

# 行政院所屬各機關因公出國人員出國報告書 (出國類別：國際會議)

## 維也納第九次締約國大會暨 蒙特婁議定書第二十三次締約國會議 與會情形報告

服務機關： 行政院環境保護署 外交部  
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                  謝議輝 助理環境技術師  
派赴國家： 印尼－峇里島  
                  (Bali, Indonesia)  
出國期間： 100 年 11 月 21 至 11 月 25 日  
報告日期： 100 年 12 月 20 日



## 摘要

維也納公約第 9 次暨蒙特婁議定書第 23 次締約方大會，於本（100）年 11 月 21 日印尼舉行，計有來自全球 196 個締約國家代表團超過 500 人參加，共同協商研擬更具有執行效力之管制規範，以達成削減臭氧層破壞物質（Ozone Depleting Substances, ODS）及保護生態環境與人類健康免受額外紫外線危害的目標。本署為掌握蒙特婁議定書管制趨勢，並向國際宣揚臺灣的遵循成果，空保處簡副處長慧貞率外交部條法司楊科長登仕及財團法人工業技術研究院等參加，透過大會宣揚我國積極參與國際公約的決心。

本次大會中討論的議題包括：（1）締約方遵循議定書情形、（2）各國使用於國際航行船隻維修之 ODS 消費量計算、（3）要求技術與經濟評估委員會 TEAP（Technology and Economic Assessment Panel）諮詢專家提出 HCFCs 技術/經濟/環境兼顧之替代品成本及開發中國家採用情形、（4）原料及製程試劑使用情形、（5）未來三年多邊基金增資數量，但亦有無法達成共識的討論議題，包括將常作為 ODS 替代品之氫氟碳化物（HFCs）納入管制及溴化甲烷用途調查等重要關鍵議題。

為向國際表達我國積極參與國際公約，並遵循蒙特婁議定書已開發國家之管制規範，我國代表團陸續會晤印尼環境部長 Mr. Balthasar Kambuaya、印尼環境部國際合作處處長 Mr. Rasio Ridho Sani、UNEP 臭氧祕書處執行秘書 Mr. Marco González、美國代表 Mr. Tom Land、緬甸代表工業局重工業規劃處副處長 Mr. Myint SDE、孟加拉國會議員 Mr. Alhaj A.S.M. Feroz, M.P 等，展現我國在地球環境保護工作成果，除獲對方肯定與讚賞外，並建立雙方未來環保合作機會窗口掌握國際動態，表達我國未來能更實質參與國際公約的積極意願，共同重視臭氧層保護及相關氣候變遷等環境議題。



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# 維也納第九次締約國大會暨

## 蒙特婁議定書第二十三次締約國會議

### 與會情形報告

#### 壹、 前言

- 一、 1930 年美國 DuPont 開發氟氯碳化物(Chlorofluorocarbons, 簡稱 CFCs) 後, 由於具有穩定、安全、便宜、不可燃、低毒性, 廣泛應用在塑膠發泡、噴霧推進、冷凍空調系統、電子金屬零組件清洗溶劑、氣喘醫療、海龍滅火器等用途, 便以 Freon 為商品名, 並大量製造取代當時普遍使用的二氧化硫與氨等具毒性溶劑。
- 二、 1970 年代隨著 CFCs 大量在消費市場使用, 在大氣環境中亦不斷排放累積, 經科學家研究發現 CFCs 對全球環境的改變及潛在衝擊, 於對流層中幾乎不會與任何物質反應, 惟擴散至平流層後, 受到紫外線照射而釋出高活性氯原子與溴原子, 再與臭氧反應, 致使臭氧層的濃度變稀薄, 而含有氫的 HCFCs 及 HBFCs 對臭氧層破壞力相對較小。
- 三、 1980 年代南北極臭氧層厚度極據變化, 由其在春季時南極上空的大氣臭氧含量約減少 40% 以上, 臭氧層破洞首度被觀察, 而其實臭氣洞並不是真正有個「洞」, 而只是表示臭氧含量反常稀少的區域。如果厚度低至 220 Dobson Unit 以下, 即稱為臭氧層破洞。所謂 Dobson Unit (DU) 是指標準狀態下(0°C, 1 大氣壓), 氣體厚度為 0.01mm 之氣體量單位。
- 四、 1985 年聯合國環境規劃署(United Nations Environment Programme, 簡稱 UNEP) 召集與協調各國共同攜手研商對策, 在奧地利維也納連署 28 個國家通過維也納保護臭氧層公約(Vienna Convention for the Protection of the Ozone Layer), 以保護臭氧層持續遭受到破壞, 並研擬具體管制措施管制臭氧層破洞, 至今維也納公約已受到 197 個國

家批准。

五、 1987 年 9 月 16 日聯合國環境規劃署於在加拿大蒙特婁市進一步通過具有實質管制規範及約束力的「蒙特婁議定書 (Montreal Protocol on Substances that Deplete the Ozone Layer)」，簽屬國家包括，當時的 24 個國家及歐洲經濟體，管制納入氟氯碳化物 (CFCs) 及海龍 Halons-1301、1211、2402 等 8 種列管物質，致力減少產生及使用破壞臭氧層物質 (Ozone Depleting Substances, ODS)，以促進國家間合作研究臭氧機制、檢視排放現況及相關資訊交流的架構協議。

六、 1989 年 1 月 1 日蒙特婁議定書生效後，包括已開發國家 (non-Article 5 國家) 及開發中國家 (Article 5)，分別自 1989 年及 1996 年起分階段削減 CFCs 與 Halons 之生產與消費量，至今「蒙特婁議定書」已成為聯合國 197 個國家皆已承諾遵循之國際環保公約。

七、 持續修訂蒙特婁議定書內容，以加快削減破壞臭氧層物質使用及範圍，各締約國持續針對各種 ODS 協商新增之物質與管制規定，陸續補充於「修正案 (Amendment)」及「調整案 (Adjustment)」中。「修正案」是用來增加新的管制方案或物質，需經一定數目的締約國批准後方具有效力；「調整案」則是用來調整現有管制措施內容，協商決議一旦採用，即自動生效，無需再經過締約國批准程序。

八、 公約、議定書及各修正案通過情形，包括 1990 年的倫敦修正案、1992 年的哥本哈根修正案、1997 年的蒙特婁修正案及 1999 年的北京修正案，如表一：

(一) 倫敦修正案：1990 年 6 月於英國倫敦召開第 2 次締約國大會 (MOP2)，修訂議定書之管制措施，擴大管制物質範圍，新增 10 種 CFCs、四氯化碳 (Carbon Tetrachloride)、三氯乙烷 (methyl chloroform)、1,1,1-三氯乙烷 (1,1,1-trichloroethane) 於 ODS 管制



清單中，並決議五種 CFCs 及三種海龍(Halons)於 2000 年之前停止生產。此外，設立多邊基金 (Multilateral Fund) 促進議定書的推廣執行，資助開發中國家執行議定書減量方案時可能需承擔的部分與支持資訊流通活動，包括：技術援助、教育訓練及秘書處行政工作等。基金每三年重新審議編列。已於 1992 年 10 月正式生效，至今有 196 個締約國批准此修正案。

(二) 哥本哈根修正案：1992 年 11 月於丹麥哥本哈根召開第 4 次締約國大會 (MOP4)，再度擴大管制物質範圍，包括新增溴化甲烷 (Methyl Bromide)、氟溴烴 (Hydrobromofluorocarbons, HBFCs) 及氟氯烴 (HCFCs) 管制，另決議將現有管制物質之削減時程大幅提前，自 1994 年 1 月 1 日起除必要用途外禁止生產海龍，自 1996 年 1 月 1 日起將 CFCs、四氯化碳、1,1,1-三氯乙烷、HBFC 等物質的消費量削減至零，並啟動「未遵約程序」(non-compliance procedure)，成立推展委員會 (Implementation Committee)，來審查締約國未遵守約定之案例與相關後續處置。已於 1994 年 6 月正式生效，截至 2012 年 1 月 12 日止，共計有 194 個締約國批准此修正案。

(三) 蒙特婁修正案：1997 年第 9 次締約國大會 (MOP9) 於加拿大蒙特婁舉行，並通過各國應採用 ODS 的進出口許可制度 (licensing system)，決議對未批准哥本哈根修正案的締約國進行溴化甲烷貿易禁止。已於 1999 年 11 月正式生效，截至 2012 年 1 月 12 日止，計有 185 個締約國批准此修正案。

(四) 北京修正案：1999 年 11 月於中國大陸北京召開之第 11 次締約國會議通過北京宣言，同意納入管制 HCFCs 生產管制，並訂定期削減期程，此外，要求締約國提報使用於檢疫與裝運前處理的溴化甲烷用量。已於 2002 年 2 月正式生效，截至 2012 年 1 月 12 日止，計有 172 個締約國批准此修正案。

表 1、蒙特婁議定書及其修正案之批准情形

公約/修正案	通過年	批准之締約國總數
維也納公約	1985	197
蒙特婁議定書	1987	197
倫敦修正案	1990	196
哥本哈根修正案	1992	194
蒙特婁修正案	1997	185
北京修正案	1999	172

資料來源：[http://ozone.unep.org/Ratification\\_status/](http://ozone.unep.org/Ratification_status/)

(五) MOP19 通過調整案：2007 年 9 月第 19 次締約國會議，因「聯合國技術與經濟評估委員會 2006 年評估報告」指出，多數 HCFCs 用途已具有經濟有效之環境友善替代品或技術，於 MOP19 決議加速 HCFCs 廢除時程，已開發國家（Article 2 所列國家）HCFCs 消費量與生產量削減時程由 2010 年達成基準量 65% 的削減率，提高為削減 75%，至 2015 年達成 90% 的削減率，在 2020 至 2030 年間得保留基準量 0.5% 供既有設備維護需求，2030 年後完全消滅 HCFCs，該項決議文業於 97 年 5 月 14 日正式生效。

九、聯合國環境規劃署臭氧秘書處於 2011 年 11 月 21-25 日在印尼—峇里島（Bali, Indonesia）舉行維也納第 9 次締約國大會（COP9）暨蒙特婁議定書第 23 次締約國會議（MOP23），約計超過 500 人與會，包括各締約國政府機關代表、聯合國周邊組織、非政府組織（Non-Governmental Organisation, NGO）及相關產業團體共襄盛舉，圖 1、2。



圖 1、MOP23 會議地點 Bali Nusa Dua Convention Centre

資料來源：<http://www.baliconventioncenter.com>



圖 2、MOP23 大會會場

## 貳、 我國代表團

本署為掌握蒙特婁議定書管制趨勢，並向國際宣揚臺灣的遵循成果，以財團法人工業技術研究院名義，非政府組織(NGO)身分參加，由本署空保處簡副處長慧貞率外交部條法司楊科長登仕及財團法人工業技術研究院等參加，共計 7 人與會，表 1、2。

表 2、成員任務分工表簡要說明如下

單位	職稱	姓名	任務分工
行政院環境保護署空氣品質保護及噪音管制處	副處長	簡慧貞	團長/對外交流
	薦任技士師	何佳祥	資訊蒐集/會議紀錄
	助理環境技術	謝議輝	資訊蒐集/會議紀錄
外交部條約法律司	科長	楊登仕	法律及對外交流
工業技術研究院 能源與環境研究所	研究員	楊斐喬	技術資訊/對外交流
	副研究員	連振安	庶務行政安排
	副研究員	徐麗滢	庶務行政安排

## 參、 出國行程

表 3、成員任務分工表簡要說明如下

2011 年 11 月 21 日	啓程
2011 年 11 月 22 日至 11 月 25 日	報到、出席會議/活動
2011 年 11 月 26 日	返程

## 肆、 與會目的

參與本次會議，有助於掌握趨勢及研擬我國因應策略，對於本署國際環保業務之推動，極有助益，大會中討論重要之議題包括：

- 一、 締約方遵循議定書情形。
- 二、 各國使用於國際航行船隻維修之 ODS 消費量計算、
- 三、 要求技術與經濟評估委員會 TEAP (Technology and Economic Assessment Panel) 諮詢專家提出 HCFCs 技術/經濟/環境兼顧之替代品成本及開發中國家採用情形。
- 四、 原料及製程試劑使用情形。
- 五、 未來三年多邊基金增資數量，但亦有無法達成共識的討論議題，包括將常作為 ODS 替代品之氫氟碳化物 (HFCs) 納入管制及溴化甲烷用途調查等重要關鍵議題。

## 伍、 會議議程

本年度蒙特婁議定書締約國會議於印尼－峇里島 (Bali, Indonesia) 召開，2011 年 11 月 21-25 日為期 5 天的會議，分為 2011 年 11 月 21-23 日 3 天的預備會議及 11 月 24-25 日 2 天的高層會議。會議議程如下：

- 一、 預備會議 (2011 年 11 月 21 日至 23 日)
  - (一) 預備會議開幕
    1. 印尼政府代表致辭。
    2. 聯合國環境規劃署代表致辭。
  - (二) 組織事項
    1. 通過預備會議議程。

2. 安排工作。

(三) 維也納公約及蒙特婁議定書問題：

1. 維也納公約及蒙特婁議定書之財務報告和預算信託基金。
2. 維也納公約、蒙特婁議定書及蒙特婁議定書修正案的批准情形。

(四) 蒙特婁議定書問題

1. 多邊基金增資問題
  - (1) 技術及經濟評估小組補充報告。
  - (2) 延長匯率機制。
2. 蒙特婁議定書第 2 條豁免相關的問題
  - (1) 2012 年和 2013 年關鍵用途豁免提名。
  - (2) 溴化甲烷的檢疫和裝運前用途。
  - (3) 實驗室和分析用途。
  - (4) CFC-113 用於航空必要用途豁免。
  - (5) 破壞臭氧物質用作加工劑有關的問題。
  - (6) 延長匯率機制。
  - (7) 技術和經濟評估小組更新提名程序和迴避準則。
  - (8) 船隻臭氧消耗物質的使用。
  - (9) 臭氧消耗物質其他替代資訊。
  - (10) 溴化甲烷在非洲地區使用。
  - (11) 蒙特婁議定書建議修訂。
    - i. 加拿大，墨西哥和美國。
    - ii. 密克羅尼西亞。
  - (12) 重點領域評估小組 2014 年 4 年期報告。
  - (13) 淘汰副產品 HCFC- 23 排放。
  - (14) 尼泊爾對於哥本哈根修正及蒙特婁議定書提案。
  - (15) 2012 年蒙特婁議定書的成員機構。
    - i. 委員會

- ii. 多邊基金委員會
- iii. 共同主席工作分組
- iv. 化學技術選擇委員會及高級技術和經濟評估小組新共同主席。

(16) 履約和匯報事項委員會審議。

(五) 維也納公約問題

- 1. 維也納公約第 8 次會議報告。
- 2. 維也納公約一般信託基金研究。

(六) 其它事項

二、 高階會議（2011 年 11 月 21-23 日）

(一) 高級別會議部分開幕：

- 1. 印尼政府代表致辭。
- 2. 聯合國代表致辭。
- 3. 維也納公約第 8 次會議主席致辭。
- 4. 蒙特婁議定書第 23 次會議主席致辭。

(二) 組織事項

- 1. 選舉維也納公約締約方第 9 次會議主席團成員。
- 2. 選舉蒙特婁議定書第 23 次會議主席團成員。
- 3. 通過維也納公約締約方第 9 次締約方及蒙特婁議定書第 23 次會議議程。
- 4. 組織工作。

(三) 評估小組介紹其四年期評估工作。

(四) 多邊基金執行委員會主席介紹執行委員會和該基金各執行機構工作。

(五) 各代表團團長致辭。

(六) 預備會議共同主席的報告和建議審議維也納公約締約方第 9 次締約方及蒙特婁議定書第 23 次會議通過的各項決定。

(七) 維也納公約締約方第 10 次締約方及蒙特婁議定書第 24 次會議的日期和地點

(八) 其他事項

- (九) 通過締約方大會納公約締約方第 9 次締約方會議各項決定
- (十) 通過締約方大會蒙特婁議定書第 23 次會議各項決定
- (十一) 維也納公約第 9 次會議的締約方大會及蒙特婁議定書第 23 次會議通過報告。
- (十二) 會議閉幕。

## 陸、 會議過程及重要決議

### 一、 預備會議重點內容

由 UNEP 臭氧秘書處執行祕書長 Mr. Marco González 宣佈維也納公約第 9 次暨蒙特婁議定書第 23 次締約方大會於 2011 年 11 月 21 日在印尼－峇里島國際會議中心預備會議開幕。Mr. Marco González 並且表示 2010 年 95% 的締約方遵循了管制的進程達成削減 CFCs 與海龍，也成功的削減了 98% 的破壞臭氧層物質。他敦促各締約方持續地努力並遵循蒙特婁議定書的條約執行各項 ODS 管制工作。同時也強調 ODS 與全球氣候變遷及各國永續發展的重要性，僅靠單一條約與各國單方面的努力將不足以保護複雜的全球環境。最後強調本次的會議關注議題事項為：充實擴編多邊基金（MLF）、擴大對 HFCs 管控範圍的提案事項、各技術評估小組的討論事項、各項重要的必要用途豁免討論、以及技術暨經濟評估委員會（TEAP）的運作事項等。

隨後，印尼的環境部部長 Dr. Balthasar Kambuaya 於開幕式致詞中表示希望各締約方能夠支持轉換至低溫暖化潛勢值（Low Global-Warming Potential）的 ODS 替代物質，以繼續向保護地球環境的道路邁進。

預備會議的組織事項由荷蘭籍的共同主席 Mr. Gudi Alkemade 主持，布吉納法索提議多邊基金用於替代移轉所需資金，以加速非洲地區的 HCFCs 的削減與淘汰，並且獲得同意，將繼續進行討論。阿根廷提議要求修正國家規劃署的增資問題，主席同意將於多邊基金增資議題討



論中繼續討論。埃及報告該國農民使用溴化甲烷的現況與使用替代品的困難，並希望進行相關的討論。印尼則是提議於本次大會中能夠通過「峇里宣言（Bali Declaration）」，並將提出決議草案文件。

印度、中國、巴林、科威特、黎巴嫩、馬來西亞、委內瑞拉與巴西則是要求大會能夠刪除兩項關於將HFCs納入蒙特婁議定書管制項目中的提案討論，強調HFCs並非破壞臭氧層物質，不應列為蒙特婁議定書的強制管制項目內。美國、歐盟與瑞士則是建議HFCs議題可於Contact Group中討論。歐盟及加拿大強調於MOP22大會中，共有91個締約方簽署全球性的聲明將CFCs與HCFCs的使用轉換至對環境友善的替代品上（之後陸續共有107個締約方簽署），這項聲明表達各締約方將在蒙特婁議定書之下以行動追求對環境更為友善的替代物質。隨後布吉納法索、摩洛哥、奈及利亞與多明尼加共和國皆發表聲明支持成立Contact Group，以進一步討論HFCs是否納入蒙特婁議定書的管制範圍之內。密克羅尼西亞針對HFCs使用量及生產量源自於蒙特婁議定書對HCFCs的管制削減沿革下的必然現象，因此認為議定書對HFCs的進一步管控有其正當性。

各國代表依據議程逐步討論各項議題，會中也針對各項議題，另外召開數個接洽小組（Contact Group）會議，以達成共識後再至大會中做最後討論。

## 二、高階會議重點內容

高階會議於11月23日傍晚正式揭幕，由印尼峇里島環境局局長Mr. Anak Agung Alit Sastrawan代表印尼政府向各代表團表達歡迎之意，並預祝COP-9與MOP-23大會順利成功。UNEP執行秘書Mr. Marco González向印尼政府協助舉辦本次會議表示感謝，並指出蒙特婁議定書執行近25年來，不僅成功地保護了臭氧層，也對全球氣候變遷做出了努力貢獻，並希冀各締約方能夠做出更多的實質努力。並強調蒙

特婁議定書的核心價值是依循永續發展的、預防性的，以及共同但責任有別的多項原則。蒙特婁議定書儘管藉由多個修正案與調整案獲得了成功，但仍面對複雜的挑戰，包括未來四年各締約方如何確實遵循 HCFCs 的削減目標、多個締約方面臨自身的經濟問題等。Mr. Marco González 呼籲並鼓勵各締約方以同理心與妥協性的條件，以達成多邊基金的增資協商。隨後印尼環境部部長 Dr. Balthasar Kambuaya 在高階會議開幕致詞中希望各締約方對各項削減 ODS 的計畫能夠順利的執行，強調恢復臭氧層與減緩 GHG 排放、低碳發展的連結性，最後並敦促各締約方能夠在此次會議中通過印尼政府所提議的「峇里宣言(Bali Declaration)」。

24 日的高階會議由斯里蘭卡環境部長，也是第 8 次保護臭氧層維也納公約會議（COP-8）的主席 Anura Priyadharshana Yapa 所主持，強調蒙特婁議定書的成功本質來自於各參與者的合作與支持，他鼓勵各方增加研究活動所需要的資金，並宣告斯里蘭卡已經自 2006 年完全廢止溴化甲烷於該國的茶葉種植使用上，正如同當初研究 ODS 替代品的目的。MOP-22 的英國籍主席 Deborah Owans 希望各締約方能夠以談判妥協取得共識，在多邊基金的增資討論上，他強調增資行為有助於對 Article-5 締約方傳遞正面的訊息，以鼓勵他們替換 HCFCs 與其他的 ODS。

保護臭氧層維也納公約第 9 次會議選出了喬治亞共和國的 Mikheil Tushishvili 為主席，並同時選出比利時籍的 Alain Wilmart、千里達與多巴哥籍的 Marissa Gowrie 與埃及籍的 Ezzat Agaiby 為共同副主席。

蒙特婁議定書第 23 次締約方大會則推舉安哥拉籍的 Sianga Abilio 為主席，波士尼亞與赫賽戈維亞籍的 Azra Rogovic-Grubic、哥倫比亞籍的 Javier Ernesto Camargo Cubilos、印尼籍的 Arief Yuwomo 為共同副主席後，並採認議程文件（UNEP/OzL.Conv.9/1-UNEP/OzL.Pro.23/1）後，隨即展開後續的議程。

### 三、各技術委員會報告

#### (一) 技術與經濟評估小組 (TEAP)

由 Mr. John Pyle 代表 TEAP 向各締約方報告，說明蒙特婁議定書經多年來管制已經有明顯成效，大氣中臭氧層破壞物質已經顯著削減，同時有助於減緩氣候變遷與溫室效應。尤其 CFCs 已完全淘汰，HCFCs 仍逐漸削減中努力中，然而部分替代技術及物質的取代仍有待克服。經調查，全球約有 25%~30% 溴化甲烷可經由替代技術或藥劑所取代。未來所面對的問題主要為庫存 ODS 普遍存在洩漏排放狀況。大會中，TEAP 提供了綜合科學研究報告，針對平流層中臭氧與氣候變遷的關聯性、高 GWP 值之 HFCs 使用對氣候衝擊影響及如何對溴化甲烷進一步管控分析。

#### (二) 醫療技術選擇委員會 (MTOC)

醫療技術選擇委員會 (Medical Technical Options Committee, MTOC) 提出關於目前使用 CFCs 之計量吸入器 (MDIs) 在許多國家的替代狀況，MTOC 共同主席 Helen Tope 說明大部分國家預計於 2012 年底，可將 CFCs 之計量吸入器 (MDIs) 完全進行替換，但中國則預計將於 2016 年達成淘汰目標。而目前部份其他開發中國家少量的 CFCs 消費量來源為另一國的既有庫存量，並非生產量。

#### (三) 化學技術選擇委員會 (CTOC)

化學技術選擇委員會 (Chemical Technical Options Committee, CTOC) 於報告中說明。在實驗用途上，少數溴化甲烷、四氯化碳 (CTC)、氯溴甲烷 (BCM) 等 ODS 難以被替代；而分析用途上因已有替代技術，故 ODS 逐漸下降，尤其是四氯化碳。在溶劑方面，大部

分締約方已進行替換，僅剩 10% 的用途且以開發中國家為主。在原料用途上，所回報的生產量與 ODS 原料排放量數據不完整，故目前估計乃基於有限的數據及專家判斷，各締約方應完整的向臭氧秘書處申報原料用途使用量。未來，CTOC 將研究改善和調整由上而下或由下而上計算四氯化碳的排放量。此外在銷毀技術上，CTOC 將定期審查可用的 ODS 銷毀技術，以提供最新的技術準則。

#### (四) 發泡技術選擇委員會 (FTOC)

發泡技術選擇委員會 (Foams Technical Options Committee, FTOC) 由 Miguel Quintero 進行報告，報告中指出 Article 5 締約方對於硬質發泡轉換至低 GWP 值替代品仍存在技術性的改善需要，以確認其替代效果能夠達到最佳化。甲酸甲脂 (Methyl Formate)、預拌碳氫發泡劑 (Pre-blended hydrocarbons)、超臨界二氧化碳 (Super-Critical CO<sub>2</sub>) 數項由多邊基金資助的先導發泡技術計畫為目前的關注焦點計畫。至於 Non-Article 5 締約方，目前 ODS 發泡替代品的開發重點為增進其能源效率。未來若逐步採行削減飽和 HFCs 的使用，則將出現較多的技術瓶頸，特別是目前認為可行的替代方案為使用混和發泡劑。

另外，未來 FTOC 也將針對發泡 ODS 庫管理策略進行調查，內容將包括發泡 ODS 基準量的排放速率與其他經濟與技術的因子。另外也將關注目前如何從既有廢棄家電產品中捕捉提取內含之 CFCs 發泡庫，並且能夠以最佳化為目標。而目前 Non-Article 5 締約方所使用的銷毀技術如何以有效且順利的方式移轉到 Article 5 締約方也是報告中的重點項目。

#### (五) 海龍技術選擇委員會 (HTOC)

海龍技術選擇委員會 (Halon Technical Option Committee, HTOC) 共同主席 Sergey Kopylov 報告指出，預估 2010 年全球 Halon-1301 的

庫存量為 42,500 MT（百萬公噸），Halon-1211 與 Halon-2402 的庫存量依序為 65,000 MT、2,300 MT，其中俄羅斯化學工業目前仍使用 Halon-2402 作為製程用劑，故 Halon-2402 庫存量較低。儘管全球海龍庫存量分佈不均，但目前並沒有締約方表達庫存量不足的問題，然而一般航空飛行器的壽命為約 25 年至 30 年，海龍仍將有需要用於維修之用，因此 HTOC 仍鼓勵各締約方建立國家或區域之海龍庫管理機制，以降低舊機維修時庫存量不足的不確定性。

#### (六) 溴化甲烷技術選擇委員會 (MBTOC)

溴化甲烷技術選擇委員會 (Methyl Bromide Technical Option Committee, MBTOC) 由 TEAP 共同主席之一的 Ms.Marta Pizano 報告，內容主要為溴化甲烷管制用途削減進程、MBTOC 面臨的挑戰、溴化甲烷土壤用途替代品、建築物與貨品燻蒸用途替代品、溴化甲烷消費量現況。從以往的溴化甲烷消費量基準線來觀察，目前全球已經削減了 90% 的溴化甲烷使用，自 2003 年起，9 個 Non-Article 5 締約方申請關鍵用途的申請，相較 2003 年共 106 項用途別，18,700 公噸的申請量；2013 年的申請用途僅 19 項，申請量僅約 690 公噸，顯見歷年的管制工作已顯成效。Article-5 締約方已經提前達成原有目標之削減量約 75% 基準量，並需要積極努力的在 2015 年達到削減目標。MBTOC 同時也認定超過 95% 管制用途的可行替代品。

