

Fighting Fit:

Building a strong foundation for the
Montreal Protocol to ensure continued
climate and ozone success

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Introduction

As Parties convene in person for the first time in more than two years, ensuring the continued successful implementation of the Montreal Protocol must include a modernisation of its institutions and increased investment in its future.

The treaty has played a critical role in mitigating climate change for 35 years, through the successive phase-out of ozone-depleting substances (ODS) and the restoration of the ozone layer, protecting the world's biosphere from harmful ultraviolet radiation.

The Kigali Amendment to the Montreal Protocol, adopted in 2016, is expected to avoid 5.6-8.7 GtCO₂e of hydrofluorocarbon (HFC) emissions per year by 2100, reducing the impact of HFCs on future global average warming by up to 0.4°C.¹

However, unexpected emissions of phased out ODS, notably chlorofluorocarbon-11 (CFC-11), demonstrate that significant improvements to the Protocol's monitoring, reporting, verification and enforcement (MRV&E) regime are necessary to ensure the sustained phase-out of substances controlled by the Protocol.

In addition to unexpected CFC-11 emissions, estimated emissions of CFC-12 and CFC-113 are also decreasing more slowly than they should, while unexpected new emissions of several other CFCs raises the possibility of new illegal production 10 years after the CFC phase-out should be complete.² At the same time, emissions of HFC-23, a highly potent greenhouse gas emitted as an unwanted by-product of HCFC-22 production, are at an all-time high despite numerous and repeated pledges from companies and producer countries that they would ensure incineration of the unwanted climate pollutant.³

Since the phase-out of ODS began more than 30 years ago, the key sectors relying on ODS have undergone several transitions, from CFCs to hydrochlorofluorocarbons (HCFCs) to HFCs. With the adoption of the Kigali Amendment, the world is poised to phase down HFCs; however, some low-GWP HFC substitutes (i.e. hydrofluoro-olefins, HFOs) and their degradation products belong to the group of per- and polyfluoroalkyl substances (PFAS).⁴ Concern over these 'forever chemicals' has led five EU member states to propose future legislation to ban their manufacture and use in the EU.⁵ They have toxic and persistent bioaccumulative effects and their production and use has resulted in severe contamination of soil, water and food as well as harmful exposure to humans. For example, HFC-1234yf, which is increasingly used in mobile air-conditioning and in HFC blends, breaks down into trifluoroacetic acid (TFA), which is harmful to aquatic life and also found in drinking water.⁶

The world faces a triple planetary crisis of climate change, pollution and biodiversity loss. It is time to quit the chemical treadmill and ensure that Montreal Protocol controls lead to the adoption of environmentally sustainable and future proof climate-neutral solutions.

The Environmental Investigation Agency (EIA) welcomes and supports the Mario Molina Declaration, which endeavours to uphold the legacy of Dr Molina by maintaining trust and commitment to the work of the Montreal Protocol, even in the face of adversity and the challenges at hand, and pledges to continue to strengthen the Montreal Protocol to protect the atmosphere for the benefit of all.

We are delighted to once again be face-to-face with the Parties to the Montreal Protocol to begin this work with renewed vigour.

Institutional processes to strengthen the effective implementation and enforcement of the Montreal Protocol

After 35 years of unmatched accomplishment, earning it the title of the world's most successful multilateral environmental agreement, the Montreal Protocol is being tested.

Following revelations of unexpected CFC-11 emissions in 2018 and reports of record atmospheric HFC-23 concentrations, with new substances of concern also making an appearance, legitimate questions have been raised as to whether the Montreal Protocol's institutions and controls are fit for purpose, not only to ensure sustained reductions of ODS but also to address issues unique to the HFC phase-down.

The response by the Parties to the Montreal Protocol and the Executive Committee to the Multilateral Fund (ExCom) to the illegal production and use of CFC-11 in China has generated a number of documents and analyses that identify a range of vulnerabilities. In tandem with the increasing responsibilities of the Protocol and challenges faced having taken on the Kigali Amendment, strengthening the effective implementation and enforcement of the Montreal Protocol must be addressed as a matter of urgency.

Decision XXXIII/4 on enhancing the global and regional atmospheric monitoring of substances by the Montreal Protocol represents positive progress in strengthening atmospheric monitoring. This tasks the Parties with identifying options for regional monitoring, the identification of locations for measurements and sampling in regions not currently covered by existing monitoring, and options for establishing new monitoring capacity and related costs. The Secretariat note to the 44th OEWG contains an update on progress in this regard.⁷

At its 62nd meeting in 2019, in the aftermath of the unexpected CFC-11 emissions, the Implementation Committee requested that the Secretariat prepare a document that would help the Committee to reflect on how to deal with illegal production and illegal trade in controlled substances, identifying potential gaps in the non-compliance procedure, challenges, tools and providing ideas and suggestions for improvement.⁸ The report identifies a number of short-comings, which indicate that a review of the Compliance Procedure and a range of issues relevant to compliance with Montreal Protocol obligations is well overdue. Some of these issues are highlighted here.

