climate and ozone layer protection.

With the planet experiencing record-breaking temperatures year-on-year and the window to limit global warming to even 2°C rapidly closing, the need for serious, committed action to phase down hydrofluorocarbons (HFCs) could not be more pressing.

The global demand for cooling is rising and, without decisive action, high-GWP HFC-based technologies risk becoming entrenched for decades. The Kigali Amendment was designed to avoid this lock-in, yet its full potential remains untapped, with 82% of the Kigali Implementation Plans so far allowing HFC consumption to continue growing until at least 2029, despite the baseline freeze in 2024.[i]

ExCom must treat this anniversary as a catalyst for transformation, ensuring that the resources of the Multilateral Fund (MLF) are directed towards the most impactful, strategic and sustainable solutions.

With the impacts of climate change now driving scarcity, conflict and instability around the world, business as usual is no longer acceptable.

AGENDA ITEM 5: COUNTRY PROGRAMME DATA

EIA notes with concern that only 100 of the 144 countries required to submit country programme (CP) data have done so for 2025, meaning that more than 30% are yet to comply with Decision 74/9(b)(iv).[ii] Furthermore, 12 of the countries which have not submitted 2025 data have submitted funding requests to the 98th meeting.

EIA also notes that five countries have reported 2025 HCFC consumption that fails to meet the 67.5% reduction target. Although four of the five have agreed HCFC phase-out management plans (HPMPs) for a complete HCFC phase-out, one country, the Central African Republic (which has HCFC consumption some 54% over the 67.5% target), does not have an approved HPMP and a proposal is not expected until 2027.

[i] In total, 69 of the 84 approved KIPs set 2029 consumption targets that are higher than their proponent's average consumption during the baseline years of 2020-2022.
[ii] Of 147 A5 Parties, three countries, the Republic of Korea, Singapore and the United Arab Emirates, do not request MLF funding and are therefore not required to submit CP data.

Five countries have also reported HFC consumption in excess of their baseline freeze (see Table 1). The percentage levels above the required baseline freeze are extremely high for two countries, Cabo Verde and Mali. Neither of these countries have approved Kigali Implementation Plans (KIPs), although EIA notes that, according to Decision XXXVII/13, Mali is expected to submit either a request to revise its baseline HFC data or a plan of action to return to compliance.[2]

EIA urges the Central African Republic, Mali and Cabo Verde to submit HCFC Phase-out Management Plan (HPMP) and/or KIP proposals as soon as possible and for all 10 countries to take urgent action to reduce HCFC/HFC consumption. EIA also congratulates Zambia and Saint Vincent and the Grenadines on returning to compliance after non-compliance decisions were adopted at MOP37.[3]

Table 1: *HFC consumption in countries that have reported exceeding their baseline*

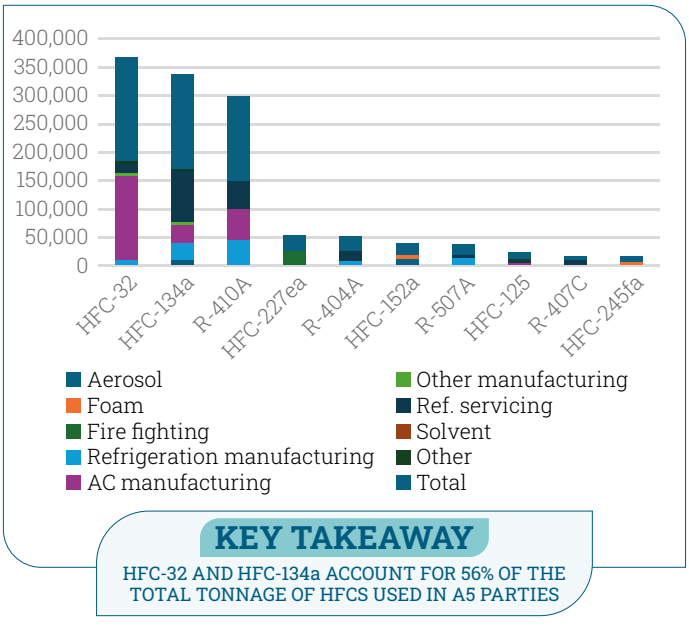
Country	Source	Daya year	Baseline (tCO_2e)	Latest consumption (tCO_2e)	% above baseline freeze	Control measures addressed by KIP
Albania	CP	2025	883,849	1,541,427	74	10% by 2029
Armenia	A7	2023	475,254	664,716	40	10% by 2029
Cabo Verde	A7	2024	38,791	108,546	180	-
Mali	A7	2024	339,935	1,773,126	343	-
Mongolia	CP	2025	57,309	67,925	19	10% by 2029

According to document 98/5, 2024 HCFC consumption in the United Arab Emirates (UAE) is 99% over the 67.5% target. While 2025 data is not available to assess compliance, EIA is concerned to note that, at the same time, UAE has reported extremely high HFC consumption of 149,066,355 CO_2-equivalent tonnes (tCO_2e) in 2024. This is the second-highest reported HFC consumption of any Article 5 (A5) Party, lower only than China, and is more than 20% higher than the combined HFC consumption of India (the world's most populous country) and Brazil (the 7th highest population).

Considering that the UAE's HCFC baseline was only the eighth highest among A5 Parties, this indicates an extraordinary growth in HFC consumption in the country. As a Group II country, EIA recommends that UAE prioritises early action to leapfrog HFCs when phasing out its remaining HCFC consumption and to take early steps to address high-GWP HFCs.

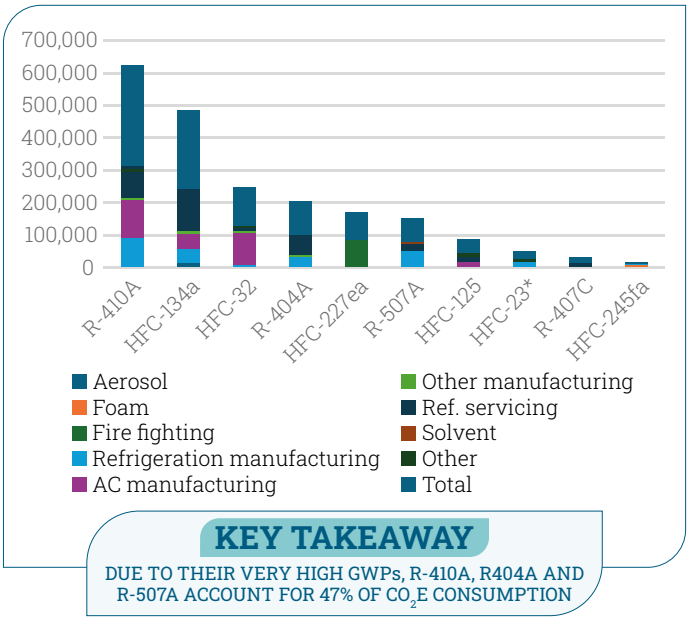
SECTOR DISTRIBUTION OF HFC CONSUMPTION

Figure 1: *Sector distribution of HFC consumption in tonnes (left) and tonnes of CO_2-equivalent (right) in 2024*



