



SUMMARY OF THE THIRTY-SIXTH MEETING OF THE OPEN-ENDED WORKING GROUP OF THE PARTIES TO THE MONTREAL PROTOCOL ON SUBSTANCES THAT DEplete THE OZONE LAYER: 20-24 JULY 2015

The thirty-sixth meeting of the Open-Ended Working Group (OEWG 36) of the parties to the Montreal Protocol on Substances that Deplete the Ozone Layer (MP) convened in Paris, France, from 20-24 July 2015. Over 440 delegates representing governments, UN agencies, MP expert panels and committees, non-governmental organizations and industry attended.

At OEWG 36, delegates considered a number of issues, including, *inter alia*: the 2014 quadrennial assessment reports of the Scientific Assessment Panel (SAP), the Environmental Effects Assessment Panel (EEAP) and the Technology and Economic Assessment Panel (TEAP); the 2015 progress report of the TEAP; the nominations for essential-use exemptions (EUEs) and critical-use exemptions (CUEs); alternatives to ozone depleting substances (ODS); and the outcomes of the intersessional informal discussions on the feasibility and ways of managing hydrofluorocarbons (HFCs). OEWG 36 also considered four proposals to amend the Protocol to address HFCs: the first by the US, Canada and Mexico; the second by India; the third by the European Union (EU) and its 28 Member States; and the fourth by the Island States—Kiribati, Marshall Islands, Mauritius, Federated States of Micronesia (FSM), Palau, the Philippines, Samoa and Solomon Islands.

As the week started, delegates moved swiftly through the agenda items so that the bulk of the time would be available to discuss the proposed amendments. Although clear divisions remained, and despite negotiations in the informal group on the feasibility and ways of managing HFCs running late into the evening on Thursday and Friday without reaching agreement, delegates were still able to hold substantive discussions on the amendment proposals in order to clarify aspects of each proposal. Delegates did agree to hold an additional session of OEWG 36 prior to MOP 27, in order to conclude discussions in the informal group.

A BRIEF HISTORY OF THE MONTREAL PROTOCOL

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

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VIENNA CONVENTION: Negotiations on an international agreement to protect the ozone layer were launched in 1981 under the auspices of UNEP. In March 1985 the Vienna Convention for the Protection of the Ozone Layer was adopted. It called for cooperation on monitoring, research and data exchange, but did not impose obligations to reduce ozone depleting substances (ODS) usage. The Convention now has 197 parties, which represents universal ratification.

MONTREAL PROTOCOL: In September 1987, efforts to negotiate binding obligations to reduce ODS usage led to the adoption of the MP. The MP introduced control measures for some CFCs and halons for developed countries (non-Article 5 countries). Developing countries (Article 5 countries) were granted a grace period allowing them to increase their ODS use before taking on commitments. The Protocol and all its amendments have been ratified by 197 parties.

Since 1987, several amendments and adjustments have been adopted, adding new obligations and additional ODS, and adjusting existing control schedules. Amendments require ratification by a particular number of parties before they enter into force; adjustments enter into force automatically.

LONDON AMENDMENT AND ADJUSTMENTS: Delegates to the second Meeting of the Parties to the MP (MOP 2), held in London, UK, in 1990, tightened control schedules and added ten more CFCs to the list of ODS, as well as carbon tetrachloride (CTC) and methyl chloroform. MOP 2 also established the Multilateral Fund (MLF), which meets the incremental costs incurred by Article 5 countries in implementing the Protocol's control measures and finances clearinghouse functions. The Fund is replenished every three years.

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

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

BEIJING AMENDMENT AND ADJUSTMENTS: At MOP 11, held in Beijing, China, in 1999, delegates agreed to controls on bromochloromethane, additional controls on HCFCs, and reporting on methyl bromide for quarantine and pre-shipment applications.

MOP 21: MOP 21 took place in Port Ghalib, Egypt, in 2009 and adopted decisions on: alternatives to HCFCs; institutional strengthening; environmentally sound management of ODS banks; methyl bromide; and data and compliance issues. This was the first meeting at which delegates considered, but did not agree on, a proposal to amend the Protocol to include HFCs submitted by the FSM and Mauritius.

MOP 22: MOP 22 took place in Bangkok, Thailand, in 2010 and adopted decisions on, *inter alia*: the terms of reference for the TEAP study on the MLF replenishment and the evaluation of the financial mechanism; and assessment of technologies for ODS destruction. Delegates considered, but did not agree to, two amendments proposed to address HFCs under the Protocol, one submitted by the US, Mexico and Canada and another submitted by FSM.

COP 9/MOP 23: COP 9/MOP 23 took place in Bali, Indonesia, in 2011 and adopted decisions on, *inter alia*: a US\$450 million replenishment of the MLF for the 2012-2014 period; updating the nomination process and recusal guidelines for the TEAP; the treatment of ODS in relation to service ships; and additional information on alternatives. Delegates also discussed the two proposed amendments to the Protocol to address HFCs, but no agreement was reached.

MOP 24: MOP 24 took place in Geneva, Switzerland, in 2012 and adopted decisions on, *inter alia*, the review by the SAP of RC-316c; procedural issues related to the TEAP and its subsidiary bodies; and data and compliance issues. MOP 24 did not reach agreement on two draft decisions on: clean production of HCFC-22 through by-product emission control; and amendment of the MP to include HFCs.

MOP 25: MOP 25 was held in Bangkok, Thailand, in 2013. The MOP adopted 21 decisions, including on: terms of reference for the study of the 2015-2017 MLF replenishment; implementation of the MP with regard to small island developing states; and a TEAP report on ODS alternatives. MOP 25 did not reach agreement on: amendment proposals; additional funding for the MLF for implementing the MP to maximize the climate benefit of the accelerated phase-out of HCFCs; and the harmonization and validation of the climate impact fund.

COP 10/MOP 26: COP 10/MOP 26 was held in Paris, France, in 2014 and adopted decisions on, *inter alia*: a US\$507.5 million replenishment of the MLF for the 2015-2017 period; availability of recovered, recycled or reclaimed halons; and a TEAP report on ODS alternatives. Delegates also discussed possible ways to move the HFC issue forward, deciding to convene a two-day workshop in 2015, back-to-back with an additional OEWG session, to continue discussions on HFC management, including a focus on high-ambient temperatures and safety requirements, as well as energy efficiency.

OEWG 35: The Workshop on Hydrofluorocarbon Management and OEWG 35 were convened back-to-back in Bangkok, Thailand, from 20-24 April 2015. OEWG 35 discussions resulted in agreement to continue to work intersessionally in an informal manner to study the feasibility and ways of managing HFCs, with a view to the establishment of a contact group on feasibility and ways of managing HFCs at OEWG 36.

OEWG 36 SUMMARY

Co-Chair Emma Rachmawaty (Indonesia) opened OEWG 36 on Monday morning, 20 July 2015.

In her opening remarks, Tina Birmipili, Executive Secretary, Ozone Secretariat, noted that no EUEs have been submitted this year for metered dose inhalers (MDIs), stating that this is another milestone in the control of ODS. She summarized key points of understanding that have emerged in discussions on HFC management, including: the MP already has a successful working relationship with the market sectors currently using HFCs; the need to carefully address the special situation of developing countries; the MLF should be the financial mechanism for HFC controls; implementation needs to be flexible; and where no economically or technically feasible alternatives exist, exemptions may be required. She emphasized that efforts toward HFC management under the MP must be built on trust.

Co-Chair Paul Krajnik (Austria) introduced the provisional agenda (UNEP/OzL.Pro.WG.1/36/1), and delegates adopted it with a minor editorial change. Krajnik suggested, and delegates agreed, to adopt the proposed organization of work.

2014 QUADRENNIAL ASSESSMENT REPORTS OF THE SAP, THE EEAP AND THE TEAP

Co-Chair Rachmawaty introduced the agenda item on the quadrennial assessment reports of the SAP, the EEAP and the TEAP.