Compliance procedure

Article 8 of the Protocol requested Parties to consider and approve, at their first meeting, procedures and institutional mechanisms for determining non-compliance with the Protocol and for the treatment of Parties in non-compliance. A non-adversarial compliance regime was adopted by the Meeting of the Parties on an interim basis at the second MoP,⁹ then permanently established in 1992 at the 4th MoP.¹⁰

The regime revolves around the Implementation Committee, which comprises two members from each of the five geographical regions. The Implementation Committee receives reports from the Ozone Secretariat on the data reported by the parties under Article 7 and their levels of compliance with obligations, making recommendations to the MoP.

Following a review and a report of the Ad Hoc Working Group of Legal and Technical Experts on Non-Compliance established by decision IX/35, some amendments were introduced to the compliance procedure at the 10th meeting in 1998,¹¹ including, importantly in EIA's view, the addition to the functions of the Implementation Committee to: "identify the facts and possible causes relating to individual cases of non-compliance referred to the Committee, as best it can, and make appropriate recommendations to the Meeting of the Parties."¹²

Three types of measures can be taken by the MoP in respect of non-compliance, namely by 1. providing appropriate assistance (e.g. technology transfer and financial assistance); 2. issuing cautions; and 3. suspension, in accordance with the applicable rules of international law concerning the suspension of the operation of a treaty, of specific rights and privileges under the Protocol.¹³ In practice, the harsher suspension measures have only been applied once, through a restriction on exports, but even then were limited in scope.¹⁴

Fundamentally, the non-compliance procedure does not define the actions that constitute non-compliance with the Protocol; this is inferred from the legal obligations of the Protocol. For example, illegal trade, illegal consumption and production are not defined and have not been necessarily treated as compliance issues. This includes the potential diversion of controlled substances from the uses for which they were licensed or

permitted, other than the situation of stockpiles. Indeed, there is a long list of uses of controlled substances that are not subject to control measures: stockpiles; quarantine and pre-shipment uses; recovered, recycled and reclaimed substances; and feedstocks. In particular, the unfettered production of ODS for feedstocks is a concern, given emissions from feedstock production and use and the possibility to launder feedstock production into illegal uses. In 2019, production of 'phased-out' controlled substances for feedstock was 547,510 tonnes, while overall feedstock uses of controlled substances (including HCFCs) are growing year on year, reaching about 1.5 million tonnes in 2019.¹⁵

Similarly, 'illegal trade' has not been defined and although a number of decisions have addressed the importance of national measures to address illegal trade, these are treated as voluntary and have not been subject to subsequent monitoring or follow-up.

Decision X/10 required Parties to "consider, unless the Parties decide otherwise, the operation of the non-compliance procedure again no later than the end of 2003"; however, no such review has taken place.

Independent verification

There is no provision under the Protocol for the independent verification of data and information reported by the Parties under the Protocol, be it data related to consumption and production of ODS reported in accordance with Article 7 or information provided pursuant to Article 4B on licensing. The Implementation Committee can only gather information regarding a particular country if invited by that Party.

Although the Secretariat's note states that policies and processes under the MLF may compensate for the lack of verification under the Protocol's reporting and compliance provisions, these policies and processes apply only to Article 5 Parties. Illegal production and trade could and does occur outside of Article 5 Parties too. Moreover, the compliance procedure relies on Article 7 data, not Country Programme data under the MLF.

Licensing systems

Article 4B of the Montreal Protocol requires Parties to establish and implement licensing systems for the import and export of new, used, recycled and reclaimed controlled substances. When the Protocol was amended in 1997 to include the requirement for a licensing system, Decision IX/8 agreed that the licensing system should assist collection of sufficient information to facilitate compliance with reporting requirements and decisions of the Parties, as well as assisting Parties in the prevention of illegal traffic of controlled substances.