KEY TAKEAWAY

HFC-32 AND HFC-134a ACCOUNT FOR 56% OF THE TOTAL TONNAGE OF HFCS USED IN A5 PARTIES



KEY TAKEAWAY

DUE TO THEIR VERY HIGH GWPs, R-410A, R404A AND R-507A ACCOUNT FOR 47% OF CO_2E CONSUMPTION

Consumption of HFC-32 and HFC-134a accounts for 56% of the tonnage of HFCs used in A5 Parties; however, due to their very high GWPs, HFC refrigerant blends R-410A, R-404A and R-507A make up almost half (47%) of the total CO_2e consumption.

The consumption of these three potent blends is focussed on refrigeration and air-conditioning (RAC) manufacturing (36% and 25% respectively), and on the servicing of this equipment (38%). This demonstrates clearly the urgent need for A5 countries to implement prohibitions on new RAC equipment containing very high-GWP refrigerants and blends.

There are multiple low- and lower-GWP non-PFAS refrigerant alternatives available in these sectors.[4] Moreover, single component refrigerants (e.g., R-290, R-32) avoid the significant difficulties presented by blends in terms of fractionation (i.e., separation of blended refrigerants into their individual components) and complex recovery processes which prevent effective life-cycle refrigerant management (LRM).[5]

Table 2: *Consumption of high-GWP HFC blends across sectors in 2024 (tCO_2e)*

HFC blend	Refrigeration manufacturing	AC manufacturing	Other manufacturing	Refrigeration servicing	Solvent	Other	Total
R-410A	90,274	116,859	2,255	99,944	-	349	309,681
R-404A	31,568	2,678	910	65,067	-	500	100,722
R-507A	51,863	479	295	21,125	595	929	75,286
Total	173,705	120,016	3,460	186,136	595	1,778	485,689
% of total	36%	25%	1%	38%	<1%	<1%	

PRICES OF ALTERNATIVES TO HCFCs AND HFCs

Table 11 of Document 98/5 provides average prices of HCFCs, HFCs and alternatives reported since 2018. This information is critical to understand the impacts of the Kigali Amendment for A5 Parties in terms of operating costs and to inform the strategies that should be pursued.

EIA notes that very few countries have reported prices of CO_2 and ammonia, which might indicate a lack of data or low penetration of these refrigerants. Document 98/57 notes that a key challenge for commercial refrigeration conversion projects is the dependency on imports of alternative refrigerants. Synthetic hydrofluoroolefin (HFO)-1234yf is a key component of many lower-GWP HFC blends used in commercial refrigeration. EIA notes the consistently high average price of this refrigerant compared to natural refrigerants, which were on average 92% cheaper than the HFO refrigerant between 2019-24.

Despite their overall affordability compared to HFOs, EIA does recognise the vast range in prices that countries are encountering for hydrocarbon refrigerants (e.g., between $2.80-420/kg for HC-290, $2.93-141.05/kg for HC-600a), which backs up the need for the ExCom to consider how it can best ensure that natural refrigerants are available for A5 Parties. In this regard, EIA is highly concerned that Nigeria's proposed study to assess the viability of local hydrocarbon refrigerant production was removed from the country's KIP (see Agenda Item 8).

Finally, the Secretariat notes that average prices in non-LVC countries are significantly lower than those in LVC countries, which speaks to the need to increase servicing sector funding in LVC countries.

AGENDA ITEM 8(a): OVERVIEW OF ISSUES IDENTIFIED DURING PROJECT REVIEW

At ExCom98, members will have the opportunity to finalise the methodology for calculating the climate impact of Kigali Implementation Plans.

Document 98/10/Add.1 outlines a two-scenario approach to capture the range of likely avoided HFC consumption, collapsing the previous third scenario (the "intermediate" scenario) into the new "high" scenario. On this topic, EIA makes the following comments and recommendations:

1. **EIA recommends** the HCFC phase-in component of the business as usual (BAU) high scenario be calculated using each country's actual consumption data as reported under Article 7 during its HFC baseline years, as opposed to the 65% HCFC level in the Kigali baseline formula. This would better achieve the objective of realistically estimating the

emissions that would have occurred without KIP implementation and align it with calculations under the HPMP. As documented in EIA's ExCom97 briefing, A5 Group 1 Parties consumed on average 41% of their HCFC baseline during 2020-22, well below the 65% assumed in the current methodology.[6] As such, EIA strongly advises members against locking in an artificially high HCFC assumption, and thus inflating HFC growth estimates, or else risk overstating the projected climate benefits across all future KIPs

2. **EIA urges** members to reject the proposal to report climate impacts only in the aggregate, as set out in paragraph 10 of the document. Retaining individual project-level reporting is essential to determine whether a given KIP will deliver real emissions reductions. EIA's analysis of the KIPs approved so far has found that 82% permit an increase in HFC consumption compared to their proponents' average consumption during the baseline years (2020-22).[iii] Any resulting increase in emissions that occurs during KIP implementation will be significantly harder to identify, and address, without project-level transparency. We strongly advise retaining the requirement that individual climate impacts are calculated within each KIP document

3. **EIA reiterates** a potential risk that climate benefits are double-counted between HPMPs and KIPs. We raised this concern in our briefing to ExCom97 and noted that the issue would become more acute under aggregate reporting. The BAU high scenario assumes that countries' remaining HCFC consumption will convert to an increase of HFC demand and KIPs then receive credit for avoiding that demand. Where an HPMP has already claimed climate benefit for phasing out the same HCFCs, the emissions reduction risks being counted twice – once under the HPMP and once under the KIP. Project-level reporting is currently the best way to identify if this is occurring.

The decisions on this methodology will shape how climate impacts are measured throughout Kigali implementation for years to come. EIA urges consideration of the above issues to ensure the approach is grounded in actual data, transparent at the individual project level and avoids inflation of projected benefits.

