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Summary of the Combined Thirteenth Meeting of the Conference of the Parties to the Vienna Convention for the Protection of the Ozone Layer and the Thirty-Sixth Meeting of the Parties to the Montreal Protocol on Substances that Deplete the Ozone Layer: 28 October – 1 November 2024

For almost four decades, the world has been combating threats to the ozone layer, which have significant effects on human health and the natural environment. Since the 1980s, successful efforts to address these threats have been entrusted to the Vienna Convention for the Protection of the Ozone Layer and its Montreal Protocol on Substances that Deplete the Ozone Layer. In 2016, delegates adopted the Kigali Amendment to address hydrofluorocarbons (HFCs), which initially served as replacements for ozone-depleting substances (ODS) but have negative effects on the global climate, opening the door to the roll-out of energy-efficient technologies in the refrigeration and air conditioning sectors.

In 2024, the Conference of Parties (COP) to the Vienna Convention and the Meeting of Parties to the Montreal Protocol (MOP) convened amidst new threats of fugitive emissions of HFC-23, and concerns about how best to address the gaps in atmospheric monitoring and potential challenges presented by very short-lived substances (VSLS). Delegates further considered how to promote life-cycle refrigerant management (LRM) to prevent unwanted emissions of HFCs in the refrigeration, air conditioning, and heat pump sector through recovery, recycling, and reclamation efforts.

Meeting in plenary, a budget committee, and 15 contact and informal groups throughout the week, delegates worked in a collegial atmosphere and managed to adopt a record number of decisions on issues relevant to the implementation of the Convention, the Protocol and the Kigali Amendment, including on:

- HFC-23 emissions;
- Changes to data reporting forms for reporting on HFC-23;
- LRM;
- VSLS;
- Feedstock uses of controlled substances;
- Enhancing the global and regional atmospheric monitoring of controlled substances;
- Report of the 12th meeting of the Ozone Research Managers (ORM) of the parties to the Vienna Convention;
- Status of the General Trust Fund for Financing Activities on Research and Systematic Observations Relevant to the Vienna Convention (GTF);
- Developments related to metered-dose inhalers (MDIs) with low global-warming-potential (GWP) propellants;
- Future availability of halons and their alternatives;
- Further strengthening Montreal Protocol institutions: next steps (which addresses illegal trade in controlled substances);
- Possible compliance deferral for Article 5, group 2 parties;
- Avoiding imports of energy-inefficient products and equipment containing or relying on controlled substances; and
- Changes in the membership of the Technology and Economic Assessment Panel (TEAP).

In this Issue

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Delegates could not come to a decision on strengthening the enabling environment to enhance energy efficiency in the cooling sector, to the disappointment of many small island developing states. This issue, alongside discussions on isomers of HFCs not explicitly listed under the Protocol and on changing the cut-off date for HFC phaseout, will be discussed at future Montreal Protocol meetings.

COP 13/MOP 36 convened from 28 October – 1 November 2024 in Bangkok, Thailand. Over 600 participants attended the meeting, which was preceded by a workshop on LRM on 27 October 2024.

A Brief History of the Ozone Regime

Concerns that the Earth's stratospheric ozone layer could be at risk from chlorofluorocarbons (CFCs) and other anthropogenic substances first arose in the early 1970s. At that time, scientists warned that releasing these substances into the atmosphere could deplete the ozone layer, hindering its ability to prevent harmful ultraviolet (UV) rays from reaching the Earth. This would adversely affect ocean ecosystems, agricultural productivity, and animal populations, and harm humans through higher rates of skin cancers, cataracts, and weakened immune systems. In response, a UN Environment Programme (UNEP) conference held in March 1977 adopted a World Plan of Action on the Ozone Layer and established a Coordinating Committee to guide future international action.

Vienna Convention: Negotiations on an international agreement to protect the ozone layer were launched in 1981 under the auspices of UNEP. In March 1985, the Vienna Convention for the Protection of the Ozone Layer was adopted. It calls for cooperation on monitoring, research, and data exchange, but does not impose obligations to reduce use of ODS. The Convention now has 198 parties, which represents universal ratification.

Montreal Protocol: In September 1987, efforts to negotiate binding obligations to reduce ODS usage led to the adoption of the Montreal Protocol, which entered into force in January 1989. The Montreal Protocol introduced control measures for some CFCs and halons for developed countries (non-Article 5 parties). Developing countries (Article 5 parties) were granted a grace period, allowing them to increase their ODS use before taking on commitments. The Protocol has been ratified by 198 parties.

The Protocol is supported by three Assessment Panels that provide parties with scientific, technological and financial information in order to reach decisions. The current three panels are: the Technology and Economic Assessment Panel; the Scientific Assessment Panel; and the Environmental Effects Assessment Panel.

Since 1987, several amendments and adjustments have been adopted, adding new obligations and additional ODS and adjusting existing control schedules. Amendments require ratification by a certain number of parties before they enter into force; adjustments enter into force automatically. All amendments except its newest, the Kigali Amendment, have been ratified by 197 parties.

Key Turning Points

London Amendment and Adjustments: At the second MOP, held in London, UK, in 1990, delegates tightened control schedules and added ten CFCs to the list of ODS, as well as carbon tetrachloride (CTC) and methyl chloroform. MOP 2 also established the Multilateral Fund (MLF), which meets the incremental costs incurred by Article 5 parties in implementing the Protocol's control measures and finances clearinghouse functions. The Fund is replenished every three years.

Copenhagen Amendment and Adjustments: At MOP 4, held in Copenhagen, Denmark, in 1992, delegates tightened existing control schedules and added controls on methyl bromide, hydrobromofluorocarbons, and hydrochlorofluorocarbons (HCFCs). MOP 4 also agreed to enact non-compliance procedures. It established an Implementation Committee (ImpCom) to examine possible non-compliance and make recommendations to the MOP aimed at securing full compliance.

Montreal Amendment and Adjustments: At MOP 9, held in Montreal, Canada, in 1997, delegates agreed to: a new licensing system for importing and exporting ODS, in addition to tightening existing control schedules; and banning trade in methyl bromide with non-parties to the Copenhagen Amendment.

Beijing Amendment and Adjustments: At MOP 11, held in Beijing, China, in 1999, delegates agreed to controls on bromochloromethane, additional controls on HCFCs, and reporting on methyl bromide for quarantine and pre-shipment (QPS) applications.

Kigali Amendment: At MOP 28, held in Kigali, Rwanda, in 2016, delegates agreed to amend the Protocol to include HFCs as part of its ambit and to set phase-down schedules for HFCs. HFCs are produced as replacements for HCFCs and are thus a result of ODS phase-out. HFCs are not a threat to the ozone layer but have a high GWP. To date, 160 parties to the Montreal Protocol have ratified the Kigali Amendment, which entered into force on 1 January 2019.

Recent Meetings

COP 12/MOP 33: This combined meeting convened virtually, due to the COVID-19 pandemic, from 23-29 October 2021, with a high-level segment (HLS) on the last day. The meeting took key decisions related to monitoring of controlled substances and energy efficiency, and delegates requested the Assessment Panels to determine what would be needed to increase the monitoring capacities in regions where capacity is limited or altogether absent.

Delegates also continued work on low-GWP and energy-efficient technologies. The meeting considered two draft decisions, which addressed trading of soon-to-be obsolete technologies that could be a threat to the future implementation of the Kigali Amendment and broadening the list of sectors required to implement more energy-efficient technologies. The meeting also adopted 18 decisions on administrative and technical matters, including: replenishment of the MLF; financial reports and budgets of the trust funds for the Vienna Convention and Montreal Protocol; compliance and reporting; membership of Montreal Protocol bodies; and recommendations of the Ozone Research Managers of the Vienna Convention.

ExMOP 5 and OEWG 44: The Fifth Extraordinary MOP to the Montreal Protocol (ExMOP 5) and Open-ended Working Group (OEWG) 44 convened in Bangkok, Thailand, from 11-16 July 2022. ExMOP 5 adopted decisions on the replenishment of the MLF for the triennium 2021-2023 and extension of the fixed-exchange-rate mechanism to the 2021-2023 replenishment. OEWG 44 addressed issues including terms of reference for a study of MLF replenishment needs in the 2024-2026 triennium; energy efficiency; ongoing emissions of CTC; potential restructuring of TEAP's Technical Options Committees (TOCs); and a proposal from African states to address the dumping of inefficient refrigeration and air-conditioning appliances.

MOP 34: At this meeting, held in Montreal, Canada from 31 October – 4 November 2022, delegates discussed and adopted decisions related to, among other issues: illegal import of certain refrigeration, air-conditioning, and heat pump products and equipment; identification of gaps in the global coverage of atmospheric monitoring of controlled substances and options for enhancing such monitoring; collecting data to understand potential

impacts of the COVID-19 pandemic on HFC consumption in developing countries; strengthening institutional processes with respect to information on HFC-23 by-product emissions; and strengthening the Protocol's institutions, including for combating illegal trade.

At this meeting, delegates also adopted the terms of reference for the study on the MLF replenishment for 2024-2026, opening the door for TEAP to establish the Replenishment Task Force (RTF) to prepare for the replenishment negotiations at MOP 35.