John Pyle, SAP, referred delegates to the report and the paper entitled: "20 Questions and Answers about the Ozone Layer: 2014 update." He explained that ODS are decreasing, citing the example of the period 1996 to 2012 where there has been an almost 10% decline of chlorine gases and a 12% decline in bromine mainly due to regulation of methyl bromide. He said that while ozone levels seem to have improved, the positive impact is not necessarily statistically significant. He showed that stopping all future production of HCFCs and destroying all ODS banks by 2020 will only have a limited impact on overall ODS levels.

A.R. Ravishankara (US), Co-Chair, SAP, said that HFCs are increasing rapidly stating that the increases can be measured in the atmosphere and have an impact on the climate. He said that the increases are consistent with estimates, providing confidence for future projections. Ravishankara explained that ODS' contributions to climate forcing are large but are declining and by mid-century HFCs will begin to dominate radiative forcing. He said HFCs' contributions to climate change due to future emissions could be large and could undo climate gains achieved by the MP, but it does not have to be that way given that there are alternatives.

Janet Bornman (Australia), Co-Chair, EEAP, introduced the Panel's report. She noted that, with a few exceptions, there have only been small changes in UV-B radiation since the 1990s, which are due less to the effects of ozone depletion than to other factors. Nigel Paul (UK), Co-Chair, EEAP, said that the EEAP is producing an updated paper on the environmental effects of trifluoroacetic acid (TFA) for its interim report, but underlined that there is no new evidence that predicted TFA accumulation poses a discernible threat to air and water quality.

Ashley Woodcock (UK), Co-Chair, TEAP, said key messages of the 2014 assessment report were, *inter alia*, that the MP is working and HCFC Phase-out Management Plans are generally running smoothly. He called for continued vigilance on remaining sector challenges and technology choices to avoid nullifying the MP's ozone and climate benefits.

Keiichi Ohnishi (Japan), Co-Chair, Chemicals Technical Options Committee (CTOC), said parties could consider ways to complete the transition away from ODS use in laboratory and analytical methods, and noted that phasing out ODS solvents in Article 5 parties will be a challenge.

Paul Ashford (UK), former Co-Chair, Foams TOC (FTOC), underscored the importance of continued tracking of choices in blowing agents.

Daniel Verdonik (US), Co-Chair, Halons TOC (HTOC) said the HTOC recommended considering re-emphasizing halon bank management in Article 5 parties and methods to increase active management of halons.

Helen Tope (Australia), Co-Chair, Medical TOC (MTOC), said a global phase-out of CFCs in MDI manufacturing is expected in 2015-2016, and complete phase-out of HCFCs in sterilization uses is on schedule.

Marta Pizano (Colombia), Co-Chair, Methyl Bromide TOC (MBTOC), said MBTOC urged: considering phase-down of quarantine and pre-shipment (QPS) uses of methyl bromide; categorization of QPS uses to prevent exempted QPS methyl bromide from being switched to controlled uses; and more consistent tracking of imported methyl bromide and its uses.

Roberto Peixoto (Brazil), Co-Chair, Refrigeration, Air Conditioning and Heat Pumps TOC (RTOC), outlined the current status, trends and challenges in refrigerants by sub-sectors.

TEAP Co-Chair Woodcock presented a summary about the role and organization of the TEAP, its TOCs and the challenges they face, including: retirement of members and the resulting loss of expertise; and the lack of funding and support for non-Article 5 members may result in more departures, with the resulting potential risk of a loss of balance and consensus in the TOCs. He called on countries to recruit experts and to support the TEAP and its TOCs going forward.

In the ensuing discussion, Switzerland inquired about the discrepancy between measured concentrations and emissions of CTC, including emissions from feedstock, which was supported by the EU, who also asked about methyl bromide production. In its response, the SAP confirmed that there are more emissions than could be seen from reported numbers of CTC and that there is a workshop being organized on specific forms of its emissions. TEAP said that while the emissions from feedstock are not negligible, they also are insignificant.

The EU noted the interconnection between protecting the ozone layer and climate change and also protecting human health from UV radiation. He queried how the EEAP 2010 report could find that TFA's natural occurrence is uncertain and that the 2014 report could find it negligible. He also called for more information on its dilution in all kinds of water bodies. The EEAP said it is preparing an update on TFA since the report includes little information, noting a gap between concentration in water bodies and take-up in organisms.

Togo called for an analysis of substitutes for foam blowing agents, especially in high ambient temperatures. TEAP pointed to other foam alternatives, including water-blown technologies.

TEAP confirmed to the US that it is continuing to work with the International Civil Aviation Organization (ICAO) on halon alternatives for civil aviation, and also at regional levels. China queried if dichloromethane can affect the ozone layer. The SAP said that some concentrations of dichloromethane are growing rapidly and there is ongoing research on them.

Referring to the current low concentrations of HFCs, India asked why there were references to its increased climate forcing. The SAP explained that while current HFC emissions are small, it is one of the fastest increasing group of substances currently, noting its proportional increase is akin to ODS and has a climate forcing effect.

The EU asked to include more information about mobile refrigeration, especially air conditioning used in cars, with Paraguay inquiring about alternatives and their flammability. Tunisia, reporting on its pilot project for date fumigation with the MLF and the UN Industrial Development Organization (UNIDO), asked to consider including the project's positive results with respect to methyl bromide in future reports. Saudi Arabia called for greater emphasis on energy efficiency in future reports.

Noting the effect climate gases have on the ozone layer, the SAP said parties might want more information on it in the next assessment.

Parties took note of the reports.

2015 PROGRESS REPORT OF THE TEAP

On Monday, Co-Chair Rachmawaty introduced this agenda item. Keiichi Ohnishi (Japan), Co-Chair, CTOC, highlighted the Chinese essential-use nomination (EUN) for CTC for 2016 for laboratory and analytical uses. He said that given a revised Chinese national standard, along with a global exemption of the use of ODS for laboratory and analytical purposes that has been extended until 31 December 2021, it is unlikely that a future EUN from China would be submitted.

Mohammed Besri (Morocco), Co-Chair, MBTOC, provided an overview of methyl bromide usage from 1992-2013, saying that since 2008, Article 5 parties' usage has exceeded that of non-Article 5 parties. He also provided an overview of the EUNs and critical-use nominations that have been received. Ian Porter (Australia), Co-Chair, MBTOC, underscored that no nomination was received for the US strawberry industry, indicating that one of the biggest uses of methyl bromide is being phased out.

HOTC Co-Chair David Catchpole discussed the work of the Work Group on Decision XXVI/7 (availability of recovered, recycled or reclaimed halons). He said the "takeaway" messages are that: there are adequate supplies of Halon 1211 currently, and the best option for meeting ICAO dates for onboard Halon 1211 replacement is an HCFC-123 based blend if the substance 2-BTP does not receive regulatory approval; industry is producing aircraft that will not have access to recycled Halon 1301 over their lifetimes; and civil aviation will need new Halon 1311 to be produced in the future.

Argentina thanked the MBTOC for agreeing to meet with its experts about its nomination for methyl bromide use in fruit growing. China asked for patience as it began the process of phasing out CTC use in laboratory and analytical uses. Canada, with the EU, US and Australia, noted it would be providing information on halon use in civil aviation and expressed concern over the lack of development of alternatives.

ISSUES RELATED TO EXEMPTIONS UNDER ARTICLES 2A-2I OF THE MONTREAL PROTOCOL

Co-Chair Rachmawaty introduced this item on Monday afternoon.

NOMINATIONS FOR EUEs FOR 2016: China requested 70 metric tons of CTC for use in 2016 for laboratory and analytical uses to test oil, grease and total petroleum hydrocarbons in water; the same amount has been recommended by the CTOC.

On Thursday, China presented its proposal for a draft decision on a EUE for laboratory and analytical uses for 2016 (UNEP/OzL.Pro.WG.1/36/CRP.1). China explained that it is revising its national standards to eliminate the need for using CTC in testing water quality, but the process was slow and required another request for an EUE covering 2016. The EU and the US asked for informal consultations to suggest adjustments to the text.

