

SUMMARY OF THE TWENTY-EIGHTH MEETING OF THE PARTIES TO THE MONTREAL PROTOCOL: 10-14 OCTOBER 2016

The twenty-eighth Meeting of the Parties to the Montreal Protocol on Substances that Deplete the Ozone Layer (MOP 28) met from 10-14 October 2016, in Kigali, Rwanda. Over 500 participants from governments, UN agencies, intergovernmental and non-governmental organizations, academia, and industry attended the meeting.

MOP 28's primary decision was to adopt the Kigali Amendment, which amended the Protocol to include hydrofluorocarbons (HFCs) as part of its ambit. MOP 28 also adopted a number of substantive and procedural decisions. Substantive decisions included: essential-use exemptions (EUEs) and critical-use exemptions (CUEs); and the Terms of Reference (TOR) for the study on the 2018-2020 replenishment of the Multilateral Fund (MLF). Procedural decisions adopted include: budget; organizational issues related to the Technology and Economic Assessment Panel; and membership of Montreal Protocol bodies.

MOP 28 immediately followed a one-day resumed session of the 38th Open-ended Working Group (OWWG 38), where parties agreed to continue work in a contact group on the feasibility and ways of managing hydrofluorocarbons (HFC Management Contact Group) and established a Legal Drafting Group to formulate legal text on an amendment for the MOP's consideration.

During the week, the main agenda item was the Dubai pathway on HFCs, under which parties were mandated to continue negotiations with a view to agreeing on an amendment in 2016. Over the course of the week, many heated discussions took place and parties "went to the brink and back" before the Kigali Amendment was agreed to at 6:54 am on Saturday morning.

A BRIEF HISTORY OF THE OZONE REGIME

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

held in March 1977 adopted a World Plan of Action on the Ozone Layer and established a Coordinating Committee to guide future international action.

VIENNA CONVENTION: Negotiations on an international agreement to protect the ozone layer were launched in 1981 under the auspices of UNEP. In March 1985, the Vienna Convention for the Protection of the Ozone Layer was adopted. It called for cooperation on monitoring, research and data exchange, but it 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 Montreal Protocol, which entered into force in January 1989. The Montreal Protocol introduced control measures for some CFCs and halons for developed countries (non-Article 5 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, representing universal ratification.

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

LONDON AMENDMENT AND ADJUSTMENTS: Delegates to the second Meeting of the Parties to the Montreal Protocol (MOP 2), held in London, UK, in 1990, tightened control schedules and added ten more CFCs to the list of ODS, as

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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 (ImpCom) to examine possible non-compliance and make recommendations to the MOP aimed at securing full compliance.

MONTREAL AMENDMENT AND ADJUSTMENTS:

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

BEIJING AMENDMENT AND ADJUSTMENTS:

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

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 meeting was the first at which delegates considered a proposal to amend the Protocol to include hydrofluorocarbons (HFCs) submitted by the Federated States of Micronesia (FSM) and Mauritius.

MOP 22: MOP 22 took place in Bangkok, Thailand, in 2010, and adopted decisions on, *inter alia*: the terms of reference (TOR) for the Technology and Economic Assessment Panel (TEAP) study on the MLF replenishment and the evaluation of the financial mechanism; and assessment of technologies for ODS destruction. Delegates also considered 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: The Ninth Conference of the Parties (COP 9) and 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 servicing ships; and additional information on alternatives. Delegates also discussed the two proposed amendments to the Protocol to address HFCs.

MOP 24: MOP 24 took place in Geneva, Switzerland, in 2012, and adopted decisions on, *inter alia*, the review by the Scientific Assessment Panel (SAP) of RC-316c, a CFC not controlled by the Montreal Protocol; 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 an HFC amendment to the Montreal Protocol.

MOP 25: MOP 25 was held in Bangkok, Thailand, in 2013. The MOP adopted 21 decisions, including on: TOR for the study of the 2015-2017 MLF replenishment; implementation of the Montreal Protocol 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 Montreal Protocol 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 (HAT) and safety requirements, as well as energy efficiency.

MOP 27: Held immediately after the two-day resumed session of OEWG 36, MOP 27 met from 1-5 November 2015, in Dubai, United Arab Emirates. Delegates adopted a number of substantive and procedural decisions. These included: essential-use and critical-use exemptions (EUEs and CUEs); avoiding the unwanted import of products and equipment containing or relying on HCFCs; the budget; and membership of Montreal Protocol bodies for 2016.

The two-day resumed session of OEWG 36 agreed on a mandate for a contact group on the feasibility and ways of managing HFCs (HFC Management Contact Group). The Contact Group was established at MOP 27 and met throughout the week. Following protracted negotiations that concluded in the early hours of Friday morning, parties adopted the Dubai pathway on HFCs (Dubai pathway), a "roadmap" for negotiating an HFC amendment including provisions for an additional OEWG meeting and an extraordinary MOP (ExMOP) in 2016.

OEWG 37: OEWG 37 convened in Geneva, Switzerland, from 4-8 April 2016. Delegates heard an update from the TEAP on ODS alternatives. The remainder of the meeting focused on the work of the HFC Management Contact Group, under the mandate outlined in the Dubai pathway on HFCs. Parties concluded a first review of the challenges listed in the mandate, including discussing a conference room paper (CRP) on funding issues, reaching an "in principle" agreement on an exemption for countries with HAT conditions as part of an HFC amendment, which includes the definition of HAT. OEWG 37 was suspended with a view to generating solutions to challenges at a resumed session.

RESUMED OEWG 37, OEWG 38 AND EXMOP 3: OEWG 37, OEWG 38 and ExMOP 3 convened back-to-back in Vienna, Austria from 15-23 July 2016.

The resumed session of OEWG 37 continued its discussions on the feasibility and ways of managing HFCs. It concluded its work on generating solutions to the stated challenges contained in the Dubai pathway.

OEWG 38 considered, *inter alia*: the report by the TEAP on updated and new information on ODS alternatives; the TEAP 2016 report; issues related to exemptions under Article 2 of the Protocol; and the TOR for the study on the 2018-2020 MLF replenishment. Parties also continued work in the HFC Management Contact Group, starting consideration of the four amendment proposals from North America, the Island States, India and the European Union. As parties were unable to conclude their work, OEWG 38 was suspended, to be concluded immediately prior to MOP 28.

ExMOP 3 considered issues contained in the Dubai pathway. The meeting convened a ministerial roundtable entitled "Moving Forward to Deliver in 2016 on the Mandate of the Dubai Pathway on HFCs." Parties also heard national statements and updates

on the work of the HFC Management Contact Group. Delegates adopted a decision for the TEAP report to MOP 28 to assess the climate benefits and MLF financial implications of proposed HFC phase-down schedules.

MOP28 SUMMARY

PREPARATORY SEGMENT

OEWG 38 Co-Chair Paul Krajnik (Austria) opened the preparatory segment of MOP 28 on Monday, 10 October. Vincent Biruta, Minister of Natural Resources, Rwanda, reflected that the Protocol's long history of international cooperation and commitment had led to the phase-out of ODS. Biruta urged delegates to adopt an ambitious amendment on HFCs, saying such action could avoid up to half a degree of warming by the end of the century and up to a full degree of warming if accompanied by strong efforts to promote energy efficiency.

Tina Birmpili, Executive Secretary, Ozone Secretariat, thanked Amina Mohamed (Malaysia) and Blaise Horisberger (Switzerland) for their contributions to the process, noting their participation for the last time. She concluded by urging delegates to reach an amendment that will contribute to a healthier planet and people.

OEWG 38 Co-Chair Leslie Smith (Grenada) introduced the agenda (UNEP/OzL.Pro.28/1) and organization of work, which delegates adopted without amendment.

TEAP REPORT ON UPDATED AND NEW

INFORMATION ON ODS ALTERNATIVES: OEWG 38 Co-Chair Smith introduced this item on Monday. TEAP Co-Chair Bella Maranion (US) noted that the updated report responds to comments on HAT criteria, and provides: further information on HFC production; updated tables for total, new manufacturing, and servicing demand; and new and updated information on the availability of alternatives for foam blowing agents, metered-dose inhalers (MDIs) and aerosols.

TEAP then highlighted, *inter alia*, that: the refrigerants and blends information remains unchanged compared to previous reports; the report provides a limited review of the OEWG 37 proposal to define HAT countries; and that completely avoiding HFC MDIs is not yet technically or economically feasible.

Responding to questions, TEAP explained difficulties in obtaining reliable data on: country-level HFC production; processing costs of HFCs vs. hydrofluoroolefins (HFOs); and regional availability and market penetration of alternatives. TEAP said projecting emissions from leaks will require further investigation. They underscored that parties have historically taken important decisions with incomplete information, stressing the Protocol's practice of regular reviews allows for updates.

Co-Chair Smith left the agenda item open and encouraged parties to engage in informal dialogue with the TEAP.

During Tuesday morning's plenary, Co-Chair Smith returned to this agenda item. The European Union (EU) thanked TEAP for the new segments on foam blowing agents, aerosol MDIs and the standards process, and expressed optimism that challenges on each will be overcome.

On Wednesday, Co-Chair Smith invited additional comments. Egypt stressed the need for the TEAP to research leakages in the refrigeration appliance manufacturing and maintenance industries and to investigate how to calculate and quantify these amounts. He also requested the TEAP to conduct additional research on the most appropriate refrigeration and air conditioning (RAC)

alternatives, especially in situations where developing countries could expect to shoulder the economic burden. Noting no further interventions, Co-Chair Smith closed this agenda item.

TEAP REPORT ON ASSESSMENT OF THE CLIMATE BENEFITS AND FINANCIAL IMPLICATIONS OF THE HFC PHASE-DOWN SCHEDULES IN THE AMENDMENT PROPOSALS: Co-Chair Smith introduced this agenda item on Monday morning. TEAP Senior Expert Lambert Kuijpers outlined the definitions the TEAP had applied to the study, noting that some information in the report was based on closed informal discussions.

TEAP Co-Chair Maranion presented the following estimated climate benefits by 2050 for the four proposed non-Annex 5 phase-down schedules: 10,690 megatonnes (Mt) carbon dioxide equivalent (CO₂e) for the North American proposal; 11,500 Mt CO₂e for the EU proposal; 10,000 Mt CO₂e for the Indian proposal; and 12,470 Mt CO₂e for the Island States' proposal.

For the proposed Article 5 phase-down schedules, Maranion presented the following estimated climate benefits and costs to the MLF by 2050: 75,850 Mt CO₂e for the North American proposal, costing US\$3,440-5,250 million; 53,260 Mt CO₂e for the EU proposal, costing US\$5,580-8,540 million; 26,130 Mt CO₂e for the Indian proposal, costing US\$9,300-14,220 million; and 74,890 Mt CO₂e for the Island States' proposal, costing US\$4,550-6,950 million. She noted the report considers manufacturing conversion costs but not other costs such as those associated with project preparation, institutional strengthening, and capacity building.

Responding to questions, TEAP said it: used customary assumptions about leakage emissions; finds HFC consumption hard to forecast; did not calculate climate benefits for actions regarding HFC-23; did not calculate the climate impacts of the HAT proposal, which is not yet finalized; did not look at the impact of proposed late Article 5 baselines; and is aware of a recent report on the cumulative costs of an HFC phase-down, and is discussing internally whether this approach is an appropriate way to consider the amendment proposals.

TEAP also stated: it had not received guidance on taking equipment disposal costs into account in its calculations and would have to investigate if this calculation is possible; and that analyzing the climate benefits of the different proposals for individual regions and countries is "an enormous task."

Canada highlighted: more than 50 gigatonnes difference in cumulative CO₂e emissions between the different proposals; that considering interim targets would yield higher climate benefits; and cumulative environmental benefits need not imply cumulative costs. The EU stressed that a five-year phase-out delay implies a doubling of the annual HFC climate impact by 2030 and suggested that the EU proposal's climate benefits would have been higher, and costs lower, if the TEAP had adopted several different assumptions. Saudi Arabia underlined the need to consider the "bigger picture" and national circumstances.

During Tuesday morning's plenary, Co-Chair Smith recalled this agenda item had been left open to allow further reflection on the report. Saudi Arabia, supported by Argentina, Benin, Egypt, the Gambia, Jordan and Kuwait, called for all costs of conversion from HFCs to be estimated by the TEAP, and for disclosure of what factors are included in the calculations. Rwanda also requested additional financing information.

