

**Montreal Protocol
on Substances that
Deplete the Ozone Layer**

Distr.: General
21 July 2025
Original: English

**Open-ended Working Group of the Parties
to the Montreal Protocol on Substances
that Deplete the Ozone Layer
Forty-seventh meeting
Bangkok, 7–11 July 2025**

**Report of the forty-seventh meeting of the Open-ended
Working Group of the Parties to the Montreal Protocol on
Substances that Deplete the Ozone Layer****I. Opening of the meeting**

1. The forty-seventh meeting of the Open-ended Working Group of the Parties to the Montreal Protocol on Substances that Deplete the Ozone Layer was held at the United Nations Conference Centre, Bangkok, from 7 to 11 July 2025. The meeting was co-chaired by Annie Gabriel (Australia) and Shontelle Wellington (Barbados).
2. Ms. Wellington opened the meeting at 10.05 a.m. on Monday, 7 July 2025. Opening statements were delivered by Dechen Tsering, Director, Regional Office for Asia and the Pacific, United Nations Environment Programme (UNEP), and Megumi Seki, Executive Secretary, Ozone Secretariat.
3. Welcoming participants, Ms. Tsering said that the Montreal Protocol remained a beacon of the achievements that were possible through science-based, consensus-driven multilateralism. She commended the 163 parties that had already ratified the Kigali Amendment to the Montreal Protocol and encouraged those parties that had not yet done so to ratify the Amendment in order for universal ratification to be achieved by 2026, which would mark the tenth anniversary of the Amendment. The valuable experiences and lessons learned by parties during the phase-out of chlorofluorocarbons (CFCs) and hydrochlorofluorocarbons (HCFCs) needed to be applied to the challenges ahead, including the phase-down of hydrofluorocarbons (HFCs) in Article 5, group 1, parties.
4. Recalling the observation of the Secretary-General of the United Nations on World Ozone Day 2024 that, in uniting the world to phase out the consumption and production of different ozone-depleting substances, the Montreal Protocol had contributed to shielding carbon sinks, protecting humanity's health, and avoiding economic losses, and noting that 2025 marked the fortieth anniversary of the adoption of the Vienna Convention for the Protection of the Ozone Layer, she said that the success of the agreements lay in united action, a science-based approach, the provision of financial and technical support through the Multilateral Fund for the Implementation of the Montreal Protocol, and strong results that encouraged parties to strive to achieve more.
5. Ms. Seki invited participants to honour the memory and reflect on the contributions made by Janusz Kozakiewicz (Poland), Satyendra Kumar Purkayastha (Bangladesh) and Xiaoyan Tang (China), all of whom had died in recent months. Mr. Kozakiewicz, who had participated in meetings of the Montreal Protocol for over three decades, many times in key roles, had received a Montreal Protocol Outstanding Contributor Award in 2007. He would be remembered for his in-depth knowledge, vast experience and professionalism. Mr. Purkayastha had dedicated over 26 years to the implementation of the Montreal Protocol in Bangladesh and had played an important role in his country's ratification and early implementation of the Kigali Amendment. He would be remembered

for his intellect, unassuming nature and dedication to the Montreal Protocol. Ms Xiaoyan Tang had served as the co-chair of the Environmental Effects Assessment Panel from 1993 to 2012, having previously led the national programme for the implementation of the Montreal Protocol in China. She had received an award for her outstanding contribution to the Vienna Convention in 2005 and would be remembered as a highly respected academic in the fields of environmental science and atmospheric chemistry.

6. Noting that the Vienna Convention had laid the groundwork for the Montreal Protocol, she recalled that the parties to both instruments had recently agreed on groundbreaking decisions on enhancing atmospheric monitoring of substances controlled under the Protocol, thereby linking the Vienna Convention and the Protocol, and strengthening their implementation.

7. Prior to the current meeting, the Implementation Committee had met over two days to review non-compliance issues, forward HFC baseline revisions for seven parties to the Thirty-Seventh Meeting of the Parties for its consideration and conclude its discussion on provisional data. The discussions begun at that meeting on systemic issues in relation to compliance would continue at the Committee's seventy-fifth meeting and at the one-day informal meeting to be held immediately before the Thirty-Seventh Meeting of the Parties, in November 2025. A meeting of the regional network of South Asia national ozone officers, under UNEP OzonAction, and a workshop on life-cycle refrigerant management convened by the Climate and Clean Air Coalition to Reduce Short-lived Climate Pollutants had also taken place prior to the current meeting. The focus of the workshop had been a review of the progress of fluorocarbon bank inventories and national action plans. Many of the issues addressed at those meetings would be relevant to discussions at the current meeting.

8. She drew attention to the key issues to be discussed at the current meeting, noting that the Technology and Economic Assessment Panel had already begun the groundwork for the study on the 2027–2029 replenishment of the Multilateral Fund, including on making its models for the analysis for the study more transparent and accessible to parties.

9. In many of the 27 decisions that had been adopted at the combined thirteenth meeting of the Conference of the Parties to the Vienna Convention and Thirty-Sixth Meeting of the Parties to the Montreal Protocol, held in 2024, parties had been requested to submit information on several issues, on a voluntary basis, and the Secretariat had been asked to compile that information. It had therefore produced an online compilation on life-cycle refrigerant management, a compilation and summary of information on feedstocks, a compendium on very short-lived substances, an updated summary of common features of licensing systems, a compilation of information and synthesis of best practices for preventing illegal trade, and an analysis of systemic issues related to compliance.

10. The Secretariat had made available on its website the submissions that it had received from parties regarding restrictions on the import of products and equipment containing controlled substances and on energy efficiency requirements. Submissions from parties regarding HFC-23 emission estimation methodologies and best practices for emission reduction had been forwarded to the Technology and Economic Assessment Panel and the Scientific Assessment Panel for consideration in the reports they were preparing for the Thirty-Seventh Meeting of the Parties.

11. If the deadlines for the submission of information from parties on any of the aforementioned topics were extended, the Secretariat would update the relevant documents with any newly received information or forward the information to the relevant Panel, as appropriate.

II. Organizational matters

A. Attendance

12. The following parties to the Montreal Protocol were represented: Albania, Argentina, Armenia, Australia, Austria, Azerbaijan, Bahrain, Bangladesh, Barbados, Belgium, Belize, Benin, Bhutan, Bosnia and Herzegovina, Botswana, Brazil, Brunei Darussalam, Burkina Faso, Burundi, Cameroon, Canada, Central African Republic, Chile, China, Colombia, Cook Islands, Costa Rica, Côte d'Ivoire, Cuba, Cyprus, Czechia, Democratic People's Republic of Korea, Democratic Republic of the Congo, Denmark, Dominica, Dominican Republic, Ecuador, Egypt, Estonia, Eswatini, European Union, Fiji, Finland, France, Gambia, Georgia, Germany, Ghana, Grenada, Guatemala, Guyana, Honduras, India, Indonesia, Iran (Islamic Republic of), Iraq, Ireland, Italy, Jamaica, Japan, Jordan, Kazakhstan, Kenya, Kiribati, Kuwait, Kyrgyzstan, Lao People's Democratic Republic, Lebanon, Lesotho, Lithuania, Malawi, Malaysia, Maldives, Mali, Mauritania, Mauritius, Mexico, Micronesia (Federated States of), Mongolia, Montenegro, Morocco, Mozambique, Myanmar, Namibia, Nauru, Nepal, Netherlands (Kingdom of the), New Zealand, Niger, Nigeria, North Macedonia, Norway,

Oman, Pakistan, Papua New Guinea, Paraguay, Philippines, Poland, Portugal, Qatar, Republic of Moldova, Romania, Russian Federation, Rwanda, Saint Kitts and Nevis, Saint Vincent and the Grenadines, Saudi Arabia, Senegal, Seychelles, Solomon Islands, Somalia, South Africa, South Sudan, Spain, Sri Lanka, State of Palestine, Sudan, Sweden, Switzerland, Syrian Arab Republic, Thailand, Timor-Leste, Togo, Trinidad and Tobago, Tunisia, Türkiye, Turkmenistan, Tuvalu, Uganda, United Arab Emirates, United Kingdom of Great Britain and Northern Ireland, United Republic of Tanzania, United States of America, Uruguay, Vanuatu, Viet Nam, Zambia and Zimbabwe.

13. The following United Nations entities, organizations and specialized agencies were represented: secretariat of the Multilateral Fund for the Implementation of the Montreal Protocol, United Nations Development Programme, United Nations Environment Programme, United Nations Industrial Development Organization and World Bank. The Montreal Protocol assessment panels were also represented.

14. The following intergovernmental, non-governmental, industry, academic and other bodies were represented as observers: A-Gas (Australia) Pty Ltd.; A-Gas International, AGC Chemicals; Alliance for an Energy Efficient Economy; Alliance for Responsible Atmospheric Policy; Asia Pacific Urban Energy Association; Association des Distributeurs, Conditionneurs, Récupérateurs et Retraiteurs de Réfrigérants; ATMOSphere; Brazilian Association of Refrigeration, Air Conditioning, Ventilation, and Heating; Carbon Containment Lab; Carraway Strategies LLC; Centre for Environment Justice and Development; China Household Electrical Appliances Association; Clean Cooling Collaborative; Climate and Clean Air Coalition Secretariat; Complex Products Manufacturers Coalition; Daikin; Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH; Emergent Ventures India; Energy Changes; Environmental Investigation Agency; European Association of Refrigeration and Air Conditioning Installers; European Partnership for Energy and the Environment; Frostchem Global FZE; Ghana Energy Commission; Glencoe Strategies LLC; Global Policy Associates; Guidehouse Germany GmbH; Gujarat Fluorochemicals Limited; ICF International; iFOREST; Independent Expert; Institute for Energy and Climate Strategies; Institute for Global Decarbonization Process; Institute for Governance and Sustainable Development; International Energy Initiative; International Institute of Refrigeration; International Pharmaceutical Aerosol Consortium; Japan Fluorocarbon Manufacturers Association; Japan Society of Refrigerating and Air Conditioning Engineers; Korea Chemical Industry Association; Kulthorn Group; Labtech International Ltd.; Leiden University; Littelfuse Inc.; Mebrom Corporation; Mexichem UK Ltd.; Midea Group; Nanjing Forestry University; Natural Resources Defense Council; Ökorecherche; Overseas Environmental Cooperation Center; Peking University; Refrigerant Gas Manufacturers Association; Refrigerant Reclaim Australia; Refrigerants Australia; RMI; Shandong Institute of Hydrogen Energy Technology; SilverLining; Solutions for our Climate; SRADeV; SRF Limited; TATA Motors Ltd.; The Japan Refrigeration and Air Conditioning Industry Association; Tradewater; Universiti Teknologi Malaysia; University of California; Wiley Rein LLP.; Zhejiang Hua Chuang Cer Intelligent Manufacturing Co. Ltd.; Zhejiang University of Technology.

B. Adoption of the agenda

15. Introducing the provisional agenda contained in document UNEP/OzL.Pro.WG.1/47/1, the Co-Chair proposed the inclusion of the consideration of Technology and Economic Assessment Panel membership changes under sub-item 4 (d) “Any other issues”, as the issue had been omitted from the provisional agenda.

16. A number of representatives, including one speaking on behalf of a group of parties, requested that the issue of halon 1301 in the aviation sector and the management of other controlled substances and their alternatives for fire suppression be considered under sub-item 4 (d) “Any other issues”, with one representative requesting that the issue be considered in the broader context of fire suppressants. In addition, one representative speaking on behalf of a group of parties requested that very short-lived substances, including recent submissions on the topic, and policies relating to per- and polyfluoroalkyl substances (PFAS), be considered under the same sub-item.

17. Under the agenda item on the classification of the State of Palestine as a party operating under paragraph 1 of Article 5 of the Montreal Protocol and access to support from the Multilateral Fund, the representative of the United States of America noted that he intended to reiterate the points made by his delegation at previous meetings regarding changes to the classification of Article 5 parties.¹

18. The representative of China emphasized the importance of discussions at the current meeting remaining focused on substantive, technical issues and on providing practical support to countries for

¹ This paragraph has not been formally edited.

implementing the Protocol. It would therefore not be appropriate to deviate from that path to discuss the reclassification of developing countries under Article 5.²

19. One representative noted her delegation's intention to submit a conference room paper on national and regional initiatives for supporting the implementation of the Kigali Amendment, with a focus on specialized regional centres of excellence, under the agenda item on "Other matters".

20. One representative, expressing his thanks for the inclusion in the provisional agenda of the item proposed by his delegation, namely "Change in the cut-off date for eligible capacity indicated in paragraph 17 of decision XXVIII/2", nevertheless asked for the removal of the item from the agenda of the current meeting, as solid progress had been made on the issue by the Executive Committee of the Multilateral Fund since the Thirty-Sixth Meeting of the Parties, including the introduction of flexibility to the funding arrangements for Article 5 parties. His delegation would therefore re-examine and discuss with interested parties any remaining challenges regarding funding eligibility and he reserved the right to submit a revised conference room paper on the matter at a future meeting, as appropriate.

21. One representative, noting that consideration of HFC-23 remained an important issue for his delegation, said that, given the time constraints at the current meeting, he would not raise the matter. He looked forward instead to discussing the issue at the Thirty-Seventh Meeting of the Parties.

22. The Working Group adopted the following agenda on the basis of the provisional agenda set out in document UNEP/OzL.Pro.WG.1/47/1, as orally amended:

1. Opening of the meeting.
2. Organizational matters:
 - (a) Adoption of the agenda;
 - (b) Organization of work.
3. Terms of reference for the study on the 2027–2029 replenishment of the Multilateral Fund for the Implementation of the Montreal Protocol.
4. Presentations by the Technology and Economic Assessment Panel on its 2025 progress report and discussions on:
 - (a) Life-cycle refrigerant management (decision XXXVI/2);
 - (b) Metered-dose inhalers with low-global-warming-potential propellants (decision XXXVI/6);
 - (c) Options for the organization of the Panel and its technical options committees (decision XXXV/20);
 - (d) Any other issues.
5. Feedstock uses of controlled substances (decision XXXVI/5).
6. Enhancing regional atmospheric monitoring of substances controlled by the Montreal Protocol (decision XXXVI/1).
7. Further strengthening the Montreal Protocol institutions (decision XXXVI/9).
8. Review of the need for the annual average of 2.5 per cent for hydrochlorofluorocarbons for servicing and non-servicing applications during the period 2030–2040, provided for in Article 5, paragraph 8 *ter* (e), (i) and (ii) (decisions XIX/6 and XXX/2).
9. Classification of the State of Palestine as a party operating under paragraph 1 of Article 5 of the Montreal Protocol and access to support from the Multilateral Fund (UNEP/OzL.Conv.13/8–UNEP/OzL.Pro.36/9, para. 13).
10. Other matters.
11. Adoption of the report of the meeting.
12. Closure of the meeting.

² This paragraph has not been formally edited.

23. Under agenda sub-item 4 (d), “Any other issues”, the Working Group agreed to consider Technology and Economic Assessment Panel membership changes; halon 1301 and its continuing use in the aviation industry and management of other controlled substances use for fire suppression; very short-lived substances; and PFAS.

24. Under agenda item 10, “Other matters”, the Working Group agreed to consider a conference room paper on regional initiatives supporting the Kigali Amendment.

C. Organization of work

25. The Working Group agreed to the organization of work proposed by the Co-Chair, namely to establish contact and informal groups as necessary and to avoid, to the extent possible, the holding of contact or informal group meetings in parallel with each other or with plenary meetings. Morning plenary sessions would run from 10 a.m. to 1 p.m. and afternoon sessions from 3 to 6 p.m.

III. Terms of reference for the study on the 2027–2029 replenishment of the Multilateral Fund for the Implementation of the Montreal Protocol

26. Introducing the item, the Co-Chair recalled that the Multilateral Fund for the Implementation of the Montreal Protocol operated on the basis of three-year funding cycles. The previous replenishment decision taken by the Meeting of Parties, adopted in 2023, had covered the period 2024–2026. In the second year of each funding cycle, the parties developed and adopted terms of reference for a study designed to estimate the funds needed to enable Article 5 parties to achieve compliance during the subsequent replenishment period. The Technology and Economic Assessment Panel usually formed a replenishment task force to carry out the study. The terms of reference of the previous study were set out in annex I to the note by the Secretariat on issues for discussion by and information for the attention of the Open-ended Working Group of the Parties to the Montreal Protocol at its forty-seventh meeting (UNEP/OzL.Pro.WG.1/47/2).

27. The Co-Chair proposed that a contact group be established to discuss the terms of reference for the study on the 2027–2029 replenishment of the Multilateral Fund.

28. In the ensuing discussion, many representatives stressed the fundamental importance of the Multilateral Fund in helping Article 5 parties to achieve their compliance targets. Several pointed out that the triennium 2027–2029 was a critical time for Article 5 parties, and the replenishment needed to enable them to fulfil their upcoming obligations, notably, the freeze in 2028 on hydrofluorocarbon (HFC) consumption for Article 5, group 2, parties, the 10 per cent reduction in HFC consumption by 2029 for Article 5, group 1, parties and the 97.5 per cent reduction in hydrochlorofluorocarbon (HCFC) consumption by 2030 for all Article 5 parties.

29. Some representatives also said that cooling was increasingly seen not only as an environmental concern but also as a development issue. Refrigeration supported food security, medicine and livelihoods. One representative said that the replenishment should enable a just transition to the use of alternatives to HFCs without affecting countries’ economic and industrial development.

30. Several representatives, including one speaking on behalf of a group of parties, noted that, since the previous replenishment, Montreal Protocol parties and institutions had amassed more experience; had taken decisions on a number of issues, such as atmospheric monitoring, funding for enhancing energy efficiency while phasing down HFCs and disposal or end-of-life management of ozone-depleting substances; had finalized the cost guidelines for Kigali HFC implementation plans, and had greater knowledge of issues such as life-cycle refrigerant management or the costs and savings related to leapfrogging HFCs and moving directly to natural refrigerants. The triennium 2027–2029 was therefore an opportunity to secure and strengthen the work of the Montreal Protocol.

31. Several representatives stressed the need for the replenishment to be based on credible assumptions aligned with approved mandates and decisions taken by the Meeting of the Parties and the Executive Committee since the last replenishment, and on evidence-based cost estimates. One representative questioned the validity of some of the estimates and assumptions made by the task force in the study for the replenishment for the triennium 2024–2026. Some representatives underscored the need for the Panel to be transparent in its calculations to build credibility, with one stressing the importance of the task force conducting close consultations with Article 5 parties, implementing agencies and national ozone units to ensure that the cost assumptions and programmatic models proposed were grounded in operational reality. One representative suggested that the task force look at scenarios that reflected current economic conditions, especially in relation to the country that was the

largest producer and consumer of controlled substances. Another representative suggested that a representative of the Multilateral Fund secretariat be included in the task force so that it could provide advice more freely and easily. Noting that he appreciated the motivation for that request, another representative said that he would like to discuss other options. Another representative proposed that the task force be asked to provide a range of estimates based on different scenarios.