AGENDA ITEM 8(d): PROJECTS RECOMMENDED FOR INDIVIDUAL CONSIDERATION

KIGALI IMPLEMENTATION PLANS (KIPs)

EIA welcomes the submission of nine Stage I Kigali Implementation Plans (KIPs) to the 98th Meeting of the Executive Committee. Seven of these are first time submissions by Group 1 countries, while one, that of Nigeria, is a resubmission seeking funding for further reductions following approval of the country's revised HFC baseline. The final KIP, that of Oman, concerns a Group 2 country for which an official baseline has not yet been established.[iv]

While these submissions demonstrate countries' ongoing commitments to fulfilling their Kigali obligations, EIA remains concerned by the persistent lack of HFC reduction in many of the proposed consumption targets and activities. With the climate crisis escalating and the global need for cooling growing, it is imperative that all A5 countries use their KIPs as an opportunity to accelerate HFC reductions and rapidly transition away from HFC-based technologies to avoid locking-in servicing reliance and future emissions.

PROPOSED CONSUMPTION TARGETS IN STAGE I KIPs (GROUP 1 ONLY)

The eight Group 1 KIPs submitted to this meeting represent a mix of approaches, with some countries proposing modest limits or reductions in HFC use by 2029, while others allow for significant growth relative to their baseline average consumption.

Although greater ambition would be preferred, EIA welcomes the commitments of Thailand, Namibia and Nigeria to phase down their HFC consumption ahead of the minimum compliance requirements by 2029. Further, we recognise that Brazil will pursue a small additional phase-down step in 2032, bringing its consumption limit to 12% below the baseline level.

Of the eight KIPs submitted, only one, that of Uganda, proposes a 2029 consumption target that represents a real-terms reduction compared to average HFC consumption during the 2020-22 baseline period.[v] EIA notes that it is the relatively small HCFC component in the country's baseline (comprising only 8%) which ensures that compliance with the 10% phase-down in 2029 delivers an actual decrease in HFC consumption.

[iii] In total, 69 of the 84 approved KIPs set 2029 consumption targets that are higher than their proponent's average consumption during the baseline years of 2020-2022.
[iv] The nine Group 1 countries that have submitted new or revised KIP proposals for consideration at ExCom98 are: Belize, Bhutan, Brazil, Namibia, Nigeria, Oman, Thailand, Uganda and Zambia.
[v] Based on its current Article 7 data, the targets proposed by the Government of Belize would also constitute a real terms reduction from the country's 2020-22 average consumption. However, as Belize's KIP was developed using revised data that would significantly increase the country's baseline, EIA has reviewed the proposed plan on this basis.

EIA is disappointed that the remaining proposals would permit increases in HFC consumption over the remainder of the current "freeze" period (2024-28), particularly given the widespread availability of low-GWP, non-fluorinated alternatives in many sectors. Particularly concerning are the two countries which propose 2029 targets more than 30% above their baseline average consumption (Belize, based on its revised data, and Bhutan). EIA reiterates its call for targets to be grounded in actual reported consumption data and reflective of real need, especially in those countries where the HFC baseline includes a substantial HCFC component.

As in previous years, EIA asks ExCom members to scrutinise BAU projections closely and to encourage proponent countries to revise their targets to reflect actual demand rather than theoretical growth. Establishing consumption limits based on average baseline consumption, with allowances only for justified and minimal growth as the HCFC phase-out concludes, would ensure a fair and equitable approach across all A5 countries. To support this, countries benefiting from large HCFC components in their baselines must refrain from using this as justification for permitting unchecked HFC consumption. EIA reiterates that the final stages of HCFC phase-out must be paired with a firm commitment to minimise HFC use wherever possible.

Table 3: *Review of HFC baseline data, reported HFC consumption in 2024 and proposed HFC consumption targets for 2029*
(All figures in CO_2e tonnes, unless otherwise stated)

Country		HFC baseline*	HCFC component as % of HFC baseline	Average HFC consumption between 2020-22*	% change between average HFC consumption 2020-22 and 2024 HFC consumption (Positive values = increase in consumption)	Reported HFC consumption in 2024*	% change between 2024 HFC consumption and proposed 2029 HFC consumption (Positive values = increase in consumption)	Proposed HFC consumption in 2029	% difference between proposed HFC consumption in 2029 and...	
									... HFC baseline	... average consumption 2020-22 (Positive values = increase in consumption)
Bhutan		13,105	50%	6,495	-2%	6,391	85%	11,795	-10%	82%
Belize†	**Revised data**	163,150	35%	105,271	18%	124,155	18%	146,835	-10%	39%
	Current A7 data	502,263	12%	444,384	-72%	124,155	18%	146,835	-71%	-67%
Brazil		72,897,680	27%	53,451,305	-18%	43,693,160	50%	65,607,912	-10%	23%
Thailand		59,270,951	27%	43,042,095	-24%	32,708,003	45%	47,416,761	-20%	10%
Namibia		774,924	23%	600,424	0%	600,368	10%	658,685	-15%	10%
Nigeria‡		24,986,406	23%	19,257,305	25%	24,024,976	-14%	20,775,549	-17%	8%
Zambia		699,513	15%	593,686	4%	616,171	2%	629,562	-10%	6%
Uganda		39,432	8%	36,291	-2%	35,728	-1%	35,489	-10%	-2%

Notes:

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

***** Baseline and reported consumption figures are based on Article 7 reported data at time of KIP submission, i.e., they do not reflect requested revisions unless explicitly stated.

† The Government of Belize has submitted a request to revise its HFC data, resulting in a baseline reduction from 502,263 tCO_2e to 163,150 tCO_2e. The consumption targets proposed by the country's Stage I KIP are based on the revised data. Due to the significant difference between the current and revised baselines, both have been presented in this table.

‡ The Government of Nigeria has re-submitted its Stage I KIP (approved at ExCom95) following the approval of its revised baseline. To ensure compliance with the Kigali Amendment under its new baseline, Nigeria must reduce its HFC consumption beyond what was previously agreed. The re-submitted KIP includes newly proposed activities to secure additional reductions in HFC consumption.

PROPOSED ACTIVITIES UNDER NEW STAGE I KIPs (GROUP 1 ONLY)

As in previous years, EIA has reviewed the proposed activities across the eight Group 1 KIP submissions. Before addressing the KIP activities, however, EIA wishes to note its disappointment that Nigeria's proposed study to assess the viability of local hydrocarbon refrigerant production has been dropped from the country's plan. This activity was removed after the MLF Secretariat noted that the cost of producing hydrocarbon refrigerants would only be eligible for funding under the production sector, adding that Nigeria has no baseline production of HFCs or HCFCs.