The US and Australia said that until parties define the scope of an amendment, it is difficult for the TEAP to provide exact figures. The US also underscored the TEAP's finding that early

reduction and freeze dates have the highest benefit and lowest cost. Mexico welcomed the report's estimates as a starting point, reflecting that the TEAP can refine its figures in the future.

OEWG 38 Co-Chair Krajnik closed this agenda item on Wednesday, as there were no further comments.

TEAP/SAP REPORT ON ANALYSIS OF THE DISCREPANCIES BETWEEN OBSERVED ATMOSPHERIC CONCENTRATIONS OF AND REPORTED DATA ON CTC: OEWG 38 Co-Chair Smith introduced this item on Monday. SAP Co-Chair Paul Newman (US) explained the recent Stratosphere-troposphere Processes and their Role in Climate (SPARC) report identifies four emission pathways that together account for 20 +/-5 gigagrams per year (Gg/yr) CTC, while observation-based estimates indicate 35 +/-15 Gg/yr, suggesting the CTC budget can be considered reconciled.

Newman said that SAP/TEAP recommendations include that parties: create a TEAP/SAP working group for estimating CTC emissions in support of their quadrennial assessments; hold a joint TEAP/SAP workshop to further evaluate emissions pathways and improve methodologies for estimating bottom-up CTC emissions; and request the Ozone Secretariat to forward the SPARC report's research suggestions to the Vienna Convention's Ozone Research Managers for consideration in their next report.

As there were no further comments, OEWG 38 Co-Chair Smith closed the agenda item.

OTHER MATTERS: On Tuesday morning, OEWG 38 Co-Chair Smith informed that the United Arab Emirates (UAE) had requested to make an intervention. The UAE said that its country has suspended its request to submit a CRP at MOP 28 but stated it will raise the UAE's eligibility for technical and financial support at MOP 29. He described the UAE's current and historic compliance with the Montreal Protocol, without any MLF assistance, despite its eligibility for such assistance. He underscored challenges related to the availability and feasibility of alternatives suitable for HAT countries, which he said will require additional and exceptional efforts that the UAE government cannot manage on its own. Saudi Arabia and Bahrain expressed support for the UAE's eligibility for financial and technical assistance.

Reminding delegates that this topic is not under discussion at this time, Co-Chair Smith proposed addressing it at the forthcoming OEWG and MOP. Delegates agreed.

HIGH-LEVEL SEGMENT

Acting MOP 27 President Lucie Desforges (Canada) opened the High-Level Segment (HLS), welcoming UNEP Executive Director, Erik Solheim, and President of Rwanda, Paul Kagame, to the "ozone family." She emphasized the time has come to deliver on the Dubai pathway and reach an agreement that works for all.

Solheim called on delegates to draw inspiration from the Montreal Protocol's history, reminding delegates the Protocol is the world's most successful environmental agreement and stressing that no one nation can address HFCs on its own. He urged delegates to be flexible but ambitious.

President Kagame urged delegates to be ambitious and not only seek to "get an amendment done," but to do it well. He noted that prior Protocol controls were imposed without sacrificing economic progress and posited that the same would prove true for HFCs. He urged including action toward significantly improving energy efficiency in appliances using coolants in the amendment.

Organizational Matters: The MOP 28 Bureau was elected by acclamation as follows: as President, Vincent Biruta (Rwanda); as Vice Presidents, Abdulbasit Sairafi (Saudi Arabia), Andrei Pilipchuk (Belarus), and Elias Gómez Mesa (Dominican Republic); and as rapporteur, Mikkel Sørensen (Denmark).

Delegates adopted the agenda (UNEP/OzL.Pro.28/1) without amendment. Plenary agreed to the organization of work as outlined by MOP 28 President Biruta.

Credentials of Representatives: On Thursday, MOP 28 President Biruta requested parties to submit credentials for inspection by the Bureau. On Friday afternoon, the Ozone Secretariat reported that the Bureau had approved the credentials of representatives from 95 out of a total of 142 countries represented at the meeting. He noted that the Bureau had agreed to provisionally approve the participation of 47 other parties who had not submitted credentials, on the understanding that these parties would provide their credentials as soon as possible. He urged parties attending future meetings to make best efforts to submit their credentials, noting that non-submission could lead to preclusion from full participation, including the right to vote.

PRESENTATIONS BY THE ASSESSMENT PANELS ON PROGRESS IN THEIR WORK AND ANY EMERGING ISSUES: This agenda item was addressed on Thursday afternoon. SAP Co-Chairs David Fahey (US) and Bonfils Safari (Rwanda) provided an overview of the ongoing 2018 assessment, which is currently in preparation, noting that it will address, *inter alia*, the reappearance of the Antarctic ozone hole in 2016 and the TEAP/SAP CTC budget analysis. Fahey noted topics previously addressed will be updated, and highlighted the expected recovery of global ozone to 1980 levels by mid-century, stressing future projections will depend on actions by parties on control of substances.

Environmental Effects Assessment Panel (EEAP) Co-Chair Janet Bornman (Australia) presented updates from the Panel that respond to party requests at MOP 27. She highlighted that ozone model simulations under different greenhouse gas (GHG) emission scenarios indicate different trends in UV radiation, with UV radiation increasing in some regions and producing a range of effects on human health, natural ecosystems and agriculture. EEAP Co-Chair Nigel Paul (UK) described additional effects from UV exposure, including on aquatic ecosystems and changes in plastics and wood materials.

TEAP Co-Chair Ashley Woodcock (UK) presented for TEAP, highlighting, *inter alia*: the International Civil Aviation Organization (ICAO) has approved a requirement to replace halons in cargo bays in all new aircraft designs by 2024; CFC phase-out in MDIs will be achieved in 2016; and the Russian Federation will phase out CFC solvents in aerospace applications in 2016, completing the global phase-out.

PRESENTATION BY THE MLF EXCOM CHAIR ON THE WORK OF THE MLF EXCOM, THE MLF SECRETARIAT AND THE FUND'S IMPLEMENTING AGENCIES: On Thursday, Agustin Sánchez Guevara (Mexico), Chair, MLF ExCom, presented the Report of the ExCom since MOP 27 (UNEP/OzL.Pro.28/10), highlighting the MLF's decisions, activities and achievements, and noting funding approval for 142 HCFC Phase-out Management Plans (HPMPs), 14 Stage II HPMPs, an HCFC production phase-out management plan for China, and 144 country surveys of ODS alternatives.

MINISTERIAL ROUNDTABLE: Towards an Agreement on an HFC Amendment under the Montreal Protocol Addressing the Remaining Issues: On Thursday, this ministerial

roundtable, moderated by Johnston Barkat, UN Assistant Secretary-General and UN Ombudsman, took place. The roundtable session featured statements and a panel discussion.

An in-depth summary of Thursday's Ministerial Roundtable is available at: <http://www.iisd.ca/vol19/enb19130e.html>

Ensuring benefits for all: On Friday, MOP 28 President Vincent Biruta opened the session, with delegates observing one minute of silence in memory of King Bhumibol Adulyadej of Thailand.

Moderator Johnston Barkat invited panelists to consider why an HFC amendment is important to them, and how such an amendment can benefit everyone.

Noting the environment knows no boundaries, Batio Bassière, Minister of Environment, Burkina Faso, stressed the need to consider future generations and vulnerable peoples. Andrew Yatilman, Director, Office of Environment and Emergency Management, FSM, highlighted GHG reduction, energy efficiency and Sustainable Development Goal benefits from an HFC phase-down.

Martha Garcíarivas, Under-Secretary for Environmental Protection, Mexico, outlined potential economic advantages from an HFC phase-down and highlighted the important role of the MLF. Hakima El Haite, Minister of the Environment, Morocco, highlighted benefits from preventing 0.5°C temperature rise including with regard to mitigating: sea level rise, forced migration and food insecurity.

Jayadev Joshi, Minister of Population and Environment, Nepal, stressed the need for: assurances the MLF would provide support to developing countries; and commercially-viable and environmentally-friendly alternative technologies. Vidar Helgesen, Minister of Climate and Environment, Norway, said challenges in negotiating the amendment "are imminently solvable," and stressed benefits to all if there is an early and fast HFC phase-down. Helgesen further stressed energy efficiency measures could help to prevent a full degree of global warming.

Norbert Kurilla, State Secretary, Slovakia, called for an agreement that: includes an early phase-down commencement; ensures inclusivity and ownership of all parties; and provides for flexibility that respects and addresses differences effectively.

Responding to moderator Barkat's question about the implications of a failure to agree on an HFC amendment in Kigali, panelists stated that signals on climate change need to be consistent, meaning a failure in Kigali could: pose a huge risk to the climate process; possibly damage the Paris Agreement's credibility; and create hesitancy among investors to make key investments to combat climate change. Panelists underscored that all parties win if there is an amendment, the momentum built up by recent decisions that address GHG emissions, such as those by the International Maritime Organization and ICAO, should be built upon, and "failure is not an option."

STATEMENTS BY HEADS OF DELEGATION: On Thursday and Friday, ministers and other heads of delegation addressed the plenary. John Kerry, US Secretary of State, described the adoption of an amendment on HFCs as the single biggest action to address climate change this year. He emphasized his country's commitment to an agreement on HFCs, and to invest in the outcomes, including through financial and technical assistance. He concluded by urging delegates to "bet on the future of the planet and human ingenuity" by adopting an ambitious HFC amendment in Kigali.

Malaysia said an amendment should recognize the need for financial assistance for Article 5 parties. Sri Lanka urged for an amendment to recognize the special needs of developing

countries. Luxembourg announced that his country will provide additional resources to the MLF to assist developing countries in implementing any HFC commitments agreed.

Costa Rica said her country's membership in the High Ambition Coalition has motivated it to take every opportunity possible to limit global GHG emissions, including adopting an ambitious HFC amendment.

Ethiopia urged delegations not to leave Kigali without ensuring a better future. Indonesia encouraged parties to show further flexibility on baselines, formulas, phase-down schedules, and financial support.

Samoa stressed the need for capacity building in the RAC sector and noted concerns related to the fisheries industry. FSM noted issues remained to be resolved but expressed confidence that an HFC phase-down would be the Montreal Protocol's next success. Italy warned that, without an HFC amendment, past and ongoing climate efforts would be undone.

Mauritius expressed satisfaction with the openness that had characterized the previous days' deliberations, saying transparency and consensus have become trademarks of the ozone process.

Canada noted movement towards an ambitious but feasible amendment and announced her country's readiness to host MOP 29 in Montreal for the HFC amendment's first anniversary and thirtieth anniversary of the Protocol.

Japan said the amendment should allow parties to choose in which sectors they continue to use HFCs, alternatives should be chosen on the basis of energy efficiency and safety and not just global warming potential (GWP), and all financing for HFC amendment implementation should be as efficient and effective as possible.

Afghanistan expressed hoped for adoption of an amendment in 2016 that has a 2017 baseline, a 2024 freeze date and a "reasonable" phase-down schedule for Article 5 countries. Maldives requested assistance in adopting low-GWP alternatives to HCFCs, particularly in the fisheries sector.

The International Institute of Refrigeration urged coordinating efforts to phase down HFCs with other international energy initiatives, as RAC energy consumption and efficiency is key for any energy strategy.

An in-depth summary of Thursday's statements is available at: <http://www.iisd.ca/vol19/enb19130e.html>

CLOSING PLENARY: The final plenary session resumed as the Preparatory Segment plenary at 1:00 am on Saturday morning, after the HFC Management Contact Group ended its work on Friday evening and allowed time for parties to consult on the draft amendment text and address other outstanding agenda items. Parties initially addressed the draft amendment text, which continued until 6:54 am. The Preparatory Segment and HLS, respectively, then approved and adopted the "Kigali Amendment." The Preparatory Segment plenary then approved the other outstanding CRPs.

The HLS plenary then reconvened and considered the draft report and compilation of decisions of MOP 28 (UNEP/OzL.Pro.28/L.1, UNEP/OzL.Pro.28/L.1/Add.1 and UNEP/OzL.Pro.28/L.2). On Friday afternoon, it had approved and adopted sections of the MOP 28 report, where possible.

After going through the remainder of the documents section-by-section, delegates adopted the documents with minor corrections.

EU thanked Lambert Kuijpers, retiring member of the Refrigeration, Air-Conditioning and Heat Pumps TOC and TEAP, for his important contribution over many years.

MOP 28 President Biruta, noting the adoption of the reports and decisions, as well as the achievement of adopting the Kigali Amendment, closed the HLS at 8:05 am, exclaiming “we have done it!”

