

行政院所屬各機關因公出國人員出國報告書  
(出國類別：出席國際會議)

出席「蒙特婁議定書第二十七次締約國  
會議」報告

出國人服務機關、職稱及姓名：

外交部薦任科員 陳瑞安

行政院環境保護署副研究員 柏雪翠

行政院環境保護署助理環境技術師 陳香君

出國地點：阿拉伯聯合大公國第二大酋長國杜拜

出國期間：104年10月30日至11月7日

報告日期：105年2月5日

## 摘要

保護臭氧層維也納公約於 1985 年在各國協議下通過，於 1988 年正式生效；另於 1987 年通過具有實質管制規定及約束力的蒙特婁議定書，且於 1989 年正式生效。各國合作協商下已再次通過 4 個蒙特婁議定書修正案，完成大幅度列管化學物質的削減。

近年來各國關注到列管化學物質的替代品(HFCs)，雖不會破壞臭氧層，但屬於溫室氣體，大量使用恐有造成溫室效應加遽之疑慮，美國、加拿大、墨西哥、密克羅尼西亞等國已於 6 年前分別提出蒙特婁議定書修正案，針對 HFCs 擬訂定削減管制時程，當時雖遭中國大陸強烈發言表示反對，但經 6 年來多次協商，中國、印度、中東國家陸續改變立場，轉為支持 HFCs 於蒙特婁議定書架構下進行管制與推動削減工作。

各國主要提的修正案內容僅是要納入管制的化學物質以及削減量時程，會議討論時，各國卻針對修正案中應納入的項目進行錙銖必較的討論，包括 HFCs 與其混合物如何納入列管化學物質、財物資助、高溫國家的豁免、替代品或替代技術的智權（IPR, intellectual property rights）等問題。

邀請締約方提供其國家的相關資訊：各國已經開始限制特定用途別使用 HCFCs，因此擔心其他國家將含 HCFCs 的產品輸往其國家對其產業不公平，因此本次會議邀請各締約方提供其產品管制內容供臭氧秘書處彙整公開給各國，停止將含 HCFCs 產品輸往限制國家。另外，為能掌握 2020 年以後 HCFCs 的需求，邀請 Article 2（先進國家）提供其後續維修用途與需求量供蒙特婁議定書締約方討論是否有相應措施。

MOP-27 針對 HFCs 管制議題有突破性的進展，即締約方協議出「杜拜 HFCs 路徑」決議文件，宣示自 2016 年起開始針對 HFCs 減量推動管理與管制協商工作，並說明未來修正案一定要涵蓋的項目與協商進度，包括列管化學物質、智權（Intellectual Property Rights, IPR）、財務支援、豁免機制等相關問題。決議文內容重點為 2016 年首要解決的挑戰為 HFCs 修正案、面臨的挑戰包含實行 HFCs 管理的靈活性、任何削減 HFCs 方案之能力建構、高環境溫度國家之豁免、替代品轉換成本、技術轉換及智慧財產權等相關問題及持續討論「HFCs 管理的可行性與方法」與「蒙特婁議定書修正案」。

## 目 次

壹、目的 .....	3
貳、過程.....	4
伍、心得及建議.....	26
陸、附件 .....	28

## 壹、目的

藉由參與本次 COP10 暨 MOP27 會議，表達我國保護臭氧層之決心及成果，有助於掌握國際公約管制發展趨勢及研擬我國因應策略，並與各國保持聯繫及交流，迅速掌握國際管制最新資訊，使我國得以妥為因應，對於本署國際環保業務之推動有極有助益。

蒙特婁議定書 HCFCs 管制目標為已開發國家（Article 2 國家或稱 non-Article 5 國家）自 2015 年起削減至基準量之 10%、自 2020 年再削減至 0.5% 且僅限維修用途使用、最後於 2030 年達到完全削減；以及開發中國家（Article 5 國家）自 2013 年凍結 HCFCs、2015 年削減 10%，2020 年、2025 年、2030 年依序削減至 35%、67.5%、97.5%，並於 2040 年達到完全削減，各締約方是否能順利達成目標，其相互間的影響以及 HCFCs 替代品的發展為近年議定書討論的重點；此外，還包括高 GWP 值之 HFCs 納入管制的可行性與必要性、溴化甲烷替代品的發展與管理制度、國際間庫存海龍的追蹤與管理、國際共同打擊 ODS 走私、廢棄產品的 ODS 庫回收管理、加速廢除、庫存處置方式等議題。

蒙特婁議定書第 27 次締約方會議（MOP-27）已於 2015 年 11 月 1 至 5 日假阿拉伯聯合大公國第二酋長國杜拜舉行。本次會議中各締約方討論重點仍專注於 HFCs 納入蒙特婁議定書管制的議題，最後產出「杜拜 HFCs 路徑（Dubai Pathway on Hydrofluorocarbons）」決議與 17 個較無爭議的決議文，包括避免進口內含 HCFCs 的產品與設備、ODS 替代品相關議題、2016-2017 年關鍵用途必要豁免等議題。

## 貳、過程

### 一、會議內容

#### (一)背景說明

- 1.保護臭氧層維也納公約於 1985 年在各國協議下通過且於 1988 年正式生效，並於 1987 年通過具有實質管制規定及約束力的蒙特婁議定書，且於 1989 年正式生效。歷年來，各國合作協商下已再次通過 4 個蒙特婁議定書修正案，完成大幅度列管化學物質的削減，包括大家熟知的氟利昂 CFCs 已不再新生產供生活消費使用，已開發國家也已將第二代列管化學物質 HCFCs 削減至 10%以下，而開發中國家也已展開削減，2015 年需先削減 10%。蒙特婁議定書至今（2015 年）全數聯合國會員國（197 個）皆已遞交承諾遵循蒙特婁議定書及其所有修正案，早已成為全球最成功的多邊環保協議（MEA）。
- 2.近年來各國關注到列管化學物質的替代品（主要為 HFCs）雖不會破壞臭氧層，但屬於溫室氣體，基於此與前述列管化學物質之性質及應用領域相同，美國、加拿大、墨西哥、密克羅尼西亞等國於 6 年前分別提出蒙特婁議定書修正案，針對 HFCs 擬訂定削減管制時程。當時雖遭中國大陸強烈發言表示反對，但經 6 年來多次協商，中國、印度、中東國家陸續改變立場，轉為支持 HFCs 於蒙特婁議定書架構下進行管制與推動削減工作。
- 3.我國一向遵循蒙特婁議定書針對已開發國家的管制時程，因此國內業者為配合達到停用 CFCs 與 HCFCs 的目標，近年也已大幅轉為使用 HFCs 類物質（包括 HFC-134a、R410A 等），為能掌握蒙特婁議定書發展動態，且向其他開發中國家宣傳我國管制列管化學物質的成果。

#### (二)與會情形

今年度 MOP-27 於 10 月 31 日至 11 月 5 日假阿拉伯聯合大公國的第二大酋長國杜拜之康萊德飯店（The Conrad Hotel）召開，共計有超過 500 位代表與專家與會。



圖第 36 次不限成員工作小組延續會議



圖 1、第 27 次蒙特婁議定書締約方大會

MOP 自 2014 年起改為網路填單報名，在國籍的下拉式選單以觀察員（Observer）的選項進行報名，因此本次比照去年方式報名，而現場

也順利領取會議名牌並順利入場參與會議。

### (三)會議內容摘要

我國持續關注之 HFCs 管制、ODS 替代品資訊等相關議題的進展，說明如下：

#### 1. 「HFCs 管理的可行性與方法」及「蒙特婁議定書修正案」

有鑑於今年 7 月在法國巴黎舉行 OEWG-36 會議中，此議題的討論各締約方皆未達成共識，因此於本次 MOP-27 前召開為期 2 天的 OEWG-36 延續會議，持續針對此議題以非正式小組 (Informal Group) 進行討論，並由 Patrick McInerney (澳大利亞籍) 和 Rafael da Soler (巴西籍) 擔任召集人。經過幾個主要國家的協調，在 OEWG-36 延續會議最後終於完成歷史性的一步，決議成立接觸小組 (Contact Group) 討論 HFCs 管理議題，這也意味著 HFCs 正式進入蒙特婁議定書的架構下展開討論，包括蒙特婁議定書內含的基金機制、科學評估機制、列管化學物質種類、基準線、減量時程、申報機制、豁免機制、遵約機制等，也將一一被討論。

因此於 MOP-27 期間，由 Patrick McInerney (澳大利亞籍) 和 Xia Yingxian (中國籍) 擔任召集人，開始討論 HFCs 管理問題，首先從各締約方履行 HFCs 削減所面臨的挑戰、財務支援、智權 (Intellectual Property Rights, IPR)、列管化學物質、豁免機制等相關問題。

最終，各締約方協議出 1 個決議「杜拜 HFCs 路徑 (Dubai Pathway on Hydrofluorocarbons (HFCs))」(Decision XXVII/1)，內容重點摘要如下：

- (1) 「HFCs 管理的可行性與方法」接觸小組於 2016 年首要解決的挑戰為 HFCs 修正案
- (2) 瞭解 MOP-27 會議期間，接觸小組討論「HFCs 管理的可行性與方法」上面臨的挑戰，包含實行 HFCs 管理的靈活性、第 2 與第

3 階段的轉換、執委會方針、任何削減 HFCs 方案之能力建構及高環境溫度國家之豁免等相關問題，詳細說明如下：

- 基金：已開發國家承諾維持多邊基金作為財務機制，且同意提供額外的資金協助開發中國家管理 HFCs
  - 靈活性：開發中國家管制 HFCs 應具靈活性，即可依據國家的情況自行訂定 HFCs 管制與實施策略、各部門別執行的優先順序及替代技術與替代品
  - 第 2 與第 3 階段之轉換：已成功轉換 HFCs 替代 CFCs 或 HCFCs 的企業將有資格獲得多邊基金的支援，以滿足轉換過程中增加的成本
  - 指委會方針：指委會應理解實施的準則和方法須根據管理 HFCs 相關議題發展，包括確定增加的成本、計算增加的成本、成本效益閾值及能源效率與氣候衝擊
  - 任何削減 HFCs 所展開的計畫活動將由多邊基金支援，包括：
    - 維修、製造及生產部門之能力建構與訓練、強化各國國內產官學研等相關組織
    - 建立管制物質之進口與出口許可制度
    - 報告
    - 示範計畫
    - 發展國家的管制策略
  - 高環境溫度國家之豁免問題
- (3) 瞭解未來討論 HFCs 管理議題上，接觸小組將面臨其他挑戰，例如轉換成本、技術轉換及智慧財產權 (Intellectual Property Rights, IPR)
- (4) 為能持續討論 HFCs 事宜，後續將召開多場不限成員工作小組



會議 (OEWG) 及其他會議，包括締約方特別會議 (Extraordinary Meeting of Parties)。

(5) 持續討論「HFCs 管理的可行性與方法」與「蒙特婁議定書修正案」

而於蒙特婁議定書修正案部分，經過 6 年的討論，各國不斷討論協商，陸續讓中國、印度、中東國家從強烈反對轉為支持，今年更已有 4 個國家群提出其版本的修正案。各國主要提的修正案內容僅是要納入管制的化學物質以及削減量時程，但本次會議中各國卻針對修正案中應納入的項目進行錙銖必較的討論，包括 HFCs 與其混合物如何納入列管化學物質、財物資助、高溫國家的豁免、替代品或替代技術的智權等問題。因此修正案內容仍待接下來的蒙特婁議定書會議協商。現階段各修正案針對已開發國家與開發中國家之管制內容詳如

表 1、表 2、表 3。

表 1、各修正案針對已開發國家之管制時程

提案國	群島國家	北美	歐盟	印度	歐盟 F-gas
基準量	100% HFCs (2011-2013) + 15% HCFCs 之 基準量	100% HFCs (2011-2013) + 75% HCFCs (2011-2013)	100% HFCs (2009-2012) + 45% HCFCs 允 許的基準量 (2009-2012)	100% HFCs (2013-2015) + 25% HCFCs (2013-2015)	100% HFCs (2009-2012)
(Mt CO <sub>2</sub> e)	451	509	474	617	351
削減時程	2017 : 85% 2021 : 65% 2025 : 45% 2029 : 25%	2019 : 90% 2024 : 65% 2030 : 30% 2036 : 15%	2019 : 85% 2023 : 60% 2028 : 30% 2034 : 15%	2016 : 100% 2018 : 90% 2023 : 65% 2029 : 30%	2015 : 100% 2016 : 93% 2018 : 63% 2021 : 45%

提案國	群島國家	北美	歐盟	印度	歐盟 F-gas
	2033 : 10%			2035 : 15%	2024 : 31% 2027 : 24% 2030 : 21%
2015-2030 年削減效益(Mt CO <sub>2e</sub> ) (不包括 HFC-23)	3,863	2,245	3,210	1,898	N/A

表 2、各修正案針對開發中國家之管制時程

提案國	群島國家	北美	歐盟	印度
基準量	100% HFCs (2015-2017) + 65% HCFCs 之基準量	100% HFCs (2011-2013) + 50% HCFCs (2011-2013)	100% HFCs (2015-2016) + 100% HCFCs (2015-2016)	100% HFCs (2028-2030) + 32.5% HCFCs (2028-2030)
(Mt CO <sub>2e</sub> )	1,184	757	1,360	2,233
削減時程	2020 : 85% 2025 : 65% 2030 : 45% 2035 : 25% 2040 : 10%	2021 : 100% 2026 : 80% 2032 : 40% 2046 : 15%	2019 年凍結，而於 2020 年前完成協商 削減時程表	2031 : 100%  2050 : 15%
2015-2030 年削減 效益(Mt CO <sub>2e</sub> ) (不包括 HFC-23)	7,045	8,641	5,890	N/A

表 3、各修正提案內容比較

北美提案	印度提案	歐盟提案	密克羅尼西亞等群島 國家提案
<b>第1條 定義</b>			
增列 19 種 HFCs 管制物質	增列 19 種 HFCs 管制物質	增列 19 種 HFCs 管制物質	增列 21 種 HFCs 管制物質
	定義由 HFCs 轉換為低 GWP 或零 GWP 的替代品之所需成本涵蓋項目		定義氣候變遷綱要公約與京都議定書
<b>第2條 管制措施</b>			
增列第 2J 條：開發中國家之 HFCs 削減時程	增列第 2J 條：開發中國家之 HFCs 削減時程	增列第 2J 條：開發中國家之 HFCs 削減時程	增列第 2J 條：開發中國家之 HFCs 削減時程
限制生產 HCFCs 之副產品 HFC-23 的排放	不在蒙特婁議定書下限制生產 HCFCs 之副產品 HFC-23 的排放	限制生產 HCFCs 之副產品 HFC-23 的排放	限制生產 HCFCs 之副產品 HFC-23 的排放
應採用經締約方批准的技術銷毀 HFC-23	應努力將 HFC-23 轉為有用的產品	應採用經締約方批准的技術銷毀 HFC-23	應採用經締約方批准的技术銷毀 HFC-23
為滿足開發中國家基本所需，允許在每一個管制階段提高 10% HFCs 生產量	為滿足開發中國家基本所需，允許在每一個管制階段提高 10% HFCs 生產量		為滿足開發中國家基本所需，允許在每一個管制階段提高 10% HFCs 生產量
HFCs 生產專利轉讓	HFCs 生產專利轉讓	HFCs 生產專利轉讓	HFCs 生產專利轉讓
協商調整 HCFCs 與 HFCs 之 GWP 值	協商調整 HCFCs 與 HFCs 之 GWP 值		
<b>第3條 管制量數值的計算</b>			

北美提案	印度提案	歐盟提案	密克羅尼西亞等群島 國家提案
計算 HFCs (包括 HFC-23) 之生產量、輸入量、輸出量、消費量	計算HFCs (排除 HFC-23) 之生產量、輸入量、輸出量、消費量	計算 HFCs (包括 HFC-23) 之生產量、輸入量、輸出量、消費量	計算HFCs (排除HFC-23) 之生產量、輸入量、輸出量、消費量
<b>第 4 條 與非締約方之間的貿易限制</b>			
禁止與非締約方進行 HFCs 貿易	禁止與非締約方進行 HFCs 貿易	禁止與非締約方進行 HFCs 貿易	禁止與非締約方進行 HFCs 貿易
實施 HFCs 進口與出口許可制度	實施 HFCs 進口與出口許可制度	實施 HFCs 進口與出口許可制度	實施 HFCs 進口與出口許可制度
<b>第 5 條 開發中國家的特殊地位</b>			
增列開發中國家之 HFCs 削減時程			
<b>第 6 條 管制措施的評估及審查</b>			
定期評估與審查 HFCs 管制措施 (即定期審查對環境友善的替代品推動情形, 並作為調整 HFCs 削減時程之基礎)	定期評估與審查 HFCs 管制措施	定期評估與審查 HFCs 管制措施	定期評估與審查 HFCs 管制措施
<b>第 7 條 申報的資料</b>			
應申報 HFCs 生產量與消費量	應申報HFCs生產量與消費量	應申報 HFCs 生產量與消費量	應申報 HFCs 生產量與消費量
應申報 HFC-23 排放量, 及以締約方核准的技術之銷毀量		應申報 HFC-23 排放量, 及以締約方核准的技術之銷毀量	應申報 HFC-23 排放量, 及以締約方核准的技術之銷毀量

北美提案	印度提案	歐盟提案	密克羅尼西亞等群島 國家提案
<b>第9條 研究、發展、大眾認知及資訊交流</b>			
		應提升替代品（包括HFCs）之研究、發展、大眾認知及資訊交流	
<b>第10條 財務機制</b>			
多邊基金應協助開發中國家履行修正案	強化財務機制以提供財務與技術合作，包括技術轉移給開發中國家	多邊基金應協助開發中國家履行修正案	強化多邊基金，並提供逐步削減HFCs生產量與消費量之資金，包括支持先期行動及與開發中國家技術合作

## 2. 避免進口內含 HCFCs 的產品與設備（Decision XXVII/8）

過去為削減 CFCs 與海龍，蒙特婁議定書於 1998 年 MOP 10 決議<sup>1</sup>，請秘書處建立不允許在國內製造以及不希望進口內含或需要 CFCs、海龍的產品與設備之締約方名單，透過此市場機制，並搭配議定書之 CFCs 與海龍削減目標，已成功淘汰此類物質。而於現階段逐步削減 HCFCs 的過程中，部分締約方乃禁止或限制進口內含或需要 HCFCs 的產品與設備；有鑑於此，歐盟、俄羅斯聯邦等締約方提議以蒙特婁議定書現有的機制，告知出口國有關 HCFCs 事宜，因此：

- 請不允許進口內含或需要 HCFCs 的產品與設備之締約方，告知秘書處不同意進口的 HCFCs 產品與設備。
- 請秘書處建立不願意進口內含或需要 HCFCs 的產品與設備之締約方名單，爾後須每年更新一次，並發給各締約方。

我國依循蒙特婁議定書的管制規範逐步削減 CFCs 與 HCFCs，主

要是依據國內訂定相關法規以及廠商的可替代能力，逐步停止不同用途別使用 CFCs 與 HCFCs，而截至目前為止，我國已禁止輸入的產品與設備包括：

- 內含 HCFC-22 之冷凍冷藏空調之產品與設備：我國自 104 年 1 月 1 日起實施
- 內含 HCFC-22 之 7.1 kw 以下窗型空調（含分離式）之產品與設備：我國自民國 99 年 1 月 1 日起實施
- 內含或需要 CFCs 的電冰箱：我國自民國 85 年 1 月 1 日起實施國內產製電冰箱及國外進口電冰箱應全面改用非氟氯碳化物冷媒系統
- 內含或需要 CFCs 的汽車：我國自民國 83 年 7 月 1 日起實施國產車及國外進口車應全面改用非氟氯碳化物（CFCs）冷媒系統我國後續可關注各締約方提報的資訊，以掌握國外 HCFCs 管制狀況，以做為政府未來研擬管制方案時參考。

### 3. ODS 替代品議題（Decision XXVII/4）

去年度 MOP-26 之決議文件 XXVI/9，已請 TEAP 更新各部門別 ODS 替代品資訊，同時考量其能源效率、區域差異與高溫環境下替代品於開發中國家使用與不使用的差異，並評估其替代品是否已商業化、技術成熟、環境無害、經濟可行且具成本效益、使用得安全性與維修保養等問題。今年度乃請 TEAP 於明年度 OEWG-37 時提出報告一份替代品評估報告、於 MOP-28 時再次更新，其評估事項如下：

(1). 依據 XXVI/9 要求持續更新替代品資訊，並考量近期高溫環境替代品的測試結果，加強評估：

- 不同區域間替代品之可用性與市場滲透率（market penetration rate）
- 漁船更換替代品，以及改造整個冷凍系統的適宜性，評估對象包括小島國家的漁船。

- 具有潛力可作為 ODS 替代品的新物質
- 替代品之能源效率、暖化衝擊及整體的轉換成本

(2). 將評估情境延伸至 2050 年。

我國產業已普遍轉為使用 HFCs，且因氣候高溫影響其能源效率，因此我國後續可持續關注此替代品議題的進展，以做為國內廠商選擇替代品之參考資訊，同時亦作為政府未來研擬管制方案時參考。

#### 4. 與削減 HCFCs 相關議題 (Decision XXVII/5)

為能掌握 2020 年以後 HCFCs 的需求，請已開發國家提供其後續維修用途與需求量供蒙特婁議定書締約方討論是否有相應措施。因此：

(1). 請 TEAP 評估

- 確認已開發中國家於 2020 年後各部門與子部門之必要用途，亦包括估計 HFCs 的使用量。
- 評估已開發中國家於 2020-2030 年冷凍空調之 HCFCs 維修需求量，以及評估其他部門可能的維修量。
- 報告為滿足國內基本需求之近期生產量、未來生產量，以及評估開發中國家於 2020 年後國內基本的需求量。

(2). 請各締約方於 2016 年 3 月 15 日前提交相關資訊至臭氧秘書處，以利納入 TEAP 評估報告

(3). 請 TEAP 於 2016 年 OEWG-37 會議提交報告

我國即將面臨 2020-2030 年消費量將從現在的 10% 下降到 0.5%，因此實有必要評估我國 HCFCs 後續維修用途與需求量，以確實掌握未來 HCFCs 供與需之間的問題。因此建議我國應持

續關注此議題的進展，深入瞭解 TEAP 計算的準則，以及各國未來的需求量及削減 HCFCs 時面臨的困難，以作為政府未來研擬管制方案時參考。

#### 5. 中國 2016 年實驗與分析用途之必要用途豁免 (Decision XXVII/2)

同意中國於 2016 年擁有 70 公噸的四氯化碳消費量作為水中油、油脂及總石油碳氫化合物測試用途，並鼓勵中國儘速修訂與落實執行國家的檢測標準方法，已確保不再使用會消耗臭氧層之過渡方法。

#### 6. 2016-2017 年關鍵用途之必要豁免 (Decision XXVII/3)

針對各締約方申請溴化甲烷關鍵用途豁免，今年度溴化甲烷技術委員會 (MBTOC) 決議核發溴化甲烷關鍵用途之必要豁免量如下：

	用途	2016 年	2017 年
澳大利亞	草莓匍匐莖	-	29.76
阿根廷	草莓果	71.25	-
	番茄	58	-
中國	薑 (開放場)	78.75	-
	薑 (保護場)	21	-
墨西哥	草莓匍匐莖	43.539	-
	覆盆子匍匐莖	41.418	-
南非	麵粉廠 (Mills)	5.462	-
	住宅 (houses)	68.6	-

#### (四) 國際間 HCFCs 替代對環境的衝擊報告

有鑑於削減 CFCs 與 HCFCs 促使各國轉為使用的 HFCs，雖不會直接破壞臭氧層，但其直接排放也讓大氣中的溫室氣體增加，因此蒙特



婁議定書締約方會議於 2007 年開始鼓勵各國向臭氧秘書處提交其擬執行的相關管制規範、經濟誘因、HCFCs 削減管理方案、其他相關執行方案及替代品對民眾身體健康與安全影響等。臭氧秘書處 (UNEP/OzL Pro 27/3) 統計截至 2015 年 9 月止，共有 25 個國家提交資料，另美國也自行蒐集彙整 23 個國家資料，因此總計有 48 個國家的資料可供參考，並於本次 MOP27 會議文件中提供各締約方參考。以下重點摘要各國提交資料：

## 1. 各國管制規範

總計有 11 個國家提供其實施的相關法規管制措施，包括 HFCs 生產與消費管制、HFCs 排放管制、教育訓練與證書、記錄保存與報告、標籤制度等。有些國家是以既有的蒙特婁議定書相關管制法規 (原本只管制 CFCs 與 HCFCs) 進行修訂，擴大管制物質種類，例如美國與日本。但也有一些國家於為因應京都議定書即研訂申報制度與管制 F-gas (包括 HFCs、PFCs、SF6) 排放的法規，包括澳洲與丹麥。

若以源頭管制，各國應訂定 HFCs 的進出口量與生產量，甚至需使用核配制度進行管制。HFCs 主要使用的用途包括冷凍冷藏空調設備、發泡、噴霧罐、清洗、消防等，部分國家在國內管制用途別使用時，也同時管制已填充 HFCs 冷媒的產品進出口，例如澳洲與丹麥。而為有效管制 HFCs 的進出口量，部分國家要求廠商應申報 HFCs 進口量，例如澳洲、歐盟、貝里斯、埃及、紐西蘭、葉門。

此外，有些國家在管制 CFCs 與 HCFCs 時即開始管制設備生命週期的測試、使用、維修及廢棄等階段之洩漏 (排放)。所有國家當然禁止惡意洩漏 HFCs 冷媒，美國與紐西蘭還考量非故意行為，因此允許微量洩漏，另大部分國家也會要求應回收冷媒。不過，歐洲國家與日本更進一步以法規要求設備擁有者需定期進行洩漏檢查與記錄。近來，汽車的溫室氣體排放量受到關注，美國與加拿

大已針對輕型與重型卡車，德國則針對特定汽車，要求以降低洩漏進行設計。而大部分的國家，依循生產或供應商的廢棄物管理責任，皆有一套冷凍冷藏空調設備冷媒回收管理制度，且已行之有年，因此從過去的 CFCs、HCFCs 到再納入 HFCs，可持續執行。

哥倫比亞更訂定 HFCs 與其他溫室氣體的最大允許空污排放量（以時、日、年的監測數值），紐西蘭則限制特定排放源的溫室氣體排放量（包括 HFCs），違者甚至有罰鍰。

為有效避免冷媒洩漏，除了如前述從設計面與檢查面進行管理外，強化維修人員與設備操作人員的教育訓練及證書規範，也是一項重要的管理方案。目前澳洲與歐美日國家皆已制訂相關規範，只是涵蓋範圍有些不同。澳洲要求執行含氟/氯冷媒的分裝、製造、冷凍空調或消防設備安裝、維修、拆除作業的人員應具有合格處理證書，而冷媒或滅火劑的的擁有與處理應由取得交易授權證書的個人或企業執行。而加拿大則以公告作業規範，提供操作者遵循的規範。日本則要求具有證書且註冊者方能執行商用冷凍冷藏空調設備冷媒回收作業。

美國的溫室氣體申報方案中，HFCs 供應商達特定排放閾值時，需上線申報供應活動，統計 2011 年申報資料，計有 54 個廠商申報，總計排放量達 7 百萬公噸二氧化碳當量。

另外，歐洲國家已法規要求含有 HFCs 的冷凍冷藏空調設備應以標籤明示，美國加州則要求含 HFC-134a 冷媒之汽車空調需標示清楚。

## 2. 經濟手段

目前全球各國為減少使用 HFCs 的經濟手段包括一般認為對產業負面的環境稅或環境規費，或是對產業正面的補助或回饋，或是總量或限量管制的排放交易系統和遵約信用額度等。以下簡要說明各國實施情形：

## (1). 環境稅或環境規費

目前有丹麥、挪威、波蘭、斯洛維尼亞及西班牙等國實施溫室氣體稅或規費，其中丹麥是最早實施者（2001 年）。丹麥是針對 HFCs、PFCs 及 SF6 苛以每 1 公噸二氧化碳當量為 100 丹麥幣（約 13 歐元）的進口稅，稅率於 2011 年已調漲至 150 丹麥幣（約 20 歐元），相當於進口 1 公斤 HFC-134a 約需繳交 26 歐元進口稅。這項措施雖然給產業壓力，但已讓 HFCs 在丹麥的進口量於 10 年內下降一半（約 350 公噸）。

波蘭是藉著收費進行維護申報資料系統及執行含氟氣體排放減量管理計畫，收費的氣體包括 CFCs、HCFCs、HFCs，收取的費用分別是每公斤 55 歐元、12 歐元、7 歐元。

西班牙內閣已經在 2013 年通過苛稅方案，針對 GWP 高於 150 的氟氣體，依其消費量進行苛稅，稅率約每個 GWP 值約 0.02 歐元，最高不超過 100 歐元/公斤。這項措施將於 3 年內逐步完成，從 2014 年苛徵 1/3，2015 年苛徵 2/3，2016 年全額苛徵。不過，此稅制不適用於新設備填充新冷媒，且含氟氣體的設備若屬全密閉並預先填充 3 公斤以內者得以免除苛稅。

布吉納法索針對進口 HFCs 苛稅，但若有與其他國家的雙邊或多邊協議得以免除，其稅率為估貨物進口價值的 27-30%。

中國大陸於 2005 年提出苛徵 HFC-23CDM 計畫的 65%稅額方案，獲得的稅金將用於 CDM 行政費用及氣候變遷能力建構及其他永續發展活動。

法國則正在考慮針對 GWP 超過 150 的 HFCs 進行苛稅，目前約有 4 個方案正在考慮，稅率每公噸二氧化碳當量約 2.5 至 60 歐元。法國環保署估計這個方案可以協助於 2020 年減少 50% HFCs，而 2030 年可以減少 80%。

紐西蘭自 2013 年 7 月 1 日起針對進口產品與第一次領牌的

新車內含有 HFCs 或 PFCs 者需支付碳稅。

馬其頓共和國則是針對舊的冷氣機、冰箱及冷凍冷藏機苛稅。

## (2). 補助、回饋及其他正面誘因

比利時、加拿大、丹麥、歐盟、日本、莫三比克、挪威、西班牙及加州提供相關補助、回饋及其他正面誘因。

比利時（The flanders region of belgium）建立了一個方案稱為 Ecology Premium，針對公司採用環境友善與能源效率替代品者提供補助，計算方式是以非 HFCs 替代品的額外成本比例進行計算。另，若以自然冷媒替換 HFCs 者，不論是既有設備或新設備，也可獲得補助。

加拿大在私家車與輕卡車溫室氣體排放法規中提到補助事項，針對可降低空調冷媒洩漏，以及採用減少洩漏技術的公司皆提供補助。這項補助鼓勵廠商使用低 GWP 冷媒，也因此推動加拿大籍的汽車公司於新型汽車轉為採用 HFC-1234yf。

丹麥環保署建立一個補助方案，針對冷媒領域的計畫提供資助，費用約 2 千萬丹麥幣。

歐盟藉由空調生態化設計規範（No. 206/2012）提供降低能效的補助計畫，推動使用對環境衝擊較低的冷媒市場。此外，德國也有提供回饋與正面又因的方案。

日本針對購買高能效且使用自然冷媒的商用與工業用冷凍冷藏設備提供補助。

莫三比克提供進口 HCFCs 替代品的免稅方案，間接鼓勵使用自然冷媒。

挪威與西班牙則是苛稅與補助方案同時進行。

美國加州則針對 HFC-134a 的小包裝容器回收者進行補貼。

哥倫比亞也針對環境友善替代品與高能效者提供稅率優惠方案。

## (五) 周邊會議

### 1. UNIDO 舉辦之漁船 ODS 管理

聯合國環境規劃署的技術、工業及經濟部 (Division of Technology, Industry and Economics (UNEP/DTIE), 簡稱 UNIDO) 關注到漁船多數使用 HCFC-22, 且因漁船環境較惡劣, 對漁船上的冷凍空調設備損害率較高, 相對的需填充 HCFC-22 冷媒的數量也較多, 也意味著這些 HCFC-22 直接排放到大氣中, 破壞臭氧層的比例增加。另一方面, 也可能提升非法交易與走私 ODS 的風險。有鑒於此, UNIDO 特別邀請幾位專家, 共同討論此議題, 提供各締約方相關資訊, 並推動轉換替代品, 減少 ODS 的排放與使用量。

研究指出交通設施的冷凍空調設備之冷媒填充量從 1 公斤到 3,000 公斤皆有, 而漁船的洩漏率更高達 40%, 但若使用密閉或半密閉系統可將洩漏率降至 5% 以下。目前聯合國的 HCFCs 減量推動計畫 (HPMP) 中完全沒有針對海洋上的船隻之 HCFCs 減量計畫, 但這個問題需大家一起解決, 期望大家研提相關計畫, 共同努力找出方法。

有些國家提出, 目前氨 (NH<sub>3</sub>) 和 CO<sub>2</sub> 冷媒可以作為選項, HC<sub>s</sub> 則因安全問題, 完全不被考慮。不過, 氨與 CO<sub>2</sub> 在漁船上仍有其限制性, 有待技術發展來解決。此外, 要從 HCFC-22 與 R404A 直接替換時, 可以考慮使用 R407 或同系列替代品。

其實, 各國大型漁船的遠洋漁業的經濟效益很大, 因此, 漁船的冷凍冷藏設備的穩定性對各國都很重要, 南太平洋論壇漁業局 (FFA, Pacific Islands Forum Fisheries Agency) 專家表示統計其會員國的漁船 ODS 消費量, 估計高達 710 公噸, 雖然目前使用 R404A 替

代 HCFC-22，但 R404A 不僅有高 GWP 值，其設備能源效率也叫原來使用 R-22 低，因此目前尚未有一個較佳的替代品，期望大家投入研究，協助漁業減少使用對環境不好的冷媒。

斐濟與馬爾地夫的 HCFCs 用途中，漁船用量佔大宗，約超過 40%，目前馬爾地夫以誘因制度推廣替代品，斐濟則正釐清船籍有關管理所屬與船旗所屬問題，其評估出 2013 年外國籍船約需 0.12 公噸 ODS，斐濟籍則約需 0.04 公噸。目前斐濟也是使用 R404A 作為替代品，但效率差且替換成本高。

## 2. HFCs 基準量與排放量推估計畫

聯合國氣候與清潔空氣聯盟 CCAC (The Climate and Clean Air Coalition) 與 UNDP 合作進行各區域 HFCs 基準量與排放量推估計畫。

孟加拉：HFC-134a、R404A、R407C、R410A 廣泛使用於該國的冷凍冷藏空調系統與設備，另外也使用 HFC-125 與 HFC-227 於滅火系統，但發泡與清洗用途及其他非醫療的氣膠用途並未使用 HFCs。其中 HFC-134a 為主，佔該國 HFCs 消費量的 92.67%。

智利：主要用途在冷凍冷藏空調及滅火系統，於 2012 年分別約佔 94.69%與 5.07%。另外，尚有 0.24%是使用 HFC-152a 於玻璃工業與使用 Chesterton® SP 296 作為電子清洗用途。該國也未使用 HFCs 於發泡用途，目前發泡主要使用環戊烷與 HCFC-141b，未來是否會轉為使用 HFCs，尚無法知道。在冷凍冷藏空調設備中，HFC-134a 佔 40.4 %、R-404A 佔 27.24 %及 R-507A 佔 22.63 %。另外，R410A 的使用成長率在 2008 至 2012 年間成長 115%。於 2012 年間，R410A 的使用量已高達冷凍冷藏設備 HFCs 使用量的 97.2%，而 HFC-227ea 與 HFC-125 用於滅火系統。Novec™ 1230 則用於資通訊產業。

哥倫比亞：一樣 HFCs 主要使用於冷凍冷藏空調部門，2012 年

佔 98.3%，其餘是使用 HFC-152a 於玻璃工業，使用 Chesterton® SP 296 做為電子清洗用途佔 0.2 %，另 HFC-227ea 與 HFC-125 用於滅火系統佔 0.4 %。

迦納 (Ghana)：使用 HFC-134a 約佔 60%，另也有使用 R404A、R410A、R407C 及 R507A。

印尼：HFC-134a 消費量佔 95%，主要使用於冷凍冷藏空調設備，而有一半是汽車空調用途。另預期 R-410A、R-407C 及 R-32 將逐步增加。此外，該國在 HPMP 協助下，發泡用途轉為使用 HFC-245fa，這部分用量也將增加。另溶劑用途也可能會增加。

奈及利亞：HFCs 與 HFCs 混合物於 2008 至 2014 年間的進口量高達 9,075 公噸，平均每年約 1,296 公噸。

各國已逐步展開調查 HFCs 工作，如何計算與評估，未來仍須持續交流分享，以提升評估技術。

#### (六) 宣傳交流事項

參與本次會議之另一重要任務是宣傳我國削減破壞臭氧層物質 (ODS) 的成果，並與國際專家交流。因此本次會議期間，乃透過 UNEP 臭氧秘書處展覽攤位發送我國臭氧層保護英文文宣 USB (Ozone Layer Protection - What Taiwan has been doing) 共計 100 份，藉此宣揚我國努力依循蒙特婁議定書管制的成果；同時亦積極與國際專家交流 ODS 及 HFCs 管制等議題，詳細交流紀錄如表 4。

表 4、與國際專家交流之會議紀錄

主要與談人	對方參與人員	討論內容摘要
Mr. Rajendra Shende Email:	前 UNEP 技術工業經濟部臭氧層分部主管 環境技術教育研究及復原組	1. HFCs 管理與技術研究應更全面，而不僅侷限於 HFCs 冷媒一項，應擴展討論設備的效率，全面探討設備的生命週期溫室氣體排放量。

主要與談人	對方參與人員	討論內容摘要
<a href="mailto:shende.rajendra@gmail.com">shende.rajendra@gmail.com</a>	織 TERRE 的政策中心主任	2. 過去也曾來台參與我國保護臭氧層國際研討會，佩服我國積極遵循蒙特婁議定書的決心，後續也期望能有國際合作機會，共同為保護大氣層努力。
Dr. Steven Andersen Email: <a href="mailto:soliverandersen@anol.com">soliverandersen@anol.com</a>	前任聯合國環境規劃署 UNEP 的技術暨經濟評估委員會 TEAP 的共同主席 現為 永續發展與管理組織 IGSD (Institute for Governance & Sustainable Development) 的研究主席	1. 長期與我國關係良好，也多次來台交流臭氧層保護，以及氣候變遷國際管制趨勢資訊。 2. 針對家用冷氣之能源效率，目前正著手進行連結各國資訊的平台建置工作，期望台灣也能參與，讓廠商的高效能設備曝光，提供其他國家買家參考，以推動全球設備能源效率的競爭性，讓設備能源效率進而提升。
Ms. Marta Pizano Email: <a href="mailto:mpizano@hortitec.com">mpizano@hortitec.com</a> Ms Bella Maranion	聯合國環境規劃署 UNEP 的技術暨經濟評估委員會 TEAP 的共同主席	1. 有關溴化甲烷 QPS 用途之追蹤，目前全球皆已限制溴化甲烷除必要用途豁免申請核准、緊急用途外，應限使用於 QPS 用途。 2. 各國 QPS 用途之認定與審核恐有許多未知的模糊地帶，認同台灣代表團所提應建置全球資訊透明平台。而針對即時掌握對方國家對檢疫與裝運前的燻蒸要求，建議採雙邊協議方式，建置即時資訊對口。
Ms. Shamila Nair-Bedouelle Email:	UNEP 技術工業經濟部臭氧層分部主管	1. 漁船冷媒使用量無法削減，對未來 HCFCs 維修用途需求使用量是一大挑戰。 2. 期望各國專家學者針對漁船冷媒使用管



主要與談人	對方參與人員	討論內容摘要
<a href="mailto:shamila.nair-bedou@unep.org">shamila.nair-bedou@unep.org</a>		理提供建議，共同針對此議題進行討論與分享資訊。
Mr. Balaji Natarajan Email: <a href="mailto:Balaji.natarajan@unep.org">Balaji.natarajan@unep.org</a>	聯合國發展署 UNDP 技術專家	<ol style="list-style-type: none"> <li>1. 正在執行協助亞洲國家評估 HFCs 未來使用需求量與建立基準量計算模式的計畫。</li> <li>2. 目前 HFCs 使用量推估模式，乃以設備使用需求推估，以掌握未來溫室氣體排放量情形。</li> <li>3. 我國在評估 HFCs 工作上，皆願意分享交流相關資訊與評估技術。</li> </ol>
Mr. Tapio Reinikainen Email: <a href="mailto:Tapio.reinikainen@ymparisto.fi">Tapio.reinikainen@ymparisto.fi</a>	負責擔任芬蘭於蒙特婁議定書的 HFCs 管制協議專家 芬蘭環境組織工業環境管理永續消費與生產中心的資深顧問 SYKE 是芬蘭政府成立的研究組織，由環境部與農業森林部管理與執行計畫	<ol style="list-style-type: none"> <li>1. 針對 HFCs 管制交換意見，建議我國展開 HFCs 需求量與基準量計算。</li> </ol>
Mr. Denise Sioson Email: <a href="mailto:Denise.sioson.affiliate@unep.org">Denise.sioson.affiliate@unep.org</a>	聯合國環境規劃署 UNEP 氣候與清潔空氣聯盟 CCAC 的秘書與柴油與 HFC 協作者	<ol style="list-style-type: none"> <li>1. 推動全球 HFCs 需求量與基準量計算工作計畫。</li> <li>2. 建議我國參考其他國家，展開 HFCs 需求量與基準量計算。</li> </ol>
Mr. Bhaskar Deol	自然資源保育團體 NRDC	<ol style="list-style-type: none"> <li>1. 針對 HFCs 的管制，期盼本次 MOP27 能有突破，為保護地球共同努力。</li> </ol>

主要與談人	對方參與人員	討論內容摘要
Email: <a href="mailto:BDEOL@NRDC">BDEOL@NRDC.</a> <a href="#">Org</a>  Mr. Nehmat Kaur		
Mr. Katsufumi Shibata 柴田勝史	日本 PREC 研究院環境技術 士	1. 針對 HFCs 管制，該研究院也積極關注，期能協助日本政府與廠商因應。

## 參、心得及建議

MOP-27 及 OEWG-36 延續會議參加對象包括各國政府代表、聯合國相關機構、政府間組織、非政府組織及產業等，共計有超過 500 位專家與代表與會。本次會議中各締約方仍針對 HFCs 議題踴躍討論，因此會議於杜拜時間 11 月 6 日凌晨 2 點多才正式結束，共計產出「杜拜 HFCs 路徑」決議與 17 個較無爭議的決議文，包括避免進口內含 HCFCs 的產品與設備、ODS 替代品相關議題、2016-2017 年關鍵用途之必要豁免、科學評估小組（SAP）、環境影響評估小組（EEA）及技術暨經濟評估委員會（TEAP）等評估小組 2018 年四年期報告之潛在重點領域、四氯化碳差異調查、技術暨經濟評估委員會（TEAP）委員異動等議題。

本次最主要的爭議是討論「修正案」的必要納入項目，以下摘要說明本次參與會議之重點結論與建議：

- 1.我國產業界已普遍轉為使用替代品 HFCs，因氣候高溫影響能源效率，以及易燃冷媒的安全管理與勞工/消費者使用安全尚未有明確防範與訓練制度，設備製造廠商尚未能全力投入自然冷媒的應用開發；本次會議正式將 HFCs 納入討論，各國爭議的不再只是 HFCs 應歸蒙特婁議定書或是京都議定書管制的議題，將進而著重於管制規範內容研擬，且不再只是侷限於削減時程，將納入財務技術協助、替代品或替代技術的智慧財產權（IPR, intellectual property rights）、高溫環境國家的豁免等和過去 ODS 管制不同的議題。
- 2.歐洲、美國、日本皆已經公告不同用別停用高 GWP 值 HFCs 的法案，聯合國又積極協助中國、印度、東南亞國家或其他開發中國家轉用低 GWP 值替代品，當全球都朝向使用新的替代品時，既有的產品價格就會上漲，其他國家為保護其產業也會要求相關產品不得輸往該國。
- 3.我國冷凍空調產業已大多轉為使用高 GWP 的 HFCs，各產業與建築物也高度依賴冷凍空調設備，而設備又需依靠這些 HFCs 冷媒才能運轉，一旦全球市場減產，使用者的成本就會增加。另一方面也顯示我國冷凍空調設備產業技術的落伍，全球競爭力也相對降低。
- 4.另針對我國進口 HFCs 各類化學品使用現況與技術開發的研究，包括 R410A、R407C 等混合（環保）冷媒應著手研擬相關管制措施，以利未來追蹤每年進出口量，並推動冷凍空調產品轉用成熟低 GWP 值替代品。
- 5.明年為協議 HFCs 管制議題，將召開多場工作小組會議（OEWG），另外 MOP28 預計於 11 月假非洲盧安達首都吉佳利（Kigali, Rwanda）舉辦。為推動實質參

與國際環保事務並即時掌握管制趨勢，我國未來可持續派員參與國際公約相關會議，以拓展我國國際參與空間，掌握全球脈動，達到臭氧層保護之目標。

## 肆、附錄

附錄一、會議議程

附錄二、OEWG-36 延續會議記錄報告

附錄三、MOP-27 會議記錄報告

附錄四、MOP-27 會議決議文件

附錄五、ENB 會議記錄

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that Deplete the Ozone Layer  
Dubai, United Arab Emirates, 1–5 November 2015

### Annotations to the provisional agenda

#### I. Preparatory segment (1–3 November 2015)

##### A. Opening of the preparatory segment (item 1 of the provisional agenda for the preparatory segment)

1. The preparatory segment of the meeting is scheduled to be opened on Sunday, 1 November 2015, at 10 a.m. at the Conrad Hotel on Sheikh Zayed Road in Dubai, United Arab Emirates. Information on the pre- and on-site registration can be found in the note by the Secretariat on issues for discussion by and information for the attention of the Twenty-Seventh Meeting of the Parties to the Montreal Protocol (UNEP/OzL.Pro.27/2, para. 4). As the meeting will be virtually paperless, participants are urged to bring their own laptops and handheld devices to access the meeting documents.

1. Statements by representative(s) of the Government of the United Arab Emirates
2. Statements by representative(s) of the United Nations Environment Programme

2. Welcoming statements will be made by the representative(s) of the Government of the United Arab Emirates and the Executive Secretary of the Ozone Secretariat representing the United Nations Environment Programme.

##### B. Organizational matters (item 2 of the provisional agenda for the preparatory segment)

1. Adoption of the agenda of the preparatory segment

3. Details of the adoption of the agenda for the preparatory segment (UNEP/OzL.Pro.27/1) are set out in the note by the Secretariat on issues for discussion by and information for the attention of the Twenty-Seventh Meeting of the Parties to the Montreal Protocol (UNEP/OzL.Pro.27/2, para. 7).