溴化甲烷的主要替代品仍受到藥品註冊與管制法規建立影響其使用進展。在作物種植前處理上的主要替代品為 1,3-D（二氯松）、氯化苦、碘化甲烷；收穫後處理主要替代品為硫化醯氟。至於其他的土壤用途，目前仍需測量其病原體的對替代藥劑的有效劑量與風險評估分析，並尋求替代藥劑的法規修改。目前土壤用途使用溴化甲烷有 82% 用於草莓的種植，數種替代藥劑包括碘化甲烷等近期已經大量減少各締約方的關鍵用途豁免提名 (CUNs)，但是比較困難的處理項目包括草莓苗圃、景觀植物與其他苗圃植物上的替代技術仍有待克服。在建築物與商品燻

蒸上，替代藥劑主要為硫化醯氟與其他的替代藥劑，MBTOC 發現許多非屬 QPS (Quarantine and Preshipment) 的收穫後商品處理仍以溴化甲烷進行處理，品項包括乾菓、核果、稻米等。

#### (七) 冷凍空調暨熱泵技術委員會 (RTOC)

冷凍空調暨熱泵技術選擇委員會 (Refrigeration, Air Conditioning and Heat Pumps Technical Options Committee) 共同主席說明在歐洲和日本，商業製冷設備冷媒主要以碳氫冷媒 (Hydrocarbons, HCs) 和 R-744 (二氧化碳冷媒) 為主；在開發中國家則以 R-404A 和 R-507A 作為替代 HCFC-22 的主要物質，且 R-744 也越來越被廣泛使用。在商用雙溫冷凍冷藏系統 (two-temperature supermarket systems) 中，較低溫的設備建議使用 R-744，中溫建議使用 HFC-134a、R-744 和碳氫化合物。而工業冷凍設備以 R-717 (氨) 和 HCFC-22 為最普遍的致冷劑，低溫使用則以 R-744 取代 R-717。

目前 R-410A 仍是家用空調中 HCFC-22 主要的替代品。不過最近 HFC-32 被選擇作為一些 MLF 計畫；且 HC-290 也逐漸替代分離式及窗型空調中 HCFC-22。未來 HFCs 混合物和 HC-290 為最可能短期內替代 HCFC-22 的製冷劑。小型中央空調部分，則普遍以 HFC-134a 和 R-410A 製冷劑，HCs 和 R-717 僅用於一小部分。

在運輸冷凍系統方面，幾乎所有的新設備皆使用 HFCs 冷媒，如 R-404A 和 R-134a。而新車空調部分，已評估新車與卡車以 R-744、HFC-152a 及 HFC-1234yf 作為 HFC-134a 替代物質之可行性，其中 HFC-1234yf 已被歐洲、日本和美國的汽車製造商批准可作為未來車用冷媒，且預計將於 2012 年推出。

#### (八) 科技評估小組 (SAP) 報告

科學評估小組（Scientific Assessment Panel, 簡稱 SAP）由 Mr. Paul Newman 進行報告，報告中指出幾項關鍵的科學發現，包括：目前的 ODS 濃度下降狀況、臭氧濃度變化與氣候變遷之間的影響分析、南極圈的永久性臭氧洞及其他如北極地區出現的臭氧洞狀況分析、全球 UV 量變化。

#### （九）環境效應評估小組（EEAP）報告

環境效應評估小組（EEAP）由 Ms. Janet Bornman 報告評估了大氣中臭氧濃度減少，以及在氣候變遷的效應之下，UV 射線對人類健康、陸地生物、水中生物、生物地理化學反應、空氣品質、建築材料的影響。Ms. Bornman 指出，若無近幾年蒙特婁議定書的成功管制，今日的 UV 射線曝射量將是目前數值的三倍以上。而 Nigel Paul 則在補充報告中強調日後臭氧濃度變化與氣候變遷效應的相互影響將會形成許多環境效應的不確定性。

### 四、會中重要決議

本次會於 11 月 25 日 23 時 15 分主席團正式通過多邊基金擴編增資決議案後落幕，雖本次會議未針對未來研擬明確管制規範，主要為各國 ODS 相關資訊蒐集及分享。本次大會值得我國持續關注的議題，包括：

#### （一）溴化甲烷檢疫與裝運前處理（QPS）用途之管理：

本次大會中締約方要求 TEAP 提供溴化甲烷於 QPS 用途之消費趨勢資料，並要求臭氧秘書處與國際植物保護公約（International Plant Protection Convention, IPPC）共同研究如何讓兩個公約以及各國和各私人組織間彼此連結與分享溴化甲烷使用及替代品發展相關資訊。通過的決議內容包括：鼓勵各締約方遵照植物檢疫委員會的建議收集做為檢疫

用途之溴化甲烷的使用資料，並務求準確；敦促各締約方依照 Article 7 回報 QPS 用途的使用資料；邀請各締約方提供核可的替代用品資料給其他 IPPC 締約方；鼓勵各締約方除非有特殊的需要，已被處理過的物品儘量不要進行二次燻蒸；要求 TEAP 於不限成員工作小組會議中提供全球各區域之溴化甲烷消費量與用於 QPS 用途之消費量的變化趨勢分析報告；並要求秘書處與 IPPC 聯繫如何就溴化甲烷使用替代技術進行資訊交流。

## (二) 船隻維修使用 ODS 之管理

本次締約方大會提案要求各締約方針對船隻維修使用 ODS 之用量如何納入消費量計算回報秘書處，以及如何依照船隻所懸掛國旗（權宜輪 1）進行規範與調查。通過的決議文的內容主要包括：要求秘書處準備船隻使用 ODS 的資料調查方式，包括銷售、國籍、維修使用地點，以便於 OEWG-32 前提交報告，利於 MOP-24 做成決議；以往船隻海外維修使用 ODS 的文件與準則；要求秘書處徵詢國際海事組織（IMO）與世界海關組織（WCO）相關的資料；要求 TEAP 之 2012 年進度報告應就船隻維修的 ODS 使用數量、船隻形式、可能的 ODS 庫數量、排放進行分析比較。

## (三) 針對不再需要（Unwanted）ODS 銷毀技術發展

本次會議中澳洲及加拿大提出新的 ODS 銷毀技術供各締約方核准，最後決議通過增加 4 種 CFCs、HCFCs、海龍等銷毀技術（Chemical Reaction with H<sub>2</sub> and CO<sub>2</sub>、Porous Thermal Reactor、Portable Plasma Arc、Thermal Reaction with Methane），其中針對 CFCs 銷毀，共計有 16 種銷毀技術，表 4，而海龍有 6 種銷毀技術（但水泥窯和裂解反應爐此兩種技術未通過可銷毀海龍）。此外，針對溴化甲烷則尚未核准任何銷毀技術，因此本次會議亦決議請 TEAP 繼續針對電漿技術是否可銷毀溴化甲烷進行評估，以提供相關資訊給締約方。同時應針對 2011 年評估報



告中提到之銷毀率（estruction efficiency）和移除效率（removal efficiency）等銷毀準則進行比較，以及設備銷毀ODS 之相關查證準則等於OEWG-32 中提出報告供各締約方討論研擬相關決議。

表 4、經核准之銷毀技術

列管物質 銷毀技術	適用性							
	高濃度							低濃度
	附件 A		附件 B			附件 C	附件 E	
	第 1 類	第 2 類	第 1 類	第 2 類	第 3 類	第 1 類	第 1 類	
	CFCs	海龍	其他 CFCs	四氯化碳	三氯乙烷	氟氯烴	溴化甲烷	
銷毀去除率	99.99%	99.99%	99.99%	99.99%	99.99%	99.99%	99.99%	95%
氫離子電漿	◎	◎	◎	◎	◎	◎	△	
水泥窯	◎	×	◎	◎	◎	◎	△	
H <sub>2</sub> 和CO <sub>2</sub> 碳化學反應	◎	◎	◎	◎	◎	◎	△	
氣相催化脫鹵	◎	△	◎	◎	◎	◎	△	
氣體/煙氣氧化法	◎	△	◎	◎	◎	◎	△	
射頻電漿	◎	◎	◎	◎	◎	◎	△	
液體噴柱法	◎	◎	◎	◎	◎	◎	△	
微波電漿	◎	△	◎	◎	◎	◎	△	
都市廢棄物焚化								◎
氮離子電漿	◎	△	◎	◎	◎	◎	△	
多孔熱反應爐	◎	△	◎	◎	◎	◎	△	
移動式電漿	◎	△	◎	◎	◎	◎	△	
反應爐裂解	◎	×	◎	◎	◎	◎	△	
旋轉窯	◎	◎	◎	◎	◎	◎	△	◎
熱蒸氣爐	◎	△	◎	◎	◎	◎	△	
甲烷熱反應	◎	◎	◎	◎	◎	◎	△	

◎已獲批准

△尚未決定

×未獲批准

#### (四) HFCs 管制

CFCs 與 HCFCs 不僅是破壞臭氧層物質，也是造成全球暖化的溫

室氣體。今年為討論 HFC 是否納入蒙特婁議定書管制範圍的第三年，其中一個提案方是北美三國家，包括美國、加拿大、墨西哥所共同提出，另一個則是海島國家密克羅尼西亞所提出的。關於該修正案，美國再次強調依據「保護臭氧層維也納公約」，締約方有義務逐步削減對環境不友善之物質。但巴西、印度及中國仍強烈反對有關 HFCs 的管制提案，認為 HFCs 物質應屬於京都議定書的管制範圍，在蒙特婁議定書未進行章程更改的狀況下對 HFCs 進行管制將是僭越執行權力的事情，最後會議未通過任何決議。不過，99 年由北美國家提出泰國宣言：蒙特婁議定書應進一步推動全球使用對環境友善替代品行動的宣言，全球已有包括澳洲、紐西蘭、日本、歐盟國家、非洲國家、密克羅尼西亞、印尼、菲律賓等 107 個國家簽署。愈來愈多國家支持即使 HFCs 目前由另一個國際公約-京都議定書管制，但蒙特婁議定書應以其成功經驗推動管制，驅使全球研發對環境友善的替代品，避免造成另一個環境問題。因此，今年各國先針對 TEAP 應於明（2012）年 OEWG-32 會議前針對 HCFCs 之技術/經濟/環境兼顧替代品成本及開發中國家採用情形等提出分析報告，供各締約方參考研擬相關議案進行討論，最後亦通過決議。

## 五、各國交流情形

為向國際表達我國積極參與國際公約，並遵循蒙特婁議定書已開發國家之管制規範，我國代表團陸續會晤印尼環境部長 Mr. Balthasar Kambuaya、印尼環境部國際合作處處長 Mr. Rasio Ridho Sani、UNEP 臭氧祕書處執行秘書 Mr. Marco González、美國代表 Mr. Tom Land、緬甸代表工業局重工業規劃處副處長 Mr. Myint SDE、孟加拉國會議員 Mr. Alhaj A.S.M. Feroz, M.P 等，展現我國在地球環境保護工作成果，除獲對方肯定與讚賞外，並建立雙方未來環保合作機會窗口掌握國際動態，表達我國未來能更實質參與國際公約的積極意願，共同重視臭氧層保護及相關氣候變遷等環境議題，相關會談如下述：

(一) 印尼環境部長 Mr. Balthasar Kambuaya、印尼環境部國際合作處處長 Mr. Rasio Ridho Sani：

11 月 23 日表達對印尼環境部成功舉辦此次 MOP23 會議和感謝其對所有參與者的完善安排，以及未來願分享 HCFCs 管理與 ODS 銷毀技術資訊，圖 3。

(二) UNEP 臭氧祕書處執行秘書 Mr. Marco González：

這次特別與統籌掌管國際公約蒙特婁議定書運作的 UNEP 臭氧祕書處之執行秘書 Mr. Marco González 會談，說明我國對參與國際公約的積極意願，並願遵循蒙特婁議定書的規範，以及與臭氧祕書處維繫良好關係，並轉交我國 Ozone Layer Protection Taiwan's Contribution 及 ODS bank Management and Actions in Taiwan 文宣品，對於台灣努力之表示肯定，圖 4。

(三) 孟加拉國會議員 Mr. Alhaj A.S.M. Feroz, M.P、環境和森林部副局長 Dr. A.K.M. Rafique Ahammed

與孟加拉代表團會晤，說明我國長期遵循蒙特婁議定書對已開發國家的管制規範，願與之分享 HCFCs 與溴化甲烷的管制策略，說明我國遵循已開發國家管制規範的決心與努力，並願意與各國合作，共同為保護臭氧層而努力，圖 5。

(四) 緬甸代表工業局重工業規劃處副處長 Mr. Myint SDE

與緬甸代表團會晤，說明我國長期遵循蒙特婁議定書對已開發國家

的管制規範，願與之分享 HCFCs 與溴化甲烷的管制策略，未來若有需要也可提供國內相關技術專家資訊以協助進行交流，圖 6。

(五) 歐盟顧問 Dr. Melanie Miller

向歐盟首席顧問 Dr. Miller 表達感謝其今年 6 月來台分享歐盟研擬溴化甲烷管制策略之經驗，並討論於明年 MOP 會議中舉辦周邊會議 Side Event 的可行方案，以及表達願與之未來持續合作建置國際專家資訊網平台，交流管制與替代品資訊，圖 7。

(六) 美國代表團團長 Mr. Tom Land

與美國環保署 Mr. Tom Land 交流 ODS 管制策略，並表達未來可藉由臺美計畫互相交流推動超市綠色冷凍冷藏設備相關行動方案，圖 8。

(七) TEAP 共同主席 Ms. Marta Pizano

向 TEAP 共同主席 Ms. Pizano 表達感謝其今年 6 月來台分享國際管制溴化甲烷策略資訊，並討論於明年 MOP 會議中合作舉辦周邊會議 (Side Event) 的可行方案，圖 9。

(八) UNEP 的技術工業經濟部記者合影 Mr. Ibrahima Fall

環保署空保處簡副處長慧貞特別接受 UNEP 的技術工業經濟部 DTIE (Division of Technology, Industry and Economics) 之臭氧行動網路頻道訪問，說明我國遵守蒙特婁議定書之規定，採非第五條國家之標準管制國內業者共同努力保護臭氧層，並每年於 9 月底前向聯合國環境規劃署臭氧秘書處申報前一年度列管化學物質生產、輸入及輸出等消費量

資料。然而我國雖非聯合國成員，無法以政府組織身分簽署蒙特婁議定書，但自始完全遵守公約各項管制措施，並以非政府組織參與歷屆締約國大會，對我國努力表示肯定與讚賞，後續即可成為向全球宣揚我國積極參與國際公約的管道，圖 10。

#### (九) 塞內加爾代表團

與塞內加爾代表團會晤，說明我國長期遵循蒙特婁議定書對已開發國家的管制規範，願與之分享 HCFCs 與溴化甲烷的管制策略，圖 11。



圖 3、印尼環境部長 Mr. Balthasar Kambuaya(中)、印尼環境部國際合作處處長 Mr. Rasio Ridho Sani(右)



圖 4、外交部條法司科長楊登仕(左)、UNEP 臭氧祕書處執行秘書 Mr. Marco González(右)



圖 5、孟加拉國會議員 Mr. Alhaj A.S.M. Feroz, M.P(左)、環境和森林部副局長 Dr. A.K.M. Rafique Ahammed(右)



圖 6、緬甸代表工業局重工業規劃處副處長 Mr. Myint SDE



圖 7、歐盟代表團 Dr. Melanie Miller



圖 8、美國代表團團長 Mr. Tom Land



圖 9、TEAP 共同主席 Ms. Marta Pizano





圖 10、UNEP 的技術工業經濟部記者合影 Mr. Ibrahima Fall



圖 11、從左到右：塞內加爾代表團 Mr. Louis Ndiaye、Mr. Sylla Ndiaye Cheikh、環保署空保處副處長簡慧貞、塞內加爾代表團、Ms. Reine Marie Coly Badiane、Ms. Mar Gueye Codou

## 柒、 心得與建議

本次會議中值得我國關切的議題，包括，推動溴化甲烷 QPS 用途管理計畫、船隻維修使用 ODS 之管理、針對不再需要（unwanted）的 ODS 之銷毀技術發展、美加墨等國推動將 HFCs 列為蒙特婁議定書管制物質、TEAP 提名程序變更等。後續建議方針為：

- 一、 我國於 2012 年除主動配合臭氧祕書處與 TEAP 要求之溴化甲烷消費量與替代品資訊提供外，也應推動我國業者確實申報用途別，以做為政府日後執行替代技術或減量管制方案之參考。
- 二、 未來我國應配合蒙特婁議定書的要求，展開國內廠商維修船隻之相關調查，以提供下列資訊給臭氧祕書處：
  - (一) 目前我國用於規範船隻維修使用 ODS 的系統模式，包括本國船隻、外國船隻、權宜輪。
  - (二) 我國認定 ODS 消費量的計算方式。
  - (三) 任何與此相關的供應、進口與出口資料。
  - (四) 其他與船隻使用 ODS 有關的資料，包括不同船隻型式的 ODS 使用量，每種船隻的估計 ODS 庫存量，並評估可能的排放。
- 三、 續關注蒙特婁議定書通過之銷毀技術與相關規範，以及 TEAP 相關評估報告，以作為後續規劃國內不堪用、不再需要之 ODS 的銷毀方案時參考。

四、我國目前 HFCs 主要使用 HFC-134a 冷媒與部分的發泡劑，以及今年因 HCFC-22 受到管制，廠商展開生產使用 R-410A 之窗型與分離式冷氣機。但因國內汽車與空調廠商之產品研發主要皆依循國際技術的發展趨勢，雖然目前受到的衝擊較小，但一旦 HFCs 遭納入管制，將會受到衝擊。此項議題明年仍會成爲締約方協商的重要議題之一，我國應持續關注，也呼籲國內廠商與相關研發單位選擇替代品時，應優先考量對環境友善並推動零或低 GWP 值的替代品。

我國雖非蒙特婁議定書締約國，但自始即遵守蒙特婁議定書對非第五條國家（即已開發國家，如歐盟、美日等）之管制規範，主動自 79 年起積極參與歷屆蒙特婁議定書締約方大會與相關工作小組會議，並自 83 年起即陸續發佈相關管制規範，研擬因應國際管制趨勢之行動方案及提供國內廠商最新國際管制動態，達到 ODS 實質削減之目標。99 年由北美國家提出蒙特婁議定書應進一步推動全球使用對環境友善替代品行動的宣言（如，將 HFCs 納入蒙特婁議定書推動低 Global Warming Potential 值管制），受到許多國家包括，澳紐、日本、歐盟國家、非洲國家、密克羅尼西亞、印尼、菲律賓等超過 100 個國家簽署，雖然會議中仍有部份國家反對將 HFCs 納入蒙特婁議定書管制，然而推動低 GWP 值替代議題將成爲蒙特婁議定書後續重點工作。而今年聯合國環境規劃署 UNEP 臭氧祕書處，檢視各締約方遵約情形，發現存在締約方未依議定書規定申報 ODS 消費量及輸出 ODS 至非締約方之情形發生，因此，大會決議持續觀察各國的遵約情形。

台灣積極保護臭氧層工作已歷經 20 多年的努力，從配合國際管制時程，採取策略性目標、建置核配制度、逐步對蒙特婁議定書列管化學物質進行管控，已具有相當成效。建議未來工作重點包括：

- 一、研擬下一階段（104 年）HCFCs 削減之目標。
- 二、推動既有設備運轉維修時應減少 ODS 物質不當洩漏的管理程序。
- 三、減少溴化甲烷使用於 QPS 用途管制。
- 四、廢棄 ODS 銷毀方式等，期對國際公約蒙特婁議定書管制工作更多實質貢獻。

## 捌、附件

一、蒙特婁議定書第23次締約國大會報告（簡報）

二、蒙特婁議定書第23次締約國大會會議議程

Provisional agenda of the Twenty-Third Meeting of the Parties to the Montreal Protocol on Substances that Deplete the Ozone Layer

三、蒙特婁議定書第23次締約國大會報告書全文

Report of the combined ninth meeting of the Conference of the Parties to the Vienna Convention on the Protection of the Ozone Layer and Twenty-Third Meeting of the Parties to the Montreal Protocol on Substances that Deplete the Ozone Layer

四、Earth Negotiations Bulletin : A Reporting Service for Environment and Development Negotiations, Published by the International Institute for Sustainable Development (IISD)

五、蒙特婁議定書締約國名單



# 環保署參與維也納公約第9次暨蒙特婁議定書第23次締約方大會成果

空氣品質保護及噪音管制處



## 維也納公約第9次暨蒙特婁議定書 第23次締約方大會與會情形

### 一、會議名稱：

維也納公約第9次暨蒙特婁議定書第23次締約方大會(COP9/MOP23)

### 二、出國人員：

服務機關：行政院環境保護署

姓名職稱：簡慧貞副處長

何佳祥薦任技士

謝議輝助理環境技術師

外交部

楊登仕科長

工業技術研究院

楊斐喬研究員

連振安副研究員

徐麗澄副研究員

### 三、出國期間：

100年11月20日至11月26日

## 會議地點



資料來源：<http://www.baliconventioncenter.com>

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## 公約簡介

### 一、國際公約

- 維也納公約(1985)、蒙特婁議定書(1987)
- 倫敦、哥本哈根、蒙特婁、北京等四項修正案
- 於MOP 2、4、7、9、11、19等六項調整案

### 二、目標

- 保護人類健康與環境，免於遭受臭氧層變化所引起之不利影響

### 三、公約秘書處

- 聯合國環境規劃署臭氧秘書處

United Nations Environment Programme, Ozone Secretariat

### 四、國際臭氧層保護日：9月16日

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## 蒙特婁議定書及其修正案之批准情形

- ✚ 2009年9月16日：「蒙特婁議定書」成為全球第一個由聯合國會員國、觀察國(教廷 Holy See)、觀察組織(歐盟EC)等共計197個國家組織皆已承諾遵循之國際環保公約(南蘇丹於2011年成為聯合國會員國後即於2012年1月參與蒙特婁議定書)

	維也納公約	蒙特婁議定書	倫敦修正案	哥本哈根修正案	蒙特婁修正案	北京修正案
通過年	1985	1987	1990	1992	1997	1999
國家數目	197	197	196	194	185	172

資訊來源：2012年1月12日, [http://ozone.unep.org/Ratification\\_status/](http://ozone.unep.org/Ratification_status/)

註：

- [1] 修正案：以增加新的管制方案與物質為主，需要一定數目的締約國批准才具有效力。  
例如，北京修正案中增加一氯一溴甲烷為蒙特婁議定書管制物質
- [2] 調整案：無管制項目之新增，以加嚴現有管制方案為主。僅需締約國大會決議即可生效，無需締約國批准程序。  
例如，MOP-19決議A2國家之氟氯烴2010年消費量削減由65%提高到75%。

## 蒙特婁議定書管制時程

$$\text{消費量} = \text{生產量} + \text{進口量} - \text{出口量}$$

已開發國家  
(Non-article 5 countries)

### 我國時程

- ◆ 海龍停止生產及進口 1994.1
- ◆ **CFCs 停止生產及進口 1996.1**
- ◆ HCFCs 限量消費及進口
- ◆ 溴化甲烷限量生產及進口
- ◆ HCFCs 2010年削減75%  
→ 2015年削減90%  
→ 2020年99.5%

**HCFCs 停止生產及進口 2030.1**

開發中國家

(Article 5 countries)

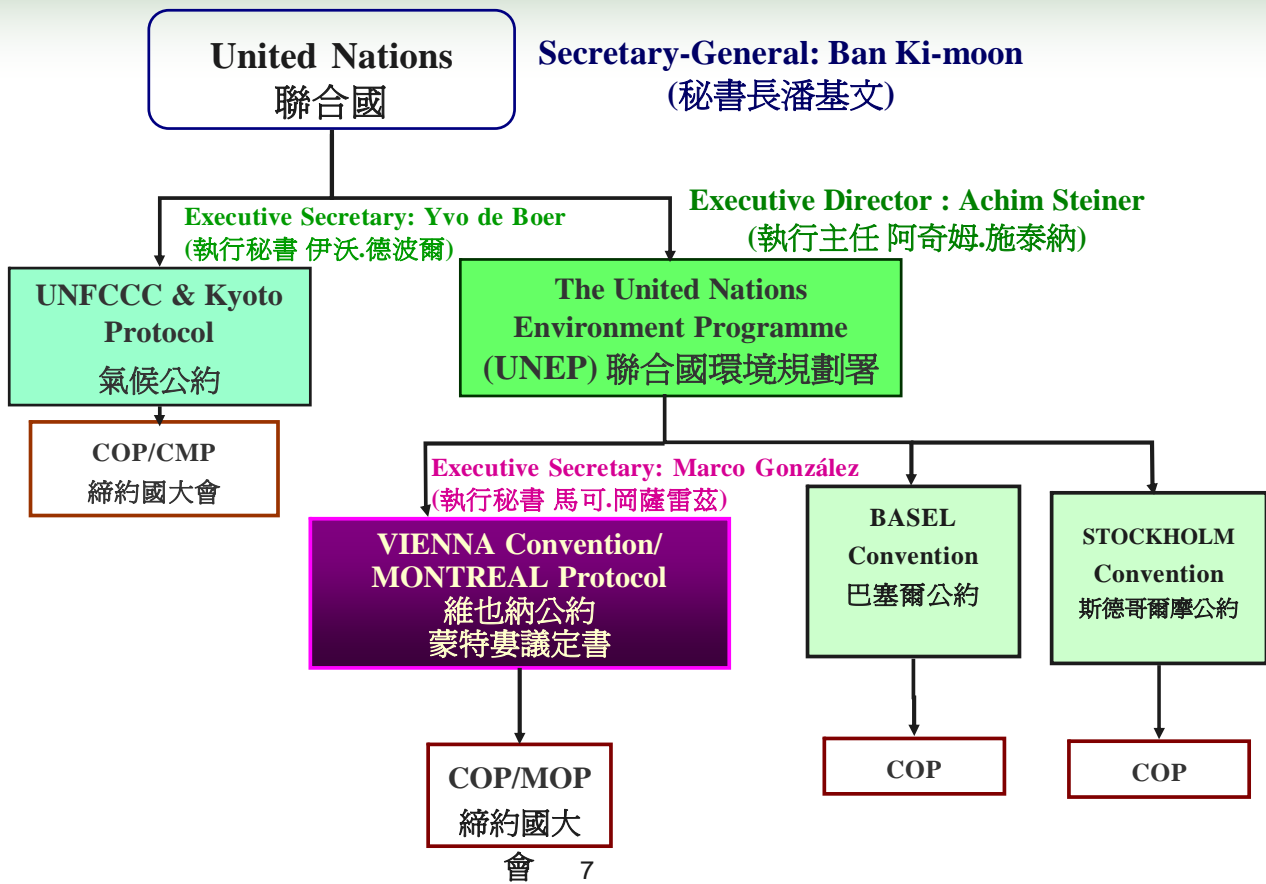
中國、印度等國的最晚時程

2010.1 **CFCs 停止生產及進口**

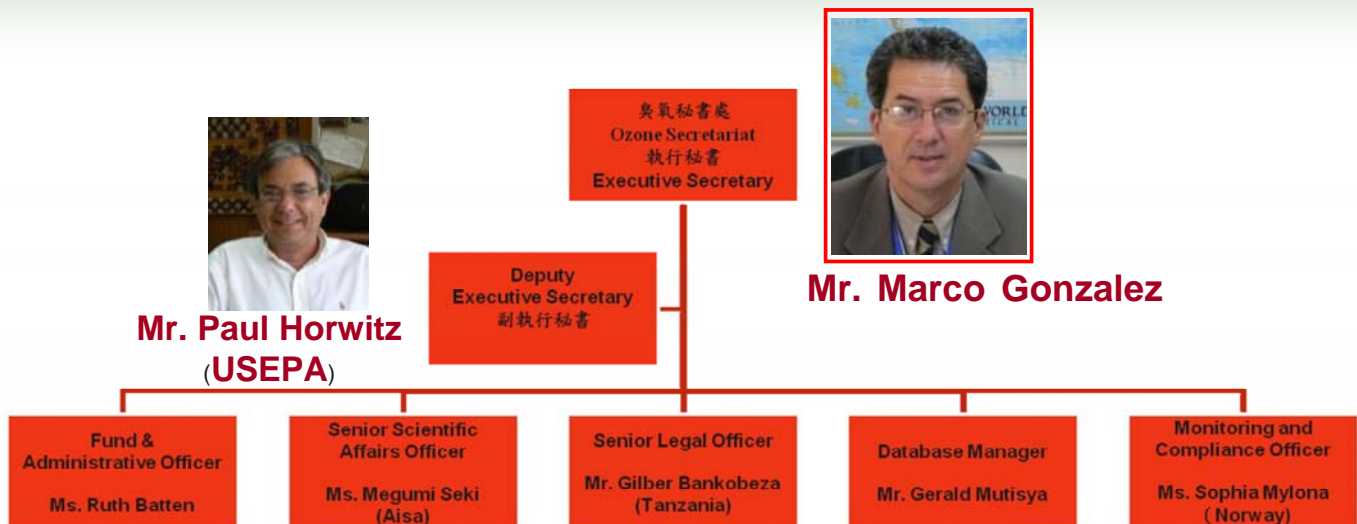
2040.1 **HCFCs 停止生產及進口**



# 國際環保公約之組織介紹



# 臭氧秘書處之組織介紹



**Mr. Paul Horwitz**  
(USEPA)



**Mr. Marco Gonzalez**



負責：處理財務事務與秘書事務，包括締約國大會的安排  
專長：基金管理



負責：處理技術與科學事務  
專長：協助環境公約事務，包括氣候變遷及多邊環境協議



負責：處理條文事務  
專長：外交官和法律顧問，國際保護臭氧層的法律制度



負責：各國ODS數據申報資料  
專長：資訊技術



負責：監督各國遵約事務  
專長：跨國空氣污染事務，同時也協助UNFCCC監督各國遵約情形

## 本次會議摘要

### 一、本次會議重要討論議題：

研擬替代品使用情形資訊分析報告、國際運輸船隻維修使用ODS之計算、溴化甲烷管理、增加銷毀技術、原料與製程試劑使用ODS之排放削減、多邊基金增資等

### 二、參與者：

自全球196個締約國家代表團與非政府組織參加，超過500多位與會。



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## 維也納公約第9次暨蒙特婁議定書第23次締約方大會實況