EIA believes that this approach sends the wrong signal. It suggests that only those countries which have historically engaged in the production of harmful controlled substances should be supported in transitioning to the production of environmentally sound alternatives. Such a stance perpetuates dependency on imported refrigerants and challenges with supply chains and misses an opportunity to build local industrial capacity for sustainable cooling technologies.

This undermines the global shift toward non-fluorinated alternatives and could discourage other countries from pursuing similar initiatives. EIA believes ExCom must consider a new approach to allow equitable support for the production of environmentally sound alternative refrigerants to be considered within KIPs, regardless of whether a country was previously a CFC, HCFC or HFC producer.

STRENGTHENING REGULATORY FRAMEWORKS

A consistent theme across the eight Group 1 KIP submissions is the recognition that robust regulatory frameworks are essential to achieving sustained reductions in HFC consumption. Many countries have proposed bans or prohibitions on high-GWP equipment and substances, as well as updates to national standards to facilitate the transition to low-GWP alternatives. However, the ambition and specificity of these measures vary significantly.

Some countries have demonstrated a strong commitment in this area. Thailand, for example, proposes a set of prohibitions including bans on the manufacture and import of domestic refrigerators and stand-alone commercial refrigeration equipment using HFCs by 2030, as well as a GWP threshold of 700 for air-conditioning equipment.

EIA welcomes the clear signal to industry sent by such bans about where industry investment should be placed and how transition plans should be developed; however, we strongly encourage Thailand to be more ambitious with regards to air-conditioning equipment. Rather than perpetuating reliance on climate-damaging controlled substances through a transition to HFC-32 (GWP 675), EIA urges Thailand to leapfrog directly to non-fluorinated alternatives such as propane (R-290; GWP 3).

Similarly, Brazil has committed to banning the use of HFC-134a in domestic refrigeration manufacturing by 2030 and the manufacture and import of residential air-conditioning equipment containing R-410A by the same date, alongside the introduction of GWP-based sectoral guidelines to support a predictable transition. Namibia has also suggested that it will explore the introduction of restrictions on HFC-based equipment, particularly in the domestic refrigeration sector.

By contrast, some KIPs leave clear regulatory gaps by overlooking bans as an effective phase-down tool. Belize, for example, does not commit to a ban on HFC-based domestic refrigerators, despite the fact that HFC alternatives have already penetrated the market to a significant degree. While this approach may be intended to reduce short-term disruption, it risks delaying necessary action and could result in missed opportunities for earlier, easier reductions.

Updates to national standards are another critical aspect of regulatory strengthening. Brazil's plan to harmonise standards for the safe use of flammable refrigerants is a positive example of how standards can be leveraged to drive market transformation. Nigeria has also made progress in this area, with ongoing work to operationalise and enforce MEPS and labelling standards for RAC appliances, which will support both energy efficiency and the phase-down of high-GWP refrigerants.

TRAINING AND CAPACITY-BUILDING

Training and capacity-building are also central to all eight Group 1 KIPs, reflecting a shared recognition that the successful phase-down of HFCs depends on a skilled workforce capable of handling low-GWP alternatives safely and effectively.

Most countries propose technician training programmes, as well as train-the-trainer initiatives, to ensure sustainable knowledge transfer. Nigeria's plan is particularly extensive, aiming to train technicians across the RAC and mobile air-conditioning (MAC) sectors, including specialised workshops on hydrocarbon and CO_2 systems. Brazil also demonstrates strong commitment, with plans to train technicians in commercial refrigeration and room AC servicing, while developing a pilot qualification, certification and registration (QCR) scheme, a critical step towards full professionalisation of the sector. Thailand's focus on MAC servicing and large AC systems is also worth noting as these are high-consumption sectors where improved practices could yield significant emissions reductions.

In all cases, the effectiveness of these programmes will depend on their accessibility, inclusivity (including of the informal sector) and long-term sustainability. Additionally, training programmes will need to keep pace with technological advancements and changes in market demand, particularly in countries where low-GWP alternatives are not yet widely available but their penetration is likely to increase.

DEMONSTRATION AND PILOT PROJECTS

Demonstration and pilot projects feature prominently in the Group 1 KIPs, with countries proposing a range of initiatives to showcase the feasibility of low-GWP technologies in real-world applications.

Brazil's plan includes some of the most ambitious demonstrations, such as the installation of NH_3-based modular chillers in supermarkets and CO_2-based variable refrigerant flow (VRF) systems in commercial buildings, which could provide valuable data on performance, energy efficiency and safety in high-ambient temperature conditions. Meanwhile, Nigeria proposes to demonstrate hydrocarbon/CO_2 cascade systems in commercial refrigeration and to support the conversion of HFC-based cold storage to solar-powered hydrocarbon technology in rural cooperatives. EIA welcomes the projects proposed by both these countries and looks forward to seeing their results.

Other pilot projects, such as Thailand's heat-recovery air-conditioners and Belize's refrigerant recovery and recycling centres also show promise for improving energy efficiency and implementing LRM best practice, respectively. Nonetheless, the scale and scope of many demonstrations remain limited and there is a risk these projects may not generate sufficient data or market confidence to drive widespread adoption, emphasising the importance of paired awareness raising activities.

Additionally, some countries, such as Uganda, have removed or scaled back demonstration activities due to budget constraints, which could limit their ability to catalyse broader sectoral transitions. This does not make sense given the high level of funds remaining which will likely be carried over to the next triennium.

MANUFACTURING CONVERSIONS

Manufacturing conversions are a key component in the KIPs for Brazil, Nigeria and Thailand. In particular, EIA commends Brazil's manufacturing conversion proposals, recognising the country's plan to convert 115 light commercial refrigeration enterprises to R-290 as a standout example among the present KIPs, demonstrating a sector-wide approach which could deliver significant and sustained reductions in HFC consumption. EIA also welcomes Brazil's proposed conversion of three industrial refrigeration manufacturing enterprises to R-290 and R-744.

With regards to Nigeria and Thailand's conversions in AC manufacturing, EIA does not endorse the proposed approaches and urges both countries to reconsider their plans. Both Nigeria and Thailand plan to convert AC manufacturing enterprises to HFC-32. EIA reminds ExCom members that HFC-32, which has a GWP of 675, should not be considered a low-GWP alternative. Transitioning to HFC-32 locks in long-term servicing demand for HFCs, which not only guarantees future emissions but also makes a costly and inefficient 'double transition' to non-fluorinated alternatives much more likely in the future.

In the context of Thailand, this is particularly problematic as the country is a significant exporter of equipment. As such, Thailand's decision to transition to HFC-32 will likely see HFC-32 reliance increase across the region, at the expense of a swifter transition to ultra-low-GWP, non-fluorinated alternatives. HFC-32 is already the clear direction of travel in South-East Asia and EIA therefore questions the need for MLF funding to prioritise such conversions when they will not meet the needs of the Kigali Amendment.