MOP 28 OUTCOMES

Unless otherwise stated, all draft decisions submitted for MOP 28’s consideration are contained in document UNEP/OzL.Pro.28/3 and were adopted on Saturday morning. The final decisions can be found in document UNEP/OzL.Pro.28/L.2.

ADMINISTRATIVE MATTERS: Consideration of Membership of Montreal Protocol Bodies for 2017: On Monday, OEWG 38 Co-Chair Krajnik requested parties to submit their nominations for membership of the 2017 ImpCom and MLF ExCom, as well as for the OEWG 39 Co-Chairs, referring delegates to document UNEP/OzL.Pro.28/2. OEWG 38 Co-Chair Smith reminded delegations on Wednesday to submit their nominations so that these could be forwarded to the HLS.

The HLS adopted the nominations on Saturday morning.

Members of the Implementation Committee: In its decision (XXVIII/[BB]), the MOP confirms the positions of Bangladesh, Canada, Haiti, Kenya, and Romania as members of the ImpCom for one further year. The MOP also selects Republic of Congo, Georgia, Jordan, Paraguay, and UK as members of the Committee for a two-year period beginning on 1 January 2017.

The MOP also notes the selection of Brian Ruddle (UK) to serve as President and Marindany Kirui (Kenya) to serve as Vice President and Rapporteur of the Committee for one year beginning on 1 January 2017.

Members of the MLF ExCom: In its decision (XXVIII/[CC]), the MOP decides to endorse Australia, Austria, Belgium, Germany, Japan, Slovakia, and US as members of the MLF ExCom representing non-Article 5 parties. It also endorses the selection of Argentina, Bosnia and Herzegovina, Cameroon, China, Lebanon, Mexico, and Nigeria as members representing Article 5 parties.

It also notes the selection of Paul Krajnik (Austria) to serve as Chair and Mazen Hussein (Lebanon) to serve as Vice Chair for one year beginning 1 January 2017

Co-Chairs of the OEWG: In its decision (XXVIII/[DD]), the MOP endorses the selection of Cindy Newberg (US) and Cheikh Ndiaye Sylla (Senegal) as Co-Chairs of OEWG 39.

Financial report of the Trust Fund and Budgets for the Montreal Protocol: On Monday, OEWG 38 Co-Chair Krajnik invited parties to indicate their interest in participating in a committee to review proposed budgets (UNEP/OzL.Pro.28/4, UNEP/OzL.Pro.28/4/Corr.1 and UNEP/OzL.Pro.28/4/Add.1) and prepare a draft decision. The Budget Committee met throughout the week, chaired by Ives Enrique Gómez Salas (Mexico) and Jean Clarke (Ireland).

On Saturday morning, Budget Committee Co-Chair Clarke introduced the draft decision, noting that the Committee had approved Option 2 in the Secretariat’s paper and recommended the CRP for adoption and approval by the MOP. The HLS adopted the decision.

Final Outcome: In its decision (UNEP/OzL.Pro.28/CRP.8), the MOP decides to, *inter alia*:

- approve the revised 2016 budget in the amount of US\$6,772,162 and the 2017 budget of US\$5,355,004;
- reaffirm that a working capital reserve shall be maintained at 15% of the annual budget to meet the final expenditures under the Trust Fund, noting such a reserve shall be in the amount

of US\$803,251 for 2017 and a proposed reserve for 2018 of US\$824,779;

- approve total contributions to be paid by the parties of US\$4,276,933 for 2016 and US\$5,756,630 for 2017;
- take note of the contributions of US\$5,910,915 for 2018 as set out in the annex to the MOP 28 report, noting that the contributions of individual parties for 2017 and indicative contributions for 2018 are also listed in this annex;
- note with concern that a number of parties have not paid their contributions for 2016 and prior years and urge those parties to pay both their outstanding contributions and their future contributions promptly and in full, particularly as the Fund balance has been significantly depleted;
- request the Executive Secretary and invite the MOP President to enter into discussions with any party whose contributions are outstanding for two or more years with a view to finding a way forward, requesting that the Executive Secretary report to MOP 29 on the outcome of these discussions;
- further consider how to address outstanding contributions to the Trust Fund at its next meeting and request the Executive Secretary to continue to publish and regularly update information on the status of contributions to the Protocol’s Trust Funds;
- invite parties to provide additional voluntary contributions to the Trust Fund “Support of the Activities of the Ozone Secretariat” for any unbudgeted meetings;
- encourage parties to contribute to the Trust Fund “Support of the Activities of the Ozone Secretariat” with a view to ensuring the full and effective participation of Article 5 parties in the MOP and the OEWG;
- encourage parties and other stakeholders to contribute financially and by other means to assist the members of the assessment panels and their subsidiary bodies to ensure their continued participation in the assessment activities under the Protocol; and
- request the Secretariat to indicate in future financial reports of the Trust Fund the amounts of cash on hand in the section entitled “Total reserves and fund balances” in addition to contributions that have not yet been received.

ISSUES RELATED TO EXEMPTIONS UNDER

ARTICLES 2A–2I OF THE MONTREAL PROTOCOL:

Nominations for EUEs for 2017: On Monday, OEWG 38 Co-Chair Smith introduced the single EUE nomination for 2017 (UNEP/OzL.Pro.28/3, draft decision XXVIII/[A]) from China for 65 metric tonnes of CTC, reminding delegates that it was discussed at OEWG 38. Delegates agreed to forward the draft decision to the HLS, where it was adopted Friday afternoon without amendment.

Final Outcome: In its decision (XXVIII/[A]), the MOP authorizes the proposed 65 metric tonnes of CTC and:

- encourages China to complete revision of its relevant national standard on testing of oil, grease and total petroleum hydrocarbons in water and to ensure that a revised national standard is brought into force as soon as possible; and
- requests China, prior to submitting any further requests for EUEs for use of ODS in the testing of oil, grease and total petroleum hydrocarbons in water, to provide information on: its evaluation of the use of other international analytical methods for such testing; the national circumstances that make using them difficult; progress in developing its own method and in revising the relevant national standard; and a timeline for phasing out CTC for laboratory and analytical uses.

Nominations for CUEs for 2017 and 2018: On Monday, OEWG 38 Co-Chair Smith introduced nominations for CUEs (UNEP/OzL.Pro.28/2/Add.1), noting five parties had submitted seven nominations for methyl bromide CUEs.

The Methyl Bromide Technical Options Committee (MBTOC) presented its recommendations for the five parties plus two emergency use nominations, one from Israel for museum artifacts and one from Jamaica for a flour mill. The MBTOC expressed concern that Article 5 parties may not be reporting all stocks and that only one party had provided a national management plan. South Africa, Canada and Australia described their efforts to reduce methyl bromide use, and indicated interest in working in a small group on the draft decision on CUEs.

On Wednesday, Argentina, Australia, Canada, China, and South Africa submitted UNEP/OzL.Pro.28/CRP.4 on this agenda item. Australia explained that the CRP followed the format of past MOP decisions on CUEs and reflected MBTOC recommendations. After the EU requested more time to reflect on the CRP, Co-Chair Smith encouraged interested parties to consult informally. On Friday the HLS approved a revised CRP (UNEP/OzL.Pro.28/CRP.4/Rev.1) resulting from the consultations.

Final Outcome: In its decision (UNEP/OzL.Pro.28/CRP.4/Rev.1), the MOP permits, for the agreed critical use categories for 2017 and 2018 for each party and subject to relevant conditions, the levels of production and consumption for 2017 and 2018 that are necessary to satisfy critical uses.

It further decides that:

- parties shall endeavor to license, permit, authorize, or allocate quantities of methyl bromide for critical uses as listed in Table A of the annex;
- each party that has an agreed CUE shall renew its commitment to ensuring that the relevant criteria are applied in licensing, permitting or authorizing critical uses of methyl bromide; and
- each party shall report on the implementation of the decision to the Ozone Secretariat by 1 February for the years that the decision applies.

The annex decision contains two tables. Table A lists agreed critical use categories for Australia (strawberry runners) for 2018, and Argentina (strawberry fruit and tomatoes), Canada (strawberry runners), China (ginger) and South Africa (mills and structures) for 2017. Table B sets out corresponding permitted levels of production and consumption.

TOR FOR THE STUDY ON THE MLF 2018–2020

REPLENISHMENT: OEWG 38 Co-Chair Smith introduced this item (UNEP/OzL.Pro.28/2, Annex) on Monday, announcing that the relevant contact group would meet before plenary returned to this item.

The Contact Group convened on Tuesday, co-chaired by Obed Baloyi (South Africa) and Philippe Chemouny (Canada). Co-Chair Baloyi recalled that parties had completed two readings of the TOR at OEWG 38 in July 2016, and invited “creative views” on how to resolve the remaining outstanding issues.

Delegates disagreed as to whether to refer to the special needs of small and medium-sized enterprises (SMEs) in the context of agreed control measures, with one country highlighting that Article 5 parties have many such enterprises whose needs should be considered. Several others noted this issue is addressed in the ExCom’s guidelines. Parties were also unable to agree on whether to refer to Article 5 parties’ meeting their 2020 “and 2025” compliance obligations with respect to Article 2F (HCFCs) of the Protocol, with some suggesting the relevant sub-paragraph be deleted. The question of whether reference should be made to

“full” support for low-GWP alternatives remained unresolved. One Article 5 party supported referencing low “or zero” GWP alternatives.

During a report to plenary on Wednesday, Co-Chair Baloyi requested additional time to allow the Contact Group to continue its work and further requested that the group’s meetings not be held in parallel with meetings of the Budget Committee. OEWG 38 Co-Chair Krajnik indicated these requests would be accommodated.

Parties continued their reading of the draft TOR on Wednesday afternoon. They continued to disagree on whether to delete a sub-paragraph on allocating resources to enable Article 5 parties to meet their 2020 and 2025 compliance obligations with respect to Article 2F, with one party supporting its retention given significant challenges faced by Article 5 countries. Delegates were also unable to agree on whether to retain a paragraph on the need to allocate sufficient resources for activities in the servicing sector in HPMPs. Some noted a decision by the ExCom renders this paragraph obsolete while others stressed the importance of this issue for certain Article 5 countries.

Co-Chair Chemouny encouraged delegates to ensure the TOR are not used “as an opportunity to make new policy recommendations.” He said the Co-Chairs would consult Article 5 countries not present to enable a decision on whether to delete references to the years 2020 and 2025. Co-Chair Baloyi noted that more time would be requested to finalize the decision and encouraged delegates to meet bilaterally to resolve outstanding issues.

The Contact Group reconvened Friday morning. Delegates supported deleting a sub-paragraph on the need to allocate sufficient resources to activities in the servicing sector of HPMPs given the recent ExCom decision. After some deliberation, delegates agreed to a new sub-paragraph on provision by the TEAP of indicative figures of the resources required for phasing out HCFCs that could enable Article 5 parties to encourage the use of low or zero GWP alternatives, to replace bracketed text on this topic. Co-Chair Chemouny proposed introducing a placeholder paragraph on HFCs, pending agreement on an amendment, to which delegates also agreed.

The Contact Group met to finalize the decision on Friday evening. Following agreement of the HFC Management Contact Group, delegates were able to agree to inclusion of a paragraph on enabling Article 5 countries to carry out initial activities related to the phase-down of HFCs. They also agreed to retain a reference to SMEs and on other outstanding issues. Co-Chair Baloyi thanked delegates for their commitment and work in Vienna and Kigali.

Reporting on the Contact Group’s work during the closing plenary on Saturday morning, Co-Chair Chemouny said the draft decision’s guidance to the TEAP is roughly in line with past decisions for similar studies. He noted the draft requests a comprehensive estimate of the 2018-2020 MLF replenishment, taking into account key party considerations, and addresses control measures related to HFC phase-down. He introduced a minor oral amendment. Parties then agreed to forward the draft decision to the HLS.