32. Representatives highlighted specific topics that they considered important, regardless of whether they were required for compliance, and for which they deemed that sufficient funding should be available during the following triennium. Those elements included energy efficiency; life-cycle refrigerant management, including recovery, reuse and end-of-life management; sustainability beyond compliance; the specific situations of low-volume-consuming countries, very low-volume-consuming countries and countries that experienced high ambient temperatures, irrespective of whether they operated under the high-ambient-temperature exemption; the application and promotion of alternatives with low global warming potential (GWP) and of alternative technologies; the difficulties faced by small and medium-sized enterprises in conversions and moving to the use of alternatives to HFCs; training, capacity-building and institutional strengthening; the UNEP Compliance Assistance Programme; the administrative costs of the implementing agencies and the budgets of the Multilateral Fund secretariat and the Treasurer; banks of ozone-depleting substances; data issues; early action and the commitments made by some Article 5 parties to accelerate the phase-down of HFCs under their Kigali HFC implementation plans; long-term reduction targets, beyond 2035; the combating of illegal trade in ozone-depleting substances; the servicing sector, including the servicing tail permitted between 2030 and 2040 and the establishment of incentives in that sector; expansion of the use of the revolving fund mechanism for energy efficiency agreed by the Executive Committee for a limited number of end users; funding for end users of refrigeration equipment; climate co-benefits in Kigali HFC implementation plans; digital tools and capacities and the use of artificial intelligence; and acceleration of the review and endorsement of well-designed funding proposals.

33. Several representatives, including one speaking on behalf of a group of parties, advocated streamlining the text of any future draft decision in comparison with that of the previous decision on a replenishment study. Some said, for example, that the decision should not restate in detail all the decisions taken by the meetings of the parties or the Executive Committee since the previous replenishment, but make general references to them for reasons of efficiency.

34. One representative expressed his intention to submit a draft decision, in the form of a conference room paper, co-sponsored by a number of other parties. The draft decision would be based on the decision on the previous study, but would aim to simplify the language used to incorporate recent decisions and guidance.

35. Subsequently, the representative of Canada, speaking also on behalf of Australia, Japan and the United Kingdom of Great Britain and Northern Ireland, introduced a conference room paper, setting out a draft decision, which, he said, was intended to serve as a basis for discussion on the terms of reference for the study on the 2027–2029 replenishment of the Multilateral Fund. He explained that the proponents had essentially followed the approach taken in past decisions for previous replenishments but had simplified the text to account for the fact that a number of issues addressed in the previous decision, such as energy efficiency and the HFC cost guidelines, had since been resolved and were the subject of decisions adopted by the Executive Committee of the Multilateral Fund. The draft decision also included two new elements for which there were no Executive Committee decisions as yet but which the proponents felt should nevertheless be considered by the Panel, namely the possibility of considering the allocation of resources associated with digitalization in the servicing sector within the HCFC phase-out management plans and Kigali HFC implementation plans, and the need to allocate resources for a funding modality to support a limited number of pilot projects to enhance atmospheric monitoring of controlled substances. There were also a number of minor differences with the text of the previous decision, which, he suggested, could be discussed in more detail in a contact group.

36. Another representative questioned the need for a new draft decision on the matter, saying that he preferred to use the text of the previous decision as a basis for discussion, which he recalled as being the usual practice. Several representatives expressed support for that approach, while several others, including one speaking on behalf of a group of parties, said that they were in favour of using the newly submitted text as a starting point.

37. Following some discussion, the Working Group agreed to establish a contact group, to be co-chaired by Miruza Mohamed (Maldives) and Ralph Brieskorn (Kingdom of the Netherlands), to develop the draft terms of reference for the study on the 2027–2029 replenishment of the Multilateral Fund, using the draft decision submitted by Australia, Canada, Japan and the United Kingdom, with

the entire text bracketed, as the basis for its discussion and taking into account the terms of reference for the previous such study, as described in decision XXXIV/2.

38. Subsequently, the co-chair of the contact group reported that, owing to time constraints, it had not been possible for the group to conclude its work. The Working Group therefore agreed to resume discussions on the terms of reference for the study on the 2027–2029 replenishment of the Multilateral Fund at the Thirty-Seventh Meeting of the Parties, on the basis of the draft decision set out in section A of annex I to the present report.

IV. Presentations by the Technology and Economic Assessment Panel on its 2025 progress report and discussions on

39. Introducing the item, the Co-Chair drew attention to volume 1 of the Technology and Economic Assessment Panel 2025 progress report and to the summaries of the issues set out in a note by the Secretariat (UNEP/OzL.Pro.WG.1/47/2, paras. 8–21) and an addendum thereto (UNEP/OzL.Pro.WG.1/47/2/Add.1, paras. 4–51 and annexes).

1. Presentation

40. Following an introduction by Bella Maranion, co-chair of the Panel, members of the Panel and its technical options committees summarized the findings of the Panel's 2025 progress report, including its responses to relevant decisions of the Meeting of the Parties, as follows: Helen Walter-Terrinoni – Flexible and Rigid Foams Technical Options Committee; Adam Chattaway – Fire Suppression Technical Options Committee; Ian Porter – Methyl Bromide Technical Options Committee; Takeshi Eriguchi – Medical and Chemicals Technical Options Committee; Omar Abdelaziz – Refrigeration, Air Conditioning and Heat Pumps Technical Options Committee. Ms. Maranion then summarized findings on PFAS, and Marta Pizano, Ashley Woodcock and Ms. Maranion, all co-chairs of the Panel, summarized the options for the future organization of the Panel and its technical options committees. A summary of the presentation is set out in annex II to the present report, without formal editing.

2. Question-and-answer session

41. In the ensuing question-and-answer session, many representatives had specific questions on the presentation.

42. All the representatives who spoke thanked the Technology and Economic Assessment Panel and its technical options committees for their work.

43. Responding to questions to the Flexible and Rigid Foams Technical Options Committee, Ms. Walter-Terrinoni observed that while parties not operating under paragraph 1 of Article 5 (non-Article 5 parties) were generally transitioning away from HFCs in foam-blowing, apart from HFC-152A, Article 5 parties were seeing greater use of HFCs, and even some continued use of HCFC-141b, although that use was now very small. Supply chain issues had hindered the uptake of hydrofluoroolefins (HFOs), although there had been some improvement recently. Paulo Altoé added that companies that accepted foam-blowing agents in one-ton cylinders rather than drums had experienced particular logistical problems.

44. The cost of the foam-blowing agents was also a constraint; many manufacturers had been experimenting with mixing other substances with fluorinated chemicals to reduce the cost. It was a constant challenge to reach the right balance between cost, performance and safety. On the use of hydrocarbons in foam-blowing, Ms. Walter-Terrinoni explained that flammability concerns and safety requirements limited their use and transport.

45. In response to a question about how parties could determine the volume of controlled substances contained in foams in refrigeration and air-conditioning equipment, Ms. Walter-Terrinoni recommended that they ask the original equipment manufacturer for the data.

46. Responding to questions to the Fire Suppression Technical Options Committee, Mr. Chattaway stated that not-in-kind solid aerosols were in use for fire suppression, but only in niche applications. They left a solid residue after use, which limited their application, especially in occupied spaces where the residue could penetrate people's lungs; sometimes toxic gases were also generated and some fatalities had resulted, which explained why their use was confined mainly to non-occupied spaces.

47. Daniel Verdonik responded to a question about the deliberate destruction of halons to generate carbon credits by stating that such destruction was not currently being observed, but that there were still some proponents in the United States; the Committee was trying to persuade them not to do so. He agreed that the figure of 26 per cent of emissions from the use of feedstock to make halon 1301 was indeed very high, but said that it seemed to be accurate. One major patent for the production of halon 1301 for use as feedstock in the production of fipronil showed a 75 per cent yield, suggesting to the Committee that the remaining 25 per cent not consumed in that process might enter the environment somehow. Mr. Chattaway added that the Committee was seeking regional emissions data in order to help identify the sources.

48. On the use of different fire suppression systems in various installations, Mr. Verdonik observed that where halon 1301 was already in use, and where it would be costly to take the installation offline – such as in nuclear power stations or oil and gas installations – operators were continuing to maintain their existing systems, since there was no drop-in replacement available. New installations, however, would probably use HFC-227ea or fluoroketone.

49. On fire suppression systems in aircraft, Mr. Chattaway explained that a single type certificate could remain in place, effectively, for up to 50 years; although aircraft manufacturers would typically create variants of the original design, they would all still be covered by the same certificate. If the International Civil Aviation Organization (ICAO) changed its requirement not to use halon 1301 in cargo compartments of completely new aircraft designs after 2024, which the aviation industry was preparing to request, demand for halon 1301 could indeed extend for a further 50 years.

50. Responding to a question about the weight penalty from replacing halon 1301 with 3,3,3-trifluoro-2-bromo-propene (2-BTP), Mr. Chattaway explained that it added 50 per cent to the weight of a portable extinguisher. A 2-BTP-carbon-dioxide system would probably have a similar weight penalty, but that would depend on the design of the aircraft. The latter system had been the leading contender for replacing halon 1301 in aircraft cargo compartments, but the uncertainty resulting from possible regulations on PFAS was causing a slowing down or pausing of developments, which was the main reason behind the possible extension of the deadline to stop using halon 1301.

51. On the question of availability of halon 1301, Mr. Verdonik said that there was currently no global shortage, but there could be a lack of availability in some regions. He justified the Committee's suggestion that the suitability of the essential-use nomination process might need to be evaluated by explaining that it would be very difficult for parties to predict in advance the volume of halon 1301 that would be needed, as this would depend on the extent to which it needed to be used in fire suppression. Some parties might find that they needed only a few kilograms, whereas others where aircraft maintenance was carried out might need larger volumes. That also explained the Committee's request to ICAO to provide to the Ozone Secretariat information on the locations of the maintenance, repair, and overhaul operations authorized to service halon 1301, for confidential use by the Panel to allow it to better model likely demand.

52. Mr. Chattaway observed that all civil airlines in the United Kingdom had now transitioned to 2-BTP, as they were required to do by the end of 2025 under national regulations. Other countries were proceeding more slowly, but demand for 2-BTP extinguishers was increasing steadily. Responding to a question on fire suppression in trains, he explained that trains were not typically fitted with gaseous systems, unlike aircraft. The only exception he was aware of was for the trains passing through the Channel Tunnel between France and the United Kingdom, where a fire in the tunnel would have serious consequences.

53. Responding to a question to the Methyl Bromide Technical Options Committee about how the emissions of methyl bromide from use in quarantine and pre-shipment applications could be reduced, Mr. Porter explained that a number of countries had made significant progress in installing recapture systems. Given their cost, however, that was unlikely to take place unless the Government put in place regulations to limit emissions.

54. Responding to a question about whether the Committee was intending to include nitrous oxide in its work, Ms. Pizano explained that this currently fell outside the Committee's mandate, but members of the Committee did possess expertise on the topic.

55. Responding to questions to the Medical and Chemicals Technical Options Committee on the replacement of HFC-134a in metered-dose inhalers, Mr. Woodcock observed that currently, about 90 per cent of metered-dose inhalers manufactured worldwide used pharmaceutical-grade HFC-134a produced by a single company in the United Kingdom. The fact that the company expected to phase down its production of HFC-134a after 2030 had stimulated a significant degree of activity in the development of alternatives. The company itself was starting to produce HFC-152a, and at least nine

companies in non-Article 5 parties had research and development activities under way. The Committee had also heard that one company in India and possibly two in China which currently manufactured HFC-152a and HFOs might be starting to manufacture pharmaceutical-grade material. One Chinese company had already approached the United States Food and Drug Administration with a view to seeking approval.

56. He said that he expected the transition to low-GWP propellants in metered-dose inhalers to take place quite quickly in non-Article 5 parties, but probably more slowly in Article 5 parties. However, the transition would not be an easy process; HFC-152a was more flammable than HFC-134a, so new safety and fire protection standards would be needed in the factories manufacturing it. He said that he remained concerned about the likely availability of affordable metered-dose inhalers in some parts of the world, such as Africa.

57. Responding to a question about why he did not think it was likely that stocks of HFC-134a could be built up before 2030 for use afterwards, Mr. Woodcock explained that it was not an unanticipated consequence of trade regulations, although those possibly had an impact, but was mainly due to the fact that only a limited number of containers existed to store pharmaceutical-grade substances and also that there was a limit on the time during which it could be stored without needing to be re-qualified. He agreed that the price of the propellant was only a minor factor in the price of inhalers. He explained that the Committee had raised the possibility of HFC-152a being affected by PFAS regulations because of the possibility of small amounts of impurities, but that it was not a current problem. He agreed that it would be possible for pharmaceutical-grade HFC-134a and HFC-152a to be produced in Article 5 parties, as industrial-grade HFCs currently were.

58. Responding to a question about emissions from feedstock use, Mr. Eriguchi said that it was normally 2–4 per cent. Responding to a question about future production of carbon tetrachloride, he agreed that production was expected to increase in the future with the increasing manufacture of HFOs. That did not, however, imply that emissions would increase. As Nick Campbell, member of the Medical and Chemicals Technical Options Committee, explained, since carbon tetrachloride was highly toxic, emissions were generally well controlled, and usually monitored at the fence of the sites. The Committee would find it very helpful to have more information from continuous fence measurements of emissions, which could then be compared to local and regional atmospheric measurements, and also information on the uses of feedstock as well as its production.

59. Mr. Eriguchi confirmed that the Medical and Chemicals Options Committee was already investigating the development of alternatives in semiconductor etching, and would be including information on it in the next quadrennial assessment report. Mr. Campbell confirmed that the Committee did not currently possess any expertise on nitrous oxide.

60. In response to a question to the Refrigeration, Air Conditioning and Heat Pumps Technical Options Committee on the means of distinguishing between containers of different substances, Mr. Abdelaziz explained that upper-case letters were used for blends and lower-case letters for pure substances. If a cylinder was received supposedly containing a blend but with a lower-case letter as the suffix at the end of the chemical name on its label, that would be grounds for suspicion. Responding to a follow-up question about the steps countries should take if they detected suspicious imports, the representative of the Secretariat commented that the Government should contact enforcement authorities in the exporting country. If illegal trade was detected it could also be reported to the Secretariat, though they had no authority to take action on it.

61. Mr. Abdelaziz recommended that parties should work with implementing agencies to equip their technicians with refrigerant identifiers and leak detectors and build their capacity to use them. He added that recent shortages of the equipment had been caused by the manufacturer ceasing production, but that manufacture had now re-started.

62. Responding to a question on the costs of HFCs, he said that supply chain issues were leading to higher costs in some markets, although the Committee did not track market developments in all regions. Which technology was the most economically viable option varied from country to country. He explained that the Committee had not had time to analyse fully the information submitted by parties on life-cycle refrigerant management, but intended to do so in time for the quadrennial assessment report; they would also look at the relevant policies included in countries' nationally determined contributions under the Paris Agreement on climate change. He agreed that regional collaboration on that topic was extremely valuable; in general there had not been enough so far, though significant progress had been made in Europe.

63. In response to a question about delays in the commercialization of propane in split-system units, Mr. Abdelaziz explained that it was mainly due to the challenge of implementing safety

standards, although significant progress had been made recently. Propane was considerably more flammable than HFC-32, so it could only be used in smaller quantities, as specified in safety standards. Sealed units, which could be produced and tested by the manufacturer in the factory, did not usually pose a problem, but for larger units which required installation on-site, there was a higher possibility of leaks occurring. In general, the choice of refrigerant was a delicate matter; the right balance needed to be reached between safety, including flammability and toxicity, and the costs of the new system and its performance.

64. Mr. Abdelaziz acknowledged the growing use of R454B, particularly in transport, in the United States and elsewhere, noting that the Committee would be investigating that development further.

65. In response to a question about the costs of recovery and destruction of controlled substances, he agreed that the process had to be economically viable, and recommended the use of carbon pricing schemes. Responding to a question about the low proportion of refrigerant that was reclaimed and destroyed, Rajan Rajendran explained that a higher percentage was almost certainly reused or recycled, often by the owner of the system, but that those figures were frequently not reported. It was only reclamation that was usually reported, which explained the 10 per cent figure the Committee had quoted. Undoubtedly the proportion could be increased, but that was a matter for a separate discussion on life-cycle refrigerant management. Mr. Abdelaziz added that more information would be included on the topic in the quadrennial assessment report.

66. In terms of the market penetration of low-GWP substances, Mr. Abdelaziz said that HFC-32 had almost reached saturation point for mini-split units and was beginning to make headway for central air-conditioning equipment too. Mr. Rajendran added that propane was now widely used in monobloc systems, particularly in Europe, where their use was mainly for heating. It was less suitable, however, for large cooling systems, where HFC-32 was a more viable alternative, although it had a higher GWP. Neither propane nor HFC-32 were expected to be affected by forthcoming PFAS regulations.

67. The Co-Chair concluded by recommending that parties talk directly to members of the Technology and Economic Assessment Panel in the margins of the meeting to follow up any further questions.

68. Subsequently, in a continuation of the question-and-answer session, responding to a question on the availability of sector-based studies of nitrous oxide, Ms. Pizano recalled that nitrous oxide was an ozone-depleting substance that was listed under the Vienna Convention and, although it was not a controlled substance under the Montreal Protocol, the Scientific Assessment Panel regularly provided information on nitrous oxide emissions. The agricultural sector was the largest source of human-induced nitrous oxide emissions, accounting for approximately two-thirds of all such emissions. In addition, the industrial and medical sectors, as well as fossil fuel combustion, biomass burning and wastewater, were all significant sources or users of nitrous oxide. There was much information available on the topic and members of the Panel could provide more information to the interested party on a bilateral basis.

69. Responding to questions from several representatives, including one speaking on behalf of a group of parties, on the options provided for the future organization of the Panel and its technical options committees, Ms. Maranion clarified that the Panel had first considered a wide range of options and then presented what it regarded to be the viable options for the future structure of the technical options committees given the anticipated workload and required coverage of issues for parties under the Protocol. After some discussions while developing its response, ultimately the Panel had not intended to indicate a preference in its presentation of two viable options per technical options committee. While the Panel members had tried to ensure that the Panel was objective in providing the advantages and disadvantages of the various options, they understood that some of the discussions within the technical options committee section might indicate a leaning to one over the other option, but considered all the options to be viable. She underscored that, while the Panel had provided those options for future configuration that it considered viable, that did not limit the consideration of other options that had not been presented, and the Panel looked forward to hearing from parties on the matter. Recalling that the Panel had requested that no organizational changes be made in the short term in order to allow it to complete its current workload, she noted that there was therefore time available to discuss the options in detail in order to ensure that any structural changes that were made would ensure that the Panel's work was manageable and sustainable for the longer term. On the Medical and Chemicals Technical Options Committee in particular, she noted that it was the largest of all the technical options committees and its mandate was ever-broadening, and therefore a formal subcommittee system or a split of the current Committee seemed to be needed. Mr. Woodcock added

that it would be beneficial to have one additional co-chair, or even two, with medical expertise, for that committee as the three current co-chairs were all experts in chemicals. He noted that, although a separate, new committee could be established on metered-dose inhalers, for example, the Committee currently worked efficiently with a subcommittee structure, as it considered a large number of cross-cutting issues.

