



BRIEFING



November 2026

# A DECADE OF KIGALI

Celebrating Success, Accelerating Action

**EIA Briefing to the 38<sup>th</sup> Meeting of Parties to the Montreal Protocol**  
2 - 6 November, 2026



Vincent Biruta, MOP28 president, gaveling the adoption of the Kigali Amendment to the Montreal Protocol.

## INTRODUCTION

Ten years ago in Kigali, the Parties to the Montreal Protocol agreed to phase down the production and use of hydrofluorocarbons (HFCs), propelling the ozone treaty into a new era of ambitious climate protection.

The past decade has done much to vindicate that ambition. Now ratified by more than 170 countries, the Kigali Amendment commits the world to an 80 per cent reduction in HFC consumption by 2047 which, if fully implemented, is projected to prevent up to 0.5°C of global warming by 2100.<sup>1</sup> Combined with improvements in energy efficiency in cooling, this climate benefit could approach 1°C.<sup>2</sup>

But anniversaries are for looking ahead as much as they are looking back and, with crucial items including strengthening the Protocol's institutions and the replenishment of the Multilateral Fund (MLF) for the 2027-29 triennium on the table, this meeting will help determine whether the Kigali Amendment's second decade can truly deliver on the agreement's promise.

For more than three decades, the MLF has been the engine behind the Montreal Protocol's success. Since its inception, the MLF has approved \$4.49 billion for a total of 10,584 projects across 144 Article 5 (A5) parties, ensuring the successful phase out of controlled ODS.<sup>3</sup> In the face of a climate emergency, the catastrophic impacts of which are already being felt, delivering a strong replenishment is vital. A breach of the 1.5°C Paris Agreement target is now widely considered "unavoidable" and to limit the overshoot it is clear that we must phase down HFCs further and faster than ever before.<sup>4</sup>

In recent years, the Montreal Protocol has remained a beacon of successful multilateralism in an increasingly fractious world. In this spirit, which is underpinned by the principles of fairness and equity, and conscious of Agenda Item 14 on the Classification of the State of Palestine as a Party operating under paragraph 1 of Article 5, EIA calls on all Parties to ensure that fair and full participation in the Protocol is granted to all, recognising that climate change and ozone-depletion affect everyone.

## TEN YEARS OF THE KIGALI AMENDMENT

The tenth anniversary of the Kigali Amendment offers an important opportunity for a comprehensive stocktake on the first decade of progress and challenges in the HFC phase-down, while charting strategies to strengthen the next ten years of implementation and unlock greater climate benefits. EIA welcomes the development of the Ozone Secretariat's Kigali Amendment Tenth Anniversary Briefing and expresses its firm support for the goals outlined in the Kigali +10 Declaration to Advance Global Atmospheric Protection.<sup>5</sup>

To strengthen the ambition and climate benefit of the Kigali Amendment's implementation, EIA recommends a more explicit emphasis on ultra-low global warming potential (<10 GWP) solutions as the guiding objective for project proposals submitted to the MLF and the use of consistent definitions and measurements for evaluating the success of these. EIA does not support broadly referring to 'lower-GWP' refrigerants as climate-friendly, as lower-GWP HFCs and hydrofluoroolefins (HFOs) require ozone-depleting substances (ODS) and greenhouse gases (GHGs) as feedstocks during production and differ significantly in terms of environmental impact compared to ultra-low GWP natural refrigerant solutions such as hydrocarbons.

It is vital to ensure that all Parties have access to the necessary resources to deliver strong Kigali implementation and to encourage accelerated action wherever possible. In its Tenth Anniversary Briefing, the Secretariat states that "most approved KIPs (Kigali Implementation Plans) have shown that A5 parties have been able to progress at a rate faster than the mandated phase-down schedule," although EIA's analysis of HFC baselines and KIPs demonstrates significant scope to go further, faster. Of the 91 KIPs approved to date, approximately one-third (31) do set HFC phase-down targets which go beyond the minimum requirements for compliance. Despite this, more than 80 per cent (75) of the approved KIPs establish consumption targets for 2029 which exceed the average amount of HFCs consumed during the baseline years, signifying a substantial real terms increase in HFC consumption across the Group 1 "freeze" period. Looking forward, a clear distinction between meeting compliance obligations and achieving real acceleration and ambition will be critical in shaping the future success of the Protocol and delivering the maximum climate benefit.

Aside from implementation of the HFC phase-down, EIA recognises the significant climate opportunity that improved lifecycle refrigerant management (LRM) can deliver and encourages further work in key areas such as leak prevention, enhanced workforce development and bank management to reduce emissions at all points of the lifecycle.<sup>6</sup> We also recommend the Parties place further emphasis on accountability, financing (which must be delivered through proven, sustainable models such as extended producer responsibility) and measurable emissions outcomes related to LRM.

As the dual hydrochlorofluorocarbon (HCFC) phase-out and HFC phase-down progresses and supply is further constrained, the financial incentives driving illegal trade will rise. EIA underscores illegal trade as a cross-cutting challenge and an opportunity to further prevent avoidable emissions through institutional strengthening. Effective licensing and enforcement systems, increased customs capacity with training and tools for detecting legal and illegal refrigerants, supply-chain traceability and information-sharing on imports and exports between governments will all become increasingly essential to safeguarding compliance and protecting the environmental benefits achieved under the Protocol.

As we commemorate this ten-year milestone, we urge Parties to renew their ambition and commit to maximising the climate benefits of Kigali implementation. The KA@10 Technical Workshop prior to the Thirty-Eighth Meeting of the Parties (MOP38) will provide an important space for stakeholders to identify opportunities to improve the delivery of Kigali and tackle the challenges that continue to threaten its implementation.



# AGENDA ITEM 4: REPLENISHMENT OF THE MLF FOR THE TRIENNIUM 2027-29

This year’s replenishment negotiations come at a pivotal moment. Most Article 5 (A5) Parties are now simultaneously completing the phase-out of HCFCs, while implementing Stage I KIPs in preparation for the first HFC consumption reduction step in 2029.

At the same time, demand for cooling in our warming world is rapidly growing, with installed cooling capacity set to triple by 2050.<sup>7</sup> This conjunction of events creates a significant challenge, but also an opportunity to avoid the uptake of HFCs, maximise parallel energy efficiency gains and adopt sustainable cooling.

The benefits of MLF funding are not just limited to the capacity built, the technology transferred or the successful compliance of A5 countries. They are also clear in the measurable decrease of ozone depletion and global temperature rise. For example, by mid-century the phase out of ODS under the Montreal Protocol will have avoided an estimated 0.5-1°C additional warming.<sup>8</sup> Providing important context to this, it is estimated that a permanent 1°C increase in global temperature would reduce global GDP by 12 per cent by the end of the century.<sup>9</sup>

Recent findings show that the cumulative benefits for non-Article 5 (non-A5) countries from the provision of MLF funding over the period 1991-2025 will amount to \$3,069 billion by the end of the century, based on avoided skin cancer and cataracts. This is far greater than the investment of \$4.9 billion to date.<sup>10</sup>

## SUPPLEMENT TO THE MAY 2026 TEAP REPLENISHMENT TASK FORCE REPORT

In its May 2026 report, the TEAP Replenishment Task Force (RTF) (“RTF-May 2026”) estimated a total funding requirement for the 2027-29 triennium to be from a low-end range of US\$1.28-1.36 billion to a high-end range of \$1.67-1.76 billion. This funding is intended to support the completion of the ODS phase-out (namely HCFCs) and the implementation of Stage I and Stage II HFC phase-down activities. It also factors in ongoing Institutional Strengthening (IS) and Standard Activities (SA), such as the Compliance Assistance Programme (CAP), Implementing Agency costs and MLF Secretariat costs.