MOP 35: At this meeting, which took place from 22-27 October 2023 in Nairobi, Kenya, delegates adopted the largest ever replenishment of the MLF for the implementation of the Protocol, just shy of USD 1 billion. Delegates took decisions on, *inter alia*, LRM; stratospheric aerosol injection; the impacts of the COVID-19 pandemic on HFC baseline consumption for certain parties; energy efficiency; and VSLS. They also took decisions on feedstock uses of methyl bromide; the import and export of prohibited cooling equipment, attempting to address the long-standing issue of dumping; and further strengthening Protocol institutions, including for combating illegal trade. They agreed to defer discussion on a potential roadmap to end illegal trade in controlled substances to the next OEWG meeting.

OEWG 46: At this meeting, held in Montreal, Canada, from 8-12 July 2024, delegates once more benefited from the work of the Protocol's Assessment Panels, which informed discussions in preparation for COP 13/MOP 36, including on enhancing regional atmospheric monitoring of controlled substances; strengthening the enabling environment of the Montreal Protocol; addressing aspects of illegal trade in controlled substances and unwanted imports of energy inefficient products; feedstock uses of controlled substances; and VSLS.

Parties decided against further discussions on additional funding to support countries seriously affected by the COVID-19 pandemic at MOP 36, noting this issue did not have the support of most parties.

Workshop on Life-Cycle Refrigerant Management

On Sunday, 27 October, delegates attended a pre-meeting workshop on LRM. The workshop provided an opportunity to share information, experiences, and lessons learned, and to assess challenges related to strengthening LRM, including policies, best practices, standards, finance, and opportunities. The workshop's outcomes were relayed to MOP 36.

Preparatory Segment Report

On Monday, OEWG Co-Chair Ralph Brieskorn (the Netherlands) opened the preparatory segment. Dechen Tsering, Director, UNEP Regional Office for Asia and the Pacific, lauded the Montreal Protocol as a symbol of unity, with nations harmonizing their efforts to safeguard the Earth's ozone layer and climate. Megumi Seki, Executive Secretary, Ozone Secretariat, reiterated the call for universal ratification of the Kigali Amendment and highlighted the growing emissions of nitrous oxide (N2O) and the subsequent impacts on the Protocol's objectives.

Organizational Matters

On Monday, delegates adopted the agenda (UNEP/OzL.Conv.13/1–UNEP/OzL.Pro.36/1 and Add.1), agreeing to: postpone consideration of Palestine's classification as an Article 5 party to MOP 37; and include, under Other Matters, a request by EGYPT to review the decision related to the HFC phase down (Decision XXVIII/2, paragraph 17) on the cut-off date for the eligible capacity, and a request by SWITZERLAND to discuss HFC-245cb and other isomers not listed in Annex F to the Montreal Protocol.

Delegates based most of their considerations on the document containing issues for discussion by and information for the attention of the COP-MOP (UNEP/OzL.Conv.13/2-UNEP/OzL.Pro.36/2 and Add.1), and the compilation of draft decisions for consideration by the COP-MOP (UNEP/OzL.Conv.13/3–UNEP/OzL.Pro.36/3). Additional draft decisions were submitted by parties in plenary.

Financial Reports and Budgets of the Trust Funds for the Convention and the Protocol

OEWG Co-Chair Miruza Mohamed (Maldives) introduced the finance and budget-related documents and draft decisions pertaining to both the Convention and the Protocol (UNEP/OzL.Conv.13/2-UNEP/OzL.Pro.36/2, paras. 10-22, UNEP/OzL.Conv.13/4, UNEP/OzL.Pro.36/4, UNEP/OzL.Conv.13/INF/1–UNEP/OzL.Pro.36/INF/1, UNEP/OzL.Conv.13/5–UNEP/OzL.Pro.36/5, UNEP/OzL.Conv.13/INF/2–UNEP/OzL.Pro.36/INF/2, and draft decision XIII/[AA]). Delegates agreed to establish a parties-only budget committee, chaired by Sebastian Schnatz (Germany). Mohamed noted the budget committee would be briefed on budget-impacting issues during the meeting. The committee met throughout the week.

On Friday evening, budget committee Chair Schnatz reported that the committee had finalized its work. Delegates agreed to forward the relevant draft decisions to the HLS, which adopted the decisions.

Final Decisions: In the final decision on the financial reports and budgets for the Vienna Convention (UNEP/OzL.Conv.13/CRP.3), the COP, *inter alia*:

- approves the 2025 budget in the amount of USD 911,910, the 2026 budget in the amount of USD 927,730, and the 2027 budget in the amount of USD 1,504,030;
- reaffirms a working capital reserve equivalent to 15% of the annual operational budgets for the triennium 2025-2027, to be used to meet the final expenditures under the Trust Fund;
- approves the contributions to be paid by the parties of USD 782,000 each in 2025, 2026, and 2027;
- requests the Executive Secretary, and invites the COP President, to enter into discussions with any party with outstanding contributions with a view to finding a way forward, and to request the Executive Secretary to report on the outcome of those discussions to COP 14; and
- requests the Executive Secretary to, among other things, indicate in future financial reports of the Trust Fund the amounts of cash on hand, in addition to contributions that have not yet been received.

The annex to the decision contains the related budget tables, explanatory notes, and a list of parties' assessed contributions.

In the final decision on the financial reports and budgets for the Montreal Protocol (UNEP/OzL.Pro.36/CRP.18), the MOP, *inter alia*:

- approves the budget of USD 6,047,195 for 2025 and takes note of the indicative budget for 2026 to be considered further by MOP 37;
- authorizes the Executive Secretary, on an exceptional basis, to draw upon the available cash balance for 2025 in an amount of up to USD 598,900 for specific activities listed in the annex;
- approves the contributions to be paid by the parties in the amount of USD 4,837,756 for 2025 and takes note of the contributions for 2026 as set out in the annex;
- authorizes the Executive Secretary to draw down from the cash balance the funds required to cover the shortfall between the

level of contributions agreed and the approved budget for 2025; and
- requests the Executive Secretary to continue to, among other things: provide regular information on earmarked contributions and include that information in the budget proposals of the Trust Fund to enhance transparency; ensure to offset programme support resources against the administrative components of the approved budget; and indicate in future financial reports of the Trust Fund the amounts of cash on hand and the status of contributions to the Trust Fund.

Montreal Protocol Issues

Consideration of the membership of Montreal Protocol bodies for 2025: On Monday, OEWG Co-Chair Mohamed introduced this item and called on parties to submit nominations for membership to the Implementation Committee (ImpCom), Executive Committee (ExCom) of the MLF, and the OEWG Co-Chairs during the course of the week.

On Friday, OEWG Co-Chair Brieskorn read out the nominations made by regional groups. He proposed, and delegates agreed, to forward the draft decision to the HLS, where parties adopted the decision.

Final Decision: In its decision on the changes in membership of the Montreal Protocol bodies (UNEP/OzL.Conv.13/L.2–UNEP/OzL.Pro.36/L.2), the COP:
- confirms Benin, Saudi Arabia, Montenegro, Dominican Republic, and the Netherlands as members of the ImpCom for a two-year period beginning on 1 January 2025; and notes the selection of Martijn Hildebrand (the Netherlands) to serve as President and Linda Kosgei (Kenya) to serve as Vice President and Rapporteur of the Committee for one year beginning 1 January 2025. Chile, Czechia, Iran, Kenya, and the US will continue for a second year;
- endorses the selection of Lesotho, Togo, Bahrain, China, Argentina, Cuba, and Kyrgyzstan as ExCom members representing Article 5 parties, and the selection of Belgium, Canada, Italy, Japan, Lithuania, Sweden, and the US as members representing non-Article 5 parties, for one year beginning 1 January 2025; and
- notes the selection of Alessandro Giuliano Peru (Italy) to serve as Chair and Mathatela Ntsatsi (Lesotho) to serve as Vice-Chair of the ExCom for one year beginning 1 January 2025.

In its decision on the OEWG Co-Chairs for 2025 (UNEP/OzL.Conv.13/L.2–UNEP/OzL.Pro.36/L.2), MOP 36 endorses the selection of Shontelle Wellington (Barbados) and Annie Gabriel (Australia).

HFC-23 issues: ***Reports by the SAP and the TEAP on HFC-23 emissions:*** During the opening plenary on Monday, the Scientific Assessment Panel (SAP) and TEAP presented their reports in response to decision XXXV/7 on HFC-23 emissions (Report of the TEAP, September 2024, and Report of the SAP, September 2024). The SAP highlighted that, after 2014, a gap emerged between global HFC-23 emissions reported by parties and emission estimates derived from measured atmospheric abundances, with a result that 75-89% of emissions are not accounted for by reporting. They estimated that based on their studies, which also rely on improved atmospheric monitoring in China, unreported emissions from China account for about 20-50% of the global emissions gap.

TEAP presented its response to decision XXXV/7 on HFC-23 emissions, and underlined that there are large differences between TEAP and SAP estimates of global HFC-23 emissions (1,470–3,540 tonnes against 13,900 ± 700 tonnes). They stated that the uncertainties in atmospheric-derived estimates cannot explain these differences, but noted refinements to Data Form 6 might help address some of these issues.

After a lengthy question and answer session in plenary, the US and CHINA each announced that they would submit a conference room paper (CRP) for consideration.