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## 維也納公約第9次暨蒙特婁議定書第23次締約方大會實況



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## 本次大會重要決議(1/3)

- 本次會議共計通過超過25項決議，包括締約方遵循議定書情形、各國使用於國際航行船隻維修之ODS消費量計算、兼顧技術/經濟/環境之HCFCs替代品的成本及開發中國家採用情形、增加銷毀技術、溴化甲烷管理、原料及製程試劑使用ODS之排放削減、必要用途豁免、TEAP專家提名程序、2012-2014年多邊基金增資美金4.5億元等。
- 以下摘列我國後續應關注的決議：
- 締約方遵循議定書情形
  - 聯合國環境規劃署UNEP (United Nations Environment Programme) 臭氧秘書處，檢視各締約方遵約情形，發現存在締約方未依議定書規定申報ODS消費量及輸出ODS至非締約方之情形發生，大會決議**持續觀察各國的遵約情形**。
- 各國使用於國際航行船隻維修之ODS消費量計算
  - 要求各締約方提供其管制或申報維修船隻使用ODS數量之既有系統資訊，特別是針對**非該國船籍的船於該國港口進行維修使用之ODS數量計算**，是否歸屬於該國消費量計算之生產、進口或出口。另希望締約方估計船隻之ODS庫數量與排放量。
  - 要求臭氧秘書處針對收集上述資料，提供申報表格與提報指引

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## 本次大會重要決議(2/3)

- 兼顧技術/經濟/環境之HCFCs替代品的成本及開發中國家採用情形
  - 此為北美與密可羅尼西亞近年不斷提議將HFCs納入蒙特婁議定書管制，卻屢遭中國、印度、巴西強烈反對下而產生的替代議案。因各國同意應選擇對環境友善的替代品，因此要求TEAP進一步研析並提出可讓各締約方參考以研擬相關議案的資訊與報告
  - 決議要求TEAP徵詢相關科學專家，針對下列議題進行分析與提出報告：
    - 技術認可/經濟可行/環境無害兼顧之HCFCs替代品的成本需求
    - 於高溫環境下可使用之技術認可/經濟可行/環境無害兼顧之HCFCs替代品，包括溫度如何影響效率與其他因子
    - 於已開發或開發中國家之不同用途別中，已被採用或預計被採用之替代品的形式與數量
    - 諮詢科學專家提出選擇替代品時之技術、經濟、環境可行性評估方式

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## 本次大會重要決議(3/3)

- 增加銷毀技術：
  - 各締約方同意增加的ODS銷毀技術包括Chemical Reaction with H<sub>2</sub> and CO<sub>2</sub>、Porous Thermal Reactor、Portable Plasma Arc、Thermal Reaction with Methane
  - 要求TEAP持續分析電漿銷毀溴化甲烷技術可行性及ODS銷毀率準則
- 溴化甲烷管理：
  - 要求締約方確認其與動植物、環境、健康、貨物儲存等相關的國家法規中未造成需使用溴化甲烷重複燻蒸兩次（包括出貨前與抵達港口後）的規範，除非已發現需進行處置的特定疫病蟲害
  - 要求TEAP針對各區域過去幾年使用溴化甲烷於QPS用途之使用量趨勢與巨大變動情形和原因進行分析，於明年OEWG會議前提出報告
  - 要求臭氧祕書處與國際植物保護公約IPPC聯繫探討如何交換替代品資訊，和促進各國與各組織提供或獲得相關資訊
  - 鼓勵各締約方按時申報溴化甲烷使用於QPS的數量，並提供使用於植物檢疫用途的資料，以及和IPPC締約方分享已獲該國植物保護組織認可的替代品資訊

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## 會外雙邊會談及聯繫

- 為向國際表達我國積極參與國際公約，並遵循蒙特婁議定書已開發國家之管制規範，我國代表團陸續會晤**印尼環境部長Mr. Balthasar Kambuaya**、**印尼環境部國際合作處處長Mr. Rasio Ridho Sani**、**UNEP臭氣祕書處執行秘書Mr. Marco González**、**美國代表Mr. Tom Land**、**緬甸代表工業局重工業規劃處副處長Mr. Myint SDE**、**孟加拉國會議員Mr. Alhaj A.S.M. Feroz, M.P**等，展現我國在地球環境保護工作成果，除獲對方肯定與讚賞外，並建立雙方未來環保合作機會窗口掌握國際動態，表達我國未來能更實質參與國際公約的積極意願，共同重視臭氣層保護及相關氣候變遷等環境議題。

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## 與會相關照片



- 印尼環境部長**Mr. Balthasar Kambuaya**(中)、印尼環境部國際合作處處長**Mr. Rasio Ridho Sani**(右) 表達對印尼環境部成功舉辦此次**MOP**會議和感謝其對所有參與者的完善安排，以及未來願與之分享**HCFCs**管理與**ODS**銷毀技術資訊



- 外交部條法司科長**楊登仕**(左)、**UNEP臭氣祕書處執行秘書Mr. Marco González**(右) 說明我國對參與國際公約的積極意願，並願遵循蒙特婁議定書的規範，以及與臭氣祕書處維繫良好關係

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## 與會相關照片(續)



- 孟加拉國會議員Mr. Alhaj A.S.M. Feroz, M.P(左)、環境和森林部副局長Dr. A.K.M. Rafique Ahammed(右)

說明我國長期遵循蒙特婁議定書對已開發國家的管制規範，願與之分享HCFCs與溴化甲烷的管制策略

- 緬甸代表工業局重工業規劃處副處長Mr. Myint SDE

分享HCFCs與溴化甲烷的管制策略，未來若有需要也可提供國內相關技術專家資訊以協助進行交流

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## 與會相關照片(續)



- 歐盟首席顧問Dr. Melanie Miller
- 感謝其今年6月來台分享歐盟研擬溴化甲烷管制策略之經驗，並討論於明年MOP會議中舉辦周邊會議Side Event的可行方案，以及表達願與之未來持續合作建置國際專家資訊網平台，交流管制與替代品資訊

- TEAP共同主席Ms. Marta Pizano
- 表達感謝其今年6月來台分享國際管制溴化甲烷策略資訊，並討論於明年MOP會議中合作舉辦周邊會議Side Event的可行方案

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## 與會相關照片(續)



- 塞內加爾代表團Mr. Louis Ndiaye、Mr. Sylla Ndiaye Cheikh、環保署空保處副處長簡慧貞、塞內加爾代表團、Ms. Reine Marie Coly Badiane、Ms. Mar Gueye Codou
- 分享國內管制策略，建立友好關係



- 美國代表團團長Mr. Tom Land
- 並表達未來可藉由臺美計畫互相交流推動超市綠色冷凍冷藏設備相關行動方案 或銷毀工作
- 已有美國銷毀廠商來信提到美國環保署轉知我國冷媒銷毀事項，希望有機會與我方合作

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## 與會相關照片(續)



- UNEP的技術工業經濟部記者合影Mr. Ibrahima Fall
- 接受UNEP的技術工業經濟部DTIE (Division of Technology, Industry and Economics) 之臭氧行動網路頻道訪問，說明我國在削減破壞臭氧層物質的重要成果，後續即可成為向全球宣揚我國積極參與國際公約的管道



- 由左至由為工業技術研究院連振安、楊斐喬、TEAP共同主席Ms. Marta Pizano、環保署空保處副處長簡慧貞、TEAP Dr. Stephen Andersen、syngenta技術顧問Akio Tateya
- 與TEAP共同主席共聚晚餐，並借此機會認識更多各國的技術專家，以建置未來推動ODS替代之國際專家名單

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## 一、我國遵約情況：**與會心得及國內現況(1/2)**

我國雖非蒙特婁議定書締約國，但自始即遵守蒙特婁議定書對非第五條國家管制規範，包括，1994年即廢除海龍，於1996年即廢除CFCs並計已削減超過13,000 ODP公噸。而於1996年即開始削減HCFCs，至2010年已削減486 ODP公噸，即75%消費量基準量。因這些氣體具高GWP值，相當於100公噸碳當量減量成果。另，我國自2003年即停止非QPS用途使用溴化甲烷等，相關成果已獲國際肯定。

## 二、會中重要提案：

會中提案規劃進一步推動全球使用對環境友善替代品行動的宣言（如，將HFCs納入蒙特婁議定書和推動低Global Warming Potential值管制），受到超過100個國家簽署，雖然會議中仍有部份國家反對將HFCs納入蒙特婁議定書管制，然而推動低GWP值替代議題將成為蒙特婁議定書後續重點工作，本署將持續關注此議題。

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## 與會心得及國內現況(2/2)

### 三、我國管制策略

向國際表達我國積極參與國際公約，從配合國際管制時程，採取策略性目標、建置核配制度、逐步對蒙特婁議定書列管化學物質進行管控，已具有相當成效。

### 四、我國未來工作重點

- (1) 研擬下一階段（104年）HCFCs削減之目標。
- (2) 推動既有設備運轉維修時應減少ODS物質不當洩漏的管理程序。
- (3) 減少溴化甲烷使用於QPS用途管制。
- (4) ODS物質庫的管理（包括使用中設備內的ODS與設備被銷毀的ODS等的回收、儲存、處理）。
- (5) 未來將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。

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# 報告完畢 敬請指教

## 維也納公約及蒙特婁議定書之觀察員資格

- 從申請以觀察員國家資格參與大會 (Conference of the Parties/Meetings of the Parties) 的條文來看，申請成為觀察國之前提仍必須為聯合國會員國(State)
- 從Rules of procedure內容來看，須先經大會同意成為觀察員國家後，接到秘書處通知參加大會者才能以該身分與會，但無投票權。
- 聯合國兩個常任觀察員
  - 國家：教廷(Holy See)已是蒙特婁議定書的締約方
  - 實體：巴勒斯坦解放組織(Palestine)仍僅是蒙特婁議定書的Observer State

## 維也納公約及蒙特婁議定書之觀察員資格

Article 6 of Vienna Convention (Conference of the Parties, COP)

Article 11 of Montreal Protocol (Meetings of the Parties, MOP)

- **The United Nations, its specialized agencies and the International Atomic Energy Agency, as well as any State not party to this Convention, may be represented at meetings of the Conference of the Parties by observers.**

**Any body or agency, whether national or international, governmental or non-governmental, qualified in fields relating to the protection of the ozone layer which has informed the secretariat of its wish to be represented at a meeting of the Conference of the Parties as an observer may be admitted unless at least one-third of the Parties present object.**

**The admission and participation of observers shall be subject to the rules of procedure adopted by the Conference of the Parties.**

## 維也納公約及蒙特婁議定書之觀察員資格

Rules of procedure for meetings of the Conference of the Parties to the Vienna Convention and Meetings of the Parties to the Montreal Protocol

Observers

Rule 6

- **The Secretariat shall notify the United Nations and its specialized agencies, the International Atomic Energy Agency and any State not party to the Protocol [Convention] of any meeting so that they may be represented by observers. Such observers may, upon invitation of the President, and if there is no objection from the Parties present, participate without the right to vote in the proceedings of any meeting.**

Rule 7

- **The Secretariat shall notify any body or agency, whether national or international, governmental or non-governmental, qualified in fields relating to the protection of the ozone layer which has informed the Secretariat of its wish to be represented, of any meeting so that they may be represented by observers, subject to the condition that their admission to the meeting is not objected to by at least one third of the Parties present at the meeting. Such observers may, upon invitation of the President, and if there is no objection from the Parties present, participate without the right to vote in the proceedings of any meeting in matters of direct concern to the body or agency they represent.**



Distr.: General  
19 August 2011

Original: English



**United Nations  
Environment  
Programme**

**Ninth meeting of the Conference of  
the Parties to the Vienna Convention  
for the Protection of the Ozone Layer**

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

**Bali, Indonesia, 21–25 November 2011**

**Provisional agenda**

**I. Preparatory segment (21–23 November 2011)**

1. Opening of the preparatory segment:
  - (a) Statement by representative(s) of the Government of Indonesia;
  - (b) Statement by representative(s) of the United Nations Environment Programme.
2. Organizational matters:
  - (a) Adoption of the agenda of the preparatory segment;
  - (b) Organization of work.
3. Combined Vienna Convention and Montreal Protocol issues:
  - (a) Financial reports and budgets of the trust funds for the Vienna Convention and the Montreal Protocol;
  - (b) Status of ratification of the Vienna Convention, the Montreal Protocol and the amendments to the Montreal Protocol.
4. Montreal Protocol issues:
  - (a) Replenishment of the Multilateral Fund for the Implementation of the Montreal Protocol:
    - (i) Supplemental report of the Technology and Economic Assessment Panel replenishment task force;
    - (ii) Extension of the fixed-exchange-rate mechanism;
  - (b) Issues related to exemptions from Article 2 of the Montreal Protocol:
    - (i) Nominations for 2012 and 2013 for essential-use exemptions;
    - (ii) Essential-use exemption for chlorofluorocarbon-113 for aerospace applications in the Russian Federation;
    - (iii) Nominations for 2012 and 2013 critical-use exemptions;
    - (iv) Quarantine and pre-shipment uses of methyl bromide;

- (v) Global laboratory and analytical-use exemption;
  - (vi) Sustained mitigation of ozone-depleting-substance emissions from feedstock and process-agent uses;
  - (c) Environmentally sound disposal of ozone-depleting substances;
  - (d) Updating the nomination processes and recusal guidelines for the Technology and Economic Assessment Panel;
  - (e) Treatment of ozone-depleting substances used to service ships;
  - (f) Additional information on alternatives to ozone-depleting substances;
  - (g) Use of methyl bromide in Africa;
  - (h) Proposed amendments to the Montreal Protocol:
    - (i) Proposed amendment by Canada, Mexico and the United States of America;
    - (ii) Proposed amendment by the Federated State of Micronesia;
  - (i) Potential areas of focus for the assessment panels' 2014 quadrennial reports;
  - (j) Phase-out of HCFC-23 by-product emissions;
  - (k) Status of Nepal relative to the Copenhagen Amendment to the Montreal Protocol;
  - (l) Consideration of membership of Montreal Protocol bodies for 2012:
    - (i) Members of the Implementation Committee;
    - (ii) Members of the Executive Committee of the Multilateral Fund;
    - (iii) Co-Chairs of the Open-ended Working Group;
    - (iv) Endorsement of a new co-chair of the Chemicals Technical Options Committee and a senior expert of the Technology and Economic Assessment Panel;
  - (m) Compliance and reporting issues considered by the Implementation Committee.
5. Vienna Convention issues:
- (a) Report of the eighth meeting of the Ozone Research Managers of the Parties to the Vienna Convention;
  - (b) Status of the General Trust Fund for Financing Activities on Research and Systematic Observations Relevant to the Vienna Convention.
6. Other matters.

## **II. High-level segment (24 and 25 November 2011)**

1. Opening of the high-level segment:
  - (a) Statement by representative(s) of the Government of Indonesia;
  - (b) Statement by representative(s) of the United Nations Environment Programme;
  - (c) Statement by the President of the eighth meeting of the Conference of the Parties to the Vienna Convention
  - (d) Statement by the President of the Twenty-Second Meeting of the Parties to the Montreal Protocol.
2. Organizational matters:
  - (a) Election of officers of the ninth meeting of the Conference of the Parties to the Vienna Convention;
  - (b) Election of officers of the Twenty-Third Meeting of the Parties to the Montreal Protocol;
  - (c) Adoption of the agenda of the high-level segment of the ninth meeting of the Conference of the Parties to the Vienna Convention and the Twenty-Third Meeting of the Parties to the Montreal Protocol;

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- (d) Organization of work;
  - (e) Credentials of representatives.
3. Presentations by the assessment panels on their 2010 quadrennial assessment.
  4. Presentation by the Chair of the Executive Committee of the Multilateral Fund on the work of the Executive Committee.
  5. Statements by heads of delegations.
  6. Report of the co-chairs of the preparatory segment and consideration of the decisions recommended for adoption at the ninth meeting of the Conference of the Parties to the Vienna Convention and the Twenty-Third Meeting of the Parties to the Montreal Protocol.
  7. Dates and venues for the tenth meeting of the Conference of the Parties to the Vienna Convention and the Twenty-Fourth Meeting of the Parties to the Montreal Protocol.
  8. Other matters.
  9. Adoption of decisions by the Conference of the Parties to the Vienna Convention at its ninth meeting.
  10. Adoption of decisions by the Twenty-Third Meeting of the Parties to the Montreal Protocol.
  11. Adoption of the report of the ninth meeting of the Conference of the Parties to the Vienna Convention and the Twenty-Third Meeting of the Parties to the Montreal Protocol.
  12. Closure of the meeting.
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**United Nations  
Environment  
Programme**

**Ninth meeting of the Conference of  
the Parties to the Vienna Convention  
for the Protection of the Ozone Layer**

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

**Bali, Indonesia, 21–25 November 2011**

**Report of the combined ninth meeting of the Conference of the  
Parties to the Vienna Convention on the Protection of the Ozone  
Layer and Twenty-Third Meeting of the Parties to the Montreal  
Protocol on Substances that Deplete the Ozone Layer**

**Introduction**

1. The combined ninth meeting of the Conference of the Parties to the Vienna Convention and Twenty-Third Meeting of the Parties to the Montreal Protocol was held at the Bali Nusa Dua Convention Centre in Nusa Dua, Bali, Indonesia, from 21 to 25 November 2011. It consisted of a preparatory segment, held from 21 to 23 November, and a high-level segment, held on 24 and 25 November. The meeting was opened at 10.20 a.m. on Monday, 21 November 2011.
2. The present report reflects the deliberations under the items included on the single agenda used for the combined meeting; any references to the current meeting should be understood to denote the combined meeting of the two bodies.

**Part one: preparatory segment**

**I. Opening of the preparatory segment**

3. The preparatory segment of the meeting began with welcoming remarks by a master of ceremonies, a performance of traditional Indonesian dance, an introductory address by Mr. Marco González, Executive Secretary of the Ozone Secretariat, and an opening statement by Mr. Balthasar Kambuaya, State Minister for the Environment of Indonesia.
4. In his statement, Mr. González welcomed the participants and thanked the Government of Indonesia for hosting the meeting. He drew attention to the historical achievements of the Montreal Protocol, recalling that the parties to the Protocol had, in 1990, agreed to accelerate the control of chlorofluorocarbons (CFCs), halons and carbon tetrachloride in a manner that shifted the fundamental strategy of the instrument from phase-down to phase-out of ozone-depleting substances, with the goal of total phase-out of controlled production and consumption by 2010. He then announced that over 95 per cent of parties had reported data for 2010, and all had reported full compliance with the phase-out of controlled uses of CFCs, halons and carbon tetrachloride. As a consequence, over 98 per cent of ozone-depleting substances controlled by the Montreal Protocol had been phased out, which represented a considerable achievement.

5. There was, however, no room for complacency. It was becoming more apparent that a synergistic approach was needed to respond to the complexities of the global environment, including the increasingly recognized interlinkages between ozone and climate change issues. It was therefore important to maintain commitment to phasing out ozone-depleting substances and to be vigilant in monitoring the global atmospheric environment. In that regard, efforts should be made to ensure that the appropriate programmes and monitoring tools were in place to maintain historical records of the levels of ozone-depleting substances in the stratosphere. In addition, he stressed that the phase-out of hydrochlorofluorocarbons (HCFCs) would present an opportunity to make the transition to more benign substances and energy-efficient technologies that would both protect the ozone layer and provide climate benefits, thus contributing to sustainable development. Continuing that process would require a robust replenishment of the Multilateral Fund for the Implementation of the Montreal Protocol. Finally, he drew attention to other important issues on the agenda of the current meeting, including hydrofluorocarbons (HFCs), exemptions, the work of the assessment panels and the treatment of ozone-depleting substances used to service ships.

6. Mr. Kambuaya welcomed the participants to Bali, saying that his country had witnessed a defining moment in the history of climate change negotiations with the adoption of the Bali Road Map and Bali Action Plan at the thirteenth session of the Conference of the Parties to the United Nations Framework Convention on Climate Change, in December 2007. He expressed the hope that the current meeting would result in significant measures to protect the ozone layer. Indonesia viewed the Montreal Protocol as a good example of how an international treaty could be implemented effectively and universally, thanks to the support and commitment of its signatory parties. He outlined the control measures that Indonesia had undertaken to fulfil its obligations under the protocol, noting that it had achieved a complete phase-out in advance of the stipulated deadline of 2010 and that the Executive Committee of the Multilateral Fund had approved the country's HCFC phase-out management plan.

7. He drew attention to the new challenges facing the Montreal Protocol, including how to deal with those substances that had a low ozone-depletion potential but a high global-warming potential. Such challenges meant that it was necessary to think and act in a comprehensive and holistic manner, as demonstrated by Indonesia's success in reducing greenhouse-gas emissions while maintaining high levels of economic growth. Indonesia recognized that the phase-out of HCFCs should be undertaken synergistically with other efforts to protect the environment for the benefit of present and future generations. He reported that as part of its effort to promote synergy and cooperation, Indonesia had developed for the consideration of the parties a declaration on the transition to low-global-warming-potential alternatives to ozone-depleting substances. In conclusion, he thanked all those involved in organizing the meeting and wished the participants fruitful and productive deliberations.

8. Following his statement, Mr. Kambuaya struck a ceremonial gong to mark the official opening of the meeting.

## **II. Organizational matters**

### **A. Attendance**

9. The combined ninth meeting of the Conference of the Parties to the Vienna Convention and Twenty-Third Meeting of the Parties to the Montreal Protocol was attended by representatives of the following parties to the two instruments: Angola, Argentina, Armenia, Australia, Austria, Azerbaijan, Bahamas, Bahrain, Bangladesh, Belgium, Belarus, Belgium, Benin, Bhutan, Bosnia and Herzegovina, Botswana, Brazil, Bulgaria, Burkina Faso, Cambodia, Canada, Central African Republic, China, Colombia, Congo, Cook Islands, Costa Rica, Côte d'Ivoire, Cuba, Czech Republic, Democratic Republic of the Congo, Denmark, Dominica, Dominican Republic, Egypt, Equatorial Guinea, Estonia, Ethiopia, European Union, Fiji, Finland, France, Gambia, Georgia, Germany, Grenada, Guinea, Guinea-Bissau, Holy See, India, Indonesia, Iran (Islamic Republic of), Iraq, Italy, Jamaica, Japan, Jordan, Kazakhstan, Kenya, Kuwait, Kyrgyzstan, Lao People's Democratic Republic, Lebanon, Lesotho, Lithuania, Malawi, Malaysia, Maldives, Mali, Marshall Islands, Mauritius, Mexico, Micronesia (Federated States of), Mongolia, Montenegro, Morocco, Mozambique, Myanmar, Nepal, Netherlands, New Zealand, Nicaragua, Niger, Nigeria, Norway, Oman, Pakistan, Palau, Panama, Republic of Moldova, Romania, Russian Federation, Saint Lucia, Samoa, Sao Tome and Principe, Senegal, Seychelles, Singapore, Solomon Islands, South Africa, Sri Lanka, Suriname, Swaziland, Sweden, Switzerland, Syrian Arab Republic, Tajikistan, Thailand, the former Yugoslav Republic of Macedonia, Timor-Leste, Togo, Tonga, Trinidad and Tobago, Tunisia, Uganda, United Arab Emirates, United Kingdom of Great Britain and Northern Ireland, United States of America, Uruguay, Uzbekistan, Vanuatu, Venezuela (Bolivarian Republic of), Viet Nam, Yemen, Zambia, Zimbabwe.