70. Responding to a question from one representative on PFAS forecasting, Ms. Maranion said that the Panel, also in coordination with other panels, would continue to provide information on the impact of PFAS-related regulation on various sectors. The representative noted, however, that it had been a year since a request had been made to the Panel for information on the way forward with regard to HFOs that were considered to be PFAS, including in terms of possible prohibition and alternatives. Despite repeated requests from his party, the Panel had not provided clarity on possible substitutions for sectors that could not use hydrocarbons or natural solutions. He requested that such information be included in the Panel's report to the Thirty-Seventh Meeting of the Parties.

71. Subsequently, one representative, while thanking the Technology and Economic Assessment Panel for its ongoing work on preparing reports, said that neither the 2024 nor the 2025 progress report had contained information on alternatives that met the aspirations of high-ambient-temperature countries, which faced specific challenges in adopting energy-efficient alternatives that were safe to handle in high temperatures and did not entail impractical maintenance and servicing requirements. She requested that future reports address that shortcoming to ensure comprehensive implementation of the Protocol.

A. Life-cycle refrigerant management (decision XXXVI/2)

72. Introducing the sub-item, the Co-Chair drew attention to paragraphs 8–13 of the note by the Secretariat on issues for discussion by and information for the attention of the Open-ended Working Group at its forty-seventh meeting (UNEP/OzL.Pro.WG.1/47/2), paragraphs 6–11 of the addendum thereto (UNEP/OzL.Pro.WG.1/47/2/Add.1) and section 6.9 of the report of the Technology and Economic Assessment Panel, May 2025, volume 1. She recalled that, in addition to requesting the Technology and Economic Assessment Panel for an update on life-cycle refrigerant management, in decision XXXVI/2, the Thirty-Sixth Meeting of the Parties had encouraged parties to submit information related to life-cycle refrigerant management activities by 31 May 2025. A total of 13 responses had been received and had been compiled by the Secretariat as requested, together with information on existing programmes that supported life-cycle refrigerant management. The compilation was available on the Secretariat's website.³

73. The Co-Chair also recalled that the Open-ended Working Group had before it a proposal submitted by Cuba related to inventories of refrigerant gases nearing the end of their life cycles in Article 5 parties. The text of the draft decision was set out in annex II to the note by the Secretariat.

74. In the general discussion about life-cycle refrigerant management, one representative, speaking on behalf of a group of parties, thanked the parties that had provided the 13 responses to the request in decision XXXVI/2 and encouraged other parties also to submit the information. Providing information to complement the submission by his group of countries, he said that, under the new regional law on fluorinated gases in those countries, reclamation facilities had to register in a centralized system and report annually on the quantities reclaimed and recycled. The first data received, for 2024, showed an increase of approximately 250 per cent in the quantities reclaimed. That increase was due both to the fact that companies that had previously reported had declared higher quantities of reclaimed substances and to the fact that there had been an increase in the number of companies reporting.

75. Another representative spoke about the need to establish or upgrade existing laboratories to support and monitor life-cycle refrigerant management, especially in Article 5 parties. The laboratories could provide analytical and quality assurance services for refrigerant reclamation or destruction operations; assist with data reporting, emission monitoring and safety protocols; and support the implementation of Kigali HFC implementation plans. The Technology and Economic Assessment Panel should consider providing additional information on the integration of laboratories into existing or new reclamation or destruction facilities and on the identification of appropriate technologies and institutional models to ensure effective and sustainable operations.

76. One representative said that initiatives on life-cycle refrigerant management should be voluntary and not connected to the phase-down of HFCs. They should take into consideration national

³ <https://ozone.unep.org/countries/additional-reported-information/life-cycle-refrigerant-management-decision-xxxvi2>.

policies and programmes, and parties that opted to join such initiatives should be given support to improve their legislative and technical infrastructure.

77. The representative of Cuba introduced the draft decision set out in annex II to the note by the Secretariat (UNEP/OzL.Pro.WG.1/47/2). He noted that the proposal was to request the Technology and Economic Assessment Panel to conduct a study of global inventories of ozone-depleting gases that had reached the end of their life cycle and needed to be destroyed, primarily in developing countries, where the capacity for the sustainable destruction of such substances was lacking. The study would help gauge the magnitude of the problem so that solutions could be found for the gradual elimination of such substances, with the support of those parties that had the technologies and capacity to do so. He recalled that certain countries were in the process of preparing inventories of banks of ozone-depleting substances. That information could be useful for the study and feed into the discussion about the 2027–2029 replenishment of the Multilateral Fund.

78. In the ensuing discussion, several representatives emphasized the importance of improving life-cycle refrigerant management, including the management of end-of-life refrigerants. Some said that it had implications for Article 5 parties in meeting the compliance obligations given their baseline values and limited technical, financial and regulatory capacity. Some representatives spoke about the scale of the problem of refrigerant accumulation, the difficulties in finding destruction capacities and the need for practical disposal methods. One representative recalled that the Ozone Secretariat compiled, annually, a list of countries with reclamation facilities. He proposed that parties with capacity duly inform the Ozone Secretariat as the Technology and Economic Assessment Panel was unlikely to be able to provide that kind of information. Another representative expressed interest in knowing the capacity available for reclamation and destruction, noting that there was also a list of facilities. She said that destruction should be a last resort and priority should be given to recovery, recycling and reclamation.

79. A representative of the Ozone Secretariat confirmed that information on reclamation facilities had been received and posted on the website pursuant to paragraph 4 of decision VI/19, but the last information received had been in 2000.⁴

80. Several representatives, including one speaking on behalf of a group of parties, said that they were in favour of discussing further the proposal by Cuba. Rather than launching straight into a study by the Panel, some representatives, including one speaking on behalf of a group of parties, proposed looking first at existing information. They noted that, under the Multilateral Fund, many Article 5 parties were indeed in the process of preparing national inventories of banks of used or unwanted controlled substances; that a funding window for pilot projects to maintain and/or enhance the energy efficiency of replacement technologies and equipment in the context of HFC phase-down had been approved; and that the Executive Committee would consider extending the funding window at its ninety-seventh meeting, in December 2025, in line with the request in decision XXXV/11 on life-cycle refrigerant management. They expressed concern that initiating a new study might be premature until existing projects had been completed and analysed. They emphasized the need to avoid the duplication of efforts already under way. One representative drew attention to a model previously developed by the Panel to estimate global banks of refrigerants and asked to what extent it could help in identifying the quantities of refrigerants coming to the end of their life cycle that needed to be either reclaimed or destroyed. He also underscored the usefulness of the resources, including on international programmes and initiatives, posted on the Ozone Secretariat website pursuant to decision XXXVI/2, saying that the information could inform ongoing efforts by parties and future analysis by the Panel. A representative speaking on behalf of a group of parties mentioned ongoing work under the Basel Convention on the Transboundary Movement of Hazardous Wastes and Their Disposal on the environmentally sound management of refrigerators and cooling and heating equipment, including the environmentally sound refurbishment of those products. The Panel could also use that as a resource.

81. A representative of the Technology and Economic Assessment Panel confirmed that a model to estimate banks of refrigerants had been developed, but stated that it was better suited to the global level. Additional data would be required for it to be adapted to the country level.

82. Several representatives said that they were against the linking of carbon markets to life-cycle refrigerant management efforts, suggesting that it encouraged the continuation of emissions. Another representative, speaking on behalf of a group of parties, while recognizing the potential of carbon credits to support life-cycle refrigerant management, warned against the creation of unwanted incentives.

⁴ <https://ozone.unep.org/countries/additional-reported-information/reclamation-facilities>.

83. Asked about the conversion of a cement kiln for the destruction of controlled substances, which had been carried out with the support of the Multilateral Fund, the representative of Cuba confirmed that his country had received funds many years previously and had begun to accumulate some experience in the destruction of ozone-depleting gases in a converted concrete and cement manufacturing plant. Given the recent economic situation, however, destruction operations had not been able to continue at the plant at the speed required. A proposal to transfer the technology to other cement plants had not received funding.
84. A number of representatives, including one speaking on behalf of a group of parties, noted that the proposal by Cuba had not been presented in the habitual format of a draft decision. The representative of Cuba said that he would prepare a draft decision, set out in a conference room paper, to aid further discussion.
85. Subsequently, the representative of Cuba introduced a conference room paper setting out a draft decision on the development of studies and strategies to find medium- and long-term solutions to the significant accumulation of inventories of refrigerant gases nearing the end of their life cycles in Article 5 parties. He explained that the proposed decision was intended to highlight concern with the increasing volume of such substances, and the impact on those countries lacking the necessary technology or economic capacity to dispose of them.
86. The draft decision sought to have the topic included in the agenda of the Thirty-Seventh Meeting of the Parties with the aim of securing a mandate for the Technology and Economic Assessment Panel to prepare a detailed analysis of the accumulation of large inventories of refrigerant gases. It would also request the Panel to assess countries' capacities for the destruction of controlled substances and to estimate the costs and requirements for capacity-building in Article 5 parties. Finally, it would encourage technical and financial international cooperation to facilitate the implementation of environmentally sound management practices for controlled substances.
87. The representatives of Chile and the Dominican Republic both announced their wish to co-sponsor the draft decision.
88. The Working Group agreed to establish a contact group, to be co-chaired by Morane Godfrin (France) and Sergio Merino (Mexico).
89. Subsequently, reporting back on the group's discussions, the co-chair of the contact group said that the proponents of the conference room paper intended to submit a revised version of the draft decision for the consideration of the Working Group.
90. In a further report back, the co-chair of the contact group reported that the group had made good progress, and the proponents of the draft decision had also worked hard to produce a new text reflecting the discussions that had been held in the group. However, it had not proved possible to reach final agreement and further discussion would be needed. The Working Group therefore agreed to resume discussions on life-cycle refrigerant management at the Thirty-Seventh Meeting of the Parties on the basis of the draft decision set out in section B of annex I to the present report.

B. Metered-dose inhalers with low-global-warming-potential propellants (decision XXXVI/6)

91. Introducing the sub-item, the Co-Chair drew attention to paragraphs 14–16 of the note by the Secretariat on issues for discussion by and information for the attention of the Open-ended Working Group at its forty-seventh meeting (UNEP/OzL.Pro.WG.1/47/2), paragraphs 12–18 of the addendum thereto (UNEP/OzL.Pro.WG.1/47/2/Add.1) and section 5.8 of the report of the Technology and Economic Assessment Panel, May 2025, volume 1.
92. The Co-Chair recalled that, in decision XXXVI/6, on developments regarding metered-dose inhalers with low-global-warming-potential propellants, the Thirty-Sixth Meeting of the Parties had requested the Technology and Economic Assessment Panel to continue to provide updated information on metered-dose inhalers with low global warming potential in its annual progress reports. In the same decision, the Thirty-Sixth Meeting of the Parties had invited parties that produced metered-dose inhalers to submit, on a voluntary basis, by June 2025, or when it became available, any relevant information on progress in the development of metered-dose inhaler products using lower-global-warming-potential propellants; the availability of other alternatives; and the implementation of lessons learned during previous metered-dose inhaler propellant transitions. To date, the Secretariat had received two submissions, including one from a party representing a group of parties.
93. In the ensuing discussion, a representative speaking on behalf of a group of parties underscored that, according to the experience of his region and the information in the Panel's

May 2025 progress report, alternatives to metered-dose inhalers using propellants with high global warming potential, such as HFC-134a, were available or in development. He gave examples of regulatory approval processes that were already under way or had been achieved in a variety of countries and regions.

94. Several other representatives highlighted significant challenges in adopting alternatives, citing a lack of available and viable alternatives; a lack of clear scientific guidance on safe and effective alternatives; and the need for robust national testing and approval processes before alternatives could be widely adopted. Some representatives were adamant that they would not put the health of individuals at risk, while other representatives, including one speaking on behalf of a group of parties, agreed that parties should make their own decisions about the transition away from HFCs in metered-dose inhalers and that the transition should be driven by patient needs. They expressed the view that action was needed for the sake of the environment and to ensure compliance with the Montreal Protocol. One representative expressed concern that this country could fall into non-compliance owing to the increased use of metered-dose inhalers, but another said that his country would focus on HFC phase-down in other major sectors in order to achieve the targets of the Kigali Amendment.

95. Some representatives sought further information and advice on the adoption of alternatives. In response to a question about the alternatives chosen for use in his region, a representative speaking on behalf of a group of parties said that there were viable replacements for both R134a and R-227ea propellants and that dry powder inhalers were a good choice. He also said that the alternative R-152a was not a PFAS and, acknowledging concerns about PFAS impurities, assured parties that minimum impurities would not trigger future regulatory problems.

96. Several representatives, including one speaking on behalf of a group of parties, drew attention to the role of the pharmaceutical industry. One called for its greater involvement in the transition, while the representative speaking on behalf of the group of countries said that the industry had a responsibility to contribute to climate action and that political support was key to driving the change. Another representative called for the provision of support to help pharmaceutical sectors in developing countries to adopt alternatives.

97. Recalling that, to date, the Secretariat had received only two submissions in response to the request in decision XXXVI/6, one representative encouraged further submissions and noted that additional information would enable a fuller discussion to be held on the topic.

C. Options for the organization of the Panel and its technical options committees (decision XXXV/20)

98. Introducing the sub-item, the Co-Chair recalled that, in decision XXXV/20 of the Thirty-Fifth Meeting of the Parties, the Panel had been requested to provide options relating to its organization and that of its technical options committees. The full report of the Panel on the matter was set out in chapter 8 of its 2025 progress report and summarized in the note by the Secretariat (UNEP/OzL.Pro.WG.1/47/2, paras. 17–21) and the addendum thereto (UNEP/OzL.Pro.WG.1/47/2/Add.1, paras. 19–28 and table 1). She noted that, although any organizational changes would not be made until 2027, once the Panel had completed its quadrennial assessment, it would be beneficial for parties to consider taking a decision on the matter in 2025 rather than 2026, given that parties would need to allocate sufficient time for replenishment negotiations in 2026.

99. In the ensuing discussion, all the representatives who took the floor emphasized the importance and excellence of the work of the Panel and its technical options committees, and thanked the Panel for the information provided on the various options.

100. A number of representatives, including one speaking on behalf of a group of parties, noted that, as both Article 5 and non-Article 5 parties were moving to substances and technologies with zero ozone depletion potential and low global warming potential, there would be an ever-growing need for cross-cutting work within the Panel and its committees, and it was therefore crucial that the work be as efficient as possible. Several representatives, including one speaking on behalf of a group of parties, expressed a preference for a subcommittee structure to be used for the Medical and Chemicals Technical Options Committee and for the Refrigeration, Air Conditioning and Heat Pumps Technical Options Committee, given that those were the larger committees and had ever-growing mandates. A number of representatives, including one speaking on behalf of a group of parties, noted that the use of such a structure would also allow for the Panel to make the best use of the experts available, given that the recruitment and retention of experts was an issue. One representative said that the option of dividing the Medical and Chemicals Technical Options Committee should be explored in order to

better reflect the differing challenges and expertise needed for the transition away from HFCs in the medical and the chemical sectors, and another expressed concern that the Committee currently covered a vast array of different issues.

101. One representative voiced his support for the proposal that senior experts on the Panel should not also be members of the technical options committees.

102. Several representatives, including one speaking on behalf of a group of parties, said that the preference of the Panel for certain options would serve as a helpful guide for decisions on the issue.

103. One representative said that his country would support a reduction in the size of the Methyl Bromide Technical Options Committee, given that controlled uses of the substance had now been phased out. Another representative, speaking on behalf of a group of parties, said that, as significant use of methyl bromide continued under exemptions, the Committee needed to be large enough to keep reporting on emissions. Another representative said that it was important not to reduce the size of the Committee so as not to lose expertise that might be needed in the future in relation to nitrous oxide, the control of which was an issue of growing interest among parties, although it was not currently controlled under the Montreal Protocol.

104. One representative said that he looked forward to further discussions on the proposal for a standing working group of the replenishment task force.

105. Several representatives requested information and further discussion on financial assistance for experts from non-Article 5 parties, as many struggled to participate without financial support.

106. One representative underlined the importance of ensuring a balance of geographical and gender representation on the Panel and the committees, as well as a consideration of the level of representation from Article 5 parties, while another, noting the current low level of representation from African countries, stressed the need for balanced regional representation of experts with the necessary relevant specialist knowledge.

107. One representative proposed that structured pathways be provided for junior experts, especially those from Article 5 parties and countries with high ambient temperatures, as mentorship and succession planning would ensure regional diversity, intergenerational learning and the long-term sustainability of the work of the Panel.

108. Several representatives, including one speaking on behalf of a group of parties, requested that an opportunity be provided at the current meeting for parties to discuss the various options, whether in a contact group or an informal group, with the co-chairs of the Technology and Economic Assessment Panel and its technical options committees. One representative noted that the options presented in the progress report were a good starting point for discussion and another said that a final decision on the matter might need to be delayed until 2026, as it was critical that all the options were considered carefully and thoroughly.

109. On the matter of funding for experts, a representative of the Secretariat explained that the participation of experts from Article 5 parties was funded under the Montreal Protocol Trust Fund. Limited funding was available for a small number of experts from non-Article 5 parties from specific donor funding. She estimated that the funding required for travel for each expert from a non-Article 5 country party would be approximately \$4,000. A decision of a Meeting of the Parties would be required to authorize the Secretariat to fund experts from non-Article 5 parties on a broader scale, with the additional cost being dependent on the number of experts to be funded, as well as the number of meetings for which each expert would receive funding.

110. The Working Group decided that an informal group, to be co-facilitated by Leslie Smith (Grenada) and Alessandro Peru (Italy), would meet with the co-chairs of the Technology and Economic Assessment Panel, its technical options committees and interested parties in the margins of the current meeting to discuss further the options for the organization of the Panel and its technical options committees.

111. Subsequently, reporting back on the group's discussions, the co-chair of the informal group said that, despite meeting twice and discussing an extensive range of issues, the group still did not have any clarity on the way forward. In addition, the Technology and Economic Assessment Panel needed more time to provide additional information. The Working Group therefore agreed to resume discussions on options for the organization of the Panel and its technical options committees at the Thirty-Seventh Meeting of the Parties.