Based on guidance from Parties at the 48<sup>th</sup> Meeting of the Open-Ended Working Group (OEWG48), the RTF has provided an updated supplementary report (“RTF-September 2026”).<sup>11</sup> The RTF first updated the May report with data that have become available since the previous report (including decisions from the 98<sup>th</sup> Meeting of the Executive Committee of the Multilateral Fund (ExCom98) and newly reported HFC consumption data). This resulted in a slight decrease in both lower and upper ends of the previous estimate (see Table 1).

**Table 1:** Updated ranges of total funding requirement for the replenishment of the MLF for 2027-29 (\$ million), including and excluding project management unit (PMU) costs. (Source: Table 2.11 TEAP RTF-September 2026)

| 2027-2029 TRIENNIUM        | MAY 2026 REPORT ESTIMATE<br>(WITHOUT PMU) | UPDATED MAY 2026 REPORT ESTIMATE<br>(WITH PMU) |
|----------------------------|-------------------------------------------|------------------------------------------------|
| Subtotal - HCFC Activities | 451 - 573                                 | 437 - 564                                      |
| Subtotal - HFC Activities  | 702 - 1,053                               | 664 - 999                                      |
| Subtotal - IS & SA         | 129                                       | 129                                            |
| Grand Total                | 1,282 - 1,755                             | 1,230 - 1,692                                  |

The updated ranges were used as a starting point for addressing a series of new scenarios requested by the Parties at OEWG48, including:

- different cost-effectiveness (CE) scenarios – historical CEs (1a), CE factors for each A5 party over the past six years (1b) and average funding levels for each A5 party over the past six years (1c)

- a low-end scenario based on reported consumption data and a high-end scenario based on established HFC baselines and eligible HCFC consumption (2a) and a “realistic” project implementation timeline through modification of Resource Allocation Schedule A (2b)
- a possible increase to the funding for Low-Volume-Consuming Countries (LVCs) and Very-Low-Volume-Consuming Countries (VLVCs) in 2027-29 for Stage II KIPs, through a revision to the resource allocation tables
- a funding window to support the implementation of national plans developed pursuant to ExCom decision 91/66.

The update also incorporated elements on energy efficiency and HFC-23, as requested by the OEWG48 contact group.

The new scenarios (points 1 and 2 above) were calculated with a view to reducing the lower-end estimate of the range of funding in 2027-29. For HCFC activities, new scenario 1c gave the lowest estimate, reducing the low-end of the range for 2027-29 by \$207 million, from \$437 million to \$230 million.<sup>12</sup>

For HFCs, available data only allowed consideration of historical CE data (new scenario 1a). Here, the new scenario reduced funding levels by \$65.2 million under Resource Allocation Schedule A, and \$38 million under Schedule B, reducing the lowest estimate for HFC activities to \$625.14 million. This estimate is based on costs of \$528.1 million for KIP activities plus additional costs for project preparation, verification, energy efficiency and pilot projects for Regional Atmospheric Monitoring (ATM) (PRP/VER/EE/ATM costs) as well as production sector/HFC-23 mitigation costs.<sup>13</sup>

New scenario 2a (based on most recently reported HFC data) reduced the low-end range of funding for HFC activities further, to \$547 million.<sup>14</sup> However TEAP noted that this scenario is not directly comparable with the main estimated funding range, as it involved “a considerable change in methodology, including the use of recently reported consumption for Parties without KIPs.”

**EIA reiterates our concern that Resource Allocation Schedule B delays allocation of funding for all Stage II KIPs to the 2030-32 triennium and beyond, and allocates no funding for Group 2 Parties during 2027-29, failing to account for possible earlier HFC activities.** At the 92<sup>nd</sup> meeting, the Executive Committee agreed that A5 countries could submit proposals for projects that reduced HFC consumption in advance of Montreal Protocol targets, and that they would be considered on a case-by-case basis where countries had a strong national level of commitment in place to support such reductions.<sup>15</sup> **We therefore believe that a resource allocation schedule that delays all Stage II KIP activities to post-2030 should be rejected.**

Resource allocation in Schedule A assumes that all Group 1 Parties will have KIPs during the 2027-29 triennium and that a large proportion of the funding (60 per cent of the funding for Group 1 Parties with existing KIPs) will be allocated to Stage II KIP activities during the period. Schedule A also assumes that 60 per cent of the KIP Stage 1 funding for Group 2 Parties will be allocated in the coming triennium. In order to respond to scenario 2b in the updated report, TEAP RTF modified Resource Allocation Schedule A to allow for Stage II KIPs to be introduced at a slower pace, with only 50 per cent of the funding for Group 1 countries with existing KIPs to be allocated in the 2027-29 triennium, instead of 60 per cent.

The estimated HFC funding requirement for 2027-29 including the new scenarios ranges from \$547-999 million.

**Table 2:** Resource allocation schedules estimated in TEAP RTF-September 2026 (Source for Schedule A and Modified Schedule A: Table 3.22, TEAP RTF-September 2026; Source for Schedule B: Table 3.4, TEAP RTF-May 2026)

| GROUP                                | KIP STAGE | SCHEDULE A<br>(% PER TRIENNIUM) | MODIFIED<br>SCHEDULE A<br>(% PER TRIENNIUM) | MODIFIED<br>SCHEDULE B<br>(% PER TRIENNIUM) |
|--------------------------------------|-----------|---------------------------------|---------------------------------------------|---------------------------------------------|
| G1 Parties without KIPs              | I         | 100% - 2027-29                  | No change                                   | 90% - 2027-29<br>10% - 2030-32              |
|                                      | II        | 60% - 2030-32<br>40% - 2033-35  | 30% - 2030-2032<br>70% - 2033-2035          | 60% - 2030-32<br>40% - 2033-35              |
| G1 Parties with KIPs<br>(91 Parties) | II        | 60% - 2027-29<br>40% - 2030-32  | 50% - 2027-2029<br>50% - 2030-2032          | 60% - 2030-32<br>40% - 2033-35              |
| G2 Parties                           | I         | 60% - 2027-29<br>40% - 2030-32  | No change                                   | 90% - 2030-32<br>10% - 2033-35              |



ADDITIONAL SCENARIOS ON LVCs/VLVCs AND LRM

In addition to the revised HCFC and HFC costs, TEAP RTF calculated a high-end scenario for a possible increase in the funding allocation for LVCs and VLVCs for Stage II, resulting in an increase to \$28.2 million in 2027-29, up from \$4.78 (RAS-B) and \$16.36 (RAS-A).<sup>16</sup> This reflects having 82 per cent of Stage I and II funding in the next triennium.

A further calculation was carried out to assess the “reasonable level of implementation support” required to implement national plans to address banks of ODS and HFCs (developed under ExCom Decision 91/66). This amounts to \$52.55 million in 2027-29.

Despite these new estimates being provided in the report, EIA notes that the calculated costs were not included in the updated ranges of total funding requirements found in Table ES.10 of the TEAP report, creating a concern that they may be overlooked. To ensure that the replenishment reflects the full range of potential funding needs, it is vital that these estimates are taken into account (see Table 3).