2. Organization of work

4. As is the custom, the preparatory segment will be co-chaired by the co-chairs of the Open-ended Working Group (currently Mr. Paul Krajnik (Austria) and Ms. Emma Rachmawaty (Indonesia)). Additional information is set out in the note by the Secretariat on issues for discussion by and information for the attention of the Twenty-Seventh Meeting of the Parties to the Montreal Protocol (UNEP/OzL.Pro.27/2, para. 8).

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- C. Administrative matters (item 3 of the provisional agenda for the preparatory segment)**
- 1. Consideration of membership of Montreal Protocol bodies for 2016**
- (a) Members of the Implementation Committee**
5. Participants at the preparatory segment are expected to discuss the membership of the Implementation Committee and the selection process for 2016. Details on membership and the selection process are set out in the following documents:
- (a) Note by the Secretariat on issues for discussion by and information for the attention of the Twenty-Seventh Meeting of the Parties to the Montreal Protocol (UNEP/OzL.Pro.27/2, paras. 9–12);
- (b) Note by the Secretariat on draft decisions for the consideration of the Twenty-Seventh Meeting of the Parties to the Montreal Protocol (UNEP/OzL.Pro.27/3, sect. III, draft decision XXXVII[CC]).
- (b) Members of the Executive Committee of the Multilateral Fund**
6. Participants at the preparatory segment are expected to discuss the membership of the Executive Committee and the selection process for 2016. Details on membership and the selection process are set out in the following documents:
- (a) Note by the Secretariat on issues for discussion by and information for the attention of the Twenty-Seventh Meeting of the Parties to the Montreal Protocol (UNEP/OzL.Pro.27/2, paras. 13–16);
- (b) Note by the Secretariat on draft decisions for the consideration of the Twenty-Seventh Meeting of the Parties to the Montreal Protocol (UNEP/OzL.Pro.27/3, sect. III, draft decision XXXVII[DD]).
- (c) Co-chairs of the Open-ended Working Group**
7. Participants at the preparatory segment are expected to select the co-chairs of the Open-ended Working Group for 2016. Details about the selection process are set out in the following documents:
- (a) Note by the Secretariat on issues for discussion by and information for the attention of the Twenty-Seventh Meeting of the Parties to the Montreal Protocol (UNEP/OzL.Pro.27/2, paras. 17 and 18);
- (b) Note by the Secretariat on draft decisions for the consideration of the Twenty-Seventh Meeting of the Parties to the Montreal Protocol (UNEP/OzL.Pro.27/3, sect. III, draft decision XXXVII[EE]).
- 2. Financial report of the trust fund and budgets for the Montreal Protocol**
8. Participants at the preparatory segment are expected to consider information provided about the financial reports and budgets for the trust fund for the Montreal Protocol. Information is set out in the following documents:
- (a) Note by the Secretariat on the proposed revision to the approved budget for 2015 and proposed budgets for 2016 and 2017 for the Trust Fund for the Montreal Protocol on Substances that Deplete the Ozone Layer (UNEP/OzL.Pro.27/4/Rev.1);
- (b) Note by the Secretariat on certified financial statements for the Trust Funds for the Vienna Convention for the Protection of the Ozone Layer and the Montreal Protocol on Substances that Deplete the Ozone Layer for the year ended 31 December 2014 and expenditures for 2014 as compared with the approved budgets (UNEP/OzL.Pro.27/4/Add.1);
- (c) Note by the Secretariat on issues for discussion by and information for the attention of the Twenty-Seventh Meeting of the Parties to the Montreal Protocol (UNEP/OzL.Pro.27/2, para. 19);
- (d) Note by the Secretariat on draft decisions for the consideration of the Twenty-Seventh Meeting of the Parties to the Montreal Protocol (UNEP/OzL.Pro.27/3, sect. III, draft decision XXXVII[AA]).

- D. Issues related to exemptions from Articles 2 A–2 I of the Montreal Protocol (item 4 of the provisional agenda for the preparatory segment)**
- (a) **Nominations for essential-use exemptions for 2016**
9. Participants at the preparatory segment are expected to consider the nomination of China for an essential-use exemption to use carbon tetrachloride for testing of oil, grease and hydrocarbons in water in 2016. The following documents are available to assist participants in their consideration of the issue:
- (a) Note by the Secretariat on issues for discussion by and information for the attention of the Twenty-Seventh Meeting of the Parties to the Montreal Protocol (UNEP/OzL.Pro.27/2, paras. 20 and 21);
- (b) Note by the Secretariat on draft decisions for the consideration of the Twenty-Seventh Meeting of the Parties to the Montreal Protocol (UNEP/OzL.Pro.27/3, sect. III, draft decision XXVII/[A]);
- (c) Report of the Technology and Economic Assessment Panel (2015), vol. 1: progress report.
- (b) **Nominations for critical-use exemptions for 2016 and 2017**
10. Participants at the preparatory segment are expected to consider the critical-use nominations for methyl bromide for 2016 and 2017. The following documents are available to assist participants in their consideration of the issue:
- (a) Note by the Secretariat on issues for discussion by and information for the attention of the Twenty-Seventh Meeting of the Parties to the Montreal Protocol and the addendum thereto (UNEP/OzL.Pro.27/2, paras. 22–24, and Add.1, paras. 3 and 4);
- (b) Report of the Technology and Economic Assessment Panel (2015), vol. 2;
- (c) Report of the Technology and Economic Assessment Panel (September 2015): Final Evaluation of 2015 Critical Use Nominations for Methyl Bromide.
- E. Issues related to alternatives to ozone-depleting substances (item 5 of the provisional agenda for the preparatory segment)**
- (a) **Report by the Technology and Economic Assessment Panel on the full range of alternatives to ozone-depleting substances (decision XXVI/9, subparagraphs 1 (a)–(c))**
11. Participants at the preparatory segment are expected to consider the final report by the task force of the Technology and Economic Assessment Panel on the full range of alternatives to ozone-depleting substances. The following documents are available to assist participants in their consideration of the issue:
- (a) Note by the Secretariat on issues for discussion by and information for the attention of the Twenty-Seventh Meeting of the Parties to the Montreal Protocol (UNEP/OzL.Pro.27/2, paras. 25 and 26 and annex I, and Add.1, para. 5);
- (b) Report of the Technology and Economic Assessment Panel (September 2015): Decision XXVI/9 Update Task Force Report – Additional Information on Alternatives to Ozone-depleting Substances.
- (b) **Updated information submitted by parties on their implementation of paragraph 9 of decision XIX/6 (decision XXVI/9, paragraph 3)**
12. Participants at the preparatory segment are expected to review the summary of information updated by the Secretariat based on the submissions by the parties on the promotion of a transition from ozone-depleting substances that minimized environmental impact. The following documents are available to assist participants in their consideration of the issue:
- (a) Report by the Secretariat on an updated summary of the information submitted by parties on their implementation of paragraph 9 of decision XIX/6 to promote a transition from ozone-depleting substances that minimizes environmental impact (decision XXV/5, paragraph 3) (UNEP/OzL.Pro.27/11);
- (b) Note by the Secretariat on issues for discussion by and information for the attention of the Twenty-Seventh Meeting of the Parties to the Montreal Protocol (UNEP/OzL.Pro.27/2, paras. 27 and 28);



(c) Submissions by parties on the implementation of decision XIX/6 (see UNEP/OzL.Pro.WG.1/34/INF/4 and Add.1 and 2, UNEP/OzL.Pro.26/INF/4 and UNEP/OzL.Pro.27/INF/2).

**F. Outcome of the resumed thirty-sixth meeting of the Open-ended Working Group meeting (item 6 of the provisional agenda for the preparatory segment)**

13. The resumed thirty-sixth meeting of the Open-ended Working Group will take place on 29 and 30 October 2015. Its main agenda is the continuation of discussion under item 7 of the agenda of the thirty-sixth meeting of the Open-ended Working Group, which was suspended in July 2015. The following documents are available to assist participants in their consideration of the issue:

(a) Agenda of the meeting (UNEP/OzL.Pro.WG.1/resumed.36/1);

(b) Note by the Secretariat on an issue for discussion by and information for the attention of the Open-ended Working Group of the Parties to the Montreal Protocol at its resumed thirty-sixth meeting (UNEP/OzL.Pro.WG.1/resumed.36/2);

(c) Note by the Secretariat on issues for discussion by and information for the attention of the Twenty-Seventh Meeting of the Parties to the Montreal Protocol (UNEP/OzL.Pro.27/2, paras. 29 and 30).

**G. Proposed amendments to the Montreal Protocol (item 7 of the provisional agenda for the preparatory segment)**

14. The parties are expected to discuss the proposed amendments to the Montreal Protocol, which were also considered by the Open-ended Working Group at its thirty-sixth meeting in July 2015. The following documents are available to assist participants in their consideration of the issue:

(a) Note by the Secretariat on a proposed amendment to the Montreal Protocol on Substances that Deplete the Ozone Layer submitted by Canada, Mexico and the United States of America (UNEP/OzL.Pro.27/5);

(b) Note by the Secretariat on a proposed amendment to the Montreal Protocol on Substances that Deplete the Ozone Layer submitted by India (UNEP/OzL.Pro.27/6);

(c) Note by the Secretariat on a proposed amendment to the Montreal Protocol on Substances that Deplete the Ozone Layer submitted by the European Union and its member States (UNEP/OzL.Pro.27/7);

(d) Note by the Secretariat on a proposed amendment to the Montreal Protocol on Substances that Deplete the Ozone Layer submitted by Kiribati, Marshall Islands, Mauritius, Micronesia (Federated States of), Palau, Philippines, Samoa and Solomon Islands (UNEP/OzL.Pro.27/8);

(e) Note by the Secretariat on issues for discussion by and information for the attention of the Twenty-Seventh Meeting of the Parties to the Montreal Protocol (UNEP/OzL.Pro.27/2, paras. 31–33 and annex II, containing a schematic summary of the key elements of the four amendment proposals);

**H. Issues related to the phase-out of hydrochlorofluorocarbons (decision XIX/6 (paragraphs 12–14)) (item 8 of the provisional agenda for the preparatory segment)**

15. The preparatory segment is expected to consider further the draft decision by Australia, Canada and the United States of America on issues related to the phase-out of hydrochlorofluorocarbons (HCFCs) to request the Technology and Economic Assessment Panel to analyse and provide information on the need for continued use of HCFCs after the final phase-out dates. The following documents are available to assist participants in their consideration of the issue:

(a) Note by the Secretariat on issues for discussion by and information for the attention of the Twenty-Seventh Meeting of the Parties to the Montreal Protocol (UNEP/OzL.Pro.27/2, paras. 34 and 35);

(b) Note by the Secretariat on draft decisions for the consideration of the Twenty-Seventh Meeting of the Parties to the Montreal Protocol (UNEP/OzL.Pro.27/3, sect. II, draft decision XXXVII(B)).

**I. Potential areas of focus for the assessment panels' 2018 quadrennial assessments (item 9 of the provisional agenda for the preparatory segment)**

16. The preparatory segment is expected to consider the suggestions for issues to be included in the 2018 quadrennial assessment of the assessment panels. The parties will also consider the membership changes in the Scientific Assessment Panel. The following documents are available to assist participants in their consideration of the issues:

- (a) Note by the Secretariat on issues for discussion by and information for the attention of the Twenty-Seventh Meeting of the Parties to the Montreal Protocol (UNEP/OzL.Pro.27/2, paras. 36–39, and Add.1, paras 6–8);
- (b) Note by the Secretariat on draft decisions for the consideration of the Twenty-Seventh Meeting of the Parties to the Montreal Protocol (UNEP/OzL.Pro.27/3, sect. III, draft decision XXVII/[BB]);
- (c) Synthesis of the 2014 Reports of the Scientific, Environmental Effects, and Technology and Economic Assessment Panels of the Montreal Protocol (October 2015);
- (d) Addendum to the June 2015 Technology and Economic Assessment Panel report , vol. 1: progress report (September 2015);
- (e) Chemicals Technical Options Committee: 2014 assessment report;
- (f) Environmental effects of ozone depletion and its interactions with climate change: 2014 assessment report;
- (g) Report of the Rigid and Flexible Foams Technical Options Committee: 2014 assessment report;
- (h) Report of the Halons Technical Options Committee, vol. 1: 2014 assessment report;
- (i) Report of the Methyl Bromide Technical Options Committee: 2014 assessment report;
- (j) Report of the Medical Technical Options Committee: 2014 assessment report;
- (k) Report of the Refrigeration, Air Conditioning and Heat Pumps Technical Options Committee: 2014 assessment;
- (l) Scientific Assessment of Ozone Depletion: 2014;
- (m) Report of the Technology and Economic Assessment Panel: 2014 assessment report;
- (n) Technology and Economic Assessment Panel (September 2015): Final Evaluation of 2015 Critical Use Nominations for Methyl Bromide;
- (o) Report of the Technology and Economic Assessment Panel (June 2015), vol. 1: progress report;
- (p) Report of the Technology and Economic Assessment Panel (September 2015): Decision XXVI/9 Update Task Force Report – Additional Information on Alternatives to Ozone-Depleting Substances.

**J. Compliance and data reporting issues: presentation on and consideration of the work and recommended decisions of the Implementation Committee under the Non-Compliance Procedure for the Montreal Protocol (item 10 of the provisional agenda for the preparatory segment)**

17. The preparatory segment is expected to consider the report by the President of the Implementation Committee on party compliance issues considered during the Committee's fifty-fourth and fifty-fifth meetings in 2015, including draft decisions to be submitted for possible adoption during the high-level segment. The following documents are available to assist participants in their consideration of the issue:

- (a) Note by the Secretariat on issues for discussion by and information for the attention of the Twenty-Seventh Meeting of the Parties to the Montreal Protocol (UNEP/OzL.Pro.27/2, paras. 40 and 41).
- (b) Report of the Implementation Committee under the Non-Compliance Procedure for the Montreal Protocol on the work of its fifty-fourth meeting (UNEP/OzL.Pro/ImpCom/54/4).

**K. Other matters (item 11 of the provisional agenda for the preparatory segment)**

18. The parties will consider other matters raised at the time of the adoption of the agenda (UNEP/OzL.Pro.27/2, para. 42).

**II. High-level segment (4 and 5 November 2015)**

**A. Opening of the high-level segment (item 1 of the provisional agenda for the high-level segment)**

19. The high-level segment of the meeting is scheduled to be opened at 10 a.m. on Wednesday, 4 November 2015 (UNEP/OzL.Pro.27/2, para. 43).

1. Statements by representative(s) of the Government of the United Arab Emirates
2. Statements by representative(s) of the United Nations Environment Programme
3. Statement by the President of the Twenty-Sixth Meeting of the Parties to the Montreal Protocol

20. Opening statements will be delivered by the Minister of Environment and Water of the United Arab Emirates, Mr. Rashid Ahmed Bin Fahad, the Executive Director of the United Nations Environment Programme, Mr. Achim Steiner, and the President of the Bureau of the Twenty-Sixth Meeting of the Parties, Mr. Rodrigo Siles Lora (Plurinational State of Bolivia) (UNEP/OzL.Pro.27/2, para. 44).

**B. Organizational matters (item 2 of the provisional agenda for the high-level segment)**

1. Election of officers of the Twenty-Seventh Meeting of the Parties to the Montreal Protocol

21. The meeting is expected to elect a president, three vice-presidents and a rapporteur on the basis of regional rotation agreed by the parties. It is expected that the president will be elected from Western European and other States and the rapporteur from Latin American and Caribbean States. It is expected that three vice-presidents will be elected, one each from African States, Asia-Pacific States and Eastern European States. Information on this issue is set out in the following documents:

- (a) Note by the Secretariat on issues for discussion by and information for the attention of the Twenty-Seventh Meeting of the Parties to the Montreal Protocol (UNEP/OzL.Pro.27/2, para. 45);
- (b) Rule 21 of the Rules of Procedure for Meetings of the Parties to the Montreal Protocol.

2. Adoption of the agenda of the high-level segment of the Twenty-Seventh Meeting of the Parties to the Montreal Protocol

22. The meeting will consider for adoption the agenda of the high-level segment. Information on this issue is set out in the following documents:

- (a) Provisional agenda (UNEP/OzL.Pro.27/1);
- (b) Note by the Secretariat on issues for discussion by and information for the attention of the Twenty-Seventh Meeting of the Parties to the Montreal Protocol (UNEP/OzL.Pro.27/2, para. 46).

3. Organization of work

23. Organization of work will be proposed by the President for consideration and agreement of the parties as set out in the note by the Secretariat on issues for discussion by and information for the attention of the Twenty-Seventh Meeting of the Parties to the Montreal Protocol (UNEP/OzL.Pro.27/2, para. 47).

4. Credentials of representatives

24. Credentials of representatives, alternative representatives and advisers should be submitted to the Executive Secretary of the meeting if possible not later than 24 hours after the opening of the meeting. The officers of the meeting shall examine the credentials and submit their report to the meeting. Information on this issue is set out in the following documents:

- (a) Note by the Secretariat on issues for discussion by and information for the attention of the Twenty-Seventh Meeting of the Parties to the Montreal Protocol (UNEP/OzL.Pro.27/2, para. 48);



(b) Rules 18 and 19 of the Rules of Procedure for Meetings of the Parties to the Montreal Protocol.

**C. Presentations by the assessment panels on their synthesis of the 2014 quadrennial assessments (item 3 of the provisional agenda for the high-level segment)**

25. Under item 3, the assessment panels will present the synthesis report, which is based on the outcomes of their quadrennial assessment prepared in accordance with Article 6 of the Montreal Protocol and decision XXIII/13. Information on this issue is set out in the following documents:

(a) Note by the Secretariat on issues for discussion by and information for the attention of the Twenty-Seventh Meeting of the Parties to the Montreal Protocol (UNEP/OzL.Pro.27/2, para. 49, and Add.1, para. 9);

(b) Synthesis of the 2014 Reports of the Scientific, Environmental Effects, and Technology and Economic Assessment Panels of the Montreal Protocol (October 2015);

(c) Addendum to the June 2015 Technology and Economic Assessment Panel report, vol. 1: Progress Report (September 2015);

(d) Chemicals Technical Options Committee: 2014 assessment report;

(e) Environmental effects of ozone depletion and its interactions with climate change: 2014 assessment report;

(f) Report of the Rigid and Flexible Foams Technical Options Committee: 2014 assessment report;

(g) Report of the Halons Technical Options Committee, vol. 1: 2014 assessment report;

(h) Report of the Methyl Bromide Technical Options Committee: 2014 assessment report;

(i) Report of the Medical Technical Options Committee: 2014 assessment report;

(j) Report of the Refrigeration, Air Conditioning and Heat Pumps Technical Options Committee: 2014 assessment;

(k) Scientific Assessment of Ozone Depletion: 2014;

(l) Report of the Technology and Economic Assessment Panel: 2014 assessment report;

(m) Report of the Technology and Economic Assessment Panel (September 2015): Final Evaluation of 2015 Critical Use Nominations for Methyl Bromide;

(n) Report of the Technology and Economic Assessment Panel (June 2015), vol. 1: progress report;

(p) Report of the Technology and Economic Assessment Panel (September 2015): Decision XXVI/9 Update Task Force Report – Additional Information on Alternatives to Ozone-Depleting Substances.

**D. Presentation by the Chair of the Executive Committee of the Multilateral Fund for the Implementation of the Montreal Protocol on the work of the Executive Committee, the Multilateral Fund secretariat and the Fund's implementing agencies (item 4 of the provisional agenda for the high-level segment)**

26. Under item 4, the Chair of the Executive Committee of the Multilateral Fund will present a report on the decisions taken during the Executive Committee meeting and the work undertaken by the Multilateral Fund secretariat and the Fund's implementing agencies since the Twenty-Sixth Meeting of the Parties in November 2014. Information on this issue is set out in the following documents:

(a) Note by the Secretariat on issues for discussion by and information for the attention of the Twenty-Seventh Meeting of the Parties to the Montreal Protocol (UNEP/OzL.Pro.27/2, para. 50);

(b) Report of the Executive Committee of the Multilateral Fund for the Implementation of the Montreal Protocol (UNEP/OzL.Pro.27/10).

**E. Statements by heads of delegation and discussion on key topics (item 5 of the provisional agenda for the high-level segment)**

27. Under item 5, the Secretariat is planning to organize a ministerial round table discussion that will focus on how the institutions and the mechanisms of the Montreal Protocol can assist parties in managing hydrofluorocarbons. The discussion will be followed by statements by heads of delegations who will be invited to speak. Beginning on the first day of the preparatory segment, the Secretariat will accept requests to speak and will compile a list of speakers based on those requests. Additional information on item 5 is set out in the note by the Secretariat on issues for discussion by and information for the attention of the Twenty-Seventh Meeting of the Parties to the Montreal Protocol (UNEP/OzL.Pro.27/2, paras. 51 and 52).

**F. Report by the co-chairs of the preparatory segment and consideration of the decisions recommended for adoption by the Twenty-Seventh Meeting of the Parties (item 6 of the provisional agenda for the high-level segment)**

28. Under item 6 the co-chairs of the preparatory segment will present the summary of discussion and recommended decisions to the high-level segment. Information on this issue is set out in the following documents:

(a) Note by the Secretariat on issues for discussion by and information for the attention of the Twenty-Seventh Meeting of the Parties to the Montreal Protocol (UNEP/OzL.Pro.27/2, para. 53);

(b) Note by the Secretariat on draft decisions for the consideration of the Twenty-Seventh Meeting of the Parties to the Montreal Protocol (UNEP/OzL.Pro.27/3).

**G. Dates and venue for the Twenty-Eighth Meeting of the Parties to the Montreal Protocol (item 7 of the provisional agenda for the high-level segment)**

29. The parties will be updated on the venue for the Twenty-Eighth Meeting of the Parties and may then wish to reaffirm their decision XXVI/22 to hold the meeting in Kigali. Information on this issue is set out in the following documents:

(a) Note by the Secretariat on issues for discussion by and information for the attention of the Twenty-Seventh Meeting of the Parties to the Montreal Protocol (UNEP/OzL.Pro.27/2, para. 54);

(b) Note by the Secretariat on draft decisions for the consideration of the Twenty-Seventh Meeting of the Parties to the Montreal Protocol (UNEP/OzL.Pro.27/3, sect. III, draft decision XXVII[FF]);

(c) Report of the Twenty-Sixth Meeting of the Parties (UNEP/OzL.Pro.26/10, decision XXVI/22).

**H. Other matters (item 8 of the provisional agenda for the high-level segment)**

30. The parties are expected to discuss any additional substantive issues agreed during the adoption of the agenda (UNEP/OzL.Pro.27/2, para. 55).

**I. Adoption of decisions by the Twenty-Seventh Meeting of the Parties to the Montreal Protocol (item 9 of the provisional agenda for the high-level segment)**

31. Parties are expected to adopt decisions under item 9. Information on this issue is set out in the following documents:

(a) Note by the Secretariat on issues for discussion by and information for the attention of the Twenty-Seventh Meeting of the Parties to the Montreal Protocol (UNEP/OzL.Pro.27/2, para. 56);

(b) Note by the Secretariat on draft decisions for the consideration of the Twenty-Seventh Meeting of the Parties to the Montreal Protocol (UNEP/OzL.Pro.27/3).

**J. Adoption of the report (item 10 of the provisional agenda for the high-level segment)**

32. Parties are expected to adopt the report under item 10 (UNEP/OzL.Pro.27/2, para. 57).

**K. Closure of the meeting (item 11 of the provisional agenda for the high-level segment)**

33. The meeting will be closed by the President after adoption of the meeting report and customary exchange of courtesies at the expected date and time set out in the note by the Secretariat on issues for discussion by and information for the attention of the Twenty-Seventh Meeting of the Parties to the Montreal Protocol (UNEP/OzL.Pro.27/2, para. 58).

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Open-ended Working Group of the Parties to  
the Montreal Protocol on Substances that  
Deplete the Ozone Layer  
Resumed thirty-sixth meeting  
Dubai, United Arab Emirates, 29 and 30 October 2015  
Item 3 of the provisional agenda\*  
Continuation of the discussion under item 7 of the agenda of  
the  
thirty-sixth meeting of the Open-ended Working Group

Issue for discussion by and information for the attention of the Open-ended  
Working Group of the Parties to the Montreal Protocol at its resumed  
thirty-sixth meeting

**Note by the Secretariat**

1. The present note sets out a summary of the issue on the provisional agenda for the resumed thirty-sixth meeting of the Open-ended Working Group of the Parties to the Montreal Protocol on Substances that Deplete the Ozone Layer. The only substantive issue is agenda item 3, “Continuation of the discussion under item 7 of the agenda of the thirty-sixth meeting of the Open-ended Working Group”. Item 7 of the agenda of the thirty-sixth meeting was on the report of the intersessional informal discussions on the feasibility and ways of managing hydrofluorocarbons (HFCs).

2. At the final plenary session of the thirty-sixth meeting of the Open-ended Working Group, held in Paris from 20 to 24 July 2015, the Working Group agreed to suspend the meeting and resume it prior to the Twenty-Seventh Meeting of the Parties for the sole purpose of continuing its work under item 7 of the agenda of the

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\* UNEP/OzL.Pro.WG.1/resumed.36/1.

thirty-sixth meeting. The Government of the United Arab Emirates kindly agreed to host the resumed meeting in addition to hosting the Twenty-Seventh Meeting of the Parties and associated meetings.

3. During the thirty-sixth meeting, the co-chair recalled that at the thirty-fifth meeting of the Open-ended Working Group, held in Bangkok from 22 to 24 April 2015, the parties had agreed to continue to work intersessionally in an informal manner to study the feasibility and ways of managing HFCs including, inter alia, the related challenges set out in annex II to the report of the thirty-fifth meeting (UNEP/OzL.Pro.WG.1/35/6), with a view to the establishment of a contact group on the issue at the thirty-sixth meeting.

4. The co-convenor of the informal discussions then reported on the progress that had been made to date and referred to the non-paper containing a factual record of the key issues raised during the intersessional informal meeting held in Vienna on 12 and 13 June 2015, which is available on the website of the Ozone Secretariat (<http://conf.montreal-protocol.org/meeting/owwg/owwg-36/presession>).

5. The parties agreed to allow the informal consultations on HFCs to continue during the thirty-sixth meeting and the co-convenors periodically reported back to the plenary on the progress achieved.

6. At the final plenary session of the thirty-sixth meeting, the co-convenor reported that although steady progress had been made, a few items remained unresolved and it had therefore not been possible to conclude the consultations.

7. Accordingly, the Open-ended Working Group agreed that the draft mandate document developed during the informal consultations as it stood at the suspension of the thirty-sixth meeting on 24 July 2015 would be appended to the report of the thirty-sixth meeting. The draft mandate is reproduced in the annex to the present note, without formal editing.

8. The outcome of the resumed thirty-sixth meeting is expected to be discussed at the Twenty-Seventh Meeting of the Parties to the Montreal Protocol, to be held in Dubai, United Arab Emirates, from 1 to 5 November 2015, under item 6 of the provisional agenda for the preparatory segment, for follow-up action as appropriate.



### Mandate for a possible contact group on the feasibility and ways of managing HFCs

The Open-ended Working Group of the Parties to the Montreal Protocol at its thirty-fifth meeting held in Bangkok from 22 to 24 April 2015, agreed that “it would continue to work inter-sessionally in an informal manner to study the feasibility and ways of managing HFCs, including, inter alia, the related challenges set out in annex II to the [report of the thirty-fifth meeting of the Open-ended Working Group], with a view to the establishment of a contact group on the feasibility and ways of managing HFCs at the thirty-sixth meeting of the Open-ended Working Group” (paragraph 128, UNEP/OzL.Pro.WG.1/35/6).

The informal meeting was convened on the 12-13 of June in Vienna on the above mentioned basis.

The parties have recognised in their interventions the success of the Montreal Protocol and its institutions in phasing out ODSs.

Parties agree that nothing should be considered agreed until everything is agreed.

~~[Parties agree that they shall resolve the list of challenges as mentioned below first. Parties agree to consider the feasibility and ways of managing HFCs in a contact group, where the parties shall resolve the following issues:]~~

[Parties in a contact group shall consider the feasibility and ways of managing HFCs, where the parties first shall resolve the following issues by formulating processes, mechanisms and approaches as required thereof:]

- Relevance and recognition of the special situation of developing countries and the principles under the Montreal Protocol which have enabled sufficient additional time in the implementation of commitments by A5 countries,
- [Enhancing the commitments by non A5 parties to maintain the MLF as the financial mechanism and provide sufficient additional funding through the MLF [commensurate with what is needed to enable [A5 party compliance with any control measures, if agreed] [A5 parties’ management of HFCs],]
- [Appropriate financial mechanism for management of HFCs in A5 parties, should any HFC control measures be agreed]
- The elements in paragraph 1(a) of decision XXVI/9 including IPR issues in considering the feasibility and the ways of managing HFCs,
- Flexibility in implementation that enables countries to set their own strategies and set their own priorities in sectors and technologies,
- Exemption process and a mechanism for periodic review of alternatives including the consideration of availability or lack of availability of alternatives in all sectors in A5 countries and special needs for high ambient countries, based on all the elements listed in paragraph 1(a) of decision XXVI/9,
- Relationship with the HCFC phase out,
- Non-party trade provisions, and

-Legal aspects, synergies and other issues related to the UNFCCC in the context of HFC management under the MP.

[[Then,]Parties will discuss in the contact group the ways of managing HFCs including [the proposed amendments] [amending the MP to phase down HFCs [at an appropriate time]] and other options suggested/proposed by Parties.]

[Then, the parties will discuss in the contact group the p2917ending matters related to the management of HFCs] [including amending the MP to phase down HFCs].

[Then, the parties will discuss the pending matters related to the management of HFCs].

[Then, the parties will discuss in the contact group the ways of managing HFCs including the proposals submitted by the parties.]

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Twenty-Seventh Meeting of the Parties to  
the Montreal Protocol on Substances  
that Deplete the Ozone Layer  
Dubai, United Arab Emirates, 1 – 5 November 2015

**Report of the Twenty-Seventh Meeting of the Parties to the Montreal Protocol  
on Substances that Deplete the Ozone Layer**

**Introduction**

1. The Twenty-Seventh Meeting of the Parties to the Montreal Protocol was held at the Conrad Hotel in Dubai, United Arab Emirates, from 1 to 5 November 2015.

**Part one: preparatory segment (1 – 3 November 2015)**

**I. Opening of the preparatory segment**

2. The preparatory segment was opened by its co-chairs, Mr. Paul Krajnik (Austria) and Ms. Emma Rachmawaty (Indonesia), on Sunday, 1 November 2015 at 10 a.m.

3. Opening remarks were delivered by Mr. Rashed Ahmed bin Fahad, Minister of the Ministry of Environment and Water of the United Arab Emirates, and Ms. Tina Birmpili, Executive Secretary of the Ozone Secretariat, who formally opened the meeting.

**A. Statement by the representative of the Government of the United Arab Emirates**

4. In his remarks, Mr. Bin Fahad welcomed the parties to Dubai and expressed appreciation to the Ozone Secretariat and all others involved in organizing the current meeting. His Government, he said, remained committed to working with the international community to tackle all threats to human health and the environment, as reflected in its continuing efforts to meet its obligations under the Vienna

Convention and the Montreal Protocol since acceding to the instruments in 1989 and 1990, respectively. Efforts in that regard had included legislative and institutional support for phasing out hydrochlorofluorocarbons (HCFCs) and combating illegal trade, as well as awareness-raising at the national and regional levels on such critical issues as refrigerant use in high ambient temperatures, and he called on the parties to work together with the same spirit of responsibility and compromise that they had shown to date in seeking sustainable solutions for the management of hydrofluorocarbons (HFCs), taking into account the viewpoints of all parties and the need to address the equally important issue of climate change.

5. Expressing his Government's satisfaction at its role in facilitating the success of the Open-ended Working Group in agreeing to establish a contact group to discuss HFC management and the proposed amendments to the Protocol, as well as its appreciation to all the parties for their flexibility, he wished them further success in their deliberations both at the current meeting and at the twenty-first session of the Conference of the Parties to the United Nations Framework Convention on Climate Change in Paris.

**B. Statement by the representative of the United Nations Environment Programme**

6. In her opening remarks, Ms. Birmpili said that the successful efforts undertaken under the Vienna Convention and the Montreal Protocol to rid the world of ozone depleting substances had become a legend that could inspire future successes, especially given that those efforts had not only helped to protect the Earth's ozone layer but had also contributed greatly to mitigating the threat of climate change.

7. The story of the Vienna Convention and the Montreal Protocol could be traced back to 1974, when researchers Mario Molina and Sherwood Rowland had published groundbreaking research indicating that chlorofluorocarbons (CFCs) were destroying the ozone layer. Under the leadership of the United Nations Environment Programme (UNEP) and its then Executive Director, Egyptian scientist Mustafa Tolba, a treaty aimed at protecting the stratospheric ozone layer had been negotiated, resulting in the adoption of the Vienna Convention in 1985 and, two years later, its Montreal Protocol.

8. On the thirtieth anniversary of the Convention, its 197 parties had much cause to celebrate. While the Montreal Protocol had started modestly, with control measures to phase out 50 per cent of a group of five CFCs and freeze production and consumption of three halons, over the years it had been amended and adjusted to cover the phase-out of nearly 100 such substances, including methyl bromide and HCFCs, and to accelerate the previously agreed phase-out schedule for HCFCs.

9. The parties had learned by doing and, as their confidence had increased, so had their level of ambition. The evolution of controls on CFCs, halons, HCFCs and methyl bromide had followed a flexible pattern that had drawn a distinction between parties operating under paragraph 1 of Article 5 (Article 5 parties) and parties not so operating, with early action by the latter and deferred action by the former, and the adoption of control measures and schedules appropriate to each group of parties.

Just as important, additional obligations for Article 5 parties had been accompanied by additional funding for those parties.

10. Behind the success of the Montreal Protocol were its dedicated financial mechanism, which since its establishment in 1990 had provided more than \$3.5 billion dollars to cover the incremental costs of implementing the Protocol in Article 5 parties; the work of its assessment panels, whose reports had assisted the parties in making informed decisions based on sound scientific, technological and economic data; and the willingness to find common ground that the parties had repeatedly demonstrated over the years.

11. The Montreal Protocol's success in phasing out ozone-depleting substances had inspired around 40 parties, including, India, a broad coalition of island developing States, the European Union and its 28 member States and three North American States, to submit four proposed amendments to the Protocol to deal with HFCs. At its resumed thirty-sixth meeting, held in Dubai the previous week, the Open-ended Working Group had begun to write the next phase of the Protocol by agreeing to the mandate for a contact group to address the issue of HFCs in two stages, first through consideration of the challenges facing all parties, in particular developing country parties, in managing HFCs, and then through discussion of four proposals to amend the Protocol to cover HFCs.

12. To move forward on HFCs, it was up to the parties at the current meeting to set up the proposed contact group and address the special situation of Article 5 parties, including through flexibility and additional time for implementation, exemptions, periodic review of alternatives and the provision of financial resources under the Protocol's financial mechanism. The thirtieth anniversary of the Vienna Convention offered parties the opportunity not only to celebrate the past successes of the ozone regime but also to build new milestones and use the institutions, mechanisms, knowledge and experience that they had built over the years to ensure the continued relevance of the Montreal Protocol and its ability to respond to evolving needs and emerging issues for the good of humankind and the environment.

## **II. Organizational matters**

### **A.Attendance**

13. The Twenty-Seventh Meeting of the Parties to the Montreal Protocol was attended by representatives of the following parties: Albania, Angola, Antigua and Barbuda, Argentina, Armenia, Australia, Austria, Azerbaijan, Bahamas, Bahrain, Bangladesh, Belarus, Benin, Bosnia and Herzegovina, Botswana, Brazil, Brunei Darussalam, Bulgaria, Burkina Faso, Cambodia, Cameroon, Canada, Chad, Chile, China, Colombia, Comoros, Cook Islands, Costa Rica, Côte d'Ivoire, Croatia, Cuba, Cyprus, Czech Republic, Denmark, Dominican Republic, Egypt, El Salvador, Estonia, Ethiopia, European Union, Fiji, Finland, France, Gabon, Georgia, Germany, Ghana, Greece, Grenada, Guatemala, Guinea-Bissau, Guyana, Haiti, Holy See, Honduras, India, Indonesia, Iran (Islamic Republic of), Iraq, Ireland, Italy, Jamaica, Japan, Jordan, Kenya, Kuwait, Kyrgyzstan, Lao People's Democratic Republic,

Lebanon, Madagascar, Malawi, Malaysia, Maldives, Mali, Mauritius, Mexico, Micronesia (Federated States of), Mongolia, Montenegro, Mozambique, Nepal, Netherlands, New Zealand, Niger, Nigeria, Norway, Oman, Pakistan, Palau, Panama, Paraguay, Philippines, Poland, Portugal, Qatar, Republic of Korea, Romania, Russian Federation, Rwanda, Samoa, Saudi Arabia, Senegal, Singapore, Slovakia, Somalia, South Africa, Spain, Sri Lanka, Sudan, Swaziland, Sweden, Switzerland, Syrian Arab Republic, Thailand, the former Yugoslav Republic of Macedonia, Timor-Leste, Turkey, Ukraine, United Arab Emirates, United Kingdom of Great Britain and Northern Ireland, United Republic of Tanzania, United States of America, Uruguay, Uzbekistan, Venezuela (Bolivarian Republic of), Viet Nam and Zimbabwe.

14. Representatives of the following United Nations bodies and specialized agencies also attended: secretariat of the Multilateral Fund for the Implementation of the Montreal Protocol, secretariat of the United Nations Framework Convention on Climate Change, United Nations Development Programme, United Nations Environment Programme, United Nations Industrial Development Organization, World Bank and World Meteorological Organization.

15. The following intergovernmental, non-governmental, industry, academic and other bodies and individuals were also represented or present: Air-conditioning, Heating and Refrigeration Institute, Air-Conditioning and Refrigeration European Association, Alliance for Responsible Atmospheric Policy, Association of Heating, Refrigerating and Air-Conditioning Engineers, Center for Climate and Energy Solutions, Centre for Science and Environment, Chemours, China Association of Fluorine and Silicone Industry, China Household Electrical Appliances Association, China Refrigeration and Air-Conditioning Industry Association, Cooperation Council for the Arab States of the Gulf, Council on Energy, Environment and Water, CPI Industry, Daikin Industries, D.C. Pro Engineering L.L.C., Emirates Diplomatic Academy, Environmental Investigation Agency, European Partnership for Energy and the Environment, Ghantoot Transport & General Contracting Establishment, GIZProklima, Gluckman Consulting, Grassroots Government Advocacy Committee, Guangdong Meizhi Compressor Company and Welling Motor, Gujarat Fluorochemicals Limited, Honeywell, ICF International, INCON CRM FZE, Industrial Technology Research Institute, Ingersoll Rand, Institute for Governance and Sustainable Development, Institute of Nuclear and Energy Research (Instituto de Pesquisas Energeticas e Nucleares), Intech Pharma Pvt Ltd., International Institute of Refrigeration, International Pharmaceutical Aerosol Consortium, Japan Fluorocarbon Manufacturers Association, Japan Refrigerants and Environment Conservation Organization, Japan Refrigeration and Air-Conditioning Industry Association, Johnson Controls, JSC Kompozit, L. Kamal & Company, Kuwait University, Lawrence Berkeley National Laboratory, Mrs. Meenakashi Lekhi, Member of Parliament of India, Linde Group, Linde Gases Division, L. Kamal & Company, Mr. Jonathon Ong, Mr. Rajiv Pillai, Marketways, Mebrom Puurs, Mhmeng Consulting, MOPIA, Natural Resources Defense Council, National Aeronautics and Space Administration, Olama Consultancy, OSSC HaloPolymer, Petra Engineering, Refrigeration and Air-Conditioning Manufacturers Association,

Refrigerant Gas Manufacturers Association, Refrigerant Reclaim Australia, Refrigerants Australia, RTOC Consulting Company, Shecco, Squire Patton Boggs, SRF Limited, Terre Policy Centre, The Three Factors Company, Transfrig, Transmond Environment Ltd., United Technologies Climate, Controls & Security, World Avoided Project, Ying Peng Group, Zhejiang Dongyang Chemical Co. Ltd., Zhejiang Foopeng Chemical Co. Ltd., Zhejiang Yonghe Refrigerant Co. Ltd. and 3M Electronics.

## **B. Officers**

16. The preparatory segment was co-chaired by Mr. Krajnik and Ms. Rachmawaty.

## **C. Adoption of the agenda of the preparatory segment**

17. The following agenda for the preparatory segment was adopted on the basis of the provisional agenda contained in document UNEP/OzL.Pro.27/1:

1. Opening of the preparatory segment:
  - (a) Statement by the representative of the Government of United Arab Emirates;
  - (b) Statements by the representative of the United Nations Environment Programme.
2. Organizational matters:
  - (a) Adoption of the agenda of the preparatory segment;
  - (b) Organization of work.
3. Administrative matters:
  - (a) Consideration of membership of Montreal Protocol bodies for 2016;
  - (b) Financial report of the trust fund and budgets for the Montreal Protocol.
4. Issues related to exemptions from Articles 2A – 2I of the Montreal Protocol:
  - (a) Nominations for essential-use exemptions for 2016;
  - (b) Nominations for critical-use exemptions for 2016 and 2017.
5. Issues related to alternatives to ozone-depleting substances:
  - (a) Report by the Technology and Economic Assessment Panel on the full range of alternatives to ozone-depleting substances (decision XXVI/9, subparagraphs 1 (a) – (c));
  - (b) Updated information submitted by parties on their implementation of paragraph 9 of decision XIX/6 (decision XXVI/9, paragraph 3).

6. Outcome of the resumed thirty-sixth meeting of the Open-ended Working Group.
7. Proposed amendments to the Montreal Protocol.
8. Issues related to the phase-out of hydrochlorofluorocarbons (decision XIX/6 (paragraphs 12 – 14)).
9. Potential areas of focus for the assessment panels' 2018 quadrennial assessments.
10. Compliance and data reporting issues: presentation on and consideration of the work and recommended decisions of the Implementation Committee under the Non-Compliance Procedure for the Montreal Protocol.
11. Other matters.

18. During the adoption of the agenda the parties agreed to discuss under agenda item 11 (Other matters) a draft decision submitted by the European Union on releases of ozone-depleting substances from production processes and opportunities for reducing such releases; the financial issues raised by the Technology and Economic Assessment Panel in an addendum to its June 2015 progress report (see UNEP/Ozl.pro.27/2/Add.1, para. 8 (e)); avoiding unwanted imports of products and equipment containing or relying on substances specified in Annex C to the Montreal Protocol; delays in the transfer of project funds from the implementing agencies of the Multilateral Fund for the Implementation of the Montreal Protocol to some Article 5 parties; and the destruction of ozone-depleting substances.

#### **D. Organization of work**

19. The parties agreed to follow their customary procedure and to establish contact groups as necessary, endeavouring to limit the number of groups operating simultaneously to ensure the effective participation of small delegations.

### **III. Administrative matters**

#### **A. Consideration of membership of Montreal Protocol bodies for 2016**

20. The Co-Chair requested regional groups to submit nominations to the Secretariat for positions in various bodies under the Montreal Protocol, including officers of the Bureau of the Twenty-Seventh meeting of the Parties, the co-chairs of the Open-ended Working Group and the members of the Executive Committee of the Multilateral Fund and the Implementation Committee under the Non-Compliance Procedure of the Montreal Protocol for 2016.

21. Subsequently, the Secretariat reported that it had received the names of the nominees for the the 2016 membership of the Implementation Committee and the Executive Committee, as well as for the 2016 co-chairs of the Open-ended Working Group, and that the relevant draft decisions were available on the meeting portal.



## **B. Financial report of the trust fund and budgets for the Montreal Protocol**

22. Introducing the item, the Co-Chair drew attention to the approved and proposed budgets set out in document UNEP/OzL.Pro.27/4/Rev.1 and the financial reports set out in document UNEP/OzL.Pro.27/4/Add.1. He noted that it had been the practice of the parties at past meetings to establish a budget committee to review budget-related documents and prepare one or more draft decisions on budgetary matters. In accordance with that practice, the parties agreed to establish a budget committee, coordinated by Mr. Delano Verwey (Netherlands) and Mr. Leslie Smith (Grenada), to agree on budgets for the Montreal Protocol trust fund and to prepare a draft decision on financial matters for the Protocol.

23. Subsequently, the co-chair of the budget committee presented a draft decision on the financial report and budget of the trust fund for the Montreal Protocol, which the parties approved for consideration and adoption during the high-level segment.

## **IV. Issues related to exemptions from Articles 2A – 2I of the Montreal Protocol**

### **A. Nominations for essential-use exemptions for 2016**

24. Introducing the sub-item, the Co-Chair recalled that the Open-ended Working Group, at its thirty-sixth meeting, had heard a presentation from the Technology and Economic Assessment Panel indicating that no essential-use nominations had been received for chlorofluorocarbons (CFCs) for metered-dose inhalers for the current year and that only one party, China, had submitted a nomination for laboratory and analytical uses of carbon tetrachloride in 2016. China's nomination was for the use of carbon tetrachloride for the testing of oil and grease and total petroleum hydrocarbons in water.

25. One representative, speaking on behalf of a group of parties, expressed a desire to consult China regarding its nomination.

26. It was agreed that interested parties would consult informally and report to the Meeting of the Parties on the results of those consultations.

27. Subsequently, the representative of China said that following the informal consultations agreement had been reached on the nomination for laboratory and analytical uses for China for 2016.

28. The parties then approved a draft decision on China's 2016 essential use exemption for laboratory and analytical uses of carbon tetrachloride for consideration and adoption during the high-level segment.

### **B. Nominations for critical-use exemptions for 2016 and 2017**

29. Mr. Ian Porter, co-chair of the Methyl Bromide Technical Options Committee, gave a presentation on the final recommendations for critical-use nominations for methyl bromide. A summary of the presentation, prepared by the co-chairs of the Methyl Bromide Technical Options Committee, is set out in annex III to the present report.

30. Following the presentation, the representative of Canada said that her country, which continued to support the phase-out of critical-use exemptions for methyl

bromide, was doing its utmost to halt the use of the substance. She did not, however, understand the rationale for the Committee's decision not to recommend Canada's one remaining nomination, for the use of 5.261 tonnes for strawberry runners. The adoption of alternatives to methyl bromide for that use, she said, had been prevented by significant regulatory and economic barriers, and the Committee's conclusion that chloropicrin would not contaminate groundwater was premature, as it was based on a published review and computer modelling but did not take into account field trials under actual conditions or trials that had been conducted by the grower. Despite its disagreement with the Committee's decision, she said, Canada had decided to withdraw its nomination for 2017 and would consider resubmitting it at a later date. In the meantime it was willing to provide additional information and wished to participate in any further discussions on critical-use exemptions.