However, there is no provision for confirmation, review or oversight in respect of the licensing systems themselves, except in the context of MLF agreements with Article 5 Parties. Here, a review of the implementation of the licensing, quota, import/export control and monitoring system is carried out as part of verification in the consumption sector. It includes a description of how the annual quota is set, who can apply for a license, who is responsible for granting or refusing applications and under what criteria and how the decision is communicated to the applicant and other relevant stakeholders. Only 20 per cent of LVC countries are selected for the purposes of verification.¹⁶

Ten years after licensing systems were established, with illegal trade continuing to undermine the achievements of the Protocol, Decision XIX/12 listed eight specific measures that Parties may consider implementing to improve implementation and enforcement of their licensing systems in order to combat illegal trade in ODS more effectively, based on an ODS tracking study prepared by EIA and Chatham House at the request of the Parties:¹⁷

- participating in an informal prior informed consent procedure or similar process
- establishing quantitative restrictions, for example import and/or export quotas
- establishing permits for each shipment and obliging importers and exports to report domestically on the use of such permits
- monitoring transit movements of ODS, including those passing through duty-free zones; for instance by identifying each shipment with a unique consignment reference number
- banning or controlling the use of non-refillable containers
- establishing minimum requirements for labelling and documentation
- cross-checking trade information, including through private-public partnerships
- including other relevant recommendations from the ODS tracking study prepared in response to Decision XVII/16, paragraph 1.

The Implementation Committee

The Secretariat reports that the Implementation Committee functions well with a geographical balance among Parties and a regular review of membership. However, the lack of transparency and expertise within the Committee deserves further consideration.

For example, civil society is not able to participate or observe in the meetings. Likewise, there is no process for information on potential non-compliance to be brought to the attention of the Implementation Committee through whistle-blowing or reporting by NGOs, independent technical experts or members of the public. Given that the unexpected emissions of CFC-11 were reported by independent scientists¹⁸ and the source of the emissions uncovered by EIA,¹⁹ this would appear to be a significant oversight in the process.

A large number of decisions are recommended by the Implementation Committee and adopted by the Parties. However, although paragraph 9 of the non-compliance procedure requires the report of the Implementation Committee to be made available to Parties six weeks before the MoP, in practice this does not occur, as the Implementation Committee meetings are held back-to-back with the OEWG and MoPs. This means that the majority of Parties which are not members of the Implementation Committee need to base their decisions on an oral report to the meeting, without the necessary background information to make an informed decision.

The Multilateral Fund

Parallel discussions in the context of the Multilateral Fund have also taken place, first at the 84th meeting and then recently at the 89th Meeting of the ExCom (Part II) in Montreal in June 2022. The discussions centred on an overview of current MLF-supported monitoring, reporting, verification and enforceable licensing and quota systems, prepared by the MLF Secretariat.²⁰ The document covered a wide range of issues, including some Members thought were beyond the ExCom mandate and better addressed by the Meeting of the Parties. Further consideration has been deferred to the 91st ExCom meeting, with a view to taking into consideration outcomes of the 44th OEWG and 34th MoP.

It is therefore now up to the Parties to consider and agree the areas of the broad issue of MRV and enforcement that should be considered by the ExCom and those by the Parties. EIA believes that the ExCom should consider as a priority those observations and suggestions for action that pertain specifically and narrowly to ExCom funded agreements, including independent verification, ensuring the continuity of Project Management Units (PMUs) across multi-year projects and funding required to ensure that Article 5 Parties have sufficient capacity to monitor the sustained phase-out of controlled substances.

Other recommendations and observations – for example, on illegal trade, free-trade zones (FTZs), export of ODS contained in pre-blended polyols, atmospheric monitoring, random sampling of products/equipment and monitoring of raw materials – are relevant to all Parties and must be considered within a broader review of the institutions and processes of the Montreal Protocol.

In particular, ExCom should examine closely the verification measures of the MLF. EIA investigations indicate that the continued production and use of CFC-11 was an open secret in the trade; it was reported on within China by Government officials²¹ and industry,²² yet not reported on or discussed within the Montreal Protocol or ExCom until the unexpected emissions were very high and identified by atmospheric scientists.

The MLF could also play a stronger role in identifying situations where illegal production, use or trade is likely to occur. For example, where alternatives are not being taken up by the market to the extent expected or significant price differentials exist between the new alternatives and the previous refrigerant.

New challenges to address with the implementation of Kigali Amendment

The Montreal Protocol is at a critical juncture, embarking on a global HFC phase-down with ongoing steep and final reductions of HCFCs in developing countries.