Table 3: Summary of total funding requirement estimates outlined in TEAP RTF-September 2026. (Source: Tables 2.9, 3.16, 3.21, 3.25 & ES10, TEAP RTF-September 2026)

| 2027-29 TRIENNIUM                                    | MAY REPORT                                      |                                               | UPDATED MAY REPORT (WITH PMU)                   |                                               | SUPPLEMENTARY REPORT ESTIMATES APPLYING HIGHEST REDUCTION FROM NEW SCENARIOS 1A, 1B OR 1C |                                               | SUPPLEMENTARY REPORT ESTIMATES APPLYING SCENARIO 2A (REPORTED HFC CONSUMPTION) |                                               |
|------------------------------------------------------|-------------------------------------------------|-----------------------------------------------|-------------------------------------------------|-----------------------------------------------|-------------------------------------------------------------------------------------------|-----------------------------------------------|--------------------------------------------------------------------------------|-----------------------------------------------|
|                                                      | Low                                             | High                                          | Low                                             | High                                          | Low                                                                                       | High                                          | Low                                                                            | High                                          |
| HCFC activities                                      | 451                                             | 573                                           | 437                                             | 564                                           | 230                                                                                       | 564                                           | 230                                                                            | 564                                           |
|                                                      | Scenario 1<br>(historical CE thresholds)        | Scenario 2<br>(CEs in cost guidelines)        | Scenario 1<br>(historical CE thresholds)        | Scenario 2<br>(CEs in cost guidelines)        | Scenario 1c.<br>(CE av funding past 6 yrs)                                                | Scenario 2<br>(CEs in cost guidelines)        | Scenario 1c.<br>(CE av funding past 6 yrs)                                     | Scenario 2<br>(CEs in cost guidelines)        |
| HFC activities                                       | 702                                             | 1,053                                         | 664                                             | 999                                           | 625                                                                                       | 999                                           | 547                                                                            | 999                                           |
|                                                      | Scenario 1<br>(CE in cost guidelines),<br>RAS B | Scenario 2<br>(higher CEs for SMEs),<br>RAS A | Scenario 1<br>(CE in cost guidelines),<br>RAS B | Scenario 2<br>(higher CEs for SMEs),<br>RAS A | New scenario 1a.<br>(historical CEs),<br>RAS B                                            | Scenario 2<br>(higher CEs for SMEs),<br>RAS A | New scenario 2a<br>(reported data),<br>RAS B                                   | Scenario 2<br>(higher CEs for SMEs),<br>RAS A |
| IS & SA                                              | 129                                             | 129                                           | 129                                             | 129                                           | 129                                                                                       | 129                                           | 129                                                                            | 129                                           |
| GRAND TOTAL (US\$ million)                           | 1,282                                           | 1,755                                         | 1,230                                           | 1,692                                         | 984                                                                                       | 1,692                                         | 906                                                                            | 1,692                                         |
| LRM funding window                                   |                                                 |                                               |                                                 |                                               |                                                                                           | 52.55                                         |                                                                                | 52.55                                         |
| GRAND TOTAL INCLUDING LRM ADJUSTMENTS (US\$ million) |                                                 |                                               | 1,230                                           | 1,692                                         | 984                                                                                       | 1,745                                         | 906**                                                                          | 1,745                                         |

RECOMMENDATIONS

Based on the data in the updated RTF report, EIA believes that the next replenishment must be at a similar level to the last record replenishment of \$965 million for 2024-26. While not all funds have been expended in the current triennium, this period was marked by the development of new policy, while both Implementing Agencies and Parties have grappled with the challenges of implementing the combined HCFC and HFC control measures.

The 2027-29 triennium is expected to be marked by a significant increase in project activity, including the establishment of new funding windows, such as support to implement plans developed under ExCom Decision 91/66 to address banks of controlled substances, as well as pilot and demonstration projects, KIPs and HPMPs.

EIA urges the Parties to the Montreal Protocol to ensure that the next replenishment of the MLF turns the policy frameworks established in recent years into effective implementation and capitalises on the opportunity and desire of many A5 Parties to take accelerated action.

\*\* Noting the different calculation methodology, which is not directly comparable with the one used in the Updated RTF May Report. Also noting that reallocation of LVC funds is not factored in.



## AGENDA ITEM 5: FURTHER STRENGTHENING MONTREAL PROTOCOL INSTITUTIONS

Over the past decade, a drumbeat of decisions and workshops have explored how to strengthen Montreal Protocol institutions in the face of emerging challenges, most recently at a pre-MOP37 informal meeting.<sup>17</sup> Thereafter, at OEWG48, two Conference Room Papers (CRPs) were presented, one by Cameroon on behalf of the African States and another by Australia, Canada, European Union, Norway and Switzerland. For MOP38, the Ozone Secretariat has produced a note with information relevant to each operative paragraph in the two CRPs.<sup>18</sup>

EIA believes focus should be given to the operative paragraphs that directly respond to the key takeaways from the pre-MOP37 informal meeting.<sup>19</sup> On those, EIA makes the following recommendations:

- **request for a checklist defining core features of effective licensing systems and/or a list of the core features of licensing systems for informational purposes.** The Ozone Secretariat notes that “common features” and notable practices have been identified in previous reports, but that Parties disagree about what “core features” might entail. EIA recommends differentiating between features which are “core” from a strict compliance perspective (i.e., those that are mandated by the treaty and previous decisions) and those that are “core” from a functional and practical perspective (i.e., those that facilitate the effective operation of licensing systems in practice). This, fundamentally, is the purpose of the requests presented. It should also be noted that, based on the co-proponents of the two CRPs presented at OEWG48 alone, this request is supported by at least 85 countries from both Article 2 and Article 5 Parties
- **request for strengthening licensing systems and trade controls.** EIA supports efforts to ensure national import and export licensing systems cover all relevant trade in controlled substances, including used, recycled and reclaimed controlled substances and substances in transshipment or re-exported and trade through free trade zones (FTZs). These measures are reflected in takeaways from the pre-MOP37 informal meeting, which highlighted FTZs, transshipment and re-export as areas requiring strengthened enforcement.<sup>20</sup> They also build on previous decisions, notably Decisions XVII/16 and XIX/12.<sup>21</sup> Parties should ensure these trade routes are appropriately controlled, tracked and reported under Article 7 of the Montreal Protocol

- **request for improving data-sharing and cross-border cooperation.** The pre-MOP37 informal meeting highlighted the importance of cooperation among trading countries with data sharing to tackle transboundary trade-related challenges.<sup>22</sup> EIA supports strengthening data-sharing and database coordination between National Ozone Units (NOUs) and customs authorities, as well as between trading countries, to improve tracking and verification of cross-border movement of controlled substances. More consistent reporting of sources of imports and destinations of exports under Article 7 would help the Ozone Secretariat identify discrepancies and prevent illegal trade
- **request for a report on available tools to enhance tracking and monitoring across the supply chain, including online marketplaces and e-commerce platforms.** The Ozone Secretariat readily acknowledges that “no single tool for enhancing tracking and monitoring of controlled substances across the supply chain is available, including in online marketplaces and on e-commerce platforms”. It thereafter lists various customs and enforcement databases and entities which are focussed on cross-border trade. This underscores the need for the requested report, which should not only review the relevance of the listed databases and entities, but also explore other tools available to track and monitor online marketplaces and e-commerce platforms and their potential deployment for controlled substances, including AI tools.<sup>23</sup>
- **request for the development of standard operating procedures to support a harmonised approach for detection of illegal trade and related matters.** The Ozone Secretariat notes that “guidelines” for customs administrators on developing standard operating procedures for enforcement of the Montreal Protocol were produced in tandem with the World Customs Organization (WCO). EIA welcomes this observation, but notes that the request is not for “guidelines” to support the eventual development of standard operating procedures, but for the development of “standard operating procedures” themselves, in support of a harmonised approach across Parties that choose to adopt them, promoting the adoption of best practices on illegal trade
- **request on feasibility and cost of developing open-source licensing software that can be integrated into customs and single-window systems.** The Ozone Secretariat notes the independent existence of such software, but provides no information on feasibility and cost, nor integration into customs and single-window systems. EIA recommends this information be made available for the Parties
- **request for ExCom assessment of additional training and capacity needs related to illegal trade, licensing systems and data reporting in A5 Parties.** The initiatives undertaken by the Compliance Assistance Programme (CAP) and OzonAction to date are invaluable. However, the request here is for an assessment on whether any additional needs exist, specifically with respect to illegal trade, licensing systems and data reporting, which is both reasonable and necessary for ensuring A5 Parties are provided with sufficient support.