D. Any other issues

1. Technology and Economic Assessment Panel membership changes

112. Introducing the sub-item, the Co-Chair drew attention to annex 4 of the Panel's 2025 progress report and the addendum to the note by the Secretariat (UNEP/OzL.Pro.WG.1/47/2/Add.1, paras. 31–36, table 2 and annex II), which included a list of the members whose terms of office were due to expire at the end of 2025 and whose reappointment required a decision by the Thirty-Seventh Meeting of the Parties, as well as a list of the members of the technical options committees whose terms were due to expire at the end of the year, but whose reappointment did not require a decision by a Meeting of the Parties. Nominations for the technical options committees could therefore be made at any time to the co-chairs of the Panel or those of the committees.

113. To date, no nominations had been received for the five positions on the Panel and therefore the Secretariat would post any nominations on the portal for the Thirty-Seventh Meeting of the Parties as soon as they were received.

114. The Working Group agreed that interested parties would consult with each other and the Panel informally in the margins of the current meeting, with a view to deciding on the nominations at the Thirty-Seventh Meeting of the Parties.

2. Halons and other fire suppressants

115. Introducing the sub-item, the Co-Chair drew attention to chapter 3 of the Panel's 2025 progress report and to the summary in the addendum to the note by the Secretariat (UNEP/OzL.Pro.WG.1/47/2/Add.1, paras. 48–51).

116. In the ensuing discussion, several representatives, including one speaking on behalf of a group of parties, said that they shared the grave concern of the Fire Suppression Technical Options Committee regarding the continued use of halon 1301 in aviation, which was currently projected to continue for at least the next 50 years.

117. Several representatives, including one speaking on behalf of a group of parties, drew attention to the need to allay the concerns of the aviation industry that the main alternative to halon 1301, namely 2-BTP, could be subject to a ban in the future, as it was considered in some jurisdictions to be a PFAS. It was important to underscore that 2-BTP had low ozone-depleting and global warming potential and had proved to be an effective alternative to halon 1301 in the aviation sector. It was also highly unlikely to be banned, as there were currently no restrictions on its use and it was already being used in the European Union as a replacement for halon 1211 in handheld fire extinguishers. Any future restrictions on 2-BTP in the European Union, for example, would include an exemption for use in the aviation sector.

118. Several representatives, including one speaking on behalf of a group of parties, noted that the concerns of the aviation industry regarding the lack of a viable alternative to halon 1301 had led to a working paper being produced that would likely lead to a draft decision being submitted to the ICAO Assembly at its forty-second session, to be held in September 2025, regarding an extension of the current deadline of 2024 to 2035 for the use of halon 1301 in cargo compartments for new aircraft designs. As that meeting would be held before the Thirty-Seventh Meeting of the Parties to the Montreal Protocol, it was important for the issue to be discussed at the current meeting and for liaison with ICAO, either by the Working Group or by parties through their national civil aviation authorities, so that the ICAO Assembly had all the relevant information to make an informed decision or to defer any decision until its forty-third session, to be held in 2028. One representative, recalling that the Working Group was not a decision-making body, stressed that the Secretariat and the technical and decision-making bodies of the Montreal Protocol should only work with their direct counterparts at ICAO.

119. Several representatives noted that a continued need for halon 1301 for 50 years or more would inevitably require the production of new halon 1301 at some stage, which represented a serious setback given that the production of halon, a highly ozone-depleting substance, had been phased out almost 30 years earlier in non-Article 5 parties and over 15 years earlier in Article 5 parties. It was important to send a strong signal that reverting to the use of halons was undermining the recovery of the ozone layer. One representative, speaking on behalf of a group of parties, drew attention to the encouraging increased use at the global level of inert gases and water-based systems as alternatives to halon 1301. Some representatives said that it was important that halon 1301 was used where it was needed. It was the mandate of ICAO to ensure passenger safety and parties would not want planes to have to be grounded owing to safety concerns. One representative, noting that it was not a foregone

conclusion that new production of halon 1301 would be required, cautioned against conflating the various issues relating to halon 1301, noting that it would, in any case, continue to be used in new aircraft with existing type certificates. Another representative said that it was not ethical to attempt to convince ICAO that halon 1301 should not be used if there were no viable alternatives. The use of ozone-depleting substances had been reduced to a minimum and it was therefore appropriate to use them in sectors where they were essential.

120. One representative called for the good management of other controlled substances used for fire suppression in enduring and non-enduring uses, so that halons could be made available for use where no alternatives were available.

121. Several representatives, including one speaking on behalf of a group of parties, requested the Fire Suppression Technical Options Committee to gather data and report at the global level on the uses and availability of halon 1301, on halon banks, and on the amount of halon that would be needed for aircraft of new types. In addition, one representative speaking on behalf of a group of parties expressed support for renewed coordination between ICAO, the Secretariat, the Technology and Economic Assessment Panel and the Committee on fire suppression agents, including through cooperation with the Committee on Aviation Environmental Protection of the ICAO Council to assess the use of and need for halons in aviation. Another representative noted that cooperation with the Committee on Aviation Environmental Protection would be inappropriate, as it was a political body.

122. One representative, speaking on behalf of a group of parties, expressed strong opposition to the destruction of halons for carbon credits and noted that the wilful destruction of usable halons had recently been made illegal in the European Union.

123. One representative said that his country intended to submit a conference room paper on the issue of halon 1301, and several representatives, including one speaking on behalf of a group of parties, expressed their interest in discussing the matter further in a contact group. One representative said that it was not appropriate to prepare a conference room paper or a draft decision on the matter.

124. The Co-Chair noted that a conference room paper was being prepared on the availability of halon 1301 in the aviation sector and said that there was general agreement on discussing the matter further.

125. Subsequently, the representative of Australia, also on behalf of Canada, the European Union, New Zealand, Norway, Switzerland, the United Kingdom and the United States, introduced a conference room paper setting out a draft decision on halon 1301 and its continuing use in the aviation industry, and on the management of other controlled substances used for fire suppression. The draft decision contained a request for the Secretariat to liaise with the secretariat of ICAO in order to facilitate information exchange between the Technology and Economic Assessment Panel, through its Fire Suppression Technical Options Committee, and the relevant ICAO bodies, so that the Panel could better assess the future use of and need for halons in civil aviation and submit a report on halon availability and the global distribution of halon banks to the Working Group. In addition, parties were encouraged to liaise, through their national ozone officers, with their national civil aviation authorities to gain an understanding as to how halons and their alternatives were being used and supplied to air carriers to meet ongoing civil aviation needs. Parties were also encouraged to reassess any national import and export restrictions, other than licensing requirements, in order to facilitate the import and export of recovered, recycled or reclaimed halons and other controlled substances used for fire suppression. Finally, the draft decision contained a request for parties to submit information on the development of alternatives to the Secretariat so that the information could be considered by the Technology and Economic Assessment Panel for inclusion in its 2027 progress report. The conference room paper included an annex submitted by Australia, Canada, the European Union, New Zealand, Norway, Switzerland and the United Kingdom containing background information on the issue.

126. The Working Group agreed to establish a contact group, co-chaired by Juan José Galeano (Argentina) and Jana Mašíčková (Czechia), to discuss the matter further.

127. Subsequently, the co-chair of the contact group reported that, owing to time constraints, it had not been possible for the group to conclude its work. The Working Group therefore agreed to resume discussions on halons and fire suppressants at the Thirty-Seventh Meeting of the Parties, on the basis of the draft decision set out in section C of annex I to the present report.

128. The Working Group also agreed to preserve the annex to the conference room paper to provide interested parties with background information on the issue of the use of halon 1301 as a fire suppression agent in cargo compartments of aircrafts for use in liaising with their respective national aviation authorities. That background information is set out in annex III to the present report.

3. Very short-lived substances

129. Introducing the sub-item, the Co-Chair recalled that, in decision XXXVI//4, parties had been invited to provide the Secretariat with information on national measures concerning use or emissions of very short-lived substances on a voluntary basis by 31 March 2025, and the Secretariat had been requested to compile a compendium of national measures based on such information. The online compendium of the eight submissions received was available on the Secretariat's website.⁵

130. At the invitation of the Co-Chair, the representative of the European Union took the floor to explain why he had requested that the sub-item be added to the agenda. It was clear, he said, that very short-lived substances were becoming more relevant, with emissions estimated to contribute about 4 per cent of total chlorine input to the stratosphere. His delegation was concerned about the continued substantial increase in emissions of dichloromethane, which was the main component of very short-lived chlorine substances and had the potential to lead to more ozone depletion than emissions from other sources. Alternatives to many very short-lived substances existed for many emissive uses, included solvent use in foam blowing and chromatography, and there were best practices for limiting the use of chlorinated solvents and reducing emissions. The European Union, on behalf of its 27 member States, had provided a detailed submission on the issue, including national measures; best available techniques for emissions avoidance; data on use and emissions of dichloromethane, 1,2-dichloroethane, trichloroethylene and trichloromethane; and information on alternatives. Five other parties had also provided information on national legislation, data on production, use and emissions and best practices, making the compendium a valuable tool. He offered to provide more detailed information on the European Union submission to interested parties and expressed an interest in hearing from other parties that had made submissions, as well as those that had not. His delegation therefore proposed to hold a discussion on the issue at the current meeting.

131. Another representative noted that the issue would be covered in the assessment panels' 2026 quadrennial assessments, and that, in decision XXXVI/4, the Thirty-Sixth Meeting of the Parties had noted that any party that had information on alternatives to very short-lived substances and best practices for avoiding such emissions could provide that information to the Technology and Economic Assessment Panel. He encouraged other parties to take advantage of the information on alternatives to dichloromethane that had already been provided to the Secretariat while also indicating his delegation's willingness to discuss the matter further with interested parties.

132. The Working Group concluded its discussion of the sub-item. In closing the sub-item, the Co-Chair noted that the matter would be addressed again in the upcoming quadrennial reports. She encouraged parties to make their submissions on the matter available to the Secretariat to enable the compendium to be updated.

4. Per- and polyfluoroalkyl substances

133. Introducing the sub-item, the Co-Chair recalled the agreement made to include the topic for discussion at the current meeting. She drew attention to chapter 7 of the report of the Technology and Economic Assessment Panel, which covered the issue of PFAS.

134. Many representatives thanked the Panel for including the issue in the report. Several drew attention to the growing concerns over the health impacts of PFAS, which were proving to be both very persistent and highly mobile as well as toxic, including to reproduction. In particular, increasing concentrations of trifluoroacetic acid (TFA) were being observed in drinking water and foodstuffs; one study on TFA in surface water and precipitation in Switzerland suggested that concentrations had increased by a factor of 4 to 6 since the 1990s. Based on the above considerations related to new findings on TFA, the conclusion of the Environmental Effects Assessment Panel, in 2024, that the risk to humans from chronic exposure to TFA in surface waters remained *de minimis* at current concentrations, might need revisiting. One representative suggested that Panel reports could include statements of the degree of confidence held by the Panel in their conclusions, as featured, for example, in the reports of the Intergovernmental Panel on Climate Change.

135. One representative noted that the matter was of direct concern to parties to the Montreal Protocol, given that one source of TFA was the breakdown of many HFCs and HFOs. One representative requested the Technology and Economic Assessment Panel to provide information on estimates of the proportion of TFA generated from substances controlled under the Montreal Protocol and their replacements. Recalling the importance of the precautionary principle to the success of the Vienna Convention and the Montreal Protocol, she called on parties to adopt a precautionary approach

⁵ <https://ozone.unep.org/countries/additional-reported-information/submissions-parties-very-short-lived-substances-under-decision-xxxvi4>.

to addressing emerging challenges, including PFAS. Another representative suggested that the Panel could include in future reports information on specific applications whose development or introduction were being delayed as a result of concerns over their impact on concentrations of PFAS.

136. One representative speaking on behalf of a group of parties drew attention to the discussions currently under way in his own party, which had been referred to in the Panel report. He explained that legislation in line with the precautionary principle was under discussion, with the aim of providing clarity to industry while also addressing scientific and public concerns. It seemed likely that restrictions would be accompanied by exemptions for critical uses where alternatives did not currently exist, for example for the aviation sector, and transitional periods for other uses. Regulation was also being considered in other countries. He did not share the view that such regulation need delay the introduction of new substances and technologies, or the phase-down of HFCs; many suitable alternatives, including natural refrigerants, were already available.

137. Other representatives raised concerns over the uncertainty that was being caused by the discussions on possible regulation, which had the potential to cause serious delays in the replacement of high-GWP controlled substances, for example in fire suppression in aviation and oil and gas installations, with negative impacts on both the ozone layer and climate change. They stressed that TFA was not a substance controlled by the Montreal Protocol and that those substances were not the only sources of TFA. As the Panel report had highlighted, there was no single perfect replacement for controlled substances in fire suppression applications. One representative reiterated the need for further scientific assessments to clarify the health and environmental impacts of PFAS, and for encouragement of innovation in developing PFAS-free fire suppression solutions.

138. Another representative queried why the Open-ended Working Group was considering the matter at all. He said that he feared that parties were ignoring scientific findings in favour of political discussions, and placing pressure on the assessment panels to change their conclusions. He said that he recognized that the scientific evidence could change, but that should be considered on the basis of scientific findings, not on decisions by some parties to change their domestic regulations. Many substances, including those controlled by the Montreal Protocol and their replacements, had a wide range of environmental and health impacts, and they should be considered in a holistic manner, not simply from one aspect. He accepted that the situation in the aviation sector had global implications, and should be considered separately, but reminded parties that other uses had only domestic implications. He reiterated the principles that parties should be free to choose their own paths to phasing down the use of HFCs, and that the Montreal Protocol should remain neutral between technologies.

139. A representative of an Article 5 party drew attention to the potential impact on Article 5 parties, which were already struggling under the burden of successive phase-outs and phase-downs and were now faced with uncertainty over some of the technologies they were being encouraged to adopt. Would they be required to replace them again in a few years' time? In reality, all alternatives, including so-called natural refrigerants, had environmental and health impacts; there were other issues besides PFAS. The success of the Montreal Protocol lay in understanding one another's needs rather than competing between each other.

140. The Working Group concluded its discussion of the sub-item. In closing the sub-item, the Co-Chair noted that the matter would be addressed again in the upcoming quadrennial reports.

V. Feedstock uses of controlled substances (decision XXXVI/5)

141. Introducing the item, the Co-Chair recalled that, in decision XXXVI/5 of the Thirty-Sixth Meeting of the Parties, in 2024, parties with production and/or use of controlled substances for feedstock were invited to provide the Secretariat, on a voluntary basis, with information on their established national procedures and frameworks for the management of such production and use, including any controls on resulting emissions. The Secretariat had been requested to prepare a compilation of the information provided by parties for consideration by the Open-ended Working Group at the current meeting. The compilation was set out in documents UNEP/OzL.Pro.WG.1/47/3 and UNEP/OzL.Pro.WG.1/47/3/Add.1. She thanked the five parties that had submitted responses.

142. All the representatives who took the floor thanked those parties that had responded, and the Secretariat for producing the compilation of information. Some of them suggested that it would be helpful if parties were able to read the full submissions, since they contained much new data and useful information. They also expressed the hope that more parties would submit information, which would help the future work of the Technology and Economic Assessment Panel. The Panel had already signalled its wish for more data, including from local site monitoring and regional monitoring and from specific production processes and uses of feedstock.

143. Several representatives drew attention to the recent and anticipated future growth in the production and use of feedstock, especially of carbon tetrachloride for the production of HFOs and hydrochlorofluoroolefins (HCFOs). Feedstock use had been exempted from control under the Montreal Protocol on the basis that its associated emissions were insignificant; however, the initial estimate that the emissions factor would be no more than 0.5 per cent was now being proved wrong, with emissions of 3.5 per cent being typical, reaching as high as 6 per cent in some cases. Emissions derived not just from production and use but also from transport, distribution, storage, handling and repackaging and these had negative impacts on both the recovery of the ozone layer and climate change. One representative drew attention to the forthcoming publication of a scientific paper which would forecast a substantial delay in the recovery of the ozone layer due to feedstock emissions. Representatives encouraged parties to continue their conversations on the challenges posed by feedstocks, and to exchange further information on best practices, legislation, controls and other means to avoid emissions.

144. Other representatives stressed the importance of feedstock to the production of low-GWP alternatives. While welcoming further discussion of the topic, parties needed to bear in mind market realities, the fact that production processes were often very complex, with many different steps, and that technical and management capacities varied between parties.

145. Subsequently, the representative of the European Union, also on behalf of Switzerland, introduced a conference room paper setting out a draft decision on feedstock uses of controlled substances. In the draft decision, parties were invited to provide the Technology and Economic Assessment Panel with emissions data and abatement technique information from processes involving feedstock production and use. Parties were also requested, in line with decision XXXVI/5, paragraph 1, to provide the Panel with information on steps taken or planned for minimizing the emissions of controlled substances at various stages of their life cycle. In addition, parties were invited to provide the Panel with information on the production of halon 1301 as a feedstock and its use to manufacture fipronil. The Panel, in turn, was requested to analyse the information submitted by parties in response to decision XXXVI/5 and the aforementioned invitations and requests, provide an update on that information in its next progress report and continue to provide updates on the issue in subsequent progress reports. Finally, parties were invited to support activities and research relating to the monitoring of emissions of feedstock substances.

146. The Working Group agreed to establish a contact group, to be co-chaired by Liana Ghahramanyan (Armenia) and Morgan Simpson (United Kingdom), to discuss the matter further.

147. Subsequently, the co-chair of the contact group reported that, owing to time constraints, it had not been possible for the group to conclude its work. One representative, speaking on behalf of a group of parties, requested that a footnote be added to the draft decision text as it currently stood to clarify that any text in square brackets was still open for discussion and that the square brackets in no way implied that the text should be deleted.

148. The Working Group therefore agreed to resume discussions on feedstock uses of controlled substances at the Thirty-Seventh Meeting of the Parties on the basis of the draft decision set out in section D of annex I to the present report.

VI. Enhancing regional atmospheric monitoring of substances controlled by the Montreal Protocol (decision XXXVI/1)

149. Introducing the item, the Co-Chair recalled that, in decision XXXVI/1, the Thirty-Sixth Meeting of the Parties had requested the Secretariat, in consultation with the Advisory Committee of the General Trust Fund for Financing Activities on Research and Systematic Observations Relevant to the Vienna Convention for the Protection of the Ozone Layer, to organize activities for evaluating the sustainability of potential sites for monitoring regional emissions of controlled substances and to report on progress and any outcomes of those activities to the Working Group at the current meeting. The information on progress in implementing the decision was set out in paragraphs 25–40 of document UNEP/OzL.Pro.WG.1/47/2 and paragraphs 54–64 of document UNEP/OzL.Pro.WG.1/47/2/Add.1. The Working Group also had before it an information document containing decision 96/56 of the Executive Committee, on options for a funding modality to support a limited number of pilot projects to enhance regional atmospheric monitoring of controlled substances (UNEP/OzL.Pro.WG.1/47/INF/4), which indicated the progress made under the Multilateral Fund on the request in paragraph 4 of decision XXXVI/1.