Reporting on Friday morning on its informal discussions with the EU and US about its proposal, China said the EU wanted the draft to state that China's standards reform process would be concluded by December 2016, but China explained that a set deadline might be difficult to agree on at this juncture. She reiterated that China accepted the CTOC recommendation for 2016. The EU responded that the CTOC recommendation was not in question, putting an end-point to the reform process was. He recommended returning to the discussion at the MOP.

Outcome: The draft decision (UNEP/OzL.Pro.WG.1/36/CRP.1) will be forwarded to MOP 27 for its consideration.

NOMINATIONS FOR CUEs FOR 2016 AND 2017: There were seven applications from parties.

Seeking protection for strawberry production, Canada asked to discuss their request with the committee in the hope to finalize it by the end of the meeting so that it can be considered at MOP 27. The US reported that they have no more applications for strawberry runners, having made an enormous effort to replace them, leaving just a small amount for dry cured pork.

South Africa took note of the recommendation to implement alternative measures for their CUE, reporting that they had considered some, but found they were not feasible because of impact on sensitive electronic infrastructure in mills and asked the committee to reconsider their recommendation.

Noting that some non-Article 5 parties hold large stocks, the EU encouraged all parties to phase out methyl bromide use. Australia welcomed the recommendation of MBTOC, referring to its research programme for suitable alternatives to ensure they can be sustained. Cuba was critical of excessive use of the substances by non-Article 5 parties saying that they should do everything to reduce this.

ISSUES RELATED TO ALTERNATIVES TO ODS

REPORT BY THE TEAP ON THE FULL RANGE OF ODS ALTERNATIVES: TEAP decision XXVI/9 Task Force Co-Chairs Lambert Kuijpers, Bella Marañon and Roberto Peixoto presented the Task Force's Report. They explained that the report updates information on alternatives, focusing on the refrigeration and air conditioning sector, and revising scenarios of avoiding high global warming potential (GWP) refrigerants, with new emphasis on the length of manufacturing conversion periods. They also considered all relevant topics related to high ambient temperature conditions and updated information on alternatives in the fire protection, MDIs, other medical and non-medical aerosol sectors.

Responding to Saudi Arabia, TEAP said the average GWP of 300 was chosen based on 2020 being selected as the transition start year. In response to China, TEAP said: approximately 10 of the 70 replacement substances being tested likely will end up being selected by the market, and that the timetable for transition will become clearer as testing proceeds; and cost estimates are based on experience with past transitions. Responding to Iraq, TEAP noted projects testing alternatives in conditions up to 55°C, which would provide data shortly on prospects for high ambient temperature conditions.

In response to India, TEAP said that the projected 50% increase in HFC use for 2015-2030 was based on certain average economic growth assumptions for Article 5 countries, which will have to be adjusted over time. TEAP assured: the EU that recent decisions of the MLF Executive Committee have been taken into account; the US that the TEAP was interested in examining more end uses in the final report for MOP 27; and Australia that mitigation scenarios for non-Article 5 countries have been done but were not included since they felt it was more important to focus on the transition for Article 5 countries.

Canada suggested it would be useful for parties to meet with the TEAP to discuss suggestions for improving the report in time for MOP 27. Co-Chair Krajnik asked the Secretariat to arrange a room for such discussions on Wednesday.

On Thursday, Lambert Kuijpers, Task Force Co-Chair, reported that he had held consultations with interested parties on Wednesday regarding the issues to be addressed in an update to the report, which will be issued in September. He said among the issues raised were: clarifying the assumptions made and basis for parameters chosen for all scenarios, particularly the average GWP figure of 300; estimates involving conversion periods longer than six years, and starting later than 2020 or 2025; projections up to 2050, especially if longer conversion periods are considered; more precise analysis and parameters regarding high ambient temperature countries or regions; various cost considerations; and life cycle climate performance assessment of the 70 alternative substances named in the report.

Co-Chair Krajnik said the report back to plenary would be noted in the OEWG 36 meeting report.

UPDATED INFORMATION SUBMITTED BY PARTIES ON THEIR IMPLEMENTATION OF PARAGRAPH 9 OF DECISION XIX/6: This agenda item was introduced by Co-Chair Rachmawaty on Monday afternoon, explaining that Decision XXVI/9 requests parties to continue submitting

information on implementation of Decision XIX/6 (UNEP/Oz.L.Pro.WG.1/36/INF/2). She said that Canada and the US had recently provided information, which was available as an information document. Noting that it provided information on domestic actions, the US inquired into next steps. The Secretariat explained that this would be included in its summary document for MOP 27.

REPORT OF THE INTERSESSIONAL INFORMAL DISCUSSIONS ON THE FEASIBILITY AND WAYS OF MANAGING HFCS

On Tuesday morning Co-Chair Rachmawaty invited the Co-Conveners to report on the results of the intersessional informal discussions. Co-Convener Patrick McInerney (Australia) noted that a full report of the intersessional meeting held in June 2015 in Vienna, Austria, is provided in the non-paper posted on the OEWG 36 webpage. He characterized the Vienna talks as positive and cooperative, noting they have continued as informal talks held during the OEWG on Monday morning and evening and again on Tuesday morning. He requested deferring further plenary discussion until informal talks on Tuesday afternoon, which would try to reach a conclusion.

Co-Chair Rachmawaty thanked the Co-Conveners for their work and announced that OEWG plenary would be suspended until 4:30 pm so that informal talks could continue.

When plenary resumed on Tuesday afternoon, Co-Chair Rachmawaty invited Co-Convener Rafael Da Soler (Brazil) to report on the informal talks earlier that afternoon. He reported that the session concentrated on more substantive issues in terms of how a potential contact group would work on the possibility for managing HFCs. He said that there was room for further advancing this understanding and asked for more time to continue these discussions. Co-Chair Rachmawaty indicated that the informal talks could continue on Wednesday.

On Thursday morning, Co-Convener McInerney reported that the informal group made steady progress, but needed more time. The group reconvened in the evening to continue their deliberations.

On Friday morning, Co-Convener Da Soler reported that the informal meetings are making significant progress and that "there was an increasing mood of convergence in the room." He asked for additional time for the group to meet and report back to plenary, which was agreed to.

Plenary resumed on Friday at 10:38 pm and heard an update on the informal discussions. Co-Convener McInerney summarized that the informal talks had run from Monday before the start of plenary until Friday after 10:00 pm and while they had made steady progress, they unfortunately did not reach a conclusion with three areas where agreement is still outstanding regarding the text for a possible mandate of the contact group. He said the group had recommended that OEWG 36 agree to continue its work intersessionally before MOP 27, understanding that the cost of participation of interested parties would have to be covered. Co-Convener Da Soler noted that parties did make considerable progress and now have a better understanding of each other's positions. Saudi Arabia inquired if the work would continue intersessionally and the US confirmed their

understanding that there would be an additional session. The EU expressed its disappointment that the discussions did not reach a conclusion but said they built a lot of trust, and urged the meeting be held as close to MOP 27 as possible to enable parties to take an active interest.

Co-Chair Rachmawaty confirmed that the work on the agenda item would continue intersessionally with an additional session to be convened prior to MOP 27.

PROPOSED AMENDMENTS TO THE MONTREAL PROTOCOL

Co-Chair Krajnik opened discussions on the proposed amendments relating to HFCs on Tuesday afternoon inviting proponents to present their respective amendments.

Canada presented the 2015 North American proposal on HFC phase-down (UNEP/OzL.Pro.WG.1/36/3) that they submitted with the US and Mexico. She welcomed the increasing number of amendment proposals, noting commonalities and stating that diversity also provides an opportunity to find a solution that works for all parties. Noting the commitment of G7 leaders to negotiate a HFC phase-down this year, Canada explained that the North American proposal follows the architecture of previous amendments, but with a few adjustments to address concerns raised in the past.

Mexico reiterated its support for the North American amendment proposal, and stressed that the proposal's provision for MLF support for conversion from high-GWP HFCs was a condition for Mexico's support.