On Tuesday, the US introduced UNEP/OzL.Pro.36/CRP.7, co-sponsored with Canada, which noted with concern that emissions estimates derived for eastern China indicate emissions substantially higher than expected on the basis of reporting, and requested relevant parties to undertake requisite actions to implement HFC-23 emissions obligations and investigate the potential reasons for deviations between their reported emissions and emissions estimates derived from atmospheric monitoring.

CHINA introduced UNEP/OzL.Pro.36/CRP.8, which: called for strengthening research on global HFC-23 emissions and data reporting; invited parties with HCFC-22 production facilities to voluntarily report their current methodologies for accounting for and reporting HFC-23 emissions, including fugitive emissions; and requested the Secretariat to establish an expert task force to research and develop technical guidelines to account for and report on HFC-23 emissions.

CHINA then stated that the US proposal "framed a global issue as the problem of one party" and was "unscientific," "impractical," and "disrespectful." The US clarified that any "requests" of parties outlined in CRP.7 are not mandatory. He acknowledged HFC-23 emissions are a global issue but said scientific data on regional emissions must be closely considered.

Delegates agreed to establish a contact group to discuss both CRP.7 and CRP.8 to see how elements of each could be merged. This contact group, co-facilitated by Shontelle Wellington (Barbados) and Paul Krajnik (Austria), met twice on Wednesday, once on Thursday, and three times on Friday. At the first meeting, they agreed to a proposal to merge the two CRPs. Most of the issues related to balancing what the MOP would request parties and/or scientific institutions to do, and whether it would be voluntary or mandatory. At 6:30 pm on Friday, the contact group finally reached agreement on all of the paragraphs and forwarded the draft decision to plenary.

During the closing of the preparatory segment on Friday, the Co-Facilitators reported that the group had finalized a draft decision. OEWG Co-Chair Brieskorn proposed, and delegates agreed, to forward the draft to the HLS, where it was adopted.

Final Decision: In the final decision on emissions of HFC-23 (UNEP/OzL.Pro.36/CRP.7/Rev.1), the MOP invites relevant parties to undertake, as appropriate, and encourage scientific institutes to undertake or cooperate with other institutions in undertaking atmospheric monitoring of HFC-23 and research on sources of HFC-23 emissions, and to share the results with the scientific community. The MOP also:
- encourages parties to study the potential reasons for differences between reported emissions and emission estimates derived from atmospheric monitoring, and to submit relevant information to the Ozone Secretariat, when available and as appropriate;
- invites parties that have HCFC-22 production facilities to submit to the Ozone Secretariat by 31 March 2025, on a voluntary basis, their current methodologies for estimating and reporting of HFC-23 emissions from HCFC-22 production;
- invites parties that have adopted best practice technologies to reduce HFC-23 emissions to provide such information to the Ozone Secretariat by 31 March 2025, on a voluntary basis;

- requests the SAP and the TEAP to update decision XXXV/7 reports on HFC-23 to reflect any additional or new information that becomes available, and to submit their reports on the matter to MOP 37; and
- requests the TEAP to provide information on and a comparison of best practices and guidelines relating to measuring, estimating, reporting, and verifying HFC-23 by-product emissions and their destruction.

***Potential changes to data reporting forms for reporting on HFC-23*:** On Monday, OEWG Co-Chair Brieskorn reminded delegates that, at OEWG 46, the Secretariat presented options for changes to data reporting form 3 (on production), and some parties expressed interest in also changing data forms 4 (destruction) and 6 (HFC-23 emissions). The US introduced the draft decision and its annexes containing revised data reporting forms. She said the proposal is to make reporting consistent across substances. OEWG Co-Chair Brieskorn proposed, and delegates agreed, to establish a contact group, co-facilitated by Obed Meringo Baloyi (South Africa) and Martijn Hildebrand (the Netherlands).

In the contact group, which met on Tuesday, Wednesday, Thursday, and Friday, parties discussed: what additional information the proponents were requesting from the TEAP; if the title of the draft decision was reflective of its content; the structure of the forms, attempting to develop synergies between them, and how they should be labeled; and the relationship between the different forms so that generation, import and export, and destruction is appropriately reflected in the event they occur over more than one reporting year.

During the closing of the preparatory segment on Friday, the Co-Facilitators reported that the group had finalized a draft decision. OEWG Co-Chair Brieskorn proposed, and delegates agreed, to forward the draft to the HLS, where it was adopted.

Final Decision: In its decision (UNEP/OzL.Pro.36/CRP.4/Rev.1), the MOP approved revised data forms 3 and 6 and the revised instructions for reporting data in accordance with obligations under the Protocol.

LRM management, including the outcomes of the LRM workshop: On Monday, OEWG Co-Chair Brieskorn introduced this item and pointed to the outcomes of the LRM workshop (UNEP/OzL.Pro/Workshop.13/3-UNEP/OzL.Pro.36/7). Some parties called for financial support for Article 5 countries to train and equip technicians in recovery, recycling, and reclamation, and called for more information on end-of-life treatment of equipment containing refrigerants.

FEDERATED STATES OF MICRONESIA (FSM) introduced a draft decision, which called for, among other things: additional information from the TEAP on LRM, a compilation of an online LRM library by the Secretariat, and strengthening national LRM policies.

OEWG Co-Chair Brieskorn proposed, and delegates agreed, to establish a contact group, co-facilitated by Morgan Simpson (UK) and Osvaldo Alvarez Perez (Chile). The group met on Tuesday, Wednesday, Thursday, and Friday, with delegates discussing an invitation to the ExCom to consider ways to enhance LRM in project preparation, including providing additional guidance on national plans and inventories and Kigali Implementation Plans (KIPs). They agreed to delete a request to the Secretariat to prepare an LRM "how-to" manual and debated a request to the Secretariat to compile information on existing efforts under other UN agencies supporting LRM.

On Friday, during the closing of the preparatory segment, the Co-Facilitators reported that the group had finalized a draft decision. OEWG Co-Chair Brieskorn proposed, and delegates agreed, to forward the CRP to the HLS, where it was adopted.

Final Decision: In its decision on LRM (UNEP/OzL.Pro.36/CRP.6/Rev.1), the MOP, among other things:

- requests the TEAP to include updated relevant information on LRM in its 2025 and subsequent progress reports, including the 2026 quadrennial assessment report, taking into account discussions at MOP 36;
- invites the ExCom and Secretariat of the MLF to continue to consider ways to enhance LRM in their work;
- requests the Secretariat to compile information on LRM, including on existing programmes that support LRM efforts, and post it on its website; and
- encourages Article 5 parties to take into account the lessons learned regarding LRM when preparing and implementing their KIPs and, if applicable, when preparing their national inventories and plans.

Very short-lived substances (VSLS): On Monday, OEWG Co-Chair Mohamed introduced this item. Delegates agreed to continue deliberations in a contact group co-facilitated by Heidi Stockhaus (Germany) and Juan Jose Galeano (Argentina).

The contact group met on Monday, Wednesday, and Thursday. Delegates discussed the draft decision on additional information on VSLS (draft decision XXXVI/[A]). They agreed on the need for updated information on dichloromethane (DCM), trichloromethane (TCM), dichloroethane (DCE), trichloroethylene (TCE), and perchloroethylene (PCE), including growth trends for the past five years. The group discussed whether to also request the Assessment Panels to provide updated information on the ozone-depleting potential (ODP) and ozone-layer impact of the five VSLS identified, with some calling to merge this with a request for information on the emissive solvent and feedstock uses of these substances.

On Friday during the closing of the preparatory segment, the Co-Facilitators reported that the group had finalized a draft decision. OEWG Co-Chair Mohamed proposed, and delegates agreed, to forward the draft decision to the HLS, where it was adopted.

Final Decision: In its decision on VSLS (UNEP/OzL.Pro.36/CRP.12), the MOP, *inter alia*, requests the TEAP and the SAP, to include in their 2026 assessment reports, for consideration by OEWG 49:

- updated information on DCM, TCM, DCE, TCE, and PCE, including their emissive solvent and feedstock uses and growth trends for the past five years, ODPs, and impact on the stratospheric ozone layer in quantifiable terms;
- any available relevant information on other anthropogenic VSLS not mentioned in the TEAP's 2024 progress report, along with the methodology used, growth trends for the past five years, ODPs, and impact on the stratospheric ozone layer in quantifiable terms;
- additional information on VSLS alternatives, including solvents with a low boiling point, in the emissive applications where they are currently used, including information on: availability and accessibility; technical feasibility; performance, including yield of the end product; economic viability; safety and sustainability; and penetration in Article 5 countries, focusing on VSLS with significant emissive uses; and
- a table providing information to the extent possible, for each VSLS identified, on: estimated annual production and consumption; estimated annual emissions; range of ODP estimated or evaluated by the SAP; contribution from VSLS to total chlorine input to the stratosphere; and impact on the stratospheric ozone layer in quantifiable terms.

Feedstock uses of controlled substances: On Monday, OEWG Co-Chair Mohamed introduced this item, pointing to a draft decision that addressed minimizing emissions of "controlled [ozone-depleting] substances" during their production, transportation, distribution, storage, handling, repackaging, and use as feedstock (draft decision XXXVI/[B]).