The complexities facing A5 Parties are significant, not least the parallel implementation of the complete phase-out of HCFCs and the freeze and first reduction step of the HFC phase-down (for most A5 Parties) which will expand the scope and complexity of the work. Countries will need to put in place and enforce legislation and regulations, some of which will be more complex for HFCs than their ODS precursors. The experience of the EU, which has experienced significant illegal trade in HFCs since the 2015 start of the HFC phase-down under the EU F-Gas Regulation, is a cogent reminder of the challenges facing all Parties.²³

Countries will also need to promote the adoption and safe use of low-GWP alternatives, dealing with safety codes and standards as well as energy efficiency. For context, a recently published impact assessment for the review of the EU F-Gas Regulation calculated an annual cost of €5.8 million for F-gas certification programmes also to include F-gas-free alternatives and practical training on all alternatives and to add energy efficiency issues to be part of training (stationary RACHP).²⁴ Moreover, the proliferation of HFC blends significantly complicates monitoring and reporting of HFCs and refrigerant management in general.

These challenges dictate that new investment in the Montreal Protocol institutions and processes is required, including increased funding for critical components of A5 implementation such as institutional strengthening (IS). Although institutional strengthening is widely acknowledged to be fundamental to the success of the Montreal Protocol, to date it has received just four per cent of the total funding approved by the MLF.

CFC-11, CTC and HCFC-141b - Unanswered questions remain

Although CFC-11 and carbon tetrafluoride (CTC) emissions declined beginning in 2018 after monitoring and enforcement actions in China, it remains unclear whether the underlying issues that contributed to the unexpected emissions of CFC-11 and related CTC emissions have been fully addressed and contained.

An updated report submitted by China to the Multilateral Fund on CTC reveals a significant ongoing discrepancy in the estimated emissions from bottom-up models and the most updated top-down atmospheric data.²⁵ The decreased level CTC emissions estimated by Park et al. (2021)²⁶ for 2018-19 that are attributable to eastern China remain two and one order of magnitude higher than the estimated CTC emissions and maximum CTC emissions respectively as presented in the updated report. Additional analysis of more recent atmospheric data from the Shangdianzi Global Atmospheric Watch (GAW) station may be helpful to verify other recent findings.

While real-time monitoring is reported to be in place for chloromethane (CM) facilities, there are questions as to whether the monitoring of the growing number of registered feedstock users is adequate. Reported material conversion rates for the same feedstock uses differ across years and facilities. Feedstock uses of CTC are reported to have grown considerably (by 70 per cent) between 2015-19. Manufacture of HCC-240fa, used to make HFOs and HFC-245fa, became the largest feedstock use in 2019, accounting for approximately 40 per cent of the CTC used as feedstock. It is also noted that CM producers have not considered technology upgrades that could further reduce the concentration of CTC in chloroform, another potential source of emissions.

New scientific observations of rising global emissions of HCFC-141b between 2017-21 raise additional questions about the potential replacement of illegal CFC-11 with illegal HCFC-141b as a blowing agent for foams.²⁷ While the scientists do not pinpoint the regional origin of increasing global HCFC-141b emissions, nor conclusively rule out the possibility that banks are contributing to this rise, the timely coincidence of this increase with the rapid decline in CFC-11 emissions raises a possible connection between these atmospheric trends due to replacement of illegal CFC-11 with unreported illegal production and use of HCFC-141b.

EIA supports the proposed decision from Switzerland requesting additional information and reporting from Parties on CTC with a view to informing the TEAP quadrennial report.²⁸

HFC-23 emissions – an avoidable climate catastrophe

In 2020, scientists reported that HFC-23 emissions have increased, reaching all-time high levels in 2018 at about 15,900 tonnes/year.²⁹

HFC-23, predominantly created as a by-product of HCFC-22 manufacture, has the highest GWP among HFCs at 14,600. Measures put in place by the largest HCFC-22 producing countries should have seen HFC-23 emissions drop by 87 per cent between 2014-17. As a result of national abatement plans, China and India, the two largest HFC-23 emitters, have reported the almost complete elimination of HFC-23 emissions by 2017.³⁰

In 2018, while HFC-23 emissions were at their highest level in history, inventory-based emissions were at the lowest level in 17 years. The difference suggests an additional ~309 million tonnes CO₂e emissions were added to the atmosphere between 2015-17, roughly the total greenhouse gas emissions from Spain in 2017.³¹ This vast discrepancy indicates that HFC-23 abatement since 2015 has not occurred to the extent it was reported and/or there was substantial unreported HCFC-22 production and associated vented HFC-23 by-product. There are also questions regarding the possibility of other sources of HFC-23 from production and/or subsequent breakdown of HFCs and HFOs.³² EIA is not aware of any comprehensive assessment to date that rules out the possibility of other sources.