Prior to presenting its proposal (UNEP/OzL.Pro.WG.1/36/4), India provided background on underlying principles including: equitable access to sustainable development; its right to self-determination; and alternatives should come out of the market. He said their proposal covers 19 HFCs and foresees a 15-year gap in implementation between Article 5 and non-Article 5 countries. He said that for the latter, full conversion costs and loss of profits should be covered, and that there should be exemptions.

The EU discussed the principal elements of its proposal (UNEP/OzL.Pro.WG.1/36/5), the basis for each element, and how they differ from the North American proposal. The EU suggested its approach would bring tangible short-term benefits, prevent the problem from growing, and allow for a more informed decision on long-term reduction steps for Article 5 countries by waiting until 2020 to set their long-term phase-down schedule.

FSM introduced the proposal by the Island States—FSM, Kiribati, Marshall Islands, Mauritius, Palau, the Philippines, Samoa and the Solomon Islands (UNEP/OzL.Pro.WG.1/36/6). He suggested that parties can draw on elements from each proposal to produce a composite amendment. He noted differences from prior FSM amendment proposals, including modifications in the phase-down schedule to coordinate with the HCFC phase-out schedule, and new provisions involving the financial mechanism.

The Philippines stressed that its interest in addressing climate change led to its decision to support the Island States' proposal. Noting a 40% rise in HFC demand in refrigeration and air conditioning since 2012 in its country, Samoa urged support for a HFC amendment and suggested consolidating all four proposals

into a single combined text to ease negotiations. Kiribati noted that the Island States' proposal includes new ideas on financial mechanism support for energy efficiency, training and pilot projects. Palau said the "HFC problem" has to be addressed through an amendment before "it got out of control."

The discussion of proposed amendments to the Montreal Protocol took place on Tuesday afternoon and continued through Friday.

Saudi Arabia queried whether discussion on this agenda item should be held, given that informal discussions on the terms of reference for a contact group are ongoing. Chile, Colombia, the EU, Senegal and the US said that discussion under this agenda item should continue irrespective of the informal discussions. Bahrain, Indonesia, Iraq, Kuwait, Lebanon, Malaysia, Oman, Pakistan, Saudi Arabia, Togo, Uruguay, and Venezuela urged for the informal discussions to first be concluded before opening debate on the amendment proposals.

Samoa, supported by Australia, Chile, Colombia, Georgia, Kenya, the Maldives and Senegal, suggested developing a consolidated text of the amendment proposals to show where more work needs to happen. Cameroon proposed requesting the TEAP to examine the strengths and weaknesses of the proposals and draw up harmonized text to form the basis of discussion.

Co-Chair Krajnik asked delegates to focus the discussion on the proposals and any arising questions.

The discussions held during the week are summarized under each thematic area below.

BASELINES: New Zealand asked all proponents to explain how they calculated their baseline numbers and selected base years. The EU, Norway, Grenada and others requested India, the North American proponents, and the Island States to explain why different baseline years are used in their respective proposals.

The EU explained it chose the proposed baselines proposed in accordance with its own experience and sectoral analysis. Georgia questioned the EU about only using two years of data for determining the HFC consumption baseline. The EU said this was due to the lack of availability of information.

India asked the EU: how does the EU determine the baseline for their proposal; and why does the EU foresee a freeze for developing countries but not for developed ones? He asked the other three proponents about the logic behind their proposed grace periods. The US asked the EU why they calculated their baseline using maximum allowable rather than reported consumption data, and how they envision their proposed freeze for Article 5 countries to work.

The EU responded saying that in order to establish baselines, their intention is to freeze HFC and HCFC levels in 2019, and cap levels at the average annual consumption for 2015 and 2016. Noting that harmony can be found between HCFC phase-out and HFC phase-down, he said that the HCFC phase-out would continue, recognizing that HFC consumption may grow to fill that gap left by the HCFC phase-out. He stated that their approach would be to "start with" a basket of gases, and have parties agree to phase-down steps by 2020. He said using this approach would recognize that alternatives for some applications may not exist.

Mexico said the baselines can be calculated using information from customs authorities and consumption data now being gathered under MLF-funded projects. India asked Mexico how HFC trade data can be collected from customs authorities, when most countries do not yet control HFC trade and therefore probably do not collect such data. India also noted that the MLF is funding surveys on ODS alternatives, not on HFC consumption *per se*. India further underlined the importance of an accurate data set to determine the baseline, since once an amendment is adopted all obligations will be based on it.

Mexico responded that many countries have customs registers tracking imports and exports, including chemical categories, and that the MLF-funded surveys are intended to generate data on consumption of all substitutes, including HFCs. FSM said that the baseline presented in their proposal is based on present refrigerant needs.

FREEZES AND PHASE-DOWNS: The US asked the EU about the rationale behind its freeze and phase-down schedules. The EU outlined its proposed freeze for Article 5 countries and where they would obtain the data for determining the basket of HCFC and HFC gases involved. He added that the phase-down steps would be decided by MOP 32, to be held in 2020. He also clarified that they foresee using the TEAP to provide analysis to guide decisions on a sectoral approach for establishing phase-down steps. Japan asked India to explain how it expects to measure compliance with the proposed freeze. Mexico said the North American reduction schedule was based on the viability of alternatives for certain sectors and the linkage to the HCFC phase-out schedule.

On the Indian proposal, Switzerland asked about its “late start.” Australia queried whether phase-down steps in Article 5 countries will be internationally agreed or nationally determined. The EU asked about the role of MP bodies in reviewing national phase-down steps by Article 5 countries. FSM said that if a phase-down is sequenced gradually, the bulk of the work under the phase-down is possible, and would be able to address issues where there are claims that no alternatives exist “as they come.”

Regarding the Indian question on whether there was a way to address HCFC phase-out if no alternative other than HFC technology exists, the US said that while they accept that there may not be an alternative for every end use, there are sufficient alternatives for enough end uses to start the transition now. He said that the North American proposal, using the phase-down approach, leaves a residual amount for HFC use. He said that through the use of TEAP reviews, the phase-down schedule can be revisited as necessary.

Argentina questioned the North American and EU proposals with regard to differences between reduction and consumption percentages. Mexico explained that the North American proposal relies on a multiplier to take into account conversion from HCFCs to HFCs. The EU pointed to a difference in their proposal regarding the allowed consumption under the phase-out of HCFCs resulting in the difference in reduction steps.

The US, responding to India on why non-Article 5 countries do not have a freeze on HFC levels prior to the phase-down steps, explained that non-Article 5 countries are expected to immediately decrease their HFC usage when the phase-down

begins, thus a freeze would be moot. The US also emphasized that it felt it was appropriate for Article 5 countries to have their HFC levels frozen prior to a planned phase-down being enacted.

On compatibility with HCFC Phase-out Management Plans, FSM said that the first three years of the HFC phase-down proposed by the Island States correspond to HCFC phase-out plans in the respective years. He noted the rationale was to ease planning for a HCFC phase-out and HFC phase-down, and that it could potentially encourage additional funding.

On its amendment proposal, the EU said that earlier freezes would not be feasible or effective given the timeline for the ratification processes required, thus it focused on a “later adoption” of the amendment. He further stated that a baseline has a need to reflect a group of substances in a concrete reference period, which they can then use to apply reduction and/or cap levels. He said that there is a need to give an accurate picture of the chosen reference periods.

ENERGY EFFICIENCY: New Zealand and Colombia asked all proponents how their proposals consider energy efficiency. Australia inquired of the Island States how their proposed article on energy efficiency will be implemented. The EU referred to its explanatory note (UNEP/OzL.Pro.WG.1/36/INF/4), posted on the OEWG 36 meeting website, which discusses energy efficiency and the amendment proposal.

FSM said there were steps to take within the MP context, such as changing current MLF policy, which requires deducting from MLF support any financial returns from energy efficiency, as well as outside the MP, such as working with policy makers to ensure that they align HFC phase-down with policies on appliance efficiency.

India said its proposal highlights the importance of energy efficiency, and would only promote a switch to an alternative chemical if it was more energy efficient. The US suggested that parties discuss with the MLF Secretariat and the TEAP possible ways to target conversion investments to promote further energy efficiency gains.