31. The representative of South Africa said that while his country was committed to phasing out the use of methyl bromide, as reflected in the significant reductions in the quantities used in recent years, it had been unable to find suitable alternatives for mills and structures owing to technical difficulties and other challenges such as affordability, downtime and the unavailability of sulphur fluoride. Efforts were under way to register sulphur fluoride for use in his country but the process was not yet complete and the substance therefore remained unregistered for the time being. Expressing disappointment at the decision to revise the nominated amount of 13 tonnes for 2016 down to 5.462 tonnes because relevant information had not been submitted by the deadline set by the Committee, he urged the Committee to reconsider its recommendation, stressing that the economic impact of a failure to secure the nominated amount would threaten the country's food security and undermine its national poverty alleviation strategy.

32. The representative of Australia expressed appreciation for the Committee's final recommendation of the full 29.76 tonne exemption requested for its strawberry runner sector, adding that it had prepared a draft decision on the matter and would welcome a small-group discussion with other interested parties to finalize the text. The representative of the United States of America, also expressing appreciation to the Committee for recommending its nominated amount of 3.240 tonnes for dry cure pork, said that following a review of information on stocks of methyl bromide in the country, it had decided to withdraw its nomination without prejudice to its possible resubmission at a later date.

33. The representative of a developing-country party, pointing out that his country had eliminated methyl bromide consumption for agricultural purposes, with only a very small amount still being used for quarantine and pre-shipment purposes, said that his ministry was at pains to explain to farmers why they should not be permitted to use the substance while more developed countries were still using it, and he urged all parties to switch to suitable alternatives as soon as possible. Another representative, speaking on behalf of a group of parties and echoing that appeal to parties to end the use of methylbromide, said that he had been encouraged to hear the commitment of South Africa in that regard and congratulated the United States of America on its decision to withdraw its nomination. Encouraging all parties to follow the example of using existing stocks before submitting any further

nominations, he said that the experience of the parties for which he spoke demonstrated that alternatives were available; moreover, funding for Article 5 parties for projects on the use of such alternatives was available from the Multilateral Fund.

34. The Co-Chair suggested that all interested parties should join Australia in discussing its proposed draft decision and that South Africa should take part in those discussions after taking up its concerns with the Methyl Bromide Technical Options Committee.

35. Subsequently, following the informal discussions, agreement was reached on the text of the draft decision on critical-use exemptions for methyl bromide for 2016 and 2017.

36. The parties approved the draft decision for consideration and adoption during the high-level segment.

## **V. Issues related to alternatives to ozone-depleting substances**

### **A. Report by the Technology and Economic Assessment Panel on the full range of alternatives to ozone-depleting substances (decision XXVI/9, subparagraphs 1 (a) – (c))**

37. Introducing the sub-item, the co-chair recalled that the initial report by the decision XXVI/9 task force of the Technology and Economic Assessment Panel on alternatives to ozone-depleting substances had been presented and made available at the thirty-sixth meeting of the Open-ended Working Group, during which several parties had provided guidance to the task force on the finalization of the report for consideration by the Twenty-Seventh Meeting of the Parties. An outline of the suggestions provided by the parties was provided in annex I to document UNEP/OzL.Pro.27/2, while an executive summary of the final report of the task force, which had incorporated the comments provided by the parties, was set out in annex II to document UNEP/OzL.Pro.27/2/Add.1.

38. Task force co-chairs Ms. Bella Maranion, Mr. Lamper Kuijpers and Mr. Roberto de Aguiar Peixoto, then gave a presentation on the final report of the task force, entitled “Decision XXVI/9 Task Force Report: Additional Information on Alternatives to Ozone-Depleting Substances”. A summary of the presentation prepared by the presenters is set out in annex III to the present report.

39. Following the presentation, the task force members responded to questions on the presentation from representatives, many of whom expressed appreciation to the task force for its comprehensive report. A general discussion on the issues raised by the Panel in its report then ensued.

#### **1. Questions and answers**

40. In response to a question on the appropriateness of the task force’s use of the American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE) classification of climate zones for the building sector, Mr. Kuijpers said that the task force had used that classification as merely one example of a possible approach to defining a high-ambient-temperature zone; the task force report clearly

stated that other examples of climate zone definitions existed and that the issue would require further investigation. Reacting to a comment that high ambient temperatures should not be estimated on the basis of annual temperature averages, he clarified that the ASHRAE classification was based on daily average temperatures that were aggregated for up to a year.

41. Responding to additional questions concerning the calculations used in the report to determine whether high-ambient temperatures and comments that the ASHRAE definitions were appropriate for the climate change regime but might not be relevant to ozone layer protection, Mr. Peixoto clarified that ASHRAE maps had been used in the report merely to show that the world had different climate regions based on temperature and humidity levels; the relevant question, which various projects on high-ambient temperatures were seeking to address, was whether refrigeration equipment would function effectively under various extreme conditions. Some preliminary data had already been produced to answer that question, including a report on R-22 and R-410A alternative refrigerants for high ambient-temperature environments published by the Oak Ridge National Laboratory (ORNL), which was available on the ORNL website; once all data were available manufacturers, regulators and other stakeholders would be able to evaluate and assess what steps, including codes and regulations, might be needed to ensure that the refrigeration and air-conditioning sector in regions with extreme conditions was sustainable. Mr. Alaa A. Olama, a member of the task force and co-chair of the Panel's Refrigeration, Air-Conditioning and Heat Pumps Technical Options Committee, then provided details on the temperatures and maps discussed in the report.

42. In response to a question regarding the main assumptions made by the task force to develop business-as-usual scenarios for Article 5 parties and non-Article 5 parties and a comment that the model used to devise such scenarios appeared to have incorporated only economic parameters, Mr. Kuijpers explained that the task force had estimated levels of HFC consumption in 2014 or 2015 based on the quantity of installed equipment that used HFC refrigerants, which had been checked against best available production data, and had calculated demand in 2014 – 2015 on the basis of the gross domestic product or other economic parameters in specific countries. While economic factors were the main reason for the growth of HFC use in both non-Article 5 and Article 5 parties, the model was very sophisticated and included many other parameters, including equipment-based parameters such as leakage, charging and servicing data. Based primarily on economic factors, however, under 2020 – 2030 business-as-usual scenarios, 50 per cent and nearly 300 per cent growth in demand for high global-warming-potential (GWP) HFCs were expected in non-Article 5 and Article 5 parties, respectively. As for mitigation scenarios, the task force had simply assumed that countries could convert all their equipment in any given year at a certain cost.

43. Regarding assumptions used in the report to estimate the cost of conversion to various technologies, Mr. Kuijpers said that a pragmatic approach had been used to calculate those costs using the incremental cost calculations developed by the Multilateral Fund in the context of the implementation of HCFC phase-out management plans; the task force had not looked at specific refrigerants for use

under specific conditions, such as high ambient temperatures, to estimate those costs.

44. With regard to a query on whether the task force had considered the cost of the destruction or elimination of HFC stocks in conversion cost estimates, in particular for countries that did not manufacture HFCs, Mr. Kuijpers said that the costs of conversion applied only to countries that manufactured HFCs; the situations of countries that imported refrigerants for servicing would need to be examined in more detail when assessing servicing costs, on which the report provided only initial estimates. The task force had examined manufacturing, and to some extent servicing, but had not dealt with any other costs, including those associated with HFC destruction, which would need to be examined at a later stage.

## **2. General discussion**

45. In the general discussion, several representatives said that while there were still areas requiring further investigation and certain gaps in information the Panel's report had improved with each iteration and update, with one saying that the latest version provided a wealth of information on a wide range of alternatives to ozone-depleting substances, the challenges of high ambient temperatures and the costs and benefits of each mitigation scenario.

46. The representative of Canada said that his country was working with others on a draft decision for consideration by the parties at the current meeting that would provide a new mandate for the Technology and Economic Assessment Panel to further update its work on alternatives and mitigation scenarios.

47. Another representative said that the scenarios developed and associated costs appeared to be more robustly estimated in the Panel's latest report and that she looked forward to hearing the results of continuing studies on high-ambient-temperature solutions. She thanked the Panel for extending the scenarios to 2030 while acknowledging the uncertainties inherent in such long-term forecasting. Another representative said that the Panel had overemphasized solutions that already existed and had given insufficient attention to the status of alternatives yet to be developed, including in the area of high ambient temperatures. Another representative highlighted the importance of giving due consideration to such issues as safety, energy efficiency and the economic and social costs of alternatives. Several representatives expressed concern at what they said was a lack of real alternatives on the market in the short term and possibly the medium term, calling for more information on where and when alternatives would become available on a regional basis, along with information on the cost of investing in them.

48. The representative of Canada, speaking also on behalf of Japan, New Zealand, Norway and Switzerland, introduced a draft decision that, like previous decisions of the Meeting of the Parties, requested the Technology and Economic Assessment Panel to produce a report on alternatives to ozone-depleting substances. The report envisaged by the draft decision was intended to focus primarily on areas where updates to the previous report were needed, including with regard to information on the availability of alternatives in various regions, and to extend the mitigation

scenarios in the previous report to 2050; to assess the costs and benefits of the various phase-down scenarios envisaged under the proposed amendments to the Montreal Protocol; and to invite the Scientific Assessment Panel to contribute its expertise on the impact of HFCs and on relevant climate parameters. Recognizing that there were other elements that could be added, he said that the draft decision would provide a good starting point for discussion.

49. Several representatives welcomed the draft decision, and in particular its intention to focus mainly on updates in recognition of the many competing demands on the time of the Technology and Economic Assessment Panel. Some representatives requested the inclusion in the proposed report of information on the availability of alternatives in the marine sector, including in particular the fisheries industry, where information was particularly sparse. Another representative suggested that the report should consider the likely socio-economic impacts of the transition from ozone-depleting substances, in particular where the costs of alternatives were high and where a further transition from those alternatives was contemplated. Another representative suggested that the report should also include information on possible alternatives that had not yet entered the market, as well as those currently available, and more detail on the scientific evidence of the impact of HFCs on the climate.

50. Other representatives said that some elements of the draft decision seemed to prejudge the outcomes of the discussions under way in the contact group on HFCs and that discussion of them was premature and unhelpful. Other representatives, however, said that the draft decision was entirely in line with previous similar decisions and would be extremely valuable to the work of the parties.

51. It was agreed that interested parties would consult informally with the aim of producing a revised version of the draft decision for further consideration in plenary.

52. Following the informal consultations and further discussion in plenary the parties approved a revised draft decision for consideration and adoption during the high-level segment.

**B. Updated information submitted by parties on their implementation of paragraph 9 of decision XIX/6 (decision XXVI/9, paragraph 3)**

53. Introducing the item, the Co-Chair recalled that in paragraph 3 of decision XXVI/9 parties had been encouraged to provide the Secretariat with information on their efforts to promote a transition from ozone-depleting substances that minimized environmental impact. A summary of those efforts had been issued by the Secretariat for the Twenty-Sixth Meeting of the Parties, and the Secretariat had updated it in document UNEP/OzL.Pro.27/11 with new and additional information from Canada, Mexico, Montenegro, Paraguay, Switzerland and the United States of America for consideration at the current meeting.

54. The parties took note of the information provided.

## **VI. Outcome of the resumed thirty-sixth meeting of the Open-ended Working Group**

55. Introducing the item, the Co-Chair recalled that the thirty-sixth meeting of the Open-ended Working Group had been suspended with an agreement that it would resume prior to the Twenty-Seventh Meeting of the Parties to allow the parties to continue their discussions on the feasibility and ways of managing HFCs. The resumed meeting had been held on 29 and 30 October 2015, and the outcome was an agreed mandate for a possible contact group on the feasibility and ways of managing HFCs (UNEP/OzL.Pro.27/12, annex).

56. The parties agreed to establish a contact group on the feasibility and ways of managing HFCs, co-chaired by Mr. Patrick McNerney (Australia) and Mr. Xia Yingxian (China), with the mandate set out in the annex to document UNEP/OzL.Pro.27/12.

57. The result of the contact group's work and the conclusion of the present item are described in paragraph 75 below.

## **VII. Proposed amendments to the Montreal Protocol**

58. Introducing the item, the Co-Chair recalled that four proposals to amend the Montreal Protocol had been submitted for consideration by the Meeting of the Parties at the current meeting, all of which sought to amend the Montreal Protocol to include the phase-down of HFCs. He invited the proponents of the four amendments to present them in turn.

59. The representative of the United States, speaking also on behalf of Canada and Mexico, introduced the proposal of those countries (UNEP/OzL.Pro.27/5). She explained that while it did not retreat from the ambition of the original North American amendment proposal, in the light of comments from parties it had been modified to achieve that ambition in two stages: a scaled-back initial amendment that could be adopted at the current meeting, followed by the negotiation of the remainder of the phase-down schedule and other issues in 2016.

60. The provisions proposed for adoption at the current meeting included a freeze of HFC consumption and production in Article 5 parties by 2021; the first two proposed reduction steps for non-Article 5 parties, to 90 per cent by 2019 and 65 per cent by 2024; the establishment of baselines for Article 5 and non-Article 5 parties (which differed in the proportion of HCFC consumption and production included in their calculation in recognition that the two groups would not achieve the transition away from HFCs at the same speed); and elements that were common to all four amendment proposals on financing, licensing and reporting, the listing of HFCs in an annex to the Protocol, entry into force and clarification that the provisions on emissions of HFCs of the United Nations Framework Convention on Climate Change would remain unchanged.

61. For the second stage, the proposal envisaged the adoption of a decision, at the current meeting, by which the parties would agree to negotiate phase-down schedules for Article 5 and non-Article 5 parties, provisions on emissions of HFC-23 as a by-product, non-party trade provisions and technology reviews to allow for

adjustments of the phase-down schedules. The decision would also ask the Technology and Economic Assessment Panel to assess the feasibility and benefits of the stage-two proposals, their financial implications and the availability of climate-friendly alternatives, especially for use in high ambient temperatures.

62. The first stage would realize two thirds of the benefits of the full proposal, with an estimated 57 – 59 GT CO<sub>2</sub>-equivalent emissions avoided by 2050 and a further 32 GT CO<sub>2</sub>-equivalent emissions to be avoided in the second stage. She said that while many non-Article 5 parties were already taking steps through domestic regulation to limit HFC use the emissions avoided would be significantly greater with the adoption of the proposed amendment. In conclusion, she said, the North American proposal offered the benefits of a clear and simple procedure, allowed sufficient time to address parties' key concerns and had the advantages of resting on the tried and tested measures with which the parties to the Montreal Protocol were familiar. Her delegation, she said, looked forward to discussing the proposal in more detail in the contact group established under agenda item 6.

63. Introducing his country's proposal (UNEP/OzL.Pro.27/6), the representative of India said that it was based on the principle of equitable and fair access to sustainable development and the right of self-determination. His country recognized that while HFCs currently accounted for only 1 per cent of greenhouse gas emissions they were growing at a rate of 8 – 9 per cent per year and that limiting that growth offered the fastest and most cost-effective option for mitigating climate change. The use of HFCs was largely a by-product of the success of action under the Montreal Protocol to phase out ozone-depleting substances, and it was therefore a responsibility of the parties to deal with it through the Protocol. There was a clear complementarity between the objectives of the Montreal Protocol and the United Nations Framework Convention on Climate Change, and the fact that the phase-out of HCFCs had only just begun in Article 5 parties offered the opportunity to leapfrog from HCFCs directly to non-HFC alternatives. Ideal substitutes for HFCs should be non-toxic and non-flammable, possess low global warming potentials and high energy efficiency, be compatible with existing equipment and be less expensive and more environmentally friendly than HFCs.

64. His country's proposed amendment would establish, for production and consumption in non-Article 5 parties, baseline years of 2013 – 2015, a freeze by 2016 and a completion of phase-down by 2035. For Article 5 parties the corresponding dates were 2028 – 2030, 2031 and 2050. The grace period of fifteen years for Article 5 parties would allow sufficient time for suitable alternatives to be developed and was in line with previous practice under the Montreal Protocol. The phase-down steps for each Article 5 party would be determined by that party and announced five years in advance for each five-year period. HFCs could continue to be used as replacements for HCFCs where low-GWP alternatives were not available.

65. The proposed amendment would introduce a new concept of total conversion cost, rather than incremental cost, as the measure of financial assistance to be delivered; the total conversion cost included would cover the total cost of converting



a chemical production plant from HFCs to low-GWP alternatives, including the costs of intellectual property rights and technology transfer. The financial mechanism of the Montreal Protocol would need to provide funding to cover both the full conversion cost and compensation for lost profits following the closure of HFC production facilities.

66. The proposed amendment would list HFCs in two annexes. Annex F would list four sub-groups of substances, differentiated according to the availability of alternatives. The first two would include substances for which alternatives were already available or soon would be, and the last two would include substances for which alternatives were not yet available. HFC-23, on which research was needed to facilitate its use, would be listed in Annex G. The proposed amendment would provide for exemptions for the production and consumption of HFCs for metered-dose inhalers and other medical appliances, as well as essential-use exemptions. The proposed amendment would also exempt feedstock applications from any controls and include licensing of imports and exports, bans on imports and exports to non-parties and requirements for reporting production, imports and exports. As HFCs should continue to be included within the scope of the United Nations Framework Convention on Climate Change and its Kyoto Protocol for the accounting and reporting of emissions, amendments to the Framework Convention and Kyoto Protocol would be necessary.

67. He concluded by observing that India had clarified all queries raised by parties regarding its proposed amendment during the thirty-sixth meeting of the Open-Ended Working Group and saying that he looked forward to discussing any remaining issues.

68. The representative of the European Union introduced the key elements of the European Union proposed amendment (UNEP/OzL.Pro.27/7). The proposed amendment included an ambitious phase-down schedule for non-Article 5 parties, currently the largest users of HFCs, beginning in 2019 with a freeze at 85 per cent of the baseline. The baseline included, as well as the consumption or production of HFCs, the volume of HCFCs allowed under the Montreal Protocol, which was necessary because the speed of phase-out of HCFCs had varied considerably from party to party.

69. While the amendment acknowledged the special situation of developing countries and the need for sufficient time for implementation, it did not do this through the usual Montreal Protocol mechanism of a long grace period. As the Technology and Economic Assessment Panel had confirmed in its latest report on alternatives to ozone-depleting substances seen earlier in the meeting, it was important to undertake the conversion from HFCs as early and rapidly as possible: as HFC use would only increase with economic growth, delay would result not only in greater environmental impact but also higher cost. The amendment therefore proposed that Article 5 parties freeze consumption in 2019 and that a phase-down schedule for those parties be negotiated at a later stage.

70. The freeze and phase-down steps combined the climate impacts of the consumption of HCFCs and HFCs, thereby allowing more time for HFC

consumption to be reduced and allowing HFC use to grow with economic development, if necessary. Combining HCFCs and HFCs in such a “basket” approach offered flexibility, enlarging the choice of options and allowing more time for transition in sectors where alternatives might not yet be available, such as stationary air-conditioning.

71. The proposed amendment would also provide for a freeze on HFC production and a phase-down target of 15 per cent by 2040, with interim phase-down steps to be determined by 2020. The Multilateral Fund would remain the financial mechanism, and the European Union was open to discussions with parties regarding the details of the obligations to be agreed. In conclusion, he said that he looked forward to the opportunity to explain in more detail the underlying concepts of the proposal and how they responded to the challenges identified in the mandate of the contact group.

72. The representative of the Federated States of Micronesia, speaking also on behalf of Kiribati, the Marshall Islands, Mauritius, Palau, the Philippines, Samoa and the Solomon Islands, introduced the proposal of those countries (UNEP/OzL.Pro.27/8). Thanking the parties for deciding to move forward on a proposed HFC amendment, first introduced six years earlier, he observed that major steps had been taken in the intervening period, including the development of new alternatives by industry and the introduction of regulations to phase out HFCs in many countries. In agreeing to a mandate for a contact group at the current meeting, he said, parties had moved from the impossible to the inevitable.

73. Recalling that at earlier meetings of the parties he had illustrated presentations on the proposed amendment with stories, he said that at the current meeting he would not do so because all the parties were together writing not just a story, but history itself. That history had two threads: fairness for all concerned and a purpose to serve the common good rather than the interests of any one country or group. Working together, the ozone family needed to address difficult issues and concerns, which could be captured in three words: financing, flexibility and fairness. He was confident, he said, that the parties would succeed in reaching agreement on all three. In conclusion, he argued that while the Montreal Protocol was already known to be the best multilateral environmental agreement in the world over the next four days parties could show that it could be even better.

74. Following the presentation of the proposed amendments the parties agreed that they would be further discussed in the contact group established under agenda item 6, as described in section VI above.

75. Following the work of the contact group its co-chair presented a draft decision prepared by the contact group entitled the Dubai pathway on hydrofluorocarbons. The parties approved the draft decision for consideration and adoption during the high-level segment.

**VIII Issues related to the phase-out of hydrochlorofluorocarbons (decision XIX/6 (paragraphs 12 – 14))**

76. Introducing the item, the Co-Chair recalled that by paragraphs 12 – 14 of decision XIX/6, the parties had agreed to address in or no later than 2015 certain issues related to the phase-out of HCFCs, namely, the possibility or need for essential-use exemptions for HCFCs for non-Article 5 parties; the need for the 0.5 per cent for servicing provided for in paragraph 3 of the decision for non-Article 5 parties; and possible further reductions in the production of HCFCs for basic domestic needs after 2020, beyond the 10 per cent of baseline allowed until that date. A draft decision on the matter had been introduced by Australia, also on behalf of Canada and the United States, at the thirty-sixth meeting of the Open-ended Working Group, which had decided to forward the draft decision to the Meeting of the Parties for further consideration.

77. The representative of Australia introduced the draft decision, summarizing its main elements.

78. The parties approved the draft decision for consideration and adoption during the high-level segment.

**IX. Potential areas of focus for the assessment panels' 2018 quadrennial assessments**

**A. Terms of reference for the 2018 quadrennial assessment**

79. Introducing the sub-item, the Co-Chair recalled that by the time of the thirty-sixth meeting of the Open-ended Working Group the Scientific Assessment Panel, the Environmental Effects Assessment Panel and the Technology and Economic Assessment Panel had completed their 2014 quadrennial assessments in accordance with decision XXIII/13. The three panels had also completed a synthesis of their assessments, and a summary of the key messages of that synthesis was set out in Annex II to document UNEP/OzL.Pro.27/2/Add.1. In addition, the European Union and Switzerland had put forth a draft decision on potential areas of focus for the 2018 quadrennial assessments of the panels, which was before the parties for consideration at the current meeting.

80. The representative of the European Union said that while the draft decision took into account comments of other parties made during the thirty-sixth meeting of the Open-ended Working Group, as well as during subsequent consultations, further discussions would be necessary at the current meeting to finalize it.

81. The parties agreed that interested parties should consult informally with the aim of presenting a revised draft decision for consideration in plenary.

82. Following the informal consultations the parties approved a revised draft decision for consideration and adoption during the high-level segment.

**B. Co-chairs of the Scientific Assessment Panel**

83. Introducing the sub-item, the Co-Chair said that Mr. A.R. Ravishankara and Mr. Ayite-Lo Nohende Ajavon were resigning from their positions as co-chairs of

the Scientific Assessment Panel and that the parties at the current meeting would need to elect their successors. Echoed by many parties, he thanked the two for their dedication, leadership, skills and long years of service to the Montreal Protocol and the cause of protecting the ozone layer, and he led the parties in a round of applause.

84. The representatives of the United States of America and Zimbabwe, speaking on behalf of Rwanda and the rest of the African States, proposed that Mr. David Fahey, Director of the Chemical Sciences Division of the National Oceanic and Atmospheric Administration, and Mr. Bonfils Safari, Professor, College of Science and Technology, University of Rwanda, respectively, be appointed to succeed Mr. Ravishankara and Mr. Ajavon.

85. The parties approved a draft decision endorsing the appointment of Mr. Fahey and Mr. Safari as co-chairs of the Scientific Assessment Panel for consideration and adoption during the high-level segment.

### **C. Technology and Economic Assessment Panel organizational issues**

86. The Co-Chair, introducing the sub-item, said that the Technology and Economic Assessment Panel had issued an addendum to its 2015 progress report with important recommendations for consideration by the parties (see UNEP/OzL.Pro.27/2/Add.1, para. 8). Furthermore, as indicated in the Panel's 2015 progress report, the four-year terms of some experts serving on the Panel and its technical options committees would end in 2015, and the Panel was recommending candidates for appointment as their successors.

87. In the ensuing discussion, the representative of Australia expressed support for the Panel's proposal to streamline its operations by combining the Chemicals Technical Options Committee and the Medical Technical Options Committee, as well its recommendations regarding the experts to be appointed as co-chairs of the new combined committee. Her delegation would be submitting a draft decision on the proposal. The representative of Japan said that her delegation would also submit a draft decision on the matter.

88. One representative said that, in order to ease the financial pressure on the assessment panels and their technical options committees, parties putting forth candidates to serve as members of those bodies should guarantee funding for their activities for the duration of their terms.

89. Subsequently, the representative of Japan presented a draft decision on Technology and Economic Assessment Panel organizational and membership changes submitted by Australia, Brazil, China, Colombia, Costa Rica, Japan, the Netherlands, the United Kingdom of Great Britain and Northern Ireland and the Bolivarian Republic of Venezuela, which had been discussed and revised in the course of informal consultations among interested parties.

90. The parties approved the draft decision for consideration and adoption during the high-level segment.

**X. Compliance and data reporting issues: presentation on and consideration of the work and recommended decisions of the Implementation Committee under the Non-Compliance Procedure for the Montreal Protocol**

91. The President of the Implementation Committee under the Non-Compliance Procedure for the Montreal Protocol, Ms. Nancy Seymour (Canada), presented a report on the outcomes of the fifty-fourth and fifty-fifth meetings of the Committee, outlining the three draft decisions that the Committee had approved for consideration by the Twenty-Seventh Meeting of the Parties. She observed that the work of the Committee during 2015 had been lighter than in previous years thanks to the progress that parties had made in complying with their obligations to phase out ozone-depleting substances under the Montreal Protocol; the Committee had needed to prepare just two draft decisions dealing with cases of non-compliance.

92. The third draft decision dealt with data and information provided by the parties in accordance with Article 7 of the Montreal Protocol. Only four parties – Democratic Republic of Congo, Dominica, Somalia and Yemen – had yet to report their annual data for 2014. She applauded the eighty-four parties that had reported their data for 2014 by 30 June 2015, in accordance with decision XV/15, which had enabled the Committee to carry out much useful work at its fifty-fourth meeting, in July 2015.

93. She also welcomed the fact that all parties that had submitted data reporting forms for 2014 containing blank cells had responded to requests for clarification of those cells by the Secretariat. She recalled decision XXIV/14 of the Meeting of the Parties, by which the Meeting of the Parties had requested parties to affirmatively specify zero quantities in their Article 7 data reporting forms rather than simply leaving cells blank.

94. Turning to the two draft decisions on non-compliance, she said that one dealt with non-compliance by Bosnia and Herzegovina with the Protocol's HCFC consumption control measures for 2013. As outlined in the draft decision, Bosnia and Herzegovina had submitted to the Committee a plan of action to ensure its return to compliance with the Protocol's consumption control measures and confirmed that it had introduced a comprehensive set of policies and measures to control consumption and in 2014 the party had returned to compliance with its obligations. The Committee had noted with appreciation Bosnia and Herzegovina's prompt actions to correct its state of non-compliance and intended to monitor the party's progress in future years.

95. The remaining draft decision dealt with non-compliance by Libya with the Protocol's HCFC consumption control measures for 2013 and 2014. The Committee had noted with appreciation the plan of action submitted by Libya to return to compliance, including its commitment to do so by 2018, together with its commitment to monitor the enforcement of its system for licensing the import and export of ozone-depleting substances, to implement a ban on the procurement of air-conditioning equipment containing HCFCs in the near future, and to consider a ban on the import of such equipment. The Committee had recognized that the

political and security situation in the country rendered enforcement of those measures particularly challenging, and it intended to monitor closely the country's progress in returning to compliance.

96. The Committee, she added, continued to play its role of closely monitoring the return to compliance of parties that had been in non-compliance, and she was pleased to confirm that all such parties were in compliance with their obligations under the Protocol.

97. She concluded by reiterating the observation of many of her predecessors that the ozone community had built a compliance system that was internationally regarded with respect and as a model to be emulated under other international agreements. The non-compliance procedure of the Montreal Protocol was a flexible and sophisticated system that continued to function successfully, and she expressed confidence that parties' data reports for 2015 would reveal the success of their compliance with the 2015 phase-out targets for the consumption and production of HCFCs – 10 percent below baseline for Article 5 parties and 90 per cent below baseline for non-Article 5 parties.

98. She concluded by thanking for their hard work and dedication the representatives of the Multilateral Fund secretariat and the implementing agencies, the members of the Ozone Secretariat and all her colleagues on the Committee.

99. The parties approved the draft decisions forwarded by the Implementation Committee for consideration and adoption during the high-level segment.

## **XI. Other matters**

### **A. Releases of ozone-depleting substances from production processes and opportunities for reducing such releases**

100. Introducing the sub-item, the Co-Chair said that, as discussed during the adoption of the agenda, the European Union had submitted a draft decision on releases of ozone-depleting substances from production processes and opportunities for reducing such releases.

101. The representative of the European Union said that the draft decision took into account comments on an earlier version of it discussed at the thirty-sixth meeting of the Open-end Working Group, as well as the outcomes of a workshop on carbon tetrachloride held in Zurich, Switzerland, in October 2015. The current version of the draft decision requested the Technology and Economic Assessment Panel and the Scientific Assessment Panel to continue their analysis of the discrepancies between observed atmospheric concentrations of ozone-depleting substances and data reported by parties on their consumption and production of such substances, with a focus on carbon tetrachloride production. Further consultations would be needed to finalize the draft decision before presenting it for consideration by the parties at the current meeting.

102. Following informal consultations the parties approved the draft decision for consideration and adoption during the high-level segment.

## **B. Technology and Economic Assessment Panel financial matters**

103. The representative of Switzerland said that the Technology and Economic Assessment Panel, in the addendum to its 2015 progress report, had drawn attention to increasing difficulties in obtaining adequate funding to cover the travel and other costs of members of the Panel and its technical options committees and had requested that the parties consider creating a funding mechanism to address the problem. He noted that at its sixth meeting the Conference of the Parties to the Vienna Convention had responded to a similar issue with regard to the funding of ozone-related monitoring and research activities by requesting the United Nations Environment Programme to establish an extrabudgetary fund for receiving voluntary contributions from the Parties to the Vienna Convention and international organizations. His delegation wished to explore the possibility of establishing a similar fund for defraying the costs of Panel members. Several other representatives expressed interest in such an approach.

104. One representative said that scientists working on a voluntary basis for the Montreal Protocol bodies should sign forms declaring that in undertaking such work they had no conflicts of interest with regard to other activities in which they were involved. Another representative said that the issue of conflicts of interest was covered in the rules of procedure of the Technology and Economic Assessment Panel.

105. The parties agreed that interested parties would consult informally with a view to developing a draft decision on the matter.

106. Subsequently the representative of Switzerland presented a draft decision submitted by his country on ensuring the continuation of the work of the assessment panels. The parties approved the draft decision for consideration and adoption during the high-level segment.

## **C. Unwanted imports of products and equipment containing or relying on hydrochlorofluorocarbons**

107. The representative of Kyrgyzstan introduced a conference room paper containing a draft decision on avoiding the unwanted import of products and equipment containing or relying on HCFCs, submitted by Armenia, Belarus, the European Union, Kyrgyzstan and the Russian Federation. He noted that decision X/9 of the Tenth Meeting of the Parties had established a list of countries that did not manufacture for domestic use and did not wish to import products and equipment whose functioning relied on Annex A or Annex B substances. He noted that a number of parties had introduced bans or restrictions on the import of products and equipment containing or relying on substances listed in Annex C, specifically HCFCs, and he suggested that such parties might wish to inform exporting countries of that fact through existing mechanisms under the Montreal Protocol. The draft decision accordingly would request the Secretariat to maintain a list of parties that did not wish to receive products and equipment containing or relying on substances listed in Annex C.

108. The parties approved the draft decision for consideration and adoption during the high-level segment.

#### **D. Delays in the disbursement of funds to recipient countries**

109. Introducing the sub-item, the Co-Chair recalled that during adoption of the agenda one representative, speaking on behalf of a group of countries, had expressed concern at what he said were delays in the disbursement of project funds to Article 5 parties by the implementing agencies of the Multilateral Fund.

110. In the ensuing discussion many parties expressed concern at the prospect of such delays, which one said could last for many months, suggesting that they could in turn cause delays in the completion of projects, thus impeding parties' ability to achieve their phase-out targets and pushing them into non-compliance with their obligations under the Protocol.

111. One representative urged that a preventive approach be adopted and a solution found in dialogue. Another representative said that delayed disbursement could create problems at the government level in countries, for example when projects placed before legislatures for approval were not implemented on schedule because of funding delays. Another said that it would be useful to know more about the nature of the problem, including its causes and whether it pertained to funding for institutional strengthening projects or investment projects. One representative said that, in addition to being delayed, funds were sometimes deposited in the wrong accounts, which also caused delays in project implementation.

112. One representative noted that under a standing agenda item for all of its meetings the Executive Committee looked at delays in the implementation of projects, including with regard to the disbursement of funds, and their possible impact on compliance. The Committee typically issued directions to the relevant implementing agency and monitored the situation until it was resolved. He suggested that parties could work through their regional representatives to bring cases of delayed disbursement of project funds before the Executive Committee. Another representative, speaking on behalf of a group of parties, acknowledged that the issue was on the agenda of the Executive Committee and expressed the willingness of the parties for whom she spoke to listen and to understand the concerns expressed.

113. The parties agreed that the issue should be noted in the present report as a means of sounding an early warning regarding the possible consequences of delays and the need to prevent them.

#### **E. Destruction of ozone-depleting substances**

114. Introducing the sub-item, the representative of Samoa said that the destruction of ozone-depleting substances presented a particular difficulty for developing countries with no destruction facilities of their own. She therefore proposed that the matter be placed on the agenda of an appropriate meeting of the Open-ended Working Group in 2016. The parties agreed that the matter would be included on the agenda for a meeting of the Open-ended Working Group in 2016.



## Part two: High-level segment (4 and 5 November 2015)

### I. Opening of the high-level segment

115. The high-level segment of the Twenty-Seventh Meeting of the Parties to the Montreal Protocol was opened at 10.20 a.m. on Wednesday, 4 November 2015, by Mr. Mikkel Sorensen (Denmark), Vice-President of the Bureau of the Twenty-Sixth Meeting of the Parties, who presided over the opening of the segment in the absence of the President of the Bureau, Mr. Rodrigo Siles Lora (Bolivia).

116. Opening statements were delivered by Mr. Bin Fahad; Mr. Achim Steiner, Executive Director of UNEP; and Mr. Sorensen.

#### A. Statement by the representative of the Government of the United Arab Emirates

117. Mr. Bin Fahad welcomed the participants on behalf of the Government and people of the United Arab Emirates, thanking all those who had contributed to the organization and success of the current meeting. The United Arab Emirates, he said, attached great importance to the Montreal Protocol and had undertaken a wide range of legislative, policy and other actions at the national level to implement its provisions, including by regulating ozone-depleting substances, monitoring imports and exports, combating illicit trade, providing incentives to the private sector to recover and recycle gases in the air-conditioning sector, developing plans and activities to raise awareness on the part of industry and the public about the consequences of ozone depletion and putting in place an HCFC phase-out plan. At the current meeting, participants were seeking consensus on a number of key issues, although differences of opinion still surrounded certain matters, including how to deal with HFCs under the Protocol. It was important to discuss the challenges and assess the economic, social and environmental effects of proposed actions, but it was time to reach consensus on sustainable and applicable solutions for HFC management in line with the challenges that countries had identified. A major step had been taken in establishing a contact group on the matter, and he urged its members to reconcile their differences of opinion and identify solutions. Financing remained an important issue for parties operating under paragraph 1 of Article 5, and it was important to undertake a comprehensive assessment of the needs and requirements of developing countries with regard to the feasibility, effectiveness, affordability and availability of alternatives. He commended the work of the Technology and Economic Assessment Panel and called on the Panel to accelerate its work to finalize its assessment of alternatives. In conclusion, he reaffirmed the commitment of the United Arab Emirates to the implementation of the Vienna Convention and the Montreal Protocol.

#### B. Statement by the representative of the United Nations Environment Programme

118. The Executive Director of UNEP said that it was an honour and a pleasure to be once again in the United Arab Emirates, which had become an important centre for dialogue and diplomacy on environmental matters. The Montreal Protocol, he said, had been one of the great success stories of history and well illustrated the mission of multilateralism – to solve major issues in an equitable and

transformative way through cooperation. It was easy to forget what the world had looked like 30 years earlier, when science had first opened the world's eyes to the phenomenon of ozone layer depletion through a pivotal article by the scientists Mario Molina and Sherwood Rowland in Nature magazine. Since then the world had witnessed the greatest planetary repair job ever attempted, through a journey from scientific discovery to diplomacy, the deployment of technology, the development of financial agreements and the establishment of monitoring and accountability mechanisms. When the hole in the ozone layer was discovered the challenge it posed had seemed insurmountable, but the world had responded to that challenge more quickly than was thought possible. Rather than being unaffordable and a threat to industry and the economy, the response to that challenge had delivered an extraordinary return on investment, with an investment of \$3.5 billion resulting in avoided health and agricultural losses that alone were estimated at more than two trillion dollars.

119. The success of the Protocol raised the question of whether it had come to the end of its useful life. It was clear, however, that that was not the case, and the Montreal Protocol would continue to be an important instrument into the future. First, it would be a waste to lose such a highly effective and proven instrument and platform, underpinned by science and working in harmony with many agencies in the United Nations system and offering great opportunities as a vehicle for future collaboration. Second, the Montreal Protocol was embedded in a far larger set of challenges, including climate change. While the Protocol had made enormous contributions to addressing climate change by eliminating ozone-depleting substances that were also greenhouse gases, HFCs, a class of greenhouse gases introduced under the Protocol as non-ozone depleting alternatives to HCFCs, threatened to make an equally significant contribution to worsening climate change. The discussions in recent years about how to address that problem, trying to find equilibrium between the mandates of the climate change and ozone-layer-protection regimes, had been difficult, but the current meeting in Dubai offered an opportunity for action on HFCs that was ripe for seizing. Whether the Montreal Protocol should address HFCs, whether such action would compromise development and whether the necessary technology was available were all valid questions, but those in the Montreal Protocol community held the answers. Leadership was needed to align the science, technology and financial considerations with the politics of international cooperation. He urged participants to honour the legacy of their predecessors who had made the Montreal Protocol such an effective instrument by taking from Dubai the message that the Protocol had only just begun to demonstrate its relevance.

120. After delivering his statement, Mr. Steiner paid tribute to the work of Mr. A.R. Ravishankara and Mr. Ayite-Lo Nohende Ajavon, retiring co-chairs of the Protocol's Scientific Assessment Panel, who for many years had made outstanding contributions to ozone layer protection as scientists, as visionaries and as co-chairs of the Scientific Assessment Panel. Presenting them with commemorative awards, he said that their wisdom and professionalism would be greatly missed, and he thanked them for their contributions to the Montreal Protocol, to humanity and to the future of the planet.

121. He then paid tribute to Mr. Bin Fahad, who, in his role as Minister of Environment and Water of the United Arab Emirates, had helped make it possible, both practically and politically, for the Montreal Protocol community to come together in Dubai. Praising his work in bringing the environment to centre stage in the Emirates, he presented him too with a commemorative award and a separate award for the Ministry of Environment and Water.

### **C.Statement by the President of the Twenty-Sixth Meeting of the Parties to the Montreal Protocol**

122. Mr.Sorensen, expressing gratitude to the Government of the United Arab Emirates for its hospitality, reported with satisfaction that at its meeting the previous week the Bureau had confirmed that the decisions adopted at the Twenty-Sixth Meeting of the Parties had been implemented and that all appropriate follow-up action had been taken. Commending the parties on their achievements in phasing out ozone-depleting substances over the previous 29 years, including through the universal ratification of all amendments to the Montreal Protocol, he stressed that the work of implementing the Protocol had yet to be completed and that it was important not to relax their efforts to that end. In regard to the agenda of the current meeting, he drew particular attention to the ongoing discussion on proposed amendments to the Protocol for the phase-down of HFCs and urged all parties to work together towards a consensual decision that enabled the Montreal Protocol mechanisms to be used to ensure the protection of the climate through decisive action to curb and reverse the growth of HFCs. In view of the quantities of ozone-depleting substances still being nominated for essential and critical uses, he urged the parties to strive to identify the safe alternatives and substitute technologies needed to ensure the total phase-out of those substances. The parties, he said, would hopefully consider all the items on the current agenda with the same spirit of compromise and cooperation that had guided their deliberations since the First Meeting of the Parties.

123. In conclusion, he expressed appreciation and gratitude to three members of the Technology and Economic Assessment Panel who were stepping down after many years of service to the Panel and its technical options committees: Mr.Paul Ashford (United Kingdom of Great Britain and Northern Ireland), Mr.Miguel Quintero (Colombia) and Mr.Masaaki Yamabe (Japan).

## **II. Organizational matters**

### **A.Election of officers for the Twenty-Seventh Meeting of the Parties to the Montreal Protocol**

124. At the opening session of the high-level segment of the meeting, in accordance with paragraph1 of rule 21 of the rules of procedure, the following officers were elected, by acclamation, to the Bureau of the Twenty-Seventh Meeting of the Parties to the Montreal Protocol:

President: Ms. Virginia Poter Canada (Western European and other States)

Vice-Presidents: Ms. Rose Mukankomeje Rwanda (African States)

Ms. Tumau Neru Samoa (Asian-Pacific States)

Mr. Sabir Atajanov Kyrgyzstan (Eastern European States)

Rapporteur: Mr. Elias Gomez Dominican Republic (Latin American and Caribbean States)

**B. Adoption of the agenda of the high-level segment of the Twenty-Seventh Meeting of the Parties to the Montreal Protocol**

125. The following agenda for the high-level segment was adopted on the basis of the provisional agenda contained in document UNEP/OzL.Pro.27/1:

1. Opening of the high-level segment:
  - (a) Statement by the representative of the Government of the United Arab Emirates;
  - (b) Statement by the representative of the United Nations Environment Programme;
  - (c) Statement by the President of the Twenty-Sixth Meeting of the Parties to the Montreal Protocol.
2. Organizational matters:
  - (a) Election of officers for the Twenty-Seventh Meeting of the Parties to the Montreal Protocol;
  - (b) Adoption of the agenda of the high-level segment of the Twenty-Seventh Meeting of the Parties to the Montreal Protocol;
  - (c) Organization of work;
  - (d) Credentials of representatives.
3. Presentations by the assessment panels on their synthesis of the 2014 quadrennial assessments.
4. Presentation by the Chair of the Executive Committee of the Multilateral Fund for the Implementation of the Montreal Protocol on the work of the Executive Committee, the Multilateral Fund secretariat and the Fund's implementing agencies.
5. Statements by heads of delegation.
6. Report by the co-chairs of the preparatory segment and consideration of the decisions recommended for adoption by the Twenty-Seventh Meeting of the Parties.
7. Dates and venue for the Twenty-Eighth Meeting of the Parties to the Montreal Protocol.
8. Other matters.

9. Adoption of decisions by the Twenty-Seventh Meeting of the Parties to the Montreal Protocol.
10. Adoption of the report.
11. Closure of the meeting.

126. Responding to a query from one representative, the President said that consideration of the issues included under item 11 (Other matters) of the preparatory segment agenda would continue in informal meetings in the margins of the high-level segment.

#### **C. Organization of work**

127. The parties agreed to follow their customary procedures. In addition, they agreed to convene a ministerial round-table discussion on how the institutions and mechanisms of the Montreal Protocol could assist parties in managing hydrofluorocarbons (HFCs).

#### **D. Credentials of representatives**

128. The Bureau of the Twenty-Seventh Meeting of the Parties to the Montreal Protocol approved the credentials of the representatives of 92 of the 128 parties represented at the meeting. The Bureau provisionally approved the participation of other parties on the understanding that they would forward their credentials to the Secretariat as soon as possible. The Bureau urged all parties attending future meetings of the parties to make their best efforts to submit credentials to the Secretariat as required under rule 18 of the rules of procedure. The Bureau also recalled that the rules of procedure required that credentials be issued either by a head of State or Government or by a minister for foreign affairs or, in the case of a regional economic integration organization, by the competent authority of that organization. The Bureau further recalled that representatives of parties not presenting credentials in the correct form could be precluded from full participation in the meetings of the parties, including with regard to the right to vote.

### **III. Presentations by the assessment panels on the status of their 2014 quadrennial assessments**

129. Mr. Ravishankara, on behalf of the Montreal Protocol's three assessment panels, gave a presentation on the key findings of the synthesis report of the panels' 2014 quadrennial assessments. Expressing his thanks to the parties to the Montreal Protocol for appointing him to the post of co-chair of the Scientific Assessment Panel, and to all those who had supported the assessment panels in their work, he presented a summary of the achievements of the Montreal Protocol in phasing out ozone-depleting substances and reducing the rate of ozone depletion, thereby avoiding large increases in ultraviolet radiation. Since almost all ozone-depleting substances were greenhouse gases, action under the Protocol had also reduced the rate of global warming. He concluded by outlining key future challenges, including the need to avoid an increase in the use of HFCs. A summary of the presentation, prepared by Mr. Ravishankara, is set out in annex III to the present report.

130. In response to a question about the best way in which to make further progress, Mr. Ravishankara commended the system of quadrennial assessments, through which the parties set broad terms of reference for the panels and then received and considered their findings, which he said was a very effective means of ensuring that scientific findings were given full consideration. Mr. Ashley Woodcock, co-chair of the Technology and Economic Assessment Panel, added that an early response to scientific signals could prevent difficult and costly problems from arising later; a key strength of the Montreal Protocol was the way that it had been able to link science to policy and encourage early action.

131. Responding to a question about the impact of HCFCs and HFCs on ozone depletion and climate change, Mr. Paul Newman, co-chair of the Scientific Assessment Panel, said that the full quadrennial assessment report contained detailed information on the global-warming potentials of many HCFCs and HFCs. In addition, a recent study of the five HFCs expected to be in most widespread use by 2050 suggested that all of them possessed low ozone-depleting potentials. That could be extrapolated to other HFCs, although those with low global-warming potentials could be expected to possess very low ozone-depleting potentials. Ms. Bella Maranion, co-chair of the Technology and Economic Assessment Panel, added that the Panel's technical options committees always considered impacts on the climate and the ozone layer when they looked in detail at the alternatives to ozone-depleting substances. Following the presentation the President thanked the assessment panels for the key role that they played in the Protocol's implementation process and for the excellent synthesis report, and he thanked in particular Mr. Ravishankara on the eve of his retirement from the Panel.

132. The parties took note of the information presented.

#### **IV. Presentation by the Chair of the Executive Committee of the Multilateral Fund for the Implementation on the work of the Executive Committee, the Multilateral Fund secretariat and the Fund's implementing agencies**

133. Mr John Thompson (United States of America), in his capacity as Chair of the Executive Committee of the Multilateral Fund, reported on progress in the implementation of the decisions adopted by the Executive Committee of the Multilateral Fund at its seventy-fourth meeting, in July 2015, and on preparations for its seventy-fifth meeting, which was due to take place in November 2015, outlining the information provided in document UNEP/OzL.Pro.27/10.