As for Nigeria, EIA notes that the KIP is explicit in acknowledging R-290 as the eventual goal for the AC manufacturing sector. With this in mind, EIA questions Nigeria's decision to treat HFC-32 as a transitional step, instead urging the country to begin the switch to R-290 now, avoiding a lock-in of HFC servicing needs and maximising the climate benefit and market uptake of this technology. Delaying the transition to R-290 not only prolongs the use of fluorinated gases but also risks stranding assets (i.e., leaving end users with equipment reliant on substances that will become increasingly scarce and, ultimately, unavailable as the HFC phase-down progresses), increasing long-term costs for manufacturers and consumers alike. The opportunity cost of not moving directly to R-290 is therefore significant, particularly in a region with high cooling demand and rapid market growth.

OMAN: STAGE I KIP REQUEST MADE AHEAD OF GROUP 2 PHASE-DOWN SCHEDULE

EIA acknowledges the submission of Oman's revised Stage I KIP, which now incorporates 2025 consumption data and adjusts the proposed targets accordingly. While we commend Oman for its proactive engagement as the first Group 2 Article 5 country to submit a KIP, ahead of its compliance obligations, our concerns regarding the adequacy of the proposed targets persist, particularly considering the new data.

The inclusion of 2025 consumption figures reveal a 20% decline in HFC use compared to 2024, primarily due to reduced demand for high-GWP refrigerants such as HFC-134a, R-410A and R-404A. Nonetheless, Oman's revised "interim" baseline (now calculated at 2,787,916 CO_2e tonnes, based on the 2023-25 average) still fails to sufficiently constrain BAU growth. The proposed "interim" baseline remains 31% higher than Oman's actual average consumption during the 2023-25 period. Even after Oman's first proposed phase-down step in 2030, permissible consumption would be 20% above average "interim" baseline consumption and in 2032 it would remain 9% higher. **This approach allows largely unrestricted baseline growth without delivering meaningful early reductions, undermining the purpose of an early KIP.**

EIA believes that Oman's proposal lacks the ambition necessary to justify approval of the present KIP ahead of the country's official baseline being established. As a high-ambient-temperature country, Oman faces unique challenges; however, the current KIP targets do not reflect the urgency of limiting HFC growth during this, the remaining baseline year (2026). A more robust strategy would involve capping HFC imports in 2026-27 (something not provided for under the current proposal, which would not see an HFC quota established until 2028), accelerating the phase-out of high-GWP refrigerants and adopting stricter regulatory measures, such as bans on new HFC-based equipment in key sectors. Additionally, the KIP could better integrate pilot projects for natural refrigerants (e.g., R-290 in domestic air-conditioning including residential monoblocs and ductless systems) to test feasibility under Oman's climatic conditions.

The Secretariat's comments highlighted that Oman considers its 2025 consumption dip to be an anomaly, hence the Government preferring to maintain conservative targets to ensure compliance. While we understand the need for stability, in light of its desire to go faster, EIA urges Oman to consider aligning its baseline and targets with Group 1. This would not only strengthen Oman's climate commitments but also mitigate the risk of baseline inflation and ensure a smoother transition to low-GWP alternatives.

In response to Oman's submission, EIA therefore reiterates its call for more ambitious targets, early regulatory action and a clearer pathway to natural refrigerants to ensure the country's HFC phase-down delivers tangible climate benefits ahead of its 2032 obligations.

HCFC PHASE-OUT MANAGEMENT PLANS (HPMPs)

EIA welcomes the first tranche submissions for stage II, III and IV HPMPs submitted for individual consideration at this meeting.

This section provides an overview of these submissions, which will phase out the remaining consumption of HCFCs by 2030 in Albania, Bahrain, Morocco, Nigeria, Saint Kitts and Nevis, South Sudan, Thailand, Tunisia and Turkmenistan. EIA also notes Thailand's intention to end the use of HCFCs for servicing by 2034 (rather than 2040), and South Sudan's expectation that HCFCs will no longer be required for servicing beyond 2030.

STRENGTHENING REGULATORY FRAMEWORKS

EIA appreciates the inclusion of regulatory-strengthening measures across all first tranche HPMPs, which include updates to licensing and quota systems (and improvements in their enforcement), updates to HS codes, the introduction of equipment bans, digitalisation and the establishment of online tools.

In particular, EIA commends Saint Kitts and Nevis for its proposed adoption of standard operating procedures (SOP) to strengthen coordination among the national ozone unit (NOU), customs and maritime authorities and the reinforcement of documentation for quota monitoring. These activities are paired with guidance for and engagement with customs brokers and the integration of risk-profiling criteria into the Automated System for Customs Data (ASYCUDA).

Saint Kitts and Nevis also proposes to introduce certification-linked controls on refrigerant sales and to develop a sales verification system (with reporting obligations) for refrigerant importers and distributors. Similarly, Bahrain proposes to develop a standardised electronic reporting template for importers and large end users and to begin linking its e-licensing system for refrigerant purchases to technicians' registration and certification identification. EIA encourages lessons learned from these activities to be shared with all Parties and, ultimately, recommends that all reporting and licensing systems should be fully digitalised to support information-sharing and collaboration across relevant government agencies.

EIA notes with appreciation that the majority of the HPMP proposals include bans on the import of equipment containing HCFCs in the lead up to the 2030 phase-out. Early bans establish clear timelines, sending a direct message to industry and end users while supporting demand reduction and illegal trade prevention. With the efficacy of bans in mind, EIA urges Morocco, which suggests its minimum energy performance standards (MEPS) already effectively prevent the import and use of ACs with HCFC-22, to ban the import and use of equipment containing HCFC-22 entirely, thus eliminating any potential market uncertainty. Additionally on the subject of bans, EIA commends countries which have already established prohibitions on non-refillable cylinders, such as Albania and Bahrain.

EIA notes that Morocco is considering a prohibition on non-refillable cylinders; this is something we strongly encourage, recommending that Morocco establishes its disposable cylinder ban as early as possible, to feed into the development of the country's refrigerant recovery and reclamation (RRR) scheme.

TRAINING AND CAPACITY-BUILDING

EIA welcomes proposed activities to improve customs and enforcement capacity, which are included in each first tranche HPMP.