With respect to the remaining operative paragraphs across the two CRPs, EIA generally supports their aims. However, to the extent that time is limited, EIA believes Parties should focus on the requests directly responsive to the key takeaways from the pre-MOP37 informal meeting, as outlined above.

## AGENDA ITEM 6: ENSURING THE VIABILITY OF MONTREAL PROTOCOL OPERATIONS

At OEWG48, Parties considered scenarios laid out by the Secretariat in response to Decision XXXVII/7, outlining options for potential changes to the Montreal Protocol’s work cycles, meetings and related activities, including associated cost estimates.<sup>24</sup>

Specifically, the three meeting scenarios detailed are:

- **Scenario A:** The current business as usual (BAU) structure of an annual mid-year OEWG and late year MOP
- **Scenario B:** An extended annual MOP which combines the OEWG into the Meeting of Parties, supported by intersessional online meetings scheduled as needed
- **Scenario C:** A biennial MOP with an OEWG in intervening years. This scenario would also extend the MLF replenishment cycle from three to four years and reduce assessment panel reports to once every four years, in between quadrennial assessments.



Building on discussions and questions raised at OEWG48, the Secretariat has prepared a supplemental report on costs and implications of potential changes to operations, for consideration at this meeting.<sup>25</sup> The report estimates annual average costs of \$6.18 million in Scenario A (BAU), \$5.18 million in Scenario B (extended annual MOP) and \$4.57 million in Scenario C (biennial MOP with four-year replenishment cycle). It also highlights additional options for changes to modalities affecting MOPs, OEWG and Implementation Committee meetings. When considering these figures, EIA reiterates that any potential financial saving must be weighed against the significant risk of undermining the efficacy and relevance of the world's most successful environmental treaty.

Although not easily quantified, the implications of the operational changes outlined threaten vital components of the Protocol, including equitable participation, timely decision-making, intersessional workload management and the capacity to address emerging issues. The ability of Parties to collectively respond to unexpected challenges and compliance issues in a timely manner, such as illegal trade and unexpected emissions, is a cornerstone of the Protocol's success and must be preserved at all costs.

During OEWG48, many Parties emphasised the value of regular in-person engagement, recognising the potential for changes to have a detrimental impact on the inclusivity of the Protocol. Concerns about the difficulty of negotiating and reaching decisions virtually were also raised, coming at a time when Parties face significant implementation challenges, evolving compliance requirements and the emergence of new issues requiring attention under the Protocol. It should be noted that greater reliance on virtual meetings, and changes to the availability of translation services, risk disproportionately burdening A5 Parties, thereby limiting equitable and inclusive participation.<sup>26</sup> The integrity of the Protocol relies on full participation and this must not be undermined.

In addition to concerns about equitable participation, the Secretariat notes that restructuring or reducing meetings would likely shift an increased workload to intersessional periods, potentially affecting capacity to provide timely technical and policy support to Parties. In particular, Scenario C risks backlog and reliance on extraordinary MOPs, overload of agendas and delays in discussions and decisions. As such, the changes outlined would not result in proportional reductions in the Secretariat's workload or personnel costs.

The Secretariat's supplementary report also addresses the important issue of contributions. EIA urges Parties to give this matter serious consideration, as the timely payment of contributions is fundamental to the continued viability of the Montreal Protocol. Between 2015-25, the average annual collection for the Montreal Protocol Trust Fund has been just 73 per cent, and only 69 per cent for the Vienna Convention Trust Fund. Unlike other multilateral environmental agreements (MEAs), the Vienna Convention and Montreal Protocol do not have any mechanism through which consistent withholding of contributions can be addressed.

Noting the examples from other MEAs set out by the Secretariat, EIA recommends that Parties discuss the introduction of a "non-contribution rule" to encourage a higher collection rate for both Trust Funds. For example, such a rule could make Parties with outstanding contributions for two or more years ineligible for membership of, or nomination to, the Implementation Committee, echoing the approach adopted under the Convention on Biological Diversity (CBD).

While there is value in careful examination of the treaty's operations, the pursuit of increased efficiency should not come at the cost of inclusivity or effectiveness. Collaboration upholds the Protocol's legacy and a shared commitment to delivery will only become more important as we confront an increasingly warming world.



## AGENDA ITEM 7: EMISSIONS OF HFC-23

The updated report on HFC-23 emissions produced by the TEAP in response to Decision XXXVII/2 confirms that the substantial gap between top-down atmospheric estimates and bottom-up reported emissions remains unexplained.<sup>27</sup>

In 2024, global HFC-23 emissions inferred from atmospheric monitoring were approximately 14kt (206Mt CO<sub>2</sub>e), about 13kt higher than emissions of HFC-23 byproduct reported under A7 (~1kt), or 10.5-12.5kt higher than TEAP's best estimate of emissions from all known sources (1.5-3.5kt).<sup>28</sup> The scale and persistence of this significant gap is a crisis that must be addressed.

### HFC-23 EMISSIONS FROM HCFC-22 PRODUCTION

HFC-23 is generated as an unavoidable byproduct during production of HCFC-22, which is now manufactured in greater volumes than any other fluorocarbon in history.<sup>29</sup> Due to the massive scale of HCFC-22 production and the relatively high generation rate of HFC-23 byproduct (1-4 per cent), this process is understood to be the main source of HFC-23 generation globally.<sup>30</sup> Prior to 2015, top-down estimates of global HFC-23 emissions closely aligned with bottom-up estimates based on reported data. However, new evidence suggests that this may have been the result of over-estimates of emissions in some regions and under-estimates in others cancelling out a global scale.<sup>31</sup> Since 2015 global top-down estimates have far surpassed those based on reported data.<sup>32</sup> The emergence of this global gap coincided with the end of the projects funded to abate HFC-23 from HCFC-22 production under the Clean Development Mechanism (CDM), despite a significant increase in reported abatement from A5 Parties.<sup>33</sup>



The ratio of HFC-23 emissions relative to HCFC-22 production ( $E_{23}/P_{22}$ ) was 1.1 per cent in 2023.<sup>34</sup> This value suggests that some emissions are being abated, as it is approximately half of what would occur without abatement.<sup>35</sup> Nonetheless, it is still significantly higher than the 0.1-0.3 per cent derived from reported emissions (a value which suggests almost complete abatement) and the value of 0.1 per cent defined by the Multilateral Fund as destruction “to the extent practicable”.<sup>36</sup>

Regionally observed atmospheric emissions accounted for just 43 ± 10 per cent of global emissions in 2023, with gaps covering monitoring in HCFC-22 producing countries including Argentina, India, Mexico, the Russian Federation, the United States and parts of China.<sup>37</sup> Regional monitoring has shown that emissions from Eastern China far surpass those reported under Article 7 for the entire country, accounting for as much as 40 ± 5 per cent of global total HFC-23 emissions.<sup>38</sup> Indeed, almost every monitored region or country showed higher estimated emissions than expected. Although A5 Parties account for most of the global emissions gap,  $E_{23}/P_{22}$  values in both A5 (average ~1 per cent) and non-A5 (average ~0.36 per cent) Parties exceed the levels that best practice and mitigation in line with Kigali requirements would be expected to deliver.<sup>39</sup>

Fundamentally, the HFC-23 emissions gap still cannot be explained with the data currently available to the Montreal Protocol’s expert panels, nor by uncertainties in the emissions inferred from atmospheric data.<sup>40</sup> Either abatement is not occurring at the levels reported or there are additional, unknown or underestimated sources of substantial HFC-23 emissions, or both.