134. He reported that the number of parties with approved HCFC phase-out management plans (HPMPs) had remained at 140, but two of the five parties without approved plans had submitted them for consideration at the Committee's seventy-fifth meeting. Criteria for funding for stage II of HPMPs had been approved, taking into account the cut-off date for eligibility and second-stage conversions, transitioning to low-global-warming-potential alternatives, the needs of small and medium-sized enterprises, and the concerns of countries with low or very low HCFC consumption. Stage II of HPMPs had been approved for two parties; six

parties had submitted stage II of their plans for consideration at the seventy-fifth meeting and a further 33 had received funding to prepare them. The 2015 tranche of the HCFC production phase-out management plan for China, the world's largest producer of HCFCs, had also been approved, and Mexico had submitted a request to conduct a technical audit of its HCFC production sector. Full implementation of the HPMPs approved to date would address 26 per cent of the total baseline HCFC consumption of Article 5 parties.

135. The analysis of remaining eligible HCFC consumption considered by the Executive Committee showed that the majority was in the servicing and air-conditioning sectors. The Executive Committee had accordingly approved funding for a feasibility study for district cooling and the preparation of 13 projects to demonstrate low-GWP technologies, and at its seventy-fifth meeting would consider further requests for funding for demonstration projects, including some in the air-conditioning manufacturing sector, and two district cooling feasibility studies.

136. Pursuant to decision XXVI/9, the Executive Committee had allocated additional funding to the conduct of national surveys of alternatives to ozone-depleting substances, aiming to obtain information on the alternatives currently in use, by sector and sub-sector, and forecasts of the growth in use of the most common alternatives. To date surveys had been approved for 85 parties, and another 44 parties had submitted requests for funding for consideration at the seventy-fifth meeting. After conducting a review of institutional strengthening projects, the Executive Committee had decided to approve further such projects and renewals at a level 28 per cent higher than that historically agreed, with a minimum annual funding of \$42,500 per party.

137. He then reported on behalf of the Multilateral Fund's four implementing agencies: the United Nations Development Programme (UNDP); UNEP; the United Nations Industrial Development Organization (UNIDO) and the World Bank. During 2015 UNDP had assisted 47 parties with the implementation of stage I of their HPMPs and one party with implementation of stage II of its HPMP; it had also assisted seven countries in preparing stage II of their HPMPs. UNDP, he said, had been at the forefront of technical assessments and demonstration projects for cost-effective alternatives to HCFCs that minimized environmental impacts and promoted low-carbon development, particularly for applications where such alternatives were not currently available.

138. UNEP, through its Compliance Assistance Programme, had assisted all 148 Article 5 parties to comply with their Montreal Protocol obligations, including through support to low and very low-volume-consuming countries and regional networks, South-South cooperation, capacity-building activities and global information clearing-house services, with an emphasis on encouraging the adoption of low global-warming-potential and energy-efficient technologies in the refrigeration servicing sector and promoting the safe use of flammable refrigerants. For the first time, Compliance Assistance

Programme personnel had been invited to participate in regional environmental ministerial forums in Africa and the Asian-Pacific region.

139. UNIDO was currently implementing HCFC phase-out management plans in 68 countries. While four countries had experienced compliance difficulties in 2013, with the support of UNIDO all but one had returned to compliance. Work had commenced on three HCFC phase-out management plans that had been approved in 2014, and assistance had been provided to parties to facilitate their total phase-out of methyl bromide in 2015. UNIDO had also co-implemented performance testing of low-GWP alternatives for air conditioners in high-ambient-temperature countries and begun the preparation of seven demonstration projects.

140. All the parties to whom the World Bank had provided assistance were on track to achieving their stage I HCFC production and consumption phase-out targets for 2015. To date, the Executive Committee had approved more than \$150 million in funding for the World Bank's partners, with the aim of phasing out more than 5,700 ODP-tonnes of HCFCs under approved HPMPs.

141. In conclusion, he thanked the members of the Executive Committee, the Multilateral Fund Secretariat and the bilateral and implementing agencies for their hard work and commitment; as Chair of the Executive Committee he expressed great pride in their collective achievements and success.

142. The parties took note of the information presented.

## V. Round-table discussion

143. On the morning of 4 November 2015, the high-level segment included a 90-minute round-table discussion under agenda item 5, which was moderated by Mr. Fernando Lugris, Deputy Director-General, Ministry of Foreign Affairs, Uruguay. The panel comprised seven discussants, listed in the order in which they spoke: Mr. Bin Fahad; Mr. Steiner; Ms. Gina McCarthy, Administrator, Environmental Protection Agency, United States of America; Mr. Xavier Sticker, Ambassador for the Environment, Foreign Affairs Department, France; Mr. Greg Hunt, Minister for the Environment, Australia; Mr. Abdullahi Majeed, State Minister, Ministry of Environment and Energy, the Maldives; and Mr. Manoj Kumar Singh, Joint Secretary, Ministry of Environment, Forest and Climate Change, India.

144. Before the discussion the participants viewed a three-minute video that outlined the contribution of the Montreal Protocol to climate change mitigation while highlighting the need for continued action, in particular on HFCs as a greenhouse gas whose use the Protocol had promoted, inadvertently contributing to global warming. Mr. Lugris recalled that during the round-table discussion held at the Twenty-Sixth Meeting of the Parties most panellists had identified HFC management as one of the critical challenges facing the Montreal Protocol over the next decade. Following the projection of the video, he proceeded to ask the panellists questions related to that challenge.

145. Mr. Bin Fahad, asked whether the current meeting could be described as historic, said that his Government was proud to host a meeting at which the parties



were discussing how to take the Protocol to a new frontier in order to ensure that ozone protection did not come at the expense of the world's climate. He said that the establishment of a contact group at the current meeting to discuss how to move forward on the management of HFCs was a positive step forward that he hoped would lead to concrete results, and he urged the parties to join together to strengthen the Protocol and support climate efforts for the benefit of humanity.

146. Mr. Steiner, asked if the Montreal Protocol should be seen as a tool for sustainable development, said that environmental treaties such as the Protocol were successful because they were part of a sustainable development framework for action. The Protocol possessed the key elements that since 1992 had defined the essence of international cooperation, namely, a strong scientific basis, a focus on technology and capacity-building, the principle of common but differentiated responsibilities, and differentiated timelines for action by developed and developing country parties. In addition, its impacts and benefits were measured not simply in terms of ozone layer protection but also in terms of costs avoided to society, including future generations, in areas such as health, agriculture and fisheries. The Protocol had delivered great sustainable development benefits that made it an example to be emulated and put it at the centre of the post-2015 development agenda, and it could continue to provide benefits for future generations should parties seize the opportunity to tackle HFCs.

147. Asked about the role of the private sector in tackling HFCs through the Protocol, Mr. Steiner said that since the treaty's inception industry had been instrumental to addressing ozone depletion and that its innovation and technology would be essential for dealing with HFCs. An important lesson from the Protocol was that public policies, including global treaties, were critical to defining the future markets that determined present-day investments; it was therefore a question of sending a clear signal to the global marketplace that industry investments in alternatives to HFCs were needed while Governments found a way to foster a transition to such alternatives. A partnership between science, industry and government was the magic formula for success.

148. Asked about the benefits of addressing HFCs through the Protocol, Ms. McCarthy suggested that the Protocol was the way to deliver benefits on HFCs because it had achieved great success and had in place the institutions to address the challenge of HFCs in the sectors in which action was needed. In addition, it was the responsibility of the Protocol to deal with HFCs because its success had largely been possible through a shift to climate-damaging chemicals. The four amendment proposals on HFCs indicated that the Protocol was widely seen by the parties as the venue of choice for addressing HFCs. One such proposal, presented by the United States, Canada and Mexico, built on elements that had been key to the Protocol's success, including the Multilateral Fund, seen as the gold standard for technology transfer and the provision of support to countries, expert assessment panels, which provided technical and financial information on how goals could be achieved leaving no country behind, and the delivery of technological solutions by industry. The three countries were interested in working with the parties to find ways to address their concerns, including with regard to high-ambient temperatures,

timelines and financing, and believed that an amendment would send a clear signal to industry that the Protocol's success in addressing ozone-depleting substances would not be complete until parties had addressed their obligation to address HFCs.

149. Mr. Sticker, asked about the possible implications of HFC discussions at the current meeting on the forthcoming twenty-first session of the Conference of the Parties to the United Nations Framework Convention on Climate Change in Paris, said that the countries of the European Union saw the issue of HFCs within the larger context of the Sustainable Development Goals, under which action on climate was required. He said that the establishment at the current meeting of a contact group to discuss HFCs represented tangible progress after six years of negotiations, but more time would be required over the following months to address the concerns of the parties and to leave no one behind. At the same time, it was essential that the Twenty-Seventh Meeting of the Parties adopt a formal decision to address HFCs in a serious and inclusive way and send a positive message to the climate negotiators in Paris.

150. Mr. Lugris then asked Mr. Hunt, Mr. Majeed and Mr. Singh to reflect on the benefits and challenges associated with using the institutions of the Montreal Protocol to address HFCs.

151. Mr. Hunt said that while the ozone treaties were the most successful environmental treaties in the United Nations system, having saved 1.6 million lives, protected 47 million pairs of eyes and spared over 200 million people from skin cancer, they had created the challenge posed by HFCs. There was no question that the Montreal Protocol was the only arena in which HFCs could be addressed effectively, and the time to do so was now. To move forward, the challenges of developing countries and high-ambient temperature countries would have to be addressed by embracing the principle of flexibility, and tools and mechanisms would be needed to support those countries through the Multilateral Fund. At the current meeting the parties could make real history, if not by agreeing to the North American amendment proposal then by developing a roadmap with an agreement in principle, incorporating the notion of flexibility, to manage HFCs under the Montreal Protocol.

152. Mr. Majeed said that a particular challenge for his country had been to find HFC-free alternatives in the refrigeration and air-conditioning sector, where almost all alternatives to HCFCs were HFCs that would continue to be used unless the country received assistance to enable it to obtain and adapt to low-GWP alternatives, including in the fisheries sector, which was an important component of its economy. Regarding opportunities, he said that cooperation and persistence were key to achieving progress and expressed confidence that they would lead to positive results.

153. Mr. Singh said that two reasons why it was logical for the Montreal Protocol to take on the challenge of HFCs were that the Protocol was seen as the most successful environmental treaty and that HFCs were a by-product of action under the Protocol to protect the ozone layer. Should HFCs be addressed under the treaty, it was important to recognize that the climate issue was of greater sensitivity than

that of ozone depletion, given that greenhouse gases were linked to livelihood, food and energy security and that action to curtail them could be seen as a barrier to the economic growth aspirations of developing countries. It was also necessary to address, in the context of the Multilateral Fund, changes that had occurred since the 1990s in the field of intellectual property rights, in particular the emergence of application patents that might limit the right of countries like India and China to manufacture alternatives to HFCs. While its greenhouse gas emissions were significantly lower than those of developed countries, India was actively looking to find solutions to climate change, which was a calamity that in its view should be addressed by using all the technological knowledge and resources available for the common good and not as an opportunity to increase profits through technologies protected by patents.

154. Asked whether action should be taken even in the absence of alternatives to HFCs, Mr. Steiner said that the experience of the Montreal Protocol showed that the treaty provided sufficient flexibility to accommodate particular concerns and that those concerns, which in some cases were commercial, should never stand in way of action that could deliver great returns for the common good. The Protocol had been successful because nothing prevented the parties from designing flexible mechanisms to address the concerns of countries and the lack of some alternatives while moving forward collectively and sending a signal to markets and Governments about where the future lay.

155. Ms. McCarthy said that, given the Technology and Economic Assessment Panel's projections for HFC consumption, the climate impacts of such consumption and the cost of delaying action, it was important to take action immediately, even if alternatives had not yet been fully developed, and to use the Montreal Protocol's institutions to carry out the research and technology transfer needed to support such action. The experience of the Protocol showed that as soon as a target for phasing out ozone-depleting substances was established, markets would respond and investments in alternatives would be made.

156. Asked whether dealing with HFCs through the Montreal Protocol might create a conflict between the Protocol and the climate regime, Mr. Sticker said that the latter already allowed for the possibility of dealing with HFCs in the Montreal Protocol, and it was the responsibility of the parties to the Protocol to address the negative climate impacts they had created by promoting HFC use.

157. Responding to a question regarding the role of the Multilateral Fund in dealing with HFCs, Mr. Singh said that his Government's amendment proposal envisaged that the date of eligibility for financing should be the date of the proposed HFC freeze for Article 5 parties, i.e., 2031, given that the majority of HFC production was in developing countries, where conversion to low-GWP or HFC-free alternatives had not yet begun. Developing countries, which were still using HCFCs, would need time, possibly 15 years, and support from the Multilateral Fund, to use HFCs in the absence of commercially available substitutes. In addition, the Fund

should finance conversions to low-GWP technologies, including the cost of acquiring intellectual property rights, for developing countries.

158. Mr. Hunt said that Multilateral Fund support would be available to countries to address the challenge of HFCs, but an agreement to move forward on the substances was first needed. With regard to technology, Australian industry was confident that once it had a reliable timeframe it would be able to deliver alternative technologies over a period of two decades or less, so it had expressed a desire for an agreement on HFCs, and substantial work was already under way on the next generation of refrigerants, fire retardants and other gases.

159. Mr. Sticker said that the European Union amendment proposal addressed the concerns expressed by the representative of India through flexibility, differentiation between Article 5 parties and non-Article 5 parties and financial support for the latter via the Multilateral Fund. Regarding patents, he said that only a small number of existing alternatives to HFCs were subject to patents.

160. Ms. McCarthy said that financial support had always been a critical component of the Montreal Protocol. It was understood that it would remain so with regard to HFCs and that flexibility would be needed to support second and third conversions, using technical and financial information provided by the Technology and Economic Assessment Panel. It would be difficult, however, to provide additional resources or support unless the amendment was adopted.

161. Following the panel discussion Mr. Lugris invited comments from the parties. Questions raised, which the panellists did not have the opportunity to address owing to a lack of time, included whether developing countries could be assured of having access to patented products and technologies; whether addressing HFCs through the Montreal Protocol would require amending Article 4 of the United Nations Framework Convention on Climate Change and Articles 2, 5, 7 and 10 of the Kyoto Protocol; whether thought had been given to the need to ensure that alternatives to HFCs would not create unforeseen environmental problems; and whether, given its important role in the Montreal Protocol, the private sector could contribute to reducing HFC consumption by granting licenses to the Multilateral Fund under preferential conditions or free of charge.

## **VI. Statements by heads of delegation**

162. During the high-level segment statements were made by the heads of delegation of the following parties, listed in the order in which they spoke: Saudi Arabia, China, Zimbabwe, Bahrain, Mexico, Australia, Ghana, Canada, Bosnia and Herzegovina, Timor-Leste, Malaysia, Sudan, Guatemala, Ethiopia, Maldives, Syria, Japan, European Union, Nigeria, Palau, Rwanda, Islamic Republic of Iran, Singapore, Philippines, Somalia, Bangladesh, Burkina Faso, Indonesia, Oman, Kyrgyzstan, Kenya, India, Micronesia (Federated States of) and Mauritius. The representatives of the International Pharmaceutical Aerosol Consortium and the International Institute of Refrigeration also delivered statements.

163. Representatives of many parties who spoke expressed thanks to the Government and people of the United Arab Emirates for their hospitality in hosting

the current meeting. Many also thanked UNEP and the Ozone Secretariat for the successful organization of the meeting. Appreciation was also expressed by many representatives to the Multilateral Fund Secretariat, implementing agencies, donor partners, the assessment panels, international organizations and other stakeholders for their guidance and support in ensuring the continued successful implementation of the Montreal Protocol.

164. Many representatives reiterated their commitment to the objectives of the Montreal Protocol and described activities being undertaken at the national level to implement its measures, including through the instigation of supportive policies, programmes, regulations and laws and awareness-raising and educational activities. A broad variety of national actions were described, including the phase-out or phase-down of CFCs, HCFCs, halons, carbon tetrachloride and methyl bromide; the destruction of ozone-depleting substances; the training of technicians to deal with ozone-depleting substances used in air-conditioning and refrigeration; incentives to convert to ozone and climate friendly alternatives; and in public-private partnerships. Some representatives spoke of country-level measures to control the import and export of ozone-depleting substances, for example through regulations and quotas, licensing systems and the training of customs officials and other officers. One representative mentioned the value of regional cooperation and synergies with other multilateral environmental agreements in assisting parties to implement measures under the Protocol at the national level. One representative said that his country had shown what could be achieved through small but crucial interventions. A number of representatives said that their countries would continue to strive to comply with their obligations under the Protocol.

165. Several representatives placed the Montreal Protocol in broader perspective, noting the historical significance of the thirtieth anniversary of the Vienna Convention and the huge benefits that it had bestowed not just in protecting the ozone layer but also in terms of lives saved, human ill health averted and environmental destruction prevented or mitigated. A number of representatives stressed the current importance of the Montreal Protocol, at a time when the Sustainable Development Goals had recently been endorsed and the twenty-first session of the Conference of the Parties to the United Nations Framework Convention on Climate Change was about to commence, and the need for the Montreal Protocol to position itself adroitly within a rapidly changing and increasingly complex global development agenda, particularly in view of its respected position as an impressively successful and much admired global instrument. Some representatives spoke of what they said was the continuing relevance of such principles as corporate social responsibility and common but differentiated responsibilities. One representative said that the developing countries varied widely in their development: some had the capacity and resources to embrace the post-2015 development agenda, while others needed to undergo political, social and economic transformation to achieve the Sustainable Development Goals, including those linked to the Vienna Convention and the Montreal Protocol.

166. A number of representatives reflected on the success of the Montreal Protocol and the factors behind it. One representative said that the depletion of the ozone layer had been a classic example of the tragedy of the commons, and its recovery had been an extraordinary success of international cooperation. Other representatives noted the wide range of partners that had collaborated in ensuring that the Protocol had achieved its objectives, including the assessment panels, donors, the Multilateral Fund, the implementing agencies, and the OzonAction Compliance Assistance Programme, enabling Article 5 parties to comply with their obligations. One representative said that the Protocol was proof that action on environmental challenges transcended national borders and was testament to the results that could be achieved through collective and coordinated action. One representative, speaking on behalf of a group of parties, said that the achievement of the Montreal Protocol, and the manner in which it had achieved its objectives – including through provisions that took account of the circumstances and requirements of developing countries, the financial and technical support of the Multilateral Fund, and the monitoring and reporting provisions under the compliance regime – would have been unimaginable at the time the damage to the ozone layer had first been reported.

167. Many representatives drew attention to the challenges still faced by developing countries, many of which would benefit from further financial and technical assistance. Some representatives highlighted the particular problems inherent in geographical location, as in the case of small island developing States and mountainous States, particularly in the context of climate change, while the challenges faced by States with high ambient temperatures remained an issue of central importance. Some representatives said that conflicts within their borders had made it very difficult for them to comply with their obligations under multilateral environmental agreements and to protect human health and the environment. Destruction of banks of ozone-depleting substances, combating illegal trade and the safe installation and maintenance of alternative technologies were identified as other concerns facing many parties; in each case, financial and technical assistance would help resolve the matter, yielding global as well as national benefits. Some representatives of small island developing States highlighted the need to find more climate-friendly alternatives in the marine sector, specifically in the fisheries industry, saying that innovative solutions to the problem might help catalyse the development of a range of technologies with low global-warming potential.

168. Several representatives highlighted the role of the Multilateral Fund in providing financial assistance to developing countries to facilitate their compliance with the Protocol. One representative said that it was essential that the Fund be used efficiently and effectively to ensure implementation by all parties. A number of representatives said that more assistance was required to help Article 5 parties to resolve continuing challenges, including the identification of feasible, cost-effective and viable alternatives to ozone-depleting substances. One representative, for example, highlighted the emergence of resistance in insect pests following the phase-out of methyl bromide for post-harvest grain storage uses and requested knowledge transfer to assist parties facing similar problems.

169. Much debate focused on the matter of the phase-out of HCFCs and the alternatives to their use. A number of representatives provided information on the current status of their HCFC phase-out management plans. Several representatives said that Article 5 parties had been placed under considerable pressure by the accelerated phase-out of HCFCs and the subsequent difficulties posed by the high global-warming potential of HFCs, including additional economic and logistical burdens on the industrial and service sectors. Another representative said that industry in developing countries was facing growing challenges due to a lack of safe, environment-friendly, technically proven, commercially viable and cost-effective alternative technologies, especially in the case of micro, small and medium-sized enterprises. Another representative outlined the challenges facing developing countries in the adoption of low-GWP alternatives, namely, cost-effectiveness, the availability of appropriate technology and components, competition from cheaper high-GWP alternatives, the slow development of alternative technologies and negative market factors.

170. Several representatives urged that strenuous efforts be made to replace HFCs with low-GWP alternatives so that the benefits derived from the recovery of the ozone layer were not outweighed by the adverse impacts of climate change and other global environmental problems. One representative said that a priority of his Government was the steady phase-out of ozone-depleting substances globally, taking into account environmental and health benefits and the feasibility of alternative technologies, including energy efficiency, cost-effectiveness and safety requirements; in that regard, phasing down production and consumption of HFCs was necessary for the global environment.

171. Many representatives expressed their views on the proposed amendments to the Montreal Protocol to deal with HFCs. Several urged adoption of a Dubai roadmap setting out a tentative schedule for taking the matter forward. Several representatives said that the parties to the Montreal Protocol should accept their responsibility to take urgent action to phase down HFCs using the mechanisms available to the Protocol given that HFC-based alternatives to HCFCs had been a technology option of choice under the Protocol. A number of parties expressed willingness to accommodate the concerns of those parties more cautious about dealing with HFCs under the Protocol, including with regard to financing and technical support, the specific circumstances of countries, the allocation of responsibility for accounting and reporting of emissions of HFCs and the schedule of any proposed phase-down. On the lack of available alternatives on the market, some parties said that industry would respond to demand once a commitment had been made to deal with HFCs under the Protocol. One representative said that inclusion of HFCs under the mandate of the Protocol would be in keeping with the holistic approach adopted by the Sustainable Development Goals.

172. A number of representatives said that it was premature to bring control of HFCs under the purview of the Montreal Protocol given the outstanding issues that were yet to be resolved, including the availability of alternatives that were technologically and economically viable; the important matter of technology options that were effective in high ambient temperatures; the lack of certainty that the

alternatives identified would not lead to further environmental problems, as had been the case with HFCs; the safety, flammability and energy efficiency of alternatives; and the legal issues pertaining to the allocation of responsibilities between the Vienna Convention and the United Nations Framework Convention on Climate Change and their respective protocols. One representative advocated a compromise, flexible approach for the phase-down of HFCs using the expertise and institutions of the Montreal Protocol while continuing to include HFCs within the scope of the Climate Change Convention and its Kyoto Protocol for accounting and reporting of emissions.

173. Several representatives said that their countries had already taken proactive measures to identify and introduce viable, low-GWP alternatives in accordance with local technological, regulatory, economic and environmental conditions. One representative encouraged the Technology and Economic Assessment Panel to continue its work on assessing the availability of technically feasible, environmentally sound and economically viable alternatives. Another representative highlighted the methodology of the Montreal Protocol, saying that it did not shy away from challenges but saw constraints as an opportunity to innovate.

174. In conclusion, a number of representatives expressed their visions for the future of the Montreal Protocol. Several supported the adoption of an approach that would include mitigation of the adverse effects of climate change through use of zero-GWP or low-GWP substances. One representative said that the success of the Montreal Protocol in protecting the ozone layer in isolation would not be a major cause for celebration if other environmental problems were not adequately resolved. Another representative said that the spirit of global cooperation should be maintained for the benefit of humankind and the protection of the environment. Finally, another representative urged the adoption of a broader, more holistic long-term approach that gave careful consideration to the solutions adopted under the Protocol to ensure they did not result in unintended adverse consequences.

## **VII. Report by the co-chairs of the preparatory segment and consideration of the decisions recommended for adoption by the Twenty-Seventh Meeting of the Parties**

175. The Co-Chair of the preparatory segment reported that the work of the preparatory segment had concluded successfully, and various draft decisions had been approved for consideration and adoption during the high-level segment. After enumerating those draft decisions he thanked all concerned for their hard work and for the spirit of cooperation and compromise that had been evident throughout the negotiations.

## **VIII. Date and venue of the Twenty-Eighth Meeting of the Parties to the Montreal Protocol**

176. The President read a message from the Government of Rwanda confirming its desire to host the Twenty-Eighth Meeting of the Parties; the Secretariat, he said, was working with the Government of Rwanda to determine the dates of the meeting.



The representative of the Dominican Republic conveyed an offer by his Government to host the Twenty-Ninth Meeting of the Parties in Punta Cana in 2017.

**IX. Other matters**

177. The parties took up no other matters during the high-level segment.

**X. Adoption of decisions by the Twenty-Seventh Meeting of the Parties to the Montreal Protocol**

*178. The Meeting of the Parties decides:*

**Decision XXVII/1: Dubai pathway on hydrofluorocarbons**

*Recognizing* the Montreal Protocol's history of success in achieving collaborative and consensus-based outcomes and that hydrofluorocarbons (HFCs) are replacements for ozone-depleting substances that parties to the Montreal Protocol are already successfully phasing out,

1. To work within the Montreal Protocol to an HFC amendment in 2016 by first resolving challenges by generating solutions in the contact group on the feasibility and ways of managing HFCs during Montreal Protocol meetings;

2. To recognize the progress made at the Twenty-Seventh Meeting of the Parties on the challenges identified in the mandate of the contact group agreed at the resumed thirty-sixth meeting of the Open-ended Working Group (listed in annex I to the present decision,) on the feasibility and ways of managing HFCs, including development of a common understanding on issues related to flexibility of implementation, second and third stage conversions, guidance to the Executive Committee of the Multilateral Fund for the Implementation of the Montreal Protocol, enabling activities for capacity-building and the need for an exemption for high-ambient-temperature countries, and to endorse the concepts listed in annex II to the present decision;

3. To recognize that further progress still needs to be made, in particular with respect to other challenges identified in the contact group mandate, for example conversion costs, technology transfer and intellectual property rights;

4. To hold in 2016 a series of Open-ended Working Group meetings and other meetings, including an extraordinary meeting of the parties;

5. To continue consideration at the meetings mentioned in paragraph 4 above of items 6 and 7 of the agenda for the Twenty-Seventh Meeting of the Parties (UNEP/OzL.Pro. 27/1), including the submissions set out in documents UNEP/OzL.Pro.27/5, UNEP/OzL.Pro.27/6, UNEP/OzL.Pro.27/7 and UNEP/OzL.Pro.27/8);

**Annex I to decision XXVII/1**

**Mandate for a possible contact group on the feasibility and ways of managing HFCs**

The Open-ended Working Group of the Parties to the Montreal Protocol at its thirty-fifth meeting held in Bangkok from 22 to 24 April 2015, agreed that "it

would continue to work inter-sessionally in an informal manner to study the feasibility and ways of managing HFCs, including, inter alia, the related challenges set out in annex II to the [report of the thirty-fifth meeting of the Open-ended Working Group], with a view to the establishment of a contact group on the feasibility and ways of managing HFCs at the thirty-sixth meeting of the Open-ended Working Group” (UNEP/OzL.Pro.WG.1/35/6, para. 128).

The informal meeting was convened on the 12-13 of June in Vienna on the above mentioned basis.

The parties have recognised in their interventions the success of the Montreal Protocol and its institutions in phasing out ODSs.

The management of HFCs is applicable to both A5 and non-A5 parties.

Parties agree that nothing should be considered agreed until everything is agreed.

Parties agree that they shall first resolve the challenges mentioned below by generating solutions in a contact group.

- Relevance and recognition of the special situation of developing countries and the principles under the Montreal Protocol which have enabled sufficient additional time in the implementation of commitments by A5 countries,
- Maintain the MLF as the financial mechanism, and to agree that additional financial resources will be provided by non-A5 parties to offset costs arising out of HFC management for A5 parties if obligations are agreed to. In this regard, key elements for financial support from the MLF for A5 parties will be developed by the contact group to provide guidance to the ExCom of the MLF, taking into account the concerns of parties,
- The elements in paragraph 1(a) of decision XXVI/9 including IPR issues in considering the feasibility and the ways of managing HFCs,
- Flexibility in implementation that enables countries to set their own strategies and set their own priorities in sectors and technologies,
- Exemption process and a mechanism for periodic review of alternatives including the consideration of availability or lack of availability of alternatives in all sectors in A5 countries and special needs for high ambient countries, based on all the elements listed in paragraph 1(a) of decision XXVI/9,
- Relationship with the HCFC phase out,
- Non-party trade provisions, and
- Legal aspects, synergies and other issues related to the UNFCCC in the context of HFC management under the MP,

Then, the parties will discuss in the contact group the ways of managing HFCs including the amendment proposals submitted by the parties.

### **Challenges to be addressed**

- Energy efficiency
- Funding requirements
- Safety of substitutes
- Availability of technologies
  - Performance and challenges in high ambient temperatures
  - Second and third conversions
  - Capacity-building
  - Non-party trade provisions
  - Synergies with the United Nations Framework Convention on Climate Change (legal, financial aspects)
  - Relationship with the HCFC phase-out
  - Ecological effects (effects on fauna and flora)
  - Implications for human health
  - Social implications
  - National policy implications
  - Challenges to the production sector
  - Rates of penetration of new alternatives
  - Exemptions and ways to address lack of alternatives
  - Technology transfer
  - Flexibility in implementation

### **Annex II to decision XXVII/1**

**Issues raised and discussed in detail as part of the challenges during the contact group will be further discussed, in a direction consistent with the record of the discussion.**

#### **Funding**

Maintain the MLF as the financial mechanism and agree that additional financial resources will be provided by non A5 parties to offset costs arising out of HFC management for A5 parties if obligations are agreed to.

#### **Flexibility**

A5 parties will have flexibility to prioritize HFCs, define sectors, select technologies/alternatives, elaborate and implement their strategies to meet agreed HFC obligations, based on their specific needs and national circumstances, following a country driven approach.

The ExCom shall incorporate the principle in the above mentioned paragraph in relevant guidelines and its decision making process.

### **2nd and 3rd conversions**

Enterprises that have already converted to HFCs in phasing out CFCs and/or HCFCs will be eligible to receive funding from the MLF to meet agreed incremental costs in the same manner as enterprises eligible for 1st conversions.

### **Guidance to the ExCom**

It is understood that guidelines and/or methodologies will have to be developed on the following issues related to HFC control measures, if agreed:

- Determination of incremental costs
- Calculation of incremental costs
- Cost effectiveness thresholds
- Energy efficiency and climate impacts of projects

### **Enabling activities**

Enabling activities will be supported by the MLF in any HFC phase down agreement.

- Capacity building and training for handling HFC alternatives in the servicing sector, the manufacturing and production sectors
- Institutional Strengthening
- Article 4b Licensing
- Reporting
- Demonstration projects
- Developing national strategies

### **HAT Exemption**

The need for an exemption for high ambient temperature countries

It is understood that the remaining challenges will be further discussed.

### **Decision XXVII/2: Essential-use exemption for laboratory and analytical uses for 2016 in China**

*Noting with appreciation* the work done by the Technology and Economic Assessment Panel and its Chemicals Technical Options Committee,

*Recalling* decision XI/15, by which the parties, among other things, eliminated the use of ozone-depleting substances for the testing of oil, grease and total petroleum hydrocarbons in water from the global exemption for laboratory and analytical uses,

*Recalling also* decision XXIII/6, by which parties operating under paragraph 1 of Article 5 of the Montreal Protocol were allowed until 31 December 2014 to deviate from the existing ban on the use of carbon tetrachloride for the testing of oil,

grease and total petroleum hydrocarbons in water in individual cases where such parties considered doing so to be justified, and in which it was clarified that any deviation beyond that should take place only in accordance with an essential-use exemption in respect of the use of carbon tetrachloride for the testing of oil, grease and total petroleum hydrocarbons in water beyond 2014,

*Noting* that China has reported difficulty in implementing existing alternatives to the use of carbon tetrachloride for the testing of oil, grease and total petroleum hydrocarbons in water and has indicated that it needs more time for the revision and promotion of national standards and has expressed its willingness to take the measures necessary to implement the alternatives as soon as possible,

1.To encourage China, which has applied for an exemption, to complete the revision of its relevant national standard and to ensure that a revised national standard is brought into force as soon as possible with a view to ensuring a smooth transition to a method that does not use ozone-depleting substances;

2.To authorize the level of consumption for China for 2016 necessary to satisfy essential uses of carbon tetrachloride for the testing of oil, grease and total petroleum hydrocarbons in water, as specified in the annex to the present decision;

**Annex to decision XXVII/2**

**Essential-use authorizations for 2016 for carbon tetrachloride for the testing of oil, grease and total petroleum hydrocarbons in water**

(Metric tonnes)

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<i>Party</i>	<i>2016</i>
China	70

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**Decision XXVII/3: Critical-use exemptions for methyl bromide for 2016 and 2017**

*Noting with appreciation* the work of the Technology and Economic Assessment Panel and its Methyl Bromide Technical Options Committee,

*Recognizing* the significant reductions in critical-use nominations for methyl bromide by many parties,

*Recalling* paragraph 10 of decision XVII/9,

*Recalling also* that all parties that have nominated critical-use exemptions are to report data on stocks of methyl bromide using the accounting framework agreed to by the Sixteenth Meeting of the Parties,

*Recalling further* paragraph 1 of decision XXV/4, in which the Meeting of the Parties requested that, by the thirty-sixth meeting<sup>2</sup> of the Open-ended Working Group, Australia submit the available results of its research programme,

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<sup>2</sup> This reference to the thirty-sixth meeting of the Open-ended Working Group should be

understood to imply that the submission is required before the appropriate Open-ended Working

*Noting with appreciation* that, in accordance with paragraph 2 of decision XXV/4, Canada submitted the available results of its assessment of the impact of chloropicrin on groundwater to the Technology and Economic Assessment Panel in August 2015,

*Recognizing* that the production and consumption of methyl bromide for critical uses should be permitted only if methyl bromide is not available in sufficient quantity and quality from existing stocks of banked or recycled methyl bromide,

*Recognizing also* that parties operating under critical-use exemptions should take into account the extent to which methyl bromide is available in sufficient quantity and quality from existing stocks of banked or recycled methyl bromide in licensing, permitting or authorizing the production and consumption of methyl bromide for critical uses,

179. To permit, for the agreed critical-use categories for 2016 and 2017 set forth in table A of the annex to the present decision for each party, subject to the conditions set forth in the present decision and in decision Ex.I/4 to the extent that those conditions are applicable, the levels of production and consumption for 2016 and 2017 set forth in table B of the annex to the present decision, which are necessary to satisfy critical uses, with the understanding that additional levels of production and consumption and categories of use may be approved by the Meeting of the Parties in accordance with decision IX/6;

180. That parties shall endeavour to license, permit, authorize or allocate quantities of methyl bromide for critical uses as listed in table A of the annex to the present decision;

181. That each party that has an agreed critical-use exemption shall renew its commitment to ensuring that the criteria in paragraph 1 of decision IX/6, in particular the criterion laid down in paragraph 1 (b) (ii) of decision IX/6, are applied in licensing, permitting or authorizing critical uses of methyl bromide, with each party requested to report on the implementation of the present provision to the Ozone Secretariat by 1 February for the years to which the present decision applies;

**Annex to decision XXVII/3**

Table A

**Agreed critical-use categories**

(Metric tonnes)

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<b>2017</b>	
Australia	Strawberry runners 29.760
<b>2016</b>	
Argentina	Strawberry fruit 71.25; tomato 58

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Group meeting to be held in 2016 in order to take into account the additional meetings of the Open-ended Working Group on HFCs in both 2015 and 2016.

China	Ginger, protected 21.0; ginger, open field 78.75
Mexico	Strawberry, nursery 43.539; raspberry, nursery 41.418
South Africa	Mills 5.462; houses 68.6

Table B

**Permitted levels of production and consumption<sup>a</sup>**

(Metric tonnes)

**2017**

Australia	29.760
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**2016**

Argentina	129.25
China	99.75
Mexico	84.957
South Africa	74.062

<sup>a</sup>Minus available stocks.

**Decision XXVII/4: Response to the report by the Technology and Economic Assessment Panel on information on alternatives to ozone-depleting substances**

*Noting with appreciation* the September 2015 report of the task force of the Technology and Economic Assessment Panel addressing the issues listed in subparagraphs 1 (a) – (c) of decision XXVI/9,

1. *To request* the Technology and Economic Assessment Panel, if necessary in consultation with external experts, to prepare a report for consideration by the Open-ended Working Group at its thirty – seventh meeting, and thereafter an updated report to be submitted to the Twenty-Eighth Meeting of the Parties to the Montreal Protocol on Substances that Deplete the Ozone Layer in 2016, that would:

(a) Update, where necessary, and provide new information on alternatives to ozone-depleting substances, including not-in-kind alternatives, based on the guidance and assessment criteria provided in subparagraph 1 (a) of decision XXVI/9 and taking into account the most recent findings on the suitability of alternatives at high-ambient temperatures, highlighting in particular:

- (i) The availability and market penetration of these alternatives in different regions;
- (ii) The availability of alternatives for replacement and retrofit of refrigeration systems in fishing vessels, including in small island countries;
- (iii) New substances in development that could be used as alternatives to ozone-depleting substances and that could become available in the near-future;

- (iv) The energy efficiency associated with the use of these alternatives;
- (v) The total warming impact and total costs associated with these alternatives and the systems where they are used;

(b) Update and extend to 2050 all the scenarios in the decision XXVI/9 report;

**Decision XXVII/5: Issues related to the phase-out of hydrochlorofluorocarbons**

*Aware* that parties operating under paragraph 1 of Article 5 of the Montreal Protocol are taking measures to reduce and eventually eliminate the production and consumption of the ozone-depleting substances listed in Annex C, group I (hydrochlorofluorocarbons),

*Recognizing* that there is some uncertainty about the future use of hydrochlorofluorocarbons by parties not operating under paragraph 1 of Article 5 after 2020 for essential uses and for servicing existing refrigeration and air-conditioning equipment, in accordance with paragraph 6 (a) of Article 2F of the Montreal Protocol,

*Recalling* paragraphs 12, 13 and 14 of decision XIX/6, in which the Meeting of the Parties indicated that further consideration by the parties of the issues of essential uses, servicing and basic domestic needs should occur by 2015 at the latest,

1. To request the Technology and Economic Assessment Panel, in relation to Annex C, group I, substances:

(a) To identify sectors, including subsectors, if any, where essential uses for parties not operating under paragraph 1 of Article 5 may be needed after 2020, including estimations of the volumes of hydrochlorofluorocarbons to be used;

(b) To assess the future refrigeration and air-conditioning equipment servicing requirements between 2020 and 2030 of parties not operating under paragraph 1 of Article 5 and to assess whether there is a need for servicing in other sectors;

(c) To report on recent volumes of production to satisfy basic domestic needs, projected estimates of such future production and estimated needs of parties operating under paragraph 1 of Article 5 to satisfy basic domestic needs beyond 2020;

2. To invite parties to provide relevant information to the Ozone Secretariat by 15 March 2016 for inclusion in the Panel's assessment;

3. To request the Panel to submit its report to the Open-ended Working Group at its thirty-seventh meeting, in 2016;<sup>3</sup>

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<sup>3</sup> This reference to the thirty-seventh meeting of the Open-ended Working Group should be understood to refer to an appropriate meeting of the Open-ended Working Group in 2016.



## **Decision XXVII/6: Potential areas of focus for the 2018 quadrennial reports of the Scientific Assessment Panel, the Environmental Effects Assessment Panel and the Technology and Economic Assessment Panel**

1. To note with appreciation the excellent and highly useful work conducted by the Scientific Assessment Panel, the Environmental Effects Assessment Panel and the Technology and Economic Assessment Panel in preparing their 2014 quadrennial assessment reports, including the 2015 synthesis report;

2. To request the three assessment panels to prepare quadrennial assessment reports in 2018, to submit them to the Secretariat by 31 December 2018 for consideration by the Open-ended Working Group and by the Thirty-First Meeting of the Parties to the Montreal Protocol in 2019 and to present a synthesis report by 30 April 2019, noting that the panels should continue to exchange information, including on all sectors, on alternatives and on the issue of high-ambient temperatures, during the process of developing their respective reports in order to provide comprehensive information to the parties to the Montreal Protocol;

3. To encourage the assessment panels to more closely involve relevant scientists from parties operating under paragraph 1 of Article 5 with a view to promoting gender and regional balance, to the best of its ability, in the work of producing the reports;

4. To encourage the assessment panels to use defined, consistent units and consistent terminology throughout for better comparability;

5. To request the assessment panels to bring to the notice of the parties any significant developments which, in their opinion, deserve such notice, in accordance with decision IV/13;

6. To request the Environmental Effects Assessment Panel, in drafting its 2018 report, to consider the most recent scientific information regarding the effects on human health and the environment of changes in the ozone layer and in ultraviolet radiation, together with future projections and scenarios for those variables, taking into account those factors stipulated in Article 3 of the Vienna Convention for the Protection of the Ozone Layer;

7. To request the Scientific Assessment Panel to undertake, in its 2018 report, a review of the scientific knowledge as dictated by the needs of the parties to the Montreal Protocol, as called for in the terms of reference for the panels,<sup>4</sup> taking into account those factors stipulated in Article 3 of the Vienna Convention, including estimates of the levels of ozone-layer depletion attributed to the remaining potential emissions of ozone-depleting substances and an assessment of the level of global emissions of ozone-depleting substances below which the depletion of the ozone layer could be comparable to various other factors such as the natural variability of global ozone, its secular trend over a decadal timescale and the 1980 benchmark level;

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<sup>4</sup> UNEP/OzL.Pro.1/5, annex VI.