150. The Co-Chair informed the Working Group that the Secretariat and the Advisory Committee, represented by one of its Co-Chairs, A. R. Ravishankara, would report on progress in the

implementation of that specific part of decision XXXVI/1. As Mr. Ravishankara had been unable to attend the meeting, his part of the report would be made by recorded presentation. Following the recorded presentation, Steve Montzka and Kenneth Jucks, members of the Advisory Committee, would be available to respond to any questions on the presentation.

151. The representative of the Secretariat and member of the Advisory Committee, Sophia Mylona, presented the information pertaining to the membership of the Advisory Committee of the General Trust Fund, the terms of reference of the General Trust Fund and the terms of reference of the Advisory Committee, as set out in documents UNEP/OzL.Pro.WG.1/47/2 and UNEP/OzL.Pro.WG.1/47/2/Add.1, as well as progress made after the preparation of those documents.

152. In his recorded presentation, Mr. Ravishankara spoke about the Committee's progress in evaluating the suitability of potential sites for monitoring regional emissions of controlled substances.

153. Following the presentations, Ms. Mylona, Mr. Montzka and Mr. Jucks responded to questions and comments from representatives.

154. Asked about the site locations being considered, Ms. Mylona drew attention to the locations cited in document UNEP/OzL.Pro.WG.1/47/2/Add.1 and said that the Secretariat was liaising with the World Meteorological Organization to identify the available infrastructure favourable to atmospheric monitoring in the vicinity of those locations. Addressing a concern regarding the high cost of any new infrastructure that might be needed to set up a site, Mr. Jucks drew attention to the original white paper,⁶ which addressed making use of existing networks and infrastructure to save costs, and acknowledged the value of potentially collaborating with the Global Atmosphere Watch network, a confederation of many nationally funded efforts, and reassured parties that the Advisory Committee was familiar with the network and intended to take advantage of it going forward.

155. In response to a question regarding whether the \$400,000 allocated in decision XXXVI/1 for the organization of activities to evaluate the suitability of potential sites had been used for the activities described in the presentation, Ms. Mylona said that it had not. To date, the European Union pilot project funds had covered activities related to the measurement programme on Bhola Island, Bangladesh, and two analyses, namely one study to determine the impact of measurement frequency in deriving emissions of controlled substances, and another study on observation system simulation experiment (OSSE) analyses in 10 locations, one of which was still outstanding. The full results of that work would be available in time for the Thirty-Seventh Meeting of the Parties. She also informed the parties that the Advisory Committee would consider how best to use the funds available, including the \$400,000 allocated in decision XXXVI/1, and advise on the way forward at its next meeting, to be held in late August or early September 2025.

156. Mr. Montzka addressed questions about capacity for chemical analysis of samples, saying that global capacity was indeed limited, but the currently planned activities did not necessarily exceed that capacity. In addition, the work done under the European Union-funded pilot project had added capacity at the University of Bristol. In terms of potential additional action needed to support the existing capacity, parties could consider adding redundancies to increase the resilience of any measurement or analysis capacity that they felt might be fragile. He noted that having flask analysis capacity at two different places, namely at the University of Bristol in the United Kingdom and at the National Oceanic and Atmospheric Administration (NOAA) in the United States provided resilience within the worldwide community for those types of measurements, while activities related to gravimetric scale preparation, which were essential to underpinning measurements, were currently taking place at NOAA and the Scripps Institute of Oceanography in the United States, although they could also take place elsewhere.

157. Turning to another question, Mr. Montzka confirmed that taking measurements from multiple groups within a similar region could provide an indication of whether the different measurement groups or activities were providing consistent information, and could improve understanding of the concentration variability within a region from multiple different angles, enabling triangulation on the locations of different emission sources within that region. It could therefore be quite beneficial, provided there were sufficient resources and capacity to have multiple sites within a region.

158. Cornelius Rhein, a member of the steering committee of the European Union-funded pilot project, thanked all those involved in the project, particularly the members of the steering committee, namely Mr. Ravishankara, Ray Weiss and Paul Newman, and their respective institutions, namely the National Aeronautics and Space Administration (NASA), the Scripps Institute of Oceanography and NOAA, as well as the University of Bristol, the Massachusetts Institute of Technology and the

⁶ <https://ozone.unep.org/system/files/documents/ORM11-II-4E.pdf>.

University of Dhaka. The pilot project would end in 2025, and in that context, Mr. Rhein announced a contribution of €4.5 million (approximately \$5.2 million) from the European Union to support the work of the General Trust Fund on the tasks called for in decision XXXVI/1. Noting that the same decision established various working and funding streams that were intended to be complementary, he expressed his interest in discussing the interplay between the ongoing initiatives and clarifying the timelines of the various workstreams with other interested parties. Such a discussion, he said, would help prepare the parties to make an informed decision on the matter once they had received the additional information expected to be presented by the Advisory Committee at the Thirty-Seventh Meeting of the Parties.

159. During the ensuing discussion, all the representatives who spoke thanked the Secretariat and the Advisory Committee for the updated information. Several applauded the progress made, including the allocation of \$400,000 by the Thirty-Sixth Meeting of the Parties, the work done under the European Union-funded pilot project as well as the substantial new contribution announced by the representative of the European Union, and the ongoing work by the Executive Committee of the Multilateral Fund on developing a funding modality for projects to enhance regional atmospheric monitoring. They also welcomed the prospect of receiving additional information from the Advisory Committee at the Thirty-Seventh Meeting of the Parties in November 2025.

160. Individual representatives highlighted elements that they deemed important to consider in moving forward with the work. One said that the scope and objective of each initiative should be clear, to ensure that initiatives were aligned and collaborative and to avoid duplication. He also stressed the criticality of equipment calibration for data integrity, and urged parties to explicitly consider the long-term funding and sustainability of calibration efforts in addition to the identification and development of new monitoring sites. Another representative also underscored the importance of considering long-term sustainability while undertaking the short-term mission of assessing sites and identifying gaps, including through engagement with existing institutions and capacity. He encouraged all parties to consider establishing their own stations regardless of the ongoing initiatives under the Protocol. One representative stressed that the monitoring of controlled substances should be voluntary and noted that strong transparency and credibility would enable parties to make sovereign decisions and maintain their independence.

161. Several representatives acknowledged the complexity of the task at hand and indicated their interest in establishing an informal group to, among other things, enhance their understanding of the progress made to date and how the various work streams might complement each other or overlap, and to explore next steps. One nevertheless cautioned that it would be difficult to make much progress at the current meeting, as the Advisory Committee still had to meet to decide on its path forward and consider how the various sources of funds could potentially be used. In that regard, he recommended that the European Union and Multilateral Fund secretariat be involved in some way in those discussions.

162. The representative of an observer made a statement, noting that while the United States had made valuable contributions in the past, institutions like NASA, NOAA and the Environmental Protection Agency were now threatened by budget cuts. She therefore urged other parties to maintain and increase their contributions to scientific data collection to avoid a precarious situation of overreliance on a single country for the technical underpinnings of the Montreal Protocol.

163. Following that statement, one representative asked to hear the views of the Scientific Assessment Panel on the impact of the budget cuts, noting that the Panel relied heavily on NASA and NOAA in its work.

164. The Working Group agreed to establish an informal group to discuss the matter further, including the question of the impact of budget cuts for NASA and NOAA.

165. Subsequently, the Co-Chair announced that Alain Wilmart (Belgium) and Sophia Anselm-Larocque (Dominica) would facilitate the informal group's discussion.

166. Later in the meeting, the convenor of the informal group reported that Mr. Rhein had provided further information regarding the additional grant funding of €4.5 million and addressed some of the concerns raised. Parties had also sought, from the Ozone Secretariat and the Advisory Committee, clarification of the scope of the work to be undertaken. Nevertheless, parties had requested the preparation of a strategy detailing the use of funds and emphasized that the information therein should be streamlined, provide details of the activities conducted under the various funding windows and of how those activities complemented one another, and address the long-term sustainability of regional atmospheric monitoring.

167. Noting that additional information would be provided, the Working Group agreed to consider further the issue of enhancing regional atmospheric monitoring of substances controlled by the Montreal Protocol at the Thirty-Seventh Meeting of the Parties.

VII. Further strengthening the Montreal Protocol institutions (decision XXXVI/9)

168. Introducing the item, the Co-Chair recalled that, in decision XXXVI/9, entitled “Further strengthening Montreal Protocol institutions – next steps”, the Thirty-Sixth Meeting of the Parties had requested the Secretariat to prepare, for consideration by the Open-ended Working Group at its forty-seventh meeting, two documents, namely, a summary of common features of licensing systems and a compilation of information provided by parties on illegal trade in controlled substances and synthesis of best practices. The summary and the compilation were set out in documents UNEP/OzL.Pro.WG.1/47/4 and UNEP/OzL.Pro.WG.1/47/5, respectively.

169. In the same decision, the Secretariat had also been requested to prepare an analysis of systemic issues in relation to compliance, based on cases considered by the Implementation Committee over the previous 10 years, for consideration by the Implementation Committee at its seventy-fourth meeting and at the informal meeting of the parties to be organized prior to the Thirty-Seventh Meeting of the Parties. The Implementation Committee had made that analysis available to parties by including it in an annex to the report of its seventy-fourth meeting (UNEP/OzL.Pro/ImpCom/74/6) and posting an advance version of that annex on the meeting portal of the forty-seventh meeting of the Open-ended Working Group.

170. Furthermore, in the same decision, the Secretariat had been requested to convene a one-day informal meeting of the parties back to back with the Thirty-Seventh Meeting of the Parties for reflection, on the basis of existing documents, on facilitating the implementation of the Montreal Protocol.

171. A representative of the Secretariat gave a presentation on documents UNEP/OzL.Pro.WG.1/47/4 and UNEP/OzL.Pro.WG.1/47/5. With regard to licensing systems, she provided information on the methodology for producing the summary of common features of licensing systems from 100 parties; the key components of such systems and their common features; and notable practices for replication. With regard to the information provided by parties on illegal trade, she gave information on the number of cases reported; parties that had reported cases of illegal trade; the substances traded and the quantities involved; enforcement actions taken by national authorities and legal outcomes; disposition of detained substances; and best practices for addressing and combating illegal trade reported by parties.

172. In the ensuing discussion, several representatives, including one speaking on behalf of a group of parties, thanked the Secretariat for its work in preparing the documents and the Implementation Committee for sharing the Secretariat’s analysis with the parties.

173. The representative speaking on behalf of the group of parties noted that the cut-off date for the inclusion in the Secretariat document on cases of illegal trade had been 17 April 2025, even though decision XXXVI/9 had not specified a submission date. He expressed the hope that reports submitted after 17 April 2025 would be included in future updates of the compilation.

174. One representative noted that the text of decision XXXVI/9 with regard to the holding of the one-day informal meeting of the parties back to back with the Thirty-Seventh Meeting of the Parties was rather vague. Several representatives, including one speaking on behalf of a group of parties, spoke in favour of further informal discussions with interested parties with a view to helping the Secretariat structure the discussions at that one-day informal meeting. One representative highlighted the fact that the Montreal Protocol had reacted rapidly and shown resilience in response to the unexpected emissions of CFC-11, particularly owing to the engagement of individual parties. He expressed the wish to discuss further whether the Montreal Protocol would be able to react equally efficiently in other situations. Another representative stressed the need to discuss the accuracy and reliability of data for effective licensing systems.

175. One representative thanked the Secretariat for the update of the online informal prior informed consent system and encouraged those parties that had done yet done so to join to the system to reduce illegal trade in the world.

176. Another representative said that, for countries that had high volumes of trade, the licensing of transit trade was not technically or administratively feasible and that international transit agreements, including those of the World Customs Organization, did not impose licensing obligations for goods

moved under a transit regime. That said, if necessary, customs authorities could carry out detailed inspections and collaborate through international intelligence mechanisms. He expressed the view that practical guidance was therefore needed on how to deal with controlled substances in transit. He also sought clarification regarding the respective responsibilities of the importing country, the exporting country and the country used for transit and asked for more information on cases of transit that were reported as illegal trade.

177. The Working Group agreed that interested parties would meet with the Secretariat to consider which topics should be discussed at the one-day informal meeting of the parties to be held back to back with the Thirty-Seventh Meeting of the Parties.

178. Reporting back on the informal consultations, the representative of the Secretariat said that parties had provided suggestions on the format and content of the informal meeting of the parties to be held back to back with the Thirty-Seventh Meeting of the Parties and thanked those that had taken the time to do so. The main messages were that the informal meeting should allow parties to have meaningful discussions on key issues based on existing documents, including on licensing systems, illegal trade and systemic issues in relation to compliance, and to share experiences on what they were doing domestically to facilitate implementation and what could be done further in that regard, including in terms of capacity-building. Parties also suggested that the Secretariat explore the possibility of holding discussions in large and smaller groups that could run in parallel.

179. The Working Group thus concluded its consideration of the item.

VIII. Review of the need for the annual average of 2.5 per cent for hydrochlorofluorocarbons for servicing and non-servicing applications during the period 2030–2040, provided for in Article 5, paragraph 8 *ter* (e), (i) and (ii) (decisions XIX/6 and XXX/2)

180. Introducing the item, the Co-Chair recalled that, in decision XIX/6, the parties had agreed to review in 2025 the need for the annual average of 2.5 per cent HCFCs for the period 2030–2040 for Article 5 parties for servicing and non-servicing applications described in Article 5, paragraph 8 *ter*, of the Protocol. A review of the 0.5 per cent HCFC servicing “tail” for non-Article 5 parties had taken place in 2015, which had led to the Technology and Economic Assessment Panel producing three reports on the matter, and to an adjustment to the Protocol to add more applications to which the “tail” would apply for all parties. Drawing attention to the summaries of the issues set out in a note by the Secretariat (UNEP/OzL.Pro.WG.1/47/2, paras. 46–52) and an addendum thereto (UNEP/OzL.Pro.WG.1/47/2/Add.1, paras 17–29), she noted that the 2022 quadrennial assessment reports of the Panel and its technical options committees were probably the most recent comprehensive reports containing relevant information regarding alternatives to HCFCs.

181. In the ensuing discussion, all the representatives who took the floor affirmed the continued need for the annual average of 2.5 per cent HCFC “tail” to remain in place for the period 2030–2040 in order to ensure a sustainable and inclusive transition, as even where HCFCs were no longer being used in new equipment, much of the existing equipment that contained HCFCs had been designed to last for a long time and could not be replaced quickly or retrofitted for technical, economic and logistical reasons. The HCFC “tail” was vital for ensuring that equipment could be serviced and therefore used efficiently and safely. Several representatives also noted that viable alternatives for all parties had not yet been identified by the Technology and Economic Assessment Panel for certain applications, such as refrigeration on ships, metered-dose inhalers and fire suppressants. In addition, one representative noted that many servicing companies in Article 5 parties were small businesses and it would be important to provide adequate support for them during the transition away from HCFCs.

182. The Co-Chair noted the agreement that there remained a need for the annual average of 2.5 per cent for HCFCs for servicing and non-servicing applications during the period 2030–2040 for Article 5 parties and confirmed therefore that no further action was required.

IX. Classification of the State of Palestine as a party operating under paragraph 1 of Article 5 of the Montreal Protocol and access to support from the Multilateral Fund (UNEP/OzL.Conv.13/8–UNEP/OzL.Pro.36/9, para. 13)

183. Introducing the item, the Co-Chair recalled that the consideration of the classification of the State of Palestine as an Article 5 party had been included in the agenda of the preparatory segment of

the combined thirteenth meeting of the Conference of the Parties to the Vienna Convention and Thirty-Sixth Meeting of the Parties to the Montreal Protocol but the State of Palestine had requested that consideration of the matter be postponed until the Thirty-Seventh Meeting of the Parties. At the suggestion of the Co-Chairs of the preparatory segment of the combined meetings, parties had agreed to include the item on the agenda for the current meeting.

184. She drew attention to the background information on the issue set out in a note by the Secretariat for the current meeting (UNEP/OzL.Pro.WG.1/47/2, paras. 55–57), as well as in a note prepared for the combined meeting (UNEP/OzL.Conv.13/2–UNEP/OzL.Pro.36/2, paras. 103 and 104 and annex III) and an addendum thereto (UNEP/OzL.Conv.13/2/Add.1–UNEP/OzL.Pro.36/2/Add.1, paras. 31 and 32 and annex III).

185. The representative of the State of Palestine introduced a conference room paper setting out a draft decision on the matter, according to which his country would be recognized as an Article 5 party with a view to becoming eligible for assistance from the Multilateral Fund. He recalled that the State of Palestine had acceded to the Vienna Convention and the Montreal Protocol in 2019 and, despite its minimal contribution to ozone depletion and its limited resources, had proactively implemented numerous technical and regulatory measures in order to fulfil its national obligations. Reiterating his country's strong commitment to the implementation of the Protocol, he underscored the critical need of the State of Palestine to have access to support from the Multilateral Fund in order to enhance national institutional and technical capacities, including by establishing a national ozone unit.

186. In the ensuing discussion, many representatives expressed their support for the draft decision and for the State of Palestine to be classified as an Article 5 party, noting that such classification would not only provide critical practical support to the country through access to the Multilateral Fund but was consistent with the values of multilateralism and of the Protocol itself, serving as a strong signal of fairness and inclusion. It would help to ensure that no party was left behind and that the State of Palestine could strengthen its efforts to protect the ozone layer, thereby contributing to the common good. Several representatives stressed that, since its accession in 2019, the State of Palestine had proactively implemented numerous measures to comply with the Protocol, despite the significant political and socioeconomic challenges faced by the country.

187. A number of representatives said that the State of Palestine should be classified as an Article 5 party once all the relevant technical and legal requirements had been met, including the ratification of the relevant amendments to the Protocol.

188. The representative of the United States of America recalled that his country had submitted a notification to the depositary of the United Nations stating that it did not consider that the State of Palestine was eligible to accede to the Vienna Convention or to the Montreal Protocol and he therefore did not consider his country to be in a treaty relationship with the State of Palestine under those agreements. He could not therefore support the draft decision. The representative noted that the draft decision would lead to the opening of the list of Article 5 parties, creating financial eligibility for a country that had not ratified all the relevant amendments to the Protocol. His country also had questions regarding whether Palestine fulfilled all the technical criteria under Article 5, such as the consumption threshold, including reliable sources of data, and would propose that informal discussions take place in the margins of the current meeting regarding the aforementioned issues. Furthermore, the representative noted, as the list of Article 5 parties was being opened, his delegation would insist, as it had at the Thirty-Fifth Meeting of the Parties, on consideration of the removal of China from the list, as the list must reflect current economic reality; financial support for China, which was the world's biggest producer and consumer of controlled substances, was unnecessary. Responding to those comments, the representative of China, stating that its classification as an Article 5 party was irrelevant to the matter under consideration, reiterated that his party's developing country status, especially under the Montreal Protocol, was based on facts and international law. Moreover, he recalled that the decisions of previous meetings of the parties had clarified that any change to the list of developing countries needed to be at the request of the relevant party itself and be considered on an individual basis, rather than being at the request of any other parties.⁷

189. In response to a question regarding the status of the State of Palestine under the Protocol and whether that status had been considered by the Implementation Committee, a representative of the Secretariat clarified that the State of Palestine had acceded both to the Vienna Convention and to the Montreal Protocol on 18 March 2019, and that both agreements had entered into force for it on 16 June 2019, but the State of Palestine had not ratified the amendments to the Protocol.