EIA has long recommended the inclusion of training for ultra-low or zero-GWP refrigerants in national certification schemes, and we are pleased to see such activities included in the present HPMP submissions. Bahrain, for example, proposes to hold two workshops to train master trainers on the safe handling of CO_2 refrigerants. Meanwhile, Saint Kitts and Nevis also plans to roll out a hydrocarbon certification module and pilot training, which includes the safe handling of low-GWP refrigerants. Other, relevant activities are also proposed in the HPMP submissions of South Sudan, Thailand and Nigeria.

A key component of technician capacity-building is access to equipment and materials that support training for zero and low-GWP refrigerants, and for recovery and leak prevention. Nigeria and Tunisia both propose investments in training equipment, including R-290, R-600a and CO_2.

As transcritical CO_2 use rises globally as a cost-effective alternative for commercial refrigeration, Tunisia is well placed to expand its use in the food retail sector. With more than 600 supermarkets operated by major retailers, including subsidiaries to international groups which already deploy CO_2 systems in their European stores, building a skilled workforce can support broader market uptake of ultra-low GWP refrigerants in Tunisia. This also presents opportunities for public-private partnerships, drawing on the experiences of international companies which have successfully implemented ultra-low GWP technologies to support technician capacity-building.

Importantly, countries with informal servicing sectors must consider how to provide support and training for these technicians. To this end, South Sudan proposes to design the curricula for both the formal and informal sectors when establishing its technician certification scheme, ensuring that a significant portion of the RAC workforce will be qualified to safely handle refrigerants.

EIA also appreciates the inclusion of activities strengthening RRR, which plays an important role in reducing demand for virgin refrigerants and supports both the prevention of illegal trade and the implementation of LRM best practices. For example, Nigeria proposes to establish an AHRI Standard 700 certified RRR centre with the necessary equipment, lab certifications and specialised training for staff, in addition to the establishment of multiple recovery centres and a public awareness campaign promoting RRR.

Albania, meanwhile, proposes to finalise a plan to establish mobile reclamation centres, in addition to the necessary procurement of RRR tools and equipment. EIA encourages lessons learned from both these activities to be shared with all Parties.

DEMONSTRATION AND PILOT PROJECTS

As countries prepare for KIP implementation or proceed to next stages of existing plans, it is an ideal opportunity to include demonstration and pilot projects that showcase scalable ultra-low GWP alternatives and not-in-kind (NIK) technologies. EIA appreciates that several of the first tranche HPMPs submitted to ExCom98 include such demonstration projects.

Nigeria and Tunisia propose projects that would replace HCFCs in cold storage refrigeration with R-290. Nigeria will also develop a strategy to transition this sector, with a focus on rural regions. Tunisia and Morocco, meanwhile, propose demonstration projects for R-290 ice machines in the fisheries sector, as well as R-290 cold room refrigeration in fisheries cold storage facilities. Additionally, Morocco proposes ammonia-based freezing tunnels for fish processing facilities, while Tunisia proposes the demonstration of ammonia refrigeration in a cold storage facility. With as much as 79% of Tunisia's fisheries cold chain operating on HCFC-22, EIA encourages further ambition in transitioning this sector to HFC-free alternatives as soon as possible, noting that this must be paired with training and capacity-building for technicians.

EIA supports the Secretariat's suggestion to institutionalise technical support for the fisheries sector in Morocco through a Fisheries RAC Technology Hub to ensure that the outcomes, knowledge, and capacity-building activities in the demonstration projects are sustainable beyond the project end. The establishment of a coordination mechanism for RAC fisheries technologies can support other A5 countries with fisheries sectors in their transition to low-GWP technologies. EIA therefore encourages lessons learned through these coordination efforts to be shared with all Parties.

Despite support for the activities mentioned above, EIA is concerned by a proposed demonstration project in Morocco regarding HCFC-22 retrofits to R-453A on fishing vessels. A total of 321 trawlers with HCFC-22 based refrigeration systems were identified during project preparation, representing 93% of the fleet. EIA recognises that challenges exist, and that R-453A was selected to reduce barriers such as associated costs with retrofits, given R-453's compatibility with mineral oil. However, EIA strongly recommends exploring the feasibility of replacing HCFC-22 equipment on fishing vessels with non-fluorinated alternatives, instead of retrofitting to a high-GWP HFC.

Given the significant leak rates inherent in this sector, assistance to transition to non-greenhouse gas alternatives must be prioritised. The fishing sector has been identified in discussions around strategic implementation of the Kigali Amendment as one facing particular challenges. An up-to-date assessment by the Secretariat on available alternative technologies would provide a useful starting point for supporting Article 5 countries with significant consumption in this sector and help inform a strategic approach to addressing these challenges.

ENERGY EFFICIENCY REVOLVING FUND (EERF) PROPOSALS

EIA welcomes the opportunity to comment on the proposed Energy Efficiency Revolving Fund (EERF) projects contained in Document 98/55.

While we acknowledge and agree with the Secretariat's positive assessment of the proposals' potential to advance sustainable cooling, **EIA is nonetheless concerned that (with the exception of Grenada's NIK technology proposal) none of the projects outlined in Document 98/55 make specific reference to the refrigerants that will be promoted to end users through EERF funding.**

EIA reiterates its previously stated position that the EERF must prioritise the uptake of non-fluorinated alternatives to genuinely support the HFC phase-down. To take any other direction is to invest in technologies that will shortly be obsolete, either based on their GWP or on concerns around TFA, which the Committee for Risk Assessment of the European Chemicals Agency has recently officially classified as toxic to reproduction (as well as persistent and highly mobile).[7]

EIA strongly supports Grenada's proposal, which is the most innovative in the portfolio, delivering more than 80% energy-efficiency improvements and zero-GWP cooling through a seawater air-conditioning district-cooling system. As the Secretariat highlights, this is a non-in-kind technology that completely removes the need for HFC-based chillers, replacing mechanical compression in the cooling cycle with naturally cold deep seawater. This represents a genuine leapfrog away from fluorinated refrigerants, aligning with the Kigali Amendment's objectives and demonstrating how EERF funding can support the adoption of future-proof, sustainable cooling solutions. EIA commends Grenada for its proposed project, which would have significant potential to serve as a model for other coastal nations, particularly small island developing states in similar geographies.

Regarding the other proposals, EIA reiterates concern that no explicit commitment is made to exclude HFC-based technologies or even to define the technologies that would be transitioned to.

The Secretariat's assessment notes that Thailand's proposal demonstrates the "strongest operating fundamentals", with a fund-rotation factor of three times and the largest estimated emission reductions. Yet, the proposal only targets "low-GWP" refrigerants, without further qualification. Similarly, the UNDP proposals for Colombia, Ghana and Jordan specify eligibility criteria requiring refrigerants with a GWP below 150 for refrigeration and below 750 for AC, thresholds that still permit the use of relatively high-GWP HFCs, notably HFC-32. Without clear guarantees that EERF funding will support the transition away from HFCs, there is a risk that these projects could undermine the goals of the phase-down.