10. A representative of South Sudan attended the meeting as an observer.
11. Representatives of the following United Nations bodies and specialized agencies also attended: Economic and Social Commission for Asia and the Pacific, Global Environment Facility, 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.
12. Representatives of the following intergovernmental, non-governmental and industry bodies attended the meeting as observers: African Development Co. for Trade, Alliance for Responsible Atmospheric Policy, Asahi Glass C. Ltd, Ausk International LLC, BASF, California Citrus Quality Council, California Strawberry Commission, Changshu 3F Fluorochemical Industry Co. Ltd, Chemtura Corporation, Children's Hospital, China Association of Flourine and Silicone Industry, China Association of Organofluorine and Silicone Material Industry, China Fluoro Technology Co. Ltd., CYDSA, Daikin Industries, Ltd., Crop Protection Coalition, Danish Environmental Protection Agency, Dow AgroSciences LLC, DuPont International, Emergent Ventures (EVI), Environmental Investigation Agency, Foam Supplies Inc., Free Trade Co., GIZ Proklima, Green Cooling Association, Greenpeace International, Gujarat Fluorochemicals Limited, HARMED, ICF International, Industrial Technology Research Institute, Institute for Governance and Sustainable Development, International Institute of Refrigeration, Japan Fluorocarbon Manufacturers Association, Jiangsu Kangtai Fluorine Chemical Co. Ltd., K-Global Corporation, Korea Specialty Chemical Industry, Kyoto University, M. De Hondt bvba, Manitoba Ozone Protection Industry Association, MEBROM, MEBROM PTY Ltd., Myland Group, Natural Resources Defense Council, Navin Fluorine International Limited, NIFLON, Nybra Consulting, Panasonic Corporation, OSP Advantage System, Princeton University, PT. Grasse Arum Lestari, Refrigerants Australia, Shecco, Sinochem Lantian Co. Ltd., SMARTD, SRF Limited, Technical Education and Skills Development Authority, Teijin Aramid BV, TouchDown Consulting, Trans-Mond Environment Ltd, Yingpeng Chemical Co. Ltd., Zhejiang Chemical Industry Research Institute, Zhejiang Fluorescence Chemical Co. Ltd, Zhejiang Juhua Co. Ltd., Zhejiang Quhua Flour-Chemistry Co. Ltd., Zhejiang Sanmeichemical Industry Co. Ltd., 3M Electronics.

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

13. The following agenda for the preparatory segment was adopted on the basis of the provisional agenda contained in document UNEP/OzL.Conv.9/1-UNEP/OzL.Pro.23/1:
  1. Opening of the preparatory segment:
    - (a) Statement by representative(s) of the Government of Indonesia;
    - (b) Statement by representative(s) of the United Nations Environment Programme.
  2. Organizational matters:
    - (a) Adoption of the agenda of the preparatory segment;
    - (b) Organization of work.
  3. Combined Vienna Convention and Montreal Protocol issues:
    - (a) Financial reports and budgets of the trust funds for the Vienna Convention and the Montreal Protocol;
    - (b) Status of ratification of the Vienna Convention, the Montreal Protocol and the amendments to the Montreal Protocol.
  4. Montreal Protocol issues:
    - (a) Replenishment of the Multilateral Fund for the Implementation of the Montreal Protocol:
      - (i) Supplemental report of the Technology and Economic Assessment Panel replenishment task force;
      - (ii) Extension of the fixed-exchange-rate mechanism;
    - (b) Issues related to exemptions from Article 2 of the Montreal Protocol:
      - (i) Nominations for 2012 and 2013 for essential-use exemptions;
      - (ii) Essential-use exemption for chlorofluorocarbon-113 for aerospace applications in the Russian Federation;



- (iii) Nominations for 2012 and 2013 critical-use exemptions;
  - (iv) Quarantine and pre-shipment uses of methyl bromide;
  - (v) Global laboratory and analytical-use exemption;
  - (vi) Sustained mitigation of ozone-depleting-substance emissions from feedstock and process-agent uses;
  - (c) Environmentally sound disposal of ozone-depleting substances;
  - (d) Updating the nomination processes and recusal guidelines for the Technology and Economic Assessment Panel;
  - (e) Treatment of ozone-depleting substances used to service ships;
  - (f) Additional information on alternatives to ozone-depleting substances;
  - (g) Use of methyl bromide in Africa;
  - (h) Proposed amendments to the Montreal Protocol:
    - (i) Proposed amendment by Canada, Mexico and the United States of America;
    - (ii) Proposed amendment by the Federated States of Micronesia;
  - (i) Potential areas of focus for the assessment panels' 2014 quadrennial reports;
  - (j) Phase-out of HFC-23 by-product emissions;
  - (k) Status of Nepal relative to the Copenhagen Amendment to the Montreal Protocol;
  - (l) Consideration of membership of Montreal Protocol bodies for 2012:
    - (i) Members of the Implementation Committee;
    - (ii) Members of the Executive Committee of the Multilateral Fund;
    - (iii) Co-Chairs of the Open-ended Working Group;
    - (iv) Endorsement of a new co-chair of the Chemicals Technical Options Committee and a senior expert of the Technology and Economic Assessment Panel;
  - (m) Compliance and reporting issues considered by the Implementation Committee.
5. Vienna Convention issues:
- (n) Report of the eighth meeting of the Ozone Research Managers of the Parties to the Vienna Convention;
  - (o) Status of the General Trust Fund for Financing Activities on Research and Systematic Observations Relevant to the Vienna Convention.

6. Other matters.

14. During the adoption of the agenda for the preparatory segment the parties agreed to take up under agenda item 6, "Other matters", or under other items of the agenda the question of mobilizing funds from sources other than the Multilateral Fund to accelerate the phase-out of HCFCs; difficulties encountered by parties operating under paragraph 1 of Article 5 of the Montreal Protocol when phasing out methyl bromide; and a proposed Bali declaration on achieving the transition to low-global-warming-potential alternatives to ozone-depleting substances. The parties also agreed to take up the composition, functions and grades of the staff of the Montreal Protocol Secretariat under item 3 (a), "Financial reports and budgets of the trust funds for the Vienna Convention and the Montreal Protocol"; and inflation adjustments for national institutional strengthening programmes under agenda item 4 (a), "Replenishment of the Multilateral Fund".

15. The discussion on the adoption of the agenda included deliberations on the merits of items 4 (h) and 4 (j) of the provisional agenda, "Proposed amendments to the Montreal Protocol" and "Phase-out of HFC-23 by-product emissions", respectively. One representative, supported by several others, said that HFCs were not ozone-depleting substances and that they therefore lay outside the scope of the Montreal Protocol and should not be on the agenda of meetings under the Protocol,

especially given the failure to reach consensus on them at several earlier meetings. He said that discussion of HFC-related matters reduced the time available for discussion of the many items that were of direct relevance to the implementation of the Protocol and should be prioritized. One representative said that HFC-related matters had been discussed informally at earlier meetings, and that such an approach at the current meeting would allow the parties to concentrate on issues that lay within the mandate of the Protocol. Another representative argued that discussion of HFCs should be left to the United Nations Framework Convention on Climate Change.

16. Other representatives supported inclusion of HFC-related items on the agenda. Several noted that the proposed amendments to the Montreal Protocol had been submitted in accordance with the rules of procedure of the Montreal Protocol and the Vienna Convention for the Protection of the Ozone Layer and said that the matter was therefore properly on the agenda. One representative, supported by others, said that the parties differed in their priorities. Many said that the proposed amendment and the draft decision on HFC-23 by-product emissions were important priorities and that, as they always did for such important matters, the parties should find the time to discuss them; exchanging views helped to foster understanding, in keeping with the traditions of the Protocol. Another representative recalled that at the Twenty-Second Meeting of the Parties 91 parties had signed a declaration requesting the Parties to give further consideration to HFCs. One representative pointed out that the parties to the Protocol had often discussed whether alternatives to ozone-depleting substances would have negative effects on the environment, other than their impact on the ozone layer, and had adopted decision XIX/6, which encouraged parties to take into account the impact of HCFC alternatives on the environment, including in particular the climate.

17. One representative said that the primary issue was one of principle: discussion under the Montreal Protocol of a substance that lay within the purview of the Kyoto Protocol to the United Nations Framework Convention on Climate Change could have negative legal, technical and policy implications. Another representative, however, said that it was equally a matter of principle that the problem of HFCs had arisen from actions taken under the Montreal Protocol and that parties therefore had a legal and moral obligation to rectify the issue.

18. Following the discussion, the co-chair said that as items 4 (h) and 4 (j) had been placed on the agenda in accordance with the rules of procedure, and there was no consensus to remove them, they would remain on the agenda.

### **C. Officers**

19. The preparatory segment of the combined meeting was co-chaired by Ms. Gudi Alkemade (Netherlands) and Mr. Ndiaye Cheikh Sylla (Senegal), co-chairs of the Open-ended Working Group of the Parties to the Montreal Protocol.

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

20. The parties agreed to follow their customary procedure and to establish contact groups as necessary.

## **III. Combined Vienna Convention and Montreal Protocol issues**

### **A. Financial reports and budgets of the trust funds for the Vienna Convention and the Montreal Protocol**

21. Introducing the item, the Co-Chair drew attention to the approved and proposed budgets set out in documents UNEP/OzL.Conv.9/4 and UNEP/OzL.Pro.23/4 and the financial reports set out in documents UNEP/OzL.Conv.9/4/Add.1 and UNEP/OzL.Pro.23/4/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, chaired by Mr. Alessandro Peru (Italy), to agree on budgets for the Vienna Convention and the Montreal Protocol trust funds and to prepare draft decisions on financial matters for the Convention and the Protocol.

22. Subsequently, the co-chair of the budget committee presented conference room papers containing consensus draft decisions on the financial report and budget of the trust fund of the Montreal Protocol and on the financial report and budget of the trust fund of the Vienna Convention.

23. During the discussion of budgetary matters, Mr. Michael Church, President of the Bureau of the Twenty-First Meeting of the Parties to the Montreal Protocol, reported that, in accordance with the wishes of the parties expressed at previous meetings, discussions had been held with the Executive Director of UNEP and the Secretary-General of the United Nations on extending the mandate of

Mr. Marco González, Executive Secretary of the Ozone Secretariat. As a result, the period of tenure of Mr. González as Executive Secretary had been extended to October 2013. He noted that as this date was not consistent with the term of extension that had been requested by the Parties in decision XXII/21, the Parties might wish to reconsider this issue at an appropriate time.

24. The parties took note of Mr. Church's statement and approved the draft financial and budgetary decisions for further consideration and adoption during the high-level segment.

## **B. Status of ratification of the Vienna Convention, the Montreal Protocol and the amendments to the Montreal Protocol**

25. Introducing the item, the Co-Chair recalled that at each meeting the parties reviewed the status of ratification of the Vienna Convention, the Montreal Protocol and the amendments to the Montreal Protocol. He drew attention to the draft decisions on the matter set out in document UNEP/OzL.Conv.9/3-UNEP/OzL.Pro.23/3.

26. The Parties agreed that the draft decisions should be updated by the Secretariat for consideration and adoption during the high-level segment

## **IV. Montreal Protocol issues**

### **A. Replenishment of the Multilateral Fund for the Implementation of the Montreal Protocol**

#### **1. Supplemental report of the Technology and Economic Assessment Panel replenishment task force**

27. Mr. Lambert Kuijpers, Co-Chair of the Technology and Economic Assessment Panel, Ms. Shiqiu Zhang, co-chair of the Panel's replenishment task force, and Mr. Daniel Colbourne, member of the task force, made a presentation on the task force's supplemental report on the replenishment of the Multilateral Fund for the period 2012–2014. A summary of the presentation, as submitted by the presenters and without formal editing, is set out in annex VI to the present report.

28. Following the presentation Mr. Kuijpers responded to several requests for clarification. Regarding swing plant funding, he said that although the supplemental report indicated that compensation for swing plants was not included, an addendum issued in November clarified that it was. He further specified that the option of full funding and the option of no funding for swing plant closures had both been considered in the May 2011 replenishment report.

29. Asked about funding stability, he explained that the replenishment task force had calculated consumption funding for stage I HCFC phase-out management plans and estimated funding for stage II plans and had then looked at how various options would contribute to a more stable funding profile. He said that chapter 6 of the supplemental report provided more details on options for ensuring more stable funding.

30. Regarding the cost effectiveness of phasing out ozone-depleting substances in the production sector, he said that, while only two scenarios had been presented, more scenario tables could be prepared very quickly and the task force would be happy to do so upon request.

31. Responding to a query about cost estimates for converting plants from non-feedstock to feedstock production, he explained that the task force lacked the experience and technical information needed to be certain that all conversions could be achieved at a given cost level. Investigations with HCFC-22 manufacturers had revealed, however, that in principle such conversions should pose no problems.

32. He expressed agreement with one representative that there was significant uncertainty and lack of experience in estimating future production sector funding. He explained that, in its analysis, the task force had chosen not to postpone tranches of production sector funding to the second or third trienniums because consumption expenditure was already due to increase in later years, creating an imbalance that should not be exacerbated. He added that the task force had evaluated additional scenarios for funding requirements but had been unable to include them all in its presentation at the current meeting. They were, however, set out in the supplemental report.

33. One representative said that 2012–2014 was a key period for accelerating HCFC phase-out, that stable and efficient funding was therefore important, and that replenishment of the Multilateral Fund should be based on the practical needs of developing countries. He said that the current international economic situation made it even more important than usual to show political will and commitment and expressed the hope that developed countries understood the importance of production

sector control measures and sustained funding sufficient to enable compliance. He also said that the conditions of developing countries should be taken fully into account in assessing their compliance.

34. Several representatives called attention to the variance in funding requirement estimates for the Multilateral Fund during the 2013–2015 triennium. The May 2011 report of the Technology and Economic Assessment Panel had estimated a total requirement of \$390–477 million, and the subsequent reassessment of the estimate was \$460–540 million. Representatives said that they would voice concerns about the increase in the estimated funding requirement during negotiations on the replenishment of the Multilateral Fund. One representative also said that the analysis in the supplemental report included too few scenarios and did not adequately explain large effects on funding estimates resulting from small differences in the underlying assumptions.

35. Many representatives of parties not operating under paragraph 1 of Article 5 of the Montreal Protocol said that, while the Multilateral Fund was the cornerstone of the Protocol's success, in the current global economic climate it was difficult to commit to substantial increases in funding. Some representatives said too that in times of financial difficulty it was important that the Multilateral Fund should be as cost-effective as possible.

36. The representative of Japan observed that his country had been stricken by an earthquake, a tsunami and a nuclear disaster in early 2011 and that the response to those disasters was a priority for his Government, particularly given the global economic crisis. He further noted that there had been no change in the composition of countries operating under paragraph 1 of Article 5 of the Protocol despite rapid economic progress in some of those countries. Flexibility would be needed in negotiations on the replenishment, including consideration of voluntary contributions from parties operating under paragraph 1 of Article 5 and parties not so operating, or private funding.

37. One representative, speaking on behalf of a group of countries, expressed concern regarding the new replenishment figures contained in the supplemental report. He said that while there was limited scope for variations in estimated funding for the consumption sector, the options for the production sector provided in chapter 6 of the supplemental report created a sound basis for negotiation. He congratulated China and other parties operating under paragraph 1 of Article 5 for their recent agreement to use funds from the Multilateral Fund to reduce or eliminate HCFCs. He said that such an arrangement should be continued in the coming replenishment in accordance with decision XIX/6, in a manner that would enable all contributing countries to meet their obligations taking into account the substantial economic constraints that some of them were facing. He emphasized that as economically viable and technically feasible low-GWP alternatives existed for many applications, a transition to high-GWP alternatives should be avoided.

38. One representative of a non-governmental organization said that parties operating under paragraph 1 of Article 5 of the Protocol were strongly committed to shifting to alternatives with lower global-warming potential. Noting that the purpose of the Montreal Protocol was to protect the environment, he said that the use of substances harmful to the environment such as HFCs would undermine that purpose.

39. The parties agreed to establish a contact group, co-chaired by Ms. Donnalyn Charles (Saint Lucia) and Mr. Jozef Buys (Belgium), to consider the matter of replenishment further. All parties were invited to take part in the initial deliberations of the contact group.

40. Following initial sessions of the contact group, the co-chair reported that the contact group had agreed that its membership should be reduced in size, comprising the two co-chairs and the representatives of Argentina, Armenia, Australia, Brazil, Canada, China, Colombia, Czech Republic, France, Germany, India, Italy, Japan, Kuwait, Lebanon, Malaysia, Mexico, Nigeria, Sweden, Switzerland and the United States of America. He also said that at its initial meetings the contact group had addressed all the non-HCFC production elements of the replenishment.

41. Subsequently, the representative of Argentina formally introduced its draft decision on accounting for inflation in funding institutional strengthening projects. The proposal was supported by the representatives of Brazil, Colombia and Uruguay. The Meeting of the Parties agreed that further consideration of the draft decision would take place in the contact group on replenishment.

42. Following the work of the contact group the parties approved for consideration and adoption during the high-level segment a draft decision agreed by the contact group on the replenishment of the Multilateral Fund for the period 2012–2014.

43. The representative of India introduced a conference room paper containing a draft decision on guidelines for the funding of HCFC production facilities. He recalled that the nineteenth Meeting of the Parties had by its decision XIX/6 decided to accelerate the phase-out of production and

consumption of HCFCs by ten years. He said that in paragraph 5 of that decision the parties had agreed that the funding available through the Multilateral Fund in upcoming replenishments would be stable and sufficient to meet all agreed incremental costs to enable parties operating under paragraph 1 of Article 5 to comply with the accelerated phase-out schedule both for production and consumption. Furthermore, he said, decision XIX/6 was very clear on funding for second conversions in respect of both production and consumption and the parties had accordingly directed the Executive Committee of the Multilateral Fund to make necessary changes to the eligibility criteria related to post-1995 facilities and second conversions.

44. He said that the accelerated phase-out of production and consumption undertaken pursuant to decision XIX/6 had significant adverse impacts on countries operating under paragraph 1 of Article 5, as decision XIX/6 had significantly advanced the applicable control measures, bringing the baseline years forward from 2015 to 2009 and 2010 and the freeze date forward from 2016 to 2013. Corresponding changes in the step-wise phase-out of HCFCs would have major adverse implications for industry and the economy in his country. He said that although more than four years had passed, the Executive Committee of the Multilateral Fund had been unable to finalize policy guidelines for phasing out HCFC-22 production facilities, including HCFC-22 swing production plants. Such plants in countries operating under paragraph 1 of Article 5 were eligible for funding under decision XIX/6 and India had therefore prepared the draft decision for consideration at the current meeting.

45. During the ensuing discussion, several representatives opposed consideration of the draft decision. One representative, supported by others, said that the Executive Committee subgroup on the production sector had made significant progress in developing the guidelines for the production sector and should complete its work. In addition, the language of the draft decision under consideration differed from that in decision XIX/6 and was therefore not an appropriate basis for discussion. Nor was it clear under which item the meeting might consider the draft decision; it had not been put forward for consideration under other matters during the adoption of the agenda, and it was not relevant to the deliberations under item 4 (a) on replenishment.

46. Several representatives supported consideration of the draft decision. One representative, supported by others, said that the provision of funding for HCFC production facilities was very relevant to the discussion on replenishment of the Multilateral Fund and was of great importance for parties operating under paragraph 1 of Article 5 as they sought to comply with the control measures for HCFC production. Also, while the Executive Committee's subgroup on the production sector was considering that matter, the Meeting of the Parties had the authority, under paragraph 4 of Article 10 of the Montreal Protocol, to issue overall policy instructions to the Executive Committee. Another representative said that if the matter was not given due consideration at the current meeting then parties operating under paragraph 1 of Article 5 would be unable to comply with decision XIX/6.

47. The Co-Chair noted that the draft decision had not been raised during the adoption of the agenda and that there was no consensus to discuss it further. Accordingly he ruled that, as the parties were unlikely to achieve consensus on the draft decision, he would not consider any further discussion of the issue at the current meeting.

48. Following the co-chairs ruling, the representative of India said that in his view the parties had agreed that the draft decision submitted by his country would be discussed in the contact group on replenishment and objected to the fact that that it had not been discussed there. He asked that the draft decision should be attached as annex to the present report; the parties having not expressed objection, the draft decision is set out in annex VII. He also said that if funding were not provided for closing HCFC swing production plants in countries operating under paragraph 1 of Article 5 of the Protocol then those countries would continue to produce HCFC-22 in accordance with the phase-out schedule in effect prior to the adoption of decision XIX/6, that is, based on a 2015 baseline, a freeze in 2016 at the 2015 baseline level and a complete production phase-out in 2040.

## **2. Extension of the fixed-exchange-rate mechanism**

49. Introducing the item, the Co-Chair noted that parties had used a fixed-exchange-rate mechanism to facilitate payments under the Multilateral Fund, resulting in a net increase in actual funds available. At its thirty-first meeting, the contact group established by the Open-ended Working Group had recommended extending the use of the fixed-exchange-rate mechanism during the 2013–2015 triennium. A draft decision on the matter was contained in document UNEP/OzL.Conv.9/3-UNEP/OzL.Pro.23/3 (draft decision B).

50. One representative expressed strong support for extending the fixed-exchange-rate mechanism, following which the parties approved the draft decision for consideration and adoption during the high-level segment.

## **B. Issues related to exemptions from Article 2 of the Montreal Protocol**

### **1. Nominations for 2012 and 2013 for essential-use exemptions**

51. Mr. Ashley Woodcok, co-chair of the Medical Technical Options Committee, provided a presentation on the Committee's findings with regard to the nominations for 2012 and 2013 essential-use exemptions and updated the Parties on the situations in China and the United States of America regarding the cessation of use of some types of CFC-free metered-dosed inhalers. A summary of the presentation, as submitted by the Committee and without formal editing, is set out in annex VI to the present report.

52. Several representatives expressed satisfaction that the number of requests for essential-use nominations had continued to decline. One representative, however, expressed regret that his country's request that the Medical Technical Options Committee should provide further information on CFC-based metered-dose inhalers intersessionally (as reflected in paragraph 89 of the report of the thirty-first meeting of the Open-ended Working Group) had not been fulfilled.

53. One representative said that his country had only been able to convert one facility to producing metered-dose inhalers using medical-grade alternatives to CFCs. While his country was committed to converting its remaining production facilities, he requested the approval of its essential-use nomination, saying that metered-dose inhalers were required to treat the large number of cases of asthma in his country. He said that his country was making progress in eliminating CFC propellants and expected to cease using them altogether by 2013.

54. Another representative said that his country had made administrative and technological progress in eliminating CFC propellants but that the continued high cost of alternatives meant that the use of CFCs was still necessary and that accordingly he would submit a draft decision on essential-use exemptions for consideration by the parties.

55. Other representatives said that alternatives to CFCs were available and that several other issues also needed to be addressed, such as the use of stockpiles. One representative said that the draft decision on essential-use nominations should address the issue of pharmaceutical grade CFCs and suggest a strategy to encourage parties to find alternatives to CFCs and develop regulations to ban their sale and use.

56. The Executive Secretary reported that on 3 August 2011 the Secretariat had received an urgent request from Mexico for an emergency use authorization for 6 tonnes of CFC-12 for metered-dose inhalers. He said that, in consultation with the Technology and Economic Assessment Panel, the Secretariat had authorized that emergency use and that Mexico had voluntarily decided to compensate for that consumption by destroying the same amount of CFC-11 from stockpiles.

57. Following the discussion it was agreed that interested parties would work together on a draft decision on essential-use exemption nominations for 2012.

58. Subsequently, the representative of China introduced a revised version of the draft decision on essential-use nominations for controlled substances for 2012, noting that the essential-use authorization for 2012 for chlorofluorocarbons for metered-dose inhalers for Bangladesh required finalization. Some representatives expressed an interest in further consultations on the draft decision.

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

### **2. Essential-use exemption for chlorofluorocarbon-113 for aerospace applications in the Russian Federation**

60. Introducing the item the Co-Chair recalled that at the thirty-first meeting of the Open-ended Working Group some concerns had been expressed about the Russian Federation's essential-use nomination for aerospace purposes and that parties had agreed to discuss the matter intersessionally.

61. At the current meeting one representative recalled that the Open-ended Working Group had discussed both the possible use of alternative solvents and the accelerated phase-out of CFC-113 by 2016 and that he would like to see that understanding reflected in the decision to be adopted on the matter. The representative of the Russian Federation, however, said that there were currently no alternatives available that would enable his country to phase out solvents completely.

62. It was agreed that a number of interested representatives would discuss the matter informally.

63. Following those discussions the parties approved a draft decision for consideration and adoption during the high-level segment.

### 3. Nominations for 2012 and 2013 critical-use exemptions

64. Three of the four co-chairs of the Methyl Bromide Technical Options Committee, Mr Mohamed Besri, Mr. Ian Porter, and Ms. Michelle Marcotte, provided a detailed presentation on the Committee's findings in respect of the critical-use nominations for 2012 and 2013. A summary of the presentation, as submitted by the presenters and without formal editing, is set out in annex VI to the present report.

65. During the ensuing discussion, the Co-Chair suggested that some parties might wish to pursue bilateral discussions with the Committee to discuss their own critical-use nominations or provide additional information.

66. In response to a question about alternatives to methyl bromide, the Committee co-chairs said that several alternatives were currently available. They also noted that decisions on using stockpiles of methyl bromide were taken by the parties and not by the Committee, and that it was not the role of the Committee to persuade parties to use alternatives to methyl bromide in quarantine and pre-shipment uses.

67. One representative said that by making available research on alternatives to methyl bromide the Committee would help those making requests for critical-use exemptions. He added that the rising use of methyl bromide for quarantine and pre-shipment purposes was a cause for concern and should be addressed through the Multilateral Fund.

68. Many representatives expressed satisfaction at the decline in critical-use nominations and methyl bromide use. Several representatives expressed concern, however, regarding the growing number of minority reports prepared by members of the Methyl Bromide Technical Options Committee with regard to critical-use nominations, the process by which the Committee generated its recommendations on such nominations and the inconsistent use of some figures in the current report. One representative asked for a detailed explanation of the components of the approval process and the indicators used by the Committee when assessing critical-use nominations. He also urged the Committee to work within its mandate. Another representative stressed that the Committee should seek to reach consensus in its deliberations. He also said that when reading the Committee's report he had sometimes found it difficult to reach the same conclusions as the Committee and requested that more information should be provided on how the Committee reached its conclusions. He also expressed concern at the metrics presented by the Panel for economic feasibility and what he described as the arbitrary nature of the suggested figures, noting that the parties had not endorsed the approach used by the Committee.

69. One representative recalled that his country had not requested an additional review of the recommendations of the committee for his country for 2011 but said that it disagreed with the conclusions of the minority report. Another representative expressed appreciation for the Committee's request to reconsider the number of Committee meetings held each year. He said that although two meetings a year had made sense in the past, lower methyl bromide use meant that it might not be necessary for the Committee to continue to meet so frequently. He noted that his country had cut methyl bromide use by 97 per cent from its 1991 baseline and that it had withdrawn its request for a critical-use exemption for using methyl bromide in research. Research needs would be met from existing stockpiles, which were being rapidly drawn down and might be exhausted by 2013. He added that the Committee's minority report for one use in his country had more accurately reflected the reality of methyl bromide use in his country than had the majority conclusion. Consequently he would be introducing a draft decision on that issue for the consideration of the parties.