OTHER SOURCES OF HFC-23 EMISSIONS

Emissions of HFC-23 can occur from sources other than HCFC-22 production. Current best estimates suggest that emissions from other sources are small compared to those from HCFC-22 production, but uncertainties remain, particularly about byproduct emissions from some other fluorochemical production.<sup>41</sup>

HFC-23 byproduct can be generated during production of other fluorinated gases, notably HFC-32, and during the synthesis of TFE/HFP from HCFC-22, a process used in the large-scale production of fluoropolymers such as PTFE.<sup>42</sup> The amount of HFC-23 generated is expected to be much lower than from HCFC-22 production but there is a lack of available data means the precise scale of emissions remains uncertain.<sup>43</sup> These sources therefore demand further investigation, especially in light of the increasing production of substances such as TFE/HFP and HFC-32. Even if the emissions are higher than currently estimated, it is unlikely that these sources would explain a substantial portion of the global emissions gap, but this does not mean they are unimportant.<sup>44</sup> All sources contributing to the gap and to global emissions need to be understood if emissions of HFC-23 are to be addressed.

ACCURACY AND COMPLETENESS OF ARTICLE 7 HFC-23 BYPRODUCT DATA

The available evidence suggests that emissions from sources other than HCFC-22 production are insufficient to account for the global emissions gap. Therefore, underreporting of emissions from HCFC-22 production is likely occurring.<sup>45</sup>

Differences in emissions estimation methodology and scope (e.g., whether fugitive emissions are included) can lead to differences in the emissions reported, yet there is no standardised methodology or best practice guidance for HFC-23 byproduct emissions reporting under Article 7.<sup>46</sup> Only four Parties have provided information on their methodologies in response to Decision XXXVI/3 and the information available on the methodologies used by Parties for reporting under Article 7 is not provided in sufficient detail for TEAP to determine if the same scope or methodology is used.<sup>47</sup>

By contrast, Parties reporting to UNFCCC follow IPCC guidelines for estimating and reporting HFC-23 byproduct emissions.<sup>48</sup> A number of different methodologies can be used: Tier 1 (based on a default emissions factor), Tier 2 (based on a plant level mass balance approach) or Tier 3 (based on plant level measurement data). Tier 3 methods are the most accurate and Tier 1 the least. The IPCC guidelines state that Tier 1 should only be used in cases where plant specific data is unavailable and that, because of standard monitoring practices in place in production facilities, it should be possible to obtain sufficient plant level data for Tier 2 methodologies, or in most cases Tier 3.<sup>49</sup> Not all countries provide information alongside their UNFCCC data on the methodology used to calculate HFC-23 byproduct emissions and where they do the level of detail varies greatly amongst countries.

Discrepancies remain between byproduct emissions reported to Article 7 and UNFCCC for some Parties and although this can be explained by differences in the accounting methodology used, there are some cases that require further consideration.<sup>50</sup>

- in 2023, the Russian Federation reported 828t HFC-23 byproduct from HCFC-22 production to the UNFCCC, and 0t to the Montreal Protocol under Article 7.<sup>51</sup> The country’s National Inventory Report states that for the UNFCCC reporting a Tier 2 methodology is used, which relies on plant-level data, and they provide data on both HFC-23 generation and capture, with capture taken into account in calculation of reported emissions. Combined,

bottom-up emissions estimates for non-A5 Parties are higher when based on UNFCCC reporting rather than Article 7, with the difference mainly due to the discrepancy in the Russian reporting. Newly published top-down estimates for total non-A5 emissions provide confidence in the scale of emissions suggested by the UNFCCC data.<sup>52</sup>

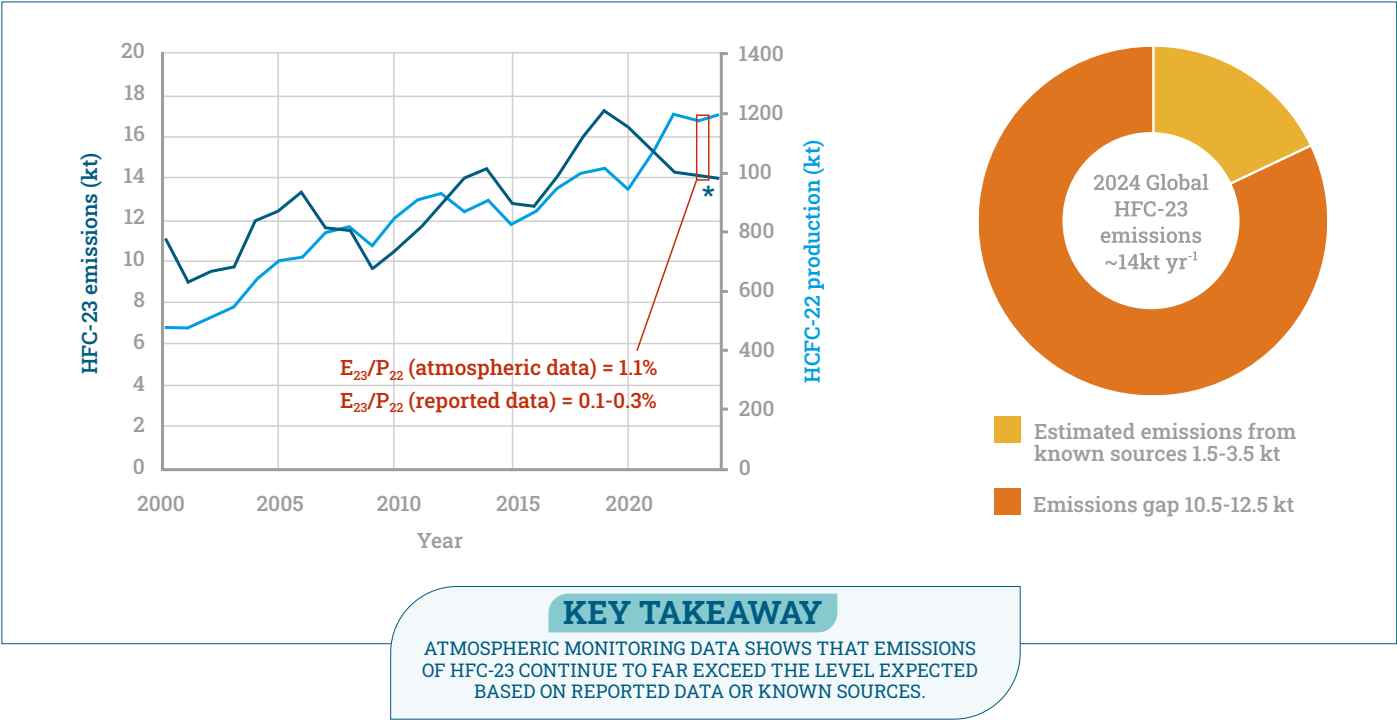
- in 2020, India reported 1,850t HFC-23 by-product. Although there is no year for which both Article 7 and UNFCCC data are available for the country, this figure is in stark contrast to the zero tonnes that India has reported under Article 7 since 2021.<sup>53</sup> For UNFCCC reporting, India’s HFC-23 byproduct emissions are calculated using a country specific emission factor of 2.89 per cent, which corresponds to the level of byproduct generation and does not consider capture or destruction of emissions.<sup>54</sup> The IPCC guidelines specify that it is good practice to take abatement into account in reported data “where the abatement has been verified by process records on every plant”.