8.To request the Technology and Economic Assessment Panel, in its 2018 report, to consider the following topics, among others:

(a)The impact of the phase-out of ozone-depleting substances on sustainable development;

(b)Technical progress in the production and consumption sectors in the transition to alternatives and practices that eliminate or minimize emissions to the atmosphere of ozone-depleting substances, taking into account those factors stipulated in Article 3 of the Vienna Convention;

(c)Technically and economically feasible choices for the reduction and elimination of ozone-depleting substances in all relevant sectors, including through the use of alternatives, taking into account their performance, and technically and economically feasible alternatives to ozone-depleting substances in consumption sectors, taking into account their overall performance;

(d)The status of banks containing ozone-depleting substances and their alternatives, including those maintained for essential and critical uses, and the options available for handling them;

(e)Accounting for production and consumption for various applications and relevant sources of ozone-depleting substances and their alternatives;

**Decision XXVII/7: Investigation of carbon tetrachloride discrepancies**

*Reiterating its concern* about the discrepancy between observed atmospheric concentrations and data on carbon tetrachloride reported in the 2014 assessment reports of the Technology and Economic Assessment Panel and the Scientific Assessment Panel, indicating that the mismatch between bottom-up inventories and global top-down estimates of carbon tetrachloride remains unresolved,

*Noting with concern* that derived emissions of carbon tetrachloride, based on its estimated lifetime and its accurately measured atmospheric abundances, have become much larger over the last decade than those from reported production and usage, notwithstanding that some of the discrepancy could be explained by additional sources unrelated to reported production, such as contaminated soils and industrial waste, and that additional explanations could include underreported releases to the atmosphere and incorrect partial lifetimes (stratosphere, ocean or soil),

*Recalling* decisions IV/12, X/12, XVI/14, XVIII/10, XXI/8 and XXIII/8,

1.To request the Technology and Economic Assessment Panel and the Scientific Assessment Panel to continue their analysis of the discrepancies between observed atmospheric concentrations and reported data on carbon tetrachloride and to report and provide an update on their findings to the Twenty-Eighth Meeting of the Parties;

### **Decision XXVII/8: Avoiding the unwanted import of products and equipment containing or relying on hydrochlorofluorocarbons**

*Noting with appreciation* the historical role of decision X/9, on the Establishment of a list of countries that do not manufacture for domestic use and do not wish to import products and equipment whose continuing functioning relies on Annex A and Annex B substances, adopted by the Tenth Meeting of the Parties in November 1998, in limiting the use and furthering the phase-out of substances specified in Annex A and Annex B to the Montreal Protocol during the implementation of country programmes on phasing out chlorofluorocarbons and halons,

*Taking into consideration* that decision X/9 covers only the substances specified in Annex A and Annex B to the Montreal Protocol,

*Bearing in mind* that during the implementation of country programmes on phasing out hydrochlorofluorocarbons parties may take advantage of the positive experience of implementation of the main provisions of decision X/9, particularly in developing countries, by introducing bans or restrictions on the import of products and equipment containing or relying on substances specified in Annex C to the Montreal Protocol (hydrochlorofluorocarbons),

*Taking into consideration* that some parties have already introduced bans or restrictions on the import of products and equipment containing or relying on hydrochlorofluorocarbons and therefore wish to inform exporting countries of that fact through existing mechanisms under the Montreal Protocol,

1. To invite those parties that do not permit the importation of products and equipment containing or relying on hydrochlorofluorocarbons from any source to inform the Secretariat, on a voluntary basis, if they so choose, that they do not consent to the importation of such products and equipment;

2. To request the Secretariat to maintain a list of parties that do not want to receive products and equipment containing or relying on hydrochlorofluorocarbons, which shall be distributed to all parties by the Secretariat and updated on an annual basis;

### **Decision XXVII/9: Data and information provided by the parties in accordance with Article 7 of the Montreal Protocol**

*Noting with appreciation* that 193 of the 197 parties that should have reported data for 2014 have done so and that 84 of those parties reported their data by 30 June 2015 in accordance with decision XV/15,

*Noting* that 140 of those parties reported their data by 30 September 2015 as required under paragraph 3 of Article 7 of the Montreal Protocol,

*Noting with concern*, however, that the following parties have not reported 2014 data: Democratic Republic of Congo, Dominica, Somalia and Yemen,

*Noting* that their failure to report their 2014 data in accordance with Article 7 places those parties in non-compliance with their data-reporting obligations under

the Montreal Protocol until such time as the Secretariat receives their outstanding data,

*Noting also* that a lack of timely data reporting by parties impedes the effective monitoring and assessment of parties' compliance with their obligations under the Montreal Protocol,

*Noting further* that reporting by 30 June each year greatly facilitates the work of the Executive Committee of the Multilateral Fund for the Implementation of the Montreal Protocol in assisting parties operating under paragraph 1 of Article 5 of the Protocol to comply with the Protocol's control measures,

1.To urge the Democratic Republic of Congo, Dominica, Somalia and Yemen, where appropriate, to work closely with the implementing agencies to report the required data to the Secretariat as a matter of urgency;

2.To request the Implementation Committee to review the situation of those parties listed in paragraph 1 above at its fifty-sixth meeting;

3.To encourage parties to continue to report consumption and production data as soon as figures are available, and preferably by 30 June each year, as agreed in decisionXV/15;

#### **Decision XXVII/10: Non-compliance with the Montreal Protocol by Bosnia and Herzegovina**

*Noting* that Bosnia and Herzegovina ratified the Montreal Protocol on Substances that Deplete the Ozone Layer on 1 September 1993, the London Amendment, the Copenhagen Amendment and the Montreal Amendment on 11 August 2003 and the Beijing Amendment on 11 October 2011 and is classified as a party operating under paragraph 1 of Article 5 of the Protocol,

*Noting also* that the Executive Committee has approved \$4,154,601 from the Multilateral Fund for the Implementation of the Montreal Protocol in accordance with Article 10 of the Protocol to enable Bosnia and Herzegovina to achieve compliance with the Protocol,

1.That Bosnia and Herzegovina reported annual consumption for the controlled substances in Annex C, group I (hydrochlorofluorocarbons), for 2013 of 5.13 ODP-tonnes, which exceeds the party's maximum allowable consumption of 4.7 ODP-tonnes for those controlled substances for that year, and was therefore in non-compliance with the consumption control measures under the Protocol for hydrochlorofluorocarbons;

2.To note with appreciation the submission by Bosnia and Herzegovina of a plan of action to ensure its return to compliance with the Protocol's hydrochlorofluorocarbon consumption control measures in 2014 and subsequent years;

3.To note also with appreciation that the party submitted an explanation for its non-compliance, which confirmed that it had introduced a comprehensive set of measures necessary to ensure future compliance;

4. That the party's submission of ozone-depleting-substance data for 2014 showed that Bosnia and Herzegovina was in compliance with its hydrochlorofluorocarbon consumption obligations under the control measures of the Protocol;

5. That no further action is necessary in view of the party's return to compliance with the hydrochlorofluorocarbon phase-out in 2014 and its implementation of regulatory and administrative measures to ensure compliance with the Protocol's control measures for hydrochlorofluorocarbons for subsequent years;

6. To monitor closely the party's progress with regard to the implementation of its obligations under the Protocol;

**Decision XXVII/11: Non-compliance with the Montreal Protocol by Libya**

*Noting* that Libya ratified the Montreal Protocol on Substances that Deplete the Ozone Layer on 11 July 1990, the London Amendment on 12 July 2001, the Copenhagen Amendment on 24 September 2004 and the Montreal Amendment and Beijing Amendment on 15 April 2014 and is classified as a party operating under paragraph 1 of Article 5 of the Protocol,

*Noting also* that the Executive Committee has approved \$6,502,199 from the Multilateral Fund for the Implementation of the Montreal Protocol in accordance with Article 10 of the Protocol to enable Libya to achieve compliance with the Protocol,

1. That the annual consumption reported by Libya of the controlled substances in Annex C, group I (hydrochlorofluorocarbons), of 144.0 ODP-tonnes for 2013 and 122.4 ODP-tonnes for 2014 exceeds the party's maximum allowable consumption of 118.38 ODP-tonnes for those controlled substances for those years and that the party was therefore in non-compliance with the consumption control measures under the Protocol for hydrochlorofluorocarbons,

2. To note with appreciation the submission by Libya of a plan of action to ensure its return to compliance with the Protocol's hydrochlorofluorocarbon control measures under which, without prejudice to the operation of the financial mechanism of the Protocol, Libya specifically commits itself:

(a) To reducing its consumption of hydrochlorofluorocarbons from 122.4 ODP-tonnes in 2014 to no greater than:

- (i) 122.3 ODP-tonnes in 2015;
- (ii) 118.4 ODP-tonnes in 2016 and 2017;
- (iii) 106.5 ODP-tonnes in 2018 and 2019;
- (iv) 76.95 ODP-tonnes in 2020 and 2021;
- (v) Levels allowed under the Montreal Protocol in 2022 and subsequent years;

(b) To monitoring the enforcement of its system for licensing imports and

exports of  
ozone-depleting substances;

(c) To imposing a ban on the procurement of air-conditioning equipment containing hydrochlorofluorocarbons in the near future and to considering a ban on the import of such equipment;

3. To urge Libya to work with the relevant implementing agencies to implement its plan of action to phase out the consumption of hydrochlorofluorocarbons;

4. To monitor closely the progress of Libya with regard to the implementation of its plan of action and the phase-out of hydrochlorofluorocarbons. To the degree that the party is working towards and meeting the specific Protocol control measures it should continue to be treated in the same manner as a party in good standing. In that regard, Libya should continue to receive international assistance to enable it to meet those commitments in accordance with item A of the indicative list of measures that may be taken by the Meeting of the Parties in respect of non-compliance;

5. To caution Libya, in accordance with item B of the indicative list of measures that may be taken by the Meeting of the Parties in respect of non-compliance, that, in the event that Libya fails to return to compliance, the parties will consider measures consistent with item C of the indicative list of measures. Those measures may include the possibility of actions available under Article 4, such as ensuring that the supply of hydrochlorofluorocarbons that are the subject of non-compliance is ceased so that exporting parties are not contributing to a continuing situation of non-compliance;

#### **Decision XXVII/12: Membership of the Implementation Committee**

1. To note with appreciation the work carried out by the Implementation Committee under the Non-Compliance Procedure for the Montreal Protocol in 2015;

2. To confirm the positions of Bosnia and Herzegovina, Cuba, Mali, Pakistan and the United Kingdom of Great Britain and Northern Ireland (replacing Italy) as members of the Committee for one further year and to select Bangladesh, Canada, Haiti, Kenya and Romania as members of the Committee for a two-year period beginning on 1 January 2016;

3. To note the selection of Mr. Iftikhar ul Hassan Shah (Pakistan) to serve as President and of Ms. Nancy Seymour (Canada) to serve as Vice-President and Rapporteur of the Committee for one year beginning on 1 January 2016;

#### **Decision XXVII/13: Membership of the Executive Committee of the Multilateral Fund**

1. To note with appreciation the work carried out by the Executive Committee of the Multilateral Fund for the Implementation of the Montreal Protocol with the assistance of the Fund secretariat in 2015;

2. To endorse the selection of Austria, Belgium, Canada, Germany, Japan, the Russian Federation and the United States of America as members of the

Executive Committee representing parties not operating under paragraph 1 of Article 5 of the Protocol and the selection of Argentina, Cameroon, China, Egypt, India, Jordan and Mexico as members representing parties operating under that paragraph for one year beginning 1 January 2016;

3. To note the selection of Mr. Agustin Sanchez (Mexico) to serve as Chair and Mr. Paul Krajnik (Austria) to serve as Vice-Chair of the Executive Committee for one year beginning 1 January 2016;

**Decision XXVII/14: Co-Chairs of the Open-ended Working Group of the Parties to the Montreal Protocol**

To endorse the selection of Mr. Paul Krajnik (Austria) and Mr. Leslie Smith (Grenada) as Co-Chairs of the Open-ended Working Group of the Parties to the Montreal Protocol in 2016;

**Decision XXVII/15: Changes in the membership of the Scientific Assessment Panel**

1. To thank the following scientific experts who have served as Co-Chairs of the Scientific Assessment Panel for their long and outstanding efforts on behalf of the Montreal Protocol:

(a) Mr. Ayite-Lo Ajavon (Togo);

(b) Mr. A.R. Ravishankara (United States of America);

2. To endorse the appointment of the following new Co-Chairs of the Scientific Assessment Panel:

(a) Mr. Bonfils Safari (Rwanda);

(b) Mr. David Fahey (United States of America);

**Decision XXVII/16: Technology and Economic Assessment Panel organizational and membership changes**

To thank the Technology and Economic Assessment Panel for its outstanding reports and to thank the individual members of the Panel for their outstanding service and dedication;

182. To thank Mr. Masaaki Yamabe (Japan) for his long and outstanding efforts on behalf of the Montreal Protocol on Substances that Deplete the Ozone Layer as Senior Expert of the Technology and Economic Assessment Panel;

183. To endorse the appointment of Mr. Marco Gonzalez (Costa Rica) and Ms. Suelly Carvalho (Brazil) as Senior Experts for a two-year and a four-year term, respectively;

184. To thank Mr. Lambert Kuijpers (the Netherlands) for his long and outstanding efforts on behalf of the Montreal Protocol as Co-Chair of the Refrigeration, Air-Conditioning and Heat Pumps Technical Options Committee;

185. To thank Mr. Paul Ashford (United Kingdom of Great Britain and Northern Ireland) and Mr. Miguel Quintero (Colombia) for their long and

outstanding efforts on behalf of the Montreal Protocol as Co-Chairs of the Flexible and Rigid Foams Technical Options Committee;

186. To thank Mr. Ashley Woodcock (United Kingdom) and Mr. Jose Pons Pons (Bolivarian Republic of Venezuela) for their long and outstanding efforts on behalf of the Montreal Protocol as Co-Chairs of the Medical Technical Options Committee;

187. To encourage the outgoing Co-Chairs of the relevant technical options committees to provide support to the new Co-Chairs to ensure a smooth transition;

188. To disband the Chemicals Technical Options Committee and the Medical Technical Options Committee and to establish a new technical options committee to be called the Medical and Chemicals Technical Options Committee;

189. To endorse the appointment of Ms. Helen Tope (Australia) as Co-Chair of the Medical and Chemicals Technical Options Committee for a term of two years;

190. To endorse the appointment of Mr. Keiichi Ohnishi (Japan) and Mr. Jianjun Zhang (China) as Co-Chairs of the Medical and Chemicals Technical Options Committee for a term of four years;

**Decision XXVII/17: Ensuring the continuation of the work of the Technology and Economic Assessment Panel, its technical options committees, the Scientific Assessment Panel and the Environmental Effects Assessment Panel**

*Noting with appreciation* the excellent work conducted by the assessment panels at the request of the parties,

*Noting* the concerns expressed by the Technology and Economic Assessment Panel in the September 2015 addendum to its June 2015 progress report<sup>5</sup> in relation to funding issues for some experts from parties not operating under paragraph 1 of Article 5,

*Recalling* that the members of the assessment panels and their subsidiary bodies provide their expertise and work on a voluntary basis,

*Recalling also* decision XVIII/5, in which the Meeting of the Parties encouraged parties, non-parties and other stakeholders to contribute financially and with other means to assist members of the three assessment panels and their subsidiary bodies for their continued participation in the assessment activities under the Protocol,

*Recalling further* that nominations of experts to the Technology and Economic Assessment Panel and its technical options committees are made in

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[http://conf.montreal-protocol.org/meeting/mop/mop-27/presession/Background%20Documents%20are%20available%20in%20English%20only/Addendum\\_TEAP\\_Progress\\_Report\\_June\\_2015%20final.pdf](http://conf.montreal-protocol.org/meeting/mop/mop-27/presession/Background%20Documents%20are%20available%20in%20English%20only/Addendum_TEAP_Progress_Report_June_2015%20final.pdf).



accordance with the terms of reference of the Technology and Economic Assessment Panel,

*Noting* the existence of the means to receive voluntary contributions, separate from the trust funds for the Montreal Protocol on Substances that Deplete the Ozone Layer and the Vienna Convention for the Protection of the Ozone Layer but managed by the Ozone Secretariat, for providing financial support for activities additional to those covered by the Vienna Convention and the Montreal Protocol trust funds;

1.To maintain the current financial support available for members of the assessment panels and their subsidiary bodies from parties operating under paragraph 1 of Article 5;

2.To request parties not operating under paragraph 1 of Article 5 that nominate experts to the assessment panels and their subsidiary bodies through their national focal points to obtain assurances or otherwise be satisfied that the nominated experts will be able to carry out their duties, including attendance at relevant meetings;

3.To invite parties to make voluntary contributions for the purpose of providing financial support, where necessary, to members of the assessment panels and their subsidiary bodies from parties not operating under paragraph 1 of Article 5 in order to support their attendance at relevant meetings;

4.That the provision of the support referred to in the preceding paragraph does not detract from the responsibility of a nominating party not operating under paragraph 1 of Article 5 to obtain assurances or otherwise be satisfied that experts that they nominate have sufficient support to carry out their duties, including attendance at relevant meetings;

5.To request the Ozone Secretariat to reinstitute administrative and organizational support for the work of the Technology and Economic Assessment Panel in order to reduce the administrative burden on assessment panel members where possible;

#### **Decision XXVII/18: Financial report and budget of the trust fund of the Montreal Protocol**

*Recalling* decision XXVI/21 on the financial report and budget for the Montreal Protocol,

*Taking note* of the financial report on the Trust Fund for the Montreal Protocol on Substances that Deplete the Ozone Layer for the year ended 31 December 2014,<sup>6</sup>

*Recognizing* that voluntary contributions are an essential complement for the effective implementation of the Montreal Protocol,

*Noting with concern* that the scheduling of unbudgeted meetings may have

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<sup>6</sup> UNEP/OzL.Pro.27/4/Add. 1.

serious implications for the fund balance,

*Welcoming* the continued efficient management by the Secretariat of the finances of the Trust Fund for the Montreal Protocol,

1. To approve the revised 2015 budget in the amount of \$6,363,557 and the 2016 budget of \$6,772,162, as set out in annex I to the report of the Twenty-Seventh Meeting of the Parties to the Montreal Protocol;<sup>7</sup>

2. To authorize the Secretariat to draw down the amounts of \$2,086,624 in 2015 and \$2,495,229 in 2016;

3. To approve, as a consequence of the drawdowns referred to in paragraph 2 of the present decision, total contributions to be paid by the parties of \$4,276,933 for 2015 and \$4,276,933 for 2016, as set out in annex II to the report of the Twenty-Seventh Meeting of the Parties and to note the ongoing unsustainable depletion of the fund balance and the implications for further drawdowns after 2016;

4. To request the Secretariat to prepare scenarios for the trust fund budget, its fund balance and reserves as well as the level of contributions that may need to be paid by the parties in the near future to ensure a fund balance adequate to allow the continued work of the Montreal Protocol and present them in time for consideration by the Open-ended Working Group at its the thirty-seventh meeting;<sup>8</sup>

5. That the contributions of individual parties for 2016 shall be listed in annex II to the report of the Twenty-Seventh Meeting of the Parties;

6. To reaffirm a working capital reserve at a level of 15 per cent of the annual budget to be used to meet the final expenditures under the Trust Fund;

7. To note with concern that a number of parties have not paid their contribution for prior years and to urge those parties to pay both their outstanding contributions and their future contributions promptly and in full, particularly given that the fund balance has been significantly depleted;

8. To request the Executive Secretary and to invite the President of the Meeting of the Parties to enter into discussions with any party whose contributions are outstanding for two or more years with a view to finding a way forward and to request the Executive Secretary to report to the Twenty-eighth Meeting of the Parties on the outcome of the discussions;

9. To further consider how to address outstanding contributions to the trust fund at its next meeting and to request the Executive Secretary to continue to publish and regularly update information on the status of contributions to the Protocol's trust funds;

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<sup>7</sup> UNEP/OzL.Pro.27/13

<sup>8</sup> This reference to the thirty-seventh meeting of the Open-ended Working Group should be understood to refer to an appropriate meeting of the Open-ended Working Group in 2016.

10. To request the Secretariat to provide, within the budget approved for 2016, administrative and organizational support to the Technical and Economic Assessment Panel;

11. Also to request the Secretariat to ensure the full utilization of programme support costs available to it in 2016 and later years and where possible to offset those costs against the administrative components of the approved budget;

12. To encourage parties to provide additional voluntary contributions to the trust fund entitled “Support of the Activities of the Ozone Secretariat” for any unbudgeted meetings;

13. In addition to the funds allocated from the core budget to cover the travel costs of representatives of parties operating under paragraph 1 of Article 5, to encourage parties to contribute to the trust fund entitled “Support of the Activities of the Ozone Secretariat” with a view to ensuring the full and effective participation of parties operating under paragraph 1 of Article 5 in the Meeting of the Parties and the Open-ended Working Group;

14. To request the Secretariat to indicate in future financial reports of the Trust Fund for the Montreal Protocol 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.

#### **XI. Adoption of the report**

179. The parties adopted the present report on Saturday, 6 November 2015, on the basis of the draft report set out in documents UNEP/OzL.Pro.27/L.1 and Add.1.

#### **XII. Closure of the meeting**

180. The Twenty-Seventh Meeting of the Parties to the Montreal Protocol was declared closed at 2.40 am on Saturday, 6 November 2015.

## Annex I

## Trust fund for the Montreal Protocol on substances that deplete the Ozone Layer

Approved revised 2015, approved 2016 and proposed 2017 budgets (in United States dollars)

<i>Cost category</i>	<i>Work months</i>	<i>Revised 2015</i>	<i>2016</i>	<i>Proposed 2017</i>	
Professional and higher category					
1101	Executive Secretary (D-2) (shared with the Vienna Convention (VC))	6	131 200	149 450	148 200
1102	Deputy Executive Secretary (D-1)	12	250 000	272 700	280 881
1103	Senior Legal Officer (P-5)	12	214 801	226 245	227 900
1104	Senior Scientific Affairs Officer (P-5) (shared with VC)	6	–	128 000	128 000
1106	Programme Officer (Data and Information Systems) (P-4)	12	182 094	187 557	194 000
1108	Programme Officer (Monitoring and Compliance) (P-4)	12	256 428	246 700	270 101
<b>Subtotal</b>			<b>1 034 523</b>	<b>1 210 652</b>	<b>1 249 082</b>
Administrative support					
1301	Administrative Assistant (G-7) (shared with VC)	6	28 000	30 700	33 535
1302	Administrative Assistant (G-6)	12	42 000	44 100	46 305
1304	Programme Assistant (G-6) (shared with VC)	6	20 230	22 342	24 559
1305	Research Information Assistant (G-6) (shared with VC)	6	22 260	–	–
1306	Information Management Assistant (G-6)	12	37 703	44 100	46 305
1307	Computer Information Systems Assistant (G-7)	12	54 590	57 320	60 186
1320	Temporary assistance		29 780	33 980	23 100
<b>Subtotal</b>			<b>234 563</b>	<b>232 542</b>	<b>233 990</b>
<b>Component total: Employee salaries, allowances and benefits</b>			<b>1 269 086</b>	<b>1 443 194</b>	<b>1 483 072</b>
Consultants					
1201	Assistance in data reporting, analysis and promotion of implementation of the Protocol		84 500	85 000	85 000

<i>Cost category</i>	<i>Work months</i>	<i>Revised 2015</i>	<i>2016</i>	<i>Proposed 2017</i>
<b>Component total: Non-employee compensation and allowances</b>		<b>84 500</b>	<b>85 000</b>	<b>85 000</b>
Expendable equipment				
4101 Miscellaneous expendables		18 000	18 000	18 000
<b>Subtotal</b>		<b>18 000</b>	<b>18 000</b>	<b>18 000</b>
Non-expendable equipment				
4201 Personal computers and accessories		5 000	5 000	5 000
4202 Portable computers		5 000	5 000	5 000
4203 Other office equipment (server, scanner, furniture, etc.)		5 000	5 000	5 000
4204 Photocopiers		5 000	5 000	5 000
4205 Equipment and peripherals for paperless meetings		5 000	5 000	5 000
<b>Subtotal</b>		<b>25 000</b>	<b>25 000</b>	<b>25 000</b>
Rental of premises				
4301 Rental of office premises		41 870	41 870	41 870
<b>Subtotal</b>		<b>41 870</b>	<b>41 870</b>	<b>41 870</b>
Operational and maintenance of equipment				
5101 Maintenance of equipment and others		20 000	20 000	20 000
<b>Subtotal</b>		<b>20 000</b>	<b>20 000</b>	<b>20 000</b>
Reporting costs				
5201 Reporting		65 000	65 000	50 000
5202 Reporting (assessment panels)		5 000	5 000	5 000
5203 Reporting (Protocol awareness)		5 000	5 000	5 000
<b>Subtotal</b>		<b>75 000</b>	<b>75 000</b>	<b>60 000</b>
Sundry				
5301 Communications		10 000	10 000	10 000
5302 Freight charges		10 000	10 000	10 000
5303 Training		10 000	10 000	10 000
5304 Others (International Ozone Day)		10 000	10 000	15 000
<b>Subtotal</b>		<b>40 000</b>	<b>40 000</b>	<b>45 000</b>
<b>Component total: Supplies and consumables</b>		<b>219 870</b>	<b>219 870</b>	<b>209 870</b>

<i>Cost category</i>	<i>Work months</i>	<i>Revised 2015</i>	<i>2016</i>	<i>Proposed 2017</i>
Travel on official business				
1601	Staff travel on official business	210 000	210 000	210 000
1602	Conference Services staff travel on official business	15 000	15 000	15 000
<b>Component total: Travel on official business</b>		<b>225 000</b>	<b>225 000</b>	<b>225 000</b>
Meeting costs				
1321	Conference services costs: Open-ended Working Group meetings	578 307	600 000	676 000
1322	Conference services costs: preparatory meetings and meetings of the parties	513 034	625 000	489 250
1323	Communication costs of A-5 assessment panel members and organizational costs of meetings	70 000	70 000	70 000
1324	Conference services costs: Bureau meetings	20 000	25 000	25 000
1325	Conference services costs: Implementation Committee meetings	115 600	125 000	125 000
1326	Conference services costs: Montreal Protocol informal consultation meetings	10 000	10 000	10 000
1330	Conference servicing costs of two-day workshop on HFC management back to back with a three-day Open-ended Working Group meeting	576 069	–	–
1331	Conference services costs: intersessional meetings	20 000	–	–
1332	Conference services costs: resumed thirty-sixth meeting of the Open-ended Working Group	200 000	–	–
1333	Conference services costs - Additional five-day OEWG meeting and two-day back to back extraordinary MOP		800 000	
<b>Subtotal</b>		<b>2 103 010</b>	<b>2 255 000</b>	<b>1 395 250</b>
Travel of Article 5 parties				
3301	Travel of Article 5 parties: assessment panel meetings	450 000	450 000	450 000
3302	Travel of Article 5 parties: preparatory meetings and meetings of the parties	350 000	375 000	375 000
3303	Travel of Article 5 parties: Open-ended Working Group meetings	300 000	325 000	325 000

<i>Cost category</i>	<i>Work months</i>	<i>Revised 2015</i>	<i>2016</i>	<i>Proposed 2017</i>
3304	Travel of Article 5 parties: Bureau meetings	20 000	20 000	20 000
3305	Travel of Article 5 parties: Implementation Committee meetings	125 000	125 000	125 000
3306	Travel of Article 5 parties: consultations in an informal meeting	10 000	10 000	10 000
3309	Travel of Article 5 parties to the two-day workshop on HFC management back to back with a three-day Open-ended Working Group meeting	300 000	–	–
3310	Travel of Article 5 parties to the intersessional meeting	40 000	–	–
3311	Travel of Article 5 parties to the resumed thirty-sixth meeting of the Open-ended Working Group	110 000	–	–
3312	Travel of Article 5 parties - Additional five-day OEWG meeting back to back with two-day extraordinary MOP		435 000	
<b>Subtotal</b>		<b>1 705 000</b>	<b>1 740 000</b>	<b>1 305 000</b>
Hospitality				
5401	Hospitality	25 000	25 000	25 000
<b>Subtotal</b>		<b>25 000</b>	<b>25 000</b>	<b>25 000</b>
<b>Component total: Operating expenses</b>		<b>3 833 010</b>	<b>4 020 000</b>	<b>2 725 250</b>
<b>Total direct costs</b>		<b>5 631 466</b>	<b>5 993 064</b>	<b>4 728 192</b>
Programme support costs (13 per cent)		732 091	779 098	614 665
<b>Grand total</b>		<b>6 363 557</b>	<b>6 772 162</b>	<b>5 342 856</b>
Drawdown		2 086 624	2 495 229	1 065 923
Contribution from parties		4 276 933	4 276 933	4 276 933
Fund balance at 31 December 2014 \$5,602,916		3 239 732	683 213	(168 315)
Operating reserve		954 534	1 015 824	801 428
<b>Total fund balance and operating reserve</b>		<b>4 194</b>	<b>1 699</b>	<b>633 114</b>

<i>Cost category</i>	<i>Work months</i>	<i>Revised 2015</i>	<i>2016</i>	<i>Proposed 2017</i>
		266	037	



**Explanatory notes for the approved budgets for 2015 and 2016 and the proposed budget for 2017 of the Trust Fund for the Montreal Protocol on Substances that Deplete the Ozone Layer**

<i>Budget line</i>	<i>Comment</i>
Professional and higher category 1101 – 1108	<p>Indicative Professional-level salary costs applicable to the Nairobi duty station and trends in salary costs have been used for the budgets. Salary costs for staff at the Professional level consist of: (a) basic salaries; (b) post adjustment as determined and reviewed by the International Civil Service Commission of the United Nations throughout the year, based on the cost of living index of the Nairobi duty station; and (c) entitlements such as home leave travel, which is granted during alternate years, and education grant.</p> <p>The inflation rate used for 2016 and 2017 is 3 per cent, to take into account annual salary step increments as well as increments decided by the International Civil Service Commission</p> <p>The post of the Deputy Executive Secretary was filled internally effective February 2015. The proposed budgets for 2016 and 2017 represent full years' salary and emoluments at the D-1 level.</p> <p>The post of the Senior Scientific Affairs Officer became vacant as of February 2015. The post was reclassified at the P-5 level to update the duties in line with the current needs of the Montreal Protocol and has been renamed Senior Environmental Affairs Officer. The post is expected to be filled by the end of 2015.</p> <p>The post of Senior Administrative Officer at the P-5 level is funded through the programme support cost budget.</p> <p>The post of Communications and Information Officer at the P-3 level is funded from the Trust fund for the Vienna Convention.</p>
Administrative support/personnel 1301 – 1320	<p>Indicative General Service level salary costs applicable to the Nairobi duty station and trends in actual salary cost have been used for the budgets.</p> <p>The approved 2015 budget increased by 5 per cent compared with the 2014 budget to cater for normal step increments and inflation. In December 2014, however, the Secretariat of the United Nations announced an additional salary increase for all General Service staff effective November 2014. The 2015 budget therefore increased by \$20,000; this was implemented after the budget was approved.</p> <p>The 2016 – 2017 budget proposals reflect trends in actual costs and a 5 per cent inflation rate taking into account annual salary step increments as well as revisions.</p> <p>The post of Senior Administrative Assistant (G-7), for which an upgrade to P-2 was approved by the parties in 2012, is funded through the programme support cost budget. The upgrade of the post has not yet been implemented.</p>

<i>Budget line</i>	<i>Comment</i>
	Two posts at the G-6 level, Programme Assistant and Meeting Services Assistant, are funded through the Trust fund for the Vienna Convention.
	The post of Research Assistant was vacated in June 2015 and is frozen with a view to any future restructuring of the Ozone Secretariat.
	The post of Team Assistant, which is funded from the programme support cost budget, was vacated in May 2015 and is frozen with a view to any future restructuring of the Ozone Secretariat.
Consultants 1201	In 2015 the budget was increased by \$9,500, from \$75,000 to \$84,500, to reflect the actual cost of consultants to fill the needs of the Secretariat for research on meetings and facilitation of the workshop on HFC management. The proposed budget for 2016 would be increased by \$500, to \$85,000, and would be maintained at that level in 2017.
Supplies and consumables 4101, 4201 – 4205, 4301, 5101, 5201 – 5203, 5301-5304	The section includes expendable equipment, non-expendable equipment, rental of office premises, reporting costs, communication, freight, training and the costs of Ozone Day celebrations.
Reporting 5201	The 2015 budget was originally \$20,000, which covered the cost of editing and translating correspondence and other official documents throughout the year. The cost of coverage of meetings by the International Institute for Sustainable Development (IISD), however, has been moved from the meeting cost budget line and correctly reflected in this budget line. The cost per meeting of IISD coverage is assumed to be \$15,000. In 2015, the cost of IISD covering three meetings, including the workshop and the thirty-fifth meeting of the Open-ended Working Group in April, the thirty-sixth meeting of the Open-ended Working Group in July and the twenty-seventh Meeting of the Parties in November, is \$45,000. In 2016 the cost of IISD covering four meetings, including the thirty-seventh meeting of the Open-ended Working Group in July, the Twenty-Eight Meeting of the Parties and an additional five-day meeting of the Open-ended Working Group to be held back-to-back with an extraordinary Meeting of the Parties, will be \$45,000. In 2017, the cost if IISD covering the Open-ended Working Group meeting and the Meeting of the Parties will be is \$30,000. All other costs remain unchanged.
Travel on official	Travel on official business for 2016 and 2017 is maintained at the

<i>Budget line</i>	<i>Comment</i>
business 1601 – 1602	2015 level.
Operating expenses 1321-1331, 3301 to 3311 and 5401	This section includes meetings costs, travel of Article 5 participants and hospitality.
1321	Meeting costs (not including travel of Article 5 parties) The 2015 meeting costs have been increased as follows: \$53,607 to cover the difference in cost associated with convening the thirty-sixth meeting of the Open-ended Working Group in Paris in July. The original budget was based on the costs of convening the meeting in Nairobi or Geneva;
1322	\$48,334 to cover costs associated with conference services and staff travel to Dubai for the twenty-seventh Meeting of the Parties;
1330	\$51,369 to cover the difference in cost associated with convening the workshop on HFC management and the thirty-fifth meeting of the Open-ended Working Group in Bangkok in April. The original budget was based on the cost of convening the meeting in Nairobi or Geneva;
1331	The increased costs in lines 1321, 1322 and 1330 are absorbed by the savings on post costs;
1332	\$20,000 to cover the cost of the two-day intersessional informal meeting held in June in Vienna. The Open-ended Working Group, at its thirty-fifth meeting, held in Bangkok in April 2015, decided to convene the intersessional informal meeting;
1321	\$200,000 to cover the cost of the resumed thirty-sixth meeting of the Open-ended Working Group held on 29 and 30 October 2015, back to back with the Twenty-Seventh Meeting of the Parties to be held in Dubai, United Arab Emirates, from 1 to 5 November 2015.
1322	For the proposed 2016 budgets: The budget for the Open-ended Working Group meeting is based on a comparison of estimates of five venues (Nairobi, Bangkok, Montreal, Paris and Vienna) and a reasonable average has been used;
	The proposed budget for the meetings of the parties is based on a

<i>Budget line</i>	<i>Comment</i>
1333	<p>comparison of estimates of six venues (Nairobi, Bangkok, Montreal, Paris, Kigali and Vienna) and a reasonable average has been used.</p> <p>Any additional costs arising from holding the meetings in other locations will be borne by the Governments hosting the meetings. In the event that the meetings are not hosted by Governments, the additional costs will be reflected in revised budgets that will be presented to the parties for approval;</p>
1321	<p>The budget for the additional five-day meeting of the Open-ended Working Group held back-to-back with a two-day extraordinary</p>
1322	<p>Meeting of the Parties is based on the 2016 budgeted cost of \$600,000 for one OEWG meeting and the 2015 cost of a two-day back to back meeting in 2015 in Dubai of \$200,000.</p> <p>For the 2017 proposed budgets:</p> <p>The 2017 budget is increased by 4 per cent compared with 2016 to cover inflationary costs;</p>
1324	<p>In 2017, the cost of the meeting is shared with the Vienna Convention Trust Fund, which is currently budgeted at \$252,000; hence the decrease in meeting costs to \$489,250;</p>
1325	<p>One Bureau meeting is scheduled for each of the years 2016 and 2017, with provision for interpretation and document translation into the appropriate languages depending on the membership of the</p>
5401	<p>Bureau. The costs are increased by \$5,000 to accommodate generally increased meeting costs</p> <p>The proposed budgets for Implementation Committee meetings in 2016 and 2017 have been increased by \$9,400 over the 2015 figure to accommodate generally increased meeting costs;</p>
3301-3311	<p>The hospitality cost covers receptions at the meetings of the Open-ended Working Group and the Meeting of the Parties;</p> <p>Necessary funds may be transferred from the conference servicing budget lines (1321 – 1326) should such services be required, either through individual consultancies or corporate contracts.</p>
3302-3303	

<i>Budget line</i>	<i>Comment</i>
3310	Travel of Article 5 participants
3311	<p>The participation of representatives of parties operating under paragraph 1 of Article 5 in the various Montreal Protocol meetings is budgeted at \$5,000 per representative per meeting using the most appropriate and advantageous economy-class fare and United Nations daily subsistence allowances.</p>
3312	<p>The 2016 and 2017 amounts were increased to \$375,000 and \$325,000, respectively, as decided by the Twenty-Seventh Meeting of the Parties.</p> <p>The 2015 cost for travel of Article 5 party representatives is increased by \$40,000 to cover costs associated with the intersessional informal meeting held in Vienna in June. The meeting was requested by the parties at the thirty-fifth meeting of the Open-ended Working Group; hence the cost was not included in the approved budget.</p> <p>The 2015 cost for travel of Article 5 party representatives increased by \$110,000 to cover costs associated with the resumed thirty-sixth meeting of the Open-ended Working Group, held on 29 and 30 October 2015, back to back with the Twenty-Seventh Meeting of the Parties, held in Dubai, United Arab Emirates, from 1 to 5 November 2015.</p> <p>The 2016 cost of travel of Article 5 participants to the additional five-day meeting of the Open-ended Working Group held back-to-back with a two-day extraordinary Meeting of the Parties is based on the 2016 budgeted cost of \$375,000 for one OEWG meeting plus an additional \$60,000. The Secretariat confirms that no funds from the budget lines in this section have been used to cover travel of non-Article 5 parties.</p>

## Annex II

Trust Fund for the Montreal Protocol on Substances that Deplete the Ozone Layer  
Scale of contributions by the parties for 2016 based on the United Nations scale of assessments

(General Assembly resolution A/67/502/Add.1 of 24 December 2012 with a maximum assessment rate of 22percent)

(United States dollars)

	<i>Name of party</i>	<i>United Nations scale of assessments for 2013 – 2015</i>	<i>Adjusted United Nations scale to exclude non-contributors</i>	<i>Adjusted United Nations scale with 22 per cent maximum assessment rate considered</i>	<i>2015 and 2016 contributions by parties</i>
1	Afghanistan	0.005	0.000	0.000	0
2	Albania	0.010	0.000	0.000	0
3	Algeria	0.137	0.137	0.137	5 840
4	Andorra	0.008	0.000	0.000	0
5	Angola	0.010	0.000	0.000	0
6	Antigua and Barbuda	0.002	0.000	0.000	0
7	Argentina	0.432	0.432	0.431	18 416
8	Armenia	0.007	0.000	0.000	0
9	Australia	2.074	2.074	2.067	88 412
10	Austria	0.798	0.798	0.795	34 018
11	Azerbaijan	0.040	0.000	0.000	0
12	Bahamas	0.017	0.000	0.000	0
13	Bahrain	0.039	0.000	0.000	0
14	Bangladesh	0.010	0.000	0.000	0
15	Barbados	0.008	0.000	0.000	0
16	Belarus	0.056	0.000	0.000	0
17	Belgium	0.998	0.998	0.995	42 543
18	Belize	0.001	0.000	0.000	0
19	Benin	0.003	0.000	0.000	0
20	Bhutan	0.001	0.000	0.000	0
21	Bolivia (Plurinational State of)	0.009	0.000	0.000	0
22	Bosnia and Herzegovina	0.017	0.000	0.000	0
23	Botswana	0.017	0.000	0.000	0
24	Brazil	2.934	2.934	2.924	125 072

	<i>Name of party</i>	<i>United Nations scale of assessments for 2013 – 2015</i>	<i>Adjusted United Nations scale to exclude non-contributors</i>	<i>Adjusted United Nations scale with 22 per cent maximum assessment rate considered</i>	<i>2015 and 2016 contributions by parties</i>
25	Brunei Darussalam	0.026	0.000	0.000	0
26	Bulgaria	0.047	0.000	0.000	0
27	Burkina Faso	0.003	0.000	0.000	0
28	Burundi	0.001	0.000	0.000	0
29	Cabo Verde	0.001	0.000	0.000	0
30	Cambodia	0.004	0.000	0.000	0
31	Cameroon	0.012	0.000	0.000	0
32	Canada	2.984	2.984	2.974	127 204
33	Central African Republic	0.001	0.000	0.000	0
34	Chad	0.002	0.000	0.000	0
35	Chile	0.334	0.334	0.333	14 238
36	China	5.148	5.148	5.131	219 452
37	Colombia	0.259	0.259	0.258	11 041
38	Comoros	0.001	0.000	0.000	0
39	Congo	0.005	0.000	0.000	0
40	Cook Islands	-	0.000	0.000	0
41	Costa Rica	0.038	0.000	0.000	0
42	Côte d' Ivoire	0.011	0.000	0.000	0
43	Croatia	0.126	0.126	0.126	5 371
44	Cuba	0.069	0.000	0.000	0
45	Cyprus	0.047	0.000	0.000	0
46	Czech Republic	0.386	0.386	0.385	16 455
47	Democratic People's Republic of Korea	0.006	0.000	0.000	0
48	Democratic Republic of the Congo	0.003	0.000	0.000	0
49	Denmark	0.675	0.675	0.673	28 774
50	Djibouti	0.001	0.000	0.000	0
51	Dominica	0.001	0.000	0.000	0
52	Dominican Republic	0.045	0.000	0.000	0
53	Ecuador	0.044	0.000	0.000	0
54	Egypt	0.134	0.134	0.134	5 712
55	El Salvador	0.016	0.000	0.000	0
56	Equatorial Guinea	0.010	0.000	0.000	0

	<i>Name of party</i>	<i>United Nations scale of assessments for 2013 – 2015</i>	<i>Adjusted United Nations scale to exclude non-contributors</i>	<i>Adjusted United Nations scale with 22 per cent maximum assessment rate considered</i>	<i>2015 and 2016 contributions by parties</i>
57	Eritrea	0.001	0.000	0.000	0
58	Estonia	0.040	0.000	0.000	0
59	Ethiopia	0.010	0.000	0.000	0
60	European Union	2.500	2.500	2.492	106 572
61	Fiji	0.003	0.000	0.000	0
62	Finland	0.519	0.519	0.517	22 124
63	France	5.593	5.593	5.575	238 422
64	Gabon	0.020	0.000	0.000	0
65	Gambia	0.001	0.000	0.000	0
66	Georgia	0.007	0.000	0.000	0
67	Germany	7.141	7.141	7.118	304 411
68	Ghana	0.014	0.000	0.000	0
69	Greece	0.638	0.638	0.636	27 197
70	Grenada	0.001	0.000	0.000	0
71	Guatemala	0.027	0.000	0.000	0
72	Guinea	0.001	0.000	0.000	0
73	Guinea-Bissau	0.001	0.000	0.000	0
74	Guyana	0.001	0.000	0.000	0
75	Haiti	0.003	0.000	0.000	0
76	Holy See	0.001	0.000	0.000	0
77	Honduras	0.008	0.000	0.000	0
78	Hungary	0.266	0.266	0.265	11 339
79	Iceland	0.027	0.000	0.000	0
80	India	0.666	0.666	0.664	28 391
81	Indonesia	0.346	0.346	0.345	14 750
82	Iran (Islamic Republic of)	0.356	0.356	0.355	15 176
83	Iraq	0.068	0.000	0.000	0
84	Ireland	0.418	0.418	0.417	17 819
85	Israel	0.396	0.396	0.395	16 881
86	Italy	4.448	4.448	4.433	189 612
87	Jamaica	0.011	0.000	0.000	0
88	Japan	10.833	10.833	10.797	461 796
89	Jordan	0.022	0.000	0.000	0
90	Kazakhstan	0.121	0.121	0.121	5 158
91	Kenya	0.013	0.000	0.000	0
92	Kiribati	0.001	0.000	0.000	0
93	Kuwait	0.273	0.273	0.272	11 638



	<i>Name of party</i>	<i>United Nations scale of assessments for 2013 – 2015</i>	<i>Adjusted United Nations scale to exclude non-contributors</i>	<i>Adjusted United Nations scale with 22 per cent maximum assessment rate considered</i>	<i>2015 and 2016 contributions by parties</i>
94	Kyrgyzstan	0.002	0.000	0.000	0
95	Lao People's Democratic Republic	0.002	0.000	0.000	0
96	Latvia	0.047	0.000	0.000	0
97	Lebanon	0.042	0.000	0.000	0
98	Lesotho	0.001	0.000	0.000	0
99	Liberia	0.001	0.000	0.000	0
100	Libya	0.142	0.142	0.142	6 053
101	Liechtenstein	0.009	0.000	0.000	0
102	Lithuania	0.073	0.000	0.000	0
103	Luxembourg	0.081	0.000	0.000	0
104	Madagascar	0.003	0.000	0.000	0
105	Malawi	0.002	0.000	0.000	0
106	Malaysia	0.281	0.281	0.280	11 979
107	Maldives	0.001	0.000	0.000	0
108	Mali	0.004	0.000	0.000	0
109	Malta	0.016	0.000	0.000	0
110	Marshall Islands	0.001	0.000	0.000	0
111	Mauritania	0.002	0.000	0.000	0
112	Mauritius	0.013	0.000	0.000	0
113	Mexico	1.842	1.842	1.836	78 522
114	Micronesia (Federated States of)	0.001	0.000	0.000	0
115	Monaco	0.012	0.000	0.000	0
116	Mongolia	0.003	0.000	0.000	0
117	Montenegro	0.005	0.000	0.000	0
118	Morocco	0.062	0.000	0.000	0
119	Mozambique	0.003	0.000	0.000	0
120	Myanmar	0.010	0.000	0.000	0
121	Namibia	0.010	0.000	0.000	0
122	Nauru	0.001	0.000	0.000	0
123	Nepal	0.006	0.000	0.000	0
124	Netherlands	1.654	1.654	1.649	70 508
125	New Zealand	0.253	0.253	0.252	10 785
126	Nicaragua	0.003	0.000	0.000	0
127	Niger	0.002	0.000	0.000	0

	<i>Name of party</i>	<i>United Nations scale of assessments for 2013 – 2015</i>	<i>Adjusted United Nations scale to exclude non-contributors</i>	<i>Adjusted United Nations scale with 22 per cent maximum assessment rate considered</i>	<i>2015 and 2016 contributions by parties</i>
128	Nigeria	0.090	0.000	0.000	0
129	Niue	-	0.000	0.000	0
130	Norway	0.851	0.851	0.848	36 277
131	Oman	0.102	0.102	0.102	4 348
132	Pakistan	0.085	0.000	0.000	0
133	Palau	0.001	0.000	0.000	0
134	Panama	0.026	0.000	0.000	0
135	Papua New Guinea	0.004	0.000	0.000	0
136	Paraguay	0.010	0.000	0.000	0
137	Peru	0.117	0.117	0.117	4 988
138	Philippines	0.154	0.154	0.153	6 565
139	Poland	0.921	0.921	0.918	39 261
140	Portugal	0.474	0.474	0.472	20 206
141	Qatar	0.209	0.209	0.208	8 909
142	Republic of Korea	1.994	1.994	1.987	85 002
143	Republic of Moldova	0.003	0.000	0.000	0
144	Romania	0.226	0.226	0.225	9 634
145	Russian Federation	2.438	2.438	2.430	103 929
146	Rwanda	0.002	0.000	0.000	0
147	Saint Kitts and Nevis	0.001	0.000	0.000	0
148	Saint Lucia	0.001	0.000	0.000	0
149	Saint Vincent and the Grenadines	0.001	0.000	0.000	0
150	Samoa	0.001	0.000	0.000	0
151	San Marino	0.003	0.000	0.000	0
152	Sao Tome and Principe	0.001	0.000	0.000	0
153	Saudi Arabia	0.864	0.864	0.861	36 831
154	Senegal	0.006	0.000	0.000	0
155	Serbia	0.040	0.000	0.000	0
156	Seychelles	0.001	0.000	0.000	0
157	Sierra Leone	0.001	0.000	0.000	0
158	Singapore	0.384	0.384	0.383	16 369
159	Slovakia	0.171	0.171	0.170	7 290
160	Slovenia	0.100	0.000	0.000	0
161	Solomon Islands	0.001	0.000	0.000	0

	<i>Name of party</i>	<i>United Nations scale of assessments for 2013 – 2015</i>	<i>Adjusted United Nations scale to exclude non-contributors</i>	<i>Adjusted United Nations scale with 22 per cent maximum assessment rate considered</i>	<i>2015 and 2016 contributions by parties</i>
162	Somalia	0.001	0.000	0.000	0
163	South Africa	0.372	0.372	0.371	15 858
164	South Sudan	0.004	0.000	0.000	0
165	Spain	2.973	2.973	2.963	126 735
166	Sri Lanka	0.025	0.000	0.000	0
167	Sudan	0.010	0.000	0.000	0
168	Suriname	0.004	0.000	0.000	0
169	Swaziland	0.003	0.000	0.000	0
170	Sweden	0.960	0.960	0.957	40 924
171	Switzerland	1.047	1.047	1.044	44 632
172	Syrian Arab Republic	0.036	0.000	0.000	0
173	Tajikistan	0.003	0.000	0.000	0
174	Thailand	0.239	0.239	0.238	10 188
175	The former Yugoslav Republic of Macedonia	0.008	0.000	0.000	0
176	Timor-Leste	0.002	0.000	0.000	0
177	Togo	0.001	0.000	0.000	0
178	Tonga	0.001	0.000	0.000	0
179	Trinidad and Tobago	0.044	0.000	0.000	0
180	Tunisia	0.036	0.000	0.000	0
181	Turkey	1.328	1.328	1.324	56 611
182	Turkmenistan	0.019	0.000	0.000	0
183	Tuvalu	0.001	0.000	0.000	0
184	Uganda	0.006	0.000	0.000	0
185	Ukraine	0.099	0.000	0.000	0
186	United Arab Emirates	0.595	0.595	0.593	25 364
187	United Kingdom of Great Britain and Northern Ireland	5.179	5.179	5.162	220 774
188	United Republic of Tanzania	0.009	0.000	0.000	0
189	United States of America	22.000	22.000	21.928	937 830
190	Uruguay	0.052	0.000	0.000	0

	<i>Name of party</i>	<i>United Nations scale of assessments for 2013 – 2015</i>	<i>Adjusted United Nations scale to exclude non-contributors</i>	<i>Adjusted United Nations scale with 22 per cent maximum assessment rate considered</i>	<i>2015 and 2016 contributions by parties</i>
191	Uzbekistan	0.015	0.000	0.000	0
192	Vanuatu	0.001	0.000	0.000	0
193	Venezuela (Bolivarian Republic of)	0.627	0.627	0.625	26 728
194	Viet Nam	0.042	0.000	0.000	0
195	Yemen	0.010	0.000	0.000	0
196	Zambia	0.006	0.000	0.000	0
197	Zimbabwe	0.002	0.000	0.000	0
	<b>Total</b>	<b>102.501</b>	<b>100.330</b>	<b>100.000</b>	<b>4 276 933</b>

**Summaries of presentations by members of the assessment panels and technical options committees**

**I. Methyl Bromide Technical Options Committee presentation on methyl bromide critical-use nominations**

1. Mr. Ian Porter, on behalf of the Technology and Economic Assessment Panel and the two other Co-Chairs of the Methyl Bromide Technical Options Committee, Mr. Mohammed Besri and Ms. Marta Pizano, presented information on the final recommendations on critical-use nominations and other issues.
2. In introducing the presentation, he reported that the global consumption of methyl bromide for controlled uses had fallen from 64,420 tonnes in 1991 to less than 2,000 tonnes in 2014 and that the requests for critical use exemptions in 2015 were for less than 400 tonnes. He also noted that the amount of methyl bromide used for quarantine and pre-shipment, exempt from control under the Protocol, was approximately 12,000 tonnes, eight times more than for controlled uses in 2014.
3. He then explained that critical-use requests for methyl bromide from non-article 5 parties had fallen from 17,000 tonnes in 2005 to 40 tonnes in 2017. Eight nominations had been received from four Article 5 parties for 2016, totalling 500 tonnes. Of those, six were for lesser amounts than applied for in 2015 and two were new nominations from the South Africa.
4. Stocks in non-Article 5 parties applying for critical-use exemptions had fallen from 10,400 tonnes in 2005 to less than 150 tonnes in 2014. Critical-use exemption recommendations had not been adjusted to account for stocks of methyl bromide, and Article 5 parties needed to report on stocks if applying for critical-use exemptions in 2016.
5. He then provided an overview of the final recommendations for critical-use exemptions for 11 nominations for pre-plant soil and structures and commodities uses from three non-Article 5 parties (Australia, Canada and the United States) that had nominated 38 tonnes for 2017 and four Article-5 parties (Argentina, China, Mexico and South Africa) that had nominated 497 tonnes for 2016.
6. For commodity uses three nominations totalling 81.6 tonnes had been assessed from two parties. No further information had been received from parties after the last session of the Open-ended Working Group and accordingly no changes had been made to the interim recommendations for those nominations, which were 3,240 tonnes for 2017 for dry cure pork in the United States, 5.462 tonnes for 2016 for mills in South Africa 68.60 tonnes for 2016 structures in South Africa.
7. For pre-plant soil uses eight nominations had been submitted; two non-Article 5 parties and three Article-5 parties had requested critical-use exemptions in amounts totalling 35.021 tonnes and 368 tonnes, respectively.
8. Of those, there was no change to the interim recommendations for the Australian (29.76 tonnes), Chinese (99.75 tonnes) and Mexican (84.957 tonnes) nominations.