TECHNOLOGY REVIEW AND TRANSFER: On technology review, Australia and Colombia asked the North American proponents how their proposal would work. The US said that their proposed dates for a technology review would be for the reviews to be held no later than 2025 for non-Article 5 parties and no later than 2030 for Article 5 parties, having been structured to occur between two steps of the phase-down, but not aligned with quadrennial reports. She further stated that the technology review would allow for parties to look at, *inter alia*, what technology is available and its penetration rates, which would then allow for a potential revision to the phase-down schedule if necessary.

Parties, including South Africa and Grenada, questioned how technology transfer will be addressed. Senegal stressed technology transfer and concomitant funding. The EU said that under its proposal technology transfer would be funded under procedures already developed by the MLF. The US said that the MLF already has a long track record of promoting technological conversion, and often costs covered by the MLF include technology transfer and, in some cases, intellectual property rights (IPRs).

FINANCIAL SUPPORT: The US referred delegates to the recent G7 statement calling for the negotiation of a HFC phase-down this year and the necessary financing to support Article 5 countries. In response to Japan and the US, the EU said that by proposing an amendment to Article 10 (financial mechanism), financing and technical assistance would be covered by the MLF, based on agreed incremental costs and existing procedures.

Noting some countries had asked about the order of magnitude of MLF funding foreseen under the North American proposal, Mexico said this could not be determined at this stage without knowing the details of an amendment. Noting that India proposed funding second conversions, the US inquired as to what sectors and conversions it expected to fund.

The US underscored that one of the reasons it wanted to handle HFCs under the MP was the existence of a strong and experienced MLF. In response to Grenada, the US said traditionally the MP did not require substance destruction as a control measure, but noted that the MLF has funded several projects in this regard. FSM, speaking to the Island States' proposal, said that the MLF would be the primary funding mechanism, but other options such as technology transfer could be complementary.

Responding to the comments from the US, India pointed out that for some applications low- or zero-GWP options are not available, so they will have to switch over to higher-GWP options, which could require a later second conversion whose costs would then need to be covered. India said that Article 5 countries' full conversion costs were never covered, with their industries incurring huge costs and, in the case of HFCs, the costs are estimated to be much higher. Grenada repeated its call for institutional and financial support, including funding for disposal of accumulated ODS.

Mexico stated that the proposed mechanisms in the North American proposal also take funding needs into account, underscoring the need for technical conversions to be available as soon as possible. He also said that funds may be needed where they are most urgent or necessary.

INTELLECTUAL PROPERTY RIGHTS: India stressed the importance of IPR provisions for Article 5 countries, saying an HFC phase-down would in many cases entail patents and unknown costs. He also noted that this is why India wants to ensure the MLF covers such costs under full conversion costs. The US suggested that looking at IPRs in North-South terms was not necessarily useful, since some of the alternative technologies are being produced by Article 5 countries.

India said that existing patents are stopping developing countries from developing some technologies, so they either have to be revoked or the additional conversion costs have to be covered. China concurred that IPRs are a major problem for potential HFC conversions. She noted that while new refrigeration technology has been developed, it is very expensive, and while some may be produced in Article 5 countries, the IPRs are not held there, so they cannot determine the price. She pointed to the extended process from development and testing to marketing being very expensive. She shared experiences where

China has claimed a market share, but some regulations related to HFCs could negatively affect that. She asked the EU how they expect them to phase out HCFCs in parallel to a freeze on HFCs.

ALTERNATIVES AND EXEMPTIONS: China said that they support the right to exemptions, saying that China has two sectors of importance for exemptions, namely fire extinguishing and medical applications. The TEAP said that while they know of some areas of fire suppression that pose problems, it should not become a large overarching issue. India reiterated the lack of availability of technologies, pointing to application patents, meaning that no one else can develop the same technology and licenses will have to be purchased. Togo expressed concerns saying that while they are currently equipping a number of buildings with air conditioning, there are few alternatives, but what there are can be cost prohibitive.

SYNERGIES BETWEEN THE MONTREAL PROTOCOL AND THE UNFCCC: India noted that its proposal called for an amendment of the UN Framework Convention on Climate Change (UNFCCC) and Kyoto Protocol (KP) regarding HFCs. The US said the North American proposal makes it clear that the MP amendment is not intended to exempt HFCs from the scope of the UNFCCC or KP.

The EU explained that its proposal would amend Article 1 of the MP to clarify that the HFCs included in the new annex are not to be considered controlled substances, and, as such, are not excluded from the scope of the UNFCCC. The EU said its proposal also explicitly states that the amendment is not intended to exempt HFCs from the scope of commitments under the UNFCCC and KP. FSM said that the Island States' proposal would specify that it would have no effect on the status of HFCs under the KP, nor would it affect the opportunities of parties to the KP to meet their commitments under that instrument.

Pakistan asked how common but differentiated responsibilities (CBDR) figured in the four proposals. The US responded that while CBDR was not cited directly, the MP had always given special considerations to developing countries under Article 5, including a special financial mechanism, and that the North American amendment proposal envisioned a different phase-down schedule, a grace period and more flexibility on licensing systems for Article 5 parties. The EU responded to Pakistan that they have considered CBDR as evidenced by the early start of the phase-out for non-Article 5 countries, followed by a freeze and a later phase-out for Article 5 countries.

Pakistan also questioned how an HFC amendment can fit under the MP since it is not within its scope, noting that that would mean taking on climate change mitigation obligations that currently do not apply to developing countries. He pointed out that HFCs constitute less than 1% of the emissions and focusing on them would mean ignoring priority items.

The US reiterated that the North American proposal addresses the relationship between the UNFCCC and the MP, warning that there is a growing base of installed HFCs and since they are growing rapidly it is cheaper to act now than once there is more investment.

Japan stressed the importance of addressing the questions regarding the relationship between the MP and UNFCCC to ensure consistency and complementarity. The EU suggested a paper be prepared on synergies and legal issues for consideration at MOP 27.

China queried why the North American proposal, on the relationship to the UNFCCC, says that the amendment could be a complementary approach. Indonesia said that it is important to know the ramifications of the amendment proposals well in advance. The US stated that should the amendment be adopted, it would be “nice” for the UNFCCC welcome it, but it is not necessary.

GENERAL COMMENTS: The US asked India why its proposal calls for no controls on feedstock applications of HFCs. Egypt outlined a number of tests being undertaken domestically, which would aid in ascertaining if viable alternatives in the refrigeration sector exist. Burkina Faso recommended including details about funding and associated mechanisms to reassure Article 5 countries. Senegal questioned why the EU proposal did not mention countries with high ambient temperatures.

The Maldives said they supported the Island States’ proposal. Morocco urged considering the environmental impacts of the respective proposals. Noting the move in the negotiations from some countries not wanting to talk about HFCs at all to informals about a process forward, Comoros said that complementarities between the proposals and their respective financial impact should be assessed.

During the plenary on Friday night, Co-Chair Krajnik expressed regret that he had to close the substantive discussion of the agenda item after three days, confirming that the agenda item will be taken up again at MOP 27.

Colombia requested the Secretariat draw up a consolidated document showing the four proposals alongside each other in a single text. This was supported by: Nigeria, Benin, South Africa and Mexico, noting it would help to see areas of convergence and divergence; Norway and Canada, expressing their trust in the Secretariat to do this; and Switzerland, noting the Secretariat had already done a comparative table.

A number of parties opposed the proposal: Kuwait pointed out that the proposals are too different to be combined; Pakistan said the Secretariat should not be put in this position since it is supposed to be objective; and Bahrain and Saudi Arabia noted that they had previously opposed this.

The EU suggested that this could be done as an information document.

The US welcomed the robust debate on the amendment proposals and the many questions asked and regretted that they had not been able to finish the discussion of miscellaneous items.

David Doniger, Natural Resources Defense Council, said that many parties had asked substantive questions on baselines and said they would make an Excel spreadsheet available to enable interested parties to compare the different “CO₂ impacts” of the respective baselines.