It is not clear why a Party would choose to use two different methodologies when reporting the same emissions, or not use plant-level data in reporting if it was available. Regardless, these cases demonstrate the significant difference in estimated emissions which can be caused by different methodologies. They also highlight the critical importance of ensuring that robust methodologies, based on best practice (e.g., prioritising plant level measurement data where possible), are used for both Article 7 and UNFCCC reporting and that information on the methods used is made available. TEAP also highlights that differences in how methodologies are implemented at a facility level can mean that not all emissions sources are captured in the data, noting this can only be verified by inspection of individual facilities.<sup>55</sup>

Article 7 requires Parties to report HFC-23 byproduct emissions from all facilities manufacturing any HCFCs or HFCs. According to the TEAP, the emissions reported under Article 7 “appear to be predominately related to HCFC-22 production; it is not known if HFC-23 emissions have been reported for all relevant production.”<sup>56</sup> In the data reporting form (data form 6) Parties are required to submit data on HFC-23 emissions (and voluntary on of HFC-23 generation and other elements) by facility but not on the source of the byproduct HFC-23.<sup>57</sup> This, coupled with the lack of transparent and up to date information on fluorochemical production facilities globally, makes it challenging to assess the completeness of the Article 7 data. However, EIA notes that the United Arab Emirates, which does not have any HCFC-22 production but recently began reporting HFC production, has not yet reported byproduct emissions.<sup>58</sup> Furthermore, in 2025 the EU no longer appeared to report byproduct data from any plant in Germany, despite the country still reporting production of HFCs.<sup>59</sup> EIA reminds all Parties that multiple past decisions have been taken, urging Parties to ensure that “all cells in the data reporting forms are completed with a number, including zero where appropriate, rather than being left blank.”<sup>60</sup>

EIA also reminds Parties that reporting and abatement of HFC-23 byproduct emissions are requirements under the Kigali Amendment and therefore any instances of non-compliance should be identified and addressed.

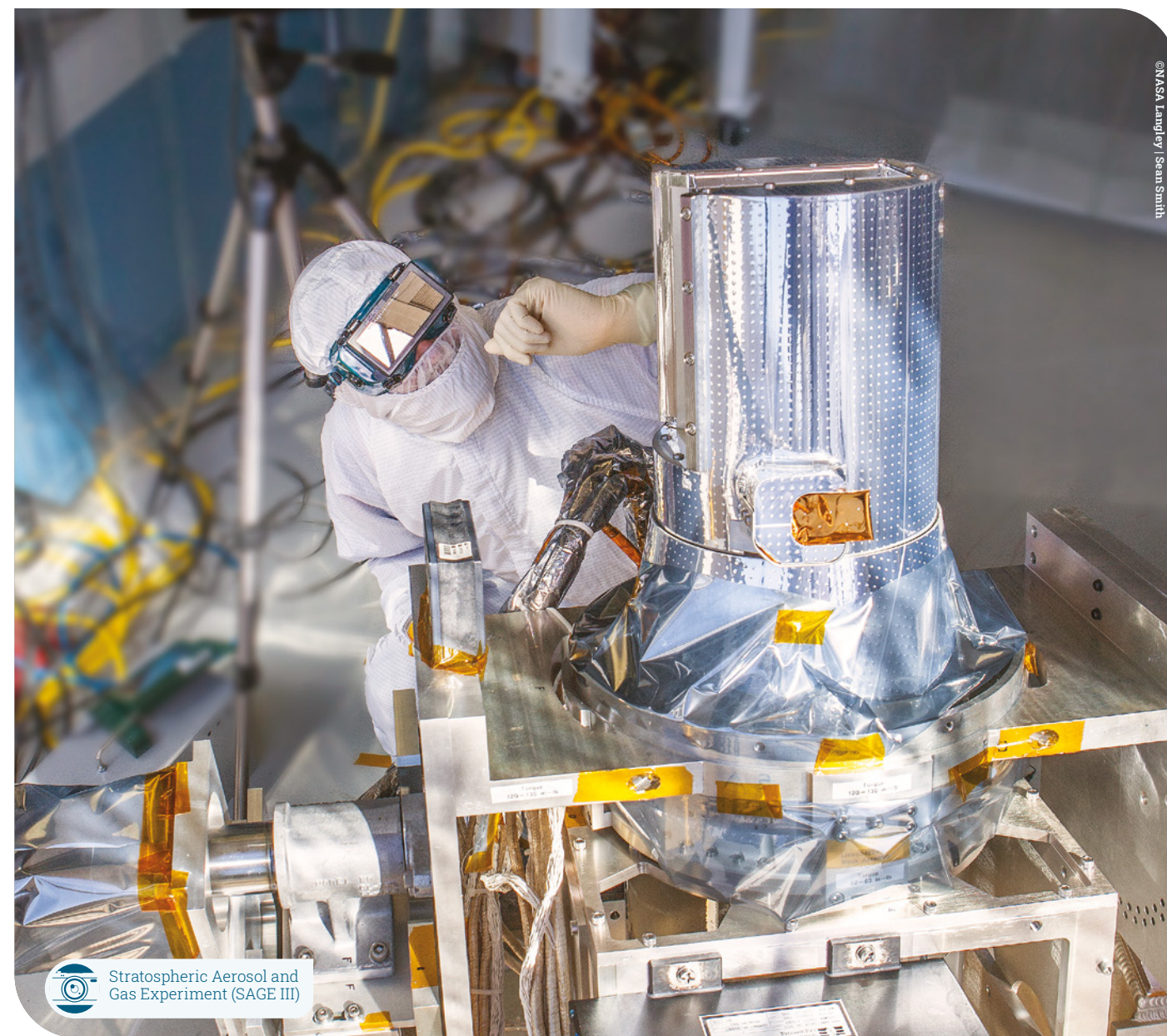
Figure 1: (Left) HFC-23 emissions inferred from atmospheric monitoring and HCFC-22 production based on Article 7 reporting.<sup>61</sup> Note, (\*) the precise value of emissions for 2024 has not been published, but a value of 14 kt has been used based on TEAP’s reference to ~14 kt. (Right) the scale of the global emissions gap in 2024 after accounting for emissions from known sources.<sup>62</sup>



## RECOMMENDATIONS

The significant global HFC-23 emissions gap was brought to light by scientists in 2020.<sup>63</sup> Despite years of discussion and multiple decisions requesting more information, Parties have yet to take decisive action to reduce the gap. EIA therefore makes the following recommendations to the Parties:

- **establish a technical taskforce:** A TEAP taskforce would be able to develop an accounting methodology and guidelines for measuring, controlling, reporting and verifying byproduct HFC-23 emissions, taking into account current practices by Parties, MLF projects and UNFCCC guidelines. This would fill a critical gap in the TEAP's mandate, which prevents evaluation of, or recommendations on, policy, as well as comments on the merits of methodologies mandated under different national regulations
- **ensure accuracy and completeness of Article 7 reporting:** EIA urges all Parties with facilities producing HCFC-22, or other HCFCs or HFCs, to ensure that best-practice emissions measurement and estimation methods are in place at these facilities and that all facilities are included in future Article 7 reporting. Data form 6 should be revised to ensure that the production source of the byproduct, whether it is Annex C Group I or Annex F, is included. EIA also recommends Parties take steps to introduce external verification of all HCFC-22 production facilities
- **request additional information sharing and transparency:** Parties with HCFC-22 and other fluorochemical production should provide transparent comprehensive information, including on HFC-23 generation. There is also a need for more information around the geographic locations and scales of HCFC, HFC and PTFE production as well as up-to-date information on the abatement technologies in place in production facilities, including those not producing HCFC-22, and on the production and use of HFC-23 as a feedstock and intermediate
- **strengthen atmospheric monitoring:** Expand atmospheric monitoring and sharing of atmospheric data in those regions responsible for remaining HCFC-22 production (including the US, Russian Federation, India and the rest of China) and carry out facility scale monitoring studies to refine estimated HFC-23 emission factors for both HCFC-22 and other fluorochemical production
- **investigate all potential emissions sources:** Investigate all potential sources of HFC-23 emissions, including known and potentially unreported HCFC-22 production, as well as other fluorochemical production
- **re-examine feedstock exemption:** The exemption that allows the unrestricted use of HCFC-22, HFC-23 and other controlled substances as feedstocks must be re-examined, given the clear evidence that emissions are more substantial than previously understood.