9. The Canadian nomination for 5.261 tonnes for strawberry runners in 2017 was not recommended, as it was considered that the technical justification in the nomination did not meet the requirements 1 (b) (iii) of decision IX/6 with regard to “appropriate effort”. Groundwater studies for a key alternative chloropicrin are still pending and no detailed research programme on alternatives is in place.

10. The revised nomination for the tomato sector from Argentina for 75 tonnes was reduced by a further 5 per cent as alternatives (including resistant plants, grafting and 1,3-D/Pic) are considered to be suitable. The Methyl Bromide Technical Options Committee considers that these alternatives can be rapidly adopted in the near future.

11. The revised nomination for the strawberry fruit sector from Argentina of 58 tonnes was recommended in full, as alternatives were either presently unsuitable for the nomination or not registered. The Methyl Bromide Technical Options Committee urges the party to provide more extensive information on the economics and infeasibility of alternatives in any future nomination.

12. He concluded the presentation by discussing key issues for the current round of nominations and explaining that any Article 5 party applying for critical-use exemptions in future years was required in accordance with decision EX-1/4 to provide an accounting framework identifying stocks of methyl bromide (paragraph 9 (f)) and a national management strategy (paragraph 3 (e)). He also explained that the timelines shown each year in the Panel’s final critical-use nomination report should be followed strictly to allow the Methyl Bromide Technical Options Committee time to fully assess nominations. The next nominations, he said, were required by 24 January 2016.

## **II. Technology and Economic Assessment Panel presentation on the decision XXVI/9 update task force report: additional information on alternatives to ozone-depleting substances**

13. Ms. Bella Marañon, task force co-chair, started the presentation on the updated decision XXVI/9 task force report, outlining decision XXVI/9 and the composition of the task force. Where it concerned the response to decision XXVI/9, she said that the updated report built on previous reports to investigate the alternatives to and implications of avoiding high-GWP alternatives to ozone-depleting substances, considering updated information obtained in various ways. She also said that the limits on the availability of data for some sectors prevented the consideration of business-as-usual and mitigation scenarios. Where it related to the topics for the update that were discussed at the thirty-sixth meeting of the Open-ended Working Group, the updated report gave the status of many refrigerant alternatives for both Article 5 party and non-Article 5 party scenarios, studied longer manufacturing conversion periods and a later start in a mitigation (MIT-5) scenario and presented updated cost estimates for the various mitigation scenarios and a definition of high ambient temperature (HAT). Costs and benefits as well as market analysis and influences up to 2050 were considered but could not be further analysed due to a lack of time. Where it concerned HAT, some testing data were currently available, but data from a number of testing projects would not be available until the beginning of 2016. A comparison of the updated task force report with the June 2015 report showed that there was no reported change with regard to refrigerants and

refrigeration and air-conditioning (RAC) equipment, that there were major changes in the RAC mitigation scenarios, including Article 5 party cost estimates, that a HAT definition was presented, that no changes had been observed regarding refrigerants in various subsectors in HAT regions and that nothing could be reported on HAT projects, since final reports had not been available when the updated report was finalized. For non-medical aerosols, new information was given for the cumulative emissions during the period 2015 – 2030, i.e., an estimate of about 360 Mt CO<sub>2</sub>-equivalent. No change could be reported for the foams, fire protection and solvents sectors.

14. Mr. Lambert Kuijpers, task force co-chair, then presented the new business-as-usual and mitigation demand scenarios provided in the updated report. Those revised RAC bottom-up scenarios included specific GWPs for specific fluids, as well as an average GWP of 300 for low-GWP refrigerant blends, different manufacturing conversion periods for non-Article 5 and Article 5 parties, as well as manufacturing conversions to commence in 2020 for all RAC subsectors in the MIT-3 scenario, to commence in 2020 for all RAC subsectors except for the stationary air-conditioning subsector in 2025 in the MIT-4 scenario, and manufacturing conversions to commence in 2025 for all RAC subsectors in the MIT-5 scenario. The 2015 quantities in the RAC demand scenarios had been cross-checked against current best HFC global production data estimates. In terms of overall climate impact, the total integrated high-GWP HFC demand in Article 5 parties for 2020 – 2030 was estimated at 16,000 Mt CO<sub>2</sub> equivalent. Under the business-as-usual scenario, at 6,500 Mt CO<sub>2</sub> equivalent under MIT-3 (60 per cent reduction), 9,800 Mt CO<sub>2</sub> equivalent under MIT-4 (40 per cent reduction) and 12,000 Mt CO<sub>2</sub> equivalent under MIT-5 (25 per cent reduction). He also said that delaying (and extending) the conversion period for the dominant stationary air-conditioning sector significantly would increase the overall climate impact and that shifting the start of all RAC subsector conversions to 2025, as in MIT-5-, would result in a substantially increased climate impact extending far beyond 2030, in particular for Article 5 parties.

15. Mr. Kuijpers then presented many graphs for the RAC sector for non-Article 5 and Article 5 parties, starting the business-as-usual scenario. The non-Article 5 party business-as-usual scenario showed 50 -60 per cent growth between 2015 and 2030 while, for the same period, the Article 5 party business-as-usual scenario showed 300 per cent growth. The bottom-up estimated demand had been checked with a best guess for production data for the year 2015. Uncertainties owing to a lack of production data, economic growth assumptions, equipment parameters and other factors were significant if extrapolated to 2030. For demand, the stationary air-conditioning subsector was clearly the most important one over the entire period 2015 – 2030. He then presented the total demand under the MIT-3 and MIT-5 scenarios for non-Article 5 parties. The MIT-5 scenario delayed conversion and resulted in higher demand by 2030. Due to the early completion of conversion (2020, 2025) assumed for non-Article 5 parties, demand was significantly reduced by the year 2030 under both MIT-3 and MIT-5. Due to the economic growth assumed after 2015 in non-Article 5 parties, the difference between MIT-3 and MIT-5 (with different starting dates) was not that large. He then showed the total demand under the MIT-3 and MIT-5 scenarios for Article 5 parties. The 5 year delay in the start of manufacturing conversion under the MIT-5 scenario resulted in a peak demand that was

60 per cent higher than in case of MIT-3; furthermore, the demand estimated under MIT-5 in 2030 was twice the demand under MIT-3. Again, stationary air-conditioning was the determining subsector, followed by commercial refrigeration. Where it related to manufacturing demand for Article 5 parties under MIT-3 and MIT-5, a number of comments were valid. Under the MIT-3 scenario, manufacturing was estimated to peak at 500 Mt CO<sub>2</sub>-equivalent, while under MIT-5 it was expected to peak at about 750Mt CO<sub>2</sub>-equivalent about five years later. By 2030, manufacturing demand would decrease substantially under MIT-3, as a result of the use of low GWP refrigerants, to less than 10 per cent of peak demand. Under MIT-3 and MIT-5, servicing demand in Article 5 parties was more or less the same as for manufacturing. The MIT-5 peak did not occur until 2029 or 2030, and substantial demand would remain after 2030. MIT-5 servicing demand in 2030 was estimated to be three times larger than under MIT-3; the servicing tail under MIT-5 would decrease much more during the 2030 – 2040 period than before 2030. Again, the stationary air-conditioning subsector was the most important sector. He then showed two graphs on a slide, which showed the total demand under the MIT-3 and MIT-5 scenarios for conversion periods of 6, 8, 10 and 12 years. A 6-year conversion period resulted in a much faster decrease of the total demand under both MIT-3 and MIT-5, while a 12-year conversion period resulted in a very slow decrease in total demand in the 5 – 10 years after that conversion had started. The graphs showed clearly the importance of an early start and a rapid conversion.

16. Mr. Kuijpers then showed a detailed cost breakdown for manufacturing conversion under both MIT-3 and MIT-5, followed by a summary slide showing total costs ranging from \$2.3 billion to \$3.2 billion under MIT-3 and MIT-5, respectively, where the reduction from business as usual in GWP-weighted equivalents went from 60 per cent to 25 per cent, or from a remaining demand of 6,500 Mt CO<sub>2</sub>-equivalent to 12,000 Mt CO<sub>2</sub>-equivalent under the MIT-3 and MIT-5 scenario, respectively. With regard to current costs, the most aggressive mitigation scenario was the least expensive. The Technology and Economic Assessment Panel could refine the cost estimates with improved production data, equipment parameters and economic growth assumptions. With regard to servicing costs during 2020 – 2030, a minimum reduction in servicing amounts, achieved through improved practices, could be estimated for MIT-3, MIT-4 and MIT-5 for the period 2020 – 2030 at costs ranging from \$200 million – \$320 million under MIT-3 and MIT-5, respectively. Those servicing costs would have to be added to the manufacturing conversion cost estimates; a larger reduction in servicing costs might be possible but would require additional measures.

17. Mr. Roberto Peixoto, co-chair of the task force, then elaborated on the HAT definition. He said that there was no universal definition of HAT and that HAT countries and regions could be defined as those exceeding a specified number of hours or days per year with temperatures above a specified level. Industry defined temperature zones in that manner. The American Society of Heating, Refrigerating, and Air-Conditioning Engineers provided one such definition (ASHRAE 162-2013), and he presented a slide showing the global temperature zones corresponding to it. Other climate zone definitions existed but had not been used in the updated report, and further study would be required. He said that systems were normally designed to operate acceptably in temperatures up to 43°C, but conditions in some countries required acceptable performance in temperatures up to 52°C.



Regarding research on refrigerants for use in HAT regions, the Oak Ridge National Laboratory in the United States had recently published a report, and projects to test the performance of equipment using various refrigerants in high ambient temperatures were being undertaken by the Air-Conditioning, Heating and Refrigeration Institute, UNEP, UNIDO and a number of enterprises in HAT countries. Data from those projects would not be available until late 2015 or early 2016.

18. Mr. Peixoto concluded the presentation with a number of important observations. By 2030 under a business-as-usual scenario demand for high-GWP HFCs in non-Article 5 parties would grow by 50 per cent and by almost 300 per cent in Article 5 parties, particularly due to growth in the stationary air-conditioning and commercial refrigeration subsectors. Options for alternatives to ozone-depleting substances, particularly those with no or low global warming potential, continued to appear on the market across all sectors. Delaying and extending the manufacturing conversion period, especially for the dominant stationary air-conditioning sector, would significantly increase both the climate impact and the conversion cost. Continued and improved tracking of production and consumption of all alternatives across all sectors would improve future analysis, and three technical reports on HAT refrigerant testing would provide additional data to inform future assessments.

### **III. Presentation on the synthesis report for the 2014 quadrennial assessments**

19. The synthesis report of the Scientific Assessment Panel, the Environmental Effects Assessment Panel and the Technology and Economics Assessments Panel was presented during the high-level segment of the meeting. The synthesis report was prepared from the material from the 2014 assessments of the three panels.

20. The overarching message was that within a century of the recognition of the harmful effects of ozone-depleting substances on the stratospheric ozone layer, the stratosphere would be restored to its former state and detrimental effects on human would be reversed. Specifically, the overall messages were as follows:

(a) Because the Montreal Protocol had protected the ozone layer, large increases in ultraviolet (UV) radiation had been prevented except near the poles. By preventing large increases in UV radiation the Protocol had protected human health, food production and natural ecosystems;

(b) Within a century of its recognition, ozone layer depletion would be reversed. The international response would have prevented several hundred million cases of skin cancer and tens of millions of cataracts;

(c) Many ozone-depleting substances were also potent greenhouse gases. By controlling ozone-depleting substances the Montreal Protocol had decreased emissions of this important class of greenhouse gases, in contrast to all other major greenhouse gases, emissions of which continued to increase;

(d) Some replacements for ozone-depleting substances were also potent greenhouse gases and so had potentially harmful effects on the Earth's climate. Scientific and technological advances, however, offered solutions, which if implemented could prevent the problem from becoming significant. The timeline for such progress was highlighted

and the thirtieth anniversary of the Vienna Convention and the fortieth anniversary of the publication of the seminal paper by Professors Mario Molina and Sherwood Rowland were noted.

21. Further details of the findings were given. They included following major findings and highlights:

(a) Progress in technology had reduced the use of ozone-depleting substances and had beneficial side effects. It was noted, however, that while halon production had been phased out since 2010 fire protection in civil aviation remained an unresolved challenge. It was also noted that technological advances enabled movement away from ozone-depleting solvents and other industrial process chemicals;

(b) In response to the technological changes that had enabled reductions in ozone-depleting substance use, the amount of ozone-depleting substances in the atmosphere was decreasing from its maximum in the 1990s. The amount of ozone-depleting substances was expected to continue to decrease with adherence to the Montreal Protocol;

(c) The reduction in atmospheric concentrations of ozone-depleting substances had prevented further depletion of the stratospheric ozone layer, and there were some small signs of recovery. It was noted that the global ozone layer had stabilized and was not getting worse, although it was still too early to state unequivocally that it was improving. It was noted that the Antarctic ozone hole had not worsened but did continue to occur every year, with its magnitude essentially unchanged over the past decade within expected year-to-year variability;

(d) The control of ozone depletion has prevented large increases in UV radiation in most parts of the globe. Damaging effects of ozone loss on human health and the environment have been minimized. Human health has been protected from the worst effects of ozone depletion. It was noted that the Montreal Protocol had limited increases in solar UV-B radiation in populous areas in the world. It was further noted that changes in lifestyle had increased UV exposure and consequently the background prevalence of skin cancers;

(e) An emerging connection between ozone layer depletion and climate was the introduction of the non-ozone depleting HFCs in place of ozone-depleting substances. It was noted that many HFCs were potent greenhouse gases and their potential influence on climate was a concern.

(f) With complete adherence, the levels of ozone-depleting substances should decrease by about .6 per cent per year during the rest of twenty-first century. In response to that decrease, the Arctic and the global ozone layer should return to benchmark 1980 levels around the middle of the century, and somewhat later for the Antarctic ozone hole. As ozone-depleting substances declined, the evolution of the stratospheric ozone layer in the second half of the twenty-first century would depend largely on atmospheric abundances of carbon dioxide (CO<sub>2</sub>), nitrous oxide (N<sub>2</sub>O) and methane (CH<sub>4</sub>);

(g) Surface levels of UV radiation would decline with the recovery of the stratospheric ozone layer. As the ozone layer recovered, UV-B radiation over the Antarctic was expected to decrease, broadly back to the same levels as existed before the onset of

ozone depletion. It was noted that predicting the effects of future changes in UV radiation was complicated by factors beyond just stratospheric ozone;

(h)The Montreal Protocol had delivered important co-benefits for the Earth's climate. In 2010, the decrease in annual ozone-depleting substance emissions under the Montreal Protocol was estimated to provide about five times the climate benefit of the annual emissions reduction targets for the first commitment period (2008 – 2012) of the Kyoto Protocol;

(i)Without a successful Montreal Protocol, today's world would have higher levels of ozone-depleting substances; greater ozone depletion; higher levels of UV radiation; and larger climate forcing caused by ozone-depleting substances. Ozone-hole-like depletions would have occurred in the future over large parts of the world and there would have been large increases in UV-B radiation;

(j)Looking beyond 2015, it was noted that if the Parties had failed to implement the Montreal Protocol, the consequences of ozone-depleting substance emissions would have continued through the coming decades. Without a successful Montreal Protocol, the climate effects from higher levels of ozone-depleting substances and from depletion of the ozone layer would have been large. UV-B radiation at the Earth's surface in the latter part of the twenty-first century would have reached levels far beyond anything experienced in human history, with major impacts on people and the environment;

(k)The destruction of banks of ozone-depleting substances was an option that would yield diminishing returns for accelerating ozone layer recovery;

(l)While HFCs were benign in respect of the ozone layer some were potent greenhouse gases, and continued increases in their use could lead to a significant negative climate impact. Future HFC emissions could be comparable with those of future CO<sub>2</sub> emissions by 2050;

(m)The essential principles of the Montreal Protocol that enabled its success were said to be commitment, as shown by universal ratification of the Protocol; consensus as a basic mode of operation; assistance to Article 5 parties; independent assessments of the state of knowledge; periodic updates of the assessments (especially by the Technology and Economic Assessment Panel) as requested by the parties; a functioning operating infrastructure as exemplified by the Multilateral Fund; and monitoring and compliance with the Protocol.

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**Twenty-Seventh Meeting of the Parties to  
the Montreal Protocol on Substances  
that Deplete the Ozone Layer**  
Dubai, United Arab Emirates, 1 – 5 November 2015

**Issues for discussion by and information for the attention of the Twenty-Seventh  
Meeting of the Parties to the Montreal Protocol**

**Note by the Secretariat**

**I. Introduction**

3. Sections II and III of the present note set out an overview of the substantive issues on the provisional agenda for the Twenty-Seventh Meeting of the Parties to the Montreal Protocol on Substances that Deplete the Ozone Layer, under the preparatory and high-level segments respectively. For most items, a brief summary is given of the background and the related discussion that took place during the thirty-sixth meeting of the Open-ended Working Group of the Parties to the Montreal Protocol, held in Paris from 20 to 24 July 2015. The resumed thirty-sixth meeting of the Open-ended Working Group will be held immediately prior to the Twenty-Seventh Meeting of the Parties and its outcome may be considered under relevant agenda items as deemed appropriate by the parties.

4. Further information on some items will be provided in an addendum to the present note when the relevant reports of the Technology and Economic Assessment Panel – for example, on alternatives to ozone-depleting substances (decision XXVI/9) and on the final evaluation of critical-use nominations – become available. The addendum will summarize the findings of the Panel in connection with the relevant agenda items.

5. Section IV of the present note sets out information on matters that the Secretariat would like to bring to the attention of the parties. Those matters include information and updates on the activities and initiatives of the Secretariat, cooperation with various bodies,

and activities of the thirtieth anniversary of the Vienna Convention for the Protection of the Ozone Layer and International Ozone Day. The section is not intended to provide a comprehensive account of all the initiatives and work of the Secretariat, but only the information that the Secretariat has deemed to be of significant relevance to the work of the parties.

**II. Overview of items on the agenda for the preparatory segment  
(1 – 3 November 2015)**

**A. Opening of the preparatory segment (item 1 of the provisional agenda for the preparatory segment)**

6. The preparatory segment of the meeting is scheduled to be opened on Sunday, 1 November 2015, at 10 a.m. at the Conrad Hotel, Sheikh Zayed Road, Dubai, United Arab Emirates. On-site registration will start at 8 a.m. on Wednesday, 28 October 2015, and thereafter at 8 a.m. every day for the duration of the meeting. Participants are encouraged to pre-register well in advance of the meeting on the website of the Secretariat using the following link: <http://registration.unon.org/ozone>. Participants are requested to update their profiles when they enter the system before registering. Participants attending both the Twenty-Seventh Meeting and the resumed thirty-sixth meeting of the Open-ended Working Group are required to register for each meeting separately. The code words for each meeting were communicated in the invitation letter.

7. In addition, as this will be a virtually paperless meeting, participants are urged to bring their own laptops and handheld devices to access the meeting documents.

**Statements by representatives of the Government of the United Arab Emirates and the United Nations Environment Programme (items 1 (a) and (b) of the provisional agenda for the preparatory segment)**

8. Welcoming statements will be made by representatives of the Government of the United Arab Emirates and the United Nations Environment Programme (UNEP).

**B. Organizational matters (item 2 of the provisional agenda for the preparatory segment)**

**1. Adoption of the agenda of the preparatory segment (item 2 (a) of the provisional agenda for the preparatory segment)**

9. The provisional agenda for the preparatory segment is set out in section I of document UNEP/OzL.Pro.27/1 and will be before the parties for adoption. The parties may wish to adopt the agenda, including any items that they may agree to raise under item 11, “Other matters” .

**2. Organization of work (item 2 (b) of the provisional agenda for the preparatory segment)**

10. The preparatory segment of the meeting will be jointly chaired by Mr. Paul Krajnik (Austria) and Ms. Emma Rachmawaty (Indonesia), the Co-Chairs of the Open-ended Working Group. Under item 2 (b), the Co-Chairs are expected to present a proposal to the parties on how they wish to proceed with the items on the agenda.

**C. Administrative matters (item 3 of the provisional agenda for the preparatory segment)**

**1. Consideration of membership of Montreal Protocol bodies for 2016 (item 3 (a) of the provisional agenda for the preparatory segment)**

**(a) Members of the Implementation Committee**

11. Each year the Meeting of the Parties considers the membership of the Implementation Committee. In accordance with the non-compliance procedure adopted by the parties, the Committee consists of 10 parties, each of which selects an individual to represent it. Those parties are elected for two years on the basis of equitable geographical distribution, that is, two are elected to represent each of the regional groupings of African States, Asian and Pacific States, Eastern European States, Latin American and Caribbean States and Western European and other States. Committee members may serve two consecutive two-year terms, if re-elected after the first term.

12. The current members of the Committee are Bosnia and Herzegovina, Canada, Cuba, the Dominican Republic, Ghana, Italy, Lebanon, Mali, Pakistan and Poland. Lebanon and Poland will conclude the second year of their second two-year terms in 2015 and therefore will have to be replaced. Bosnia and Herzegovina, Cuba, Italy, Mali and Pakistan will complete the first year of their two-year terms in 2015; they will therefore continue as members for 2016. Canada, the Dominican Republic and Ghana will conclude the second year of their first two-year terms in 2015 and will therefore have to be replaced or re-elected.

13. In accordance with decision XII/13, the Committee selects its President and Vice-President from among its members. The selection process usually takes place through consultations among the Committee members during the Meeting of the Parties to ensure the continuity of the two offices. The Secretariat has prepared a draft decision on this item for the consideration of the parties (UNEP/OzL.Pro.27/3, sect. III draft decision XXVII/[CC]).

14. During the preparatory segment, the parties may wish to consider nominating new Committee members and to discuss the draft decision further, for possible adoption during the high-level segment.

**(b) Members of the Executive Committee of the Multilateral Fund for the Implementation of the Montreal Protocol**

15. The Twenty-Seventh Meeting of the Parties will also consider the membership of the Executive Committee of the Multilateral Fund. In accordance with its terms of reference, the Executive Committee consists of seven members from parties operating under paragraph 1 of Article 5 of the Montreal Protocol and seven members from parties not so operating. For 2016, the seven members of parties operating under paragraph 1 of Article 5 are expected to be selected from the regional groups as follows: two members from African States, three members from Asia-Pacific States and two members from Latin American and the Caribbean States.

16. Each of the two groups of parties elects its Executive Committee members and reports their names to the Secretariat for endorsement by the Meeting of the Parties. In addition, the terms of reference of the Executive Committee call for the election from

among the members of the Committee of a Chair and a Vice-Chair, who alternate each year between parties operating under paragraph 1 of Article 5 and parties not so operating. As representatives of the United States of America and Grenada served as Chair and Vice-Chair, respectively, during 2015, the parties operating under paragraph 1 of Article 5 will be expected to nominate the Chair for 2016 and the parties not so operating will be expected to nominate the Vice-Chair.

17. The Twenty-Seventh Meeting of the Parties will be asked to adopt a decision in which it endorses the selection of the new Committee members and takes note of the selection of the Committee Chair and Vice-Chair for 2016. The Secretariat has prepared a draft decision on the matter for the consideration of the parties (UNEP/OzL.Pro.27/3, sect. III, draft decision XXVII/[DD]).

18. During the preparatory segment, the parties may wish to consult among themselves in appropriate groups and consider the new composition of the Committee to enable the Secretariat to include the nominated parties in the draft decision for possible adoption, with any amendments that it deems appropriate, during the high-level segment.

**(c) Co-Chairs of the Open-ended Working Group**

19. Each year the Meeting of the Parties selects one representative from among the parties operating under paragraph 1 of Article 5 and one representative from among the parties not so operating to serve as Co-Chairs of the Open-ended Working Group in the subsequent year. In accordance with decision XXVI/20, Mr. Paul Krajnik (Austria) and Ms. Emma Rachmawaty (Indonesia) have served as Co-Chairs of the Open-ended Working Group in 2015. The Twenty-Seventh Meeting of the Parties is expected to adopt a decision naming the Co-Chairs of the Open-ended Working Group for 2016. The Secretariat has prepared a draft decision on the matter for the consideration of the parties (UNEP/OzL.Pro.27/3, sect. III, draft decision XXVII/[EE]).

20. The Twenty-Seventh Meeting of the Parties may wish to consult as necessary and nominate the two persons whose names can then be included in the draft decision for possible adoption during the high-level segment.

**2. Financial report of the trust fund and budgets for the Montreal Protocol (item 3 (b) of the provisional agenda for the preparatory segment)**

21. The financial reports and budgets for the Montreal Protocol are considered annually by the Meeting of the Parties. The budget documents and the financial report for the current meeting bear the symbols UNEP/OzL.Pro.27/4/Rev.1 and UNEP/OzL.Pro.27/4/Add.1, respectively. Under item 3 (b) of the provisional agenda, the parties are expected to establish a budget committee during the preparatory segment to deliberate on and recommend a draft decision on the budget for adoption, as appropriate, during the high-level segment (UNEP/OzL.Pro.27/3, sect. III, draft decision XXVII/[AA]).

- D. Issues related to exemptions from Articles 2A – 2I of the Montreal Protocol (item 4 of the provisional agenda for the preparatory segment)**
- 1. Nominations for essential-use exemptions for 2016 (item 4 (a) of the provisional agenda for the preparatory segment)**
    22. During the thirty-sixth meeting of the Open-ended Working Group, the Technology and Economic Assessment Panel reported on its evaluation of the nomination of China for an essential-use exemption to use carbon tetrachloride for testing of oil, grease and hydrocarbons in water in 2016. The amount of carbon tetrachloride nominated was 70 tonnes and, after evaluating the nomination, the Technology and Economic Assessment Panel and its Chemicals Technical Options Committee recommended that same amount for approval for exemption by the parties. At that meeting, China submitted a conference room paper on the matter and interested parties held informal discussions in the margins of the meeting.
    23. During the preparatory segment, the parties may wish to consider draft decision XXVII/[A] (UNEP/OzL.Pro.27/3, sect. II), and consider whether to submit it for possible adoption during the high-level segment.
  - 2. Nominations for critical-use exemptions for 2016 and 2017 (item 4 (b) of the provisional agenda for the preparatory segment)**
    24. During the thirty-sixth meeting of the Open-ended Working Group, the Technology and Economic Assessment Panel reported that it had received and reviewed three critical-use nominations for methyl bromide submitted by three parties not operating under paragraph 1 of Article 5 of the Protocol (Australia, Canada and the United States of America) and eight from four parties operating under that paragraph (Argentina, China, Mexico and South Africa). The details of the evaluation and interim recommendations on each nomination may be found in volume 2 of the Panel's 2015 report.
    25. Bilateral discussions took place during and after the Open-ended Working Group meeting between the Methyl Bromide Technical Options Committee and nominating parties to clarify what further information was needed to enable the Committee to carry out the final evaluation and formulate final recommendations for consideration by the Twenty-Seventh Meeting of the Parties. The Committee is currently reviewing all the additional information submitted by the nominating parties.
    26. When the final evaluation report becomes available, the Secretariat will post it on the conference portal and include a summary of the final recommendations in the addendum to the present note.
- E. Issues related to alternatives to ozone-depleting substances (item 5 of the provisional agenda for the preparatory segment)**
- 1. Report by the Technology and Economic Assessment Panel on the full range of alternatives to ozone-depleting substances (decision XXVI/9, subparagraphs 1 (a) – (c)) (item 5 (a) of the provisional agenda for the preparatory segment)**
    27. At the thirty-sixth meeting of the Open-ended Working Group, the task force of the Technology and Economic Assessment Panel presented its report on updated information on alternatives to ozone-depleting substances, addressing the issues listed in



subparagraphs 1 (a) – (c) of decision XXVI/9. The report of the task force is contained in volume 3 of the June 2015 report of the Technology and Economic Assessment Panel. During the thirty-sixth meeting, interested parties and the task force held informal discussions on the report. Parties provided guidance on issues for the task force to further address in its final report to be considered by the parties at their Twenty-Seventh Meeting. Those elements to be addressed were set out in annex III to the report of the thirty-sixth meeting (UNEP/OzL.Pro.WG.1/36/7) and are reproduced in the present note as annex I, without formal editing.

28. As soon as the final report of the task force is available, it will be posted on the conference portal and a summary will be included in an addendum to the present note.

**2. Updated information submitted by parties on their implementation of paragraph 9 of decision XIX/6 (decision XXVI/9, paragraph 3) (item 5 (b) of the provisional agenda for the preparatory segment)**

29. At the thirty-sixth meeting of the Open-ended Working Group, the parties were informed that the Secretariat would continue to compile, as well as update its summary on, information submitted by parties in response to paragraph 3 of decision XXVI/9 on their efforts, pursuant to paragraph 9 of decision XIX/6, to promote a transition from ozone-depleting substances that minimized environmental impact. The updated summary is contained in a note by the Secretariat (UNEP/OzL.Pro.27/11) and an updated compilation that includes all the submissions received to date pursuant to decisions XXVI/9, paragraph 3, and XXV/5, paragraph 3, is being issued as an information document (UNEP/OzL.Pro.27/INF/2).

30. The parties may wish to review the updated summary and the compilation and consider whether any follow-up actions are needed.

**F. Outcome of the resumed thirty-sixth meeting of the Open-ended Working Group (item 6 of the provisional agenda for the preparatory segment)**

31. At the final plenary session of its thirty-sixth meeting, the Working Group agreed to suspend the meeting and resume it prior to the Twenty-Seventh Meeting of the Parties for the sole purpose of continuing its work under item 7 of the agenda of the thirty-sixth meeting, “Report of the intersessional informal discussions on the feasibility and ways of managing hydrofluorocarbons”. The resumed thirty-sixth meeting will be held in Dubai, United Arab Emirates, on 29 and 30 October 2015. The Government of the United Arab Emirates is generously hosting the meeting in addition to hosting the Twenty-Seventh Meeting of the Parties and associated meetings.

32. The parties may wish to consider the outcome of the resumed meeting and decide on the course of action.

**G. Proposed amendments to the Montreal Protocol (item 7 of the provisional agenda for the preparatory segment)**

33. In compliance with the six-month rule for the submission of any proposals to amend the Protocol pursuant to paragraph 10 of Article 2 of the Protocol and in accordance with the procedures laid down in Article 9 of the Vienna Convention, four proposals for amendment to the Montreal Protocol were received by the Secretariat for consideration by

the Twenty-Seventh Meeting of the Parties. The proposals seek to amend the Montreal Protocol by managing and phasing down hydrofluorocarbons (HFCs), which are being used predominantly as replacements for ozone-depleting substances that are being phased out under the Montreal Protocol. The four proposals are contained in the following documents:

(a) Note by the Secretariat on a proposed amendment to the Montreal Protocol submitted by Canada, Mexico and the United States of America (UNEP/OzL.Pro.27/5);

(b) Note by the Secretariat on a proposed amendment to the Montreal Protocol submitted by India (UNEP/OzL.Pro.27/6);

(c) Note by the Secretariat on a proposed amendment to the Montreal Protocol submitted by the European Union and its member States (UNEP/OzL.Pro.27/7);

(d) Note by the Secretariat on a proposed amendment to the Montreal Protocol submitted by Kiribati, Marshall Islands, Mauritius, Micronesia (Federated States of), Palau, Philippines, Samoa and Solomon Islands (UNEP/OzL.Pro.27/8).

34. A schematic summary of the key elements of the four amendment proposals prepared by the Secretariat for the thirty-sixth meeting of the Open-ended Working Group is set out in annex II to the present note.

35. The amendment proposals were presented and discussed in a question and answer session in plenary during the thirty-sixth meeting of the Open-ended Working Group. To facilitate the discussion, the questions and answers were grouped under the following categories: financial support, technology transfer and intellectual property rights; alternatives and exemptions; environmental benefits and energy efficiency; synergies between the United Nations Framework Convention on Climate Change and the Montreal Protocol; baselines for production and consumption; phase-down schedules and production baselines; and other miscellaneous issues. The parties may wish to further consider the amendment proposals.

#### **H. Issues related to the phase-out of hydrochlorofluorocarbons (decision XIX/6 (paragraphs 12 – 14)) (item 8 of the provisional agenda for the preparatory segment)**

36. In decision XIX/6, the parties agreed to address certain issues related to the phase-out of hydrochlorofluorocarbons (HCFCs) as specified in paragraphs 12, 13 and 14 of the decision:

(a) In paragraph 12, the parties agreed to address the possibilities or need for essential-use exemptions for HCFCs, no later than 2015 where that related to parties not operating under paragraph 1 of Article 5, and no later than 2020 where that related to parties operating under paragraph 1 of Article 5;

(b) In paragraph 13, the parties agreed to review in 2015 the need for the 0.5 per cent for servicing provided for in paragraph 3 of the same decision that specifies the reduction steps for parties not operating under paragraph 1 of Article 5 of the Protocol, and to review in 2025 the need for the annual average of 2.5 per cent for servicing provided for in paragraph 4 (d) of the same decision, which specifies the HCFC reduction steps for parties operating under Article 5 of the Protocol;

(c) In order to satisfy basic domestic needs, the parties, in paragraph 14, agreed to allow for up to 10 per cent of baseline levels of HCFC production until 2020, and, for the period after that, to consider no later than 2015 further reductions of production for basic domestic needs.

37. During the thirty-sixth meeting of the Open-ended Working Group, a conference room paper was introduced by Australia, also on behalf of Canada and the United States, containing a proposal to request the Technology and Economic Assessment Panel to undertake an analysis and provide the parties with additional information to inform further discussion on the issues in 2016 and to create a process for gathering information from parties not operating under paragraph 1 of Article 5. The Working Group agreed to forward the proposal for further consideration at the Twenty-Seventh Meeting of the Parties. The proposal is set out in section II of document UNEP/OzL.Pro.27/3 for further consideration by the parties (draft decision XXVII/[B]).

**I. Potential areas of focus for the assessment panels' 2018 quadrennial assessments (item 9 of the provisional agenda for the preparatory segment)**

38. At the thirty-sixth meeting of the Open-ended Working Group, the European Union submitted two conference room papers: one contained proposed potential areas of focus for the next quadrennial assessments of the Scientific Assessment Panel, the Environmental Effects Assessment Panel and the Technology and Economics Assessment Panel; and the other focused on releases of ozone-depleting substances from production processes and opportunities for reducing such releases, recalling the presentations by the assessment panels during the thirty-sixth meeting on discrepancies between the concentrations of certain ozone-depleting and other substances measured in the atmosphere and the quantities of consumption and production of those substances reported by parties to the Montreal Protocol.

39. After the discussion on the two proposals, the Working Group decided that the European Union would work intersessionally to revise the proposals taking into account all the comments and concerns raised by the parties. Revised proposals, once received by the Secretariat, will be issued for consideration by the Twenty-Seventh Meeting of the Parties.

40. Under agenda item 9 the parties may also wish to consider appointing a new Co-Chair of the Scientific Assessment Panel in the light of the retirement of Mr. Ayite-Lo Ajavon after many years of service in the position. The parties may wish to consider the nominations submitted for the position and select a new Co-Chair.

41. The relevant draft decision is set out in section III of document UNEP/OzL.Pro.27/3 (draft decision XXVII/[BB]).

**J. Compliance and data reporting issues: presentation on and consideration of the work and recommended decisions of the Implementation Committee under the Non-Compliance Procedure for the Montreal Protocol (item 10 of the provisional agenda for the preparatory segment)**

42. The President of the Implementation Committee will report on party compliance issues considered during the fifty-fourth and fifty-fifth meetings of the Committee. During the fifty-fourth meeting, the Implementation Committee agreed to forward two draft

decisions. The fifty-fifth meeting of the Committee will be held on 28 October 2015, immediately prior to the resumed thirty-sixth meeting of the Open-ended Working Group.

43. Recommendations and draft decisions emanating from the Committee's two meetings will also be presented by the President for consideration and adoption by the Twenty-Seventh Meeting of the Parties.

**K. Other matters (item 11 of the provisional agenda for the preparatory segment)**

44. Under agenda item 11, the parties will consider other matters raised at the time of the adoption of the agenda.

**III. Overview of items on the provisional agenda for the high-level segment (4 and 5 November 2015)**

**A. Opening of the high-level segment (item 1 of the provisional agenda for the high-level segment)**

45. The high-level segment of the joint meeting is scheduled to be opened at 10 a.m. on Wednesday, 4 November 2015.

**Statements by representatives of the Government of the United Arab Emirates and the United Nations Environment Programme and the President of the Twenty-Sixth Meeting of the Parties to the Montreal Protocol (items 1 (a), (b) and (c) of the provisional agenda for the high-level segment)**

46. Opening statements will be made by the representatives of the Government of the United Arab Emirates and UNEP and by the President of the Twenty-Sixth Meeting of the Parties to the Montreal Protocol. It is expected that the Executive Director of UNEP will address the meeting.

**B. Organizational matters (item 2 of the provisional agenda for the high-level segment)**

**1. Election of officers for the Twenty-Seventh Meeting of the Parties to the Montreal Protocol (item 2(a) of the provisional agenda for the high-level segment)**

47. In accordance with rule 21 of the rules of procedure, the Twenty-Seventh Meeting of the Parties must elect a president, three vice-presidents and a rapporteur. A representative of a party from the group of Latin American and Caribbean countries presided over the Twenty-Sixth Meeting of the Parties, while a representative of a party from the group of Eastern European countries served as rapporteur. On the basis of regional rotation agreed by the parties, the parties may wish to elect a party from the group of Western European and other States to preside over the Twenty-Seventh Meeting of the Parties and to elect a party from the group of Latin American and Caribbean States as rapporteur. The parties may also wish to elect three vice-presidents, one each from African States, Asia-Pacific States and Eastern European States.

**2. Adoption of the agenda of the high-level segment of the Twenty-Seventh Meeting of the Parties to the Montreal Protocol (item 2 (b) of the provisional agenda for the high-level segment)**

48. The provisional agenda for the high-level segment is set out in section II of document UNEP/OzL.Pro.27/1 and will be before the parties for adoption. The parties

may wish to adopt that agenda, including any items that they may agree to include under item 8, “Other matters” .

3. **Organization of work (item 2 (c) of the provisional agenda for the high-level segment)**
  49. The President of the Twenty-Seventh Meeting of the Parties is expected to outline a plan of work for discussing the items on the agenda.
4. **Credentials of representatives (item 2 (d) of the provisional agenda for the high-level segment)**
  50. In accordance with rule 18 of the rules of procedure for meetings of the parties to the Montreal Protocol, the credentials of representatives of parties attending a meeting of the parties must be submitted to the Executive Secretary of the meeting, if possible not later than 24 hours after the opening of the meeting. Representatives are urged to come to the meeting with duly signed credentials and to submit them to the Secretariat as soon as possible after the start of the meeting. In accordance with rule 19 of the rules of procedure, the elected officers of the meeting will examine the credentials and submit their report thereon to the parties.
- C. **Presentations by the assessment panels on their synthesis of the 2014 quadrennial assessments (item 3 of the provisional agenda for the high-level segment)**
  51. Under this agenda item, the three assessment panels will present the synthesis of their 2014 quadrennial assessment, prepared in accordance with Article 6 of the Montreal Protocol and decision XXIII/13. The panels published their individual assessment reports in early 2015 and are expected to finalize their synthesis report in September. The synthesis report is expected to be issued as an e-booklet to mark the thirtieth anniversary of the Vienna Convention for the Protection of the Ozone Layer, the framework convention that focused on collaboration among nations on science and information exchange. The key messages of the synthesis report will be included in an addendum to the present note.
- D. **Presentation by the Chair of the Executive Committee of the Multilateral Fund for the Implementation of the Montreal Protocol on the work of the Executive Committee, the Multilateral Fund secretariat and the Fund’ s implementing agencies (item 4 of the provisional agenda for the high-level segment)**
  52. Under agenda item 4, the Chair of the Executive Committee of the Multilateral Fund will introduce a report by the Executive Committee to the parties highlighting the key decisions taken by the Committee and the work undertaken by the Multilateral Fund secretariat and the Fund’ s implementing agencies since the Twenty-Sixth Meeting (see UNEP/OzL.Pro.27/10 and UNEP/OzL.Pro.WG.1/36/2/Add.1, paras. 18 and 19).
- E. **Statements by heads of delegation and discussion on key topics (item 5 of the provisional agenda for the high-level segment)**
  53. At the high-level segment of the Twenty-Sixth Meeting of the Parties in 2014, a 90-minute ministerial round-table discussion was held on issues that constitute the main challenges in the context of the Montreal Protocol to be addressed by countries during the coming decade. The discussion brought into the limelight the key challenges and the different perspectives on those challenges, stimulating further open dialogue among the

parties. Under agenda item 5, a second ministerial round-table discussion with a similar format will be held. The topic of the discussion will be how the institutions and the mechanisms of the Montreal Protocol could assist parties in managing HFCs. A number of ministers from around the world are being invited to participate and to make brief statements on the topic. After they have delivered their statements, an interactive discussion will be held involving the audience and conducted by a moderator. At the end of the discussion, the rapporteur will provide a summary of the main points raised.

54. Following the ministerial round-table discussion, heads of delegation will be invited to make statements. From the first day of the preparatory segment of the meeting, the Secretariat will begin accepting requests to speak and compiling a list of speakers based on those requests. In the interests of fairness to all delegations and to ensure that all who wish to speak have an opportunity to do so, it will be important for heads of delegation to limit their statements to four or five minutes. Statements by heads of delegations of parties will be delivered in the order in which their requests to speak are received, subject to the understanding that ministers will be accorded priority.

**F. Report by the co-chairs of the preparatory segment and consideration of the decisions recommended for adoption by the Twenty-Seventh Meeting of the Parties to the Montreal Protocol (item 6 of the provisional agenda for the high-level segment)**

55. Under agenda item 6, the co-chairs of the preparatory segment will be invited to report to the parties on the progress made in reaching consensus on the substantive issues on the agenda, including on the draft decisions to be considered for adoption during the high-level segment.

**G. Dates and venue for the Twenty-Eighth Meeting of the Parties to the Montreal Protocol (item 7 of the provisional agenda for the high-level segment)**

56. In decision XXVI/22, parties decided to convene the Twenty-Eighth Meeting of the Parties in Kigali, accepting the offer of the Government of Rwanda to host the meeting. The parties may wish to confirm that Kigali will be the venue of the Twenty-Eighth Meeting of the Parties by adopting a new decision on the matter. The relevant draft decision is set out in section III of document UNEP/OzL.Pro.27/3 (draft decision XXVII/[FF]).

**H. Other matters (item 8 of the provisional agenda for the high-level segment)**

57. Any additional substantive issues agreed for inclusion on the agenda under item 2 (b), “Adoption of the agenda”, will be taken up under agenda item 8.

**I. Adoption of decisions by the Twenty-Seventh Meeting of the Parties to the Montreal Protocol (item 9 of the provisional agenda for the high-level segment)**

58. Under agenda item 9, the parties will adopt the decisions of the Twenty-Seventh Meeting of the Parties.

**J. Adoption of the report (item 10 of the provisional agenda for the high-level segment)**

59. Under agenda item 10, the parties will adopt the report of the Twenty-Seventh Meeting of the Parties to the Montreal Protocol.

**K. Closure of the meeting (item 11 of the provisional agenda for the high-level segment)**

60. The Twenty-Seventh Meeting of the Parties to the Montreal Protocol is expected to close by 6p.m. on Thursday, 5 November 2015.

**IV. Matters that the Secretariat would like to bring to the parties' attention**

**A. Carbon offsetting**

61. In 2014, the Secretariat worked in collaboration with the secretariat of the United Nations Framework Convention on Climate Change secretariat to determine the carbon footprint of the main meetings of the Vienna Convention and Montreal Protocol held in 2014 and offset the emissions created by purchasing certified emission reductions from the Adaptation Fund, which finances projects and programmes to help developing countries to adapt to the negative effects of climate change. The Secretariat purchased an equivalent of 1,358 tonnes of carbon dioxide (CO<sub>2</sub>) at \$202 (due to the low carbon pricing at the time) for the greenhouse gas emissions associated with travel to the meetings and related operations.

62. The Ozone Secretariat continues to strive towards climate neutrality and is planning to measure the carbon footprint of all Montreal Protocol meetings, including the meetings of the assessment panels in 2015, and offset the associated greenhouse gas emissions. A web-based carbon calculator created by the International Civil Aviation Organization will be used to calculate the emissions. The calculations will be made after the last meeting of the year and will also factor in local emissions and the carbon footprint of facility operations.