Co-Chair Krajnik said that since there was no consensus, the request for a compilation could not be forwarded, but the discussion would be reflected in the report of the meeting.

This agenda item will be taken up again at MOP 27.

ISSUES RELATED TO THE PHASE-OUT OF HCFCs

Co-Chair Krajnik opened the discussions on this agenda item on Tuesday morning, which covers sub-items on: possibilities or need for EUEs with respect to non-Article 5 parties; review of the need for the 0.5% for servicing equipment for the period 2020-2030 with respect to non-Article 5 parties; and consideration of further reductions of production of HCFCs for each party producing for basic domestic needs.

Noting that this agenda item raises issues for non-Article 5 parties, Australia pointed to the lack of information on this issue and expressed readiness to work with other parties on a conference room paper (CRP), asking the TEAP to gather some information and also seek non-Article 5 party input to inform a broader future discussion of the issue. Canada, the US, the EU and Japan welcomed the Australian proposal and expressed willingness to work together with other interested parties.

Regarding the review of the need for the 0.5% for servicing equipment for the period 2020-2030 with respect to non-Article 5 parties, Australia indicated that they might want existing equipment to continue to be serviced until end-of-life, and indicated that this might go beyond the air conditioning and refrigeration sector.

Canada and the EU indicated that they might require exemptions for certain laboratory and analytical uses.

The Co-Chairs indicated that they will wait for the CRP to be submitted to enable further discussion.

On Thursday morning, Australia presented the proposal, also on behalf of Canada and the US, for a draft decision requesting the TEAP for an analysis and inviting parties to provide relevant information. The EU welcomed and supported the CRP.

Outcome: OEWG 36 agreed to forward the draft decision (UNEP/OzL.Pro.WG.1/36/CRP.4) to MOP 27 for its consideration.

MEASURES TO FACILITATE THE MONITORING OF TRADE IN HCFCs AND SUBSTITUTING SUBSTANCES

Co-Chair Rachmawaty introduced this agenda item on Tuesday morning, explaining that the Secretariat had implemented decision XXVI/8 (measures to facilitate the monitoring of trade in HCFCs and substituting substances) by communicating with the World Customs Organization (WCO) to develop codes for trade in HCFCs and substitutes, an issue that the WCO will take up in future sessions. A number of parties welcomed the cooperation between the Secretariat and the WCO.

Israel said it is engaging in a national process to deal with HCFC imports and their customs agency said it is crucial to have such codes. The EU said it is also establishing customs codes and would be ready to share the outcome once the process is complete. Australia informed that they already have an eight-digit customs code.

China said developing such codes is complicated and even then it does not address the need to develop alternatives and combat illicit trade, which requires cooperation. The US asked to see the list of substances the Secretariat shared with the WCO, with Indonesia encouraging the Secretariat to provide information on all substances to the WCO, including HFC blends

that have high GWP. Welcoming the approach to regulating HCFC trade, Togo said that if all exporting countries had a strategy, it would also help importing countries.

Co-Chair Rachmawaty asked the Secretariat to share the list they have communicated to the WCO.

POTENTIAL AREAS OF FOCUS FOR THE ASSESSMENT PANELS' 2018 QUADRENNIAL REPORTS

Co-Chair Krajnik opened the discussion on this item on Tuesday, asking for ideas on what subjects the assessment panels should focus on in their next quadrennial reports, due in 2018.

The EU said it would propose a draft decision on the subject. China urged greater study of methodology and parameters for assessments of potential replacement substances, more analysis of the 2051-2070 period, and a closer look at the potential environmental impacts of hydrofluoroolefins. Australia emphasized appropriate analysis of the interplay between the ozone layer and climate change, and its reciprocal effects.

Saudi Arabia, supported by Kuwait, urged greater focus on the requirements for operating in high ambient temperatures. Saudi Arabia also asked for more discussion on HCFC banks, future training and capacity-building needs, and maintenance requirements. Kuwait called for more consideration of disposal and destruction issues for alternative substances, as well as their recovery and recycling. Argentina requested that when the TEAP and the EEAP assess low-GWP alternatives that they provide more analysis of the conversion impact for Article 5 countries.

The US, supported by Pakistan, suggested a separate discussion session between interested parties and the panel members. Pakistan said it was particularly interested in discussing how panels assess the impacts of alternative substances.

Co-Chair Krajnik suspended further discussion of the agenda item until after the draft decision became available.

On Thursday morning, the EU presented the draft decision, sponsored with Switzerland (UNEP/OzL.Pro.WG.1/36/CRP.2), on potential focus areas for the 2018 quadrennial reports, requesting assessments on, *inter alia*: the effects of changes in the ozone layer on human health and the environment; the state of the ozone layer and its future evolution; and the impact of ODS phase-out on sustainable development.

Australia, Canada and the US welcomed the draft decision, but stressed the need to consult further with the assessment panels and domestically.

Pakistan, Bahrain and Kuwait said the draft decision covers matters beyond the scope of the MP, with Saudi Arabia and India asking for more time to consult.

China suggested that the draft decision be revised to: focus research on issues closely linked to the ozone layer; prioritizing tasks, with some to be categorized as primary, some secondary and some optional; and focus reports on issues likely to improve Protocol implementation.

Switzerland noted that draft decisions are usually examined by parties at the OEWG and also discussed intersessionally and at the subsequent MOP. He said that decisions are based on the

fullest possible knowledge, and that the review every four years allows parties to be apprised of the most up-to-date information, upon which they can then base decisions.

The EU also introduced the draft decision on releases of ODS from production processes and opportunities for reducing such releases (UNEP/OzL.Pro.WG.1/36/CRP.3). The US noted that while the key concern seems to be the discrepancy between reported CTCs and the occurrence in the atmosphere, the draft decision's focus is broader, addressing all ODS and their by-production in any chemical process. The EU replied that when talking about feedstock there are other ODS concerned and indeed they want to look at all ODS and their co- and by-production. The EU noted that the discrepancy was large requiring further information and study and that this would not impose any obligations at this stage. China questioned the data pointing to a large discrepancy.

Australia said that if this issue was to be discussed at MOP 27 it should be under a separate agenda item and not the terms of the reference for the assessment panels' 2018 quadrennial report.

Referring to previous MOP decisions, India pointed out that production from feedstock is an excluded use under the MP and strongly opposed the proposal. Pointing to MOP decision IV/12 (clarification of the definition of controlled substances) requesting parties to take steps to reduce such emissions and make process changes, Switzerland urged discussions of the content of the draft decision so the large discrepancies can be analyzed, not just those related to CTCs and feedstock.

Noting that there is no way to monitor the proposed emissions under the MP since they are not covered, Argentina opposed forwarding the draft decision to the MOP. China urged intersessional work, which the EU expressed readiness to engage in.

Co-Chair Krajnik asked the EU to confer with other delegations. On Friday morning, the EU reported that consultations on the draft decision regarding the potential areas of focus for the 2018 quadrennial reports (UNEP/OzL.Pro.WG.1/36/CRP.2) had been fruitful, and what was needed was time to reflect on the comments and put them into a revised text. He promised a revised draft decision would be made available a week before the preparatory segment of MOP 27 and invited any interested party to submit comments before then. India said it would provide comments intersessionally.

The EU also reported on informal consultations with Argentina, China, India and Japan on the draft decision on ODS releases from production processes (UNEP/OzL.Pro.WG.1/36/CRP.3), saying that a revised text would be submitted to the MOP.

CLOSURE OF THE MEETING

On Friday evening, Co-Chair Rachmawaty presented the draft report of the meeting (UNEP/OzL.Pro.WG.1/36/L.1, Add.1, Add.2 and Add.3). Delegates adopted the report with minor amendments. Co-Chair Rachmawaty declared the meeting suspended at 11:47 pm, noting that another session of OEWG 36 would be convened prior to MOP 27.