Delegates agreed to establish a contact group, co-facilitated by Ryan Ooi Chean Weai (Malaysia) and Michel Gauvin (Canada), which met in an open setting on Wednesday, and in a parties-only setting on Thursday and Friday. The group debated issues related to best practices and technologies for minimizing emissions, unintentional production, and whether the MLF should consider establishing a funding window to support up to two production-sector-related projects to demonstrate best practices and technologies for minimizing emissions of controlled substances used as feedstock.

During the closing of the preparatory segment on Friday, the Co-Facilitators reported that the group had finalized the draft decision. OEWG Co-Chair Mohamed proposed, and delegates agreed, to forward the draft decision to the HLS, where it was adopted.

Final Decision: In its decision on feedstock uses of controlled substances (UNEP/OzL.Pro.36/CRP.14), the MOP:

- requests relevant parties to minimize emissions of controlled substances during their production, transportation, distribution, storage, handling, repackaging, and use as feedstock, including the avoidance of the creation of such emissions, reduction of emissions using practicable control technologies or process changes, containment, or destruction;
- encourages parties to promote the use of practices and technologies, including those identified in the TEAP 2024 progress report, and, taking into account national circumstances, to reduce emissions of controlled substances during their production, transportation, distribution, storage, handling, repackaging, and use as feedstock in the manufacture of other chemicals;
- encourages parties that have such practices and technologies to provide such information to the Secretariat to assist parties in promoting the application of such practices and technologies;
- invites parties with production and/or use of controlled substances for feedstock to voluntarily provide the Secretariat, by 1 May 2025, information on their established national procedures and frameworks for management of such production and use, including any controls on resulting emissions; and
- requests the Secretariat to collate and summarize the information provided for consideration by OEWG 47.

Enhancing the global and regional atmospheric monitoring of controlled substances: On Monday, Co-Chair Mohamed introduced this item (draft decision XXXVI/[C]). Delegates established a contact group, co-facilitated by Liana Ghahramanyan (Armenia) and Alessandro Giuliano Peru (Italy).

The group met on Tuesday, Wednesday, Thursday, and multiple times on Friday, focusing on: specific modalities for identifying and evaluating the suitability of potential monitoring sites; the process for consulting site host countries and interested parties; the exploration of options for co-financing by other relevant institutions; and the funding sources and amount for the evaluation of the first monitoring sites.

On Friday, during the closing of the preparatory segment, the Co-Facilitators reported that the group had finalized a draft decision. OEWG Co-Chair Mohamed proposed, and delegates agreed, to forward the draft to the HLS, where it was adopted.

Final Decision: In its decision on enhancing the global and regional atmospheric monitoring of controlled substances (UNEP/OzL.Pro.36/CRP.17), the MOP:

- requests the Secretariat to organize activities for evaluating the suitability of potential sites for monitoring regional emissions of controlled substances, with a 2025 budget line item of USD 400,000 from the cash balance of the Montreal Protocol Trust Fund;
- requests the Secretariat to support the work of the GTF Advisory Committee in mapping possible monitoring locations, using existing facilities and reaching out to other organizations; and
- requests the ExCom to consider a funding modality to support a limited number of pilot projects to enhance regional atmospheric monitoring and to report to MOP 37.

Climate-friendly alternatives for metered-dose inhalers: On Monday, OEWG Co-Chair Mohamed introduced this issue, which at that time referred to measures to facilitate the transition to MDIs with low-GWP propellants or other alternative products (draft decision XXXVI/[D]). Delegates established a contact group, co-facilitated by Henry Wöhrnschimmel (Switzerland) and Noe Megrelishvili (Georgia).

The group met on Tuesday, Wednesday, Thursday, and Friday, discussing, among other things, requests to the TEAP to continue "monitoring" and updating parties on developments with respect to HFC-based MDIs and their alternatives, and to provide updated information on low-GWP MDI propellants, including their availability, technical feasibility, economic viability, safety, and penetration in developing countries.

On Friday, during the closing of the preparatory segment, the Co-Facilitators reported the group had finalized a draft decision. OEWG Co-Chair Mohamed proposed, and delegates agreed, to forward the draft to the HLS, where it was adopted.

***Final Decision*:** In its decision on developments regarding MDIs with low-GWP propellants (UNEP/OzL.Pro.36/CRP.15), the MOP, among other things:

- invites parties that produce MDIs to voluntarily submit to the Secretariat, preferably by June 2025 or when it becomes available, any relevant information on progress in the development of MDI products using lower-GWP propellants and the availability of other alternatives, as well as on the implementation of lessons learned during previous MDI propellant transitions;
- requests the TEAP to continue to provide updated information on low-GWP MDI propellants, and to complement its 2026 quadrennial assessment report with timely information, including on their availability, technical feasibility, economic viability, safety, and market penetration in Article 5 parties; and
- encourages parties to revisit the issue no later than 2027 in the light of updated information provided in the 2026 quadrennial assessment report of the TEAP.

Future availability of halons and their alternatives: On Monday, OEWG Co-Chair Brieskorn introduced this issue (draft decision XXXVI/[E]) and delegates established a contact group, co-chaired by Andrew Clark (US) and Ali Tumayhi (Saudi Arabia). The contact group met on Monday evening, Wednesday, and Thursday. There was general agreement that parties should refrain from any deliberate destruction of recovered and recycled halons, unless these halons cannot be returned to an acceptable purity for subsequent reuse, with a protracted debate on whether parties should be "urged" or "encouraged" to do so. They agreed to delete language on the submission of information to the Secretariat on feedstock production and the consequent request for a TEAP assessment on this.

On Friday, during the closing of the preparatory segment, the Co-Facilitators reported the group had finalized a draft decision. OEWG Co-Chair Brieskorn proposed, and delegates agreed, to forward the draft to the HLS, where it was adopted.

Final Outcome: In the final decision on measures to support the sustainable management of recovered, recycled, or reclaimed halons (UNEP/OzL.Pro.36/CRP.13), the MOP urges parties to refrain from any destruction of recovered or recycled halons that can be reclaimed for re-use, and to ensure that sufficient stocks of recovered, recycled, or reclaimed halons remain available for anticipated future needs, and invites parties to encourage relevant stakeholders to take the actions listed above. The MOP encourages parties and stakeholders to:

- ensure that during maintenance and servicing of equipment, or before dismantling and disposal of equipment, halons are recovered for recycling and reclamation;
- reconsider restrictions on import and export of recovered halons to facilitate the transboundary movement and reuse of recovered halons, taking into account Basel Convention requirements, where applicable; and
- raise awareness about the importance of sustainable management of halons, avoid the use of halons where alternatives are available, and inform users of the need to prepare for the risk of reduced availability of halons in the future.

The Ozone Secretariat is requested to liaise with relevant international bodies about the importance of the sustainable management of halons and report back to parties as needed.

Possible compliance deferral for Article 5, group 2 parties: technology review by the TEAP: OEWG Co-Chair Brieskorn introduced the agenda item on Monday. He noted at OEWG 46, India, Bahrain, Kuwait, Qatar, and Saudi Arabia put forward a draft decision (related to paragraph 5 of decision XXVIII/2), requesting the TEAP to provide information on HFC alternatives for use by Article 5, group 2 parties in preparation for the HFC freeze.

OEWG Co-Chair Brieskorn proposed, and delegates agreed, to establish a contact group, co-facilitated by Cornelius Rhein (EU) and Ana Maria Kleymeyer (FSM). The group met on Tuesday, Wednesday, Thursday, and Friday and discussed: what additional information the proponents were requesting from the TEAP and if the title of the draft decision was reflective of its content; whether reporting should specify low, zero, or lower GWP alternatives; to what extent the draft decision should emphasize Article 5, group 2 parties; and whether to include information on "successful transitions" within group 2 parties.

On Friday, during the closing of the preparatory segment, the Co-Facilitators reported that the group had finalized a draft decision. OEWG Co-Chair Brieskorn proposed, and delegates agreed, to forward the draft to the HLS, where it was adopted.

Final Decision: In its decision on the update to the report of the TEAP prepared pursuant to decision XXVIII/2, paragraph 5 (UNEP/OzL.Pro.36/CRP.16), the MOP requests the TEAP to provide, in its 2026 quadrennial assessment report, an update by sector and subsector on low- and lower-GWP alternatives to HFCs for use in Article 5, group 2 parties to prepare for the HFC freeze, including on the following:

- challenges and barriers in terms of availability, accessibility, and adoption;
- standards for alternative refrigerants and for equipment, taking into consideration the capacity of equipment in different countries;
- market structure, including supply chain issues;
- options for addressing the challenges and barriers to the adoption of alternatives; and
- information on the cost of adoption of alternatives.

Strengthening Montreal Protocol institutions, including combating illegal trade: On Monday, OEWG Co-Chair Mohamed introduced a draft decision, proposed by the EU, on further strengthening Montreal Protocol institutions, with a request to the Secretariat to share information on illegal production of and illegal trade in controlled substances, and to identify potential gaps in the non-compliance procedure, alongside challenges, tools, ideas, and suggestions to strengthen and enhance the implementation and enforcement of the Protocol. Parties expressed interest in building on work already done to strengthen the effective implementation and enforcement of the Montreal Protocol and agreed to establish a contact group, co-facilitated by Fathmath Usra (Maldives) and Jana Mašíčková (Czechia).