**B. Relationship between the United Nations Environment Programme and multilateral environmental agreements**

63. In the note by the Secretariat on issues for discussion by and information for the attention of the Conference of the Parties to the Vienna Convention at its tenth meeting and the Twenty-Sixth Meeting of the Parties to the Montreal Protocol (UNEP/OzL.Conv.10/2-UNEP/OzL.Pro.26/2), the Secretariat reported on the efforts being made by UNEP and the multilateral environmental agreement secretariats administered by UNEP to strengthen their relationship. As mentioned in that note, this effort took a new turn with the establishment in February 2014 of a task team comprising representatives of the secretariats of UNEP-administered convention secretariats, including the Ozone Secretariat, and of the relevant offices of the UNEP secretariat to address how to improve the effectiveness of both administrative arrangements and programmatic cooperation between UNEP and UNEP-administered multilateral environmental agreements.

64. At its first session, held in Nairobi in June 2014, the United Nations Environment Assembly adopted resolution 1/12 on the relationship between the United Nations Environment Programme and multilateral environmental agreements, in which the Assembly welcomed the step taken by the Executive Director of UNEP to establish a task team and requested the Executive Director to submit a final report to the next session of the open-ended Committee of Permanent Representatives of UNEP, with a view to putting the issue before the United Nations Environment Assembly. In the same decision, the Executive Director was also requested to submit information on the progress made by the

task team and its two working groups to the relevant conferences and meetings of the parties of multilateral environmental agreements to be held in the period before the second session of the United Nations Environment Assembly.

65. The Executive Director of UNEP held a consultative meeting with the heads of the UNEP-administered convention secretariats on 19 June 2015 to review and consider the draft final progress report and the recommendations of the task team and its two working groups on administrative arrangements and on programmatic cooperation. Further efforts will be made to refine the report of the task team and to put in place an appropriate mechanism for long-term implementation of its recommendations on improving the effectiveness of cooperation between UNEP and the multilateral environmental agreement secretariats. A report by the Executive Director, informed by the work of the task team, will be presented for consideration by the United Nations Environment Assembly at its second session, to be held in Nairobi in May 2016.

### C. Millennium Development Goals

66. Over the past fifteen years, the world has been working toward the achievement of the Millennium Development Goals. Indicators from various sectors have been used to monitor progress towards the achievement of the goals. “Consumption of ozone-depleting substances” was one of the indicators for monitoring progress to “Integrate the principles of sustainable development into country policies and programmes and reverse the loss of environmental resources”, which was one of the targets of the goals under “environmental sustainability”. The final year for the monitoring of the Millennium Development Goals is 2015. The *Millennium Development Goals Report 2015* provides a final assessment of global and regional progress towards achieving the goals since their endorsement in 2000.

67. In the report, the efforts of the parties to the Montreal Protocol were recognized as representing an unequivocal success of an intergovernmental effort, reflecting achievements in both integrating sustainable development principles into national policies and developing global partnerships for development (*Millennium Development Goals Report 2015*, p. 54). From 2015 onwards, Governments will move on to the post-2015 development agenda, which includes a set of sustainable development goals with an indicator framework, which is still under development.

### D. Sustainable development goals

68. With the Millennium Development Goals concluding at the end of 2015, the countries of the world have been working on the development of a post-2015 development agenda that aims to continue to improve people’s lives and protect the planet for future generations. It is anticipated that the post-2015 development agenda, which includes a set of sustainable development goals with underlying targets, will be adopted by United Nations Member States during a summit to be held in New York from 25 to 27 September 2015.<sup>1</sup> The Secretariat, through UNEP, has been contributing to this process by providing input to the development of a global indicator framework for the monitoring of those goals and associated targets. The global indicator framework is to be presented by the

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<sup>1</sup> <https://sustainabledevelopment.un.org/post2015>.



established Inter-Agency and Expert Group on Sustainable Development Goal Indicators at the forty-seventh session of the United Nations Statistical Commission in March 2016 for its review and approval. The Secretariat will continue to work with UNEP in this respect and will be updating the parties accordingly.

**E. Thirtieth anniversary of the Vienna Convention in 2015 and International Ozone Day on 16 September 2015**

69. The year 2015 marks thirty years since the adoption of the Vienna Convention, which was signed in Vienna on 22 March 1985. As part of activities to commemorate the thirtieth anniversary of the Convention, the Ozone Secretariat is conducting a smart digital campaign to increase awareness about and celebrate the many achievements of the Vienna Convention and the Montreal Protocol and to mobilize support to address current and future challenges to ensure the continued protection of the ozone layer and the climate.

70. Products being produced and disseminated include videos, animations such as an ozone song, interactive two-dimensional and three-dimensional representations of the atmosphere and the ozone layer, posters and social media messages through the Ozone Secretariat website and other outlets, providing audiences with more user-friendly and easy-to-grasp information about the protection of the ozone layer. The downloadable campaign products are available on the website of the Secretariat (<http://ozone.unep.org/en/precious-ozone>).

71. The theme for the commemoration of the thirtieth anniversary of the Vienna Convention and International Ozone Day on 16 September 2015 is “30 years of healing the ozone together,” which celebrates the collective efforts of the parties to the Vienna Convention and the Montreal Protocol in protecting the ozone layer over the past three decades. The theme is supported by the slogan, “Ozone: all there is between you and UV,” which highlights the importance of the ozone layer in protecting life on Earth from the harmful effects of ultraviolet radiation from the sun. As in previous years, the message of the United Nations Secretary-General for Ozone Day will be shared prior to the day for wider dissemination, together with a video by the Executive Director of UNEP.

72. Once again, the Secretariat has provided limited financial support to developing countries, this year to four countries (Colombia, the Dominican Republic, the Gambia and Namibia) in order to contribute towards organizing their national activities to commemorate the day. The parties’ plans for the celebration activities for International Ozone Day are available at <http://ozone.unep.org/en/30th-anniversary-vienna-convention-and-international-ozone-day-2015>. [Parties are encouraged to share their reports on the celebrations for dissemination on the Ozone Secretariat website.](#)

**F. Secretariat missions**

73. A list of the missions undertaken by the Secretariat since June 2015 and expected to be undertaken before the end of the year is provided below. For many of the meetings, the Secretariat participated with a view to enhancing cooperation and synergies with other forums and to contributing to and monitoring their activities of relevance to ozone layer protection, pursuant to the decisions of the parties:

(a) Forty-eighth meeting of the Global Environment Facility Council, Washington, D.C., United States of America, 2 – 4 June 2015;

(b) Bilateral meeting with the Secretariat of the United Nations Framework Convention on Climate Change, Bonn, Germany, 16 June 2015;

(c) UNEP Multilateral Environmental Agreements Management Meeting, Vienna, 19 June 2015;

(d) Montevideo Programme Environmental Law Seminar on the theme “Law to regulate air pollution and protect Earth’s atmosphere”, Osaka, Japan, 23 and 24 June 2015;

(e) Midterm review of the Fourth Programme for the Development and Periodic Review of Environmental Law (Montevideo Programme IV), Montevideo, 7 – 11 September 2015;

(f) Commemoration of the International Day for the Preservation of the Ozone Layer on the occasion of the Thirtieth Anniversary of the Vienna Convention, Beijing, 15 and 16 September 2015, and Kuwait City, 17 September 2015;

(g) Sixth meeting of the Multilateral Environmental Agreements Information and Knowledge Management Steering Committee, Geneva, 15 – 17 September 2015;

(h) Presentation and discussion upon invitation with the Environment, Public Health and Food Safety Committee of the European Parliament on Montreal Protocol-related issues, Brussels, 23 September 2015;

(i) Pacific Island Countries Ozone Officers Network Meeting, Nadi, Fiji, 29 September – 1 October;

(j) Joint Network Meeting of Ozone Officers for Latin America and the Caribbean, Panama City, 5 – 7 October 2015;

(k) Joint thematic meeting of the Southeast Asia and the Pacific Network of Ozone Officers, Bangkok, 5 – 7 October 2015;

(l) Joint network meeting of national ozone officers of 54 African countries and network meetings of the francophone and anglophone countries in parallel, Dakar, 12 – 16 October 2015.

74. In the case of the missions related to the Montevideo programme (see para. 71 (d) and (e) above), the Secretariat participated in order to articulate and demonstrate the significant contribution of the Montreal Protocol, along with other multilateral environmental agreements, in particular the United Nations Framework Convention on Climate Change and the Kyoto Protocol thereto, in protecting the atmosphere. Many of the principles and mechanisms applied in the implementation of and compliance with the Montreal Protocol are being replicated by other multilateral environmental agreements due to their contribution to the unprecedented success of the Montreal Protocol in achieving its objectives.

### Considerations for updated report: decision XXVI/9 task force report

In accordance with Decision XXVI/9, a report has been made available to the meeting of the 36<sup>th</sup> OEWG, and an update report will be submitted to the Twenty-Seventh Meeting of the Parties, that addresses the information requested by Parties in that decision.

Considerations for the updates have been submitted in writing and were discussed with Parties during an informal discussion session, Wednesday lunchtime. TEAP XXVI/9 Task Force members discussed with interested Parties the feasibility of potential updates considering both the update requested within the scope of Decision XXVI/9 as well as the timeline for completing the updated report in early September to meet the deadline for submission of documents to the 27<sup>th</sup> MOP. The considerations can be summarized as follows:

#### Scenarios

1. In general, all assumptions made in scenarios should be well explained, so that Parties are fully aware how scenarios are constructed, in how far these scenarios might reflect reality, or whether they are mainly used to demonstrate the impact of certain parameters – or the impact of changing parameters-- on high GWP HFC demand during the period 2010-2030.

2. Further explanation why the GWP of 300 had been selected was considered as one of the first requirements. This would also hold for other parameters and why they were chosen.

3. One Article 5 Party asked to consider longer conversions periods (6 years was considered too short), later starts of conversion than 2020 or 2025 as well as conversion of only certain percentages of manufacturing equipment, since there was not yet evidence that alternatives would be fully available in 2020 or soon thereafter. The lag was noted from when Article 2 countries adopt the alternatives in the market before the Article 5 countries transition; this lag should be about 10 years. A sensitivity analysis was suggested.

4. Introduction of a longer time period than up to 2030, e.g. until 2050, was also considered necessary, in particular also if longer conversion periods would be studied. This is also related to the fact that certain amendment proposals consider time schedules that go far beyond 2030.

5. One Party mentioned that it would be revealing if a separate study could be made for the update report which identified crucial sectors that would be important to transition in order to meet a certain reduction obligation in a certain year.

6. Where the XXVI/9 report shows many results for Article 5 countries, expansion of the scenario material for non-Article 5 countries was considered necessary (a suggestion already made directly after the XXVI/9 presentation). It was asked whether market interactions related to equipment (exports, imports) had been considered, if not, whether this could be investigated for the update report.

## **Costs**

7. Costs calculations for non-RAC and production sectors need to be clearer, while taking into account relevant ExCom decisions, such as the ones related to financing stage II HPMPs and demonstration projects. This is also related to the costs of the alternatives on the market and those not yet on the market.

8. Costs should also be analysed dependent on the start of the conversion and the duration of the conversion period. A global estimate of costs and benefits up to the year 2050 was also considered desirable.

9. One request was submitted to present the non R/AC costings in a clearer way.

## **High Ambient Temperature (HAT) Conditions**

10. A more precise analysis and parameters for definition of a high ambient temperature country or region was considered desirable.

11. Another Party mentioned the consideration of the alternatives for HAT countries or regions, the HCFC consumption by sector of these countries/regions as well as the types of equipment used.

12. Testing data of projects, if completed, should be listed and analysed if possible. Performance of various alternatives will be important, however, a Life Cycle Climate Performance evaluation of possible alternatives was considered even more important.

## **Alternatives**

13. The status of the various alternatives as well as their markets should be more precisely described. This in particular related to the 70 alternatives mentioned. Expansion of information on regional and international standards in the update report was also emphasized by several Parties.

Annex II

Schematic summary of the HFC amendment proposals submitted by Canada, Mexico and the United States (North American proposal), India (Indian proposal), the European Union and its member States (European Union proposal) and some island States<sup>10</sup> (Island States proposal)<sup>11</sup>

	North American proposal		Indian proposal		European Union proposal		Island States proposal	
	<i>Non-Article 5 parties</i>	<i>Article 5 parties</i>	<i>Non-Article 5 parties</i>	<i>Article 5 parties</i>	<i>Non-Article 5 parties</i>	<i>Article 5 parties</i>	<i>Non-Article 5 parties</i>	<i>Article 5 parties</i>
<b>Baseline consumption</b>	Average HFC consumption plus 75% of average HCFC consumption in 2011 – 2013 (CO <sub>2</sub> -eq)	Average HFC consumption plus 50% of average HCFC consumption in 2011 – 2013 (CO <sub>2</sub> -eq)	Average HFC consumption in 2013 – 2015 plus 25% of the HCFC baseline* (CO <sub>2</sub> -eq)	Average HFC consumption in 2028 – 2030 plus 32.5% of the HCFC baseline** consumption (CO <sub>2</sub> -eq)	Average HFC consumption in 2009 – 2012 plus 45% of average HCFC consumption allowed under the Protocol in 2009-2012 (CO <sub>2</sub> -eq)	Average HFC and HCFC consumption in 2015 – 2016 (CO <sub>2</sub> -eq)	Average HFC consumption in 2011-2013 plus 10% of the HCFC baseline* consumption (CO <sub>2</sub> -eq)	Average HFC consumption in 2015 – 2017 plus 65% of the HCFC baseline** consumption (CO <sub>2</sub> -eq)

<sup>10</sup> Kiribati, Marshall Islands, Mauritius, Micronesia (Federated States of), Palau, Philippines, Samoa and Solomon Islands.

<sup>11</sup> The schematic summary is being issued without formal editing.

<b>Baseline production</b>	Average HFC production plus 75% of average HCFC production in 2011 – 2013 (CO <sub>2</sub> -eq)	Average HFC production plus 50% of average HCFC production in 2011 – 2013 (CO <sub>2</sub> -eq)	Average HFC production in 2013 – 2015 plus 25% of the HCFC baseline* (CO <sub>2</sub> -eq)	Average HFC production in 2028 – 2030 plus 32.5% of the HCFC baseline** production (CO <sub>2</sub> -eq)	Average HFC production in 2009 – 2012 plus 45% of average HCFC production allowed under the Protocol in 2009-2012 (CO <sub>2</sub> -eq)	Average HFC production in 2009 – 2012 plus 70% of average HCFC production in 2009 – 2012 (CO <sub>2</sub> -eq)	Average HFC production in 2011 – 2013 plus 10% of the HCFC baseline* production (CO <sub>2</sub> -eq)	Average HFC production in 2015 – 2017 plus 65% of the HCFC baseline** production (CO <sub>2</sub> -eq)	
			<i>*1989 HCFC levels+2.8% of 1989 CFC levels</i>	<i>** Average 2009 – 2010 levels</i>			<i>*1989 HCFC levels+2.8% of 1989 CFC levels</i>	<i>** Average 2009 – 2010 levels</i>	
	<b>North American proposal</b>		<b>Indian proposal</b>		<b>European Union proposal</b>		<b>Island States proposal</b>		
	<i>Non-Article 5 parties</i>	<i>Article 5 parties</i>	<i>Non-Article 5 parties</i>	<i>Article 5 parties</i>	<i>Non-Article 5 parties</i>	<i>Article 5 parties</i>	<i>Non-Article 5 parties</i>	<i>Article 5 parties</i>	
<b>Potential</b>	<i>Year</i>	<i>Reduction steps apply to HFCs only</i>		<i>Reduction steps apply to HFCs only</i>		<i>Reduction steps for consumption apply to the basket of HFCs and HCFCs Reduction steps for production apply to HFCs only</i>		<i>Reduction steps apply to HFCs only</i>	
	2016			100%					
	2017							85%	
	2018			90%					

<b>reduction steps</b> <i>(% of the baseline production / consumption)</i>  <b>Montreal Protocol Articles 2 &amp; 5</b>	2019	90%				85%	Freeze of combined HCFC and HFC consumption			
							Freeze of HFC production			
	2020						Further reduction steps and their timing to be agreed by 2020		85%**	
	2021		100%					65%		
	2023			65%		60%				
	2024	65%								
	2025							45%	65%**	
	2026		80%							
	2028					30%				
	2029			30%					25%	
	2030	30%								45%**
	2031				100%					
	2032		40%							
	2033				Reduction steps to be determined 5 years in advance of the next 5 years period				10%	
	2034					15%				
	2035			15%						25%
	2036	15%								
	2040								15%*	
	2046		15%							
	2050				15%					
								<i>* Step applies</i>		<i>** Steps in years</i>

						<i>only to production</i>		<i>HCFC reductions are due</i>
	North American proposal		Indian proposal		European Union proposal		Island States proposal	
Key provisions per Montreal Protocol Article included in the legal texts of the amendment proposals	Article 1							
	Controlled substances: 19 HFCs		Controlled substances: 19 HFCs		List of substances: 19 HFCs		Controlled substances: 22 HFCs	
			Added definition of full conversion costs		Added definition of listed HFCs		Added definitions of the United Nations Framework Convention on Climate Change and its Kyoto Protocol	
	Article 2 <sup>a</sup>							
	Reduction steps for non-Article 5 parties as indicated above		Reduction steps for non-Article 5 parties as indicated above		Reduction steps for non-Article 5 parties as indicated above		Reduction steps for non-Article 5 parties as indicated above	
	Limits on HFC-23 by-product emissions		No controls on HFC-23 by-product emissions under the Protocol		Limits on HFC-23 by-product emissions		Limits on HFC-23 by-product emissions	
	Destruction of HFC-23 by approved technologies		Comprehensive efforts to convert HFC-23 into useful products		Destruction of HFC-23 by approved technologies		Destruction of HFC-23 by approved technologies	
	Production to satisfy the basic domestic needs of Article 5 parties		Production to satisfy the basic domestic needs of Article 5 parties				Production to satisfy the basic domestic needs of Article 5 parties	
	Transfer of HFC production rights		Transfer of HFC production rights		Transfer of HFC production rights		Transfer of HFC production rights	



	Agreement by consensus on GWP adjustments for HCFCs and HFCs	Agreement by consensus on GWP adjustments for HCFCs and HFCs		
	<b>Article 3</b>			
	Calculation of HFC control levels including HFC-23 emissions	Calculation of HFC control levels excluding HFC-23 emissions	Calculation of HFC and HCFC control levels including HFC-23 emissions	Calculation of HFC control levels including HFC-23 emissions
	<b>Article 4</b>			
	Bans on HFC trade with non-parties	Bans on HFC trade with non-parties	Bans on HFC trade with non-parties	Bans on HFC trade with non-parties
	Licensing HFC imports/exports	Licensing HFC imports/exports	Licensing HFC imports/exports	Licensing HFC imports/exports
	<b>Article 5<sup>a</sup></b>			
Reduction steps for Article 5 parties as indicated above	Reduction steps for Article 5 parties as indicated above	Freeze and reduction steps for Article 5 parties as indicated above	Reduction steps for Article 5 parties as indicated above	

<sup>a</sup>All proposals provide for phasing-down of HFC consumption and production using Montreal Protocol's expertise and institutions while continuing to include HFCs under the scope of the United Nations Framework Convention on Climate Change and its Kyoto Protocol for accounting and reporting of emissions.

	North American proposal	Indian proposal	European Union proposal	Island States proposal
Key provisions per Montreal	<b>Article 6</b>			
	Assessment and review of HFC control measures	Assessment and review of HFC control measures	Assessment and review of HFC measures	Assessment and review of HFC control measures
	<b>Article 7</b>			

	North American proposal	Indian proposal	European Union proposal	Island States proposal
Protocol Article included in the legal texts of the amendment proposals	Reporting on HFC production and consumption	Reporting on HFC production and consumption	Reporting on HFC production and consumption	Reporting on HFC production and consumption
	Reporting on HFC-23 by-product emissions and amounts captured and destroyed by approved technologies		Reporting on HFC-23 by-product emissions and amounts captured and destroyed by approved technologies	Reporting on HFC-23 by-product emissions and amounts captured and destroyed by approved technologies
	Article 9			
			Research, development, public awareness and exchange of information related to alternatives, including HFCs	
	Article 10			
	MLF support to Article 5 parties to implement the amendment	Strengthening the financial mechanism for providing financial and technical cooperation including transfer of technologies to Article 5 parties <sup>b</sup>	MLF support to Article 5 parties to implement the amendment	MLF strengthening and funding for the phase-down of HFC production and consumption including support for early action and provisions for financial and technical cooperation to Article 5 parties <sup>c</sup>

<sup>b</sup>The financial mechanism would meet: Compensation for lost profit stream for gradual closure of production facilities of HFCs; “Full costs of conversion” to HFC production facilities; manufacturing unit of equipment(s)/products from HFCs to low-GWP/zero GWP alternatives, operating costs for 5 years; Full second conversion costs wherever transitional technologies are used; Adequate funding for servicing sector including training of technicians, awareness, equipment support etc; Transfer of Technology including technologies with Intellectual Property Rights (IPR), process and application patents.

<sup>c</sup>The financial mechanism would promote energy efficiency and overcome barriers to the uptake of low-GWP technologies.

	North American proposal	Indian proposal	European Union proposal	Island States proposal
<p><b>Additional key elements included in the accompanying texts of the proposals</b></p>	<p>Accompanying decision includes possible adjustments to HFC reduction schedules based on progress of deployment of alternatives no later than 2025 for non-Article 5 parties and 2030 for Article 5 parties</p>	<p>Accompanying background text includes:</p> <ul style="list-style-type: none"> <li>➤ Nationally determined phase-down steps for HFCs in Article 5 parties</li> <li>➤ Date of freeze to be the date of eligibility of enterprises for financial assistance</li> <li>➤ Emissions of HFC-23 to be addressed on priority</li> <li>➤ Research and Development efforts to convert HFC-23 into useful products</li> <li>➤ Exemptions for MDIs and other medical applications</li> <li>➤ Essential use exemptions for all parties</li> <li>➤ No controls on HFC feedstock applications</li> </ul>		



# Earth Negotiations Bulletin

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## SUMMARY OF THE TWENTY-SEVENTH MEETING OF THE PARTIES TO THE MONTREAL PROTOCOL: 1-5 NOVEMBER 2015

The twenty-seventh Meeting of the Parties to the Montreal Protocol on Substances that Deplete the Ozone Layer (MOP 27) met from 1-5 November 2015, in Dubai, United Arab Emirates (UAE). Over 500 participants from governments, UN agencies, intergovernmental and non-governmental organizations, academia, and industry attended the joint meeting.

MOP 27 adopted a number of substantive and procedural decisions. Substantive decisions included: essential-use exemptions (EUEs) and critical-use exemptions (CUEs); avoiding the unwanted import of products and equipment containing or relying on hydrochlorofluorocarbons (HCFCs); and a Technology and Economic Assessment Panel (TEAP) report on alternatives to ozone depleting substances (ODS). Procedural decisions adopted include: budget; organizational issues related to the TEAP; and membership of Montreal Protocol bodies for 2015.

MOP 27 immediately followed the two-day resumed session of the 36th Open-ended Working Group (OWWG 36), which had agreed on a mandate for a contact group on the feasibility and ways of managing hydrofluorocarbons (HFCs). The contact group was established and HFCs were the “major topic” under debate throughout the week. Following protracted negotiations that finally concluded in the early hours of Friday morning, parties agreed to a “roadmap” for negotiating an HFC amendment; this agreement included provision for an additional OWWG meeting and an extraordinary MOP in 2016.

### 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 to this, a UN Environment Programme (UNEP) conference held in March 1977 adopted a World Plan of Action on the Ozone Layer and established a Coordinating Committee to guide future international action.

**VIENNA CONVENTION:** Negotiations on an international agreement to protect the ozone layer were launched in 1981 under the auspices of UNEP. In March 1985 the Vienna Convention for the Protection of the Ozone Layer was adopted. It called for cooperation on monitoring, research and data exchange, but did not impose obligations to reduce 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. 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, which represent 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 particular number of parties before they enter into force; adjustments enter into force automatically.

### IN THIS ISSUE

A Brief History of the Ozone Regime .....	1
MOP 27 Report .....	2
Preparatory Segment .....	2
High-Level Segment .....	3
MOP 27 Outcomes .....	4
A Brief Analysis of MOP 27 .....	12
Upcoming Meetings .....	14
Glossary .....	15

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**LONDON AMENDMENT AND ADJUSTMENTS:**

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

**COPENHAGEN AMENDMENT AND ADJUSTMENTS:**

At MOP 4, held in Copenhagen, Denmark, in 1992, delegates tightened existing control schedules and added controls on methyl bromide, hydrobromofluorocarbons and 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 applications.

**MOP 21:** MOP 21 took place in Port Ghalib, Egypt, in 2009 and adopted decisions on: alternatives to HCFCs; institutional strengthening; environmentally sound management of ODS banks; methyl bromide; and data and compliance issues. This was the first meeting at which delegates considered, but did not agree on, a proposal to amend the Protocol to include HFCs submitted by the 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 for the TEAP study on the MLF replenishment and the evaluation of the financial mechanism; and assessment of technologies for ODS destruction. Delegates considered, but did not agree on, 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) to the Vienna Convention 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 used to service ships; and additional information on alternatives. Delegates also discussed the two proposed amendments to the Protocol to address HFCs, but no agreement was reached.

**MOP 24:** MOP 24 took place in Geneva, Switzerland, in 2012 and adopted decisions on, *inter alia*, the review by the Scientific Assessment Panel (SAP) of RC-316c; procedural issues related to the TEAP and its subsidiary bodies; and data and compliance

issues. MOP 24 did not reach agreement on two draft decisions on: clean production of HCFC-22 through by-product emission control; and amendment of the Montreal Protocol to include HFCs.

**MOP 25:** MOP 25 was held in Bangkok, Thailand, in 2013. The MOP adopted 21 decisions, including on: terms of reference for the study of the 2015-2017 MLF replenishment; implementation of the 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.

**MOP 27 REPORT**

MOP 27 opened on Sunday morning, 1 November. The Preparatory Segment met from Sunday through to Tuesday. On Wednesday and Thursday, the High-Level Segment (HLS) convened. As the Preparatory Segment was unable to complete its work by Tuesday, it reconvened a number of times during the HLS.

**PREPARATORY SEGMENT**

On Sunday, Co-Chair Emma Rachmawaty (Indonesia) opened the Preparatory Segment. Rashid Ahmed Mohammed Bin Fahad, Minister of Environment and Water, UAE, underscored his country's longstanding commitment to the Montreal Protocol and welcomed OEWG 36's success in establishing a mandate for a contact group on HFC management.

Tina Birmpili, Executive Secretary, Ozone Secretariat, observed that the evolution of ODS controls under the Montreal Protocol follow a pattern, with early action by non-Article 5 parties, later action by Article 5 parties, and inclusion and tightening of control measures and schedules at appropriate times. She highlighted that additional obligations have been accompanied by supplementary funding for Article 5 parties. She said delegates are beginning to write the Protocol's next phase by agreeing on a mandate for a contact group on HFC management. She stressed that HFC discussions must be inclusive, build trust and consider the interlinkages of the eight challenges identified in the mandate.

**ORGANIZATIONAL MATTERS: Adoption of the Agenda:** Co-Chair Rachmawaty introduced the provisional agenda (UNEP/OzL.Pro.27/1 and 1/Add.1). Delegates agreed to discuss under agenda item nine (Potential areas of focus for the 2018 quadrennial assessments) nominations to replace the

resigning SAP Co-Chairs, A. R. Ravishankara (US) and Ayite-Lo Nohende Ajavon (Togo), as well as TEAP organizational matters raised in the addendum to its 2015 progress report.

Delegates agreed to include under item 11 (Other matters), *inter alia*: ODS releases from production processes; financial matters related to TEAP's organizational issues; ODS disposal; and possible problems created by delayed transfer of funds from implementation bodies.

**Organization of Work:** Co-Chair Paul Krajnik (Austria) introduced the organization of work. Saudi Arabia questioned whether the outcome of the OEWG and the proposed amendments should be discussed in plenary or in a contact group. Co-Chair Krajnik clarified that proponents need to present their amendments before discussing them in a contact group.

**OTHER MATTERS:** These items were addressed on Sunday.

**ODS Disposal:** Samoa, supported by Grenada and Cameroon, requested that this issue be included on OEWG 37's agenda. Delegates agreed.

**Delayed Transfer of Funds:** Co-Chair Krajnik addressed possible problems created by delayed transfer of funds from implementation bodies. Paraguay, supported by Cuba, Haiti, Mozambique and Niger, cautioned that delays in disbursing funds from implementing agencies could lead to parties' non-compliance.

Canada explained that the MLF Executive Committee (ExCom) addresses possible delays and the reasons for the delays. Jordan noted the ExCom finances two types of projects: infrastructure and investment.

Cuba suggested the MOP "take note" of the issue as a preventative approach, to which parties agreed.

#### HIGH-LEVEL SEGMENT

The HLS was opened by Mikkel Sorensen (Denmark), Acting MOP 26 President, on Wednesday.

Minister Fahad called for moving past discussing HFC management challenges and focusing on generating solutions. He said further delay in achieving an HFC agreement would undermine efforts to mitigate climate change and recommended sending a strong message to the 21st COP of the UN Framework Convention on Climate Change (UNFCCC).

India urged careful consideration of any HFC phase-down under the Protocol, noting that the UNFCCC controls greenhouse gas (GHG) emissions. He recommended the contact group on HFCs address the concerns of all parties through a holistic, visionary approach.

Achim Steiner, Executive Director, UNEP, urged delegates to seize the opportunity to act on HFCs to honor and build on the Protocol's legacy as the most successful multilateral environmental agreement. He elaborated that acting on HFCs in Dubai would prove that the Protocol can take up new challenges.

Steiner then presented outgoing SAP Co-Chairs Ravishankara and Ayite-Lo Nohende Ajavon with awards honoring their contribution to the SAP, the Montreal Protocol, and ozone science as a whole. Fahad was also honored for his contribution, including in environmental decision-making in the region.

Acting MOP 26 President Sorensen said that, while much has been achieved under the Protocol, parties should continue their efforts to address current and future dangers. He highlighted unfinished business, such as exemptions and the use of methyl bromide for quarantine and pre-shipment procedures.

**ORGANIZATIONAL MATTERS: Election of MOP 27 officers:** The MOP 27 Bureau was elected as follows: as President, Virginia Poter (Canada); as Vice Presidents, Rose Mkankomeje (Rwanda); Tumu Herowna Neru (Samoa); and Sabir Atadjanov (Kyrgyzstan); and as rapporteur, Elias Gómez (Dominican Republic).

**Adoption of the Agenda of the MOP 27 HLS:** Delegates adopted the agenda (UNEP/OzL.Pro.27/1 and 1/Add.1) without amendment.

**Organization of work:** Plenary agreed to convene a ministerial roundtable, followed by a presentation on the 2014 Quadrennial Assessment Synthesis Report, among other items.

**Credentials of representatives:** On Wednesday morning, MOP 27 President Poter requested parties to submit credentials as soon as possible, saying that the Bureau will review them and report to plenary. On Friday morning, Gilbert Bankobeza, Senior Legal Officer, Ozone Secretariat, reported that the MOP 27 Bureau had inspected the credentials, and approved 90 of them.

**PRESENTATIONS BY THE ASSESSMENT PANELS ON THEIR SYNTHESIS OF THE 2014 QUADRENNIAL ASSESSMENTS:** On Wednesday, SAP Co-Chair Ravishankara presented the Synthesis of the 2014 Reports of the Assessment Panels of the Montreal Protocol. He noted overarching messages include that, due to the success of the Montreal Protocol: large increases in UV radiation have been prevented, except near the poles; ozone layer depletion has been reversed; and ODS consumption has decreased, in contrast to all other major GHGs. He cautioned that some ODS alternatives are powerful GHGs, with potentially harmful effects, but stated that scientific and technological advances may offer solutions.

On a question regarding the aspects contributing to the success of the Protocol, Ravishankara, with Ashley Woodcock, Medical Technical Options Committee (TOC) Co-Chair, underscored the importance of "bringing science to the parties." On studying the links between the replacement of HCFCs and HFCs and their effect on the ozone layer and climate change, Paul Newman, SAP Co-Chair, said that these are dealt with in greater depth in the report.

MOP 27 took note of the report.

#### PRESENTATION BY THE CHAIR OF THE MLF EXCOM ON THE WORK OF THE COMMITTEE:

On Thursday in plenary, John Thompson (US), Chair of the ExCom, presented the Report of the ExCom of the MLF for the Implementation of MOP 27 (UNEP/OzL.Pro.27/10). He highlighted the MLF's decisions, activities and achievements, noting 140 countries have approved HCFC Phase-Out Management Plans (HPMPs) and 33 countries are preparing to implement stage 2 HPMPs. He highlighted, *inter alia*: the importance of addressing the refrigeration and air conditioning (RAC) sector, noting funding for a feasibility project on district cooling to demonstrate low-global warming potential (GWP) technologies in the air conditioning manufacturing sector and the



expected consideration of demonstration projects and feasibility studies on district cooling at the upcoming ExCom meeting. Thompson reminded delegates that the ExCom had scheduled a review of institutional strengthening projects, saying that such projects will be approved at a level that is 28% higher than the historically agreed level. He described projects being implemented by the UN Development Programme (UNDP), the UN Industrial Development Organization (UNIDO) and the World Bank. On achievement, he said a total of 453,772 tonnes of ODS has already been phased out.

**STATEMENTS BY HEADS OF DELEGATION:** This agenda item was taken up on Wednesday and Thursday.

**Ministerial Roundtable:** On Wednesday, a ministerial roundtable addressed "How the institutions and mechanisms of the Montreal Protocol could assist parties in managing HFCs," moderated by Ambassador Fernando Lugris (Uruguay). The roundtable began with a video on the role of HFCs in contributing to global warming, followed by statements and a panel discussion.

An in-depth summary of the Ministerial Roundtable is available at: <http://www.iisd.ca/vol19/enb19114e.html>.

**Statements from Heads of Delegation:** On Wednesday and Thursday, the HLS heard statements from heads of delegation. Burkina Faso, with Bangladesh, the European Union (EU), Kenya, and others, supported an HFC amendment. Bahrain identified challenges, including funding, alternatives and capacity building.

FSM reiterated that adopting the HFC amendment would send a signal to the market that could spark innovation and unlock large-scale investments. He highlighted opportunities for energy efficiency in an HFC phase-down and urged, with Australia and others, agreement on a "Dubai roadmap" for a comprehensive, inclusive negotiation process in 2016. Somalia referenced current reconstruction efforts, including a focus on energy efficiency and green growth, calling on the private sector to comply with corporate social responsibility.

Indonesia presented efforts to phase-out HCFCs. FSM urged attention on low-GWP alternatives for the fisheries sector. Mauritius suggested that other multilateral environmental agreements could learn from the Protocol's success, particularly its cooperative nature. Kyrgyzstan emphasized the vulnerability of mountain ecosystems to climate change. Oman reiterated its commitment to the Vienna Convention and the Montreal Protocol.

The International Institute of Refrigeration offered to help countries develop and adopt low-GWP technologies in the refrigeration sector. The International Pharmaceutical Aerosol Consortium expressed support for the phase-down of HFCs, but requested consideration of important patient health aspects, as was suggested by the Medical TOC (MTOC).

An in-depth summary of Wednesday's statements is available at: <http://www.iisd.ca/vol19/enb19114e.html>.

**REPORT OF THE CO-CHAIRS OF THE PREPARATORY SEGMENT AND CONSIDERATION OF THE DECISIONS RECOMMENDED FOR ADOPTION BY MOP 27:** On Friday morning, Co-Chair Krajník provided

a report on the preparatory segment, stating that, while taking a long time, parties had concluded their work and agreed to forward a number of decisions to the HLS.

**ADOPTION OF DECISIONS AND REPORT OF MOP 27:** On Friday morning, the HLS considered the draft report of MOP 27 (UNEP/OzL.Pro.27/L.1 and UNEP/OzL.Pro.27/L.1/Add.1). They also considered the compilation of draft decisions (UNEP/OzL.Pro.27/L.2).

The decisions were considered and adopted with minor amendments. After going through the report paragraph-by-paragraph, delegates adopted it with minor amendments.

**CLOSING PLENARY:** The HLS closing plenary reconvened early Friday morning due to protracted contact group discussions. MOP 27 President Poter thanked participants for their cooperative spirit during discussions over the week and congratulated them on their achievements. She reminded delegates of Rwanda's offer to host MOP 28 in 2016 in Rwanda, as well as MOP 26's agreement that Rwanda would host MOP 28. She also read a message from the delegation of Rwanda, who she said had to leave, reconfirming that Rwanda is ready and honored to host this meeting in November 2016. She closed the meeting at 2:41 am on Friday, 6 November.

#### **MOP 27 OUTCOMES**

Unless otherwise stated, all draft decisions submitted for MOP 27's consideration are contained in document UNEP/OzL.Pro.27/3. Unless otherwise indicated, draft decisions were adopted during the HLS on Friday morning, and can be found in document UNEP/OzL.Pro.27/L.2.

**ADMINISTRATIVE ISSUES: Financial report of the Trust Fund and budgets for the Montreal Protocol:** On Sunday, in plenary, Co-Chair Rachmawaty introduced this item (UNEP/OzL.Pro.27/3, UNEP/OzL.Pro.WG.1/36/INF/1 and UNEP/OzL.Pro.WG.1/36/INF/2) and asked interested parties to join an open-ended budget committee, which convened throughout the week. Delano Ferwey (the Netherlands) and Leslie Smith (Grenada) co-chaired the group.

On Friday morning in plenary, Co-Chair Ferwey presented the report of the budget committee. He reported that the committee agreed to, *inter alia*: leave parties' contributions unchanged, noting that this decision carries risks with regard to the fund balance; and include a budget line for one extra five-day OEWG and one three-day ExMOP to be held back-to-back with the scheduled OEWG in the 2016 budget. Plenary agreed to forward the draft decision to the HLS.

**Final Outcome:** In its decision (UNEP/OzL.Pro.27/CRP.10), the MOP decides to, *inter alia*:

- approve the revisions of the 2015 budget in the amount of US\$6,363,557 and the budget of US\$6,772,162 for 2016;
- authorize the Secretariat to draw down the amounts of US\$2,086,624 in 2015 and US\$2,495,229 in 2016;
- approve, as a consequence of the drawdowns referred to above, total contributions to be paid by the parties of US\$4,276,933 for 2015 and US\$4,276,933 in 2016, and to note the on-going unsustainable depletion of the fund balance and the implications for further drawdowns after 2016;
- request the Secretariat to prepare scenarios for the Trust Fund budget, its fund balance and reserves and parties' future

contributions to ensure an adequate level of the fund balance to allow the continued work of the Montreal Protocol and present these scenarios in time for OEWG 36;

- reaffirm a working capital reserve at a level of 15% of the annual budget to be used to meet the final expenditures under the Trust Fund;
- note with concern that a number of parties have not paid their contribution for prior years, and urge those parties to pay both their outstanding contributions and their future contributions promptly and in full, particularly given that 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, and to request that the Executive Secretary report to MOP 28;
- decide to 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;
- request the Secretariat to provide, within the budget approved for 2016, administrative and organizational support to the TEAP;
- encourage 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 OEWG; and
- request the Secretariat to indicate in future financial reports of the Trust Fund the amounts of cash in hand in the section entitled "Total reserves and fund balances," in addition to contributions that have not yet been received.

#### ISSUES RELATED TO EXEMPTIONS FROM ARTICLE

**2 OF THE MONTREAL PROTOCOL: Nominations for essential-use exemptions for 2016:** On Sunday, Co-Chair Rachmawaty presented the EUE nominations noting, *inter alia*, one nomination from China for CTC was approved by the Chemicals TOC.

On Tuesday, parties agreed to forward nominations for EUEs for 2016 (draft decision XXVII/[A]) to the HLS, where it was adopted Friday morning without amendment.

**Final Outcome:** In its decision (XXVII/[A]), the MOP, *inter alia*:

- encourages China to complete the revision of its relevant national standard and to ensure that a revised national standard is brought into force as soon as possible with a view to ensuring a smooth transition to a method that does not use ODS; and
- authorizes the level of consumption for China for 2016 necessary to satisfy essential uses of CTC for testing of oil, grease and total petroleum hydrocarbons in water, as specified in the annex to the decision.

**Nominations for critical-use exemptions for 2016 and 2017:** On Sunday, Methyl Bromide TOC (MBTOC) Co-Chair Ian Porter (Australia) presented the recommendations for methyl bromide critical-use nominations (CUNs). He requested parties to report on stocks if applying for CUEs and to follow data submission timelines. He said the MBTOC: does not recommend Canada's CUN for strawberry runners in 2017; reduced Argentina's CUN for tomatoes by an additional 5%; and approved Argentina's revised request on strawberries.

Noting disagreement with the MBTOC's recommendation, Canada withdrew its CUN and said it will consider submitting it in 2017. The US said it had collected additional information on available stocks and withdrew its CUN on cured pork.

Australia invited delegates to join a small discussion group to finalize a conference room paper (CRP) on CUEs. South Africa asked the MBTOC to re-consider its recommendation on South Africa's CUN, saying it cannot find a suitable alternative. Co-Chair Rachmawaty suggested interested parties discuss with Australia and proposed South Africa hold additional bilateral discussions with the MBTOC.

On Tuesday, parties agreed to forward the nominations for CUEs for 2016 and 2017 (UNEP/OzL.Pro.27/CRP.6) to the HLS for adoption.

**Final Outcome:** In its decision, XXVII/[B], the MOP permits, for the agreed critical-use categories for 2016 and 2017 set forth in Table A contained in the annex to the decision, for each party, subject to the relevant conditions, the levels of production and consumption for 2016 and 2017 set forth in Table B of the annex, which 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 reports on the implementation of the present provision to the Ozone Secretariat by 1 February for the years to which the present decision applies.

The annex to the decision contains two tables. Table A lists agreed critical-use categories for: Australia (strawberry runners) for 2017; and Argentina (strawberry fruit and tomato), China (ginger), Mexico (strawberry and raspberry nurseries) and South Africa (mills and houses) for 2016. Table B sets out corresponding permitted levels of production and consumption.

**ISSUES RELATED TO ALTERNATIVES TO ODS: Report by the TEAP on the full range of alternatives to ODS:** On Sunday, Co-Chair Krajnik introduced this item. TEAP Co-Chair Bella Maranion (US) noted the report's highlights, including little change in the availability of equipment in the RAC sector and significant changes in mitigation scenarios, including on cost estimates.

Various TEAP members outlined, *inter alia*: that the different scenarios consider three conversion periods, noting the most aggressive mitigation scenario showed the greatest decrease in GWP impacts, while the least aggressive scenario showed the



lowest decrease; that delaying and extending conversion periods for the stationary air conditioning sector affects overall climate impacts and that the most aggressive mitigation scenario is the cheapest; and that without a universal definition for high-ambient temperature conditions, there is no clarity on what constitutes a high-ambient temperature country.

Responding to questions, the TEAP explained that: the model has many parameters, not just gross domestic product (GDP) and growth projections; the report's maps illustrate different climate zones in which equipment has to work efficiently; the definitions and classifications take into consideration the American Society of Heating, Refrigerating, and Air-Conditioning Engineers methods.

Pakistan requested more information on new substances. Saudi Arabia asked the TEAP to explore safety, energy efficiency, and economic and social costs. Argentina requested analysis of the availability and timelines for alternatives in different world regions. Switzerland asked for more precision on investment costs in HFC replacements. Canada announced that it would propose a CRP on a renewed mandate for TEAP work on mitigation scenarios.

On Tuesday, Canada introduced the document (UNEP/OzL.Pro.27/CRP.8), explaining that it requests the TEAP to prepare a report for consideration by OEWG 37 that would, *inter alia*, update information on alternatives to ODS and HFCs and update and extend the business-as-usual scenario.

Burkina Faso, Fiji and Samoa urged the TEAP to consider alternatives to ODS in the fisheries sector. Australia, the EU, Mexico and the US expressed broad support for the draft decision. Pakistan and Saudi Arabia noted caution, saying that elements of the draft decision presuppose the outcome of the contact group on HFCs management. India opposed the draft decision.

On Wednesday and Thursday, an informal group discussed the CRP. The group addressed, *inter alia*: the TEAP's role as an advisory body; that the TEAP has not previously conducted specific options for phase-down scenarios; and the TEAP's position to provide a definition of high ambient temperatures.

During Friday morning's Preparatory Segment plenary, Canada revealed that after the informal group had concluded on Thursday afternoon, discussions continued on the meeting's margins with concerned parties agreeing to text. Parties then agreed to forward the CRP to the HLS for adoption.

**Final Outcome:** In its final decision (UNEP/OzL.Pro.27/CRP.8/Rev.1), the MOP agreed to request the TEAP, if necessary in consultation with external experts, to prepare a report for consideration by OEWG 37, and thereafter an updated report to be submitted to MOP 28. The update would, where necessary, provide new information on ODS alternatives, including not-in-kind alternatives, based on the guidance and assessment criteria provided in sub-paragraph 1(a) of Decision XXVI/9 (Responses to the TEAP Report on Information on ODS Alternatives), taking into account the most recent findings on the suitability of alternatives under high-ambient temperatures.

**Updated information submitted by parties on their implementation of paragraph 9 of decision XIX/6:** On Sunday, Co-Chair Rachmawaty stated that parties were

encouraged to send information on their activities to minimize ODS' environmental impacts to the Secretariat. She welcomed information provided by Canada, Mexico, Montenegro, Paraguay, Switzerland and the US.

On Friday morning, Kuwait reported that his country and Qatar had submitted their data and asked to be removed from the list of six parties that had not reported 2014 data. The Secretariat noted that the decision will be amended to reflect this change.

**Final Outcome:** The final decision (XXVII/[G]) notes, *inter alia*, that: 193 of the 197 parties that should have reported data for 2014 have done so; failure to report 2014 data in accordance with Article 7 places parties in non-compliance with their data reporting obligations; a lack of timely data reporting impedes effective monitoring and assessment of parties' compliance; and reporting by 30 June each year facilitates the MLF ExCom for the implementation of the Protocol in assisting parties to comply with the Protocol's control measures.

The decision also:

- urges Democratic Republic of Congo, Dominica, Somalia and Yemen to work closely with the implementing agencies and to report the required data to the Secretariat;
- requests the ImpCom to review the situation of those parties; and
- encourages parties to continue to report consumption and production data as soon as figures are available, preferably by 30 June each year, as agreed in Decision XV/15 (on Earlier Reporting of Consumption and Production Data).

**OUTCOME OF THE RESUMED OEWG 36 MEETING:** On Sunday, Co-Chair Rachmawaty introduced this item (UNEP/OzL.Pro.27/12), underlining that most discussions occurred informally, but a decision had been reached on a mandate to establish a contact group to discuss the feasibility and ways of managing HFCs. Co-Chair Rachmawaty proposed, and delegates agreed, to establish a contact group.

The summary of the OEWG 36 discussions and the contact group mandate is available at: <http://www.iisd.ca/vol19/enb19110e.html>

**PROPOSED AMENDMENTS TO THE MONTREAL PROTOCOL:** On Sunday, Co-Chair Krajnik noted four amendment proposals submitted by: North America (UNEP/OzL.Pro.27/5); India (UNEP/OzL.Pro.27/6); the EU (UNEP/OzL.Pro.27/7); and Kiribati, Marshall Islands, Mauritius, FSM, Palau, Philippines, Samoa and Solomon Islands (UNEP/OzL.Pro.27/8). He reminded parties that, while the proposals will be introduced in plenary, a contact group will discuss them in greater depth.