⁷ This paragraph has not been formally edited.

190. As consensus had not been reached, despite much support for the draft decision presented by the State of Palestine, the Working Group agreed that informal discussions on the matter between interested parties should be held in the margins of the current meeting.

191. Subsequently, the representative of the State of Palestine said that his delegation had engaged in fruitful informal consultations with interested parties on issues relating to his country's adoption of amendments to the Protocol and the submission of data and information in line with the requirements outlined in Article 5, paragraph 1. The exchange of information on those issues would continue during the intersessional period with a view to engagement in further discussion on the draft decision and the expectation of addressing all the issues raised and building consensus on the adoption of the decision at the Thirty-Seventh Meeting of the Parties. Furthermore, he drew attention to the fact that, despite the exceptional and deeply challenging circumstances faced by his country, in particular given the unprecedented levels of destruction and humanitarian crisis in the Gaza Strip, the State of Palestine remained committed to the Protocol and to fulfilling its environmental responsibilities.

192. One representative, expressing appreciation to the State of Palestine for the informal consultations, said that initial steps towards addressing the issues raised had indeed been made and that he looked forward to receiving the additional information indicated. He also restated the view of his country that, given the current economic realities, China should be removed from the list of Article 5 parties, and said that he looked forward to further discussion on the agenda item at the Thirty-Seventh Meeting of the Parties. In response, the representative of China, welcoming the progress made in the informal consultations between the State of Palestine and other interested parties, reiterated the strong opposition of his country to the proposal that the removal of China from the list of Article 5 parties should be discussed under the current agenda item. The classification of China as a developing country was not in question and it was not appropriate to politicize discussions under the current agenda item.

193. One representative invited the Secretariat and any parties in a position to do so to provide support to the State of Palestine in ratifying the appropriate amendment to the Protocol that would enable it to become eligible for assistance under the Multilateral Fund.

194. The Working Group therefore agreed to resume discussions on the classification of the State of Palestine as a party operating under paragraph 1 of Article 5 of the Montreal Protocol and access to support from the Multilateral Fund at the Thirty-Seventh Meeting of the Parties. The draft decision is set out in section E of annex I to the present report.

X. Other matters

National and regional initiatives to support the implementation of the Kigali Amendment to the Montreal Protocol

195. The representatives of Rwanda and the United Kingdom introduced a conference room paper setting out a draft decision on national and regional initiatives to support the implementation of the Kigali Amendment that they had submitted jointly.

196. They explained that, in the draft decision, the Ozone Secretariat was requested to organize a one-day workshop, back to back with the Thirty-Eighth Meeting of the Parties, to share information and experiences on strategies, policies and activities of existing regional centres of excellence and their approaches in promoting sustainable cooling and cold chains and to explore interlinkages with the implementation of the Kigali Amendment and the potential for enhanced cooperation and support. The Secretariat was also requested to prepare a background information paper summarizing the strategies, policies, activities and approaches of existing regional centres of excellence and their contributions to the implementation of the Kigali Amendment. The Executive Committee was requested to consider providing a funding window for non-manufacturing activities to support the implementation of the Kigali Amendment, in particular for regional centres of excellence promoting sustainable cooling and cold chains, including for the integration of testing centres for energy efficiency. Finally, parties and stakeholders were invited to submit to the Secretariat, by 1 April 2026, information on strategies, policies and activities that contributed to sustainable cooling and cold chains, including on the establishment, operation and functioning of centres of excellence and testing centres for energy efficiency.

197. The representative of the United Kingdom added that, as the cooling and cold chain sectors were growing rapidly, there was an urgent need to shift away from isolated interventions towards a more holistic, systems-based approach, which could be delivered through specialized centres of excellence. The United Kingdom was supporting a systems approach to cooling through the

Sustainable Cooling and Cold Chain Solutions programme. At the heart of the programme was the Africa Centre of Excellence for Sustainable Cooling and Cold Chain in Rwanda and the Specialized Outreach and Knowledge Establishment programme in Kenya. Together, they were building regional capacity, enabling knowledge exchange and fostering collaborative research. The model was entirely replicable.

198. In the ensuing discussion, many representatives expressed their support either for the entire draft decision or welcomed particular elements of it. Some emphasized that the support provided by regional centres could play an important role in advancing the implementation of the Montreal Protocol, in particular the Kigali Amendment. One representative highlighted that such centres were an opportunity to build and retain knowledge and capacity, including in monitoring, to harmonize data collection and verification activities, to promote coordination of technical assistance, training and knowledge exchange, and to foster innovation. Furthermore, the centres were a cost-effective way of providing support as they avoided duplication of effort and enabled economies of scale. One representative recalled that the Executive Committee was already planning to consider the provision of funding for centres of excellence and the Multilateral Fund secretariat was preparing a paper on the issue. Some representatives spoke of how valuable a one-day workshop would be; some welcomed the proposal for a dedicated funding window; and others spoke of the utility of a background information paper and of inviting parties and stakeholders to submit relevant information. One of them, however, wished to discuss further the scope of the workshop.

199. Some representatives, including one speaking on behalf of a group of parties, expressed the view that the definition of a centre of excellence needed further clarification, and consequently so did the kind of support that would be required.

200. Some representatives said that it was difficult to approve a full-day workshop in the light of budget constraints. They suggested that another approach be looked at, such as an extended side event or an event held with external financing. One pointed out that, if the event took place in the margins of a meeting of the Open-ended Working Group, the outcomes could be discussed at the Meeting of the Parties to be held in the same year.

201. One representative sought clarification of how the testing centres fitted into the action proposed in the decision, while another underscored the need for regional equipment testing centres to support, for example, the implementation and enforcement of the minimum energy performance standards at the national level.

202. Some representatives also pointed out that the Multilateral Fund already provided funding for non-manufacturing activities in a range of ways.

203. The Open-ended Working Group agreed to establish a contact group, to be co-chaired by Mariska Wouters (New Zealand) and Camilla Noel (Vanuatu), to discuss the proposed draft decision and the issues raised.

204. Subsequently, reporting back on the group's discussions, the co-chair of the contact group said that the proponents of the draft decision had submitted additional information, which the Secretariat would upload to the meeting website.

205. Later in the meeting, the co-chair of the contact group reported that, owing to time constraints, it had not been possible for the group to conclude its work. The Working Group therefore agreed to resume discussions on national and regional initiatives to support the implementation of the Kigali Amendment at the Thirty-Seventh Meeting of the Parties, on the basis of the draft decision set out in section F of annex I to the present report.

206. The Co-Chair urged interested parties to consider engaging in consultations on the outstanding issues during the intersessional period.

XI. Adoption of the report of the meeting

207. The Co-Chair proposed that since the translations of the draft report in the six official languages of the United Nations were not yet available, the Working Group adopt the report on the basis of the English version. One representative said that he accepted to proceed in the manner proposed but he hoped it could be avoided at future meetings.

208. The parties adopted the present report on the basis of the draft report that had been circulated, as orally amended. The Ozone Secretariat was entrusted with the finalization of the report.

XII. Closure of the meeting

209. During the closure of the meeting, one representative observed that the Montreal Protocol was the only successful international legal framework recognized by the entire world, promoting clear methods of implementation, obligation and limits of responsibility. Given that fact, it was unacceptable to politicize international cooperation and neglect the responsibility stated in the Montreal Protocol.

210. Another representative raised some questions on procedural aspects of making such statements at the closure of the meeting. The Co-Chair clarified that such statements had occasionally been made in the past at the current stage of the meeting.

211. Following the customary exchange of courtesies, the meeting was declared closed at 3.15 p.m. on Friday, 11 July 2025.

Annex I

Draft decisions to be forwarded to the Thirty-Seventh Meeting of the Parties

The Working Group agreed to forward to the Thirty-Seventh Meeting of the Parties, the following draft decisions for further consideration, on the understanding that they did not constitute agreed text and were subject in their entirety to further negotiation.

A. Terms of reference for the study on the 2027–2029 replenishment of the Multilateral Fund for the Implementation of the Montreal Protocol

Submission by Australia, Canada, Japan and the United Kingdom of Great Britain and Northern Ireland

The Thirty-Seventh Meeting of the Parties,

Recalling the parties' decisions on previous terms of reference for studies on the replenishment of the Multilateral Fund for the Implementation of the Montreal Protocol on Substances that Deplete the Ozone Layer,

Recalling also the parties' decisions on previous replenishments of the Multilateral Fund,

Decides:

1. To request the Technology and Economic Assessment Panel to prepare a report for submission to the Thirty-Eighth Meeting of the Parties to the Montreal Protocol, and to submit it through the Open-ended Working Group of the Parties to the Montreal Protocol at its forty-eighth meeting, to enable the Thirty-Eighth Meeting of the Parties to adopt a decision on the appropriate level of the 2027–2029 replenishment of the Multilateral Fund;

2. That, in preparing the report referred to in paragraph 1 of the present decision, the Panel should take into account, among other things:

(a) All control measures [including funding windows for activities agreed under decision XXVIII/2] and relevant decisions agreed upon by the parties to the Montreal Protocol and the Executive Committee of the Multilateral Fund for the Implementation of the Montreal Protocol [and the special needs of low-volume-consuming and very-low-volume-consuming countries] [[, including paragraphs 9 to 25 of decision XXVIII/2,] and the decisions of the Thirty-Seventh Meeting of the Parties and the Executive Committee at its meetings, up to and including its ninety-eighth meeting, insofar as those decisions will necessitate expenditure by the Multilateral Fund during the period 2027–2029];

[(b) The special needs [and circumstances] of low-volume-consuming and very-low-volume-consuming countries[, taking into account relevant decisions of the Executive Committee pertaining to those countries] [for long-term targets for at least till 2040]];

(c) The need to allocate resources to enable all parties operating under paragraph 1 of Article 5 of the Montreal Protocol to comply with Articles 2A–2J of the Protocol, focusing on compliance targets [[up to] [for] the 10 per cent hydrofluorocarbon reduction and [the 10-year average][the 2030 target for HCFCs] [[and beyond [annual average of 2.5% for HCFC for servicing and non-servicing for the period of 2030-2040]]] [97.5 per cent hydrochlorofluorocarbon reduction]], and the reductions and extended commitments made by parties operating under paragraph 1 of Article 5 under approved hydrochlorofluorocarbon phase-out management plans and Kigali hydrofluorocarbon implementation plans [including funding windows for activities agreed under decision XXVIII/2];

[Alt (d) Decisions, rules and guidelines agreed by the Executive Committee at all its meetings, up to and including its ninety-second meeting, in determining eligibility for the funding of investment projects and non-investment projects;

[(e) The need to allocate resources for activities to maintain and/or enhance energy efficiency while phasing down HFCs, including those relating to pilot and demonstration projects, in accordance with any energy efficiency cost guidance developed by the Executive Committee, or, should the Executive Committee not adopt cost guidance in time to be considered in the report, for a scenario for a funding window to support such activities;]

[(f) The need to allocate resources for supporting activities related to gender mainstreaming as part of the gender policy of the Multilateral Fund, taking into account the implementing agencies' existing policies to promote gender mainstreaming and the mandate set out in Executive Committee decision 84/92;]

[(g) The need to allocate resources for a funding window for activities to support end-of-life management and disposal of controlled substances in an environmentally sound manner, in accordance with any relevant decisions by the Executive Committee, or, should the Executive Committee not adopt relevant decisions in time to be considered in the report, for a scenario for funding a limited number of demonstration projects;]

[opportunities for incentives for countries with the servicing sector only]

[(d) The possibility of [considering] [exploring] the [cost saving] [allocation of [additional] resources] associated with [piloting] digitalization in the servicing sector [in interested parties] within the hydrochlorofluorocarbon phase-out management plans and Kigali hydrofluorocarbon implementation plans;]

[(e)] A scenario to allocate resources for a funding modality to support a limited number of pilot projects to enhance regional atmospheric monitoring of substances controlled by the Montreal Protocol taking into account decision XXXVI/1 and any other decisions of the meetings of the parties and the Executive Committee;

[[h)] A scenario to increase funding for institutional strengthening [, capacity building] and the compliance assistance programme to assist parties operating under paragraph 1 of Article 5 to strengthen their national capacities to address challenges associated with implementing the Kigali Amendment;]

3. That, in estimating funding requirements associated with the hydrochlorofluorocarbon and hydrofluorocarbon [reduction] targets, the Panel will use a clearly explained compliance-based methodology that is informed by, but independent of, the business plan of the Multilateral Fund[, and that applies [a range of] cost-effectiveness figures for the manufacturing sectors [taking into account relevant] [based on] [historical] experience rather than only on the cost-effectiveness thresholds approved by the Executive Committee];

4. That the Panel should provide indicative figures associated with enabling parties operating under paragraph 1 of Article 5 to implement hydrochlorofluorocarbon phase-out management plans and Kigali hydrofluorocarbon implementation plans in a [coordinated] [holistic] manner [, including opportunities [to destroy obsolete and] [for] leapfrogging by moving directly to [readily available] [natural refrigerants][HFOs] [as well as] [low-GWP alternatives]]. [Indicative figures should be provided for a range of typical scenarios using all relevant data available to the Panel] and should include specific scenarios for the party with the highest production and consumption of ODS/controlled substances to consider: (1) levels of funding consistent with those provided in recent years; and (2) a [complete] phase-out [as per reduction schedule] [of funding by 2027];

[4bis. That, in estimating the funding requirements, the Panel should consider scenarios based on the following aspects: (1) financing of Kigali implementation plans based on reductions from actual HFC consumption; (2) increased ambition in line with decision 92/37 para (b) (ii) of the Executive Committee of the Multilateral Fund;]

5. That, in preparing the report, the Panel should consult widely, including all relevant persons and institutions and other relevant sources of information deemed useful;

6. That the Panel should strive to complete the report in good time to enable it to be distributed to all parties two months before the forty-eighth meeting of the Open-ended Working Group;

7. That the Panel should provide indicative figures for the periods 2030–2032 and 2033–2035[, taking into account [the principle as described in decision 96/51 of the Executive Committee] that funds from the energy efficiency revolving fund] [will eventually flow back to the Multilateral Fund], [and indicating the long-term effects of leapfrogging by moving directly to [natural refrigerants][HFOs]] to support a stable and sufficient level of funding, on the understanding that those figures will be updated in subsequent replenishment studies.]

B. Development of studies and strategies to find medium- and long-term solutions to the significant accumulation of inventories of refrigerant gases nearing the end of their life cycles in parties operating under paragraph 1 of Article 5

Submission by Chile, Cuba and the Dominican Republic

The Thirty-Seventh Meeting of the Parties to the Montreal Protocol,

Pp1: Recalling the objectives of the Montreal Protocol on Substances that Deplete the Ozone Layer and its significant contribution to the protection of the ozone layer [and the climate],

Pp5: Noting the importance of avoiding emissions of controlled substances from equipment during servicing and end of life, and preventing their release into the atmosphere,

Pp7 Recognizing [that not all parties currently [have the [technological and [economic] [financial]] capacity to [[recover] recycle, reclaim and destroy] destroy[, reclaim] or recycle refrigerants],

Pp8: Aware that prolonged storage of controlled substances without adequate [recovery, recycling, reclamation and] destruction [reclamation and] [or] recycling] [capacity][processes] increases the risk of their release into the atmosphere,

Decides:

1. To request the Technology and Economic Assessment Panel to prepare, for consideration at the Thirty-Ninth Meeting of the Parties to the Montreal Protocol, a comprehensive report that would include:

(a) An estimate of the quantity at global level of used[, including unwanted] [refrigerants [including blends] containing] [controlled substances], taking into account the national inventories being prepared pursuant to decision 91/66 of the Executive Committee of the Multilateral Fund and other sources of information;

(b) Identification of existing destruction and reclamation facilities that can accept used refrigerants from other countries, and the conditions associated with exporting used refrigerants for disposal at such facilities, taking into account any legislative barriers to transboundary movements;

(c) [Scenarios,] [Assumptions] indicating the potential benefits in terms of avoided ODP tons and CO₂eq tons associated with the reclamation and destruction of used refrigerants;

2. To request the Executive Committee of the Multilateral Fund to conduct a review of any national inventories and plans prepared pursuant to decision 91/66 submitted before 1 September 2026, and provide this review to the Ozone Secretariat by 15 January 2027 for subsequent transmission to Technology and Economic Assessment Panel to assist with the preparation of the study referred to in paragraph 1.

[2bis. To request parties to submit to the Ozone Secretariat by 31 March 2026 information on existing reclamation and destruction facilities in their country and, where available, the respective capacity of those facilities and request the Secretariat to make this information available to the parties.]