Final Outcome: In the final decision (UNEP/OzL.Pro.28/CRP.9), the MOP decides, *inter alia*:

- to request the TEAP to prepare a report for submission to MOP 29, and to submit it through OEWG 39, to enable MOP 29 to take a decision on the appropriate level of the 2018-2020 MLF replenishment;

- that, in preparing the report, the TEAP should take into account, *inter alia*: all control measures and relevant decisions agreed upon by parties, in particular those pertaining to the special needs of low volume- and very-low-volume-consuming countries, in addition to SMEs; the need to allocate resources to enable all Article 5 parties to meet and/or maintain compliance with Articles 2A–2E (CFCs, halons, other fully integrated CFCs, CTC, and methyl chloroform), 2G (hydrobromofluorocarbons), 2H (methyl bromide), 2I (bromochloromethane) and 2J (HFCs) of the Protocol; as well as the need to allocate resources to enable all Article 5 parties to meet compliance obligations relevant in the 2018-2020 replenishment period with respect to Article 2F of the Protocol;
- that the TEAP should provide indicative figures of the resources within the estimated funding required for phasing out HFCs that could be associated with enabling Article 5 parties to encourage the use of low- or zero-GWP alternatives, and indicative figures for any additional resources that would be needed to further encourage the use of low- or zero-GWP alternatives;
- the need for additional resources to enable parties operating under paragraph 1 of Article 5 to carry out initial activities related to the phase-down of HCFCs listed under Annex F and controlled under Article 2J; and
- that the TEAP should provide indicative figures for the periods 2021-2023 and 2024-2026 to support a stable and sufficient level of funding, on the understanding that those figures will be updated in subsequent replenishment studies.

PROPOSAL TO ESTABLISH AN *AD HOC* STANDARDS

COORDINATION GROUP: OEWG 38 Co-Chair Krajnik introduced this agenda item (UNEP/OzL.Pro.28/3, draft decision XXVIII/[B]) on Monday. Delegates agreed to a request from China that a further exchange of views be held before the draft decision was forwarded to the HLS. Informal consultations were held on Tuesday.

Krajnik invited a report-back on Tuesday's discussions during Wednesday morning's plenary. China said many delegates had proposed amendments, noting numerous issues remained to be resolved. She requested more time for additional deliberations.

During Saturday morning's closing plenary, President Biruta invited China to report on progress. China said the CRP had been through several rounds of discussion and had been finalized. He expressed hope that the joint efforts of governments, industry, standard bodies, and other stakeholders would allow standards barriers to be removed as soon as possible. Delegates agreed to forward the decision to the HLS for adoption.

Final Outcome: In the final decision (UNEP/OzL.Pro.28/CRP.7), the MOP aims to support the timely revision of standards for flammable, low-GWP refrigerants and zero-GWP and low-GWP refrigerants that are alternatives to HCFCs and HFCs, and decides to, *inter alia*:

- request the TEAP to: establish a task force to: liaise with standards organizations to support the timely revision of the IEC 60335-2-40 standard and ensure that the requirements for categories are revised synchronously; submit a report on safety standards relevant for low-GWP alternatives to OEWG 39; and provide relevant findings to the standards bodies;
- request the Ozone Secretariat to organize a workshop on the safety standards relevant to the safe use of low-GWP alternatives back-to-back with OEWG 39 within existing resources;

- urge parties to consult and work with their industries and standards bodies to support the timely completion of the processes of developing new standards, harmonizing existing standards and revising current standards with a goal of completing these efforts by the end of 2018;
- invite parties to submit information on their domestic safety standards relevant to the use of low-GWP flammable refrigerants to the Ozone Secretariat by the end of 2016; and
- request the MLF's ExCom to consider maintaining or increasing the Fund's technical and capacity-building assistance with a view to improving cooperation between national authorities in charge of Protocol implementation and national and regional standards committees.

COMPLIANCE AND DATA REPORTING ISSUES: On Monday, ImpCom President Iftikhar-ul-Hassan Gilani (Pakistan) reported on the 56th and 57th ImpCom meetings (UNEP/OzL.Pro.28/9/Add.1-UNEP/OzL.Pro/ImpCom/57/2/Add.1), highlighting the ImpCom's "light agenda" due to widespread compliance. He presented three draft decisions (UNEP/OzL.Pro.28/CRP.1/Rev.3) on: non-compliance with its data and information reporting obligations by Israel; data and information provided by the parties in accordance with Article 7 of the Protocol; and non-compliance by Guatemala in 2014 with Montreal Protocol provisions governing consumption of HCFCs. Delegates agreed to forward the draft decisions to the HLS, where they were adopted on Saturday morning without amendment.

Final Outcome: All three final decisions are contained in UNEP/OzL.Pro.28/CRP.1/Rev.3. In its decision on **the non-compliance of Israel**, the MOP notes with concern that Israel has not:

- reported on its use of controlled substances as process agents in 2014 and 2015; and
- provided the information required under paragraph 3 of decision XXII/20 (Treatment of stockpiled ODS) on the measures in place to avoid the diversion to unauthorized uses of 17.3 ODP-tonnes of excess production of bromochloromethane stockpiled in 2014.

The MOP also:

- expresses its concern about Israel's repeated failure to respond to the requests for information recorded in ImpCom recommendations 55/4, 56/5 and 56/7;
- requests Israel to submit this information to the Secretariat no later than 31 March 2017; and
- requests the ImpCom to review Israel's situation at its 58th meeting.

In its decision on **data and information** provided by the parties in accordance with Article 7 of the Montreal Protocol, the MOP:

- notes with concern that Iceland, Israel and Yemen have not reported their 2015 data as required under Article 7 of the Montreal Protocol;
- urges the three countries to report the required data as quickly as possible, and urges Yemen, where appropriate, to work closely with the implementing agencies in reporting the required data; and
- requests the ImpCom to review the situation of the three parties at its 58th session.

In its decision on **non-compliance in 2014 by Guatemala** with Montreal Protocol provisions governing HCFC consumption, the MOP:

- notes that despite Guatemala's revision of its 2013 data, it remains in non-compliance for 2013;

- notes that Guatemala's data corrections for 2013 and 2014 will not change any of the benchmarks already agreed in decision XXVI/16;
- notes that Guatemala's 2015 data indicates the country has already returned to compliance with Protocol control measures;
- urges Guatemala to work with the relevant implementing agencies to implement the remainder of the plan of action in decision XXVI/6; and
- requests the ImpCom to continue monitoring Guatemala's progress in implementing the plan of action, and, to the extent that it works towards meeting the specific Protocol control measures, treat Guatemala in the same manner as a party in good standing, including by allowing Guatemala to continue to receive international assistance to meet commitments.

TEAP MEMBERSHIP: On Monday, OEWG 38 Co-Chair Smith said Brazil and India had submitted TEAP membership nominations and recommended these countries take the lead in preparing a CRP for parties' consideration. Delegates agreed. During plenary on Wednesday morning, Smith informed delegates that a CRP has been submitted and said plenary would return to the issue once parties had had time to review the CRP.

During Saturday morning's closing plenary, MOP 28 President Biruta noted that Brazil had coordinated with the US, India and other countries on TEAP membership, and that nominations for Brazil, Georgia, India, Kazakhstan, Kyrgyzstan, Moldova, Tajikistan, Turkmenistan, and the US could be found in UNEP/OzL.Pro.28/CRP.6. The UK noted his country's nomination of Adam Chattaway to Co-Chair the Halons Technical Options Committee (HTOC), replacing David Catchpole. Delegates agreed to forward the draft decision as amended by the UK for adoption.

Final Outcome: In the final decision (UNEP/OzL.Pro.28/CRP.6), the MOP decides to thank the TEAP for its outstanding reports and the individual members of the Panel for their outstanding service and dedication. The MOP further decides to endorse the following four-year appointments: Rajendra Shende (India) as TEAP Senior Expert; Paulo Altoé (Brazil) as Co-Chair of the Flexible and Rigid Foams TOC; and Daniel Verdonik (US) as Co-Chair of the HTOC. Bella Maranion (US) is appointed TEAP Co-Chair for an additional four-year term. Adam Chattaway is appointed HTOC Co-Chair.

ISSUES RELATED TO THE HCFC PHASE-OUT: On Monday, OEWG 38 Co-Chair Krajnik introduced this issue. Canada informed that a small group of parties will submit a CRP. The UAE said his country may submit a CRP and requested time for consultation.

Recalling that the agenda item is in relation to a decision on issues faced by non-Article 5 countries, the US requested clarification from Saudi Arabia and the UAE. Saudi Arabia responded that the HFC Management Contact Group is considering baselines calculated using both HCFC and HFC components.

Co-Chair Krajnik suggested postponing discussion until the CRPs are available.

On Tuesday, Co-Chair Krajnik said that Australia, Canada, Japan, and the US had submitted a CRP (UNEP/OzL.Pro.28/CRP.3).

On Saturday morning, Canada informed her country had met informally with several parties to discuss the document and had submitted UNEP/OzL.Pro.28/CRP.3/Rev.1. Co-Chair Krajnik proposed forwarding the CRP to the HLS for adoption, to which delegates agreed.

Final Outcome: In its decision (UNEP/OzL.Pro.28/CRP.3/Rev.1) the MOP decides to, *inter alia*: request the TEAP, in relation to Annex C, Group I, substances:

- to continue to assess sectors, including subsectors, if any, where essential uses for non-Article 5 parties may be needed after 1 January 2020, including estimations of the volumes of HCFCs that may be needed;
- to continue to assess the servicing requirements for RAC equipment and any other possible needs in other sectors between 2020 and 2030 for non-Article 5 parties; and
- to continue to review recent volumes of production of each of the HCFCs to satisfy basic domestic needs, and to make projected estimates of such future production and estimated needs of Article 5 parties to satisfy basic domestic needs beyond 1 January 2020.

The MOP also requests the TEAP to invite parties to provide relevant information to the Ozone Secretariat by 15 March 2017 for inclusion in the TEAP's assessment; and requests the TEAP to submit its report to OEWG 39 in 2017.

AVAILABILITY OF RECOVERED, RECYCLED OR RECLAIMED HALONS: On Monday, OEWG 38 Co-Chair Smith introduced this issue, noting there had been no submissions. He suggested closing the agenda item. Delegates agreed.

DATES AND VENUE FOR MOP 29: On Friday morning, Canada offered to host MOP 29 in Montreal, the birthplace of the Protocol and home of the MLF. She reminded delegates that Canada hosted the MOP during the Protocol's 10th and 20th anniversaries and that 2017 would be the Protocol's 30th anniversary.

MOP 28 President Biruta said the Secretariat would consult with Canada about dates and insert them into the draft decision (UNEP/OzL.Pro.28/3, Draft decision XXVIII/[EE]) before conveying it to the HLS for adoption.

Delegates did not revisit the decision during the closing plenary.

DUBAI PATHWAY ON HYDROFLUOROCARBONS

Negotiations on the Kigali Amendment took place under this agenda item. The majority of discussions took place in the HFC Management Contact Group, co-chaired by Patrick McInerney (Australia) and Xia Yinxian (China), which met throughout the week. A number of small group and informal discussions, as well as Article 5 and non-Article 5 party consultation sessions also took place. The Contact Group established a Legal Drafting Group (LDG), facilitated by Brian Ruddie (UK), to draft legal text in parallel to the Contact Group discussions to allow legal text to be reviewed and approved as negotiations progressed.

Discussions began on Monday morning, with a report from the Co-Chairs on progress. The MOP then asked the Contact Group to continue its deliberations. During the week, the MOP also referred a number of CRPs for consideration by the Contact Group, including on energy efficiency, ExCom guidelines related to an HFC amendment, and consideration of HFCs not listed as controlled substances.

The HFC Management Contact Group ended its work on Friday evening, after which parties were afforded the time to review the draft amendment text before the final plenary session. During the final plenary session, participants reviewed the amendment text article-by-article. The Contact Group concluded its work in the early hours of Saturday morning, forwarding the proposed amendment to the MOP 28 HLS for adoption.

This section summarizes the discussions that took place during MOP 28 and the principal elements of the Kigali Amendment. Discussion is organized by topic, in order of amended articles.

PREAMBLE: The US proposed a text addition on recognizing the adoption of an amendment to address adverse climate effects from the transition to ODS, similar to the preamble reference in the Dubai pathway. Following questions, the US withdrew its proposal and requested it be noted in the meeting report.

ARTICLE 1 (DEFINITIONS): MOP 28 updated this article to reflect the inclusion of HFCs as listed in Annex F.

ARTICLE 2J (HFCs): The Kigali Amendment amends Article 2 (Control Measures) to include reference to HFCs, as well as to include a new sub-article, Article 2J on HFCs. Within this sub-article, a number of issues are addressed, including baselines and freeze dates. These aspects are further discussed below.

Baselines: On Monday evening, the Contact Group discussed the non-Article 5 proposal for baselines. Some Article 5 parties questioned why there was not scope for more ambition. In response, several non-Article 5 parties explained what they felt the proposal went as far as possible. The Russian Federation said a 2018 baseline year for non-Article 5 parties is not reasonable for countries like his and Belarus because entry into force and adoption of implementing regulations would require three years.

In the Tuesday contact group session, Kuwait, for Article 5 parties, proposed a two-track baseline set for Article 5 parties, one averaging consumption for the years 2020, 2021 and 2022, the other averaging consumption for the years 2024, 2025 and 2026.