## AGENDA ITEM 8: ENHANCING REGIONAL ATMOSPHERIC MONITORING

Regional scale monitoring provides invaluable information on the progress of implementation and on the scale and sources of unexpected emissions. However, the large gaps that remain in the global monitoring network mean that regionally observed data is not available for many parts of the world.<sup>64</sup> EIA is therefore encouraged by the steps taken at the Montreal Protocol in recent years to expand regional monitoring, but notes that further action is needed to address major gaps in monitoring networks to ensure robust implementation of treaty obligations.

This year, the ExCom agreed to a funding window of \$9.25 million for three regional atmospheric monitoring stations in A5 countries, with projects to be submitted to the 102<sup>nd</sup> meeting in 2028, while an anticipated grant from the European Commission to the Vienna Convention General Trust Fund (GTF) will support monitoring at two to three new sites (the continued operation of which will be funded by an additional \$1.8 million from the MLF).<sup>65</sup>



The Advisory Committee has identified priority regions for new monitoring stations, made progress in evaluating the suitability of potential sites within these regions and recommended a phased approach for establishing stations.<sup>66</sup> The Secretariat has also developed an online cost estimation tool to help Parties assess costs associated with the establishment and operation of monitoring stations per national circumstances, to be launched at this meeting.<sup>67</sup> Several Parties, including Brazil, South Africa, Vietnam, Bangladesh, Ecuador and Mexico, have expressed interest in the possibility of establishing monitoring stations and scientific consultations are ongoing with India and South Africa.<sup>68</sup>

EIA welcomes the progress that is being made and encourages Parties, particularly those in priority regions identified by the Advisory Committee, to volunteer to host a station and to begin consultations with the Secretariat and the Advisory Committee and project preparation as soon as possible.<sup>69</sup>

In recent years, several Parties have emphasised the importance of supporting local scientific capacity and the need to ensure the long-term viability of monitoring stations, raising questions and concerns about sustained financial and capacity-building support. Establishing a station is only the first step; ensuring the resources, expertise and institutional capacity needed for its continued operation is essential for an effective enhanced monitoring network.

In its presentation to OEWG48, the Advisory Committee highlighted the need for consistent processes across the projects funded under the GFT and the MLF.<sup>70</sup> Parties reiterated this need for consistency, as well as the need for greater clarity on the Advisory Committee's role as this work progresses.<sup>71</sup> The EU has also indicated its intention to submit a CRP on these issues to MOP38.<sup>72</sup> EIA supports the intention to formalise and align the processes for the planned monitoring projects across the two funding streams, with clear roles and responsibilities to ensure effective coordination. Crucially, the Advisory Committee's extensive scientific and technical expertise, including members with experience operating existing global monitoring networks, must continue to inform project development and implementation.

Alongside the ongoing efforts at the Montreal Protocol to expand monitoring networks, there are several initiatives outside the Protocol building new monitoring capacity, from which lessons may be learned. This includes a project led by Georgetown University, which is establishing seven new sites for atmospheric flask sampling in under-monitored regions with growing consumption, and the EU-funded PARIS Project, which has established several new monitoring stations and evaluated Europe's HFC emissions, comparing top-down estimates with bottom-up inventories.<sup>73</sup> To advance these efforts, EIA encourages Parties to strengthen collaboration across universities, research institutions, local and national governments and civil society.

Also of note is the expansion of China's national atmospheric monitoring network. In recent years, China has developed a commercialised monitoring system for ODS and F-gases and established several new monitoring stations, providing a useful example of how national investment and international scientific cooperation can build monitoring capacity and expertise.<sup>74</sup> Lessons from China's efforts on atmospheric monitoring were shared at an international workshop hosted in the country in September 2026 and EIA notes the value of further exchanges of this kind between scientists, policy makers and civil society. The expansion of China's atmospheric monitoring network has led to several important studies on China's emissions of Montreal Protocol controlled gases, although notably not yet to the publication of an up-to-date estimate of China's total emissions of HFC-23.<sup>75</sup>

EIA reminds Parties that it is critical that data from atmospheric monitoring, including from the new stations which are to be funded under the MLF and the GTF, is shared with the global scientific community to enable verification and confidence in calculated emissions and that results are made public, both to strengthen transparency and accountability and to support the work of the Montreal Protocol.

Despite the progress, recent efforts will not be sufficient to close all critical atmospheric monitoring gaps, including those in regions with significant production and consumption of controlled substances. While they remain, network gaps will continue to hinder the timely detection of unexpected emissions of controlled substances and impede monitoring, verification and enforcement of compliance obligations.<sup>76</sup>

EIA urges Parties to consider how the remaining monitoring gaps can be closed and to explore opportunities for innovation at the national, regional and global levels to ensure that maximum climate benefits under the Protocol are secured. EIA also notes that alternative monitoring technologies and approaches will be necessary to build a more complete picture of emissions, including satellite and aerial monitoring and monitoring at local or facility level to pinpoint specific sources of emissions.<sup>77</sup>



# EMERGING ISSUES AND ENDURING CHALLENGES

## FEEDSTOCKS AND PRODUCTION

Industrial ODS and HFC emissions occur both when they are used as a feedstock and when they are formed as byproducts. The exemption of ODS and HFC feedstocks from the Montreal Protocol's control measures has allowed production for feedstock uses to grow significantly.<sup>78</sup> As feedstock production has grown, so has the body of evidence demonstrating that the associated emissions are not, as was previously assumed, insignificant.<sup>79</sup> A recent study from Reimann et al. found that without action, emissions from ODS feedstock use could delay ozone layer recovery by seven (6-11) years compared to a low emissions scenario where feedstock emissions were 0.5 per cent relative to production.

The evidence is clear: feedstock use of controlled substances leads to climate-damaging and ozone-depleting emissions on a scale that must not be ignored. Feedstock emissions are expected to continue growing in coming decades, due to both HFC production and increasing demand for products such as fluoropolymers and HFOs.<sup>80</sup> It is incumbent on the Montreal Protocol to heed the science and take action to address feedstock emissions. As a first step, Parties must require improved transparency and increased granular reporting on feedstock use, along with enhanced verification of reported data, to inform future decisions. Parties should also prioritise MLF-funded projects that transition to ultra-low GWP natural refrigerants and which do not rely on ODS or HFC feedstocks in their production, thereby avoiding upstream emissions of controlled substances.

Feedstock use is also an important emission source of chlorinated very short-lived substances (Cl-VSLs). Cl-VSLs are halocarbons with atmospheric lifetimes of less than six months, which have significant applications as feedstocks and solvents.<sup>81</sup> While ozone depletion is mainly driven by emissions of long-lived species, the contribution from VSLs is increasing.<sup>82</sup> As evidence of their current and future impacts on the ozone layer mounts, the need for action on VSLs is becoming clear.<sup>83</sup> Growing emissions of Cl-VSLs are offsetting some of the ozone benefits of the Montreal Protocol's phase-out of long-lived ODS and delaying recovery of the ozone layer.<sup>84</sup> This is a challenge that the Montreal Protocol, as the world's dedicated ozone protection treaty, must address.



## MANAGING BANKS OF CONTROLLED SUBSTANCES

The Montreal Protocol has phased out almost 99 per cent of controlled ODS, but a large quantity of the substances already produced remain at large. ODS and HFCs contained in equipment, foams and stockpiles, so called “banks”, are estimated at 13-24 GtCO<sub>2</sub>e globally and release around 1.5 GtCO<sub>2</sub>e every year, equivalent to almost 3 per cent of total global GHG emissions.<sup>85</sup> Even with full compliance under the Montreal Protocol, emissions from banks will continue as millions of appliances reach end of life and stockpiles gradually leak.