C. Halon 1301 and its continuing use in the aviation industry, and management of other controlled substances used for fire suppression

Submitted by Australia, Canada, the European Union, New Zealand, Norway, Switzerland, the United Kingdom of Great Britain and Northern Ireland and the United States of America

The Thirty Seventh Meeting of the Parties,

Taking note of the 2025 progress report of the Technology and Economic Assessment Panel and its update on the potential long-term use of halon 1301 in the aviation sector,

Noting that some controlled substances, including halons and HCFC-123, continue to have a meaningful role in fire suppression,

Noting with concern that the long-term supply of halon 1301 is uncertain given its continuing use in key sectors, difficulties in transboundary shipment of recovered, recycled or reclaimed halon

1301, its deliberate destruction for carbon credits and some users of halon 2402 switching to halon 1301,

Noting that the International Civil Aviation Organization may consider changes to the mandatory 2024 date by which an application for a type certificate submitted to the State of design shall not use extinguishing agents listed in the Montreal Protocol on Substances that Deplete the Ozone Layer,

Noting also that considerable work has been carried out on evaluating alternatives to halon 1301 in cargo compartments for new aircraft designs, and that at least one alternative candidate might soon be available,

Recalling the ongoing communication between the International Civil Aviation Organization and the Fire Suppression Technical Options Committee of the Technology and Economic Assessment Panel,

Recalling also the long-standing decisions XXX/7, XXIX/8, XXVI/7, XXII/11 and XXI/7, and most recently, decision XXXVI/7 on measures to support the sustainable management of recovered, recycled or reclaimed halons,

Decides:

1. To request that the Ozone Secretariat liaise with the secretariat of the International Civil Aviation Organization on the matter of fire suppression agents controlled under the Montreal Protocol on Substances that Deplete the Ozone Layer and facilitate the exchange of information between the Technology and Economic Assessment Panel, through its Fire Suppression Technical Options Committee and the relevant International Civil Aviation Organization technical committees and working groups to allow the Panel to:

(a) Better assess the future use of and needs for halons in civil aviation, making use of, inter alia, available data on the locations of the maintenance, repair and overhaul operations authorized to service halons, data on future fleet evolution and estimates on aircraft in operation with different types of halon fire protection systems;

(b) Submit a report on halon availability and the global distribution of halon banks, based on the above-mentioned activities, to the parties in advance of the forty-eighth meeting of the Open-ended Working Group of the Parties to the Montreal Protocol;

2. To encourage parties, to liaise, through their national ozone officers, with their national civil aviation authorities to gain an understanding of how halons and their alternatives are being used and supplied to air carriers to meet ongoing civil aviation needs;

3. To encourage all parties to reassess any national import and export restrictions other than licensing requirements with a view to facilitating the import and export of recovered, recycled, or reclaimed halons [and other controlled substances] used for fire suppression, with the aim of enabling all parties to meet their remaining needs, taking into account the requirements of the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal, where applicable;

4. To [request][encourage][invite] parties to submit to the Ozone Secretariat, by 31 March 2026, available information regarding the development of alternatives suitable for use as substitutes for [controlled substances] [[in particular] halon 1301] in fire suppression, and to request the Secretariat to forward the information received to the Technology and Economic Assessment Panel for its consideration and for inclusion in its 2027 progress report.

D. Feedstock uses of controlled substances

Submitted by the European Union and Switzerland

The Thirty-Seventh Meeting of the Parties,

[*Recalling* Article 1, paragraph 5, of the Montreal Protocol on Substances that Deplete the Ozone Layer, which excludes the calculated level of controlled substances produced that are entirely used as feedstock in the manufacture of other chemicals from the definition of “production” of controlled substances,

Recalling also decision IV/12, in which parties were urged to take steps to minimize emissions of such substances,

[Noting that in the 2022 assessment reports of the Technology and Economic Assessment Panel¹ and the Scientific Assessment Panel² and the 2023 and 2024 progress reports of the Technology and Economic Assessment Panel³ significant increases in the production of controlled substances used as feedstock were highlighted and high emission factors were identified,]

Taking note with appreciation of the information provided by parties and compiled by the Ozone Secretariat on practices and technologies used to reduce emissions of controlled substances and on established national procedures and frameworks for management of production and use of controlled substances for feedstock, in response to decision XXXVI/5,⁴]

Decides:

- [1. To invite parties to provide any available data on emissions from the different processes involving the production or use of [controlled substances that are] feedstocks, and on the associated abatement technique used, to the Ozone Secretariat by 31 March 2026, for use by the Technology and Economic Assessment Panel;]
- [2. To request relevant parties to provide information on their ongoing and planned steps, which they were requested to continue to take in decision XXXVI/5, paragraph 1, to minimize emissions of controlled substances during their production, transportation, distribution, storage, handling, repackaging and use as feedstock, including such steps as avoidance of the creation of such emissions and reduction of emissions using practicable control technologies or process changes, containment or destruction, to the Ozone Secretariat by 31 March 2026, for use by the Technology and Economic Assessment Panel;]*
- [3. To invite parties to submit information, including any emission data, on the production of halon 1301 as a feedstock and its use to manufacture fipronil, to the Ozone Secretariat by 31 March 2026, for use by the Technology and Economic Assessment Panel;]*
- [4. To request the Technology and Economic Assessment Panel to:
 - (a) [Provide an analysis of] [Analyse]the information submitted by parties in response to decision XXXVI/5 [in the 2026 progress report];
 - (b) [and] [provide an analysis of the] [their] responses to the invitations [and request set out in paragraphs 1 to 3 above;] [and] provide[, in its [next][2027] progress report [together with,]] an update of all relevant information on emissions of controlled substances that are produced or used as feedstock substances;
 - (c) Provide regular updates on [emissions of controlled substances produced or used as feedstocks] [this issue] in its annual progress reports;]]
- [5. To invite parties to support activities and research relating to the monitoring of emissions of feedstock substances, including site measurements at the local level and regional atmospheric modelling, and the identification of relevant sources.]*

E. Classification of the State of Palestine as a party operating under paragraph 1 of Article 5 of the Montreal Protocol and access to support from the Multilateral Fund

Submission by the State of Palestine

[The Thirty-Seventh Meeting of the Parties decides:

1. To recognize the State of Palestine as a party operating under paragraph 1 of Article 5 of the Montreal Protocol on Substances that Deplete the Ozone Layer;

¹ United Nations Environment Programme, Technology and Economic Assessment Panel: 2022 Assessment Report (Nairobi, 2023).

² World Meteorological Organization, Scientific Assessment of Ozone Depletion: 2022, GAW Report No. 278 (Geneva, 2022).

³ Available at <https://ozone.unep.org/science/assessment/teap>.

⁴ UNEP/OzL.Pro.WG.1/47/3.

* Square brackets were added to the operative paragraphs that had not yet been discussed in the contact group.

2. To request the Executive Committee of the Multilateral Fund for the Implementation of the Montreal Protocol to make the State of Palestine eligible for assistance under the same terms and conditions as other Article 5 parties;

3. To invite the Ozone Secretariat and the Executive Committee to provide guidance and institutional support for the full integration of the State of Palestine into Protocol mechanisms;

4. To encourage bilateral and implementing agencies to collaborate with the State of Palestine in preparing its country programme and related preparatory activities.]

F. National and regional initiatives to support implementation of the Kigali Amendment to the Montreal Protocol

Submission by Rwanda and the United Kingdom of Great Britain and Northern Ireland

The Thirty-Seventh Meeting of the Parties,

Aware that national and regional initiatives promoting sustainable cooling and cold chains can support the implementation of the Kigali Amendment to the Montreal Protocol on Substances that Deplete the Ozone Layer,

Noting that various regional centres of excellence promote sustainable cooling and cold chains, undertaking capacity-building and related activities complementary to those set out in hydrochlorofluorocarbon phase-out management plans and Kigali hydrofluorocarbon implementation plans,

Recognizing that the Multilateral Fund for the Implementation of the Montreal Protocol has historically supported capacity-building and related activities in non-manufacturing sectors,

Decides:

1. To invite parties and stakeholders to submit to the Secretariat, by 1 April 2026, information on strategies, policies and activities that contribute to [the implementation of the Kigali Amendment] [[sustainable] cooling and cold chains[, including on the establishment, operation and functioning of centres of excellence and testing centres for energy efficiency]];

2. To request the Ozone Secretariat:

[(a) To organize [an event] [a one-day workshop], back to back with the [Thirty-Eighth Meeting of the Parties] [forty-eighth meeting of the Open-ended Working Group], to share information and experiences on strategies, policies and activities of existing [national and] regional centres of excellence and their approaches in promoting sustainable cooling and cold chains and explore interlinkages with the implementation of the Kigali Amendment to the Montreal Protocol on Substances that Deplete the Ozone Layer and the potential for enhanced cooperation and support;]

[(b) To prepare a background information paper [and make it available by the [Thirty-Eighth Meeting of the Parties][forty-eighth meeting of the Open-ended Working Group]] [, in recognition of the tenth anniversary of the Kigali Amendment], summarizing the strategies, policies and activities and approaches of existing [national and] regional centres of excellence and their contributions to the implementation of the Kigali Amendment, taking into account the updated paper requested in decision 95/87 of the Executive Committee of the Multilateral Fund for the Implementation of the Montreal Protocol;]

[3. To request the Executive Committee of the Multilateral Fund to consider [possibilities] [providing a window] of funding [for non-manufacturing activities to support implementation of the Kigali Amendment, in particular] for [national and] regional centres of excellence promoting sustainable cooling and cold chains, including for the integration of testing centres for energy efficiency;]

[3alt. To note the related discussions on this topic at the 97th meeting of the Executive Committee.]

Annex II*

Summaries of presentations by the Technology and Economic Assessment Panel on its 2025 progress report

1. Introducing the report, Ms. Bella Maranion, co-chair of the TEAP, began the presentation of the TEAP 2025 Progress Report, on behalf of her fellow co-chairs Marta Pizano and Ashley Woodcock as well as the members of the Panel. The TEAP reports in 2025 consist of two volumes: the progress report which the Panel was presenting to parties at this meeting and the response to decision XXXVI/3: Emissions of HFC-23, which the TEAP will present at MOP-37. She gratefully acknowledged the submission of information by parties under decisions on life-cycle refrigerant management (LRM) (decision XXXVI/2), HFC-23 emissions (decision XXXVI/3), very short-lived substances (VSLs) (decision XXXVI/4), feedstock uses (decision XXXVI/5) and metered-dose inhalers (MDIs) (decision XXXVI/6). The TEAP will review and consider the information in its relevant reports. Ms. Maranion then noted the members of the Panel, thanking them for their work throughout the year as well as the experts who serve on the technical options committees (TOCs), and the parties who support their participation. She also acknowledged with appreciation the continued support of the Ozone Secretariat to the work of the TEAP.

A. Foams Technical Options Committee

2. Continuing the presentation, Ms. Helen Walter-Terrinoni, on behalf of her co-chair, Mr. Paulo Altoe, provided a summary of the progress of transitions away from ozone-depleting substances (ODS) and hydrofluorocarbons (HFCs). She noted that the successful transitions continue in both Article 5 (A5) and non-A5 parties with all previously used HFCs, except HFC-152a, no longer in use in foams in almost all non-A5 parties.

3. Ms. Walter-Terrinoni then described continued progress in recovery of supply chain for foam blowing agents (FBAs) and other raw materials. She said that hydrofluoro-olefin (HFO)/hydrochlorofluoro-olefin (HCFO) imbalances have eased, in both A5 and non-A5 parties, due to capacity increases. She commented that higher than expected demand for pentanes has challenged availability in some cases, and that companies in A5 parties that converted to HFC-365mfc have now transitioned again due to plant closure in 2023.

4. Ms. Walter-Terrinoni explained that foam blowing agent (FBA) economics are driving selection, blending, and loading. She expounded that there has been continued use of HFC-245fa blends in A5 parties due to cost of HFO/HCFO alternatives, with many companies transitioning away from fluorinated FBAs due to cost of HFCs, HFOs, and HCFOs, provided they can still meet insulation performance and other criteria. She also noted that non-fluorocarbon components (e.g., hydrocarbon (HC), methylal, methyl formate, and methylene chloride) are reportedly blended with fluorocarbons to reduce costs.

5. Ms. Walter-Terrinoni then focused on the growing use of flammable FBAs and FBAs with differing toxicity, which create unique safety concerns for end-users and workers at system houses and foam manufacturers, especially small- and medium-sized enterprises (SMEs). She noted that the commercial adoption of hydrocarbon (HC) FBAs in A5 parties is increasing, with some SMEs have reportedly adopting HC FBAs without safety precautions. She noted that anecdotally, local companies have generally installed HC safety precautions only if they received Multilateral Fund support for transitions and that HC is being tested as a blowing agent for spray foam.

6. Finally, Ms. Walter-Terrinoni then noted that toxicity of 1,2 dichloroethylene (1,2-DCE) use in PU foam is currently being reviewed by at least one party with field studies related to PU spray foam indoor air quality show 1,2-DCE concentrations for months or years after installation.

B. Fire Suppression Technical Options Committee

7. Mr. Adam Chattaway then presented the FSTOC progress report on behalf of his co-chairs Sergey Kopylov and Dan Verdonik. He indicated that the International Civil Aviation Organization, ICAO, currently mandates that halon 1301 cannot be used in cargo compartments of completely new aircraft designs after 2024. By completely new design he explained that he was referring to a basic aircraft type, for example, the next completely new Boeing (maybe a 797?) or the next new Airbus

* The annex is presented without formal editing.

(maybe a A360?). The global civil aviation industry is preparing to submit a request to ICAO to extend this date beyond 2024. This is reportedly owing to the significant long-term uncertainty and apprehension caused by potential PFAS regulations. This is because 2-BTP, blended with CO₂, is (or was) the leading alternative to halon 1301 for cargo compartments and, under some definitions, 2-BTP is classed as a PFAS.

8. Therefore, in the absence of alternatives, the civil aviation industry expects to be able to use halon 1301 in cargo compartments of the next-generation aircraft, i.e., those with completely new aircraft designs. Should ICAO agree to this request, civil aviation is committing to require halon 1301 for at least an **additional** 50 years, and likely further into the future. This is well beyond any of the halon 1301 run-out dates estimated by the FSTOC.

9. Therefore, to ensure long-term halon 1301 supply is available to meet their increasing and extending demand, the civil aviation industry also intends to pursue the *Essential Use Nomination (EUN)* process. As a result of this, Mr Chattaway suggested that parties may wish to consider the following: requesting FSTOC to continue to coordinate with ICAO on fire suppressants controlled under the Montreal Protocol; liaising with civil aviation authorities to defer this decision until at least the 2028 ICAO General Assembly (note that the ICAO General Assembly only meets every three years, the next meeting being in September this year); requesting the TEAP to evaluate the suitability of the existing EUN/Essential Use Exemption (EUE) procedures where all parties may need to have access to the halon 1301 under an EUE; and requesting ICAO to provide to the Ozone Secretariat all locations of the maintenance, repair and overhaul (MRO) operations authorized to service halon 1301, for confidential use by the TEAP and the SAP (this is because service organisations as well as aircraft manufacturers will need access to halon 1301).

10. Mr Chattaway then addressed the availability of halon 1301, explaining that the FSTOC is even more concerned about the mid- and long-term availability of halon 1301 for **all** enduring uses. He listed the activities that bring the run-out date sooner: misapplication of the Basel Convention and/or local regulations can prohibit or hinder the transboundary shipment of recovered/recycled/reclaimed halon 1301; the deliberate destruction of halon 1301 for carbon credits has the potential to significantly reduce its quantity; considering potential EUN(s), destroying halon at the same time as producing more seems to be counterproductive at best.

11. He then suggested that parties may wish to consider how to better facilitate the transboundary shipments of recovered halons to address any potential future regional imbalances: emphasize that recovered halons are not hazardous wastes under the Basel Convention; reinforce the message that the Montreal Protocol does not control recovered halons; discourage the destruction of halons unless they cannot be economically reclaimed, as the EU has done in its latest ODS regulations

12. Finally, Mr Chattaway reviewed the emissions of halon 1301. He stated that the FSTOC has received additional data for production of halon 1301 as a feedstock, covering both earlier and later years than previously published. The previously-used assumed emission factor of 26% still fits remarkably well. He presented a graph showing that when adding emissions from feedstock production (scaled by 26%) to emissions from the fire suppression bank gives a remarkable match to emissions derived from atmospheric measurements from two independent sources (AGAGE and NOAA).

13. Mr Chattaway further stated that the FSTOC would still like to know more, so he suggested: that parties may wish to consider requesting SAP to provide any regionalized halon 1301 emissions estimates available to the TEAP; and that parties that use, import, or export halon 1301 in a feedstock may wish to consider providing more information on **emissions** from this and **use as a feedstock** to the Ozone Secretariat for confidential use by the TEAP.

C. Methyl Bromide Technical Options Committee

14. On behalf of fellow co-chair, Marta Pizano, the Methyl Bromide Technical Options Committee (MBTOC) and TEAPco-chair, Mr. Ian Porter, presented a summary of the MBTOC progress report. Referring to the finalization of the methyl bromide (MB) phaseout for controlled, non-quarantine and pre-shipment (QPS) uses, he also noted that MB is still used for exempted QPS uses. The baseline for MB for controlled non-QPS use was 62,000 tonnes/yr in 1992–95 and is now almost zero, which is a great global achievement for all parties and industries around the world.

15. Since 2003, parties submitted over 250 critical use nominations (CUNs) totalling 18,000 tonnes/yr of MB. However, no submissions for critical use exemptions (CUEs) were received in 2025. The only CUN exempted last year for 2025 allowed Canada to use 2.85 tonnes of MB for the production of strawberry nursery plants in Prince Edward Island as their final CUE. Unfortunately, the

MBTOC notes that media and websites still document use of MB for controlled uses, which is a major concern.

16. Mr. Porter then highlighted that the MBTOC's work will now focus on continuing use of MB for QPS uses, which amount to 7-10,000 tonnes/yr. He stressed that over 85% of the MB used is vented directly to the atmosphere after treatment is completed.

17. In continuing his presentation, Mr. Porter reported that alternatives for QPS uses of MB are being increasingly used, in particular phosphine, ethyl formate and debarking of timber, while a potential alternative, ethane dinitrile, is being registered in many regions. He further said that a recent change to the worker safety exposure limit for MB from 5 ppm to 1 ppm in several major MB user parties will potentially restrict use of this fumigant.

18. He then showed a chart of the relative amounts of MB used for QPS in the 10 largest consuming countries since 2015. He also stated that production currently occurs in 5 parties - China, Israel, India, Japan and the US with India and the US accounting for over 75%. Reported QPS consumption in 2023 globally was ~7,660 tonnes, an amount which is ~25% lower than the average use reported over the last decade. Key to this reduction in 2023 was the large decrease reported by New Zealand (~98%), China (~60%), and Australia (~45%).

19. Proceeding with the presentation, Mr. Porter showed a chart of the global concentration of MB showing the rise in atmospheric MB concentrations since 1940, and how that matched with reductions in anthropogenic emissions achieved through the MB phase out to date. He noted however that the decline in atmospheric concentration of MB has ceased over the last seven years, due to the remaining QPS uses. He noted the gap that still exists between the natural baseline in MB concentration and the present amount is due to emissions coming from QPS use and any unreported/unknown emission sources.

20. In finalizing his presentation, he stated that recent papers report emissions of MB from unknown sources that do not match consumption reported under Article 7 (estimated at 4,000-9,000 tonnes/year from 2011 to 2020).

D. Medical and Chemicals Technical Options Committee

21. Co-chair Mr. Takeshi Eriguchi presented a summary of the Committee's progress report. He first addressed production of ODS for feedstock use, stating that the 2023 production quantity was close to 2 million tonnes, very similar to production in 2022. He further noted that the production of Annex C, Group I substances (HCFCs) had grown significantly since 2020 and that 50% of production of ODS for feedstock was HCFC-22.

22. He then presented the production in 2023 of HFCs for feedstock for the first time, noting that the data were not complete due to the timing of the ratification of parties to the Kigali Amendment. He also noted that the Committee could not present data in a breakdown of HFC production for feedstock by individual product, due to confidentiality rules.

23. In closing his presentation, Mr. Eriguchi noted that no compelling new information had been identified on process agent uses, n-propyl bromide, laboratory and analytical uses, aerosols or destruction technologies.