The US and Switzerland sought clarity on certain aspects of the Article 5 proposal. China explained that Article 5 parties have very diverse positions and that having two baselines would allow each country to make a choice appropriate to its national circumstances. She said China considers 2020-2025 to be a reasonable timeframe, and that Argentina and Brazil have agreed to reach the baseline earlier than 2023. With regard to the HCFC component in baselines, she noted the same principles cannot be applied to Article 5 and non-Article 5 parties.

The EU said non-Article 5 parties are willing to consider a two-track approach for Article 5 parties but need more information before they can embrace the concept.

Brazil, supported by South Africa, said Article 5 countries had made progress in narrowing baseline years to two options, and other details, such as baseline components and freeze years, have not been disclosed because Article 5 parties are still negotiating them.

Canada expressed concern about the two-track baseline year proposal, saying it is difficult to negotiate without knowing which countries would opt for which baseline year. He added such clarity would help in understanding potential climate benefits.

Final Outcome: In the decision on Further Amending the Montreal Protocol and its accompanying annex (UNEP/OzL. Pro.28/CRP/11 and CRP/10), the MOP decides most non-Article 5 parties will use a baseline averaging their calculated levels of HFC consumption for the years 2011, 2012, and 2013, plus 15% of their baseline consumption of HCFCs.

The decision and its annex state that Belarus, the Russian Federation, Kazakhstan, Tajikistan, and Uzbekistan will use a baseline averaging their calculated levels of HFC consumption for the years 2011, 2012 and 2013, plus 25% of their baseline consumption of HCFCs.

The decision and its annex state that most Annex 5 parties will use a baseline averaging their calculated levels of HFC

consumption for the years 2020, 2021, and 2022, plus 65% of their baseline consumption of HCFCs.

The decision and its annex state that Bahrain, India, Iran, Iraq, Kuwait, Oman, Pakistan, Qatar, Saudi Arabia, and the UAE will use a baseline averaging their calculated levels of HFC consumption for the years 2024, 2025, and 2026, plus 65% of their baseline consumption of HCFCs.

Freeze Date: During Tuesday's contact group deliberations, China said there should be at least two years between freeze and baseline dates. The EU said that non-Article 5 parties are willing to explore a two-year delay between a baseline year and freeze date. The Russian Federation said a freeze would not be possible for his country and Belarus until 2021.

During Friday's contact group deliberations, Indonesia said his country had a mandate, achieved through a national stakeholder consultation, including with industry, to agree on a freeze date for 2025. He emphasized that he would not block consensus but requested the Contact Group reflect his country's position in the meeting report.

Thailand supported a freeze date of 2025, expressing concern that its industry would not be ready by 2024. The EU thanked Indonesia and Thailand for their flexibility in reaching consensus, observing that the 65% baseline component aims to help countries to be able to comply. Cambodia preferred retaining 2025 as a freeze date.

In response to a question from the US, Co-Chair McNerney noted that a number of the amendment proposals address HFC-23 emissions and requested a single proposal. China, supported by the US, suggested controlling HFC-23 by 1 January 2020. The US requested the LDG to apply the control measures on a facility basis. India and Argentina expressed interest in working with the LDG to develop appropriate language.

During Saturday morning's plenary discussion, Indonesia reiterated its position on freeze dates, stressing it prefers 2025 and requesting its position be reflected in the MOP 28 report. Co-Chair McNerney confirmed this statement, and similar statements by Thailand and Cambodia, would be reflected in the report.

Final Outcome: In the decision on Further Amending the Montreal Protocol and its accompanying annex (UNEP/OzL. Pro.28/CRP/11 and CRP/10), the MOP decides on a freeze year of 2024 for most Article 5 parties, and a freeze year of 2028 for Bahrain, India, Iran, Iraq, Kuwait, Oman, Pakistan, Qatar, Saudi Arabia, and UAE. No freeze is set for non-Article 5 countries.

Phase-down schedules: The phase-down schedules were discussed as a "package deal" with baselines and freeze dates, which were accepted by all parties.

Final Outcome: In the decision on Further Amending the Montreal Protocol and its accompanying annex (UNEP/OzL. Pro.28/CRP/11 and CRP/10), the MOP decides to have two baselines each for non-Article 5 and Article 5 parties. The majority of non-Article 5 parties will have the following phase-down schedule:

- 2019 to 2023: 90%
- 2024 to 2028: 60%
- 2029 to 2033: 30%
- 2034 to 2035: 20%
- 2036 and thereafter: 15%

The decision and its annex provide that the second group of non-Article 5 parties, which includes Belarus, the Russian Federation, Kazakhstan, Tajikistan, and Uzbekistan, will have the following phase-down schedule:

- 2020 to 2024: 95%
- 2025 to 2028: 65%
- 2029 to 2033: 30%
- 2034 to 2035: 20%
- 2036 and thereafter: 15%

The decision and its annex provide that the majority of Article 5 parties will have the following phase-down schedule:

- 2024 to 2028: 100%
- 2029 to 2034: 90%
- 2035 to 2039: 70%
- 2040 to 2044: 50%
- 2045 and thereafter: 20%

The decision and its annex provide that the second group of Article 5 parties, i.e., Bahrain, India, Iran, Iraq, Kuwait, Oman, Pakistan, Qatar, Saudi Arabia, and UAE, will have the following phase-down schedule:

- 2028 to 2031: 100%
- 2032 to 2036: 90%
- 2037 to 2041: 80%
- 2042 to 2046: 70%
- 2047 and thereafter: 15%

Basic Domestic Needs: During Friday's contact group deliberations, the US proposed the LDG include Basic Domestic Needs provisions in the agreement, to which delegates agreed.

Final Outcome: In the decision on Further Amending the Montreal Protocol and its accompanying annex (UNEP/OzL.Pro.28/CRP/11 and CRP/10), the MOP decides that in order to satisfy the basic domestic needs of Article 5 parties, these countries' calculated levels of production may exceed that limit by up to 10% of calculated production levels of controlled substances in Annex F.

Emissions of substances generated as a byproduct: On Saturday morning, the US suggested adding "through leakage" after emissions. Following consultations, Switzerland proposed adding "process vent does not exceed zero" after the "period thereafter." The US requested clarification on how a process has emissions of zero. Switzerland responded the process vents themselves have zero emissions. Saudi Arabia expressed concern that zero emissions would be costly for manufacturers.

Final Outcome: In its decision on the Further Amendment of the Montreal Protocol and its annex (UNEP/OzL.Pro.28/CRP/11 and CRP/10), the MOP decides that each party manufacturing Annex C Group I or Annex F substances shall ensure that for the twelve-month period commencing 1 January 2020, and in each twelve-month period thereafter, its calculated level of emissions of Annex F, Group II substances generated as a byproduct in each production line that manufactures Annex C, Group I or Annex F substances does not exceed 0.1% of the mass of Annex C, Group I or Annex F substances manufactured in that production line during the same twelve-month period.

HFC-23: On HFC 23 as a by-product, Switzerland proposed adding: "Each party manufacturing Annex C Group I or Annex F substances shall ensure that for the 12-month period commencing on 1 January 2020 and each 12-month period thereafter its emissions of Annex F Group II substances generated as a byproduct in each production line that manufactures Annex F Group II substances are destroyed with the technology approved by the parties in the same 12-month period." The EU asked to delete "as a byproduct." The US proposed adding at the end of the paragraph: "should be destroyed to the extent practicable using approved technology."

Final Outcome: Delegates agreed to the proposed changes.

ARTICLE 3 (CALCULATION OF CONTROL LEVELS):

During Saturday morning's plenary, Belarus questioned the feasibility of measuring an emission level as precisely as 0.1% and suggested further discussions were necessary on the relevant paragraph. LDG Facilitator Ruddle suggested replacing the word "baseline" with the phrase "calculated level of." Belarus proposed "consumption level" as alternative wording.

Final Outcome: In its decision on the Further Amendment of the Montreal Protocol and its annex (UNEP/OzL.Pro.28/CRP/11 and CRP/10), the MOP updates the preambular text to include references to HFCs. It also includes text stating that emissions from Annex F, Group II substances generated in each facility that generates HCFCs or HFCs by including, among other things, amounts emitted from equipment leaks, process vents and destruction devices, but excluding amounts captured for use, destruction or storage, are also included.

The MOP further states that when calculating levels, expressed in CO₂e, of production, consumption, imports, exports, and emissions of substances as listed in Annex F and HCFCs for the purposes of Article 2J, paragraph 5ter of Article 2, and paragraph 1(d) of Article 3, each party shall use the GWPs of these substances as specified in Annexes C and F.

ARTICLE 4A (CONTROL OF TRADE WITH NON-PARTIES): During Saturday morning's discussions, China requested further explanation on an article on trade with non-parties, noting her country's understanding that the date of entry into force regarding trade with such parties should be five years after the relevant article enters into force for Article 5 parties. India supported this reading.

The US also confirmed this understanding, noting that this paragraph additionally allows Article 5 parties an extra year to put regulations in place. India said this extra year is not required given the freeze dates for Article 5 parties of 2024 and 2028.

Final Outcome: In the decision on Further Amending the Montreal Protocol and its accompanying annex (UNEP/OzL.Pro.28/CRP/11 and CRP/10), the MOP updates Article 4 to include reference to HFCs.

ARTICLE 4B (LICENSING): During Friday's contact group deliberations, Co-Chair McInerney asked the group to decide on the date on which licensing systems would come into play. Belarus noted a difference in the wording on licensing systems and requested discussing the topic in plenary. The US affiliated itself with the EU dates of 2019 and 2021, to which other delegates also agreed.

Final Outcome: In the decision on Further Amending the Montreal Protocol and its accompanying annex (UNEP/OzL.Pro.28/CRP/11 and CRP/10), the MOP decides to include a paragraph, inserted after paragraph 2 of Article 4B (Licensing) of the Protocol, stating that each party shall, by 1 January 2019 or within three months of the date of entry into force of the paragraph, whichever is later, establish and implement a system for licensing the import and export of new, used, recycled and reclaimed controlled substances in Annex F.

The paragraph also states that non-Article 5 parties not in a position to establish and implement such a system by 1 January 2019 may delay taking those actions until 1 January 2021.

ARTICLE 5 (SPECIAL SITUATION OF DEVELOPING COUNTRIES): In this article, the MOP included text stating that, in order to meet basic domestic needs and subject to any adjustments made to the control measures in Article 2J, the majority of Article 5 parties shall be entitled to delay its compliance with the control measures as follows:

- 2024 to 2028: 100%
- 2029 to 2034: 90%
- 2035 to 2039: 70%
- 2040 to 2044: 50%
- 2045 and thereafter: 20%

The remainder, namely Bahrain, India, Iran, Iraq, Kuwait, Oman, Pakistan, Qatar, Saudi Arabia, and the UAE, may modify those measures as follows:

- 2028 to 2031: 100%
- 2032 to 2036: 90%
- 2037 to 2041: 80%
- 2042 to 2046: 70%
- 2047 and thereafter: 15%

Parties may also, for the purposes of calculating their consumption baseline, be entitled to use the average of its calculated levels of consumption and production of Annex F controlled substances for the years 2020, 2021, and 2022, plus 65% of its baseline consumption of Annex C, Group I controlled substances

Parties may decide that an Article 5 party may, for the purposes of calculating its consumption baseline, be entitled to use the average of its calculated levels of consumption and production of Annex F controlled substances for the years 2024, 2025, and 2026, plus 65% of its baseline consumption of Annex C, Group I controlled substances.

These paragraphs will apply to calculated levels of production and consumption save to the extent that a high ambient temperature exemption applies based on criteria decided by the parties.

Exemption for HAT Countries: In its Friday deliberations, the Contact Group tasked the LDG with converting the agreed HAT exemption from the Vienna solutions into legal text.