Under the Kigali Amendment to the Montreal Protocol, all ratified parties have agreed to implement controls to destroy HFC-23 emissions from the production of Annex C, Group 1 or Annex F substances to the extent practicable as of January 2020. These unexplained high emissions of HFC-23, following on from the unexpected CFC-11 emissions, further highlight the urgent need for the Montreal Protocol to undergo a robust review of its monitoring, reporting, verification and enforcement processes. EIA urges all HCFC-22 producing countries to urgently investigate and verify their HFC-23 emissions and collaborate with scientists to pinpoint the source of these unexpected HFC-23 emissions. An assessment by the TEAP, aided by the information submitted by the Parties, is needed to provide Parties with up-to-date information on potential additional sources of HFC-23 emissions.



Regulating feedstock

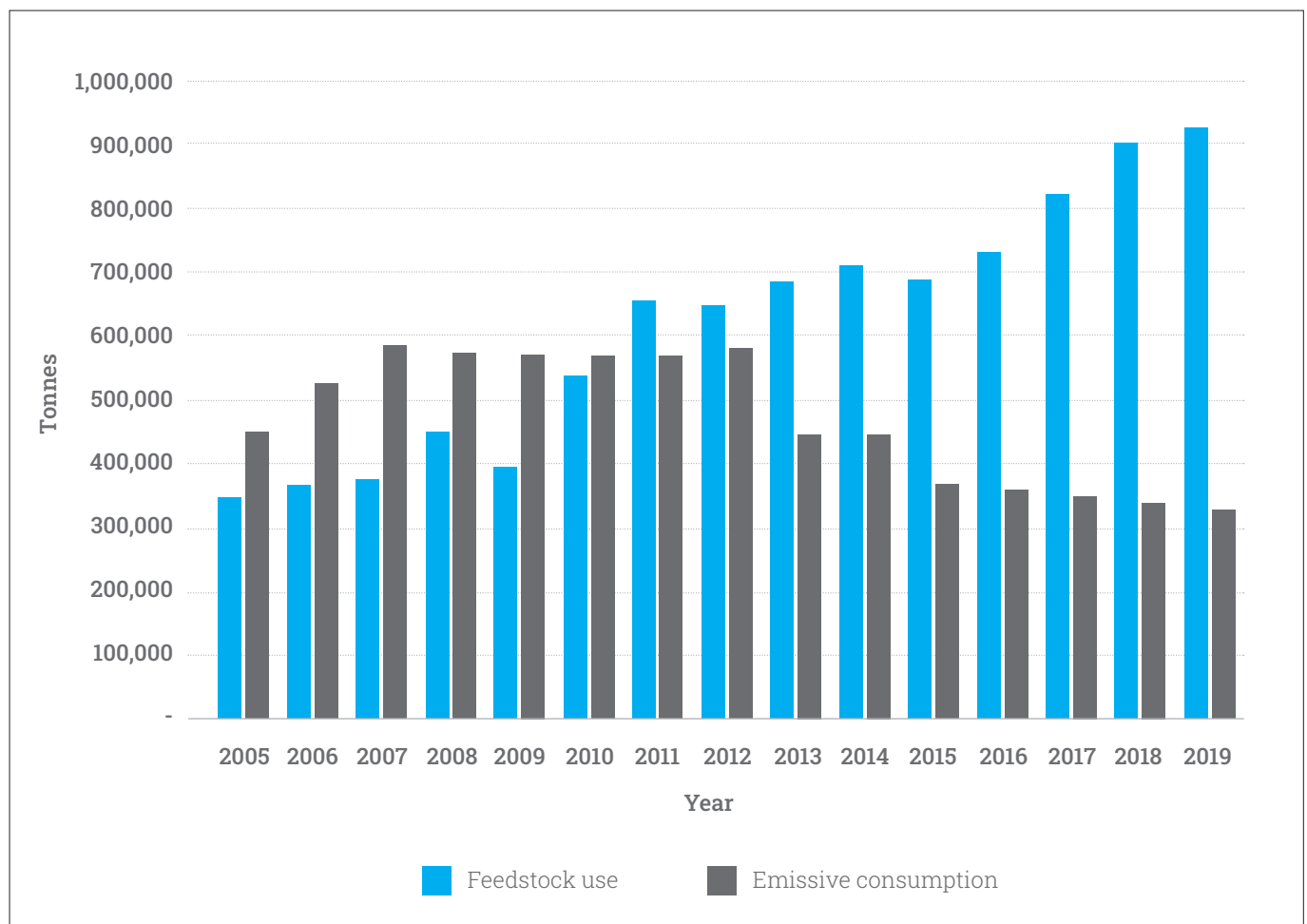
The ongoing high emissions of HFC-23 highlight the need for the Montreal Protocol to carefully consider the significant production and use of ODS as feedstock chemicals.