24. Mr. Ashley Woodcock then continued the Panel's presentation addressing **decision XXXVI/6** on developments regarding MDIs with low-GWP propellants. He said that the decision requested TEAP to "*continue to provide in its annual progress reports updated information on [low-GWP MDI] propellants and to complement its 2026 quadrennial assessment report with timely information, including on the availability, technical feasibility, economic viability, safety, and market penetration of those propellants in parties operating under paragraph 1 of Article 5...and in parties not so doing*";

25. Mr. Woodcock pointed out that Asthma and Chronic Obstructive Pulmonary Disease (COPD) now affect 600 million people worldwide, and that new treatment guidelines for asthma and COPD continue to recommend inhaled treatment delivered mainly with pressurized metered dose inhalers (pMDIs) (~70%) and dry powder inhalers (DPIs). Current pMDIs use pharma grade HFC-134a or HFC-227ea as propellants, both of which have high GWP, and may be unavailable long after 2030.

26. He continued to explain that although around half of all inhalers are manufactured in Europe, there are more than 70 pMDI manufacturers worldwide, many of which are SMEs in A5 parties currently using HFC-134a to supply affordable inhaled treatments, especially salbutamol pMDIs. He stated that a rapid pace of transition in non-A5 parties, shortage of pharmaceutical grade HFC-134a, patent protection and limited technology transfer could impact the availability and affordability of

pMDIs in A5 parties. This could accentuate the global inequalities in the provision of care for patients with asthma and COPD in A5 parties.

E. Refrigeration, Air Conditioning and Heat Pumps Technical Options Committee and decision XXXVI/2 on life-cycle refrigerant management

27. Mr. Omar Abdelaziz, co-chair of the Refrigeration, Air Conditioning and Heat Pumps Technical Options Committee (RTOC) introduced its progress report saying that no new single-component refrigerants were approved since 2024. However, 27 refrigerant blends have received designations and classifications from ASHRAE Standard 34 and/or from ISO standard 817. He then stated that the gradual transition to zero-ODP, lower GWP refrigerants resulted in the adoption of more hazardous refrigerants, especially those which are flammable and the increased amount of risk assessment research and publication on how to address refrigerant leakage and associated hazards. He also noted a growing emphasis on improving RACHP equipment energy efficiency, with air conditioning accounting for 80% of the rise in energy-related emissions from 2023 to 2024. He stated that mechanical cooling demand will increase as temperatures rise, but more efficient appliances will help reduce overall energy use.

28. Mr. Abdelaziz provided sectoral updates, noting a global shortage of both equipment and expertise necessary to identify new refrigerants, particularly blends. This shortage is impeding progress in numerous countries, especially Article 5 (A5) parties. He highlighted the issuance of a new safety standard for refrigerated road transport, EN 17893, in 2024, which has facilitated the safe use of flammable refrigerants. As a result, one refrigerated container shipping line has announced plans to operate with HFO-1234yf (GWP 1). He also reported a growing adoption of industrial heat pumps replacing fossil fuel-based boilers in China and Europe, with a significant uptick observed in the United States. Additionally, he noted an increase in industrial heat pump quotations in Latin America.

29. In continuing his presentation, Mr. Abdelaziz then gave an update on the development of HFC-32 Variable Refrigerant Flow (VRF) air conditioning systems, indicating their availability from various original equipment manufacturers (OEMs) in multiple regions, including A5 parties. He mentioned ongoing challenges associated with charge limit restrictions for A2L refrigerants. In addition, he noted that at least one manufacturer has introduced R-744 (CO₂) refrigerant. Mr. Abdelaziz stated that water chillers used for data centre cooling now represent a significant portion of chiller production. He also reported increased use of Artificial Intelligence (AI) to optimize chiller plant performance and building design and operation. Finally, he remarked on a growing attention to vehicle thermal management systems beyond conventional comfort cooling and heating, with at least one original equipment manufacturer (OEM) showing interest in HC-290 secondary loop technologies.

30. Mr. Abdelaziz then addresses TEAP's response to decision XXXVI/2: Life-Cycle Refrigerant Management requesting 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 the Thirty-Sixth Meeting of the Parties to the Montreal Protocol on Substances that Deplete the Ozone Layer."*

31. He provided an overview of the report, noting an increasing global focus on LRM. He stated that the reported reclamation and destruction amounts are currently less than 10% of their potential. He also noted that unreported recovery and reuse figures may vary depending on market conditions and the price of new refrigerants. According to data in the progress report, reclamation trends are rising in the EU, US, and China, with reported destruction activities in Canada. Additionally, the TEAP has received input from nine parties regarding LRM since the publication of the report: Australia; Belize; Ecuador; Japan Kenya Maldives Norway; Rwanda; and Switzerland.

F. Per- and polyfluoroalkyl substances

32. Ms. Bella Maranion, co-chair of the TEAP, proceeded to present updates on emerging policies related to per- and poly-fluoroalkyl substances (PFAS) and potential implications for sector transitions. The toxicity, bioaccumulation, and persistence of certain PFAS chemicals have led to varied enacted/proposed regulatory controls in some parties and sub-national jurisdictions. These have ranged from limited control of specific chemicals of known toxicity for specific end-uses (e.g., food packaging) to non-discriminatory ban of a broad range of chemicals. She noted that definitions incorporated into potential future policies vary between jurisdictions. Emerging PFAS policies and definitions may or may not include Montreal Protocol controlled chemicals, chemicals, and breakdown products, such as trifluoroacetic acid (TFA) and its salts. Definitions range from specifically excluding Montreal Protocol controlled chemicals (e.g., Delaware) to broad

(e.g., Organization for Economic Cooperation and Development or OECD). The OECD definition of PFAS encompasses a wide range of chemicals from gases to liquids to solid polymers, including TFA and most commercial HFCs and HFOs; it excludes several fluorinated gases such as halons, HCFC-22, HFC-32, HFC-23, CF₃I, HFC-152a. The OECD explains that the “term ‘PFASs’ does not inform whether a compound is harmful or not, but only communicates that the compounds under this term share the same trait for having a fully fluorinated methyl or methylene carbon moiety.” Ms. Maranion noted that broad bans could narrow the availability of alternatives as replacements for Montreal Protocol controlled chemicals and may make transitions away from ODS and HFCs more difficult. Risk of possible bans are creating uncertainty for companies working to transition from ODS and HFCs. There may be resulting delays in investments in alternatives and technologies and potential delays in transitions or reduced availability of optimized solutions.

33. She noted that TEAP considered potential sector implications. For fire suppression, there may be uncertainty for cargo compartment replacement (2-BTP) and longer-term reliance for halon 1301 (i.e., EUN) for enduring uses. Reducing available alternatives will make the already complex FBA selection process more challenging. Propellants that are currently used, under development, or being invested in, for pMDIs could be affected by a broad ban. In the RACHP sector, broad-ranging restrictions and limited availability of alternatives may increase GHG emissions by slowing the uptake of lower GWP alternatives (crucial to meet HFC phase-down targets), limiting the energy efficiency of medium-sized RACHP systems, or slowing the roll-out of HPs (needed to decarbonize heating).

34. Fluoropolymers could be included in PFAS definitions and bans. Many fluoropolymers are used in components in all sectors of interest to the Montreal Protocol, e.g., in compressors, valves, heat exchangers, flexible seals and coatings, and inhalers, etc. They are also widely used in manufacturing processes and equipment. A ban on fluoropolymers would significantly affect the design of equipment irrespective of the specific chemical being used, e.g., RACHP equipment using HCs, CO₂, or ammonia would be affected as well as those using fluorocarbon refrigerants. She reminded parties that the TEAP along with the other panels will continue to update parties on these issues as part of their quadrennial assessment.

G. Options for the future organization of the Technology and Economic Assessment Panel and its technical options committees

35. Ms. Marta Pizano, co-chair of the TEAP and MBTOC, then began the presentation of the panel’s response to **decision XXXV/20**: Options for the organization of TEAP and its TOCs, which requested the TEAP “*in its progress report prepared ahead of the 47th meeting of the Open Ended Working Group, to provide options on the organization of the Panel and its Technical Options Committees, considering the Panel’s terms of reference established in decision XXIV/8, and informed by consultation with the Technical Options Committees’ co-chairs and members, and by their experiences with operating, on a trial basis, with new ways of organizing their work.*” She noted that over 150 experts from A5 and non-A5 parties serve on the TEAP and its TOCs as unpaid volunteers. TEAP’s evidence-based approach over three decades has provided a firm foundation for informed decisions by parties. TEAP organization and structure has been sufficiently flexible to enable timely adjustments and amendments to the Protocol for emerging challenges and opportunities. The TEAP mission and scope of work includes: providing objective, policy-neutral, technical and economic information relevant to the Montreal Protocol in response to decision of the parties; maintaining expertise on issues related to the global transition away from ODS and phase down of HFCs; managing its functioning together with its TOCs and Temporary Subsidiary Bodies (TSBs), in adherence with the TEAP Terms of Reference, and coordination with the other panels, the Environmental Effects Assessment Panel and the Scientific Assessment Panel.

36. Ms. Pizano provided some historical background on changes to the structure of TEAP. Assessments started in 1989 under the Montreal Protocol, and in 1991, the TEAP was formed from the former Technical and Economic Assessment Panels. In 2001, experts from the Economics Options Committee were transferred to TEAP (as senior advisers) and its TOCs. In 2005, the Chemicals TOC and in 2006 the Medical TOC were formed from the former Solvents, Coatings and Adhesives and Aerosols, Sterilants, Miscellaneous Uses and CTC TOCs resulting in six TOCs. In 2016, the Chemicals and Medicals TOCs were merged into the MCTOC, bringing the number down to five TOCs. Most recently, in 2023, the Halons TOC was renamed the Fire Suppression TOC (FSTOC).

37. To respond to decision XXXV/20, the TEAP formed a working group. The TEAP took the approach of recommending that the current structure be retained until the end of 2026 and into 2027 given that the TEAP already has substantial work to complete plus reports for any new decisions in this period (e.g., 2026 Assessment and Synthesis Reports, Progress Reports, and the Multilateral Fund (MLF) replenishment study). For 2027 and beyond, the TEAP proposes options based on anticipated

workload and scope and endeavours to improve gender balance and regional distribution while maintaining the required expertise. Challenges to ensuring a manageable workload as well as maintaining an independent, consensus-based approach are becoming more critical with the juncture of the ODS phase-out and HFC phase-down regimes, the anticipated attrition of membership and relevant expertise, and the lack of support limiting some members' participation in face-to-face meetings. To address these challenges to the long-term viability of TEAP and its TOCs, the Panel will need the support of the parties to find sustainable solutions.

38. Ms. Pizano reviewed the current composition of the TEAP which consists of a total of 22 members: 10 (45%) from A5 parties; three TEAP co-chairs; 14 TOC co-chairs; six senior experts; six female and 16 male. Members of the TEAP have expertise in ODS and HFC sectors, national and international regulations, functioning and history of the Montreal Protocol. Independent experts serve on a voluntary basis to produce and present technical and economic information through consensus and attend TEAP, TOC, and Montreal Protocol meetings.

39. Mr. Ashley Woodcock, co-chair of the TEAP, presented information as well as organizational options for each of the TOCs: current composition, expertise and functioning, two options which TEAP considered to be viable based on future workload of each committee. He noted that the TEAP considered a broad range of options and that the viable options presented were not mutually exclusive. The current composition of the TOCs are: FTOC has 20 members including two co-chairs; FTOC has 21 members including three co-chairs; MBTOC has 15 members including two co-chairs; MCTOC has 39 members including three co-chairs; and RTOC has 43 members including four co-chairs. He described the broad expertise and experience within each TOC. He then discussed the two presented viable options for the future configuration of each TOC and the key advantages and disadvantages.

40. For FTOC:

Option 1 maintains the current membership including 2 co-chairs, and has the advantage of maintaining core competences and institutional knowledge.

Option 2 would work more on-line, with the advantage of lower cost, but the disadvantage of demotivation, loss of teamworking due to less interaction, and loss of members.

41. For FSTOC:

Option 1 maintains the current membership and 2/3 co-chairs with the advantages of continuing to be able to deliver future assessments, and to react to emerging issues.

Option 2 is a reduced size of the Committee with the disadvantage of impaired ability to respond to decisions in a timely manner, and reduced ability to manage succession planning.

42. For MBTOC:

Option 1 maintains a membership of 15-20 members and two co-chairs. This has the advantage that parties are informed about the latest developments in relation to methyl bromide and that MBTOC is able to respond to party requests.

Option 2 is to reduce the size to 10-12 members, which keeps a holding position for controlled uses in case CUNs and other issues re-appear, but has the disadvantage of reduced capacity to gather, assess and process updated information necessary for reports in a timely manner.

43. Mr. Woodcock then moved on to discuss the two larger TOCs.

44. For MCTOC:

Option 1 is to retain a single MCTOC, but to restructure with 4 co-chairs and 2 subcommittees - Aerosol/Medical, and Chemicals. This has the advantage of having 2 specialist co-chairs for each committee, with a single over-arching committee to enable joint review of cross-cutting issues. It has the disadvantage of requiring careful management by the co-chairs to facilitate the necessary collaboration between the groups.

Option 2 is to split MCTOC into two separate TOCs i.e. Aerosols/Medical TOC with 2 co-chairs and Chemicals TOC with 3 co-chairs, each with about 20 members. This would enable greater focus, especially in Chemicals with an increasing range of diverse topics. It would enable the strengthening Aerosols/MDIs TOC to manage the increase in expected short- to medium-term workload, which may then diminish. It has the disadvantage of some initial disruption e.g., of cross-cutting issues, and would require forward planning including cross-cutting TOC/TEAP communication to avoid knowledge isolation.

45. For RTOC:

Option 1 is to retain a single RTOC with the whole Committee covering the increasingly important cross cutting issues. There would be two technical subcommittees on Comfort Cooling/Heating, and on Cold chain/other applications. This has the advantage of enabling consensus on cross-cutting topics such as energy efficiency, life-cycle refrigerant management, safety standards, PFAS etc. It also allows for the separate subcommittees to focus in their specific areas, but coordinate as they work across the increasing overlap between comfort cooling/heating and cold chain in many applications e.g. supermarkets, and in new NIK (not in kind) innovations.

Option 2 is to formally split RTOC into two TOCs i.e. Comfort Cooling/Heating, and Cold Chain and other applications. This has the advantage of having two smaller TOCs each of 20 members with two co-chairs. This has the disadvantage that cross-cutting topics will be independently handled by both committees, with significant duplication and wasted effort, with a risk of loss of consensus.

46. Ms. Bella Maranion, co-chair of the TEAP, presented other considerations for the future organization and functioning of the Panel. For senior experts, the TEAP would move, per its TOR, to the recommended two-four members, to fulfil expertise not covered by the TEAP or TOC co-chairs. To manage the workload and commitment required, senior experts would not serve on any TOCs concurrently. This reduces the size of the Panel and travel support needed. To better manage its work related to MLF replenishment, the TEAP would establish a standing TEAP working group. This group would ensure regular updates of relevant data and information on new decisions throughout triennium. The TEAP believes this may make the work more manageable given tight deadlines between receiving TOR from parties, forming a task force, and delivering a study to OEWG and, potentially, a supplementary study for MOP. This may also ensure that parties' interest for greater transparency of the TEAP's funding model is addressed.

47. Ms. Maranion concluded the TEAP's presentation of its 2025 progress report by reviewing the continuing challenges faced by the TEAP. The challenge for the TEAP and for the parties, is both to maintain the needed expertise and to recruit new volunteers with needed technical expertise, ability to work independently, confidentially, and to reach consensus, and the necessary time, energy, and ability to write clearly. Some TOCs have experienced substantial attrition of key members, both through retirement, and especially because of lack of support for their participation, with increasing loss of expertise for those TOCs. Some members have been unable to travel to face-to-face meetings for diverse administrative reasons, and visas with longer timelines/increasing geographical restrictions. Many non-A5 experts find it increasingly difficult to obtain funding support for travel from their organizations. The TEAP therefore recommended that parties may wish to consider how to assist the TEAP in ensuring the independence in its products and the full participation of TEAP/TOC members in its consensus-based process, i.e., providing travel support to members, where needed, irrespective of their A5/non-A5 status.

Annex III*

Annex to the conference room paper on halon 1301 and its continuing use in the aviation industry, and management of other controlled substances used for fire suppression

Submitted by Australia, Canada, the European Union, New Zealand, Norway, Switzerland and the United Kingdom of Great Britain and Northern Ireland

The present annex is intended to provide interested parties to the Montreal Protocol with background information on the issue of the use of halon 1301 as a fire suppression agent in cargo compartments of aircrafts, should they wish to refer to the informative discussions that took place at the forty-seventh meeting of the Open-ended Working Group of the Parties to the Protocol, when liaising with their respective national aviation authorities.

Background

1. In chapter 7.3 of its 2025 progress report (vol. 1), the Technology and Economic Assessment Panel, through its Fire Suppression Technical Options Committee, provided an update on developments with the potential to impact the future availability of halons and their alternatives.
2. The Fire Suppression Technical Options Committee noted the critical role that halon 1301 plays in fire protection systems in civil aviation, specifically its use in cargo compartments and in engine nacelles, uses for which there are concerns about the availability of alternatives, since a 2-BTP/CO₂ blend alternative to halon 1301 for new aircraft designs has passed testing successfully but is not yet certified. 2-BTP and other halon alternatives are considered perfluoroalkyl and polyfluoroalkyl substances (PFAS) in some jurisdictions.
3. Currently, the International Civil Aviation Organization mandates that halon 1301 not be used in cargo compartments for new aircraft designs after 2024.
4. The Fire Suppression Technical Options Committee noted that the global civil aviation industry is preparing to submit a request to extend the use of halon 1301 in cargo compartments for new aircraft designs after 2024, for consideration by the Assembly of the International Civil Aviation Organization in September 2025. The request was reportedly owing to the apprehension among industry stakeholders caused by proposed PFAS regulations.
5. According to an estimate by the Fire Suppression Technical Options Committee, should the International Civil Aviation Organization agree to the request, the global civil aviation sector would be committing to allowing the use of halon 1301 in the cargo compartments of the next generation of aircraft for at least an additional 50 years. Extending the use of halon 1301 in those situations will place pressure on the supply of halon 1301, beyond the already anticipated shortfall in supply.
6. At the forty-seventh meeting of the Open-ended Working Group, the European Union clarified that the use of 2-BTP as a fire suppression agent is not currently prohibited by any European Union legislation concerning PFAS. Proposed European Union legislation targeting PFAS, currently in the assessment phase, includes an exemption for the aviation sector. Any potential future European Union restrictions on PFAS will allow for exemptions of critical applications where no alternatives are available, which will likely apply to fire suppression systems in civil aviation.

* The annex is presented without formal editing.