A BRIEF ANALYSIS OF OEWG 36

LE TOUR D'OZONE

Life is like riding a bicycle—in order to keep your balance, you must keep moving. – Albert Einstein

SOLID START – FIRST OUT THE GATE

OEWG delegates convened in Paris, the city awaiting the arrival of the most famous bicycle race in the world, the Tour de France, at a milestone in ozone history. 2015 marks the 30th anniversary of the Vienna Convention for the Protection of the Ozone Layer—one round of “le tour d’ozone,” so to speak. With 197 parties who have ratified the Vienna Convention, its Montreal Protocol and subsequent amendments, amounting to universal ratification makes it the most broadly ratified and implemented multilateral environmental agreement. The Montreal Protocol has successfully reduced ozone depleting substances, starting with CFCs and halons, then carbon tetrachloride and methyl bromide, followed by HCFCs, the phase-out of which is still underway. This year marked further milestones, as no essential-use exemptions for metered dose inhalers were received and the number of critical-use exemptions declined.

At this OEWG session, the Scientific Assessment Panel underscored that the Montreal Protocol has gone the long, steady distance since its start: ODS are declining and the ozone layer is continuing to heal; but challenges remain such as a rapid increase in HFCs that have been used as a replacement substance, some of which have a high global warming potential. These are words that ring loudly in Paris, a city gearing up for the upcoming crucial climate change conference starting on 30 November 2015. The building momentum and pressure could also be felt at this meeting, with many eyes on the Montreal Protocol’s next time trial addressing HFCs, whose finish could contribute to addressing the climate change challenge.

OEWG 36 spent much of its time focusing on moving the discussion on HFCs management forward. It was the first time substantive, rather than just procedural, discussions on aspects of the amendments had been held in a formal setting. There were also informal discussions to try and establish terms of reference for a contact group to continue this discussion. Both of these discussions hoped to build on the sound footing of the Protocol, buoyed by its previous successes. This brief analysis looks at the discussions on the HFC amendments in the context of the history of the ozone regime, and assesses whether its history of success will ultimately help the current peloton of delegates move the Montreal Protocol into its next stage.

THE CHALLENGE OF CHANGING TIMES IN A MULTI-STAGE RACE

The Vienna Convention itself has weathered changing times. In the first half of its life, it saw the negotiation of the Montreal Protocol followed by four amendments, including the pivotal London (1990) and Copenhagen (1992) amendments and adjustments focusing on CFCs and HCFCs respectively—the early stages of the multi-stage “tour d’ozone.”

A future HFC amendment could be compared to those in order of magnitude. All previous amendments were negotiated over a

relatively brief period of time by many of the same negotiators who brought the Protocol into being. Compelling scientific evidence, such as the 1988 Ozone Trends Panel Report, surely played an important role in propelling parties into action, even when some replacement technologies were not yet available.

Similarly the Intergovernmental Panel on Climate Change (IPCC)/TEAP special report on safeguarding the ozone layer and global climate system, which was part of the Fourth Assessment Report of IPCC that won the 2007 Nobel Peace Prize, was the first to spark broader awareness about the chemical and radiative effects of HFCs. The report pointed to the complex two-way interactions between stratospheric ozone and climate and also sparked concern about HFCs, which by then had been deployed as a replacement substance for HCFCs under the Montreal Protocol. Arguably the Protocol is not only in the best position to deal with a phase-down of HFCs with high GWP, but also has a responsibility to be actively involved in this process since it played a role in increasing the use of HFCs in the first place.

The question that remains is how to move to the next stage, namely addressing HFCs.

With the last amendment having been negotiated over 15 years ago, many delegations have not retained the institutional memory of negotiating amendments that could help guide parties through this difficult terrain. But as some delegates pointed out what parties have now is an institutional memory and experience of implementation. Notably, countries have the experience of what worked and what was missing from previous amendments and their implementation, most notably with issues of financing, technology transfer and IPRs.

Another concern that came to the fore was how a number of Article 5 countries felt rushed in the previous amendment negotiations. A seasoned delegate was heard commenting that due to this perception, a number of parties felt like they may have lost out in the process, suggesting that this included not having Article 5 countries’ financial concerns fully addressed. This might underlie some of the anxieties of parties about undergoing another round of Montreal Protocol amendment negotiations and the call to have their concerns addressed first before considering amendment proposals. It might also explain the mistrust by some delegations who questioned certain proponents’ assurances that issues critical to other parties, such as full funding for conversions and providing for exemptions where viable alternatives are not yet widely available on the market at a reasonable price, will be adequately dealt with in the upcoming negotiations.

This anxiety and mistrust could be noted in the informal discussions about how to address HFCs, with much time being spent on discussing and listing concerns, which some delegations insisted had to be addressed first before considering amendment proposals. Others, however, said that they did not share these concerns and expressed confidence that any and all issues could be raised within a contact group.

Many delegates pointed to the lead role that the Montreal Protocol can take by addressing HFCs. HFCs are not ODS but rather greenhouse gases, many with high global warming potential. There is growing agreement among delegates that the Montreal Protocol is best positioned to address the increase in

HFCs due in large part to its use as a replacement substance. Many delegates noted that no other convention has the infrastructure to address the issue and that the Montreal Protocol is best positioned to address the challenge having sound footing and processes for replacing substances, and providing funding for transition in Article 5 countries through the Multilateral Fund, that have been built and strengthened over the decades and that other conventions simply do not have.

TAKING ANOTHER TURN

Many viewed it as an achievement that OEWG 36 held a substantive exchange on the amendment proposals to air some of the prevailing concerns and issues. Parties were able to query proponents and seek clarifications about the proposals and thereby prepare themselves for future negotiations. This was achieved by separating the discussion about the mandate for a contact group, which proceeded in informal consultations and reported regularly to plenary and, on the other hand, having a separate agenda item on the amendment proposals, which were discussed in detail in plenary, component by component, over the better part of three days—something never before done in either the OEWG or the MOP.

Most delegates welcomed that there are now four proposals that have been submitted by about 40 parties. This in itself was seen by many as evidence of a growing momentum in favor of an HFC amendment. Generally, there seems to be a growing consensus that HFCs should be addressed under the Montreal Protocol, with parties acknowledging this in substantive discussions in plenary and getting close to agreement on a process going forward.

Delegates also recognized that the four HFC amendment proposals currently on the table also differ significantly but, as one delegate noted, there is opportunity in this diversity, with delegates now able to pick and choose components from each so that they can create an amendment that balances parties' different concerns. Among the critical issues that need to be worked out are the baselines and timelines for an HFC phase-down. As some Article 5 countries pointed out, the HCFC phase-out in non-Article 5 countries is almost complete, while they themselves are still in the midst of it. One delegate was heard pointing to the fear of Article 5 countries carrying a double burden as another reason for resistance to quick timelines. Some parties were concerned that overlapping phase-downs of HCFCs and HFCs could place undue pressure on their industries and negatively affect national economic growth.

Building on these first substantive discussions, now might be the moment in time for the Montreal Protocol to reassert its role and responsibility in the interplay between safeguarding the ozone layer and the global climate system. It will remain to be seen if delegates can use the momentum offered by the concern over climate change to speed up the tour d'ozone and set the agenda for the next 30 years to come.