A large and growing share of banks sit in A5 countries, where recovery, reclamation and destruction or recycling remains more challenging and where capacity building and infrastructure development is often most needed. Yet despite this, bank management still represents a clear and cost-effective climate intervention, costing roughly \$2.50-16.67 (depending on the GWP of the substance in question) per tonne of CO<sub>2</sub>e avoided.<sup>86</sup> Indeed, capturing and destroying the remaining bank of CFCs alone was highlighted by the SAP in its 2022 assessment report as one of the “most effective ozone and climate mitigation [options] available”.<sup>87</sup>

EIA is concerned that carbon markets are increasingly being viewed as a potential financing source for managing ODS and HFC banks. These approaches are fraught with intractable problems which undermine the emissions reductions they purport to deliver, something EIA has detailed in its recent report *Polluting the Protocol* and in EIA UK's *Position on Carbon Credits and Offsetting*.<sup>88</sup> Further, offsetting is unable to address the long-term need to develop systems and infrastructure which will prevent future banks of lower-GWP substances from accumulating. While recognising local contexts and challenges, EIA advocates for mechanisms such as EPR to sustain the long-term operation of bank management activities.

Under Decision 91/66 of the ExCom, 127 A5 countries have already been funded to prepare inventories of unwanted banks and plans for their collection and disposal and a practical guide for turning these into national action plans has been produced.<sup>89</sup> At the present meeting, following a suggestion from Parties at OEWG48, the TEAP has updated its cost estimates for the 2027-29 MLF replenishment to include a potential funding window to support the implementation of these plans, which it estimates at \$52.55 million.<sup>90</sup> Parties must ensure the replenishment decision delivers this funding. As banks continue to leak, the opportunity for delivering on this climate and ozone opportunity narrows. To maximise the benefit of action and ensure future banks do not accumulate, the time to act is now.

MOP38 will also receive an update on recycled, used and unwanted controlled substances under Decisions XXXVII/3, XXXVII/4 and XXXVI/7, alongside the new practical guide on transboundary movement of waste prepared with the Basel Convention Secretariat.<sup>91</sup> Parties should use this information to facilitate environmentally sound reclamation and destruction, including for countries which lack domestic capacity. Importantly, increased transboundary movement can lead to more opportunities for illegal trade, as past cases have demonstrated how weaker controls on used substances can be exploited to ship newly produced substances falsely labelled as used.<sup>92</sup> EIA urges the TEAP report for MOP39 under Decision XXXVII/3 assess these risks and identify safeguards to prevent mislabelling, illegal diversion and other risks associated with transboundary shipments.

## NITROUS OXIDE (N<sub>2</sub>O)

Nitrous oxide (N<sub>2</sub>O) is the single most significant ODS in the world today, with annual ODP-weighted emissions equivalent to those of all substances controlled under the Montreal Protocol combined.<sup>93</sup> Although N<sub>2</sub>O is listed under Annex I of the Vienna Convention as a substance known to modify the ozone layer, it has never been subject to specific control measures under the Montreal Protocol. This is despite the Scientific Assessment Panel flagging N<sub>2</sub>O in its 2022 assessment report as a “serious threat” to stratospheric ozone.<sup>94</sup> In addition, N<sub>2</sub>O is also the third most important greenhouse gas, responsible for approximately 10 per cent of net warming to date (~0.1°C).<sup>95</sup>

N<sub>2</sub>O emissions have already increased by 40 per cent since 1980 and continue to accelerate. If CO<sub>2</sub> and methane emissions are reduced in line with current climate commitments, but N<sub>2</sub>O emissions remain unchecked, stratospheric ozone could be driven to levels even lower than the previous period of peak ozone depletion (1995-2005).<sup>96</sup> As this depletion would occur across all latitudes, regions where the bulk of the global population reside would be exposed to greater levels of harmful UV radiation than ever before, increasing skin cancer rates by up to 10 per cent and cataracts by ~1 per cent.<sup>97</sup>

The majority of global N<sub>2</sub>O emissions (~75 per cent) are agricultural in origin, but about five per cent arise as a byproduct of industrial chemical production, primarily from adipic acid and nitric acid manufacturing. These industrial emissions may be particularly well-suited to control under the Montreal Protocol as they are associated with a relatively small number of facilities (approximately 600 worldwide) and can be abated using proven technologies at costs often well below \$20 per tonne of CO<sub>2</sub>e.<sup>98</sup> Acting on industrial emissions alone could see the Montreal Protocol prevent more than nine million tonnes of N<sub>2</sub>O emissions by 2050, equivalent to 2.5 billion tonnes of CO<sub>2</sub>e or 160,000 tonnes of CFC-11-equivalent.<sup>99</sup>

Although Lesotho's proposed Conference Room Paper (CRP) seeking an assessment of N<sub>2</sub>O emissions and abatement opportunities was ultimately withdrawn at OEWG48, future discussions were welcomed by multiple Parties while important questions and concerns were raised by others.<sup>100</sup> During the plenary discussion, some Parties noted that additional obligations should not be added to the treaty before a comprehensive technical, institutional and financial assessment of their potential implications is conducted. EIA recommends that such an assessment should be carried out by the SAP and the TEAP, at the request of the Parties.

## PER- AND POLYFLUOROALKYL SUBSTANCES (PFAS)

Atmospheric breakdown of some HCFCs, HFCs and HFOs results in the formation of the PFAS, trifluoroacetic acid (TFA).<sup>101</sup> TFA is, like other PFAS, very persistent, meaning that once it is emitted it will remain in the environment for a long time.<sup>102</sup> It is present in increasing concentrations in food, people's bodies, water and even in remote regions such as the Arctic due to anthropogenic emissions.<sup>103</sup> Fluorinated gases are already a major source of environmental TFA, and numerous studies have shown that uptake of HFOs in place of HFCs will further increase TFA formation.<sup>104</sup>

The impacts of TFA on people and the environment are not yet well understood. There is debate amongst the scientific community about the risks posed by environmental TFA and significant gaps in the evidence remain.<sup>105</sup> However, there is growing concern about the public health and environmental consequences of widespread and increasing TFA pollution from many in the scientific community and beyond.<sup>106</sup> These concerns have sharpened in light of emerging evidence of TFA's potential toxicity and the essentially irreversible nature of its pollution.<sup>107</sup>

During a presentation on PFAS and Human rights, Bethanie Carney Almroth, UN Special Rapporteur on the implications for human rights of the environmentally sound management and disposal of hazardous substances and wastes, told the 63<sup>rd</sup> session of the UN Human Rights Council that “when pollution is highly persistent and potentially irreversible, waiting for complete certainty before acting can itself cause harm”.<sup>108</sup> It is critical that the Montreal Protocol heeds this message and once again applies the precautionary principle, this time by taking steps to avoid the uptake of HFOs, which will undeniably add TFA to the environment.<sup>109</sup>

**EIA dedicates this briefing to the memory of the distinguished government representatives and advocates whose leadership and commitment helped shape the negotiations that led to the adoption of the Kigali Amendment. Their contributions continue to be reflected in its enduring success and benefits for people and the planet.**



Cornelius Rhein, European Commission



Patrick McInerney, Australia



Tilson Kephass, Federated States of Micronesia



Janusz Kozakiewicz, Poland





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12. See Table 3.10, TEAP Replenishment Task Force (2026) 'Supplement to the May 2026 TEAP Replenishment Task Force Report'. Accessible at: <https://ozone.unep.org/meetings/thirty-eighth-meeting-parties/pre-session-documents>

13. Based on \$528.1 million for KIP activities (Table 3.15) plus additional costs for project preparation (PRP), verification (VER), energy efficiency (EE) and pilot projects for Regional Atmospheric Monitoring (ATM) and production sector/HFC-23 mitigation costs (Table 3.16). TEAP RTF-September 2026

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23. There is a plethora of tools that can be used to monitor online marketplaces, ranging from scrapers to specific marketplace application programming interfaces (APIs), which can be bolstered with image recognition and "natural language processing" (NLP) to catch coded or disguised listings. Additionally, many e-commerce platforms have direct takedown/reporting channels which Parties could be made aware of.

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