The US presented North America's proposal for a two-step approach to an HFCs amendment. She suggested that step one consider adopting a scaled-back amendment in 2015, the "Dubai amendment," and step two negotiate the remaining provisions in 2016, with additional negotiating sessions and further analysis from TEAP.

India presented its proposal. He highlighted, *inter alia*: support for conversion costs; a 15-year grace period for Article 5 parties; and a division of the 19 HFCs into four categories based on their GWP and the availability of financially viable alternatives.

The EU highlighted its proposal's emphasis on offering solutions and its ambitious phase-down schedule for non-Article 5 countries, beginning in 2019.

Presenting the island states' proposal, FSM welcomed progress on the HFC discussions and said any agreement must address financing, flexibility and fairness. He called for agreement on an amendment at MOP 27.

**CONTACT GROUP ON FEASIBILITY AND WAYS OF MANAGING HFCs:** The contact group, with Patrick McInerney (Australia) and Xia Yingxian (China) as co-conveners, met throughout the week. In line with the mandate detailed by the resumed session of OEWG 36, the group began by discussing challenges and then moved to examine possible solutions to identified challenges.

The challenges identified in the initial discussions included: recognizing the principle of common but differentiated responsibilities; the lack of availability and cost of alternatives in some countries or regions; "flexibility of implementation" in matters such as choosing which technologies to employ and the prioritization and timing of sector conversions; cost coverage and cut-off dates for funding eligibility; funding coverage of second and third phase conversions; sufficient lead time for non-Article 5 control measures "to send the needed signal to the market" before Article 5 countries begin their control measures, in order to increase the availability of technology choices in the marketplace; HFC stocks disposal; capacity building for new technologies; a possible exemption mechanism; intellectual property rights (IPRs); the need for a "full" study of the economic impact of any proposed HFC phase-down on Article 5 countries; supporting small- and medium-sized enterprises in a transition away from HFCs; the need for a survey of HFC production and consumption by all parties prior to an agreement on phase-down commitments; whether to ask the TEAP to undertake a formal, technical review on the availability of alternatives; lack of "common procedures" for implementing agencies; and developing new standards and a shortage of engineers, particularly in the commercial refrigeration sector.

On Tuesday and Wednesday the contact group began discussing solutions and possible ways forward, with several non-Article 5 countries offering ideas, and several Article 5 countries welcoming the dialogue and suggestions.

On **flexibility in implementation**, several Article 5 and non-Article 5 countries expressed support for amendment language allowing flexibility in prioritizing sectors for phase-down and choosing substances, technologies and national compliance strategies. Article 5 countries supported, *inter alia*: including the concept of ratios in any phase-down; developing an HFC inventory; and exploring linkages between the concepts of flexibility and exemptions. They also urged ensuring flexibility in MLF funding and called for conducting a potential HFC phase-down in concert with the HCFC phase-out.

One non-Article 5 country suggested linking cost-effectiveness with funding made available for the phase-down. Two non-Article 5 countries suggested there was potential for substantial flexibility as long as it fell within the Montreal Protocol's framework.

An Article 5 country suggested linking commitments to actual country emissions of HFCs, using a volumetric approach. Others questioned the practicality of such an approach.

One non-Article 5 country suggested that if the baseline used for phase-down combines both HCFCs and HFCs, then countries could have many choices in how to meet targets. Regarding sectors and uses for which no viable technology is available as a phase-down deadline approaches, two non-Article 5 countries suggested that the proposed periodic technology review could allow for adjustments, when necessary.

On **financial support**, several non-Article 5 countries suggested "clear and transparent guidance" from the MOP to the ExCom on what the MLF would support, including a definition of what constitutes second and third stage conversions. One non-Article 5 country suggested that support for conversions might require a limit on GWP levels. Another suggested specifying support for training on alternative technologies and defining and adopting safety standards.

Participants also called for addressing, *inter alia*: "early funding" for enabling activities; training; methodologies for calculating conversion costs; new reporting obligations on by-products; patent costs and licensing fees; plant closings; lost profits; collection and disposal; and levels of support for low-level consumption countries. Several delegations suggested developing a list and classifying what should be dealt with by MOP guidance to the ExCom and what should be included in an amendment text. One urged caution concerning the level of detail to include in any guidance to ExCom.

Observing that the RAC sector is already moving to address HFCs, an Article 5 country requested support for **capacity building** during phase-down.

On **incentives**, one Article 5 country questioned whether the proposed cut-off date should be linked to the amendment's date of adoption, cautioning that this requirement may discourage some parties from committing. A non-Article 5 country proposed linking cut-off dates to the date of adoption of any agreement. An Article 5 country stressed that incentives should ensure that all parties benefit, identifying some countries that are without production sectors. One non-Article 5 country stated that if the Montreal Protocol agreed to address HFCs, dialogue on additional incentives could continue.

On Thursday a group of Article 5 countries proposed possible amendment text on the special situation of **high ambient temperature** countries. The proposal called for a special exemption, separate from CUEs and EUEs, for countries with high ambient temperature conditions where suitable alternatives do not exist in the specific sub-sector of use. The exemption initially would be for five years but renewable for another five years if the TEAP finds that suitable HFC alternatives still do not exist, based on criteria agreed by parties. The proposal also called for a deferral in consideration by the ImpCom of any noncompliance in HCFC production and consumption during the exemption period(s).

Non-Article 5 countries reacted to the proposal, indicating that more details would be needed on, *inter alia*: the criteria for deciding what constitutes a country with high ambient temperatures; which sectors would be eligible for the exemption;



and the role of the MOP in agreeing to or ending any extension request. They also suggested further discussion on the duration of exemptions and their extensions. One non-Article 5 country suggested that exemption renewals be tied to evidence that the party in question had committed to establishing framework conditions, such as developing safety standards for flammable or toxic alternatives.

Saying that the group needed to decide on a path forward, a non-Article 5 country proposed decision text in which parties would agree to: address HFCs under the Montreal Protocol and work towards an HFC amendment in 2016; recognize the progress made on the challenges identified in the group's mandate on certain issues; recognize that further progress needs to be made regarding the other challenges identified in the mandate; maintain the contact group to undertake those discussion during 2016; hold a series of OEWG and other meetings, including an ExMOP; forward the four 2015 amendment proposals to the 2016 Montreal Protocol meetings for consideration; and request the Ozone Secretariat to prepare a document for consideration at the 2016 meetings consolidating the legal text of the four amendment proposals.

Another delegation, saying they were reflecting the work of an informal consultation among Article 5 and non-Article 5 countries, suggested formally recognizing a list of points of convergence reached during contact group discussions, such as those on MLF funding, flexibility in implementation, second and third stage conversions, enabling activities, and the need for an exemption for high ambient temperature countries.

Delegations welcomed the two proposals as a good basis for discussion. The contact group then suspended its discussion for informal discussions on the proposals for a draft MOP decision and points of convergence until after 1:00 am. When the contact group reconvened, the Co-Conveners presented a modified proposal for a decision, with an annex containing a retitled and amended list of points of convergence. The Preparatory Segment agreed to forward the text, unchanged, to the HLS.

**Final Outcome:** In the decision, the parties decide to work within the Montreal Protocol toward an HFC amendment in 2016 by first resolving challenges through generating solutions in the contact group. They agree to hold a series of OEWG and other meetings, including an ExMOP, in 2016. The meetings will continue consideration of agenda items 6 (outcome of the resumed OEWG 36 meeting) and 7 (proposed amendments to the Montreal Protocol), including the four proposals for an HFC amendment.

The decision recognizes the progress made at MOP 27 on the challenges identified in the mandate agreed at the resumed session of OEWG 36 for a contact group on feasibility and ways of managing HFCs, including developing a common understanding on issues related to flexibility of implementation, second and third stage conversions, guidance to the ExCom, enabling activities for capacity building, and the need for an exemption for high ambient temperature countries. The mandate for the contact group is attached to the decision as Annex 1.

The decision recognizes that further progress still needs to be made, in particular regarding other challenges identified in the contact group mandate, on such issues as conversion costs, technology transfer and IPRs.

The decision also endorses the concepts in Annex 2, "Issues raised and discussed in detail as part of the challenges during the contact group will be further discussed, in a direction consistent with the record of the discussion." These concepts are:

- **Funding:** maintain the MLF as the financial mechanism and agree that additional financial resources will be provided by non-Article 5 parties to offset costs arising out of HFC management for Article 5 parties, if obligations are agreed to;
- **Flexibility:** Article 5 parties will have flexibility to prioritize HFCs, define sectors, select technologies/alternatives, and elaborate and implement their strategies to meet agreed HFC obligations, based on their specific needs and national circumstances, following a country-driven approach. The ExCom shall incorporate the aforementioned principle in relevant guidelines and its decision-making process;
- **Second and Third Conversions:** enterprises that have already converted to HFCs in phasing out CFCs and/or HCFCs will be eligible to receive funding from the MLF to meet agreed incremental costs in the same manner as enterprises eligible for first conversions;
- **Guidance to the ExCom:** guidelines and/or methodologies will be developed on the following issues, if agreed: determining incremental costs; calculating incremental costs; cost effectiveness thresholds; and the energy efficiency and climate impacts of projects;
- **Enabling activities:** enabling activities will be supported by the MLF in any HFC phase-down agreement: capacity building and training for handling HFC alternatives in the servicing, manufacturing and production sectors; institutional strengthening; Article 4b licensing; reporting; demonstration projects; and developing national strategies; and
- **High Ambient Temperature Exemption:** the need for an exemption for high ambient temperature countries.

**ISSUES RELATED TO THE PHASE-OUT OF HCFCs:** On Sunday, Co-Chair Rachmawaty introduced the agenda item. Australia presented its proposal with the US and Canada, requesting the TEAP to provide additional information on, *inter alia*: sectors where essential uses for non-Article 5 countries will be required after 2020; and future needs for non-Article 5 countries in the RAC sector. Plenary forwarded the draft decision to the HLS.

**Final Outcome:** In its decision (XXVII/[D]), the MOP requests the TEAP in relation to Annex C, group I, substances, to identify sectors, including subsectors, if any, where essential uses for non-Article 5 parties may be needed after 2020, including estimations of the HFC volumes to be used; to assess the future servicing requirements between 2020 and 2030 for non-Article 5 parties of RAC equipment, and to assess whether there is a need for servicing in other sectors; to report on recent volumes of production to satisfy basic domestic needs, projected estimates of such future production and estimated needs of non-Article 5 parties to satisfy basic domestic needs beyond 2020.



The decision also:

- invites parties to provide relevant information to the Ozone Secretariat by 15 March 2016 for inclusion in the Panel's assessment; and
- requests the Panel to submit its report to OEWG 37.

**POTENTIAL AREAS OF FOCUS FOR THE ASSESSMENT PANELS' 2018 QUADRENNIAL ASSESSMENT:**

Plenary addressed this item on Sunday.

Co-Chair Krajnik invited nominations for the SAP. The US for North America nominated David Fahey (US). Zimbabwe for the African Group nominated Bonfils Safari (Rwanda). On Tuesday, Co-Chair Krajnik informed plenary that the draft decision on the two nominations for SAP Co-Chairs was available (UNEP/OzL.Pro.27/CRP.5), along with their *curriculum vitae*. Plenary forwarded the draft decision to the HLS.

On TEAP organizational issues, Australia supported a MTOC, Japan said it is finalizing a CRP, and Switzerland proposed parties guarantee secure funding for their candidates.

On Monday through Thursday, delegates met informally to discuss potential areas of focus for the assessment panels' 2018 quadrennial reports (UNEP/OzL.Pro.27/CRP.1). Switzerland and the EU co-chaired the group.

Participants debated issues related to: references to climate change; whether to encourage the assessment panels to keep parties informed of any important new developments; "definition" of units and terminology; timing of the reports; and spacing between panel reports and the synthesis report. Members of the Assessment Panels shared their process for producing the report, among other topics.

Participants also discussed whether to reference environmental impacts in the work of the Environmental Effects Assessment Panel (EEAP), with one participant opposing such a reference. Others suggested alternative language, including reference to physical and chemical processes; "atmospheric" processes; and reference to Vienna Convention language. One participant pointed out the difficulty of removing the word "environment," noting that the Panel itself is called the Environmental Effects Assessment Panel and the Protocol is hosted under UNEP. Panel representatives expressed concern about "broad" references, saying the Panels rely on the MOP for guidance. Following protracted discussion, participants compromised by agreeing to refer to "those factors stipulated in Article 3 of the Vienna Convention."

During Friday morning's plenary, and following bilateral discussions, the EU reported that participants agreed to UNEP/OzL.Pro.27/CRP.1/Rev.1.

The relevant decisions were forwarded to the HLS.

**Final Outcomes:** In decision XXVII/H, on membership changes in the SAP, the MOP:

- thanks the scientific experts who have served as SAP Co-Chairs for their long and outstanding efforts on behalf of the Montreal Protocol: Ayite-Lo Ajavon (Togo); and A.R. Ravishankara (US); and
- endorses the appointment of new SAP Co-Chairs: Bonfils Safari (Rwanda); and David Fahey (US).

In its decision (UNEP/OzL.Pro.27/CRP.1/Rev.1), on potential areas of focus for the assessment panels' 2018 quadrennial reports, the MOP, *inter alia*:

- notes the excellent and highly useful work conducted by the SAP, the EEAP and the TEAP in preparing their 2014 assessment reports, including the 2015 synthesis report;
- requests the three assessment panels to prepare reports in 2018 and submit them to the Secretariat by 31 December 2018 for consideration by the OEWG and by MOP 31 in 2019 and present a synthesis report by 30 April 2019, noting that the panels should continue to exchange information, including on all sectors as well as on alternatives and the issue of high ambient temperatures, during the process of developing their respective reports to provide comprehensive information to the parties;
- encourages the assessment panels to more closely involve relevant scientists from non-Article 5 parties with a view to promoting gender and regional balance in producing reports;
- encourages the assessment panels to use defined, consistent units and consistent terminology throughout for better comparability;
- requests the assessment panels to bring to the notice of the parties any significant developments which, in their opinion, deserve notice, in accordance with Decision IV/13 (Assessment Panels);
- requests the EEAP, in drafting its 2018 report, to consider the most recent scientific information regarding the effects on human health and the environment of changes in the ozone layer and in ultraviolet radiation, together with future projections and scenarios for those variables, taking into account those factors stipulated in Article 3 of the Vienna Convention;
- requests the SAP to undertake, in its 2018 report, a review of the scientific knowledge as dictated by the needs of the parties to the Montreal Protocol, taking into account those factors stipulated in Article 3 of the Vienna Convention, including estimates of the levels of ozone layer depletion attributed to the remaining potential ODS emissions and an assessment of the level of global ODS emissions below which the depletion of the ozone layer could be comparable to various factors, such as the natural variability of global ozone, its secular trend over a decadal timescale and the 1980 benchmark level; and
- requests the TEAP, in its 2018 report, to consider the following topics, among others: the impact of ODS phase-out on sustainable development; technical progress in the production and consumption sectors in the transition to alternatives and practices that eliminate or minimize ODS emissions to the atmosphere, taking into account those factors stipulated in Article 3 of the Vienna Convention; technically and economically feasible choices for the reduction and elimination of ODS in all relevant sectors, including through the use of alternatives, taking into account their performance, and technically and economically feasible alternatives to ODS in consumption sectors; their overall performance; the status of banks containing ODS and their alternatives, including those maintained for essential and critical uses, and



the options available for handling them; and accounting for the production and consumption in various applications and relevant sources of ODS and their alternatives.

In its decision (UNEP/OzL.Pro.27/CRP.7/Rev.1) on the TEAP organizational and membership changes, the MOP thanks:

- the TEAP for its outstanding reports and the individual members for their service and dedication;
- Masaaki Yamabe (Japan) for his long and outstanding efforts as Senior Expert of the TEAP;
- Lambert Kuijpers (the Netherlands) for his long and outstanding efforts as Co-Chair of the RAC and Heat Pumps TOC;
- Paul Ashford (UK) and Miguel Quintero (Colombia) for their long and outstanding efforts as Co-Chairs of the Flexible and Rigid Foams TOC; and
- Ashley Woodcock (UK) and Jose Pons Pons (Venezuela) for their long and outstanding efforts as Co-Chairs of the MTOC.

The MOP also:

- endorses the appointment of Marco Gonzalez (Costa Rica) and Suely Carvalho (Brazil) as Senior Experts for a two-year and a four-year term, respectively;
- encourages the outgoing Co-Chairs to provide support to the new Co-Chairs of the relevant TOCs to ensure a smooth transition;
- disbands the Chemicals TOC and the MTOC and establishes a new TOC, to be called the Medical and Chemicals TOC;
- endorses the appointment of Helen Tope (Australia) as Co-Chair of the Medical and Chemicals TOC for a term of two years; and
- endorses the appointment of Keiichi Ohnishi (Japan) and Jianjun Zhang (China) as Co-Chairs of the Medical and Chemicals TOC for a term of four years.

**COMPLIANCE AND DATA REPORTING ISSUES:** On Sunday, ImpCom President Nancy Seymour (Canada) reported on the 54th and 55th ImpCom meetings (UNEP/OzL.Pro.27/9-UNEP/OzL.Pro/ImpCom/55/2 and Add.1). She noted that the Democratic Republic of Congo, Dominica, Somalia and Yemen have yet to report for 2014. She reported cases of non-compliance involving Libya and Bosnia and Herzegovina, noting both have submitted plans of action to return to compliance. She said that the draft decision (UNEP/OzL.Pro.27/CRP.3) calls for no further action for Bosnia and Herzegovina and close monitoring of Libya. Delegates agreed to forward the draft decision to the HLS.

**Final Outcomes:** In its decision on non-compliance of Bosnia and Herzegovina (XXVII/[E]), the MOP recognizes that Bosnia and Herzegovina reported annual consumption for the controlled substances in Annex C, group I (HCFCs), for 2013 of 5.13 ozone depleting potential (ODP) tonnes, which exceeded the party's maximum allowable consumption of 4.7 ODP-tonnes for those controlled substances for that year, and was therefore in non-compliance.

The decision, *inter alia*:

- notes the party's submission of a plan of action to ensure its return to compliance with the Protocol's HCFCs consumption control measures in 2014 and subsequent years;

- notes that the party submitted an explanation for its non-compliance, which confirmed that it had introduced a comprehensive set of measures necessary to ensure future compliance;
- notes the party's submission of ODS data for 2014 showing that it was in compliance with its HCFC consumption obligations;
- notes that no further action is necessary in view of the party's return to compliance and its implementation of regulatory and administrative measures to ensure compliance for subsequent years; and
- agrees to monitor the party's progress on the implementation of its obligations under the Protocol.

In its decision on non-compliance of Libya (XXVII/[F]), the COP recognizes that the annual consumption reported by Libya of the controlled substances in Annex C, group I (HCFCs), of 144.0 ODP-tonnes for 2013 and 122.4 ODP-tonnes for 2014, exceeded the party's maximum allowable consumption of 118.38 ODP-tonnes for those controlled substances for those years, and that the party was therefore in non-compliance.

The decision, *inter alia*:

- notes Libya's submission of an action plan to ensure its return to compliance with the Protocol's HCFC control measures under which Libya commits itself to reducing its HCFC consumption from 122.4 ODP-tonnes in 2014 to no greater than: 122.3 ODP-tonnes in 2015; 118.4 ODP-tonnes in 2016 and 2017; 106.5 ODP-tonnes in 2018 and 2019; 79.95 ODP-tonnes in 2020 and 2021; and levels allowed under the Protocol in 2022 and subsequent years;
- monitors the enforcement of Libya's system for licensing imports and exports of ODS;
- imposes a procurement ban of air-conditioning equipment containing HCFCs in the near future and consideration of a ban on the import of such equipment;
- urges Libya to work with relevant agencies to implement its action plan to phase out HCFC consumption;
- monitors Libya's progress on implementing its action plan and HCFC phase-out, and stated that Libya should be treated as a party in good standing, further noting that Libya should continue to receive international assistance to enable it to meet those commitments; and
- cautions Libya that, if it fails to return to compliance, parties will consider measures that may include actions, such as ensuring that the supply of HCFCs, that are the subject of non-compliance, is ceased so that exporting parties are not contributing to a continuing situation of non-compliance.

**CTC DISCREPANCIES:** This item was addressed under the agenda item on other matters during Sunday's plenary session. The EU introduced a draft decision on ODS releases from production processes and opportunities to reduce releases (UNEP/OzL.Pro.27/CRP.2) and asked for time to discuss the proposal with other parties.

An informal group met Monday and Tuesday to consider the draft decision. In the group, parties discussed, *inter alia*: possible discrepancies between observed and reported CTC data, as they relate to bottom-up inventories and global top-down assessments; findings from a scientific workshop held in Zurich, Switzerland,

in October 2015, themed "Solving the Mystery of CTC," organized by the Stratosphere-Troposphere Processes and their Role in Climate (SPARC); the estimated lifetime of CTC; and removal of halon 2402 as this discrepancy was clarified by new data. The group agreed that the SPARC report findings would be presented at MOP 28, underscoring that the SAP will only provide an update to learn and benefit from the SPARC findings.

On Friday morning, plenary agreed to forward the CRP to the HLS.

**Final Outcome:** In its decision (UNEP/OzL.Pro.27/CRP.2/Rev.1), *inter alia*, the MOP:

- reiterates concern about the discrepancy between observed atmospheric concentrations and data on CTC reported in the 2014 TEAP and SAP assessment reports, indicating that the mismatch between bottom-up inventories and global top-down estimates of CTC remains unresolved;
- notes that derived CTC emissions, based on estimated lifetime and accurately measured atmospheric abundances, have become much larger over the last decade than those from reported production and usage, notwithstanding that some of the discrepancy could be explained by additional sources unrelated to reported production, such as contaminated soils and industrial waste, and that additional explanations could include underreported releases to the atmosphere and incorrect partial lifetimes (stratosphere, ocean or soil);
- recalls Decisions IV/12 (Classification of the Definition of Controlled Substances), X/12 (Emissions of ODS from Feedstock Applications), XVI/14 (Sources of CTC Emissions and Opportunities for Reductions), XVIII/10 (Sources of CTC Emissions and Opportunities for Reductions), XXI/8 (Sources of CTC Emissions and Opportunities for Reductions) and XXIII/8 (Investigation of CTC Discrepancy); and
- requests the TEAP and the SAP to continue their analysis of the discrepancies between observed atmospheric concentrations and reported data on CTC and to report and provide an update on their findings to MOP 28.

**FINANCIAL ISSUES RELATED TO TEAP'S ORGANIZATION:** This item was taken up under the agenda item on other matters, during Sunday's plenary session. Switzerland explained concerns raised by the TEAP report addendum, suggested creating a voluntary trust fund to support participation in TEAP, and volunteered to work informally with other parties and draft a CRP.

On Friday morning, during the Preparatory Segment plenary, Switzerland introduced UNEP/OzL.Pro.27/CRP.9, providing an outline of key points, including modalities of funding for TEAP members' participation. The plenary forwarded the draft decision to the HLS.

**Final Outcome:** In its decision (UNEP/OzL.Pro.27/CRP.9), the MOP, noting the existence of the means to receive voluntary contributions, separate from the trust funds for the Montreal Protocol and the Vienna Convention but managed by the Ozone Secretariat, to provide financial support for activities additional to the ones covered by the Vienna Convention and the Montreal Protocol, decides to, *inter alia*:

- maintain the current financial support for members of the assessment panels and their subsidiary bodies from Article 5 parties;
- request non-Article 5 parties that nominate experts to the assessment panels and their subsidiary bodies through their national focal points to obtain assurances or ensure they are otherwise satisfied that the nominated experts will be able to carry out their duties, including attendance at relevant meetings;
- invite parties to make voluntary financial contributions to members of the assessment panels and their subsidiary bodies from non-Article 5 parties to support their attendance at relevant meetings;
- note that the provision of such support does not detract from the responsibility of the non-Article 5 nominating party to obtain assurances or ensure it is otherwise satisfied that the nominated experts have sufficient support to carry out their duties, including attendance at relevant meetings; and
- request the Ozone Secretariat to reinstitute administrative and organizational support for the TEAP's work to reduce the administrative burden on assessment panel members where possible.

**UNWANTED IMPORT OF PRODUCTS AND EQUIPMENT:** This item was taken up on Sunday under the agenda item on other matters. Kyrgyzstan presented its CRP (UNEP/OzL.Pro.27/CRP.4), submitted with Armenia, Belarus, the EU, Kyrgyzstan, and the Russian Federation, on avoiding the unwanted import of products and equipment containing or relying on HCFCs. Co-Chair Rachmawaty suggested the MOP return to this CRP once it was translated into all languages.

On Monday, Co-Chair Rachmawaty reported that the finalized version of the draft decision, introduced by Kyrgyzstan and others, to amend MOP Decision X/9 on establishing a list of countries not wishing to import products and equipment whose continuing functioning relies on substances specified in Annex A and Annex B of the Protocol (UNEP/OzL.Pro.27/CRP.4) was available. Plenary forwarded the draft decision to the HLS.

**Final Outcome:** In its decision (UNEP/OzL.Pro.27/CRP.4), the MOP, *inter alia*:

- invites those parties that do not permit the importation of products and equipment containing or relying on substances specified in Annex C from any source, to inform the Secretariat, on a voluntary basis, that they do not consent to the importation of such products and equipment; and
- requests the Secretariat to maintain a list of parties that do not want to receive products and equipment containing or relying on substances specified in Annex C to be distributed to all parties by the Secretariat and updated on an annual basis.

**CONSIDERATION OF THE MEMBERSHIP OF MONTREAL PROTOCOL BODIES FOR 2016:** On Sunday, Co-Chair Rachmawaty introduced this item, saying that nominations should be forwarded to the Secretariat for consideration at the HLS. The HLS adopted the nominations on Friday morning.

**Members of the Implementation Committee:** In its decision (XXVII/II), the MOP confirms the positions of Bosnia and Herzegovina, Cuba, Mali, Pakistan and the UK as members



of the ImpCom for one further year and selects, *inter alia*, Bangladesh, Canada, Haiti and Kenya as members of the ImpCom for a two-year period beginning on 1 January 2016;

It also notes the selection of Iftikhar ul Hassan Shah (Pakistan) to serve as President and Nancy Seymour (Canada) to serve as Vice-President and Rapporteur of the ImpCom for one year beginning on 1 January 2016.

**Members of the MLF ExCom:** In its decision (XXVII/JJ), the MOP decides to endorse the selection of Austria, Belgium, Canada, Germany, Japan, the Russian Federation and the US as members of the ExCom representing non-Article 5 parties and the selection of Argentina, Cameroon, China, Egypt, India, Jordan, and Mexico as members representing Article 5 parties for one year beginning 1 January 2016.

It also decides to note the selection of Agustin Sanchez (Mexico) and Krajnik to serve as Chair and Vice-Chair, for one year beginning 1 January 2016.

**Co-Chairs of the OEWG:** In its decision (XXVII/KJ), the MOP endorses the selection of Krajnik and Leslie Smith (Grenada) as Co-Chairs of the Montreal Protocol OEWG in 2016.

**DATES AND VENUES FOR COP 11 OF THE VIENNA CONVENTION AND MOP 28 OF THE MONTREAL PROTOCOL:** During Friday morning's plenary, MOP 27 President Poter reminded delegates of Rwanda's offer to host MOP 28 in 2016 in Rwanda and MOP 26's agreement that Rwanda would host MOP 28. She read a message from the delegation of Rwanda, reconfirming that Rwanda is ready and honored to host this meeting in November 2016.

The Dominican Republic then offered to host in 2017. MOP 27 President Poter said this offer would be noted in the report.

### A BRIEF ANALYSIS OF MOP 27

*I have walked that long road to freedom. I have tried not to falter; I have made missteps along the way. But I have discovered the secret that after climbing a great hill, one only finds that there are many more hills to climb. I have taken a moment here to rest, to steal a view of the glorious vista that surrounds me, to look back on the distance I have come. But I can only rest for a moment...and I dare not linger, for my long walk is not ended. – Nelson Mandela*

As MOP 27 closed in the early morning hours of Friday, 6 November, delegates applauded, happily hugged and patted each other on the back. After six years of debate, with many parties refusing to even discuss a possible HFC amendment in any depth, MOP 27 was finally able to convene a contact group on the issue. Delegates held fruitful exchanges and shared their concerns as they embarked on what could be a long journey. In the end, the MOP decided to convene extraordinary meetings to be held during 2016, with a view to possible adoption of an HFC amendment.

Arriving at this outcome was not easy. During the final day of MOP 27, delegates' hope of capturing the broad agreement on certain ideas discussed in the contact group, including endorsing a 2016 goal to adopt an HFC amendment and authorizing the

necessary steps to make such a goal feasible, nearly faltered when an Article 5 country continued to apply steady resistance.

These cliff-hanging final hours of negotiation were a sharp reminder of the lingering mistrust among some Article 5 countries that was bred during the HCFC phase-out. Some felt misled by being pushed into HFCs in order to accelerate the HCFC phase-out, only to be told to shift away from HFCs just after they had invested heavily into converting to HFCs. Others felt they never received the financial support from the MLF they thought they had been promised, or the financial support offered was too little, with too many strings attached, and not enough flexibility.

The negotiations also highlighted the potential hazards of the Montreal Protocol's tradition of consensus decision-making as well as on the insistence by many parties of honoring the old diplomatic maxim, now explicitly enshrined in the contact group's mandate, that "nothing is agreed until everything is agreed." Ultimately, delegates struck a compromise on going forward, but not before raising, in the minds of many, the potential for one country to use the Protocol's preference for consensus-building to squeeze out additional concessions.

This brief analysis examines how the MOP's decision has put the Protocol firmly on the road toward developing an amendment that may inject new life and relevance into the Protocol. The analysis also considers how this agreement has given the "ozone family" an opportunity to reflect on lessons learned from implementing other amendments, start healing the wounds caused during the HCFC phase-out negotiations, and rebuild the trust among ozone family members.

### THE LONG ROAD TO THE CONTACT GROUP, BUT MILES STILL TO GO

During MOP 27's opening plenary, many countries appeared eager to manage expectations, emphasizing that approval by the resumed session of OEWG 36 on a mandate for a contact group to discuss the feasibility and ways of managing HFCs was a notable achievement in and of itself. "It's a baby step, but an important one," stressed one seasoned participant, "For six years we have argued about whether or not we could discuss the issue at all...at least now it's no longer taboo." Another participant countered "We may yet have many years of talking left to endure, but at least now we are talking."

The contact group started with the shadow of mistrust built up from disagreements over the HCFC phase-out and six years of acrimonious debate about whether the management of HFCs belonged under the Montreal Protocol. On the former, Article 5 countries repeatedly employed examples from their HCFC experience, such as issues involving second and third conversions and the reputed lack of MLF help on technology transfer and IPR cost, to illustrate they did not want to repeat the experience by "walking down the long road" to a possible HFC amendment.

A large number of these complaints involved the MLF, expected to be one of the pillars of any HFC regime. Article 5 countries alleged that the MLF ExCom limited their choice of strategies and technologies to employ, would not permit flexibility in the prioritizing of sectors, underpriced projects in





some instances, and mishandled or ignored issues, such as those around second and third conversions, small- and medium-sized enterprises, and IPRs.

In Dubai, some Article 5 countries continued to debate which road to take. They questioned whether HFCs can and/or should be handled under the Montreal Protocol, stressing that HFCs are GHGs, not ODS, and therefore should be addressed under the UNFCCC. A few countries even wondered if HFCs were allowed under the Montreal Protocol, questioning if addressing HFCs under the Protocol would set a precedent for addressing other non-ozone-depleting substances.

For their part, some HFC amendment proponents expected the skeptics to “run out the clock” “by talking us to death and constantly adding to the list of challenges” before allowing discussion to turn to solutions. They expected this to be followed by discussion of the amendment proposals at some indeterminate time in the future. Resistance by a few Article 5 countries to a simple inventory of the ideas being offered to the group, even as a non-paper or virtual projection to aid discussion and identify commonalities, reinforced suspicions that some participants came to room solely to “apply the brakes.”

#### **MORE HILLS TO CLIMB**

Article 5 countries insisted on adequately airing concerns during initial contact group discussions, opposing early suggestions to focus on the text of the amendment proposals. Several countries adamantly emphasized the need to first address challenges, stressing the need to share lessons learned from the HCFC phase-out and their apprehensions about an HFC phase-down. One explained, “This is about trust building. This is about knowing you are not only listening, but that you hear us.”

The airing of the “challenges exercise” proved cathartic. But by the end of Monday’s contact group session, many Article 5 and non-Article 5 countries had tired of hearing about challenges and were eager to start “traveling further down the road” and discuss solutions. “We can repeatedly revisit the list of challenges, but really we all know them well by now,” declared one Article 5 country. “It does us little good if non-Article 5 countries are not going to offer us solutions.”

Non-Article 5 countries claimed that by providing more specific examples of Article 5 country HCFC implementation issues, their understanding of the latter’s concerns had improved. This was evidenced on Tuesday when they came ready to offer concessions, flexibility and compromise on key issues.

Encouraged by what they heard, Article 5 countries began taking some tentative steps. These steps, combined with a few behind-the-scenes informal-informals on Wednesday evening, helped the contact group reach what they deemed a “meeting of the minds” on possible solutions to several challenges posed by a possible HFC amendment. These challenges included implementation flexibility, second and third conversions, funding coverage, and guidance to the ExCom.

However, bumps in the road still exist and there are still many hills left to climb. This was evidenced by the final day of deliberations at MOP 27. Countries, eager to avoid the complete break-down of negotiations, focused on drafting a decision that would at least set out a pathway for negotiations on an amendment to continue. To this end, some countries,

long skeptical of an amendment, expressed sudden support for negotiations. Some were even tabling possible amendment text on the possible exemption for high ambient temperature countries.

Still, one country’s opposition to the draft decision led to approximately fifteen hours of often-frustrating informal talks and a series of concessions to bring on board the lone holdout. Several delegations and the Co-Conveners tried to put a positive spin on the situation, saying that during the long, frank discussions, “Everyone got to understand each other’s thinking better, and that will help us during negotiations next year.”

Others suggested that the protracted MOP 27 discussions were only the beginning. Informally, they said that the 2016 negotiations may be arduous and, once again, test the ozone family’s reliance on consensus, even though the Protocol allows for adoption by a two-thirds vote of parties present and voting.

Discussions on the HFC amendment, as well as in other informal discussions on decisions ranging from the terms of reference for the assessment panels to requests for the TEAP to provide information on alternatives to ODS, have also suggested the absence of “mutual trust” among a few members of the ozone family. This, they posited, led to the need for more intimate consultations on the meeting’s margins to hash out some of the underlying issues.

Several Article 5 countries, for example, expressed concerns about the terms of reference of the scientific assessment panels, questioning even the science of the assessment panels, and wanting both greater flexibility from and a tighter leash on the ExCom. The panels and the MLF are key pillars of the Montreal Protocol architecture, often pointed to as reasons for the Protocol’s success. However, the current mistrust in a few of these institutions, which are likely to have starring roles in implementing any HFC amendment, suggests the importance of building and re-building trust among the ozone family for any tangible progress to be made. This may be a process that could prove difficult, given the tone of some of the final hours of the informal-informals. For instance, normally positive, optimistic delegates were seen retreating with their heads in their hands, rubbing their eyes and looking exasperated, perhaps at having tried everything they could think of to reach consensus.

#### **ONLY ONE DIRECTION TO GO?**

After MOP 27’s dialogue, most participants seem to accept that, now that the contact group has been established, the eventual adoption of an HFC amendment is inevitable. Some were even arguing that the inevitable is necessary for the Montreal Protocol to continue its success. One observer was overheard saying that if an HFC amendment is not adopted, the Protocol will start meeting biennially until it meets “the end of its road” when the HCFC phase-out is complete, meaning the Protocol’s work would be done. As a result, many noted that this is ultimately a one-way street.

One seasoned participant familiar with the amendment negotiations of the past was heard insisting, “There is only one direction to go, even if we have to carry some parties while they drag their feet. Now it’s just a question of—when we finally get there—how ambitious it will be, and whether its name will be Kigali or Punta Cana.”

## UPCOMING MEETINGS

**UNFCCC COP 21:** The 21st session of the Conference of the Parties to the UNFCCC will take place in December 2015, in Paris, France. **dates:** 30 November - 11 December 2015 **location:** Paris, France **contact:** UNFCCC Secretariat **phone:** +49-228 815-1000 **fax:** +49-228-815-1999 **email:** secretariat@unfccc.int **www:** <http://www.unfccc.int>

**CCAC High Level Assembly:** The Climate and Clean Air Coalition to Reduce Short-Lived Climate Pollutants (CCAC) High-Level Assembly will gather CCAC ministers and heads of partner organizations to evaluate the CCAC's progress, provide input on the direction of the CCAC's future work and learn about the latest policy and scientific developments related to short-lived climate pollutants (SLCPs). **date:** 8 December 2015 **location:** Paris, France **contact:** CCAC **www:** <http://www.ccacoalition.org/>

**ATMOsphere Asia 2016:** ATMOsphere Asia 2016 brings together decision-makers from industry and government to discuss the latest natural refrigerant technologies, market trends and regulatory issues in Asia. **dates:** 9-10 February 2016 **location:** Tokyo, Japan **contact:** ATMOsphere Secretariat **phone:** +81-3-3287-7330 or +32-22-30-37-00 **email:** info@atmo.org **www:** <http://www.atmo.org/events.details.php?eventid=36>

**Second Meeting of the UNEP Open-ended Committee of Permanent Representatives:** The Open-ended Committee of Permanent Representatives will prepare for the next meeting of the UN Environment Assembly (UNEA) of UNEP. **dates:** 15-19 February 2016 **location:** Nairobi, Kenya **contact:** Jorge Laguna-Celis, Secretary of Governing Bodies **phone:** +254-20-7623431 **email:** unep.sgb@unep.org **www:** <http://www.unep.org/about/sgb>

**Global Climate Observation: The Road to the Future:** This conference will allow producers and users of climate observations and other stakeholders the opportunity to discuss the current monitoring of the Essential Climate Variables (ECVs) and to highlight possible new areas for ECVs. **dates:** 2-4 March 2016 **location:** Amsterdam, the Netherlands **contact:** GCOS Science Conference Organizing Committee **phone:** +49-6151-807-6740 **fax:** +49-6151-807-6150 **email:** GCOS-SC@eumetsat.int **www:** <http://www.gcos-science.org/>

**Committee on Mercury (INC-7):** The seventh meeting of the Intergovernmental Negotiation Committee (INC-7) for the Minamata Convention on Mercury is scheduled to convene in Jordan. **dates:** 10-15 March 2016 **location:** Jordan **contact:** Sheila Logan, Interim Secretariat **phone:** +41-22-917-8511 **fax:** +41-22-797-3460 **email:** Sheila.logan@unep.org **www:** <http://www.mercuryconvention.org/Negotiations/INC7/tabid/4506/Default.aspx>

**UNGA High-level Thematic Debate: Implementing Commitments on Sustainable Development, Climate Change and Financing:** The President of the UN General Assembly, Mogens Lykketoft, will convene a high-level thematic debate to support coherent implementation of commitments relating to sustainable development, climate change and financing. The event aims to mobilize and catalyze multilateral, collective, multi-stakeholder and individual

actions and commitments in these areas, and to support early progress on the SDGs. **dates:** 11-12 April 2016 **location:** UN Headquarters, New York **contact:** Office of the President of the UNGA **email:** dowlatshahi@un.org **www:** <http://www.un.org/pga/70/2015/09/14/opening-speech/>

**ATMOsphere Europe 2016:** ATMOsphere Europe 2016 brings together decision-makers from industry and government to discuss the latest natural refrigerant technologies, market trends and regulatory issues in Europe. **dates:** 19-20 April 2016 **location:** Barcelona, Spain **contact:** ATMOsphere Secretariat **phone:** +32-22-30-37-00 **email:** info@atmo.org **www:** <http://www.atmo.org/europe2016>

**76th Session of the MLF ExCom:** The 76th session of the Montreal Protocol Multilateral Fund (MLF) Executive Committee (ExCom) will meet in Montreal, Canada. **dates:** 9-13 May 2016 **location:** Montreal, Canada **contact:** MLF Secretariat **phone:** +1-514-282-1122 **fax:** +1-514-282-0068 **email:** secretariat@unmfs.org **www:** <http://www.multilateralfund.org>

**ATMOsphere Australia 2016:** ATMOsphere Australia 2016 brings together decision-makers from industry and government to discuss the latest natural refrigerant technologies, market trends and regulatory issues in Australia. **dates:** 16 May 2016 **location:** Melbourne, Australia **contact:** ATMOsphere Secretariat **phone:** +32-22-30-37-00 **email:** info@atmo.org **www:** <http://www.atmo.org/events.details.php?eventid=43>

**Tenth Meeting of the Open-ended Working Group of the Basel Convention (OEWG-10):** The tenth meeting of the Open-ended Working Group of the Basel Convention (OEWG-10) will consider issues in advance of COP 13, including: strategic issues; scientific and technical matters; legal, governance and enforcement matters; international cooperation and coordination; and the programme of work and budget. OEWG 10 will consider revising the technical guidelines on e-waste adopted by COP-12 on an interim basis. **dates:** 30 May-2 June 2016 **location:** Nairobi, Kenya **contact:** BRS Secretariat **phone:** +41-22-917-8218 **fax:** +41-22-917-8098 **email:** brs@brsmeas.org **www:** <http://www.basel.int>

**42nd Sessions of the UNFCCC Subsidiary Bodies:** The 42nd sessions of the subsidiary bodies to the UNFCCC are expected to take place in May 2016. **dates:** 16-26 May 2016 **location:** Bonn, Germany **contact:** UNFCCC Secretariat **phone:** +49-228 815-1000 **fax:** +49-228-815-1999 **email:** secretariat@unfccc.int **www:** <http://www.unfccc.int>

**Second Meeting of the UN Environment Assembly (UNEA):** The UNEA of UNEP will convene for the second time, representing the highest level of governance of international environmental affairs in the UN system. **dates:** 23-27 May 2016 **location:** Nairobi, Kenya **contact:** Jorge Laguna-Celis, Secretary of Governing Bodies **phone:** +254-20-7623431 **email:** unep.sgb@unep.org **www:** <https://www.myunea.org>

**50th Meeting of the GEF Council:** The GEF Council meets twice a year to approve new projects with global environmental benefits in the GEF's focal areas, and in the GEF's integrated approach programmes. **dates:** 6-9 June 2016 **location:**





Washington D.C., US contact: GEF Secretariat phone: +1-202-473-0508 fax: +1-202-522-3240 email: [secretariat@thegef.org](mailto:secretariat@thegef.org) www: <https://www.thegef.org/gef/calendar-date/2016-06>

**ATMOsphere America 2016:** ATMOsphere America 2016 brings together decision-makers from industry and government to discuss the latest natural refrigerant technologies, market trends and regulatory issues in North America. dates: 16-17 June 2016 location: Chicago, US contact: ATMOsphere Secretariat phone: +32-22-30-37-00 email: [info@atmo.org](mailto:info@atmo.org) www: <http://www.atmo.org/events.details.php?eventid=44>

**37th Meeting of the Open-Ended Working Group of the Montreal Protocol:** OEWG 37 will meet in July 2016. It will be held back-to-back with an Extraordinary session of the Meeting of the Parties to the Montreal Protocol. dates: July 2016 location: TBC contact: Ozone Secretariat phone: +254-20-762-3851 fax: +254-20-762-0335 email: [ozoneinfo@unep.org](mailto:ozoneinfo@unep.org) www: <http://conf.montreal-protocol.org/>

**Quadrennial Ozone Symposium 2016:** The next Quadrennial Ozone Symposium will include scientific papers on all aspects of atmospheric ozone such as: tropospheric ozone; past and future budgets and trends and long-range transport; observations and budgets of trace constituents related to atmospheric ozone; and ozone chemistry, sources, sinks and budgets. dates: 4-9 September 2016 location: Edinburgh, UK contact: Sophie Godin-Beekmann phone: +33-1-80-28-54-99 email: [beekmann@latmos.ipsl.fr](mailto:beekmann@latmos.ipsl.fr) www: <http://www.ozone-symposium-2016.org/>

**Eleventh Meeting of the Rotterdam Convention Chemical Review Committee (CRC-12):** The CRC will convene to consider, *inter alia*: notifications for atrazine, and DGDs for carbosulfate and carbofuran. It will also consider notifications found to meet Annex I criteria. dates: 12-16 September 2016 location: Rome, Italy contact: BRS Secretariat phone: +41-22-917-8729 fax: +41-22-917-8098 email: [brs@brsmeas.org](mailto:brs@brsmeas.org) www: <http://www.pic.int>

**Twelfth Meeting of the Persistent Organic Pollutants Review Committee (POPRC-12):** POPRC-12 will convene to consider, *inter alia*: the draft risk profiles for dicofol and PFOA; further information related to Annex F for decaBDE; and the draft risk management evaluation for SCCPs. dates: 19-23 September 2016 location: Rome, Italy contact: BRS Secretariat phone: +41-22-917-8729 fax: +41-22-917-8098 email: [brs@brsmeas.org](mailto:brs@brsmeas.org) www: <http://www.pops.int>

**28th Meeting of the Parties to the Montreal Protocol:** MOP 28 is scheduled to consider a number of issues, including HFCs management and nominations for critical- and essential-use exemptions. dates: November 2016 location: Kigali, Rwanda contact: Ozone Secretariat phone: +254-20-762-3851 fax: +254-20-762-0335 email: [ozoneinfo@unep.org](mailto:ozoneinfo@unep.org) www: <http://conf.montreal-protocol.org/>

## GLOSSARY

CFCs	Chlorofluorocarbons
COP	Conference of the Parties
CRP	Conference room paper
CTC	Carbon tetrachloride
CUEs	Critical-use exemptions
CUN	Critical-use nomination
EEAP	Environmental Effects Assessment Panel
EUEs	Essential use exemptions
ExCom	Executive Committee
ExMOP	Extraordinary MOP
FSM	Federated States of Micronesia
GHG	Greenhouse gases
GWP	Global warming potential
HCFCs	Hydrochlorofluorocarbons
HFCs	Hydrofluorocarbons
HLS	High-level Segment
ImpCom	Implementation Committee
IPRs	Intellectual property rights
MBTOC	Methyl bromide TOC
MLF	Multilateral Fund
MOP	Meeting of the Parties
MTOC	Medical TOC
ODS	Ozone depleting substances
OEWG	Open Ended Working Group
ODP	Ozone depleting potential
RAC	Refrigeration and air conditioning
SAP	Scientific Assessment Panel
TEAP	Technology and Economic Assessment Panel
TOC	Technical Options Committee
UAE	United Arab Emirates
UNEP	UN Environment Programme
UNFCCC	UN Framework Convention on Climate Change
UV	Ultraviolet