70. Several representatives expressed interest in the draft decision on critical uses, although one representative said that he hoped that it would not lead to an increase in critical-use nominations. One representative of a non-governmental organization expressed concern at what he said was a tendency to seek critical-use exemptions for production of methyl bromide instead of drawing down stockpiles, and he urged parties to use up their stocks before seeking exemptions.

71. Following the discussions in plenary session and informal consultations the parties approved a draft decision on critical-use nominations for consideration and adoption during the high-level segment.

### 4. Quarantine and pre-shipment uses of methyl bromide

72. Introducing the sub-item, the Co-Chair recalled that the European Union had presented a draft decision on quarantine and pre-shipment uses of methyl bromide at the thirty-first meeting of the Open-ended Working Group. Following discussion at that meeting the European Union had engaged in informal consultations and produced a revised draft decision, which was available to the parties as a

conference room paper. Introducing the revised draft, the representative of the European Union said that it emphasized the crucial role of the International Plant Protection Convention in determining phytosanitary requirements in international trade and called for improved reporting and access to information on alternatives to methyl bromide.

73. Several representatives voiced general support for the draft decision, saying that it should be discussed in a contact group. Many said that there was a need for accurate data to provide a basis for controlling quarantine and pre-shipment uses of methyl bromide, suggesting that a good overview of quantities and uses would help to prevent proscribed uses.

74. Some representatives affirmed that measures should be taken, whenever possible, to avoid methyl bromide use both before shipment and on arrival, with some noting that they were often required to use methyl bromide by countries to whom they exported goods.

75. Several representatives also welcomed proposed measures for identifying alternatives to methyl bromide used for quarantine and pre-shipment purposes. One representative pointed out that the Technology and Economic Assessment Panel's report for 2010 had indicated that over 30 per cent of the methyl bromide used for quarantine and pre-shipment purposes could be rapidly replaced by alternatives. Another representative, however, said that the available alternatives were not very mature and that shifting to alternatives was a challenge for developing countries.

76. A few representatives said that any discussion of the draft decision should be deferred, stating that they were not yet in a position to provide detailed data on methyl bromide used for quarantine and pre-shipment purposes. Some suggested that reporting should be on a voluntary basis. One representative said that methyl bromide used for such purposes was already reported under Article 7 of the Montreal Protocol.

77. The parties agreed to establish a contact group, to be chaired by Ms. Alice Gausted (Norway), to discuss the matter and to consider the draft decision further.

78. Following the work of the contact group the parties approved a draft decision on the matter for consideration and adoption during the high-level segment.

## **5. Global laboratory and analytical-use exemption**

79. Introducing the item, the Co-Chair recalled that at the Open-ended Working Group's thirty-first meeting the Technology and Economic Assessment Panel had reported on alternatives to ozone-depleting substances available for laboratory and analytical uses. Following the deliberations at that meeting, China had put forward a draft decision (draft decision G in document UNEP/OzL.Conv.9/3-UNEP/OzL.Pro.23/3) that would allow parties operating under paragraph 1 of Article 5 of the Protocol to deviate from existing laboratory and analytical use bans in individual cases until 31 December 2014. Subsequently, several parties, supported by members of the Chemicals Technical Options Committee, had engaged in discussions on the substance of that draft decision.

80. Reporting on the status of those discussions, the representative of China said that the deliberations had been very fruitful and had culminated, at the current meeting, in an agreement between several parties on a revised draft decision. He expressed gratitude to those parties for their constructive approach and invited other interested countries to engage in further discussions.

81. Subsequently, the representative of China introduced a conference room paper containing a revised version of the draft decision. The parties approved the draft decision for further consideration and adoption during the high-level segment.

## **6. Sustained mitigation of ozone-depleting-substance emissions from feedstock and process-agent uses**

82. Introducing the sub-item, the Co-Chair recalled that the European Union had put forward a draft decision on sustained mitigation of ozone-depleting-substance emissions from feedstock and process-agent uses at the Open-ended Working Group's thirty-first meeting. After discussing the draft decision in a contact group, the Working Group had forwarded the draft decision for further consideration at the current meeting.

83. The representative of the European Union noted that there had been extensive intersessional consultations on the matter. On the basis of those discussions, the European Union had prepared two separate draft decisions, presented in conference room papers for consideration at the current meeting, one addressing process-agent uses and another on feedstock uses.

84. Several representatives expressed support for further discussions in a contact group, in particular to address the unexplained discrepancy between bottom-up and top-down estimates of



carbon tetrachloride emissions. Several mentioned that new information had emerged during the inter-sessional consultations. One representative objected strongly to the discussion of feedstock uses in a contact group, arguing that such uses were not covered by the Montreal Protocol.

85. The parties agreed to establish a contact group, to be chaired by Mr. Blaise Horisberger (Switzerland). The contact group was mandated to consider process-agent uses first and then, if sufficient time remained, to consider feedstock uses, with particular emphasis on carbon tetrachloride emissions.

86. Following the work of the contact group the parties approved draft decisions on process-agent uses and on the discrepancy between bottom-up and top-down estimates of carbon tetrachloride emissions for consideration and adoption during the high-level segment.

### **C. Environmentally sound disposal of ozone-depleting substances**

87. Introducing the sub-item, the Co-Chair recalled that the Technology and Economic Assessment Panel had made a presentation at the thirty-first meeting of the Open-ended Working Group reviewing the Panel's work on destruction of ozone-depleting substances, pursuant to decision XXII/10.

88. The representative of Canada introduced a conference room paper containing a draft decision on adoption of new destruction technologies for ozone-depleting substances. It was timely and appropriate, he said, to take into account the recommendations of the task force established by the Panel in response to decision XXII/10 to update the list of destruction processes approved by the parties.

89. Subsequently, the representative of Canada presented a revised version of the draft decision, which the parties approved for further consideration during the high-level segment. In approving the draft decision the parties requested the Secretariat, prior to presenting the draft decision for adoption during the high-level segment, to complete the table in the annex to the draft decision by inserting the words "not determined" in the blank spaces in the table to indicate that the suitability of the related technologies had not been determined or approved for the substances in various annexes and groups of the Protocol.

### **D. Updating the nomination processes and recusal guidelines for the Technology and Economic Assessment Panel**

90. Introducing the sub-item, the Co-Chair recalled that by decision XXII/22 the parties had requested the Technology and Economic Assessment Panel to consider a number of issues related to the Panel's operation and that, in response to the Panel's report to the Open-ended Working Group at its thirty-first meeting, the representatives of Australia and the United States of America had introduced a draft decision (draft decision D in document UNEP/OzL.Conv.9/3-UNEP/OzL.Pro.23/3) that had been discussed by the contact group set up by the Working Group. Intersessional discussions had addressed organizational aspects of the Panel but a number of issues still needed to be resolved.

91. The parties agreed to establish a contact group to continue deliberating on the matter, co-chaired by Mr. Javier Camargo (Colombia) and Ms. Masami Fujimoto (Japan).

92. Following the work of the contact group the parties approved a draft decision on the matter for consideration and adoption during the high-level segment.

### **E. Treatment of ozone-depleting substances used to service ships**

93. Introducing the sub-item, the Co-Chair recalled that a draft decision on the issue had been put forward by Saint Lucia at the thirty-first meeting of the Open-ended Working Group and that a contact group had been established to consider the matter further. The resulting draft decision (draft decision K in document UNEP/OzL.Conv.9/3-UNEP/OzL.Pro.23/3) was before the parties for their consideration, and document UNEP/OzL.Pro.23/INF/3 contained additional information on ozone-depleting substances used to service ships that might assist the parties in coming to a conclusion on the issue.

94. The parties agreed to establish a contact group, co-chaired by Ms. Marissa Gowrie (Trinidad and Tobago) and Mr. Cornelius Rhein (European Union), to consider the issue further.

95. Following the work of the contact group the parties approved a draft decision on the matter for consideration and adoption during the high-level segment.

## **F. Additional information on alternatives to ozone-depleting substances**

96. Introducing the sub-item the Co-Chair recalled that it had been considered by a contact group at the thirty-first meeting of the Open-ended Working Group. The draft decision developed by that contact group (draft decision J in document UNEP/OzL.Conv.9/3-UNEP/OzL.Pro.23/3) was before the parties for their consideration.

97. The parties agreed to establish a contact group to consider the issue further. The Group was initially chaired by Mr. Leslie Smith (Grenada) and Mr. Mikkel Sorensen (Denmark); upon his departure, Mr. Sorensen was replaced by Ms. Jana Borská (Czech Republic).

98. Following the work of the contact group the parties approved a draft decision on the matter for consideration and adoption during the high-level segment.

## **G. Use of methyl bromide in Africa**

99. Introducing the sub-item, the Co-Chair recalled that at the thirty-first meeting of the Open-ended Working Group a number of parties had put forth a proposal that the Technology and Economic Assessment Panel should review methyl bromide consumption trends in Africa and make recommendations on possible phase-out activities. While a draft decision on key challenges facing methyl bromide phase-out in Africa (draft decision A in document UNEP/OzL.Conv.9/3-UNEP/OzL.Pro.23/3) was before the parties for consideration, the co-chair noted that a revised version of the proposal would be forthcoming.

100. Subsequently, the representative of Kenya introduced a revised version of the draft decision. He said that many parties operating under paragraph 1 of Article 5 of the Protocol, and particularly many of those in the African region, had made great strides in phasing out methyl bromide use in a number of applications and that parties were in compliance with the control measures for the substance under the Montreal Protocol. Nevertheless, while cost-effective alternatives to methyl bromide were available for several applications, significant difficulties were being encountered in some areas that threatened the sustainability of alternatives to methyl bromide and risked placing many parties in non-compliance. Those issues included increased pest resistance to alternative chemicals, non-availability of alternatives in the market, technical difficulties in converting to new formulations, increasing restrictions as even alternatives became subject to control measures outside the scope of the Protocol (European Union regulations, for example) and the high capital investment and running costs associated with some alternatives. The situation required urgent attention in view of the 2015 target for the phase-out of methyl bromide under the Montreal Protocol.

101. Another representative said that assistance was required by parties in Africa to overcome the technical and procedural difficulties in applying alternatives at the national level and in preparing possible nominations for critical-use exemptions for methyl bromide.

102. Following their discussions in plenary session and informal consultations among interested parties the parties approved a draft decision on the matter for consideration and adoption during the high-level segment.

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

### **1. Proposed amendment by Canada, Mexico and the United States of America**

### **2. Proposed amendment by the Federated States of Micronesia**

103. The parties agreed to consider sub-items 4 (h) (i) and 4 (h) (ii) together.

104. The representative of the Federated States of Micronesia introduced a proposed amendment to the Montreal Protocol, relating to control of HFCs (UNEP/OzL.Pro.23/5). He told a traditional tale to illustrate the need for the parties to the Montreal Protocol to take action to protect the global community from further environmental degradation resulting from HFC production. He said that the people of the Federated States of Micronesia, a small island developing State, were not alone in facing immediate catastrophe due to global warming. Populations in many African States faced the same threat and globally there was a common interest in addressing climate change through all means possible. Despite the concerted efforts of the parties to the Montreal Protocol and the acclaim for their achievements, the ozone hole in the southern hemisphere had not shrunk in recent years and earlier in 2011 a large ozone hole had been discovered for the first time over the Arctic region. Saying that there was a significant difference between the cost of phase-out between Montreal Protocol processes and those of the Kyoto Protocol, he concluded by saying that instead of expressing regret for past losses it was important to find strength in what remained as a basis for planning the future.

105. The representatives of Canada, Mexico and the United States of America jointly presented their proposed amendment to the Montreal Protocol (UNEP/OzL.Pro.23/6) and drew attention to document UNEP/OzL.Pro.23/INF/5, prepared by the three parties, which addressed frequently asked questions relating to the proposed amendment.

106. Introducing the proposed amendment, the representative of the United States of America highlighted a recent UNEP report describing clear links between ozone-related issues and climate change. Noting that HFCs were being introduced almost exclusively as an alternative to ozone-depleting substances, he said that the parties must immediately address an environmental harm resulting directly from the implementation of the Protocol and that preventing harm would be more cost-effective than repairing the damage after it had materialized.

107. He said that parties had a responsibility under the Vienna Convention to manage the phase-out of ozone-depleting substances in a manner that minimized adverse effects on the environment and that the current forum was perfectly placed to discuss HFCs produced and consumed as alternatives to ozone-depleting substances. In outlining the substance of the proposed amendment, he said that it was important to send a clear signal to industry to develop and commercialize substances with low global-warming potential in both developed and developing countries. Substantial benefits might accrue from adopting the amendment, including a cumulative 98 gigatonne reduction in the production of HFCs by 2050. The proposed amendment did not alter or affect obligations under the United Nations Framework Convention on Climate Change but rather promoted harmonization and coherence of policies among multilateral environmental agreements. He also explained that since HFCs were the primary alternative to CFCs and HCFCs, which were subject to phase-out under the Montreal Protocol, the parties might agree, in accordance with paragraph 2 (b) of Article 2 of the Vienna Convention, to harmonize their policies in moving to other alternatives under the Montreal Protocol. Concluding, he noted that opposition to the proposed amendment had already been voiced on technical, economic and legal grounds. He said, however, that the way forward involved dialogue to find common ground, and he requested that a formal contact group should be established.

108. The representative of Canada added that the proposed amendment was timely, relevant and in line with the purpose of the Montreal Protocol and said that actions undertaken under the proposed amendment would complement the Kyoto Protocol. He said that there was a need to send an early signal to industry so that the market could adapt well in advance of regulatory change both by reducing production of HFCs and developing alternatives. He recalled that the parties to the Montreal Protocol had a long history of considering the impact of their actions and decisions on climate change, citing several decisions taken under the Protocol to that effect, specifically decisions X/16, XIV/10, XIX/6 and XX/8, along with decision 60/44 of the Executive Committee of the Multilateral Fund.

109. The representative of Mexico said that it was important for parties to the Montreal Protocol to make decisions based on scientific evidence and emphasized that his country had considered the evidence in deciding to support the proposed amendment and was acting on that basis alone. The financial mechanism under the Montreal Protocol had shown unparalleled success in reducing production and consumption of harmful gases and it would be appropriate to extend that process to HFCs. He affirmed that there was a moral and ethical basis for taking action based on clear scientific data and urged that Parties should engage in cooperative dialogue about the proposed amendment.

110. The parties discussed at length whether the proposed amendments should be discussed in a formal contact group. Some representatives expressed support for doing so but other representatives maintained strong opposition to any formal consideration of the issue under the Montreal Protocol

111. There was agreement that in phasing out ozone-depleting substances it was preferable to adopt alternatives with low or zero global-warming potential rather than high global-warming potential. There was disagreement, however, on whether HFCs could be considered under the Montreal Protocol. Some representatives said that, because HFCs were not associated with ozone depletion, there was no legal basis for further discussion of the proposed amendments. Other representatives expressed support for further discussion of the amendments, noting that the Montreal Protocol and the Vienna Convention stipulated that protection of the ozone layer must be conducted with minimal effects on the environment and that the current rapid growth in HFC production was a direct result of actions undertaken under the Montreal Protocol.

112. Many representatives from parties vulnerable to the effects of climate change, particularly small island developing States and States in Africa, emphasized that the risks posed by and harm caused by climate change were already occurring and increasing, with disastrous effects for their populations. Several representatives said that it was contradictory to argue that actions taken under the Montreal Protocol might exacerbate climate change but that parties were barred from recognizing and

responding to the consequences of those actions under the Montreal Protocol and must instead seek relief under a different international agreement having largely the same parties.

113. Some representatives said that both proposed amendments respected the principle of common but differentiated responsibilities, as they provided different timescales for phasing down HFCs for parties operating under paragraph 1 of Article 5 and those not so operating. One representative added that the Montreal Protocol had been one of the first multilateral environmental agreements to implement the principle, in particular in creating the Multilateral Fund and adopting worldwide implementation of ozone-depleting substance phase-out schedules. Another representative, however, said that the including HFCs in the Montreal Protocol would impose new obligations on all parties to the ozone regime that would not be consistent with the Kyoto Protocol, which only imposed the obligation of reducing HFCs on developed countries. In accordance with the principles of equity and common but differentiated responsibilities, developing countries, in contrast to developed countries, should deal with HFCs through voluntary, nationally appropriate actions supported by international financial, technological and capacity-building support. He urged parties to retain their focus on approaches that would be agreeable to all parties, instead of diverting efforts to questionable approaches such as the proposed amendments.. Proponents of the amendments suggested that such concerns could be resolved through dialogue in a formal contact group.

114. Some representatives said that the Montreal Protocol provided the infrastructure for addressing the production and consumption of HFCs, particularly through the Multilateral Fund, the OzonAction information clearing-house and other technical assistance mechanisms. Those representatives argued that the Montreal Protocol therefore provided a proper and effective framework for considerations of HFCs. Other representatives, however, said that the acknowledged success of the Montreal Protocol was grounded in its clear focus on ozone depletion. That success might be put at risk if its focus were diluted by encompassing other environmental issues. They said that the Framework Convention on Climate Change and its Kyoto Protocol were the appropriate multilateral environmental agreements for considering greenhouse gases such as HFCs. Some representatives further suggested that the Multilateral Fund could provide incentives for countries operating under paragraph 1 of Article 5 to use alternatives with low global-warming potential but that the Montreal Protocol could go no further in addressing HFCs in the absence of a request from the Framework Convention on Climate Change.

115. In response, representatives supporting establishment of a formal contact group to discuss the issues further noted that the priorities of the Framework Convention on Climate Change and the Kyoto Protocol were much broader in their overall scope, that negotiations under those agreements were much more complex, and that robust efforts to introduce consideration of HFCs in that context had so far failed. Moreover, those agreements addressed emissions but not consumption and production of greenhouse gases, including HFCs. They argued that the Montreal Protocol was therefore better positioned to examine consumption and production of HFCs, which had been promoted under its aegis. One representative also said that he supported a formal contact group but if one could not be created would also support informal negotiations to help advance the discussion of the amendments.

116. One representative said that it was not premature to consider HFCs or even timely to do so. Rather, parties were already too late in taking up the issue and time spent debating whether to have a fuller dialogue would be better used in a constructive discussion of controlling the effects of HFCs. Another representative said that there had been very successful collaboration between the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal, the Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade and the Stockholm Convention on Persistent Organic Pollutants. He suggested that a joint committee of the Montreal Protocol, the Framework Convention on Climate Change and the Convention on Long-Range Transboundary Air Pollution should be convened to identify how a synergies process might be applied to controlling HFCs under the ozone, climate change and air pollution regimes. Furthermore, the parties to the Vienna Convention should invite the parties to the other two conventions to consider implementing enhanced measures to study, monitor and report on HFCs.

117. Two representatives of non-governmental organizations expressed support for establishing a formal contact group. One noted that States arguing for consideration of the issues under the auspices of other multilateral environmental agreements were also blocking their consideration under those agreements. Another observed that the secretariats of those agreements had said that the earliest date that HFCs could be considered under them would be 2016 and that no provisions would enter into force until 2020, by which time HFC production might have tripled. Accordingly, the Montreal Protocol provided a more responsive structure for discussion and action to reduce the harmful effects of HFCs. In addition, progress should not be held back by States seeking to protect domestic industry through inaction at an international forum.

118. On the other hand, the representative of an industry group from a developing country said that it would be too much of a challenge for industry in his country to reduce HFCs, and he suggested that additional alternatives were required before the issue could be discussed further.

119. In summarizing the discussion, the Chair noted that proper procedure had been followed by the parties proposing the amendments to the Protocol but that the parties had nevertheless failed to reach consensus on establishing a formal contact group to consider the proposed amendments. Indicating that it was necessary to move on to other items on the agenda, she therefore declared that the parties would not discuss the proposed amendments further at the current meeting either in plenary session or in a contact group. She noted, however, that the important issue of alternatives to HFCs could be discussed in the contact group discussing alternatives to ozone-depleting substances.

## **I. Potential areas of focus for the assessment panels' 2014 quadrennial reports**

120. Introducing the sub-item, the Co-Chair recalled that at its thirty-first meeting the Open-ended Working Group had requested the Secretariat to prepare a document consolidating the suggestions of the assessment panels on possible guidance that the parties might wish to give the panels regarding the preparation of their 2014 quadrennial assessment. Initial ideas on the matter were contained in document UNEP/OzL.Pro.23/10.

121. Some representatives expressed an interest in elaborating on those ideas at the current meeting. The representative of the European Union subsequently introduced a conference room paper containing a draft decision on potential focus areas for the 2014 quadrennial reports of the Scientific Assessment Panel, the Environmental Effects Assessment Panel and the Technology and Economic Assessment Panel. He summarized the main focal areas proposed for the reports, which, under the proposed schedule, would all be finalized by 31 December 2014. Several representatives expressed an interest in discussing the matter further.

122. Following deliberations among interested parties, the representative of the European Union presented a revised version of the draft decision. The parties approved the revised draft decision with small modifications for further consideration and adoption during the high-level segment.

## **J. Phase-out of HFC-23 by-product emissions**

123. The representative of the United States of America introduced a draft decision on phase-out of HFC-23 by-product emissions (draft decision C in document UNEP/OzL.Conv.9/3-UNEP/OzL.Pro.23/3). She said that the draft decision was intended to deal with HFC-23 emitted as a by-product of the production of HCFC-22.

124. One representative, supported by others, said that HFC-23 was not an ozone-depleting substance, that it came under the purview of the Kyoto Protocol to the United Nations Framework Convention on Climate Change and that it was therefore not appropriate for consideration by the Meeting of the Parties. Some representatives said that the matter fell within the discussions that had already taken place on amendments to the Montreal Protocol and had therefore been disposed of and should not be discussed further, while others said that it was a distinct matter properly on the agenda. Furthermore, they noted that it had not been included in the earlier discussion on the HFC amendments and said that, as a result, it had to be considered separately. Finally, they said that the issue was directly related to HCFC-22 production, a matter directly within the purview of the Montreal Protocol.

125. The Co-Chair ruled that, as the parties were unlikely to achieve consensus on it, the draft decision would not be considered further at the current meeting.

## **K. Status of Nepal relative to the Copenhagen Amendment to the Montreal Protocol**

126. Introducing the item, the Co-Chair said that the Government of Nepal had submitted a request to have the issue of its compliance with the Copenhagen Amendment reviewed by the parties in the light of paragraphs 8 and 9 of Article 4 of the Montreal Protocol, which allowed a State to avoid the application of trade sanctions under the Protocol and its amendments if it could demonstrate that it was in full compliance with their provisions. The matter had been discussed at the thirty-first meeting of the Open-ended Working Group; at the recent sixty-fifth meeting of the Executive Committee of the Multilateral Fund for the Implementation of the Montreal Protocol, at which the Committee had decided not to fund Nepal's HCFC phase-out management pending specific actions by that Party; and at the recent forty-seventh meeting of the Implementation Committee under the Non-Compliance Procedure for the Montreal Protocol.

127. The representative of Nepal said that the control of ozone-depleting substances was a high priority for the country and that all requirements of the Copenhagen Amendment with regard to control of HCFCs had been addressed by national regulations, through which annual consumption of HCFCs had been capped at 23 tonnes since 2001. Nepal had fulfilled all its obligations under the Protocol and had satisfied all reporting requirements. Consideration of Nepal as a party in full compliance with the HCFC control provisions pursuant to paragraphs 8 and 9 of Article 4 of the Protocol would help the country to move forward in implementing its HCFC phase-out management plan.

128. In the ensuing discussion, several representatives commended Nepal for the efforts it had made to control ozone-depleting substances and to move towards ratifying the Copenhagen Amendment. Mr. Ghazi Al Odat (Jordan), Vice-President, Rapporteur and previous President of the Implementation Committee, who had presided over the Committee's forty-seventh meeting in the absence of the current president, Ms. Elizabeth Munzert (Germany), said that in a recommendation agreed at its forty-seventh meeting, the Committee had advised Nepal to take note of decision XX/9. That decision clarified that the term "State not party to this Protocol" in Article 4, paragraph 9, did not apply to parties operating under paragraph 1 of Article 5 of the Protocol until 1 January 2013, effectively deferring the application of trade sanctions to Nepal, as such a party, until that date.

129. The parties took note of the current status of Nepal with regard to the Copenhagen Amendment, taking into account the recent decision of the Executive Committee and the recommendation of the Implementation Committee.

## **L. Consideration of membership of Montreal Protocol bodies for 2012**

130. Introducing the item, the Co-Chair requested the regional groups to submit nominations to the Secretariat for several positions in Montreal Protocol bodies for 2012.

131. The parties subsequently agreed on the membership of the Implementation Committee and the Executive Committee of the Multilateral Fund for the Implementation of the Montreal Protocol and on co-chairs of the Open-ended Working Group. They also endorsed a new co-chair for the Chemicals Technical Options Committee and a senior expert of the Technology and Economic Assessment Panel.

132. The parties approved draft decisions reflecting that agreement for further consideration and adoption during the high-level segment.

## **M. Compliance and reporting issues considered by the Implementation Committee**

133. In the absence of Ms. Munzert Mr. Odat reported on the work of the Committee's forty sixth and forty-seventh meetings, which had taken place on 7 and 8 August 2011 and 18 and 19 November 2011 respectively. The full report of the forty sixth meeting was available, while that of the forty seventh meeting would be made available on the Ozone Secretariat's website.

134. He said that the Committee was pleased with the excellent progress by parties in meeting their data reporting and phase-out obligations under the Protocol. The draft decisions of the Committee were contained in a conference room paper summarizing the Committee's work at its forty-seventh meeting. That work had been immensely assisted by the representatives of the Multilateral Fund and its implementing agencies, including the Chair of the Fund's Executive Committee, and the Ozone Secretariat.

135. He then outlined the ten draft decisions approved by the Committee for consideration by the Meeting of the Parties. The first, on data reporting, listed seven parties that had yet to report ozone-depleting substance consumption and production data for 2010 in accordance with Article 7 of the Protocol. Those seven parties were Bolivia (Plurinational State of), Libya, Liechtenstein, Nauru, New Zealand, Peru and Yemen. Those seven parties were the only ones that had not yet reported their data and the rate of reporting was therefore high, with 189 parties having submitted their 2010 data. He also said that 92 parties had reported data for 2010 by 30 June 2010 in accordance with decision XV/15 and that such early submission of data was exceptionally helpful to the Committee's work. It was extremely encouraging that except for the seven parties all parties had complied with their data reporting obligations under the Protocol for all years from 1991 to 2010.

136. Turning to the reported data he observed that all parties operating under paragraph 1 of Article 5 that had reported data had already succeeded in phasing out the controlled uses of CFCs (except for those with approved exemptions for essential uses), halons and carbon tetrachloride and had therefore complied with the phase-out deadline of 1 January 2010. That, he said, meant that there was a high

degree of confidence that the phase-out targets for methyl chloroform, methyl bromide and HCFCs would be successfully attained during the next two decades.

137. Three of the draft decisions pertained to the compliance status of particular parties: the draft decision on Libya recorded that party's non-compliance with its phase-out obligations for halons; the draft decision on Iraq addressed that party's compliance in the light of its security situation and political and economic difficulties; and the draft decision on Yemen concerned the fact that Yemen had not yet reported its HCFC data for the year 2009.