The group met on Tuesday, Wednesday, and Thursday to discuss the request to the Secretariat to extract common elements of licensing systems and to provide a compilation of these elements, including best practice examples of licensing systems, for discussion at a future meeting of the OEWG. Delegates also parsed out the purpose of the request for the Secretariat to convene a meeting for parties to reflect on the functioning of the Protocol's compliance mechanism. One delegation lauded the strength and effectiveness of the compliance mechanism and stated that reviewing its function is unnecessary. Another delegation proposed a paragraph requesting the Secretariat to share an analysis of non-compliance cases over the last 10 years, the source of non-compliance, and how these instances were identified and resolved.

On Friday during the closing of the preparatory segment, the Co-Facilitators reported that the group had finalized a draft decision. OEWG Co-Chair Mohamed proposed, and delegates agreed to forward it to the HLS, where it was adopted.

Final Decision: In its decision on strengthening Montreal Protocol institutions, including combating illegal trade (UNEP/OzL.Pro.36/CRP.5/Rev.1), the MOP, *inter alia*:

- requests the Secretariat to update its response to decision XXXIV/8 on identifying common features of licensing systems; to prepare a compilation of such features, including examples of licensing systems as implemented under various circumstances; and to make this information available to the parties for consideration at OEWG 47;
- invites parties that have not done so to provide to the Secretariat information on their licensing systems; and
- requests the Secretariat to provide, before OEWG 47, a compilation of the relevant information provided by the parties synthesizing best practices for preventing illegal trade in controlled substances, for consideration by MOP 37.

Energy efficiency issues: ***Avoiding imports of energy inefficient products and equipment containing or relying on controlled substances:*** OEWG Co-Chair Mohamed introduced the first energy efficiency issue on Monday. Delegates agreed to establish a contact group for the continued consideration of a draft decision brought forward by Kyrgyzstan at OEWG 46 inviting parties to share information on national policies, standards, and legislation that restricts the imports of energy-inefficient products and equipment.

Co-facilitated by Morane Godfrin (France) and Baba Dramé (Senegal), the contact group met on Wednesday and Thursday, and discussed whether the draft decision should focus only on energy inefficient equipment or whether it should also include the unwanted importation of controlled substances in line with decision XXVII/8 (phase out of HCFCs). They also discussed provisions to

create, publish, and maintain separate lists specifying equipment and products that are legally prohibited by domestic regulations, and those based on non-binding minimum energy-efficiency performance standards.

In the contact group discussions, one party stated that the draft decision should only include a list of legally prohibited imports, but make the provision of this information mandatory for parties. Another delegation suggested broadening the draft decision to invite parties to share any information related to the import of unwanted products and equipment, including and beyond those related to energy efficiency, on a voluntary basis. A third delegation noted the potential burden updating and relaying such information to parties may place on the Secretariat.

On Friday during the closing of the preparatory segment, the Co-Facilitators reported that the group had finalized a draft decision. OEWG Co-Chair Mohamed proposed, and delegates agreed to forward it to the HLS, where it was adopted.

Final Decision: In its decision on avoiding imports of energy inefficient products and equipment containing or relying on controlled substances (UNEP/OzL.Pro.36/CRP.11.Rev.1), the MOP:

- invites parties that have restricted the import of products and equipment containing or relying on controlled substances in respect to energy efficiency to voluntarily provide this information to the Secretariat;
- invites parties that have national policies, standards, or legislation for products and equipment containing or relying on controlled substances that do not lead to import prohibitions to voluntarily inform the Secretariat of such policies, standards, or legislation, specifying the categories of equipment concerned; and
- requests the Secretariat to publish on its website separate lists of information received in accordance with the above invitations and to update that information when new information is submitted to the Secretariat.

Strengthening the enabling environment to enhance energy efficiency in the cooling sector: On Monday, OEWG Co-Chair Mohamed introduced a draft decision, proposed by FSM, also on behalf of Grenada (UNEP/OzL.Pro.36/CRP.10). The UK, KENYA, COOK ISLANDS, and VANUATU supported the proposal, stressing the importance of energy efficiency as it relates to HFC phase down and the need for financial and technical support for low-volume consuming and very low-volume consuming countries. Several delegations lauded the proposed centers of excellence approach. OEWG Co-Chair Mohamed proposed the establishment of a contact group, to which delegates agreed.

Co-facilitated by Alain Wilmart (Belgium) and Sergio Merino (Mexico), the contact group met on Wednesday and Thursday, where the co-proponents outlined their rationale to: augment efforts under the Kigali Amendment; provide direction to the different institutional branches under the Protocol; and increase the number of energy efficiency projects submitted by parties and funded by the MLF. Delegates also discussed the scope and role of the proposed "regional sustainable cooling centers of excellence," to what extent the ExCom should have flexibility to define these centers, and whether these centers need additional funding.

On Friday during the closing of the preparatory segment, the Co-Facilitators informed delegates that the co-proponents had decided to withdraw their proposal. GRENADA, FSM, COOK ISLANDS, PALAU, and MAURITIUS expressed their profound disappointment about withdrawing the draft decision. However, they expressed that they remain undeterred and look forward to refining the ideas contained in the draft decision and developing inclusive solutions in the future under the Montreal Protocol.

Nominations for critical-use exemptions for methyl bromide for 2025: On Monday, Co-Chair Mohamed introduced this item and noted only one critical use nomination (CUN) was submitted, by Canada. The Methyl Bromide Technical Options Committee (MBTOC) stated this may be the final CUN presentation to the Montreal Protocol. CANADA said it recognized the importance of reducing and phasing out methyl bromide, and had adopted non-chemical alternatives for treating strawberry runners, aiming for a complete reduction by 2026. The draft decision was forwarded to the HLS for adoption. On Friday, during the HLS, parties adopted the decision.

***Final Decision*:** In its decision on critical-use exemptions for methyl bromide for 2025 (UNEP/OzL.Pro.36/CRP.3), the MOP permits Canada to produce and consume 2.85 metric tons of methyl bromide in the critical-use category of strawberry runners in 2025.

TEAP membership changes: On Monday, OEWG Co-Chair Brieskorn introduced this item. He noted the Secretariat had received 10 nominations to serve on the TEAP and called on parties to nominate any additional experts. Delegates agreed to establish an informal group to finalize the draft decision, which met on Wednesday, facilitated by Michel Gauvin (Canada).

On Friday, Facilitator Gauvin presented the outcome during the closing of the preparatory segment, and delegates forwarded the draft decision to the HLS, where it was adopted.

Final Decision: In its decision on the changes in membership of the TEAP (UNEP/OzL.Pro.36/CRP.2), the MOP endorses the appointments of:

- Bella Maranion (US) as Co-Chair of the TEAP for an additional term of four years;
- Paolo Altoé (Brazil) as Co-Chair of the Flexible and Rigid Foams Technical Options Committee (FTOC) for an additional term of four years;
- Adam Chattaway (UK) as Co-Chair of the Fire Suppression Technical Options Committee (FSTOC) for an additional term of four years;
- Daniel Verdonik (US) as Co-Chair of the FSTOC for an additional term of four years;
- Suely Carvalho (Brazil) as a senior expert of the TEAP for an additional term of two years;
- Sukumar Devotta (India) as senior expert of the TEAP for an additional term of two years;
- Bassam Elassaad (Lebanon) as a senior expert for a term of two years;
- Ray Gluckman (UK) as a senior expert for an additional term of two years;
- Marco González (Costa Rica) as a senior expert for an additional term of two years; and
- Shiqiu Zhang (China) as a senior expert for an additional term of two years.

ImpCom recommendations on compliance and data reporting issues: On Tuesday, Co-Chair Brieskorn introduced this item (UNEP/OzL.Pro.36/6 - UNEP/OzL.Pro/ImpCom/73/2, and Add.1). Osvaldo Alvarez-Perez (Chile), ImpCom President, reported on party compliance issues considered during the Committee's 72nd and 73rd meetings, and outlined the four draft decisions emanating from those meetings. He also drew attention to the practice of parties indicating their submission of "provisional" data via a checkbox on the online reporting form.

The US noted the online checkbox was inconsistent with MOP-approved data forms. The Secretariat clarified that the checkbox had

now been deleted from the online form. GRENADA, with KUWAIT and the RUSSIAN FEDERATION, regretted the removal of the checkbox without prior consultation with parties.

ARMENIA described data reporting challenges, referring to online trade and the absence of customs declarations in the Eurasian Economic Union. She expressed willingness to cooperate with the ImpCom, but cautioned that all parties should have been made aware of the checkbox. ARGENTINA, with the EU, US, and BAHRAIN, expressed concern about the lack of clarity around the ImpCom's review and decision process for provisional data.

Co-Chair Brieskorn proposed, and delegates agreed, to forward the draft decision to the HLS, and to establish an informal group, facilitated by Martin Lacroix (Canada), to further discuss concerns raised around the submission and status of provisional data.

On Friday, during the closing of the preparatory segment, Facilitator Lacroix reported on the informal group's discussion with the outcome that any data qualified as provisional will need to be submitted to ImpCom for consideration. ARMENIA stated that a lack of clarity remains, referring to different procedures for reporting baseline and other data, and to inequalities between parties depending on whether they had already declared data as provisional. During the HLS, parties adopted the ImpCom decisions.