UPCOMING MEETINGS

54th Meeting of the Implementation Committee under the Non-compliance Procedure for the Montreal Protocol:

This meeting will consider issues related to non-compliance and parties returning to compliance. **dates:** 27-28 July 2015 **location:** Paris, France **contact:** Ozone Secretariat **phone:** +254-20-762-3851 **fax:** +254-20-762-4691 **email:** ozoneinfo@unep.org **www:** <http://conf.montreal-protocol.org/>

24th International Congress of Refrigeration (ICR 24):

The International Institute of Refrigeration (IIR) will hold ICR 24 under the theme "Improving Quality of Life, Preserving the Earth." The IIR is a 58-country intergovernmental organization that promotes knowledge of refrigeration and associated technologies to address today's major issues, including reduction of global warming and prevention of ozone depletion. **dates:** 16-22 August 2015 **location:** Yokohama, Japan **contact:** Secretariat, Japan Society of Refrigerating & Air Conditioning Engineers **phone:** +81-3-3219-3541 **fax:** +81-3-3219-3577 **email:** icr2015@ics-inc.co.jp **www:** <http://www.icr2015.org/>

ADP 2-10: The tenth part of the second session of the UNFCCC *Ad Hoc* Working Group on the Durban Platform for Enhanced Action (ADP) will continue to develop a protocol, another legal instrument or an agreed outcome with legal force under the Convention applicable to all parties, which is supposed to be adopted by the 21st Conference of the Parties (COP 21) in December 2015. **dates:** 31 August - 4 September 2015 **location:** Bonn, Germany **contact:** UNFCCC Secretariat **phone:** +49-228-815-1000 **fax:** +49-228-815-1999 **email:** secretariat@unfccc.int **www:** <http://unfccc.int/meetings/session/9056.php>

CCAC Working Group Meeting: This Working Group meeting, which oversees the cooperative actions of the Climate and Clean Air Coalition to Reduce Short-Lived Climate Pollutants (CCAC), is scheduled to launch CCAC's 2014-15 Annual Report, issue the CCAC five-year strategic plan, private sector package on SLCPs, and discuss CCAC's role in the "Road to Paris," i.e., the UNFCCC's Paris COP. **dates:** 8-9 September 2015 **location:** Paris, France **contact:** CCAC Secretariat **phone:** +33-1-44-37-14-50 **fax:** +33-1-44-37-14-74 **email:** ccac_secretariat@unep.org **www:** <http://www.ccacoalition.org/>

Global Aviation Partnerships on Emissions Reductions

(E-GAP) - Multiplying Environmental Action: This forum is being organized by the International Civil Aviation Organization (ICAO) to highlight the results achieved thus far through partnerships between ICAO, governments and other organizations that are focused on reducing greenhouse gas (GHG) emissions from international aviation. The seminar will cover current and potential action in the following areas: aircraft technology and research programmes; recycling of aircraft; next generation air navigation and green operations; sustainable alternative fuels and renewable energy; financing for aviation environmental activities; and carbon markets. Initiatives formed as a result of the seminar will be presented to the UNFCCC COP in December 2015. **dates:** 16-17 September 2015 **location:**

Montreal, Quebec, Canada **contact:** ICAO **phone:** +1-514-954-8219 **fax:** +1-514-954-6077 **email:** e-gap@icao.int **www:** <http://www.icao.int/Meetings/EGAP/Pages/default.aspx>

ICCM4: The Fourth International Conference on Chemicals Management (ICCM4) will consider the Overall Orientation and Guidance, progress in achieving the objectives of the Strategic Approach to International Chemicals Management's (SAICM) Overarching Policy Strategy, existing emerging policy issues (EPIs), the nomination of environmentally persistent pharmaceutical pollutants as a new EPI, highly hazardous pesticides, and chemicals management beyond 2020. **dates:** 28 September - 2 October 2015 **location:** Geneva, Switzerland **contact:** SAICM Secretariat **phone:** +41-22-917-8532 **fax:** +41-22-797-3460 **email:** saicm.chemicals@unep.org **www:** <http://www.saicm.org>

International Conference on Climate Action (ICCA): Local Governments Driving Transformation: ICCA will highlight the strategic role that municipalities play in combating climate change, recognizing that many have developed successful measures to reduce GHG emissions. The Conference will serve as a platform for exchanging the know-how that subnational governments have acquired through policy creation and implementation. **dates:** 1-2 October 2015 **location:** Hannover, Germany **contact:** adelphi, Conference Secretariat **phone:** +49-30-89-000-68-18 **fax:** +49-30-89-000-68-10 **email:** contact@icca2015.org **www:** <http://www.icca2015.org/>

Workshop on "Solving the Mystery of Carbon Tetrachloride": The World Climate Research Programme (WCRP) workshop aims to bring together science, industry, and technology experts to exchange information and to coordinate research activities across disciplines to try to resolve the unexplained discrepancy between estimated carbon tetrachloride sources and sinks with abundance observations. The WCRP is jointly sponsored by the World Meteorological Organization, the Intergovernmental Oceanographic Commission of the UN Educational, Scientific and Cultural Organization, and the International Council for Science. **dates:** 5-6 October 2015 **location:** Zurich, Switzerland **contact:** Kathy Thompson **email:** work@kathyathompson.com **www:** <http://www.sparc-climate.org/activities/emerging-activities/>

IPCC 42: The 42nd session of the Intergovernmental Panel on Climate Change (IPCC) is expected to start the process to develop the sixth Assessment Report (AR6) and elect a new Chair. **dates:** 5-8 October 2015 **location:** Dubrovnik, Croatia **contact:** IPCC Secretariat **phone:** +41-22-730-8208/54/84 **fax:** +41-22-730-8025/13 **email:** IPCC-Sec@wmo.int **www:** <http://www.ipcc.ch>

Second Annual Meeting of the Innovation for Cool Earth Forum (ICEF): The second annual Innovation for Cool Earth Forum (ICEF) is being held with a view to addressing climate change through innovation. Hosted by the Japanese Government, the event will bring together policymakers, business leaders and researchers for "an energy- and environment-focused version of the World Economic Forum." Organizers of the event are working with the French Presidency of the Conference of the Parties (COP) to the UNFCCC to make the event an important milestone on the road to a global climate agreement at COP 21

in December 2015. **dates:** 7-8 October 2015 **location:** Tokyo, Japan **contact:** ICEF Secretariat **phone:** +81-3-3263-4040 **email:** icef-reg@congre.co.jp **www:** <http://www.icef-forum.org/>

ADP 2-11: The eleventh part of the second session of the UNFCCC *Ad Hoc* Working Group on the Durban Platform for Enhanced Action (ADP) will continue to develop a protocol, another legal instrument or an agreed outcome with legal force under the Convention applicable to all parties, which is supposed to be adopted by COP 21 in December 2015. **dates:** 19-23 October 2015 **location:** Bonn, Germany **contact:** UNFCCC Secretariat **phone:** +49-228-815-1000 **fax:** +49-228-815-1999 **email:** secretariat@unfccc.int **www:** <http://www.unfccc.int>

27th Meeting of the Parties to the Montreal Protocol: MOP27 is scheduled to consider a number of issues, including *inter alia:* the quadrennial assessment reports of SAP, TEAP and EEAP; TEAP's report on the full range of alternatives to ODS; HFC management; nominations for critical- and essential-use exemptions; and issues related to HCFC phase-out. **dates:** 1-5 November 2015 **location:** Dubai, United Arab Emirates **contact:** Ozone Secretariat **phone:** +254-20-762-3851 **fax:** +254-20-762-0335 **email:** ozoneinfo@unep.org **www:** <http://conf.montreal-protocol.org/>

UNFCCC COP 21: UNFCCC COP 21 and associated meetings will take place in Paris. **dates:** 30 November - 11 December 2015 **location:** Paris, France **contact:** UNFCCC Secretariat **phone:** +49-228-815-1000 **fax:** +49-228-815-1999 **email:** secretariat@unfccc.int **www:** <http://www.unfccc.int>

For additional meetings, see <http://climate-l.iisd.org/> and <http://chemicals-l.iisd.org/>

GLOSSARY

CFCs	Chlorofluorocarbons
COP	Conference of the Parties
CRP	Conference room paper
CTC	Carbon tetrachloride
CTOC	Chemicals TOC
CUEs	Critical-use exemptions
EEAP	Environmental Effects Assessment Panel
EUEs	Essential-use exemptions
FSM	Federated States of Micronesia
GWP	Global warming potential
HCFCs	Hydrochlorofluorocarbons
HFCs	Hydrofluorocarbons
HTOC	Halons TOC
IPRs	Intellectual property rights
MBTOC	Methyl Bromide TOC
MDIs	Metered dose inhalers
MLF	Multilateral Fund
MOP	Meeting of the Parties
MP	Montreal Protocol
ODS	Ozone depleting substances
OEWG	Open-Ended Working Group
SAP	Scientific Assessment Panel
TEAP	Technology and Economic Assessment Panel
TFA	Trifluoroacetic acid
TOCs	Technical Options Committee