Feedstock ODS production has been exempt from Montreal Protocol controls as it is assumed that the ODS are contained and destroyed in the manufacturing process. This has resulted in a situation whereby global consumption of HCFCs is at an all-time high (estimated to be 1.25 million tonnes in 2019), despite the phase-out of HCFCs under the Montreal Protocol (see Figure 1).³³

The assumption that feedstock uses of ODS do not result in emissions is questionable, given higher than expected emissions of CTC, CFC-113 and CFC-113a. Moreover, the large-scale legal production of HCFCs for feedstock purposes alongside the phase-out of HCFCs for other uses highly complicates implementation and enforcement, undermining the phase-out of HCFCs used for emissive purposes. Narrowing feedstock exemptions under the Montreal Protocol would have multiple environmental benefits, including reduced greenhouse gas and ODS emissions and reduced plastics production and associated pollution.³⁴

Under Article 9 of the Montreal Protocol, Parties are required to “promote research, development and exchange of information on possible alternatives to controlled substances, to products containing such substances and to products manufactured with them; and costs and benefit of relevant control strategies.” Parties are required to submit a summary of the activities it has conducted in this regard every two years, which could provide valuable information on strategies to reduce reliance on ODS as feedstocks. However, over the past 10 years, it would appear that the only reports received were from Sweden (in 2012), Norway (in 2015), Australia (in 2019) and Lithuania (in 2020).³⁵

Figure 1: Reported global HCFC consumption for feedstock and emissive uses (tonnes).³⁶



Energy efficiency

The latest update from the Energy Efficiency Task Force (EETF) reiterates that combining early action for HFC mitigation with simultaneous energy efficiency actions can lead to significant reductions in emissions by 2050.

The EETF shows that RACHP equipment using low and medium GWP refrigerants with enhanced energy efficiency is now available in all the relevant sectors and technology developments are continuously underway. The report also makes clear that synchronising investment and action across both areas will cost manufacturers and consumers less than if these pathways were pursued separately. Furthermore, the lifecycle cost savings far outweigh the higher initial cost of more efficient equipment.

Coordination between National Ozone Units and national energy and climate authorities will be paramount. A synchronised effort can produce policies to drive the adoption of highly efficient low GWP equipment. In designing roadmaps for sustainable cooling, parties should consider including measures on energy efficiency and the refrigerant transition within revised NDCs and NCAPs as well as in enabling policies including MEPS and labelling, training and servicing schemes and revising safety and building standards.

Policies such as MEPS are increasingly being adopted to drive up the efficiency levels of products on the market. However, so far, many parties have failed to piggyback controls on high-GWP refrigerants with the introduction of MEPS, thus missing a vital opportunity to transform the market. To ensure the uptake of efficient low-GWP equipment, training and servicing needs to be improved and supported in all sectors as design upgrades and refrigerant transition requires higher levels of knowledge and skill. Improper installation and maintenance can lead to significant efficiency losses and higher leakage rates which also impact efficiency levels. International standards on the use of energy efficient low GWP natural alternatives have been revised and parties must swiftly transpose these standards into national and regional regulations and improve building regulations in line with new safety limits.

The EETF discussion on the dumping of obsolete products is of added importance in light of the CRP proposed by the African Group of Parties.³⁷ This environmentally harmful practice creates market barriers to the adoption of efficient low GWP equipment and makes it harder for recipient countries to meet their climate and ozone obligations. The EETF makes plain that non-A5 exporting countries share the responsibility to prevent this environmentally harmful dumping. Both exporting and importing countries should have laws in place prohibiting such practices.

The 90th meeting of the ExCom agreed to request the Secretariat to develop criteria for pilot projects to maintain and/or enhance energy efficiency of equipment in the context of the HFC phasedown. Furthermore, the Secretariat has been requested to prepare an operational framework to elaborate on potential MLF projects and activities on energy efficiency in the manufacturing and servicing sector and to continue to consult the Global Environment Facility and the Green Climate Fund on collaboration opportunities.





ODS and HFC banks

Historically, the Montreal Protocol has only controlled the upstream production and consumption of ODS, not emissions.