138. Two other draft decisions, on the European Union and the Russian Federation, recorded the fact that those parties had fallen into non-compliance because they were engaged in trade of HCFCs with Kazakhstan, a non-party to the Copenhagen and Beijing Amendments to the Protocol at the time that the trade had taken place. Kazakhstan had become a party to the Copenhagen Amendment on 26 June 2011 but was not yet a party to the Beijing Amendment.

139. A further two draft decisions dealt with requests for the revision of HCFC baseline data, while another dealt with the number of decimal places used by the Secretariat when presenting and analysing HCFC data for compliance.

140. The last draft decision addressed parties that had established systems for licensing the import and export of ozone-depleting substances. Of the 185 parties that had ratified the Montreal Amendment, only three had yet to establish such systems, while a further ten that had not ratified the Amendment had nevertheless established them. According to the reported data, 174 parties and eight non-parties had reported on their licensing systems, and the draft decision encouraged both parties and non-parties to act on that issue as necessary.

141. In conclusion, he thanked his fellow Committee members on the President's behalf for their hard work, support and dedication in helping him to carry out his duties.

142. In the ensuing discussion one representative said that he was concerned by the suggestion that the Secretariat should use two decimal places when analysing and presenting data. He recalled that data was reported in ODP-tonnes by the Secretariat and not the metric tonnes used by the parties and said that even in cases of little consumption of ozone-depleting substances the use of two decimal places could place parties in non-compliance.

143. Following Mr. Odat's presentation and the ensuing discussion the parties approved the draft decisions submitted by the Committee for further consideration and adoption during the high-level segment.

## **V. Vienna Convention issues**

### **A. Report of the eighth meeting of the Ozone Research Managers of the Parties to the Vienna Convention**

### **B. Status of the General Trust Fund for Financing Activities on Research and Systematic Observations Relevant to the Vienna Convention**

144. The parties considered items 5 (a) and (b) together.

145. Mr. Michael Kurylo (United States of America), chair of the eighth meeting of the Ozone Research Managers of the Parties to the Vienna Convention, gave a presentation on the work of the eighth meeting, held in Geneva from 2 to 4 May 2011. A summary of his presentation, as submitted by Mr. Kurylo without formal editing, is set out in annex VIII to the present report.

146. The representative of the Secretariat then gave a presentation outlining the history of the General Trust Fund for Financing Activities on Research and Systematic Observations Relevant to the Vienna Convention, including its inception in 2003, its extension to 2015 and the institutional arrangements agreed between the Secretariat and the World Meteorological Organization in respect of its operation. She also detailed the administrative activities of the Secretariat under the Trust Fund, including the annual dispatch of invitations for contributions, and provided information on contributions and expenditures. As of 13 July 2011, \$259,054 had been received in the Trust Fund from the Czech Republic, Estonia, Finland, Kazakhstan, South Africa, Spain, Switzerland and the United Kingdom of Great Britain and Northern Ireland. She also said that in kind contributions had also been received in conjunction with activities undertaken under the Trust Fund.

147. She said that four activities had taken place: a Dobson inter-calibration exercise in Egypt, in March 2004; a Brewer calibration in Nepal and Indonesia, in September 2006; an inter-calibration exercise in South Africa for all African Dobson instruments, in October 2009; and a Dobson data

quality workshop in the Czech Republic, in February 2011. Planned activities included a Brewer calibration and associated training for several stations worldwide during 2012 and 2013 and an inter-comparison exercise involving all African Dobson instruments in October 2013. Currently \$103,454 remained in the Trust Fund and the limited resources available had prevented consideration of the national proposals submitted by six countries.

148. Responding to a question, Mr. Kurylo said that in many cases green-house gases and ozone-depleting substance were being measured together. Asking the Ozone Research Managers to measure greenhouse gases therefore did not duplicate work under the Framework Convention on Climate Change as an understanding of how all atmospheric gases functioned was necessary to an understanding of how the atmosphere functioned. As an example, he said that while sulfur hexafluoride was a greenhouse gas monitoring it could reveal a great deal about atmospheric circulation, which was also of value in understanding the behaviour of ozone-depleting substances.

149. Mr. W.L. Sumathipala (Sri Lanka), on behalf of the President of the Bureau of the eighth meeting of the Conference of the Parties to the Vienna Convention, Mr. Anura Priyadharshana Yapa, subsequently submitted two draft decisions on behalf of the Bureaux of the eighth meeting and of the Twenty-Second Meeting of the Parties to the Montreal Protocol. One concerned the recommendations of the Ozone Research Managers and the other related to the Trust Fund.

150. Several members requested more information on monitoring activities taking place in both the southern and northern hemispheres. Some expressed concern at the monitoring of green-house gases, which were said to be within the mandate of the United Nations Framework Convention on Climate Change. Several members asked for more time to consider both draft decisions and it was suggested that it might be possible to merge the texts into a single draft decision.

151. The Co-Chair asked interested parties to engage in informal consultations with the representative of Sri Lanka to revise the text to produce a single draft decision.

152. Following those consultations the parties approved a draft decision on the matter for consideration and adoption during the high-level segment.

## **VI. Other matters**

### **A. Mobilizing financing from sources other than the Multilateral Fund**

153. The representative of Burkina Faso introduced a draft recommendation on mobilizing financing from sources other than the Multilateral Fund for the accelerated phase-out of HCFCs in Africa.

154. Several members requested more time to review the draft decision. The Co-Chair requested interested parties to engage in informal consultations with the representative of Burkina Faso to revise the draft recommendation. Subsequently, the representative of Burkina Faso said that, following discussion at a meeting of the African group, the draft decision would be withdrawn to allow further discussion of the matter at the regional level.

### **B. Bali declaration on achieving the transition to low-GWP alternatives to HFCs**

155. As had been indicated during the opening of the current meeting the representative of Indonesia introduced a declaration on achieving the transition to low-GWP alternatives to HFCs. He then read the declaration, which is set out in annex IX to the present report as submitted and without formal editing, and invited other parties to sign it.

156. One representative recalled that at the Twenty-Second Meeting of the Parties in Bangkok, 91 countries had signed a declaration on the global transition away from HCFCs and HFCs. Since that meeting the total number of signatories had risen to 108, with the addition of Belarus, Cote d'Ivoire, Equatorial Guinea, Grenada, Guinea, Guinea-Bissau, Kenya, Malawi, Maldives, Morocco, Seychelles, Solomon Islands, Saint Vincent and the Grenadines, Swaziland, Trinidad and Tobago, Yemen and Zambia. She added that the current meeting marked the closure of the Bangkok declaration to additional signatories and suggested that parties wishing to add their names to it should sign the Bali declaration instead.

157. The representative of Indonesia thanked all representatives for their support for the Bali Declaration and announced that the Declaration was open for signature and would remain so until the Twenty-Fourth Meeting of the Parties.



## Part two: High-level segment

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

158. The high-level segment of the Twenty-Third Meeting of the Parties was opened at 5.20 p.m. on Wednesday, 23 November 2011, with an opening ceremony facilitated by a master of ceremonies.

159. Opening statements were delivered by Mr. Anak Agung Alit Sastrawan, representing the Governor of Bali; Mr. Marco González, Executive Secretary of the Ozone Secretariat; Mr. Balthasar Kambuaya, State Minister for the Environment, Indonesia; Mr. Priyadharshana Yapa; and Ms. Deborah Owens (United Kingdom of Great Britain and Northern Ireland), President of the Twenty-Second Meeting of the Parties to the Montreal Protocol.

160. Mr. Sastrawan officially welcomed the representatives on behalf of the Governor of Bali, expressing his hope that the island's beauty would inspire solutions to the environmental challenges under discussion. He noted that population growth and tourism were putting pressure on Bali's natural environment; pollution and emission of ozone-depleting substances were high and rising, in part due to lack of awareness. He outlined the strategy adopted at all levels of the Government and the private sector to address these environmental issues over the long term, which was viewed as crucial for preserving the island's way of life. He concluded by expressing the hope that the representatives present would arrive at effective recommendations for controlling ozone-depleting substances.

161. Mr. González thanked the people and Government of Bali, who, he said, were living the ideal of sustainable development, a concept that had gained global prominence in the past 30 years. He suggested that as the Protocol approached its twenty-fifth year it should be viewed through the lens of sustainable development. Doing so revealed that key principles now recognized as cornerstones of sustainable development had been implemented consistently under the Protocol. They included the precautionary principle, according to which the international community had taken action in advance of hard evidence of ozone layer destruction; the principle of common but differentiated responsibilities, whereby developed countries provided both financial and technical support to enable developing countries to participate fully; and the "start and strengthen" approach that began with small steps and later strengthened the Protocol through amendments based on scientific, technological and economic assessments. He described the benefits of Protocol implementation, which included the carbon emissions avoided by phasing out ozone-depleting substances, the modernization of entire sectors and the achievement of substantial health benefits. Finally, he cautioned that challenges remained, particularly HCFC phase-out over the next four years, and he urged representatives to approach replenishment in a spirit of understanding and compromise.

162. Mr. Kambuaya welcomed the representatives to Bali and expressed his Government's commitment to eliminating ozone-depleting substances and addressing climate change in a synergistic manner. He identified certain key priorities for a global solution, namely, that phasing out ozone-depleting substances required technical and financial assistance; that an innovative strategy must address both the ozone layer and increasing atmospheric greenhouse gas concentrations; and that global political will and international action were necessary to implement the Montreal Protocol effectively. In closing, he called on representatives to adopt a Bali Declaration addressing a transition to low-global-warming-potential alternatives to ozone-depleting substances, and he expressed his hopes for a successful outcome to the meeting.

163. Mr. Priyadharshana Yapa welcomed the participants and said that since the last meeting of the Conference of the Parties several important implementation activities had taken place. The Ozone Research Managers, at their meeting in Geneva in May 2011, had reviewed national and international research and monitoring programmes and had made several recommendations on areas needing further research, support and resources to enable understanding of ozone recovery and the interrelationship between ozone and climate variability and human and biological vulnerability to increased ultraviolet radiation and other stress factors. The Bureau had held two meetings to review implementation of the decisions of the eighth meeting of the Conference of the Parties, during which it had agreed on the need for increased funding for research. He added that successful implementation of the Vienna Convention over the past twenty-six years had demonstrated the cooperative spirit of all parties in addressing ozone depletion. Challenges persisted, however, some of which were closely linked to items on the agenda of the current meeting. Concluding, he said that it had been an honour for Sri Lanka to serve as President of the Bureau and he thanked his colleagues in the Bureau for their cooperation and support over the past three years.

164. Ms. Owens welcomed the representatives and expressed her gratitude for the trust invested in her during her tenure. She reported that the Bureau had met twice in the past year and was satisfied

with the implementation of the decisions of the Twenty-Second Meeting of the Parties. Recalling that the Montreal Protocol's success was based on cooperation among the parties, she expressed her hope for a continued focus on agreement by consensus, noting that there were many challenges on the agenda of the current meeting, particularly the proposal for replenishing the Multilateral Fund. Calling attention to the plan for parties operating under paragraph 1 of Article 5 of the Protocol to implement their first control measure on HCFC phase-out by freezing production and consumption in the near future, she expressed confidence that a firm agreement on replenishment would send a positive signal to those parties regarding their compliance obligations. She concluded by thanking her colleagues in the Bureau, the Ozone Secretariat and all parties for their preparations for the current meeting.

165. Following those opening statements, the Executive Secretary presented the representatives of the Government of Indonesia with an award in recognition of the Government's outstanding efforts and achievements in protecting the ozone layer.

166. The representatives then enjoyed a cultural event, during which they learned to play the *angklung*, a traditional Indonesian musical instrument that each representative had received as a gift from the Government of Indonesia.

## II. Organizational matters

### A. Election of officers of the ninth meeting of the Conference of the Parties to the Vienna Convention

167. At the opening session of the high-level segment of the combined meeting, in accordance with paragraph 1 of rule 21 of the rules of procedure, the following officers were elected, by acclamation, to the Bureau of the ninth meeting of the Conference of the Parties to the Vienna Convention:

President:	Mr. Mikheil Tushishvili	Georgia (Eastern European States)
Vice-Presidents:	Mr. Alain Wilmart	Belgium (Western Europe and other States)
	Ms. Marissa Gowrie	Trinidad and Tobago (Latin American and Caribbean States)
	Mr. Ezzat Lewis Hannalla Agaiby	Egypt (African States)
Rapporteur:	Mr. Arief Yuwono	Indonesia (Asian and Pacific States)

### B. Election of officers of the Twenty-Third Meeting of the Parties to the Montreal Protocol

168. At the opening session of the high-level segment of the combined meeting, in accordance with paragraph 1 of rule 21 of the rules of procedure, the following officers were elected, by acclamation, to the Bureau of the Twenty-Third Meeting of the Parties to the Montreal Protocol:

President:	Mr. Sianga Abilio	Angola (African States)
Vice-Presidents:	Ms. Azra Rogovic-Grubic	Bosnia and Herzegovina (Eastern European States)
	Mr. Javier Ernesto Camargo	Colombia (Latin American and Caribbean States)
	Mr. Arief Yuwono	Indonesia (Asian and Pacific States)
Rapporteur:	Mr. Bernard Made	Canada (Western Europe and other States)

### C. Adoption of the agenda of the high-level segment of the ninth meeting of the Conference of the Parties to the Vienna Convention and the Twenty-Third Meeting of the Parties to the Montreal Protocol

169. The following agenda for the high-level segment was adopted on the basis of the provisional agenda contained in document UNEP/OzL.Conv.9/1-UNEP/OzL.Pro.23.1:

1. Opening of the high-level segment:
  - (a) Statement by representative(s) of the Government of Indonesia;
  - (b) Statement by representative(s) of the United Nations Environment Programme;

- (c) Statement by the President of the eighth meeting of the Conference of the Parties to the Vienna Convention
  - (d) Statement by the President of the Twenty-Second Meeting of the Parties to the Montreal Protocol.
2. Organizational matters:
    - (a) Election of officers of the ninth meeting of the Conference of the Parties to the Vienna Convention;
    - (b) Election of officers of the Twenty-Third Meeting of the Parties to the Montreal Protocol;
    - (c) Adoption of the agenda of the high-level segment of the ninth meeting of the Conference of the Parties to the Vienna Convention and the Twenty-Third Meeting of the Parties to the Montreal Protocol;
    - (d) Organization of work;
    - (e) Credentials of representatives.
  3. Presentations by the assessment panels on their 2010 quadrennial assessment.
  4. Presentation by the Chair of the Executive Committee of the Multilateral Fund on the work of the Executive Committee.
  5. Statements by heads of delegations.
  6. Report of the co-chairs of the preparatory segment and consideration of the decisions recommended for adoption at the ninth meeting of the Conference of the Parties to the Vienna Convention and the Twenty-Third Meeting of the Parties to the Montreal Protocol.
  7. Dates and venues for the tenth meeting of the Conference of the Parties to the Vienna Convention and the Twenty-Fourth Meeting of the Parties to the Montreal Protocol.
  8. Other matters.
  9. Adoption of decisions by the Conference of the Parties to the Vienna Convention at its ninth meeting.
  10. Adoption of decisions by the Twenty-Third Meeting of the Parties to the Montreal Protocol.
  11. Adoption of the report of the ninth meeting of the Conference of the Parties to the Vienna Convention and the Twenty-Third Meeting of the Parties to the Montreal Protocol.
  12. Closure of the meeting.

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

170. The parties agreed to follow their customary procedures.

#### **E. Credentials of representatives**

171. The Bureaux of the ninth meeting of the Conference of the Parties to the Vienna Convention and the Twenty-Third Meeting of the Parties to the Montreal Protocol approved the credentials of the representatives of 86 of the 127 parties represented. The Bureaux provisionally approved the participation of other parties on the understanding that they would forward their credentials to the Secretariat as soon as possible. The Bureaux 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 Bureaux also recalled that under the rules of procedure credentials had to 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 Bureaux 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 the right to vote.

### **III. Presentations by the assessment panels on their 2010 quadrennial assessment**

172. Members of the Montreal Protocol's three assessment panels and their technical options committees made presentations on the panels' 2010 quadrennial assessments.

173. Ms. Janet Bornman and Mr. Nigel Paul gave an overview of the key findings of the 2010 Environmental Effects Assessment Panel report, and then summarized the effects of ultraviolet radiation and climate change interactions on human health, terrestrial and aquatic ecosystems, biogeochemical cycles, air quality and construction materials.

174. Mr. John Pyle and Mr. Paul Newman spoke about the scientific findings discussed in the 2011 synthesis report and the scientific assessment of the Scientific Assessment Panel, including matters such as the total abundance of ozone-depleting substances in the atmosphere, prospects for further control of methyl bromide and the interaction between ozone-layer depletion and climate change, including the role of HFCs

175. Mr. Ian Rae began the presentation by the Technology and Economic Assessment Panel, providing an overview of that panel's report and summaries from each of the technical options committees. He then continued with the report of the Chemicals Technical Options Committee and was followed by Mr. Miguel Quintero with the report of the Flexible and Rigid Foams Technical Options Committee, Mr. Sergey Kopylov with the report of the Halons Technical Options Committee, Ms. Marta Pizano with the report of the Methyl Bromide Technical Options Committee, Mr. Lambert Kuijpers with the report of the Refrigeration, Air Conditioning and Heat Pumps Technical Options Committee, and Ms. Helen Tope with the report of the Medical Technical Options Committee. Ms. Tope concluded the presentations with a summary of the Panel's portion of the synthesis report.

176. Summaries of the presentations, as prepared by the presenters and without formal editing, are set out in annex X to the present report.

177. The parties took note of the information presented.

### **IV. Presentation by the Chair of the Executive Committee of the Multilateral Fund on the work of the Executive Committee**

178. Mr. Patrick McLnerney (Australia), chair of the Executive Committee of the Multilateral Fund, delivered a presentation on the Committee's activities since the Twenty-Second Meeting of the Parties, encompassing the Committee's sixty-second, sixty-third, sixty-fourth and sixty-fifth meetings. He summarized the report contained in document UNEP/OzL.Pro.23/8 and said that between its sixty-second and the sixty-fifth meetings the Executive Committee had approved a total of 349 additional projects and activities with a planned phase-out of production and consumption of 1,465 ODP-tonnes of controlled substances. The funds approved for projects and activities totalled \$274,468,323, including \$30,232,360 for agency support costs. That included funding for 91 stage I HCFC phase-out management plans for 102 countries, including the management plan for China. Those approvals had been enabled by applying the HCFC cost guidelines agreed in decision 60/44 and resolving certain policy issues related to HCFC phase-out.

179. The Executive Committee had considered activities and projects to phase out HCFCs pursuant to decision XIX/6. On a case-by-case basis, it had provided funding to phase out more than ten per cent of countries' estimated HCFC baselines and would continue to do so. It had also calculated the starting points for aggregate reductions in HCFC consumption for HCFC phase-out management plans and additional funding for HCFC conversion projects submitted outside of approved HCFC phase-out management plans. Such funding could be considered on an exceptional and case-by-case basis, especially when it was for enterprises exclusively reliant on imported HCFC-141b pre-blended polyol systems that had not been reported as consumption. The Multilateral Fund Secretariat would also prepare a paper on options for a tracking system to correlate, by country, the amounts of HCFC 141b-based pre-blended polyols exported by system houses with the amounts used by foam enterprises, and which had been approved for phase-out, in importing parties operating under paragraph one of Article 5 of the Protocol.

180. Funding would be made available for faster phase-out of HCFCs beyond 2020 for low-volume-consuming countries. It would be calculated from the funding agreed to meet the 35 per cent reduction in consumption established under the HCFC cost guidelines. The Executive Committee had agreed to consider, on a case-by-case basis, stage I of the HCFC phase-out management plans of former low-volume-consuming countries, with a consumption of over 360 metric tonnes in the

refrigeration servicing sector only. Funding would also be provided on a case-by-case basis. The Committee had also established a window for ozone-depleting substance destruction technologies for low-volume-consuming countries pursuant to decision XXI/2, and ozone-depleting substance disposal demonstration projects had been approved for Ghana, Mexico, and Cuba.

181. He said that funding for projects to phase out HCFC-22 in the manufacture of refrigeration and air-conditioning equipment would be considered if the project proposals included information on estimated future amounts of HCFC-22 that could be required for servicing such equipment until 2020 and clearly demonstrated how the projects could reduce the growth of HCFC consumption for servicing that equipment. Work on the HCFC production sector was under way and an interim report on the technical audit of HCFC production plants in China had been presented to the members of the subgroup on the production sector.

182. A number of other policy issues had also been considered, including funding for those countries whose consumption was between 361 and 400 metric tonnes in the servicing sector. The Executive Committee reiterated that funding for institutional strengthening as part of HCFC phase-out management plans was subject to the performance-based targets of the plans. The Executive Committee had also set a cost-effectiveness threshold for the rigid insulation refrigeration foam subsector and had discussed the incremental costs related to retooling for the manufacture of heat exchangers.

183. Further progress had been made regarding the outstanding contributions of the Russian Federation, and senior representatives of the Russian Ministries of Foreign Affairs and Natural Resources and Environment had participated in an informal meeting on the margins of the current meeting. The Secretariat of the Multilateral Fund had been informed that the Ministry of Finance of the Russian Federation had taken steps to resolve the issue, and dialogue was continuing.

184. In summary he said that at its meetings the Executive Committee had been mindful that 2011 was the last year of the current Multilateral Fund funding triennium and that it needed to ensure that the goals set by the parties for the period 2009–2011 were successfully met. The work of the Executive Committee had placed the goals of the 2013 freeze and the 2015 ten per cent reduction in HCFC consumption firmly within the reach of the parties.

185. He then spoke on behalf of the implementing agencies. The United Nations Development Programme (UNDP) was operating a programme with a total value of \$616 million in over 100 countries. During 2011, HCFC phase-out management plans and sector plans for 30 countries had been submitted to the Executive Committee, including China where UNDP was the lead agency. UNDP had also engaged with partner countries and technology providers to find the best available solutions to industrial conversion that also took into account global-warming potential and energy efficiency. UNDP was assessing relatively new technological developments that had not been used in developing countries and had reported on the progress achieved in pilot and validation projects in the foam, solvent and refrigeration sectors as well as on ozone-depleting substance waste destruction projects in Brazil, Colombia, Ghana and India.

186. UNEP was currently working as lead agency in 51 countries and as cooperating agency in 22 countries in preparing HCFC phase-out management plans. Under its Compliance Assistance Programme, UNEP had been providing support to Governments at risk of non-compliance and had supported the ratification of amendments to the Montreal Protocol through the regional networks, thematic meetings and country-to-country cooperation. Special attention had been given to newly appointed national ozone officers, and UNEP had used a variety of means such as partnerships and cooperation with private companies and refrigeration and air conditioning associations, information on existing technology options and opportunities for climate benefits.

187. The United Nations Industrial Development Organization (UNIDO) had provided assistance to 78 countries operating under paragraph 1 of Article 5 of the Montreal Protocol through 270 projects. Since the Twenty-Second Meeting of the Parties, the Executive Committee had approved funding for 95 new projects to be implemented by UNIDO, phasing out a total of 807 ODP-tonnes of controlled substances in 59 different countries operating under paragraph 1 of Article 5. A project on resource mobilization for HCFC phase-out and climate co-benefits had also been approved for UNIDO at the sixty-second meeting of the Executive Committee and UNIDO had contributed to promoting new technologies that coupled climate benefits with zero ozone-depletion potential.

188. The World Bank had expanded its Montreal Protocol portfolio to address HCFCs in three large countries in East Asia, and once completed in 2015 those projects would permanently eliminate approximately 15,500 metric tonnes of HCFC-141b consumption, equivalent to 12 million tonnes of carbon dioxide. The World Bank had also started to work with the Government of China to reduce its

production levels to match the HCFC-141b consumption reductions that many other countries were undertaking in line with decision XIX/6.

189. The parties took note of the information presented.

## V. Statements by heads of delegations

190. During the high-level segment statements were made by heads of delegation of the following parties, listed in the order in which they spoke: Sri Lanka, Maldives, Iran (Islamic Republic of), Indonesia, China, Japan, Switzerland, European Union and its member States, Lao People's Democratic Republic, Cambodia, Paraguay, India, Guinea, Kenya, Pakistan, Uzbekistan, Zimbabwe, Iraq, Cote d'Ivoire, Palau, Malaysia, Seychelles, Nepal, Mozambique, Mongolia and Bangladesh. The representative of South Sudan, the world's newest country, also made a statement, as did the representatives of an intergovernmental body and a non-governmental organization.

191. Representatives of all parties who spoke thanked the Government and people of Indonesia for their hospitality in hosting the current meeting and remarked on the beauty of the island of Bali. Many thanked UNEP and the Ozone Secretariat, the Multilateral Fund secretariat and implementing agencies, donor countries, the assessment panels, international organizations and other stakeholders for their roles in ensuring the success of the meeting and the successful development and implementation of the Protocol, and they congratulated the members of the bureau on their election.

192. Many representatives reiterated their commitment to the objectives of the Protocol, and some countries that had not yet ratified certain amendments affirmed their intention to do so. Many representatives described their countries' efforts to meet their obligations under the Protocol. Achievements included the phase-out of the production and consumption of controlled substances, in a number of cases ahead of the deadlines established under the Protocol; the promotion of alternative substances and technologies, including climate-friendly technologies; training and capacity-building; awareness-raising; and the enhancement of cooperation among government ministries, public and private stakeholders, international organizations and the parties themselves. Several representatives referred to their attempts to ensure that phase-out was achieved in a sustainable manner. Some also noted the synergistic effects of their phase-out efforts, such as climate co-benefits and strengthened procedures and security measures related to other controlled substances.

193. Representatives praised the Montreal Protocol, characterizing it as the most successful international mechanism for environmental protection and citing it as a model for multilateral environmental agreements and for cooperation between developed and developing countries. Many called on the expertise gained through implementation of the Protocol to be used to accelerate destruction of banks of ozone-depleting substances and development of alternatives to those substances, as well as to address new challenges such as climate change.

194. In the context of the replenishment of the Multilateral Fund many representatives spoke about the financial challenges faced by the parties, in particular parties operating under paragraph 1 of Article 5 of the Protocol. Representatives of such parties called on donors to provide adequate financial assistance to ensure that accelerated HCFC phase-out targets could be achieved. Representatives of donor countries noted the effects of the global economic crisis on their countries and the need to ensure that funds were used as efficiently as possible, while reaffirming their commitment to ensuring that the Protocol continued to function effectively and recognizing the need for financial assistance to parties operating under paragraph 1 of Article 5.

195. A number of representatives were pleased to announce the approval of their country's HCFC phase-out management plans. Many representatives from parties operating under paragraph 1 of Article 5 spoke about the challenges their countries faced in implementing their phase-out plans, saying that sustained financial and technical support were needed to ensure that targets could be met. Many also emphasized the need for effective, regionally appropriate and economically, technically and environmentally viable alternatives to HCFCs.

196. A large number of representatives spoke about the control of HFCs. Many supported taking steps under the Protocol to begin addressing HFCs, arguing that their expanding use resulted almost entirely from the Protocol's controls on CFCs and HCFCs and that doing so would yield important climate benefits. Others said that the parties should not address HFCs; they said, among other things, that they were beyond the scope of the Protocol and more appropriately addressed under the Framework Convention on Climate Change. In addition, they said that the challenges of HCFC phase-out and destruction of banks of ozone-depleting substances still remained and that viable alternatives to HFCs were not available in all sectors. At the same time, many representatives

acknowledged that the negative impacts of high-GWP alternatives on the climate had to be carefully considered.