***Final Decision*:** In the four decisions forwarded by the ImpCom on compliance and data reporting issues (UNEP/OzL.Pro.36/CRP.1), the MOP:

- notes that 192 of 198 parties have reported data under Article 7 of the Protocol for 2023;
- notes that three parties have not yet submitted HFC baseline data for 2020-2022 under the Kigali Amendment;
- expresses serious concern regarding the repeated non-compliance by one party with control measures for HCFCs and cautions this party accordingly;
- notes that 154 of 160 parties that have ratified the Kigali Amendment have an import and export licensing system in place, and urges all parties that have not yet reported on the establishment and operation of their licensing systems to do so; and
- approves the request by two parties to revise their HFC consumption data for the 2020-2022 and 2022 baselines, respectively.

Status of ratification of the Kigali Amendment: On Monday, OEWG Co-Chair Mohamed opened this issue, noting 160 parties have ratified the Amendment. OEWG Co-Chair Mohamed proposed, and delegates agreed, to forward the decision on this issue to the HLS for adoption.

On Friday, during the HLS, parties adopted the decision.

***Final Decision*:** In its decision on the status of ratification of the Kigali Amendment (UNEP/OzL. Pro.36/INF/5), the MOP:

- notes that, as of 1 November 2024, 160 parties had ratified, approved, or accepted the Kigali Amendment; and
- urges all parties that have not yet done so to ratify, approve, or accept the Kigali Amendment in order to ensure broad participation and achieve the goals of the Amendment.

Vienna Convention Issues

Report of the twelfth meeting of the Ozone Research Managers (ORM 12): On Tuesday, OEWG Co-Chair Mohamed opened the discussion on the ORM 12 report. The ORM 12 Co-Chairs, María Del Carmen Cazorla Andrade (Ecuador) and Wolfgang Steinbrecht (Germany), presented the report of the ORM meeting held in April 2024 and highlighted ORM 12's recommendations presented in the report. ORM 12 Co-Chair Steinbrecht stated that observations need to indicate where the emissions are coming from, noting the Montreal Protocol has "put up the speed signs, but we need radar to ensure everyone follows the speed limits."

Delegates agreed to discuss the draft decision in the contact group on global and regional atmospheric monitoring, which met on Tuesday, Wednesday, Thursday, and Friday (see further detail under the respective Montreal Protocol agenda item above).

On Friday, the Co-Facilitators of the contact group reported on the outcome during the closing of the preparatory segment, which forwarded the draft decision to the HLS, where parties adopted the decision.

Final Decision: In its final decision on recommendations of ORM 12 (UNEP/OzL.Conv.13/CRP.1/Rev.1), the COP:

- encourages parties to adopt and implement the recommendations of the ORM on research needs, systematic observations, gaps in the global coverage of atmospheric monitoring of controlled substances and options for enhancing such monitoring, data archiving and stewardship, and capacity building; and
- encourages parties to accord priority, *inter alia*, to: maintaining, augmenting, restoring, and establishing new long-term capacity and infrastructure for atmospheric monitoring; and supporting capacity-building activities in developing countries and countries with economies in transition, including through the continuation and expansion of regular calibration and intercomparison campaigns and the establishment of monitoring stations.

General Trust Fund for Financing Activities on Research and Systematic Observations (GTF): OEWG Co-Chair Brieskorn introduced this agenda item (UNEP/OzL.Conv.13/7) on Tuesday. A.R. Ravishankara, GTF Advisory Committee, reported on the Committee's work since COP 12, which focused on calibration and intercomparison campaigns, training activities, and instrument refurbishment and acquisition by Article 5 countries and countries with economies in transition. The Ozone Secretariat briefed delegates on the status of the GTF, reporting that USD 308,453 is currently available for future activities, and that the Advisory Committee had received seed-funding proposals amounting to USD 4,685,170. Paolo Laj, World Meteorological Organization, presented on the activities on research and systematic observations relevant to the Convention, also focusing on actions for enhancing capacity.

Delegates discussed the draft decision in the contact group on enhanced global and regional atmospheric monitoring (see above).

On Friday, the HLS adopted the draft decision.

Final Decision: In its final decision on the GTF (UNEP/OzL.Conv.13/CRP.2/Rev.1), the COP:

- recognizes that the purpose of the GTF includes supporting activities related to the atmospheric monitoring of substances controlled under the Montreal Protocol, but notes with great concern that the resources available in the GTF are not sufficient to enable substantial and sustainable improvements to be made to the global ozone observation system;
- encourages parties to make contributions to the GTF for the purpose of improving the global ozone observing system and for enhancing the global and regional atmospheric monitoring;
- requests the Ozone Secretariat to organize the work of the GTF Advisory Committee in line with the relevant Montreal Protocol decision (UNEP/OzL.Pro.36/CRP.17); and
- requests the GTF Advisory Committee to continue to implement its long-term strategy and short-term plan of action, and to support the work of the Ozone Secretariat to organize activities for evaluating the suitability of potential sites for monitoring regional emissions.

Other Matters

Isomers of HFCs not explicitly listed in Annex F: This issue was introduced in plenary on Monday, and taken up by an informal group. On Friday during the closing of the preparatory segment, SWITZERLAND referred to the relevant information document (UNEP/OzL.Pro.36/INF/6) and reported that the informal group had agreed delegates should take up the issue again once additional factual information becomes available.

Changing the cut-off date indicated in paragraph 17 of decision XXVIII/2: This issue was discussed in plenary on Monday with EGYPT introducing a proposal (UNEP/OzL.Pro.36/CRP.9), which was taken up by an informal group. On Friday, during the closing of the preparatory segment, EGYPT, supported by BAHRAIN and SENEGAL, reported that there had not been sufficient time for discussion of their proposal at this MOP, and asked for this item to be included in the agenda for the next OEWG.

Closure of the Preparatory Segment

On Friday, OEWG 46 Co-Chair Brieskorn thanked delegates for their work and closed the preparatory segment at 8:40 pm.

High-level Segment Report

On Thursday, COP 12 President Ndiaye Cheikh Sylla (Senegal) opened the HLS. Lauding the Vienna Convention and its Montreal Protocol as a "shining example of multilateral action," Elizabeth Mrema, Deputy Executive Director UNEP, called for the universal ratification of the Kigali Amendment by 2026.

Akanat Promphan, Minister of Industry, Thailand, announced that his country ratified the Kigali Amendment in 2024 and noted they were accelerating the phase out of HFCs in the same manner they phased out CFCs in the early years of the Montreal Protocol.

In his remarks as outgoing COP President, Sylla expressed thanks for: the work of the ORM in identifying gaps in observation and monitoring; and the GTF Advisory Committee for guaranteeing resources for observation and monitoring.

MOP 35 President Azra Rogović-Grubić (Bosnia and Herzegovina) reflected on her time in office during which parties to the Protocol adopted the largest ever MLF replenishment—USD 965 million. She noted the opportunities this presents to phase out HCFCs and phase down HFCs through cutting-edge policies.

Election of Officers

On Thursday, delegates elected the COP 13 bureau: President: Yaqoub Almatouq (Kuwait); Vice-Presidents: Liana Ghahramanyan (Armenia); Gilda María Torres (Paraguay); Sandrine Benard (Norway); and Rapporteur: Beatrice Odwong Atim (Uganda).

They also elected the MOP 36 bureau: President: Kerryne James (Grenada); Vice-Presidents: Ndiaye Cheikh Sylla (Senegal); Wan Abdul Latiff Wan Jaffar (Malaysia); Alain Wilmart (Belgium); and Rapporteur: Claudia Dumitru (Romania).

Organizational Matters and Credentials

On Thursday, delegates adopted the agenda and organization of work (UNEP/OzL.Conv.13/2-UNEP/OzL.Pro.36/2 and Add.1).

In plenary on Friday, the Secretariat orally presented the credentials report, noting that the Credentials Committee had approved the credentials of 93 parties and provisionally approved 51 parties based on the understanding that they would forward their original credentials to the Secretariat as soon as possible, in accordance with the rules of procedure. Parties adopted the report as orally presented.

Presentations by the Assessment Panels

On Thursday, the Assessment Panels delivered their reports.

SAP: SAP Co-Chair David Fahey provided a status report, focusing on preparations for the 2026 Assessment Report, and called on states to nominate scientific experts, including early-career scientists.

EEAP: Environmental Effects Assessment Panel (EEAP) Co-Chair Janet Bornman presented the EEAP report on changes in the ozone layer and UV radiation, and their interaction with the climate system. The presentation also examined potential effects of stratospheric aerosol injection and discussed per- and polyfluoroalkyl substances (PFAS).

TEAP: TEAP Co-Chair Bella Maranion presented the TEAP status report, as well as the work of its five Technical Options Committees (TOCs). The report focused on the topics of the upcoming TEAP 2026 assessment, sector highlights, and emerging issues, including MDIs, emissions of HFC-23, energy efficiency, and LRM.

ExCom Report

On Thursday, María Antonella Parodi, Chair, MLF ExCom, presented the report for the ExCom activities, meetings, and decisions since MOP 35 (UNEP/OzL.Pro.36/8). She gave an update on the development of cost guidelines for funding the HFC phase down in Article 5 countries and the energy efficiency operational framework, with an agreed MLF funding window of USD 100 million. She also reported on collaborations with other UN agencies and the World Bank to assist parties in the preparation of KIPs. Delegates took note of the report.