EIA urges the Executive Committee to approve Grenada's proposed project and to ensure EERF funding is strictly limited to transitions away from HFCs, thereby supporting a sustainable and cost-effective transition.

REVIEW OF SELECTED PILOT PROJECTS

EIA welcomes several innovative pilot projects submitted to this meeting, with the potential to accelerate the transition to energy-efficient ultra-low GWP cooling technologies, including Ecuador and Indonesia for the adoption of ammonia and isobutane in domestic and industrial refrigeration.

However, EIA is deeply disappointed with the pilot project submitted on behalf of Thailand and recommends rejection of this funding request to manufacture ACs using HFC-32. Pilot projects must demonstrate the potential to transition to ultra-low GWP technologies, showcasing scalable opportunities and providing lessons learned for countries facing similar barriers to adoption.

HFC-32 is not a low-GWP refrigerant and EIA does not support funding pilot projects that promote fluorinated

refrigerants. Instead, funding should prioritise innovative projects that enable leapfrogging to non-HFC alternatives, particularly in sectors with high leak rates and significant climate impacts.

AGENDA ITEM 12: ADDITIONAL INFORMATION ON NEW ENERGY-EFFICIENCY TESTING CENTRES IN NON-MANUFACTURING COUNTRIES (DECISION 97/88(c))

At ExCom97, members considered an update to the operationalisation of testing centres for energy efficiency and acknowledged their potential value in the context of rapid technological development.

EIA shares this view, noting that such centres can support the safe installation, use, and servicing of RAC and heat pump (RACHP) equipment, while reducing energy consumption, especially in regions with limited energy infrastructure.

Mapping of existing MEPS across A5 countries reveals that approximately 60% of reporting countries have adopted standards for at least one category of RACHP. MEPS compliance in A5s is currently achieved through mutual recognition arrangements and third-party certification from accredited facilities abroad. The following points are provided to support discussions and to address topics on which additional information is required before financial resources for the establishment or upgrading of testing centres are committed.

I. Preliminary assessment of regional energy-efficiency testing centres. The establishment of testing centres for newly manufactured RACHP equipment in A5 countries should keep pace with the growth of manufacturing capacity for RACHP using low-GWP refrigerants. Testing centres are critical for ensuring new equipment entering the market is energy efficient, safe and climate-friendly.

II.Reliance on foreign testing centres increases costs, disincentivising RACHP certification. A lack of testing centres artificially inflates RACHP costs as reliance is on the export of testing expertise to developing countries at high cost.

Many non-A5 countries have employed standardised and legally binding laboratory tests for safety and energy efficiency as a condition of RACHP introduction into commerce. For example, the Underwriter's Laboratory (UL) and the Air Conditioning, Heating, Refrigeration Institute (AHRI) provide distinct testing for safety and performance, respectively, for RACHP equipment using low-GWP alternative refrigerants. A lack of domestic (or regional) testing centres among A5 countries artificially inflates RACHP certification costs by necessitating the additional import/export of equipment as well as further transport and logistical costs to make use of facilities abroad.

III. A regulatory framework requiring the testing of RACHP by regional energy-efficiency testing centres would offset capital investments and support a sustainable revenue stream. ExCom members have acknowledged potential advantages of a regional testing centre network, but questioned implementation aspects such as geographic coverage, financing arrangements and the management of cross-border movement of equipment. EIA recommends a reconsideration of the current assumption that testing centres must generate revenue to be viable. Instead, a regulatory framework requiring certification of RACHP equipment could support the sustainable operation of testing centres.

Regulatory bodies could mandate adherence to test standards, as certified by a government-approved testing centre, as a condition of equipment use or sale in their respective jurisdiction. Such a mandate would likely guarantee a stream of revenue needed to maintain the viability of testing centres. EIA recommends that regulatory bodies allow for reciprocity in the recognition of RACHP equipment properly tested in regional centres to maximise geographical coverage and ease the burden of managing cross-border movement of equipment. EIA also recommends regulatory caps on the fees associated with certification testing to promote equitable use of testing centres and avoid monopolies or the unintended creation of de facto regulatory bodies.

AGENDA ITEM 13: PAPER REGARDING STRATEGIC APPROACHES TO KIGALI AMENDMENT IMPLEMENTATION IN ARTICLE 5 COUNTRIES PURSUANT TO ELEMENTS REFERRED TO IN DECISION 96/57

In recent years, ExCom members have increasingly recognised the complexity of managing the dual HCFC phase-out and HFC phase-down, as well as the Montreal Protocol's role in supporting global access to sustainable cooling in a warming world.

Three informal half-day sessions on strategic approaches to Kigali implementation and the contribution of the MLF to sustainable cooling were held in 2024 and 2025.[8]

These sessions have brought several key implementation challenges into focus and highlighted innovative approaches to consider. Access to affordable, low-GWP alternatives remains the central concern for A5 Parties, many of which rely on the MLF to support technology transfer and capacity development.[9] Ensuring that these technologies are not only available but also effectively adopted requires sustained investment in training, institutional strengthening and the development of regulatory standards. There has also been a strong recognition of the need to pair the HFC phase-down with improvements in energy efficiency, to focus on sectoral approaches that target end users, and to coordinate action across government, industry and civil society to accelerate the transition to sustainable cooling solutions. Some of these challenges are further outlined in Document 98/57 under Agenda Item 10, on challenges in implementing conversion projects in the RACHP sector due to supply-chain issues.

The servicing sector and end users, as well as regional centres of excellence, featured in the key takeaways from the first two half-day sessions. In the third session, innovation in the servicing sector was a key focus topic. Issues covered included digitalisation, automation and artificial intelligence (AI) and their role in transforming heating, ventilation, air-conditioning and refrigeration (HVACR) systems, with smart controllers and sensors now enabling remote monitoring, automatic fault detection and predictive maintenance, which in turn improves installer efficiency and lowers costs.[10]

A digital transformation across the servicing sector is required, which could be enhanced through the MLF via support for mobile leak tracking and service log platforms, the creation of open access training applications in local languages, funding of field projects that tested remote monitoring and AI tools, backing of low-cost augmented reality applications and inclusion of a digital component in Kigali-supported projects.