As a result, ODS that were legally placed onto the market in products and equipment but have not yet emitted to the atmosphere have accumulated in banks. Addressing ODS and HFC banks represents a massive but time-limited climate mitigation opportunity.³⁸

The absence of comprehensive global data regarding the size and emissions of refrigerant and foam banks is a key issue that needs to be addressed. A global inventory where banks and amounts available for recovery can be reported would help facilitate increased end-of-life recovery and destruction. The potential mitigation from preventing emissions of ODS and HFC banks has been estimated by Project Drawdown at 57.15 GtCO₂e between 2020-50,³⁹ likely an underestimate. For example, the recently identified illegal production and use of CFC-11 may have contributed an additional 266,000 to 333,000 tonnes to the existing CFC-11 bank of foam products during 2007-19, equivalent to 1.4 GtCO₂e.⁴⁰ A 2020 *Nature* paper warned that emissions from 'banks' of ozone-destroying CFCs could potentially delay Antarctic ozone hole recovery by about six years and that current CFC banks could lead to an additional nine billion tonnes CO₂e of future emissions between 2020 and 2100.⁴¹

A global framework to recover and destroy ODS and HFC banks is required, with a key role for the Montreal Protocol in coordination with global climate institutions and other stakeholders, including the Climate and Ozone Protection Alliance (COPA).⁴² As a starting point, all Parties should be reporting on "best technologies for improving the containment, recovery, recycling, or destruction of controlled substances or otherwise reducing their emissions", as required by Article 9 of the Montreal Protocol.

In response to Paragraph 24 of Decision XXVIII/2, the 90th meeting of the ExCom agreed to provide flexibility for A5 Parties to include funding activities related to environmentally sound management of used or unwanted controlled substances, including disposal, in funding requests for future tranches of HCFC Phase-out Management Plans (HPMPs) and Kigali Implementation Plans (KIPs). The ExCom also requested the Secretariat to develop criteria for a funding window to provide Article 5 countries with assistance to prepare an inventory of banks of used or unwanted controlled substances and develop a plan for the collection, transport and disposal (including consideration of recycling, reclamation and cost-effective destruction) of such substances.

Replenishment: Funding a strong foundation for continued success

The financial needs of the Montreal Protocol have never been greater.

Following the adoption of the Kigali Amendment, A5 Parties are confronted with a concurrent HCFC phase-out and HFC phase-down while working to enhance energy efficiency in this critical decade of climate action to limit warming to below 1.5°C. At the same time, the COVID-19 pandemic has annihilated public budgets in many A5 Parties, hitting low-volume consuming (LVC) countries particularly hard, threatening their ability to supplement MLF funding and undertake the activities required to meet their international commitments. Meanwhile, the HFC freeze in 2024 and 67.5 per cent HCFC reduction in 2025 loom. If there was ever a time to significantly boost investment in the Montreal Protocol, this is it.

The Replenishment Task Force (RTF) estimates total funding requirements to replenish MLF for the 2021-23 triennium, including support costs, to be between \$417.5 million and \$779.6 million.⁴³

Figure 2: Range of total funding requirement based on different scenarios.⁴⁴

2021-23 Triennium	Low End with HFC BAU	Low End with HFC Scenario 1	Low End with HFC Scenario 2	High End with HFC Scenario 3
HCFC Activities	\$267,862,000	\$267,862,000	\$267,862,000	\$267,862,000
HFC Activities	\$39,969,000	\$241,097,000	\$357,008,000	\$366,212,000
IS & Standard Activities	\$109,707,000	\$109,707,000	\$109,707,000	\$145,560,000
Grand Total	\$417,538,000	\$618,666,000	\$734,577,000	\$779,634,000

Assuming the HFC BAU scenario is immediately discarded, the main differences between the remaining scenarios rest on the commitment made to HFC activities and institutional strengthening (IS).

EIA makes the following observations about the HFC activities. First, the high-end scenario would provide funding for the activities identified by the RTF for all A5 Parties (scenario 3), not just those that have ratified (scenario 1) or those that have ratified and/or submitted letters expressing their intent to do so (scenario 2). Given the steady drumbeat of ratifications, it makes sense to provide sufficient resources to accommodate at least scenario 2 and, subject to discussions with the two A5 Parties that have neither ratified nor submitted letters expressing their intent to do so (Brazil and Yemen), move to scenario 3.⁴⁵ Second, additional funding beyond what the RTF identified for any given scenario will be needed. This is due to the RTF having relied on cost guidelines for the HCFC phase-out, which are currently being reconsidered and will likely be increased across many sectors and activities once a final decision is adopted.⁴⁶ Third, given delays caused by the Covid pandemic, there is a risk of non-compliance by many A5 Parties on day one of the HFC freeze in 2024. To avoid this, those A5 Parties will require immediate resources to undertake activities under their Kigali Implementation Plans (KIPs) in 2023.