Statements by Heads of Delegation

On Thursday, 25 parties delivered national statements, highlighting, among other things, their commitment to implementing the Protocol and Kigali Amendment, the need for financial and technical assistance for Article 5 countries to phase out HFCs and transition to energy efficient technologies, and the importance of setting up additional atmospheric monitoring stations.

On Friday, INDONESIA highlighted the significant progress they have made in implementing their HFC phase-out management plan and stressed the need to support capacity building within Article 5 countries to shift toward low-GWP technologies. Reflecting on the disastrous consequences of climate change that are being felt globally, SENEGAL emphasized that combating the depletion of the ozone layer must be commensurate with efforts to reduce greenhouse gas emissions.

PERU noted the success of the Protocol would not have been possible without support from the MLF, which has enabled developing countries to meet their commitments under the Protocol, and called on parties to bring the spirit of the Protocol to negotiations at the upcoming UN Climate Change Conference in Baku.

TÜRKIYE noted their establishment of an online licensing system for exports and imports of controlled substances and highlighted that they are expecting facilities for HCFC and HFC recycling, recovery, and reclamation to begin operations in 2025. TUNISIA described capacity building and training undertaken to deal with refrigerants and noted they are setting up centers for recycling and recovery, addressing illegal trade of controlled substances, and developing a plan for HFC elimination.

KENYA explained their plans for a licensing system to ensure compliance with control schedules, to combat illegal imports, and to develop a phase-out strategy, including the training of over two

dozen enforcement officers and over 1000 refrigeration technicians. TIMOR-LESTE shared that they are training technicians through a certification programme, announced that they had successfully phased out controlled substances with technical and financial support from the MLF, UNEP and the UN Development Programme, and stated that they are in the final stage of ratifying the Kigali Amendment.

ECUADOR underscored the importance of enhancing the sustainability of the refrigeration and air conditioning sector for daily life, global trade, and food security, and underlined that the constraints developing nations face when implementing the Protocol must be met with robust commitments and concrete actions from donor countries.

Speaking on the need for the effective exchange of knowledge between scientific-evidence holders and knowledge users, the INTERNATIONAL INSTITUTE FOR REFRIGERATION emphasized the need to foster collaboration and knowledge exchange globally to support practical and relevant policy formation.

The ENVIRONMENTAL INVESTIGATION AGENCY highlighted the significant co-benefits of reducing greenhouse gas emissions and ODS supported by the Protocol. They stressed that challenges around monitoring and reporting remain, allowing the fluorochemical industry to cause "unchecked damage," and stressed the need for the Protocol to sharpen its implementation strategies to enhance its effectiveness.

Advocating for the amplification of youth perspectives in multilateral negotiations and the need to support young climate leaders, the CHILDREN AND YOUTH MAJOR GROUP expressed its appreciation for the Youth Forum on the Montreal Protocol and Climate Protection held prior to the conference. They urged parties to allocate resources through the Ozone Secretariat to facilitate meaningful youth engagement and enable the diverse representation of youth voices.

Preparatory Segment Report

On Friday, OEWG 46 Co-Chair Brieskorn reported on the work of the preparatory segment, noting most agenda items were concluded and forwarded to the HLS. He thanked delegates for the cooperative way they worked together on the decisions forwarded to the HLS, noting these will enhance the implementation of the Protocol. MOP 36 Rapporteur Claudia Dumitru (Romania) introduced the compilation of draft decisions for adoption (UNEP/OzL.Conv.13/L.2-UNEP/OzL.Pro.36/L.2). Delegates adopted the decisions.

COP 13 President Yaqoub Almatouq (Kuwait) congratulated the OEWG Co-Chairs for effectively steering the group to its successful conclusion.

Dates and Venues for the Next Meetings

On Friday during the closing plenary, KAZAKHSTAN indicated that they were considering hosting MOP 37 and that a final decision would be conveyed to the Secretariat by the end of the month.

President Almatouq announced that COP 14 would be held in conjunction with MOP 39 in 2027. MOP 37 is scheduled to be held in Nairobi, Kenya, from 3-7 November 2025, unless other arrangements are made by the Secretariat in consultation with the Bureau. He also reported that OEWG 46 is scheduled for 7-11 July 2025 in Bangkok, Thailand.

Adoption of Decisions by COP 13 and MOP 36

MOP 36 Rapporteur Claudia Dumitru (Romania) led delegates in adopting the COP/MOP decisions forwarded to the HLS by the preparatory segment (contained in UNEP/OzL.Conv.13/L.2–UNEP/OzL.Pro.36/L.2). Delegates adopted a record number of decisions, which have been summarized under the relevant agenda items above.

Adoption of the Meeting Report and Closure of the Meeting

MOP 36 Rapporteur Dumitru led delegates in the adoption of the report of the meeting (UNEP/OzL.Conv.13/L.1–UNEP/OzL.Pro.36/L.1 and Add 1). Parties adopted the meeting report, with minor editorial amendments.

Commending delegates for a successful meeting, MOP 36 President James called on delegates to ensure that all the decisions are implemented at the grassroots level. COP 13 President Almatouq thanked delegates for electing him, noting that the ozone family is his second family. MOP 36 President James closed the meeting at 9:43 pm.

A Brief Analysis of COP 13/MOP 36

The late astronomer and planetary scientist Carl Sagan once said: "The hole in the ozone layer is a kind of skywriting. At first it seemed to spell out our continuing complacency before a witch's brew of deadly perils. But perhaps it really tells of a newfound talent to work together to protect the global environment." In anticipation of the upcoming anniversaries of the Vienna Convention, Montreal Protocol, and Kigali Amendment, many delegates and dignitaries were reflecting on their talent to work together as well as past and future milestones in protecting the ozone layer and the climate.

Collaboration indeed saved the international community from most of the dire consequences of ozone layer depletion and increased ultraviolet (UV) radiation. These include increased skin cancers, eye cataracts, and immune deficiency disorders as well as altered growth, food chains, and biochemical cycles in terrestrial and aquatic ecosystems, with impacts on agri- and aquacultural production. What's more, the Kigali Amendment is estimated to lead to the avoidance of 0.3–0.5°C warming by 2100 from the anticipated phase down of hydrofluorocarbons (HFCs).

But current global warming trends suggest that past successes are not enough, and that the often praised "ozone family" must not rest on its laurels. Clearly, the members of this close-knit group have no intention of resting, but instead are actively planning for the future of both the Protocol and the Earth. In this light, this brief analysis examines the key issues that delegates faced at the combined thirteenth meeting of the Conference of the Parties (COP13) to the Vienna Convention and thirty-sixth Meeting of the Parties (MOP36) to the Montreal Protocol. It considers how parties are: dealing with the atmospheric monitoring of controlled substances in support of the implementation of the Protocol; addressing discrepancies between such monitoring and the reporting of controlled substances; and preparing for emerging challenges and opportunities.

It's All about the Monitoring

Atmospheric monitoring is foundational for any action to protect the ozone layer and mitigate climate change caused by emissions of controlled substances. The Vienna Convention, as the first international treaty in this policy area, is responsible for ongoing scientific monitoring and observation of the ozone layer and the physical and chemical processes that may affect it. Monitoring insights can then inform decision making by parties.

Monitoring is the link—the red thread—between the Convention, the Protocol, and the Kigali Amendment, as it is equally important for the substances already controlled by the Protocol, or those that may be controlled in the future. Monitoring helps to ensure that the phase-out and phase-down of controlled substances is sustained and emissions of controlled substances are detected.

Bolstered by information from the Protocol's Scientific Assessment Panel (SAP), parties have long recognized that there are significant gaps in today's global atmospheric monitoring network, especially over Africa and Latin America. At this meeting, parties took action by agreeing to organize activities to evaluate the suitability of potential sites for monitoring regional emissions of controlled substances, allocating USD 400,000 from the cash balance of the Montreal Protocol Trust Fund to this purpose. They also requested the Executive Committee to consider funding a limited number of pilot projects under the Vienna Convention General Trust Fund. Some participants interpreted this as a sign of the ozone treaties' responsiveness to addressing challenges that could hinder the recovery of the ozone layer, and parties' commitments to ensuring any future emissions are detected and arrested in good time.

Unexpected HFC-23 Emissions

As if to highlight the growing need for an enhanced atmospheric monitoring network, delegates were confronted with a new challenge. HFC-23 is the longest-lived and most potent greenhouse gas among HFCs, with a 100-year global warming potential (GWP) of 14,800 and an atmospheric lifetime of 222 years. While there are limited instances where HFC-23 is captured, purified, and used for commercial purposes, the majority of HFC-23 is unintentionally created as a by-product during the production of certain fluorinated compounds, including hydrochlorofluorocarbon (HCFC)-22. The Kigali Amendment calls for cutting the production and use of HFCs with the goal of avoiding additional global warming by up to 0.5°C.

Updated research by the SAP and Technology and Economic Assessment Panel (TEAP) presented on the first day of the meeting revealed that, after 2014, a gap emerged between global HFC-23 emissions reported by parties and emission estimates derived from measured atmospheric abundances, with a result that 75-89% of emissions are not accounted for in parties-reported emissions data. The SAP further estimated that based on their studies, which also rely on improved atmospheric monitoring, unreported emissions from China account for about 20-50% of the global emissions gap.