The question of better engagement with end users was also discussed, focussing on commercial and institutional building owners and individual customers, given they are major drivers of demand in the RAC service sector and thus play a key role in the choice of technology. Key challenges identified include a lack of awareness of, and the absence of effective supply chains for, energy-efficient low-GWP technologies, limited access to testing labs and funding gaps for awareness-raising. Cost-effective outreach, training, incentives and financial instruments are therefore required to help servicing technicians to handle energy-efficient, low-GWP refrigerants, equipment and components.

Finally, preventive maintenance, i.e., keeping systems leak-tight and recovering/recycling refrigerants for further use, was also a topic of significant interest.

This requires a business case which takes a systems approach, encompassing technician training and certification, regular leak checking, equipment owner accountability and refrigerant tracking via QR-coded cylinders. Additionally, government-mandated certification and enforcement systems should be used to restrict refrigerant sales to certified technicians and to establish electronic systems that control the consumption of refrigerants. Regional countries should offer reciprocity in the recognition of technician certification programs to ease burden on service technicians' migration across borders.

In document 98/60, the Secretariat outlines five strategic opportunity areas:

1. **strengthening of data systems and market intelligence** (through standardised methodologies, reporting requirements, digital and AI-based monitoring tools and enhanced national capacities in statistical analysis);

   Important measures to improve regular data collection and management include, for example, establishing mandatory reporting requirements for major end users, strengthened technician registries and certification systems, banning disposable cylinders and tracking and reporting refrigerants through the supply chain. Traceability instruments such as digital logbooks and QR-coded cylinders could be explored, which would also improve control of the quality of refrigerants and help address illegal trade. Digital and AI-based monitoring tools

could also support the systematic collection of servicing-related data, e.g. refrigerant leakage and consumption, thus improving maintenance. EIA recommends that the MLF Secretariat sponsor a paper on available digital and AI-based monitoring tools

2. **accelerating the adoption of low-GWP, energy-efficient technologies in manufacturing** (through complementary measures to strengthen supply chains, improve market intelligence, support SMEs and address the local installation and assembly subsector);

   This should prioritise complementary actions to improve access to natural refrigerants and their components, strengthening the regional and local supply chains (including natural refrigerant production) to avoid the supply issues and the uptake of HFO refrigerants that have significant environmental concerns due to their broad classification as "forever chemicals" (PFAS).[11] EIA recommends that the ExCom re-examines eligible incremental cost categories to ensure that countries that have no HCFC or HFC production can still receive funding to set up the production of natural refrigerant alternatives within the context of their consumption sector activities under KIPs

3. **transforming support to the refrigeration and air-conditioning (RAC) servicing sector** (by shifting from substance-driven to market-driven, application-based approaches structured around workforce, service providers, end users and institutional stakeholders, while integrating digital tools and AI-assisted diagnostics);

   This should include robust LRM strategies, including integrated regulatory frameworks for leak prevention and repair, and handling end-of-life management of refrigerants and equipment

4. **scaling up end user engagement and diversifying funding modalities** (through revolving funds, concessional credit lines, blended finance structures and performance-based instruments to enable sector-level transformation).

   The need to engage end-users and the benefits of sector-level transformation have been repeatedly raised in ExCom discussions. EIA supports the recommendation that the Secretariat undertake an assessment of activities, alternative financial modalities and institutional arrangements required to design scaled-up assistance to end users to transition to low-GWP alternatives under future stages of the KIPs, including criteria for the selection of priority sectors

5. **integrating energy efficiency as part of the refrigerant transition** (aligning KIPs with national cooling action plans (NCAPs) and energy-efficiency policies to maximise co-benefits, with strengthened coordination between NOUs and energy authorities).
   In addition to the five strategic opportunity areas, the Secretariat notes the importance of taking a country programme approach in Stage II KIPs and of enhancing regional cooperation (e.g., in terms of shared reclamation facilities, customs coordination to combat illegal trade, bulk procurement and so on). EIA fully supports these and other recommendations outlined in document 98/60, in addition to our recommendations above.

AGENDA ITEM 14: MATTERS RELATING TO PILOT PROJECTS TO ENHANCE REGIONAL ATMOSPHERIC MONITORING OF SUBSTANCES CONTROLLED BY THE MONTREAL PROTOCOL

In keeping with Decision 96/56, the Secretariat has recommended a funding window of $11,050,000 to prepare, establish and operate three regional atmospheric monitoring stations and to ensure their continued operation upon completion of a possible European Union (EU) grant.

The Secretariat has also prepared three documents recommended for approval by the Executive Committee – guidelines for the preparation of pilot projects, guidelines for the implementation of pilot projects and a template agreement between the Executive Committee and the Article 5 country where the site is located.

It is noted that the decision on whether a monitoring station should be based on high-frequency in situ measurements or daily flask sampling would be based on, inter alia, the site preliminary observations test, the developmental observations test, local capacity and the suitability of the measurement frequency for regional emissions modelling. EIA reminds ExCom members that, as previously noted by Scientific Assessment Panel (SAP), making use of high-frequency on-site sampling alongside low-frequency flask sampling can "significantly strengthen the robustness and reliability of an integrated measurement network."[12]

Essential to the success of new regional monitoring stations (and included in the template agreement for the ExCom and A5 country) is a requirement that host countries must commit to following the principles of data availability and accessibility. This would require an open data policy and the application of the 'Findability, Accessibility, Interoperability and Reusability' (FAIR) guiding principles for scientific data management and stewardship.

EIA strongly urges the Executive Committee to establish a funding window for at least the proposed $11,050,000, noting the importance of the $1,800,000 in continued support for these stations' operations to ensure long-term data collection.

EIA also recommends that the ExCom revisit the results of the six-month Site Preliminary Observations Test (SPOT) and the two-year Developmental Observations Test (DOT) to consider if the three selected locations are sufficient to close the existing monitoring gaps identified by the Advisory Committee of the Vienna Convention General Trust Fund. Further, to ensure the most pressing gaps are filled, Parties should consider whether funds can be increased to establish monitoring at all five sites prioritised by the advisory committee.[13, vi]

ExCom members must act with urgency to establish funding windows for both initial monitoring stations and the additional locations identified but not prioritised by the advisory committee.[14, vii] Given that sites with existing infrastructure will receive priority, ExCom may wish to consider whether these locations could allow the budget to stretch further, to accommodate additional stations elsewhere.

[vi] Southern Asia (India/Bangladesh); South-East Asia (Viet Nam); Southern Africa (Botswana/South Africa); the Middle East (Saudi Arabia); and Central and Southern South America (Brazil/Argentina).
[vii] North Africa (Algeria); North America (Mexico); Northern South America (Ecuador); Eastern Europe (Russian Federation); and West Africa (Nigeria).

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