Final Outcome: In its decision on Further Amendment of the Montreal Protocol (UNEP/OzL.Pro.28/CRP/11), the MOP decides:

- to make an exemption for parties with HAT conditions available, where no suitable alternatives exist for the specific sub-sector of use, as described below;
- to distinguish and separate this exemption from the EUEs and CUEs under the Montreal Protocol;
- to make this exemption effective and available as of the HFC freeze date or other initial control obligation, with an initial duration of four years;
- to apply this exemption for sub-sectors contained in Annex I for parties with an average of at least two months per year over 10 consecutive years with a peak monthly average temperature above 35°C, where the party has formally notified the Secretariat of its intent to use this exemption no later than one year before the HFC freeze date or other initial control obligation, and every four years thereafter should it wish to extend the exemption;
- that any party operating under this HAT exemption will report separately its production and consumption data for the sub-sectors to which a HAT exemption applies;
- that any transfer of production and consumption allowances for this HAT exemption will be reported to the Secretariat under Article 7 of the Protocol by each of the parties concerned;
- the TEAP and a TEAP subsidiary body that includes outside expertise on HAT will assess the suitability of HFC alternatives for use where suitable alternatives do not exist based on criteria agreed by the parties and can recommend to add or

remove sub-sectors to Annex I, that will include, but not be limited to, the criteria listed in paragraph 1(a) of Decision XXVI/9, and report this information to the MOP;

- that this assessment will take place periodically starting four years from the HFC freeze date or other initial control obligation and every four years thereafter;
- to review, no later than the year following receipt of the first TEAP report on suitability of alternatives, the need for an extension of this exemption for a further period of up to four years, and periodically thereafter, for specific sub-sectors in parties that meet the criteria set out in paragraph 4 above, and that parties will develop an expedited process to ensure the renewal of the exemption in a timely manner where there are no feasible alternatives, taking into account the recommendation of the TEAP and its subsidiary body;
- that amounts of Annex F substances that are subject to the HAT exemption are not eligible for funding under the MLF while they are exempted for that party;
- that the ImpCom and MOP should, for 2025 and 2026, defer the consideration of the HCFC compliance status of any party operating under a HAT exemption in cases where it has exceeded its allowable consumption or production levels due to its HCFC-22 consumption or production for the sub-sectors listed in Annex I, on the condition that the party concerned is following the phase-out schedule for consumption and production of HCFCs for other sectors and has formally requested a deferral through the Secretariat; and
- to consider, no later than 2026, whether to extend the compliance deferral in paragraph 11 for an additional period of two years, and, if appropriate, to consider further deferrals thereafter, for parties operating under the HAT exemption.

ARTICLE 6 (ASSESSMENT AND REVIEW OF CONTROL MEASURES): This article was updated to include reference to those substances included under Annex F.

ARTICLE 7 (REPORTING OF DATA): In its annex to the decision on Further Amendment of the Montreal Protocol (UNEP/OzL.Pro.28/CRP/10), the MOP decides to insert text stating that non-Article 5 parties shall provide data for the years 2011 to 2013. The majority of Article 5 parties shall provide such data for 2020 to 2022. Bahrain, India, Iran, Iraq, Kuwait, Oman, Pakistan, Qatar, Saudi Arabia, and the UAE shall provide such data for 2024 to 2026. Each party shall also provide to the Secretariat statistical data of its annual emissions of Annex F, Group II controlled substances per facility in accordance with Article 3(d) of the Protocol.

ARTICLE 10 (FINANCIAL MECHANISM): In Friday's Contact Group deliberations, Co-Chair McInerney noted that the Russian Federation had requested this issue be dealt with in plenary to allow for translation. The US suggested language be simplified to state that a financial mechanism will be enabled to address those chemicals listed in Article 2J (HFCs). Co-Chair McInerney suggested tasking the LDG with the minimum amount of text needed for negotiation.

FSM said that his country favors simplified text such as that proposed by the US and suggested further discussion take place. India cautioned against discriminating between the two Article 5 country groups and requested clarity on what is defined as a financial mechanism, including whether this mechanism includes domestic funding. Co-Chair McInerney suggested, and delegates agreed, that the US, EU, FSM, Colombia, and India discuss and resolve this issue to enable further negotiation, in addition

to tasking the LDG to partially complete its work so that the minimum text needed to facilitate funding could be included to enable further negotiation.

During Saturday morning's plenary, the Russian Federation expressed concern about the lack of discussion on the scale of necessary finance to address HFCs and the consequences of such funding on the MLF and for countries. He proposed adding the following text to the first paragraph of Article 10 (Financial Mechanism): "Contributions to the MLF funding assigned for HFC-related activities shall be voluntary."

The EU said this proposal would undermine a very important part of the agreement. She stressed that non-Article 5 parties are willing to provide additional, sufficient financial resources, underscoring these resources were a condition for agreement on an amendment for many parties.

Co-Chair McInerney said both interventions would be reflected in the meeting report.

The Russian Federation, also on behalf of Belarus, Kazakhstan, Tajikistan and Uzbekistan, said this group would not insist on the inclusion of the text in Article 10 under the condition that the Russian Federation could explain the group's position before the beginning of the procedure of the examination of the amendment, and under the condition that the statement would be reflected in the meeting report.

Co-Chair McInerney agreed the Russian Federation could make his statement.

The Russian Federation, also on behalf of Belarus, Kazakhstan, Tajikistan and Uzbekistan, described the group's concern that the financial consequences of an adoption of an amendment had been insufficiently worked on. He highlighted that: HFCs do not have a destructive effect on the ozone layer and do not fall under the Protocol's mandate; discussion of an amendment became possible based on compromise consensus; and the regulation of HFCs by the Protocol will be based exclusively on voluntary contributions by parties. He further described the intention of the London Amendment on the establishment of the MLF, stressing its focus on ozone. Belarus underscored his country's support for the statement.

Final Outcome: In its decision on Further Amendment of the Montreal Protocol (UNEP/OzL.Pro.28/CRP/11), the MOP decides to recognize that the amendment maintains the MLF as the financial mechanism and that sufficient additional financial resources will be provided by non-Article 5 parties to offset costs arising out of HCFC obligations for Article 5 parties under this amendment;

The MOP also includes text under Article 10 stating that where an Article 5 party chooses to use funding from any other financial mechanism that could assist in meeting any part of its agreed incremental costs, that part shall not be met by the financial mechanism under Article 10 of the Protocol.

ARTICLES 17 (PARTIES JOINING AFTER ENTRY INTO FORCE): This article was updated to include reference to those substances included under Annex F.

ANNEX F (CONTROLLED SUBSTANCES): This annex has been added after Annex E of the Protocol.

List of Controlled Substances: On Wednesday, Co-Chair McInerney proposed opening discussion on the list of substances, noting some informal discussion had previously taken place. The US suggested, supported by FSM, informal discussions on the amendment's substances list to decide whether it should contain 19 or 22 substances. Belarus asked whether HFC-23 would be included in the list of controlled substances and in the calculation of baselines.

Australia, with Canada, expressed support for the North American and EU proposals to list HFCs in one annex with two groups, one of which would list HFC-23. She said her country does not consider listing hydrofluoroolefins (HFOs) as the right way forward since these function as alternatives to high- and very high-GWP HFCs. She noted openness to discussing the list with China.

FSM clarified his country's proposal to have two groups of substances. He noted that, under the proposal, the phase-down would apply to one group, while substances listed in the second group would require reporting, but would not be part of the HFC baseline and control measures.

Canada explained the rationale behind HFC-23 having its own group, as this substance would be subject to different control measures as part of an amendment.

Summarizing the discussions, Co-Chair McInerney noted there are a total of 22 HFCs across the four amendment proposals. He said there has been some suggestion that three HFOs should not be included and noted additional discussion on whether or not to include a number of other relatively low-GWP substances.

During Friday's afternoon contact group deliberations, China requested deleting HFC-161 from the list of controlled substances, noting its very low GWP. Co-Chair McInerney noted China's request and proposed bracketing the list of controlled substances.

On Saturday morning, during the final plenary session, China proposed deleting HFC-161 from the list. India stressed the text should state that HFOs will not be controlled. The EU asked if brackets on the list could be lifted. Co-Chair McInerney suggested bilateral discussions, following which China noted agreement that HFC-161 be deleted from the list. Parties agreed to retain HFC-23 as listed in Group II of Annex F.

Final Outcome: In the annex to its decision on Further Amending the Montreal Protocol (UNEP/OzL.Pro.28/CRP/10), the MOP decides to place 18 HFCs in Annex F, Group II of the table of controlled substances in Annex F, along with their respective 100-year GWP figures. HFC-23 is listed in Group II of Annex F.

GWP Values: On language on GWP values, the EU, following consultation with the Russian Federation, proposed adding the following text to the end of Annex C: "until a GWP value is included by means of the procedure in Article 2 (Control Measures)."

Final Outcome: Delegates agreed to include this amendment in Annex C.

Consideration of HFCs Not Listed as Controlled Substances in Annex F of the Protocol: During Tuesday's Contact Group, Switzerland introduced a CRP on the topic (UNEP/OzL.Pro.28/CRP.2), prepared with Norway. He said the CRP, *inter alia*: urges individual parties to discourage, at the national level, the development and promotion of HFCs with significant GWP that are not listed as controlled substances in Annex F; encourages parties to report on the existence of these HFCs, including on the likelihood of these substances' production and consumption; and requests the Secretariat to forward this information to the SAP and the TEAP, and request these panels to report to the MOP on such HFCs.

India suggested it was premature to discuss the CRP before an amendment is agreed. The US noted the type of reporting proposed in the CRP mirrors existing practice for unlisted ODS. The EU added that the draft decision would send an important signal to industry that non-listed HFCs will be monitored.

China requested Switzerland to consider postponing work on the CRP until after the amendment was agreed. Switzerland agreed that consideration of the CRP could be deferred to OEWG 39, requesting the evening's brief discussion be reflected in the MOP 28 report.

Final Outcome: The MOP agreed to defer this decision to OEWG 39.

OTHER MATTERS ADDRESSED UNDER THE DUBAI PATHWAY: Relationship with the UNFCCC: In Friday's Contact Group deliberations, Saudi Arabia urged specific reference to the relationship with the United Nations Framework Convention on Climate Change (UNFCCC) in the amendment text. India said the text should note that an amendment will not impose additional obligations under the Kyoto Protocol. The US, with FSM, suggested similar text to that advocated by India be included. Australia cautioned on nuances, suggesting that the LDG bear responsibility for drafting text. Delegates agreed.

Final Outcome: During the final plenary session, delegates agreed to Article III in the consolidated amendment text from the LDG stating that the Kigali Amendment is not intended to have the effect of excepting HFCs from the scope of the commitments contained in relevant articles of the UNFCCC or those of its Kyoto Protocol.

Entry-into-Force: In Friday's Contact Group deliberations, Co-Chair McInerney noted that the entry into force will be the same as the first control measure: January 2019. Belarus requested that this date be further discussed with translation and cautioned on a potential contradiction with previous articles. McInerney noted that the LDG will address the potential contradiction and report to plenary.

Final Outcome: In its decision on the Further Amendment of the Montreal Protocol and its annex (UNEP/OzL.Pro.28/CRP/11 and CRP/10), the MOP decides to include text under Article IV (entry into force) stating that Kigali Amendment shall enter into force on 1 January 2019, provided that at least 20 instruments of ratification, acceptance or approval of the Amendment have been deposited by states or regional economic integration organizations that are parties to the Montreal Protocol. It further states that if this condition has not been fulfilled by that date, the Amendment shall enter into force on the 90th day following the date on which the condition has been fulfilled.

The changes to Article 4 of the Protocol (control of trade with non-parties) set out in Article I of this Amendment shall enter into force on 1 January 2029, provided that at least 70 instruments of ratification, acceptance or approval of the Amendment have been deposited by states or regional economic integration organizations that are parties to the Montreal Protocol. In the event that this condition has not been fulfilled by that date, the control of trade with non-parties provisions of the Amendment shall enter into force on the 90th day following the date on which the condition has been fulfilled.

It further states that for purposes of the foregoing paragraphs, any such instrument deposited by a regional economic integration organization shall not be counted as additional to those deposited by Member States of such an organization.

It also states that after the entry into force of this Amendment, the Amendment shall enter into force for any other party to the Protocol on the 90th day following the date of deposit of its instrument of ratification, acceptance or approval.

ExCom Guidelines: During Contact Group deliberations on Friday, India provided an overview of its CRP that it had introduced at the meetings held in Vienna in July (UNEP/OzL.Pro.WG.1/38/CRP.2), explaining that the paper tasks the ExCom

with developing guidelines for the solutions. He noted that the intention is for the MOP to approve the guidelines within one to two years after the CRP's adoption. Canada suggested flexibility with timing, given that it is an important issue that may take some time. Australia noted that timing of approval is crucial. Co-Chair McInerney suggested interested parties discuss the CRP prior to the recommencement of plenary.