These discrepancies led to some of the most heated discussions at the meeting. Some delegations thought the spotlight on China may have been unfair, wondering if other countries could also be emitting undetected HFC-23 due to the lack of atmospheric monitoring over Africa and Latin America. The SAP itself acknowledged that China had been doing a lot to phase out ODS and phase down HFCs, but some parties opined that China needed to do more to curb HFC-23 emissions. The discussion also highlighted that even an improved atmospheric monitoring network would not necessarily detect the exact source of emissions, which is rendered all the more difficult by the atmospheric circulation of substances.

The delicate nature of this issue and how best to resolve it came into full display in plenary when two competing draft decisions on HFC-23 emissions were submitted—one by the US and Canada, and another by China. The former called on parties, in particular China, to take the necessary action to ensure compliance with Kigali Amendment obligations and investigate the potential reasons for the discrepancy. The latter focused on strengthening research on HFC-23 emissions and data reporting and called on scientific institutes to cooperate with each other on this issue. While delegates quickly agreed to merge the two drafts, reaching agreement on the underlying goal of the decision took six meetings of the contact group, which only finalized its work late on Friday. Most of the issues surrounded balancing what they would request parties to do and what scientific institutions would do, and if these tasks would be voluntary or mandatory.

The final decision was a careful compromise that requests "relevant" parties to undertake, "as appropriate," and to encourage scientific institutes to undertake (or cooperate with other institutions in undertaking) atmospheric monitoring of HFC-23, research on sources of HFC-23 emissions, and to share the results with the scientific community. Among other requests, the decision invites parties that have HCFC-22 production facilities to voluntarily submit to the Secretariat, by 31 March 2025, their current methodologies for estimating and reporting HFC-23 emissions from HCFC-22 production. Needless to say, this item will remain on the agenda going forward.

Issues on the Horizon

Monitoring and addressing emissions' discrepancies for controlled substances are long-standing core tasks of parties under the Protocol. But parties also need to prepare for the future to keep the Protocol and its implementation fit for purpose.

One such issue is life-cycle refrigerant management (LRM). Realizing the full potential of the Montreal Protocol to protect the climate and ozone layer requires consideration of the complete life-cycle of controlled substances, like refrigerants. In this regard, the COP/MOP was preceded by a one-day workshop on LRM where participants explored practical options to: prevent refrigerants from leaking; recover, recycle, and reclaim them; destroy them; and deal with used and waste equipment containing refrigerants. The workshop discussions translated directly into a MOP decision to provide further guidance and information on LRM and to encourage parties to adopt a systemic approach to LRM. Parties underlined that it is important to not only address the larger-scale production and use of controlled substances, but also their handling by technicians in often very small businesses.

Another area that has attracted increasing attention recently has to do with very short-lived substances (VSLS). Unlike long-lived ODS, only a fraction of emitted VSLS reach the stratosphere where they augment chlorine and deplete ozone in the short term—months, rather than decades. But at scale, VSLS can still have an impact on the ozone layer. In response, and after long debates between delegates during previous meetings on how to get this issue on the agenda in a meaningful way, parties agreed to request the TEAP and SAP to provide updated information on the most abundantly used VSLS, including their ozone-depleting potential and potential alternative substances.

Energy efficiency is another area receiving increased attention by parties. Essentially, energy efficient buildings reduce the need for air conditioning, which in turn reduces the use of controlled substances. With this in mind, a group of small island developing states (SIDS) drafted a proposal around the establishment of "regional sustainable cooling centres of excellence." However, this proposal was eventually withdrawn by the sponsors after recognizing they didn't have the necessary support, which was seen by some as one of the few disappointments of this COP/MOP. Grenada and the Federated States of Micronesia, among other SIDS, regretted the feedback received from other parties—"no, not here, not now"—but expressed determination to continue working on this issue and reintroduce the topic in 2025. But not all the momentum on energy

efficiency gained during other sessions was lost. The MOP did adopt a decision that invites parties to share national policies on minimum energy performance standards for appliances containing or relying on controlled substances.

Ready to Face the Challenges Ahead

Despite a few small setbacks and some late nights, delegates agreed that COP13/MOP36 was a resounding success. Parties managed to address a record number of agenda items in the most contact groups ever established, and adopted important decisions to keep the Convention and Protocol strong and successful.

The Montreal Protocol agenda will remain busy in the coming years, and the workload of the Protocol's subsidiary bodies, in particular its three Assessment Panels, seems to be ever-increasing. However, delegates expressed their feeling that the ozone family is agile and well set up for this work, which was buttressed at MOP 35 by the record replenishment of USD 965 million under the Multilateral Fund for 2024-2026.

The next three years will bring a set of major anniversaries for the ozone family. The Vienna Convention celebrates its 40th anniversary in 2025, the Kigali Amendment will have its 10th anniversary in 2026, and the Montreal Protocol turns 40 in 2027. These milestones provide an opportunity to create momentum, including by achieving universal ratification of the Kigali Amendment by 2026. Many delegations throughout the meeting stressed the importance of universal ratification to ensure the global phase-down of HFCs and decisive action on climate change. Both UN Environment Programme Deputy Executive Director Elizabeth Mrema and Ozone Secretariat Executive Secretary Megumi Seki pledged their support to achieve this goal.

Overall, parties shared that COP13/MOP36 reinvigorated the Convention and the Protocol with new energy and drive. As tired but happy delegates left the UN Conference Centre in Bangkok on Friday night, they headed home with the reassurance that the ozone family "gets the job done." Maybe this is also because high-GWP substances like HFCs are relatively easier to effectively abate than carbon dioxide, one participant mused when pledging to return in 2025. Either way, the future begins today.

Upcoming Meetings

UN Climate Change Conference (UNFCCC COP 29): This event will include the 29th meeting of the Conference of the Parties (COP 29), the 19th meeting of the COP serving as the Meeting of the Parties to the Kyoto Protocol (CMP 19), and the sixth meeting of the COP serving as the Meeting of the Parties to the Paris Agreement (CMA 6), which will convene to complete the first enhanced transparency framework and the new collective quantified goal on finance, among other matters. The 61st sessions of the Subsidiary Body for Scientific and Technological Advice (SBSTA 61) and the Subsidiary Body for Implementation (SBI 61) will also meet. **dates:** 11-22 November 2024 **location:** Baku, Azerbaijan **www:** unfccc.int/cop29

Plastics Treaty INC-5: The 5th meeting of the Intergovernmental Negotiating Committee (INC) to develop an international legally binding instrument on plastic pollution, including in the marine environment, is the last scheduled meeting of the INC. **dates:** 25 November – 1 December 2024 **location:** Busan, Republic of Korea **www:** unep.org/inc-plastic-pollution/session-5

Basel Convention COP 17, Rotterdam Convention COP 12, and Stockholm Convention COP 12: The Basel, Rotterdam, and Stockholm COPs will meet to address proposed listings to the respective conventions' annexes, and issues of joint concern such as financial and technical assistance. **dates:** 28 April – 9 May 2025 **location:** Geneva, Switzerland **www:** brsmeas.org/2025COPs/

Global Framework for Chemicals OEWG: The first meeting of the Open-ended Working Group for the Global Framework of Chemicals will begin to review the implementation of the Global Framework. **dates:** 21-27 June 2025 **location:** Nairobi, Kenya **www:** unep.org/global-framework-chemicals

Montreal Protocol OEWG 47: The 47th meeting of the Montreal Protocol's Open-ended Working Group of the Parties will review the implementation of the decisions of previous meetings and prepare for the next one by adopting recommendations to forward to the MOP for consideration and final decision. **dates:** 7-11 July 2025 **location:** Bangkok, Thailand **www:** ozone.unep.org/meetings/47th-meeting-open-ended-working-group-parties

Minamata Convention on Mercury COP-6: The sixth meeting of the Conference of the Parties to the Minamata Convention on Mercury (COP-6) will review implementation of the Convention. **dates:** 3-7 November 2025 **location:** Geneva, Switzerland **www:** https://minamataconvention.org/en/meetings/cop6

Montreal Protocol MOP 37: The thirty-seventh Meeting of the Parties will review implementation and strengthening of the Montreal Protocol **dates:** 3-7 November 2025 **location:** Nairobi, Kenya, or Kazakhstan **www:** ozone.unep.org/

For additional upcoming events, see sdg.iisd.org/

Glossary

CFCs	Chlorofluorocarbons
COP	Conference of the Parties
CTC	Carbon tetrachloride
CUN	Critical use nominations
EEAP	Environmental Affects Assessment Panel
ExCom	Executive Committee of the Multilateral Fund
GTF	General Trust Fund for Financing Activities on Research and Systematic Observations Relevant to the Vienna Convention
GWP	Global warming potential
HCFCs	Hydrochlorofluorocarbons
HFCs	Hydrofluorocarbons
HLS	High-level segment
ImpCom	Implementation Committee
KIPs	Kigali Implementation Plans
LRM	Life-cycle refrigerant management
MDI	Metered-dose inhaler
MLF	Multilateral Fund
MOP	Meeting of the Parties
ODP	Ozone depleting potential
ODS	Ozone depleting substances
OEWG	Open-ended Working Group
ORM	Ozone Research Managers
SAP	Scientific Assessment Panel
TEAP	Technology and Economic Assessment Panel
TOC	Technical Options Committee
UNEP	United Nations Environment Programme
UV	Ultraviolet
VSLS	Very short-lived substances