197. In that regard, several representatives urged that synergies with other multilateral environmental agreements be enhanced to address the broader climate change issues arising from implementation of the Protocol.

198. Methyl bromide use, particularly in quarantine and pre-shipment applications, remained a concern. Several representatives observed that commercially and technically viable alternatives were available, and they urged parties using methyl bromide, particularly for quarantine and pre-shipment, to make use of them. Representatives from developing countries called attention to the need for shared information on alternatives and the transfer of technologies. Some proposed improved monitoring and the harmonization of trade standards as a more strategic means of reducing quarantine and pre-shipment use.

199. Many representatives agreed that ensuring the environmentally sound management and destruction of the growing amount of ozone-depleting substances, including those contained in banks, would enhance efforts to protect the ozone layer and mitigate climate change. A number of representatives of developing countries said that they were hampered in their ability to deal with banks of ozone-depleting substances by a lack of material and financial resources and called upon the Multilateral Fund to provide assistance in that area. One representative described his country's success in developing effective destruction technologies and offered to share knowledge on the subject.

200. A number of representatives said that institutional strengthening had played an important role in building the capacity of developing countries to implement the Protocol. They called for continued funding for institutional strengthening for the accelerated phase-out of HCFCs; eliminating production and consumption of methyl bromide, including for quarantine and pre-shipment applications; destruction of obsolete ozone-depleting substances; and control of illegal trade and illegal disposal of such substances.

201. In his statement, the representative of Nepal appealed to the parties to reconsider his country's request to be treated as a party in accordance with paragraphs 8 and 9 of Article 4 of the Montreal Protocol, reiterating the arguments made during the preparatory segment.

202. The representative of South Sudan affirmed his Government's commitment to ratifying the Protocol and its amendments, and he requested the support of the parties to enable South Sudan to achieve the targets of the Protocol.

203. The representative of the International Institute of Refrigeration, an intergovernmental organization, noted the importance of refrigeration and cooling technologies to modern human life, particularly in developing countries in the tropics. He recommended the coordination of efforts under the Montreal Protocol and the Framework Convention on Climate Change, an emphasis on training for better refrigerant containment, incentives for the use of low-GWP alternatives and enhanced availability and use of information by all parties.

204. The representative of a non-governmental organization expressed regret for what she termed a failure of leadership and a lack of progress in the discussions on phasing out HFCs under the Montreal Protocol. Citing the work of several organizations employing proven HFC-free alternatives to HCFCs, she said that the chemical industry was misusing the political process and the Montreal Protocol to serve solely commercial interests, at the expense of environmental safety, and she called on the parties to stop funding HFC-based projects.

## **VI. Report of the co-chairs of the preparatory segment and consideration of the decisions recommended for adoption at the ninth meeting of the Conference of the Parties to the Vienna Convention and the Twenty-Third Meeting of the Parties to the Montreal Protocol**

205. The Co-Chairs of the preparatory segment reported at various points during the meeting. They noted that, although negotiations during the preparatory segment had been difficult, considerable progress had been made on a number of important issues. Thanking the parties for their great efforts, the contact group chairs for their leadership, the Secretariat for its excellent work and professionalism and the interpreters and other behind-the-scenes staff for making it possible for the parties to do their work, they commended the draft decisions approved during the segment for adoption by the Meeting of the Parties.

## **VII. Dates and venues for the tenth meeting of the Conference of the Parties to the Vienna Convention and the Twenty-Fourth Meeting of the Parties to the Montreal Protocol**

206. In his statement during the high-level segment, the representative of Switzerland conveyed an offer by his Government to host the Twenty-Fourth Meeting of the Parties to the Montreal Protocol. In the light of that offer the parties adopted a decision providing that the Twenty-Fourth Meeting of the Parties would take place in Geneva from 12 to 16 November 2011 unless other suitable arrangements needed to be made in consultation with the Bureau. They also adopted decisions to the effect that the tenth meeting of the Conference of the Parties to the Vienna Convention would be held back to back with the Twenty-Sixth Meeting of the Parties, at a time and place to be determined. Also in his statement during the high-level segment the representative of Côte d'Ivoire announced that his Government desired to host the Twenty-Fifth Meeting of the Parties to the Montreal Protocol and would explore the possibility of doing so with the Secretariat.

## **VIII. Other matters**

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

## **IX. Adoption of decisions by the Conference of the Parties to the Vienna Convention at its ninth meeting**

208. *The Conference of the Parties* decides:

[Decisions to be inserted]

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

209. *The Twenty-Third Meeting of the Parties* decides:

[Decisions to be inserted]

### **Comments made at the time of adoption of decisions**

210. Following the adoption of the decisions by the Twenty-Third Meeting of the Parties, several representatives made comments in connection with the 2012–2014 replenishment of the Multilateral Fund. All the representatives who spoke emphasized that the negotiations had been very difficult, applauded the efforts of those who had facilitated the negotiations, thanked the other parties for their flexibility and willingness to compromise, and said that they were pleased that in keeping with the traditions of the Protocol consensus had been reached on the matter.

211. The representative of the United States, acknowledging the challenges faced by parties operating under paragraph one of Article 5 of the Protocol in meeting their 2013 and 2015 phase-out targets, pointed out that developed countries faced serious economic challenges. Those challenges notwithstanding, he said, his Government was committed to ensuring adequate replenishment funding, and pledged to work with all parties to make the Protocol work.

212. The representative of China expressed concern that the amount of the replenishment, the lowest to date, extended what had become a trend of shrinking replenishments and might be insufficient to support the accelerated phase-out of HCFCs. While not prepared to assert that it would lead to non-compliance, he suggested that there was a clear link between the risk of non-compliance and the amount of the replenishment and said that he hoped that donor countries would pay close attention in the future to the challenges involved in HCFC phase-out and show greater flexibility and support.

213. The representative of Canada emphasized the positive aspects of the outcome, noting that the parties had succeeded in reaching consensus in a difficult global context. He expressed confidence that, as in the past, the parties would continue to work together to ensure compliance.

214. The representative of Brazil spoke of his concern that the difficulty of the negotiations might have left parties operating under paragraph one of Article 5 with doubts about funding levels, which were not in line with the Technology and Economic Assessment Panel's recommendations on the matter. He said that there were many challenges ahead and that it was necessary to fund current obligations sufficiently before extending the scope of the Protocol to include new obligations. He



urged the parties to focus on the Protocol's mandate so that the level of compliance action was consistent with the level of support provided.

215. Echoing the views of China and Brazil the representative of India called upon developed countries to demonstrate through action their appreciation for the commitment made by the developing world.

216. The representative of Germany said that, owing to the effect of national regulations, and as he had pointed out during the deliberations of the replenishment contact group, his country's consent to the decision on replenishment of the Multilateral Fund was contingent on the approval by Germany's parliament of the country's 2012 federal budget. He said that although that approval had not yet been secured he hoped that it would be in the very near future.

217. The representative of Austria said that his country recognized the replenishment decision as a good compromise that would help to achieve the objectives of the Protocol and therefore did not wish to stand in the way of consensus on the replenishment. That notwithstanding, he was constrained to report that his Government's budget for 2012 had already been adopted and did not include provision for Austria's increased contribution under the replenishment decision. Austria would make its utmost efforts to comply with the replenishment decision but was not currently in a position to secure the payment of its share of the replenishment.

## **XI. Adoption of the report of the ninth meeting of the Conference of the Parties to the Vienna Convention and the Twenty-Third Meeting of the Parties to the Montreal Protocol**

218. The present report was adopted on Friday, 25 November 2011, on the basis of the draft report that had been circulated.

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

219. Following the customary exchange of courtesies, the meeting was declared closed at 11.20 p.m. on Friday, 25 November 2011.

## Annex I

### Trust fund for the Vienna Convention for the protection of the ozone layer: approved 2011 and 2012 and proposed 2013 and 2014 budgets (in United States dollars)

		w/m	2011	w/m	2012	w/m	2013	w/m	2014
<b>10</b>	<b>Project personnel component</b>								
	<i>1100 Project personnel</i>								
	1101 Executive Secretary (D-2) (shared with the Montreal Protocol (MP))	6	142 811	6	142 811	6	142 811	6	142 811
	1104 Scientific Affairs Officer (P-5) (shared with MP)	6	106 925	6	106 925	6	106 925	6	106 925
	1105 Administrative Officer (P-5) (paid by UNEP)		0		0		0		0
	1107 Programme Officer (Communication and Information) (P-3)	12	132 306	12	140 306	12	144 515	12	148 850
1199	Subtotal		382 042		390 042		394 251		398 586
	<i>1300 Administrative support</i>								
	1301 Administrative Assistant (G-7) (Shared with MP)	6	23 220	6	23 917	6	24 635	6	25 374
	1303 Programme Assistant (G-6)	12	25 488		25 488		25 488		25 488
	1304 Programme Assistant (G-6) (shared with MP)	6	19 931	6	20 529	6	21 145	6	21 779
	1305 Information Assistant (G-6) (Shared with MP)	6	18 482	6	19 036	6	19 607	6	20 195
	1310 Bilingual Senior Secretary (G-6)	12	25 367	12	25 367	12	25 367	12	25 367
	1322 Preparatory and parties meeting (shared with MP every 3 years, it applies to 2011 and 2014)		210 000		0		0		210 000
	1324 Meetings of the Bureau		20 000		0		0		20 000
	1326 Promotion of activities for the protection of the Ozone Layer		10 000		10 000		10 000		10 000
	1327 Meeting of the Ozone Research Managers		34 027		0		0		35 728
1399	Subtotal		386 515		124 337		126 241		393 932

		w/m	2011	w/m	2012	w/m	2013	w/m	2014
1600	<i>Travel on official business</i>								
	1601	Staff travel on official business	30 000		30 000		30 000		30 000
1699	Subtotal		30 000		30 000		30 000		30 000
<b>1999</b>	<b>Component total</b>		<b>798 557</b>		<b>544 379</b>		<b>550 493</b>		<b>822 518</b>
3300	<i>Participation costs of developing countries</i>								
	3302	Preparatory and parties meetings	0		0		0		0
	3304	Bureau meetings	20 000		0		0		20 000
	3307	Meeting of Ozone Research Managers	175 000		0		0		175 000
3399	Subtotal		195 000		0		0		195 000
<b>3999</b>	<b>Component total</b>		<b>195 000</b>		<b>0</b>		<b>0</b>		<b>195 000</b>
<b>40</b>	<b>Equipment and premises component</b>								
4100	<i>Expendable equipment (items under \$1 500)</i>								
	4101	Miscellaneous expendables (shared with MP)	9 000		8 000		8 000		8 000
4199	Subtotal		9 000		8 000		8 000		8 000
4200	<i>Non-expendable equipment</i>								
	4201	Personal computers and accessories	0		0		5 000		0
	4202	Portable computers	5 000		5 000		5 000		0
	4203	Other office equipment (server, fax, scanner, furniture, etc.)	5 000		5 000		5 000		5 000
	4204	Photocopiers	0		0		0		0
	4205	Paperless equipment and peripherals	0		5 000		5 000		5 000
4299	Subtotal		10 000		15 000		20 000		10 000
4300	<i>Premises</i>								
		Rental of office premises (shared with MP)	17 500		17 500		17 500		17 500
4399	Subtotal		17 500		17 500		17 500		17 500
<b>4999</b>	<b>Component total</b>		<b>36 500</b>		<b>40 500</b>		<b>45 500</b>		<b>35 500</b>
<b>50</b>	<b>Miscellaneous component</b>								
5100	<i>Operation and maintenance of equipment</i>								
	5101	Maintenance of equipment and other (shared with MP)	10 000		7 500		7 500		7 500

		w/m	2011	w/m	2012	w/m	2013	w/m	2014
5199	Subtotal		10 000		7 500		7 500		7 500
5200	<i>Reporting costs</i>								
	5201	Reporting	7 500		7 500		7 500		7 500
	5202	Reporting (Ozone Research Managers meeting report)	15 000		0		0		15 000
5299	Subtotal		22 500		7 500		7 500		22 500
5300	<i>Sundry</i>								
	5301	Communications	25 000		20 000		20 000		20 000
		Freight charges (documents)	20 000		15 000		15 000		15 000
	5302	Others (Ozone layer protection public awareness campaign)	5 000		5 000		5 000		5 000
5399	Subtotal		50 000		40 000		40 000		40 000
5400	<i>Hospitality</i>								
	5401	Hospitality	10 000		0		0		10 000
5499	Subtotal		10 000		0		0		10 000
<b>5999</b>	<b>Component total</b>		<b>92 500</b>		<b>55 000</b>		<b>55 000</b>		<b>80 000</b>
<b>99</b>	<b>Total direct project cost</b>		<b>1 122 557</b>		<b>639 879</b>		<b>650 993</b>		<b>1 133 018</b>
	<b>Programme support costs (13%)</b>		<b>145 932</b>		<b>83 184</b>		<b>84 629</b>		<b>147 292</b>
	<b>Grand total (inclusive of programme support costs)</b>		<b>1 268 489</b>		<b>723 063</b>		<b>735 622</b>		<b>1 280 311</b>
	<b>Drawdown from Trust Fund balance*</b>		<b>665 489</b>		<b>120 063</b>		<b>132 622</b>		<b>677 311</b>
	<b>Contribution to be paid by the parties</b>		<b>603 000</b>		<b>603 000</b>		<b>603 000</b>		<b>603 000</b>

## Explanatory notes for the approved 2012, 2013 and 2014 budgets of the Trust Fund for the Vienna Convention for the Protection of the Ozone Layer

Budget line	Comment
Personnel component 1101, 1104 and 1107	Indicative Professional salary costs applicable to the relevant duty stations have been used for the budget proposals. Where information on actual staff costs is available, however, the figures have been adjusted accordingly. Unspent commitments normally revert to the Vienna Convention Trust Fund.
1105	The post of Administrative Officer continues to be paid from the 13 per cent programme support costs based on actual expenditures.
Administrative support/personnel 1301–1310	Standard General Service salary costs applicable to the Nairobi duty station have been used for the budget proposals.
Administrative support/conference services 1322, 1324, 1326, 1327	Necessary funds may be transferred from the conference servicing budget lines should such services be required to be rendered, either by individual consultancies or under corporate contracts.
	The current conference servicing costs have been based on the following reasons and assumptions:
	1322: The conferencing costs of the ninth and tenth meetings of the Conference of the Parties to the Vienna Convention are being shared with the Twenty-Third and Twenty-Sixth Meetings of the Parties to the Montreal Protocol as the meetings will be held jointly in 2011 and 2014;
	1324: Two Bureau meetings are scheduled for 2011 and 2014. The first meeting in the year is to be held back to back with the Ozone Research Managers' meeting and the second, back to back with the meeting of the Conference of the Parties. The meetings have provision for interpretation and document translation into the appropriate languages based on the membership of the Bureau;
	1326: A minimum amount is proposed for each year to cover activities in connection with the celebration of the International Day for the Protection of the Ozone Layer;
	1327: A small increase is included to cover conference costs related to the organization of the eighth and ninth Ozone Research Managers' meetings, in 2011 and 2014.

Travel on official business 1601	The budgets include travel of Secretariat officers in connection with the organization of the Ozone Research Managers' meetings and the meetings of the Conference of the Parties, in addition to travel related to provision of support to network and capacity-building meetings.
3302	<p>The participation of representatives of parties operating under paragraph 1 of Article 5 in the various Convention meetings is assumed at \$5,000 per representative per meeting taking into account not more than one person's travel costs per country, using the most appropriate and advantageous economy-class fare and United Nations daily subsistence allowances.</p> <p>Considering that the meeting of the Conference of the Parties to the Vienna Convention is normally held jointly with the Meeting of the Parties to the Montreal Protocol, the participation costs are borne by the Montreal Protocol.</p>
3304	The participation costs are based on two Bureau meetings respectively in 2011 and 2014 for four participants from developing countries or countries with economies in transition, being held back to back with the Ozone Research Managers' meeting and the meeting of the Conference of the Parties.
3307	One Ozone Research Managers' meeting was held in May 2011. The next meeting will be held in 2014. Funding has been reserved for participation by 35 experts from qualifying developing countries that submit national reports.
4201–4205	<p>The Secretariat is maintaining its electronic data processing systems to make the documentation of the Protocol and the Convention available electronically to the parties. This requires periodic procurement of necessary peripherals and software licenses, and also updating of the existing computer servers.</p> <p>A minimum provision has been made to enable the Secretariat to replace some equipment each year.</p>
5100–5400	Provisions under these budget lines contain minimal increase based on inflation rates recommended by the United Nations.

## Annex II

## Trust Fund for the Vienna Convention for the Protection of the Ozone Layer

Scale of contributions by the parties for 2012–2014 based on the United Nations scale of assessments  
(General Assembly resolution A/64/482/Add.1 of 28 December 2009 with a maximum assessment rate of 22 per cent)  
(in United States dollars)

	Party	United Nations scale of assessments for 2010–2012	United Nations scale adjusted to exclude non-contributors	Adjusted United Nations scale with 22% maximum assessment rate considered	2012 contributions by parties	2013 contributions by parties	2014 contributions by parties
1	Afghanistan	0.004	0.000	0.000	0	0	0
2	Albania	0.010	0.000	0.000	0	0	0
3	Algeria	0.128	0.128	0.128	771	771	771
4	Andorra	0.007	0.000	0.000	0	0	0
5	Angola	0.010	0.000	0.000	0	0	0
6	Antigua and Barbuda	0.002	0.000	0.000	0	0	0
7	Argentina	0.287	0.287	0.287	1 728	1 728	1 728
8	Armenia	0.005	0.000	0.000	0	0	0
9	Australia	1.933	1.933	1.930	11 637	11 637	11 637
10	Austria	0.851	0.851	0.850	5 123	5 123	5 123
11	Azerbaijan	0.015	0.000	0.000	0	0	0
12	Bahamas	0.018	0.000	0.000	0	0	0
13	Bahrain	0.039	0.000	0.000	0	0	0
14	Bangladesh	0.010	0.000	0.000	0	0	0
15	Barbados	0.008	0.000	0.000	0	0	0
16	Belarus	0.042	0.000	0.000	0	0	0
17	Belgium	1.075	1.075	1.073	6 472	6 472	6 472
18	Belize	0.001	0.000	0.000	0	0	0
19	Benin	0.003	0.000	0.000	0	0	0
20	Bhutan	0.001	0.000	0.000	0	0	0

	Party	United Nations scale of assessments for 2010–2012	United Nations scale adjusted to exclude non-contributors	Adjusted United Nations scale with 22% maximum assessment rate considered	2012 contributions by parties	2013 contributions by parties	2014 contributions by parties
21	Bolivia (Plurinational State of)	0.007	0.000	0.000	0	0	0
22	Bosnia and Herzegovina	0.014	0.000	0.000	0	0	0
23	Botswana	0.018	0.000	0.000	0	0	0
24	Brazil	1.611	1.611	1.608	9 698	9 698	9 698
25	Brunei Darussalam	0.028	0.000	0.000	0	0	0
26	Bulgaria	0.038	0.000	0.000	0	0	0
27	Burkina Faso	0.003	0.000	0.000	0	0	0
28	Burundi	0.001	0.000	0.000	0	0	0
29	Cambodia	0.003	0.000	0.000	0	0	0
30	Cameroon	0.011	0.000	0.000	0	0	0
31	Canada	3.207	3.207	3.202	19 306	19 306	19 306
32	Cape Verde	0.001	0.000	0.000	0	0	0
33	Central African Republic	0.001	0.000	0.000	0	0	0
34	Chad	0.002	0.000	0.000	0	0	0
35	Chile	0.236	0.236	0.236	1 421	1 421	1 421
36	China	3.189	3.189	3.184	19 198	19 198	19 198
37	Colombia	0.144	0.144	0.144	867	867	867
38	Comoros	0.001	0.000	0.000	0	0	0
39	Congo	0.003	0.000	0.000	0	0	0
40	Cook Islands	-	0.000	0.000	0	0	0
41	Costa Rica	0.034	0.000	0.000	0	0	0
42	Côte d'Ivoire	0.010	0.000	0.000	0	0	0
43	Croatia	0.097	0.000	0.000	0	0	0
44	Cuba	0.071	0.000	0.000	0	0	0
45	Cyprus	0.046	0.000	0.000	0	0	0
46	Czech Republic	0.349	0.349	0.348	2 101	2 101	2 101
47	Democratic People's Republic of Korea	0.007	0.000	0.000	0	0	0



	Party	United Nations scale of assessments for 2010–2012	United Nations scale adjusted to exclude non-contributors	Adjusted United Nations scale with 22% maximum assessment rate considered	2012 contributions by parties	2013 contributions by parties	2014 contributions by parties
48	Democratic Republic of the Congo	0.003	0.000	0.000	0	0	0
49	Denmark	0.736	0.736	0.735	4 431	4 431	4 431
50	Djibouti	0.001	0.000	0.000	0	0	0
51	Dominica	0.001	0.000	0.000	0	0	0
52	Dominican Republic	0.042	0.000	0.000	0	0	0
53	Ecuador	0.040	0.000	0.000	0	0	0
54	Egypt	0.094	0.000	0.000	0	0	0
55	El Salvador	0.019	0.000	0.000	0	0	0
56	Equatorial Guinea	0.008	0.000	0.000	0	0	0
57	Eritrea	0.001	0.000	0.000	0	0	0
58	Estonia	0.040	0.000	0.000	0	0	0
59	Ethiopia	0.008	0.000	0.000	0	0	0
60	European Union	2.500	2.500	2.496	15 050	15 050	15 050
61	Fiji	0.004	0.000	0.000	0	0	0
62	Finland	0.566	0.566	0.565	3 407	3 407	3 407
63	France	6.123	6.123	6.113	36 861	36 861	36 861
64	Gabon	0.014	0.000	0.000	0	0	0
65	Gambia	0.001	0.000	0.000	0	0	0
66	Georgia	0.006	0.000	0.000	0	0	0
67	Germany	8.018	8.018	8.005	48 269	48 269	48 269
68	Ghana	0.006	0.000	0.000	0	0	0
69	Greece	0.691	0.691	0.690	4 160	4 160	4 160
70	Grenada	0.001	0.000	0.000	0	0	0
71	Guatemala	0.028	0.000	0.000	0	0	0
72	Guinea	0.002	0.000	0.000	0	0	0
73	Guinea-Bissau	0.001	0.000	0.000	0	0	0

	Party	United Nations scale of assessments for 2010–2012	United Nations scale adjusted to exclude non-contributors	Adjusted United Nations scale with 22% maximum assessment rate considered	2012 contributions by parties	2013 contributions by parties	2014 contributions by parties
74	Guyana	0.001	0.000	0.000	0	0	0
75	Haiti	0.003	0.000	0.000	0	0	0
76	Holy See	0.001	0.000	0.000	0	0	0
77	Honduras	0.008	0.000	0.000	0	0	0
78	Hungary	0.291	0.291	0.291	1 752	1 752	1 752
79	Iceland	0.042	0.000	0.000	0	0	0
80	India	0.534	0.534	0.533	3 215	3 215	3 215
81	Indonesia	0.238	0.238	0.238	1 433	1 433	1 433
82	Iran (Islamic Republic of)	0.233	0.233	0.233	1 403	1 403	1 403
83	Iraq	0.020	0.000	0.000	0	0	0
84	Ireland	0.498	0.498	0.497	2 998	2 998	2 998
85	Israel	0.384	0.384	0.383	2 312	2 312	2 312
86	Italy	4.999	4.999	4.991	30 094	30 094	30 094
87	Jamaica	0.014	0.000	0.000	0	0	0
88	Japan	12.530	12.530	12.509	75 431	75 431	75 431
89	Jordan	0.014	0.000	0.000	0	0	0
90	Kazakhstan	0.076	0.000	0.000	0	0	0
91	Kenya	0.012	0.000	0.000	0	0	0
92	Kiribati	0.001	0.000	0.000	0	0	0
93	Kuwait	0.263	0.263	0.263	1 583	1 583	1 583
94	Kyrgyzstan	0.001	0.000	0.000	0	0	0
95	Lao People's Democratic Republic	0.001	0.000	0.000	0	0	0
96	Latvia	0.038	0.000	0.000	0	0	0
97	Lebanon	0.033	0.000	0.000	0	0	0
98	Lesotho	0.001	0.000	0.000	0	0	0
99	Liberia	0.001	0.000	0.000	0	0	0

	Party	United Nations scale of assessments for 2010–2012	United Nations scale adjusted to exclude non-contributors	Adjusted United Nations scale with 22% maximum assessment rate considered	2012 contributions by parties	2013 contributions by parties	2014 contributions by parties
100	Libya	0.129	0.129	0.129	777	777	777
101	Liechtenstein	0.009	0.000	0.000	0	0	0
102	Lithuania	0.065	0.000	0.000	0	0	0
103	Luxembourg	0.090	0.000	0.000	0	0	0
104	Madagascar	0.003	0.000	0.000	0	0	0
105	Malawi	0.001	0.000	0.000	0	0	0
106	Malaysia	0.253	0.253	0.253	1 523	1 523	1 523
107	Maldives	0.001	0.000	0.000	0	0	0
108	Mali	0.003	0.000	0.000	0	0	0
109	Malta	0.017	0.000	0.000	0	0	0
110	Marshall Islands	0.001	0.000	0.000	0	0	0
111	Mauritania	0.001	0.000	0.000	0	0	0
112	Mauritius	0.011	0.000	0.000	0	0	0
113	Mexico	2.356	2.356	2.352	14 183	14 183	14 183
114	Micronesia (Federated State of)	0.001	0.000	0.000	0	0	0
115	Monaco	0.003	0.000	0.000	0	0	0
116	Mongolia	0.002	0.000	0.000	0	0	0
117	Montenegro	0.004	0.000	0.000	0	0	0
118	Morocco	0.058	0.000	0.000	0	0	0
119	Mozambique	0.003	0.000	0.000	0	0	0
120	Myanmar	0.006	0.000	0.000	0	0	0
121	Namibia	0.008	0.000	0.000	0	0	0
122	Nauru	0.001	0.000	0.000	0	0	0
123	Nepal	0.006	0.000	0.000	0	0	0
124	Netherlands	1.855	1.855	1.852	11 167	11 167	11 167
125	New Zealand	0.273	0.273	0.273	1 643	1 643	1 643