Final Outcome: In its decision on the Further Amendment of the Montreal Protocol and its annex (UNEP/OzL.Pro.28/CRP/11 and CRP/10), the MOP decides to request:

- the MLF ExCom to develop, within one year of the Kigali Amendment's adoption, guidelines for financing the phase-down of HFCs' consumption and production, including cost-effectiveness thresholds;
- the MLF ExCom Chair to report back to the MOP on the progress made in accordance with this decision, including on cases where ExCom deliberations have resulted in a change in the national strategy or the national technology choice submitted to the ExCom; and
- the MLF ExCom to revise the rules of procedure of the ExCom with a view to building in more flexibility for Article 5 parties.

The MOP also requests the MLF ExCom, in developing new guidelines on methodologies and cost calculations, to make the following categories of costs eligible and to include them in the cost calculation:

- for the consumption manufacturing sector: incremental capital costs; incremental operating costs; technical assistance activities; research and development, when required to adapt and optimize low-GWP or zero-GWP alternatives to HFCs; costs of patents and designs, and incremental costs of royalties, when necessary and cost-effective; and costs of safe introduction of flammable and toxic alternatives.
- for the production sector: lost profit due to shutdown/closure of the production facilities as well as production reduction; compensation to displaced workers; dismantling of production facilities; technical assistance activities; research and development related to the production of low-GWP or zero-GWP alternatives to HFCs with a view to lowering the costs of alternatives; costs of patents and designs or incremental costs of royalties; costs of converting facilities to produce low-GWP or zero-GWP alternatives to HFCs when technically feasible and cost-effective; costs of reducing emissions of HFC-23, a by-product from the production process of HCFC-22, by reducing its emission rate in the process, destroying it from the off-gas, or by collecting and converting to other environmentally-safe chemicals. Such costs should be funded by the MLF to meet the obligations of Article 5 parties.
- for the servicing sector: public awareness activities; policy development and implementation; certification programmes and training of technicians on the safe handling, good practice and safety of alternatives, including training equipment; training of customs officers; preventing illegal trade of hydrofluorocarbons; servicing tools; refrigerant testing equipment for the RAC sector; recycling and recovery of HFCs; additional import costs; and incremental cost of refrigerants for MVAC servicing/recharging.

Energy Efficiency: On Wednesday, during plenary, Co-Chair Smith noted that Rwanda and Morocco had submitted UNEP/OzL.Pro.28/CRP.5 on energy efficiency, which was referred to the HFC Management Contact Group for discussion.

During Friday's Contact Group, Rwanda introduced the draft Kigali Decision on Energy Efficiency (UNEP/OzL.Pro.28/CRP.5/Rev.1). She noted limited time available for discussion

but stressed the proponents' desire to reach agreement at MOP 28. She said the decision, *inter alia*: establishes a task force on emerging energy efficiency opportunities in the RAC sectors related to a transition to climate-friendly refrigerants; and requests the task force to assess information submitted by parties and to report to OEWG 39 in 2017.

The EU stated its intent to further discuss the draft CRP with Rwanda. Australia suggested the task force report to MOP 29, rather than OEWG 39, and that parties submit information by June 2017, rather than March 2017. The US informed that TEAP would like to take on this work without having to form a task force and proposed removing reference to the task force. Saudi Arabia expressed interest in further discussing the draft decision with Rwanda and other interested parties.

During Saturday morning's plenary, Rwanda introduced a revised version of the CRP (UNEP/OzL.Pro.28/CRP.5/Rev.3), "Kigali Decision on Energy Efficiency," saying that the CRP's proponents intend to come up with a review of the technology in the energy efficiency sector. She noted that the CRP incorporates parties' ideas and aims to have a meaningful assessment to present to MOP 29.

Qatar and Saudi Arabia urged adoption of the CRP. Bahrain requested postponing the decision to MOP 29 due to the late hour.

Rwanda stated that the review has been simplified to investigate national efforts, submissions will be on a voluntary basis, and the submissions would be compiled and presented to the MOP.

Following interventions from many parties in support of adopting of the decision, including Burkina Faso, Canada, Colombia, FSM, India, and Switzerland, Bahrain withdrew its objection. The MOP approved the decision as part of the amendment decisions.

Final Outcome: In its decision UNEP/OzL.Pro.28/CRP.5/Rev.3), "Kigali Decision on Energy Efficiency," the MOP:

- decides to request TEAP to review energy efficiency opportunities in the RAC and heat pump sectors related to a transition to climate-friendly alternatives, including not in-kind options;
- invites parties to submit, on a voluntary basis, relevant information on energy efficiency innovations in these sectors to the Ozone Secretariat by May 2017; and
- requests TEAP to assess the information submitted by parties on energy efficiency opportunities in the RAC sectors during the transition to low- and zero-GWP alternatives and to report to MOP 29.

Adoption of the Amendment: The amendment and its associated decisions were adopted as orally amended at 6:54 am on Saturday, 15 October.

Nigeria proposed, and President Birtuta agreed, to name the amendment the "Kigali Amendment to the Montreal Protocol." Stressing the importance of enhanced climate ambition and financial support, Micronesia announced his country would share a declaration supporting early phase-down action to which delegates could become signatories. Mexico, Marshall Islands, Fiji, Morocco, Costa Rica, Chile, Colombia and Burkina Faso expressed support for FSM's proposed declaration.

Colombia requested its support for ambitious action and concomitant financial support be captured in the meeting report. Many, including Kuwait, China, Saudi Arabia, and India, thanked the Co-Chairs of the HFC Management Group, the Ozone Secretariat and its Executive Secretary, Article 5 and non-Article 5 parties, and the Government of Rwanda for their efforts in securing an amendment.

The US highlighted the adoption of a "historic" agreement, saying parties had helped to protect the future of their children. Egypt recalled that negotiations on HFCs had begun in the African city of Port Ghalib, and now ended in the African city of Kigali. South Africa said that "together we can always do more." The EU said the Kigali amendment is feasible and starts the world off on a good footing in implementing the Paris Agreement. Switzerland highlighted his country's long-standing support for inclusion of HFCs under the Montreal Protocol.

A BRIEF ANALYSIS OF MOP 28

AGREEMENT AND PRIDE

"We have an amendment." With those words, participants at the 28th Meeting of the Parties (MOP 28) expressed both joy and relief that seven years of considering options and proposals to amend the Montreal Protocol on Substances that Deplete the Ozone Layer to enable it to address HFCs—a chemical with significant climate impacts but that is not traditionally considered an ozone-depleting substance (ODS)—had finally reached not only a positive conclusion but, in the words of one delegate, "an agreement that we will be proud of for the rest of our lives."

The road to Kigali has been neither short nor smooth, leading one sleepy Co-Chair to introduce the text as an "amendment that delegates have been working on for five years...I mean five days!" In the end, despite moments of near collapse and a nearly 24-hour marathon to finalize the details, the Kigali Amendment tackles a critical global challenge, provides room for ambition while achieving universal agreement, and honors the spirit of the Montreal Protocol by achieving consensus and relying on the wisdom of the Protocol's founders who allowed for both amendments and adjustments.

This brief analysis reflects on the process that led to the Kigali Amendment, including the role of compromise and concession in reaching agreement, and the Protocol's ability to "start and strengthen" its work. The analysis then reflects on what this historic achievement means for the future of the Montreal Protocol and the wider climate regime.

AMBITIOUS BUT UNIVERSAL

Parties first considered HFCs at MOP 21 in 2009 when the Federated States of Micronesia (FSM) and Mauritius introduced a proposal to amend the Protocol to address HFCs. After several years of discussion on whether the MOP should even form a contact group to consider discussion of a possible HFC amendment, parties reached agreement on the Dubai pathway at MOP 27. Under the Dubai pathway, parties to the Montreal Protocol agreed to work towards an amendment to phase down HFCs in 2016, an agreement that marked the beginning of the culmination of a process first set in motion in 2009. This pathway has been a "remarkable period in this treaty," with parties making incremental progress in overcoming their differences and ultimately drawing upon their creativity and trust in one another and the process to agree on an ambitious, balanced Kigali Amendment. Key agreements at the 37th meeting of the Open-ended Working Group (OEWG 37), OEWG 38 and the Third Extraordinary MOP (ExMOP 3) in July 2016 allowed parties to discuss and develop solutions on exemptions for high-ambient temperature (HAT) countries, financing, and other challenges on the road to Kigali. Most participants left Vienna confident that an amendment could be adopted but questioned how ambitious it would be.

Progress throughout 2016, combined with significant intersessional work by some countries and high-level statements such as the New York Declaration of the Coalition to Secure an Ambitious HFC Amendment just prior to MOP 28, set the stage in Kigali for the adoption of an amendment, even though key details still needed to be resolved. This optimism contributed to a sense of confidence among delegates that an agreement would be adopted that proved critical to keeping the process on track. Still, the slow progress at the resumed OEWG 38 and the first days of MOP 28 caused many to lose hope by Thursday night, when the Contact Group adjourned without even discussing critical outstanding and emerging issues, much less making progress towards their solutions. As one seasoned delegate commented, “We went to the brink, where we thought it would not happen, and we came back from there.”

Several delegates underscored the role of ministers in helping parties to overcome tensions and disagreements and achieve an agreement in time. The presence of over 40 ministers, who pushed and encouraged negotiators to reach agreement during the High-Level Segment, also meant that negotiators could not stall by saying they needed to consult with their capitals. Others pointed to the significant number of informal and bilateral dialogues that took place during the week, underscoring that, while little progress appeared to occur in the Contact Group, real flexibility, creativity and compromise emerged from informal sessions, including several high-level bilaterals on Friday morning and an informal group on Friday evening that developed the final package.

Another delegate attributed the “extreme perseverance” shown by a few key Article 5 and non-Article 5 delegates as a critical component in reaching agreement. Many delegates simply continued working when all appeared lost, reaching deep within themselves to remain optimistic and find ways to be flexible. In the end, even some of the newer participants in the “ozone family,” who were initially less familiar with the strength of the family’s respect for the Protocol and trust in its institutions, appreciated the “hard time” their colleagues gave them when negotiating the amendment text, admitting this back-and-forth resulted in a stronger, balanced agreement.

“Now, I really understand what ‘the ozone family’ means,” one non-Article 5 country reflected after the amendment’s adoption, stressing, “I am proud to be in this family and part of this Kigali Amendment.” Pride in the family and the family’s achievements in reaching a consensus agreement was a common reflection among participants Saturday morning, reflecting delegates’ desire to achieve an agreement with enough ambition that they could be proud, while also ensuring that the agreement did not leave anyone behind.

COMPROMISE AND CONCESSION

“We pushed ourselves to the maximum,” to compromise everywhere that we could, one Article 5 party stressed as negotiations on the baseline, freeze dates and incremental steps concluded. As another Article 5 party put it, “everybody gave as much as they could.” A third Article 5 party underscored, “always, our commitment is to ensure everyone is happy.” In the end, although not all parties were completely satisfied, most praised the “spirit of compromise” that made reaching an agreement among 197 parties possible.

The baseline year was a key area of concession, with Article 5 parties managing to move from the six proposed groupings discussed at OEWG 38 and ExMOP 3 to two groups during the course of the week. Participants agreed to two Article

5 groupings, with most Article 5 parties following one set of baseline years and the Gulf Cooperation Council (GCC), India, Iran, Iraq and Pakistan opting for a later set of baseline years. Southeast Asian countries and the Like-minded Latin American countries both stressed they made concessions on the baseline. Southeast Asian countries strongly preferred a baseline of 2025 over 2024 but agreed to the package in order not to block consensus. Conversely, the Like-minded Latin American countries, as well as the African Group, the Island States and some others, preferred an earlier baseline and early action but agreed to the 2024 baseline to ensure that Article 5 countries were only grouped into two categories.

Parties also worked out a special arrangement for some non-Article 5 countries because Belarus, Kazakhstan, Russian Federation, Tajikistan, and Uzbekistan insisted an adjustment in the HCFC component of the baseline was necessary for any agreement. Delegates again demonstrated flexibility and creativity by agreeing to adjust the component of the baseline designed to account for a period in which conversion from HCFCs to HFCs may have taken place, known as “the HCFC component,” to 25% (instead of the 15% for the rest of non-Article 5 parties). They also allowed an adjustment to the early portion of the phase-down schedule to enable these countries to start with smaller and later cuts while catching up to the rest of non-Article 5 parties by 2029.

These divisions of two groups for Article 5 parties and two for non-Article 5 parties represents the first time the Protocol has ever had such a division, reflecting a recognition by parties that the world is now more nuanced than simply developed versus developing countries. The codification of this recognition into the amendment further underscores the ingenuity of negotiators in finding new and creative ways to bring all countries on board. The Legal Drafting Group (LDG), for instance, said the Protocol has never contained elements that allow for different groupings beyond Article 5 and non-Article 5, which meant the LDG also had to be creative in drafting the legal text for such compromises.