With respect to IS, EIA notes that the only difference between scenarios 1 and 2 and scenario 3 is the 100 per cent increase in IS funding. Such increase should be forthcoming as several additional activities must take place in parallel to the work under HPMPs, which include “the development of institutional framework for future ratification, implementation and compliance with the Kigali Amendment, and extra reporting and staff training costs.”⁴⁷ It would also ensure that, during these difficult times, A5 Parties have the resources to keep the Montreal Protocol on track.

EIA strongly supports providing the maximum amount possible to ensure the Montreal Protocol stays on course. Investment in the Montreal Protocol is extremely cost-effective. EIA further notes that additional funding should be made available for activities that go beyond compliance in a strict sense, including: (i) to establish a funding window to fund pilot and demonstration projects to maintain and/or enhance energy efficiency; and (ii) to establish a funding window to prepare inventories of banks of used or unwanted controlled substances and develop a plan for their collection, transport and disposal. For both funding windows, the MLF secretariat will be developing criteria for consideration by the ExCom at its 91st meeting in December 2022, meaning projects could be adopted as early as 2023.

Additional observations

EIA supports funding early activities to avoid HFC growth to the maximum extent possible both to “close the tap” and transition the marketplace to low-GWP products.⁴⁸ To this end, the Montreal Protocol should advance a sectoral approach to addressing the high growth of HFCs, aligned with leapfrogging to low- and zero-GWP alternatives in the context of the HCFC phase-out. For example, in smaller air-conditioning systems, the optimal solution from a climate perspective – both in terms of direct and indirect emission reductions – is propane.

While the Montreal Protocol should support efforts to avoid high-GWP HFC-410A in these units, it should not do so by simply transitioning to mid-GWP HFCs, such as HFC-32 and various HFC blends, but instead promote and fund a transition to the optimal, ‘future-proof’ solution. Focusing exclusively on avoiding high-GWP HFCs while allowing the uptake of mid-GWP HFCs when low- and zero-GWP alternatives are available is not “closing the tap”, it is more analogous to “turning down the tap” and is in no way responsive to the climate emergency. Addressing the high growth rate of HFCs by leapfrogging to low- and zero-GWP alternatives should be pursued as part of a concerted strategy to close the tap. This could take the form of additional funding, going beyond the 25 per cent incentive already available to transition from HFCs to low-GWP alternatives.

The recent publication of an updated international standard for air conditioners and heat pumps – IEC-60335-2-40 Edition 7 – which will enable the safe use of higher charges of flammable refrigerants and was adopted with universal support from voting countries, should further remove barriers to this approach. The widespread adoption of the updated standard into national and regional standards is urgently required by all Parties.⁴⁹

EIA further notes that Parties should pay particular attention to hot spots for the dumping of high-GWP HFC-based equipment in A5 Parties, as is the case in Africa.⁵⁰ RTF found that:

[G]rowth in high-GWP HFCs is also an inadvertent side effect of the introduction of Minimum Performance Standards (MEPS) solely focused on improving energy efficiency without wider consideration of the climate impact from the high GWP of the refrigerants and blowing agents. This is resulting in the “dumping” of high-GWP HFC technology in A5 countries ... with a much larger overall long-term cost to phase them down.⁵¹

RTF states that the “most powerful activity to avoid growth is to stop manufacturing of high-GWP products in A5 Parties.⁵² While this is a measure to be explored in manufacturing countries, consuming countries subject to dumping should ensure MEPS are coupled with GWP limits (e.g. of 15) or introduce bans on new equipment exceeding this GWP limit. Funding made available now for those purposes saves money down the road.

Conclusions and recommendations

The Montreal Protocol and its Parties must urgently step up to a number of challenges: implementation of the Kigali Amendment; the illegal production, trade and use of CFCs and other ODS; emissions from the use of these chemicals in the manufacturing of other chemicals; and the banks of ODS and HFCs that continue to release super greenhouse gases to the atmosphere.

In 2020, Parties were set to discuss the potential initiation of a process to comprehensively review the Montreal Protocol’s institutions and controls. However, the COVID-19 pandemic forced meetings to go online and focus on administrative matters. In the wake of the pandemic, ‘build back better’ became the mantra for economic recovery and it frames well how the Parties should go about addressing the shortcomings in the Montreal Protocol.

EIA recommends that Parties adopt a decision at MoP34 setting out a two-year timeline for a comprehensive evaluation of the Montreal Protocol’s monitoring, reporting, verification, compliance and enforcement mechanisms, with a view to presenting recommendations for short-, medium- and long-term actions to strengthen institutional processes to ensure the sustainability of the ODS phase-out and to meet the new challenges under the HFC phase-down.

As the world strives to achieve net-zero by 2050, we simply cannot afford to miss any opportunity to deliver additional climate mitigation under the world’s most successful environmental treaty.

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