Compromise and concession was also necessary during Friday evening’s HFCs Management Contact Group, where the Co-Chairs asked for, and received, parties’ indulgence to intervene only where necessary to allow the group to complete its work in time to adopt the amendment. Many had hoped for more time in the Contact Group to discuss a number of key issues, ranging from the list of controlled substances to a proposed draft decision on energy efficiency. Instead, participants limited themselves to minimal discussion, allowing only one or two parties to speak on most issues in order to swiftly agree on needed amendments to the Protocol. The proponent of the draft decision on energy efficiency, for instance, limited her introduction of the decision by explicitly stating that she recognized the pressure parties were under to wrap up discussion and finalize amendment text. On the whole, such concessions characterized the work of the Contact Group, which proceeded through amendment text at a steady pace—or, in the words of one seasoned delegate, “at a pace necessary to make history.”

Indeed, some challenges, including the list of controlled substances and GWP values, cut-off dates for eligible capacity, non-party trade provisions, and by-product emissions, among others, still remained as parties reconvened in the early hours of Saturday morning to read through the amendment text for the first time. Delegates once again showed a spirit of flexibility by generally agreeing not to raise additional issues but to either withdraw their concerns or postpone discussion until OEWG 39, MOP 29 or through other intersessional work. As Co-Chair

McInerney jokingly said, he himself learned, the “next time deal I with an amendment parties have been addressing for seven years, I will give them at least one day to prepare the text.” The LDG deserves significant credit for preparing amendment text while the decisions were literally still being discussed. As one LDG member put it, such rapid progress was only possible because the members “speeded through everything,” departing from the traditional legal ways of working.

STARTING AND STRENGTHENING

“In the end, all that matters is that we got started,” one insider reflected, pointing to the Montreal Protocol’s unique construction that allows for parties to both amend and adjust the Protocol. By agreeing on the Kigali Amendment, parties took a critical step in officially recognizing the need to control HFCs under the Montreal Protocol.

Others pointed to the Protocol’s history of accelerating phase-out schedules and achieving phase-out of substances in advance of deadlines as reason for confidence that parties may phase down HFCs faster than initially agreed under the schedules in the Kigali Amendment. The Protocol’s London, Copenhagen, Montreal, and Beijing Amendments and Adjustments have all tightened existing control schedules and added new controls. Although the US withdrew its proposed text on a technology review early Saturday morning, in the spirit of compromise, a few insiders stressed the TEAP is already mandated to do this type of work and expressed confidence that future TEAP reports may identify emerging technologies or options for tightening the existing control schedules.

During the closing plenary, many parties expressed support for early action and readiness to join the Micronesia Declaration, which calls on all parties to take early action, including as early as 2021, and appeals to non-Article 5 parties to work with Article 5 parties to explore ways forward, including by delivering financial support. Such support for early action suggests parties’ intention to build on the success achieved on the road from Dubai to Kigali by taking early action or further strengthening agreed action. Similarly, the High Ambition Coalition, a coalition of over 100 developed and developing countries that seeks the highest level of ambition in combating climate change, represents another group that may push for and achieve phase-down of HFCs in advance of 2036, 2045, or 2047, the plateau date for non-Article 5, Article 5 Group I and Article 5 Group II countries, respectively.

COMMITMENT AND CONCLUSION

Perhaps one of the most important outcomes of the Kigali Amendment is the signal to the rest of the world on the continued relevance of the Montreal Protocol. By agreeing on an amendment to address HFCs, delegates sent a message that the Protocol is no longer just a chemicals treaty but instead a universal treaty with relevance for chemicals, climate change and energy efficiency. Moreover, by addressing a family of chemicals that are not ODS per se but have significant global warming potential, the ozone family demonstrated its willingness to take responsibility for the problems created by its actions and show what it means to play a leading role in working towards an environmentally sustainable world where no one is left behind, as called for by the 2030 Agenda for Sustainable Development. This expansion of the Protocol’s scope and recognition of parties’ responsibilities ensure the Protocol will be a critical player in the climate regime.

Throughout the week, many participants underscored that adoption of an amendment would be the single-most important

action taken to address climate change in 2016 and a clear signal of support for strong implementation of the Paris Agreement, which commits nations to limiting global warming to 2°C and to pursue efforts to limit it to 1.5°C. By committing the world’s largest producing countries to begin phase-down of HFCs two years earlier than they desired back in July, and allowing countries to begin early action, the Kigali Amendment has the potential to avoid up to 0.5°C of warming. As MOP 28 President Biruta highlighted, “Kigali shows the 1.5°C target is achievable.”

The Kigali Amendment is one of several recent climate-related signals that instill hope that the world will avoid significant warming. It follows news that the Paris Agreement crossed its ratification threshold earlier than expected and will enter into force on 4 November, and the International Civil Aviation Organization (ICAO) reached agreement on a new standard to control GHG emissions from international flights.

The agreement to approve the Kigali Decision on Energy Efficiency further signals the potential for the Protocol to contribute to another significant global challenge. Since at least MOP 26, several parties have underscored that it would be a mistake to phase down HFCs in the refrigeration and air-conditioning sector without concurrently maintaining and improving gains in the energy efficiency of refrigeration and cooling equipment. Although the decision could be more ambitious, the agreement for analysis of actions by parties on energy efficiency “is a start and keeps energy efficiency” in the spotlight as an issue for possible later action,” in the words of one seasoned observer.

As MOP 28 ended, one delegate, who admitted his hope and confidence wavered during the process, expressed “immense gratitude to be going home with such a great success,” saying he was “so, so happy” to have achieved the Kigali Amendment. His sentiments speak for the ozone family, who persevered when all seemed lost, welcomed new and different members to the family with open arms, and concluded Saturday morning with pride in a treaty that they have believed in and strengthened.

UPCOMING MEETINGS

44th Session of the IPCC: The 44th session of the Intergovernmental Panel on Climate Change (IPCC-44) will discuss the outline of the Special Report on the impacts of global warming of 1.5°C above pre-industrial levels and related GHG emission pathways in the context of strengthening the global response to the threat of climate change, sustainable development and efforts to eradicate poverty. Other sixth Assessment Report (AR6) products under consideration are: the outline of the Methodology Report(s) to refine the 2006 IPCC Guidelines for National Greenhouse Gas Inventories; workshop on Climate Change and Cities; and an Expert Meeting on Mitigation, Sustainability and Climate Stabilization Scenarios. **dates:** 17-20 October 2016 **location:** Bangkok, Thailand **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/>

51st Meeting of the GEF Council: The Global Environment Facility (GEF) Council meets twice a year to approve new projects with global environmental benefits in the GEF’s focal areas of biodiversity, climate change mitigation, chemicals and waste, international waters, land degradation, and sustainable forest management. The Council also considers the GEF’s integrated approach programmes on: sustainable cities; taking deforestation out of commodity chains; and sustainability and resilience for food security in Sub-Saharan Africa. The Council also provides guidance to the GEF Secretariat and Agencies. The

Council meeting will be preceded by a consultation with civil society organizations. On 27 October the Council will convene as the 21st meeting of the Least Developed Countries Fund (LDCF) and Special Climate Change Fund (SCCF). **dates:** 24-27 October 2016 **location:** Washington D.C., US **contact:** GEF Secretariat **phone:** +1-202-473-0508 **fax:** +1-202-522-3240 **email:** secretariat@thegef.org **www:** http://www.thegef.org/gef/council_meetings

GEO-XIII: The 13th plenary session of the Group on Earth Observations (GEO-XIII) will, among other things, consider adoption of the Data Management Principles Implementation Guidelines. **dates:** 7-10 November 2016 **location:** St. Petersburg, Russian Federation **contact:** GEO Secretariat **email:** secretariat@geosec.org **phone:** +41-22-730-8505 **fax:** +41-22-730-8520 **www:** <http://www.earthobservations.org>

19th CCAC Working Group: The 19th CCAC WG will be the preparatory session for the eighth High Level Assembly (HLA), taking place on the margins of UNFCCC COP 22. **date:** 12 November 2016 (TBC) **location:** Marrakesh, Morocco **contact:** James Morris, Partnership & Programme Officer, CCAC Secretariat **phone:** +33-1-44-37-14-73 **fax:** +33-1-44-37-14-74 **email:** James.Morris@unep.org **www:** <http://www.ccacoalition.org/en/events/19th-ccac-working-group-preparatory-session-8th-high-level-assembly>

8th CCAC High Level Assembly: This event will take place on the margins of UNFCCC COP 22, and is expected to adopt a ministerial communiqué. **date:** 14 November 2016 (TBC) **location:** Marrakesh, Morocco **contact:** James Morris, Partnership & Programme Officer, CCAC Secretariat **phone:** +33-1-44-37-14-73 **fax:** +33-1-44-37-14-74 **email:** James.Morris@unep.org **www:** <http://www.ccacoalition.org/en/events/8th-ccac-high-level-assembly>

UNFCCC COP 22: During COP 22 of the UN Framework Convention on Climate Change (UNFCCC), parties will meet to, *inter alia*, address entry into force the Paris Agreement among other issues. **dates:** 7-18 November 2016 **location:** Marrakesh, Morocco **contact:** UNFCCC Secretariat **phone:** +49-228 815-1000 **fax:** +49-228-815-1999 **email:** secretariat@unfccc.int **www:** <http://unfccc.int/>

20th CCAC Working Group: The 20th CCAC WG and associated meetings will take place in Santiago, Chile. A science-policy dialogue will precede the WG meeting. **dates:** 24-28 April 2017 (TBC) **location:** Santiago, Chile **contact:** James Morris, Partnership & Programme Officer, CCAC Secretariat **phone:** +33-1-44-37-14-73 **fax:** +33-1-44-37-14-74 **email:** James.Morris@unep.org **www:** <http://www.ccacoalition.org/en/events/20th-ccac-working-group>

Basel COP-13, Rotterdam COP-8 and Stockholm COP-8: The 13th meeting of the COP to the Basel Convention, eighth meeting of the COP to the Rotterdam Convention and eighth meeting of the COP to the Stockholm Convention will convene back-to-back and include a high-level segment. The theme will be "A future detoxified: sound management of chemicals and waste." **dates:** 24 April – 5 May 2017 **location:** Geneva, Switzerland **contact:** BRS Secretariat **phone:** +41-22-917-8729 **fax:** +41-22-917-8098 **email:** brs@brsmeas.org **www:** <http://synergies.pops.int/>

Montreal Protocol OEWG 39: Montreal Protocol OEWG 39 will meet in July 2017, at a venue yet to be decided. **dates:** July 2017 **location:** TBC **contact:** Ozone Secretariat **phone:** +254-20-762-3851 **fax:** +254-20-762-0335 **email:** ozoneinfo@unep.org **www:** <http://conf.montreal-protocol.org/>

Vienna Convention COP 11 and Montreal Protocol MOP 29: The Vienna Convention COP 11 and Montreal Protocol MOP 29 will take place in 2017 in Montreal, Canada. **dates:** TBC **location:** Montreal, Canada **contact:** Ozone Secretariat **phone:** +254-20-762-3851 **fax:** +254-20-762-0335 **email:** ozoneinfo@unep.org **www:** <http://conf.montreal-protocol.org/>

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

GLOSSARY

CFCs	Chlorofluorocarbons
CO ₂ e	Carbon dioxide equivalent
CTC	Carbon tetrachloride
CRP	Conference room paper
CUEs	Critical use exemptions
EUEs	Essential use exemptions
ExCom	Executive Committee
FSM	Federated States of Micronesia
GHG	Greenhouse gases
GWP	Global warming potential
HAT	High ambient temperature
HCFCs	Hydrochlorofluorocarbons
HFCs	Hydrofluorocarbons
HFOs	Hydrofluoroolefins
HLS	High-Level Segment
HPMP	HCFC Phase-out Management Plan
ICAO	International Civil Aviation Organization
ImpCom	Implementation Committee
LDG	Legal Drafting Group
MDIs	Metered dose inhalers
MLF	Multilateral Fund
MOP	Meeting of the Parties
ODS	Ozone-depleting substances
OEWG	Open-ended Working Group
RAC	Refrigeration and air conditioning
SAP	Scientific Assessment Panel
SMEs	Small and medium-sized enterprises
TEAP	Technology and Economic Assessment Panel
TOR	Terms of reference
UAE	United Arab Emirates
UNEP	UN Environment Programme
UV	Ultraviolet