	Party	United Nations scale of assessments for 2010–2012	United Nations scale adjusted to exclude non-contributors	Adjusted United Nations scale with 22% maximum assessment rate considered	2012 contributions by parties	2013 contributions by parties	2014 contributions by parties
126	Nicaragua	0.003	0.000	0.000	0	0	0
127	Niger	0.002	0.000	0.000	0	0	0
128	Nigeria	0.078	0.000	0.000	0	0	0
129	Niue	-	0.000	0.000	0	0	0
130	Norway	0.871	0.871	0.870	5 243	5 243	5 243
131	Oman	0.086	0.000	0.000	0	0	0
132	Pakistan	0.082	0.000	0.000	0	0	0
133	Palau	0.001	0.000	0.000	0	0	0
134	Panama	0.022	0.000	0.000	0	0	0
135	Papua New Guinea	0.002	0.000	0.000	0	0	0
136	Paraguay	0.007	0.000	0.000	0	0	0
137	Peru	0.090	0.000	0.000	0	0	0
138	Philippines	0.090	0.000	0.000	0	0	0
139	Poland	0.828	0.828	0.827	4 985	4 985	4 985
140	Portugal	0.511	0.511	0.510	3 076	3 076	3 076
141	Qatar	0.135	0.135	0.135	813	813	813
142	Republic of Korea	2.260	2.260	2.256	13 605	13 605	13 605
143	Republic of Moldova	0.002	0.000	0.000	0	0	0
144	Romania	0.177	0.177	0.177	1 066	1 066	1 066
145	Russian Federation	1.602	1.602	1.599	9 644	9 644	9 644
146	Rwanda	0.001	0.000	0.000	0	0	0
147	Saint Kitts and Nevis	0.001	0.000	0.000	0	0	0
148	Saint Lucia	0.001	0.000	0.000	0	0	0
149	Saint Vincent and the Grenadines	0.001	0.000	0.000	0	0	0
150	Samoa	0.001	0.000	0.000	0	0	0
151	San Marino	0.003	0.000	0.000	0	0	0

	Party	United Nations scale of assessments for 2010–2012	United Nations scale adjusted to exclude non-contributors	Adjusted United Nations scale with 22% maximum assessment rate considered	2012 contributions by parties	2013 contributions by parties	2014 contributions by parties
152	Sao Tome and Principe	0.001	0.000	0.000	0	0	0
153	Saudi Arabia	0.830	0.830	0.829	4 997	4 997	4 997
154	Senegal	0.006	0.000	0.000	0	0	0
155	Serbia	0.037	0.000	0.000	0	0	0
156	Seychelles	0.002	0.000	0.000	0	0	0
157	Sierra Leone	0.001	0.000	0.000	0	0	0
158	Singapore	0.335	0.335	0.334	2 017	2 017	2 017
159	Slovakia	0.142	0.142	0.142	855	855	855
160	Slovenia	0.103	0.103	0.103	620	620	620
161	Solomon Islands	0.001	0.000	0.000	0	0	0
162	Somalia	0.001	0.000	0.000	0	0	0
163	South Africa	0.385	0.385	0.384	2 318	2 318	2 318
164	Spain	3.177	3.177	3.172	19 126	19 126	19 126
165	Sri Lanka	0.019	0.000	0.000	0	0	0
166	Sudan	0.010	0.000	0.000	0	0	0
167	Suriname	0.003	0.000	0.000	0	0	0
168	Swaziland	0.003	0.000	0.000	0	0	0
169	Sweden	1.064	1.064	1.062	6 405	6 405	6 405
170	Switzerland	1.130	1.130	1.128	6 803	6 803	6 803
171	Syrian Arab Republic	0.025	0.000	0.000	0	0	0
172	Tajikistan	0.002	0.000	0.000	0	0	0
173	Thailand	0.209	0.209	0.209	1 258	1 258	1 258
174	The former Yugoslav Republic of Macedonia	0.007	0.000	0.000	0	0	0
175	Timor-Leste	0.001	0.000	0.000	0	0	0
176	Togo	0.001	0.000	0.000	0	0	0
177	Tonga	0.001	0.000	0.000	0	0	0
178	Trinidad and Tobago	0.044	0.000	0.000	0	0	0

	Party	United Nations scale of assessments for 2010–2012	United Nations scale adjusted to exclude non-contributors	Adjusted United Nations scale with 22% maximum assessment rate considered	2012 contributions by parties	2013 contributions by parties	2014 contributions by parties
179	Tunisia	0.030	0.000	0.000	0	0	0
180	Turkey	0.617	0.617	0.616	3 714	3 714	3 714
181	Turkmenistan	0.026	0.000	0.000	0	0	0
182	Tuvalu	0.001	0.000	0.000	0	0	0
183	Uganda	0.006	0.000	0.000	0	0	0
184	Ukraine	0.087	0.000	0.000	0	0	0
185	United Arab Emirates	0.391	0.391	0.390	2 354	2 354	2 354
186	United Kingdom of Great Britain and Northern Ireland	6.604	6.604	6.593	39 757	39 757	39 757
187	United Republic of Tanzania	0.008	0.000	0.000	0	0	0
188	United States of America	22.000	22.000	21.964	132 441	132 441	132 441
189	Uruguay	0.027	0.000	0.000	0	0	0
190	Uzbekistan	0.010	0.000	0.000	0	0	0
191	Vanuatu	0.001	0.000	0.000	0	0	0
192	Venezuela (Bolivarian Republic of)	0.314	0.314	0.313	1 890	1 890	1 890
193	Viet Nam	0.033	0.000	0.000	0	0	0
194	Yemen	0.010	0.000	0.000	0	0	0
195	Zambia	0.004	0.000	0.000	0	0	0
196	Zimbabwe	0.003	0.000	0.000	0	0	0
	<b>Total</b>	<b>102.501</b>	<b>100.165</b>	<b>100.000</b>	<b>603 000</b>	<b>603 000</b>	<b>603 000</b>

## Annex III

**Contributions by parties to the eighth replenishment of the Multilateral Fund (2012, 2013 and 2014)  
(replenishment at US\$ 450 million, including US\$ 400 million from new contributions)**

No.	Parties	United Nations scale of assessments for 2010–2012	Adjusted United Nations scale of assessments with no party contributing more than 22%	Annual contributions (in United States dollars) for years 2012, 2013 and 2014	Average inflation rate for the period 2009–2011	Qualifying for FERM Use Yes=1 No=0	FERM Users' currencies rates of exchange	FERM users' national currencies	FERM users' payments in national currencies
1	Andorra	0.007	0.008929886	11 906.51					0.00
2	Australia	1.933	2.465924145	3 287 898.86	2.56%	1	0.967	Australian dollar	3 179 398.20
3	Austria	0.851	1.085618959	1 447 491.95	1.53%	1	0.7203	Euro	1 042 628.45
4	Azerbaijan	0.015	0.019135469	25 513.96	5.82%	1	0.7953	New manat	20 291.25
5	Belarus	0.042	0.053579314	71 439.09	11.21%	0			0.00
6	Belgium	1.075	1.371375301	1 828 500.40	1.72%	1	0.7203	Euro	1 317 068.84
7	Bulgaria	0.038	0.048476522	64 635.36	3.42%	1	1.4089	Lev	91 064.76
8	Canada	3.207	4.091163338	5 454 884.45	1.43%	1	0.9802	Canadian dollar	5 346 877.74
9	Cyprus	0.046	0.058682106	78 242.81	2.21%	1	0.7203	Euro	56 358.29
10	Czech Republic	0.349	0.445218586	593 624.78	1.52%	1	17.71	Czech koruna	10 513 094.88
11	Denmark	0.736	0.938913694	1 251 884.93	1.87%	1	5.3696	Danish krone	6 722 121.30
12	Estonia	0.040	0.051027918	68 037.22	2.50%	1	0.7203	Euro	49 007.21
13	Finland	0.566	0.722045042	962 726.72	2.10%	1	0.7203	Euro	693 452.06
14	France	6.123	7.811098572	10 414 798.10	1.33%	1	0.7203	Euro	7 501 779.07
15	Germany	8.018	10.228546195	13 638 061.59	1.19%	1	0.7203	Euro	9 823 495.77
16	Greece	0.691	0.881507286	1 175 343.05	2.86%	1	0.7203	Euro	846 599.60

No.	Parties	United Nations scale of assessments for 2010–2012	Adjusted United Nations scale of assessments with no party contributing more than 22%	Annual contributions (in United States dollars) for years 2012, 2013 and 2014	Average inflation rate for the period 2009–2011	Qualifying for FERM Use Yes=1 No=0	FERM Users' currencies rates of exchange	FERM users' national currencies	FERM users' payments in national currencies
17	Holy see	0.001	0.001275698	1 700.93					
18	Hungary	0.291	0.371228105	494 970.81	4.38%	1	195.2083	Forint	96 622 409.62
19	Iceland	0.042	0.053579314	71 439.09	6.67%	1	115.25	Icelandic krona	8 233 354.59
20	Ireland	0.498	0.635297581	847 063.44	-0.91%	1	0.7203	Euro	610 139.80
21	Israel	0.384	0.489868014	653 157.35	3.02%	1	3.53	Shekel	2 305 645.45
22	Italy	4.999	6.377214072	8 502 952.10	1.45%	1	0.7203	Euro	6 124 676.39
23	Japan	12.530	15.984495363	21 312 660.48	-0.64%	1	81.915	Yen	1 745 826 583.58
24	Latvia	0.038	0.048476522	64 635.36	1.69%	1	0.5094	Lats	32 925.25
25	Liechtenstein	0.009	0.011481282	15 308.38		1	0.9134	Swiss franc	13 982.67
26	Lithuania	0.065	0.082920367	110 560.49	2.92%	1	2.4869	Litas	274 952.88
27	Luxembourg	0.090	0.114812816	153 083.75	2.04%	1	0.7203	Euro	110 266.23
28	Malta	0.017	0.021686865	28 915.82	2.31%	1	0.7203	Euro	20 828.07
29	Monaco	0.003	0.003827094	5 102.79		1	0.7203	Euro	3 675.54
30	Netherlands	1.855	2.366419705	3 155 226.27	1.38%	1	0.7203	Euro	2 272 709.48
31	New Zealand	0.273	0.348265541	464 354.06	2.85%	1	1.2873	New Zealand dollar	597 762.98
32	Norway	0.871	1.111132918	1 481 510.56	2.11%	1	5.637	Norwegian krone	8 351 275.01
33	Poland	0.828	1.056277906	1 408 370.54	3.36%	1	2.8595	Zloty	4 027 235.56
34	Portugal	0.511	0.651881654	869 175.54	0.95%	1	0.7203	Euro	626 067.14
35	Romania	0.177	0.225798538	301 064.72	5.94%	1	3.025	Leu	910 720.77
36	Russian Federation	1.602	2.043668122	2 724 890.83	9.27%	1	28.8617	Roubles	78 644 981.66
37	San Marino	0.003	0.003827094	5 102.79			0.7203		



No.	Parties	United Nations scale of assessments for 2010–2012	Adjusted United Nations scale of assessments with no party contributing more than 22%	Annual contributions (in United States dollars) for years 2012, 2013 and 2014	Average inflation rate for the period 2009–2011	Qualifying for FERM Use Yes=1 No=0	FERM Users' currencies rates of exchange	FERM users' national currencies	FERM users' payments in national currencies
38	Slovakia	0.142	0.181149109	241 532.15	1.67%	1	0.7203	Euro	173 975.60
39	Slovenia	0.103	0.131396889	175 195.85	1.62%	1	0.7203	Euro	126 193.57
40	Spain	3.177	4.052892400	5 403 856.53	1.47%	1	0.7203	Euro	3 892 397.86
41	Sweden	1.064	1.357342623	1 809 790.16	1.97%	1	6.4202	Swedish krona	11 619 214.81
42	Switzerland	1.130	1.441538688	1 922 051.58	0.37%	1	0.9134	Swiss franc	1 755 601.92
43	Tajikistan	0.002	0.002551396	3 401.86	8.95%	1	4.4767	Somoni	15 229.11
44	Ukraine	0.087	0.110985722	147 980.96	11.48%	0	0		0.00
45	United Kingdom	6.604	8.424709288	11 232 945.72	3.22%	1	0.6223	Pound Sterling	6 990 262.12
46	United States of America	22.000	22.000000000	29 333 333.33	1.16%	1	1	United States dollar	29 333 333.33
47	Uzbekistan	0.010	0.012756980	17 009.31	11.68%	0	0		0.00
	<b>Total</b>	<b>83.143</b>	<b>100.000000000</b>	<b>133 333 333.33</b>					

## Annex IV

**Trust fund for the Montreal Protocol on substances that deplete the ozone layer  
Approved 2011 and 2012 and proposed 2013 budgets (in United States dollars)**

		w/m	2011	w/m	2012	w/m	2013	
<b>10</b>	<b>Project personnel component</b>							
	<i>1100</i>							
	<i>Project personnel</i>							
	1101	Executive Secretary (D-2) (shared with the Vienna Convention (VC)) <sup>1</sup>	6	166 757	6	166 000	6	166 000
	1102	Deputy Executive Secretary (D-1)	12	259 560	12	272 538	12	275 367
	1103	Senior Legal Officer (P-5)	12	202 632	12	208 711	12	208 711
	1104	Senior Scientific Affairs Officer (P-5) (shared with VC)	6	130 000	6	130 000	6	130 000
	1105	Administrative Officer (P-5) (paid by UNEP)		0		0		0
	1106	Database Manager (Information System and Technology (P-4)	12	150 115	12	154 618	12	159 257
	1107	Programme Officer (Communication & Information (P-3) (paid from VC)	12	0	12	0	12	0
	1108	Programme Officer (Monitoring and Compliance (P-4)	12	188 000	12	193 640	12	199 449
1199		Subtotal		1 097 064		1 125 507		1 138 784
	<i>1200</i>							
		<i>Consultants</i>						
	1201	Assistance in data-reporting, analysis and promotion of the implementation of the Protocol		40 000		75 000		75 000
1299		Subtotal		40 000		75 000		75 000
	<i>1300</i>							
		<i>Administrative support</i>						
	1301	Administrative Assistant (G-7) (shared with VC)	6	21 250	6	21 888	6	22 545
	1302	Administrative Assistant (G-6)	12	27 000	12	28 350	12	29 768
	1303	Programme Assistant (G-6) (paid from VC)	12	0	12	0	12	0
	1304	Programme Assistant (Data) (G-6) (shared with VC)	6	17 573	6	18 452	6	19 375
	1305	Information Assistant (Research) (G-6) (shared with VC)	6	16 295	6	16 295	6	16 295

		w/m	2011	w/m	2012	w/m	2013
1306	Information Management Assistant/Documentation Clerk (G-6)	12	27 560	12	28 387	12	29 239
1307	Data Assistant (Computer Information Systems Assistant) (G-7)	12	42 174	12	44 704	12	46 940
1308	Administrative Assistant - Fund (G-7) (paid by UNEP)	12	0	12	0	12	0
1309	Team Assistant/Logistics Assistant (G-4) (paid by UNEP)	12	0	12	0	12	0
1310	Meetings Services Assistant/Bilingual Senior Secretary (G-6) (paid from VC)	12	0	12	0	12	0
1320	Temporary assistance		21 300		21 300		21 300
1321	Open-ended Working Group meetings		490 000		490 000		490 000
1322	Preparatory and parties meetings (shared with VC every three years, applies to the Twenty-Third and Twenty-Sixth Meetings of the Parties to the Montreal Protocol and the ninth and tenth meetings of the Conference of the Parties to the Vienna Convention in 2011 and 2014)		350 000		500 000		500 000
1323	Assessment panel meetings		75 000		75 000		75 000
1324	Bureau meeting		20 000		20 000		20 000
1325	Implementation Committee meetings		111 200		111 200		111 200
1326	MP informal consultation meetings		10 000		10 000		10 000
1399	Subtotal		1 229 352		1 385 575		1 391 660
1600	<i>Travel on official business</i>						
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
1699	Subtotal		225 000		225 000		225 000
<b>1999</b>	<b>Component total</b>		<b>2 591 416</b>		<b>2 811 083</b>		<b>2 830 444</b>
<b>20</b>	<b>Contracts</b>						
2300	<i>Subcontracts</i> <sup>2</sup>						
2301			70 000		57 134		0
2399	Subtotal		70 000		57 134		0
<b>2999</b>	<b>Component total</b>		<b>70 000</b>		<b>57 134</b>		<b>0</b>

		w/m	2011	w/m	2012	w/m	2013
<b>30</b>	<b>Meeting/Participation component</b>						
	<i>3300 Support for participation</i>						
	3301 Assessment panel meetings <sup>3</sup>		500 000		450 000		450 000
	3302 Preparatory and parties meetings (Montreal Protocol bears the cost of the participation of MP and VC delegates from A-5 countries at the joint 23rd MOP and 9th COP in 2011)		350 000		350 000		350 000
	3303 Open-ended Working Group meetings		300 000		300 000		300 000
	3304 Bureau meeting		20 000		20 000		20 000
	3305 Implementation Committee meetings		125 000		125 000		125 000
	3306 Consultations in an informal meeting		10 000		10 000		10 000
	3399 Subtotal		1 305 000		1 255 000		1 255 000
<b>3999</b>	<b>Component total</b>		<b>1 305 000</b>		<b>1 255 000</b>		<b>1 255 000</b>
<b>40</b>	<b>Equipment and premises component</b>						
	<i>4100 Expendable equipment (items under \$1 500)</i>						
	4101 Miscellaneous expendables (shared with VC)		22 000		20 000		20 000
	4199 Subtotal		22 000		20 000		20 000
	<i>4200 Non-expendable equipment</i>						
	4201 Personal computers and accessories		20 000		5 000		5 000
	4202 Portable computers		5 000		5 000		5 000
	4203 Other office equipment (server, fax, scanner, furniture etc.)		20 000		5 000		5 000
	4204 Photocopiers		5 000		5 000		5 000
	4205 Equipment and peripherals for paperless conferences		0		10 000		5 000
	4299 Subtotal		50 000		30 000		25 000
	<i>4300 Premises</i>						
	4301 Rental of office premises (shared with VC)		48 000		49 440		50 882
	4399 Subtotal		48 000		49 440		50 882
<b>4999</b>	<b>Component total</b>		<b>120 000</b>		<b>99 440</b>		<b>95 882</b>

		w/m	2011	w/m	2012	w/m	2013
<b>50</b>	<b>Miscellaneous component</b>						
	<i>5100</i>						
			<i>Operation and maintenance of equipment</i>				
	5101						
	5199						
	<i>5200</i>						
			<i>Reporting costs</i>				
	5201						
	5202						
	5203						
	5299						
	<i>5300</i>						
			<i>Sundry</i>				
	5301						
	5302						
	5303						
	5304						
	5399						
	<i>5400</i>						
			<i>Hospitality</i>				
	5401						
	5499						
<b>5999</b>	<b>Component total</b>		<b>193,000</b>		<b>157 000</b>		<b>152 000</b>
<b>99</b>	<b>Total direct project cost</b>		<b>4 279 416</b>		<b>4 379 657</b>		<b>4 333 326</b>
	<i>Programme support costs (13%)</i>		<b>556 324</b>		<b>569 355</b>		<b>563 332</b>
	<b>GRAND TOTAL (inclusive of programme support costs)</b>		<b>4 835 740</b>		<b>4 949 012</b>		<b>4 896 659</b>
	<b>Operating cash reserve exclusive of programme support costs<sup>5</sup></b>		<b>0</b>		<b>0</b>		<b>0</b>
	<b>Total budget</b>		<b>4 835 740</b>		<b>4 949 012</b>		<b>4 896 659</b>
	<b>Drawdown<sup>6</sup></b>		<b>558 807</b>		<b>672 079</b>		<b>619 726</b>
	<b>Contribution from the parties</b>		<b>4 276 933</b>		<b>4 276 933</b>		<b>4 276 933</b>

1 By decision XXII/21, the parties requested the President of the Bureau of the Twenty-Second Meeting of the Parties to convey to the Secretary-General of the United Nations the Parties' request to find a way to extend the tenure of the current Executive Secretary of the Ozone Secretariat through 2015. At the thirty-first meeting of the Open-ended Working Group, the President conveyed to the parties that he had received confirmation from the Chef-de-Cabinet of the Secretary-General that the Executive Secretary's contract was being extended by two-years, until October 2013. There are no additional budget implications of this extension.

- 2 In accordance with decision XXII/2, and under the decision created by that decision, the Secretariat entered into a contract with ICF International for the preparation of an evaluation of the financial mechanism.
- 3 Budget line covers participation of all TEAP experts to enable the timely completion of the work requested by the Parties.
- 4 As paperless meetings have been successful since 2008, there has been both a decrease and shift in the resources needed for certain budget lines. The Secretariat introduced line 4205 as a new budget line to ensure transparency in reporting of related expenditures in this area.
- 5 The Secretariat is maintaining the operating cash reserve at 15 per cent of the annual budget in accordance with paragraph 5 of decision XXII/21. As the 15 per cent level has been reached, there is no need to allocate funds in this area from 2011 and beyond until such time as the parties decide to increase the level to meet the final expenditures under the Trust Fund.
- 6 Prior years' drawdown levels were set with a view to maintaining the level of contributions constant through 2011. A drawdown for 2012 and 2013 is designed to keep contributions stable.

ADVANCED

## Explanatory notes for the approved 2012 and 2013 budgets of the Trust Fund for the Montreal Protocol on Substances that Deplete the Ozone Layer

Budget line	Comment
Personnel component 1101–1108	Indicative Professional salary costs applicable to the relevant duty stations have been used for the budget proposals. Where information on actual staff costs is available, however, the figures have been adjusted accordingly. Unspent commitments normally revert to the Trust Fund for the Montreal Protocol.
1105	The post of Administrative Officer continues to be paid by UNEP from the 13 per cent programme support costs.
Consultants – 1201	Assistance in data reporting, updating of publications, translation of essential features of the Ozone Secretariat website and the maintenance of a fully interlinked digital system at the Secretariat will continue to be required. Funds under this line may be transferred to line 1100 to create or support short-term Professional posts if necessary.
Administrative support/personnel 1301- 1309	Standard General Service salary costs applicable to the Nairobi duty station have been used for the 2012–2013 budget proposals.
1310	The post of Bilingual Secretary is funded from the Vienna Convention Trust Fund.
Administrative support/Conference services – 1321–1326	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.  The current conference servicing costs have been based on the following reasons and assumptions:  1321: The budget proposed is for one meeting of the Open-ended Working Group to be held each year in 2012 and 2013 in Nairobi or at another United Nations venue, in the six official United Nations languages;  1322: The Montreal Protocol budgets for 2011 and 2014 will be shared with the Vienna Convention budgets for the ninth and tenth meetings of the Conference of the Parties to the Vienna Convention;

Budget line	Comment
Travel on official business – 1601–1602	<p>The budgeted amount is based on the estimated cost of holding the Meeting of the Parties in Nairobi in 2012 and 2013, in the six official United Nations languages. Any additional costs arising from holding the meetings in a location other than Nairobi will be borne by the Governments hosting the meetings;</p> <p>1323: The budget allocation in 2012 and 2013 will cover the costs of organizing annual meetings of the assessment panels and the Technology and Economic Assessment Panel’s technical options committees, together with communication and other sundry costs related to the work of Panel members from developing countries and countries with economies in transition;</p> <p>1324: One Bureau meeting is scheduled for each of the years 2012 and 2013, with provision for interpretation and document translation into the appropriate languages based on the membership of the Bureau;</p> <p>1325: At least two Implementation Committee meetings of three days’ duration are scheduled for each of the years 2012 and 2013, with interpretation and document translation as required, to be held back-to-back with the Open-ended Working Group meetings and the meetings of the parties in those years;</p> <p>1326: At least one informal consultation meeting per year, expected to take place in Nairobi, is envisaged for 2012 and 2013 to facilitate the work of assisting the parties and promoting ratification of and compliance with the Montreal Protocol and its amendments.</p> <p>Travel on official business for 2012 and 2013 is being maintained at the 2011 level.</p>
Meetings/Participation component – 3300	<p>Participation of representatives of developing countries</p> <p>The participation of representatives of parties operating under paragraph 1 of Article 5 in the various Protocol meetings is budgeted at \$5,000 per meeting per representative, taking into account no more than one person’s travel costs per country, using the most appropriate and advantageous economy-class fare and United Nations daily subsistence allowances.</p>
3301	<p>The budget provision requested in 2012 for travel of members and experts of the assessment panels and the technical options committees attending assessment panel meetings has been reduced from the 2011 levels. Additional funds will be requested as required for the next assessment process.</p>



Budget line	Comment
3302	<p>In 2011 and 2014, the total participation costs based on some 80 participants attending the joint meetings of the Conference of the Parties to the Vienna Convention and the Meeting of the Parties to the Montreal Protocol, will be borne fully by the Trust Fund for the Montreal Protocol.</p> <p>Participation costs are based on some 60 participants attending the Open-ended Working Group meetings in both 2012 and 2013.</p>
3303	<p>Participation costs are based on one Bureau meeting per year for four Bureau members from developing countries or countries with economies in transition at each meeting.</p>
3304	
3305	<p>The participation costs for the two Implementation Committee meetings per year are based on eight members from developing countries and countries with economies in transition at each meeting and one representative each from three or four countries invited by the Implementation Committee at each meeting. Provision has also been made for travel by the Implementation Committee President or Vice-President from a country operating under paragraph 1 of Article 5 to attend three Executive Committee meetings a year.</p>
3306	<p>Funds have been allocated to finance the participation of two participants from developing countries and countries with economies in transition in informal consultations in 2012 and 2013 on critical issues relating to the Montreal Protocol. It is expected that these consultations will be held in Nairobi.</p>
Equipment and premises component	<p>The cost of miscellaneous expendables is being increased minimally in 2012 and 2013 to take into account inflation. Resource use is being monitored constantly to maintain low expenditure levels.</p>
Expendable equipment – 4101	
Non-expendable equipment – 4203	<p>Additional funds for 2012 and 2013 have been allocated to provide for increased server capacity to cope with the demands of paperless meetings and to enable the Secretariat to replace equipment as required.</p>
Premises (rent) – 4300	<p>The allocation for rental of premises in 2012 and 2013 has been based on an increase in Nairobi rental rates imposed by the United Nations Controller.</p>
Miscellaneous component	

Budget line	Comment
Operation and maintenance of equipment – 5101	The provision for operation and maintenance of equipment is being increased minimally in 2012 and 2013 to cover increased maintenance costs for constantly increasing server capacity and additional computing requirements for staff.
Reporting costs (including editing, translation, duplication, publication and printing) – 5201–5203	General reporting costs for the Secretariat are provided for under these lines. Line 5202 is reserved for reporting of assessment panels. A small amount is allocated in line 5203 for any editing, translation, duplication, publication and printing related to Protocol awareness campaigns.
Sundry – Communications – 5301	Careful monitoring of telecommunications resources and the use of electronic mail instead of facsimile communications enable the Secretariat to maintain a relatively low budget provision under this line.
Training – 5303	The provision for training will be maintained to meet evolving training needs and to cater for training schemes introduced by the United Nations as a result of its continuing human resources reform programme and guidelines for continuous training to encourage high performance delivery of staff.
Others (International Ozone Day) – 5304	The Ozone Secretariat will continue to provide assistance to specific countries during 2012 and 2013 to assist in their preparations for the celebration of the International Day for the Preservation of the Ozone Layer.

## Annex V

### Trust Fund for the Montreal Protocol on the Substances that Deplete the Ozone Layer

Scale of contributions by the parties for 2012 and 2013 based on the United Nations scale of assessments  
(General Assembly Resolution A/64/482/Add.1 of 28 December 2009 with a maximum assessment rate of 22 per cent)  
(in United States dollars)

Party	United Nations scale of assessments for 2010–2012	United Nations scale adjusted to exclude non-contributors	Adjusted United Nations scale with 22% maximum assessment rate considered	2012 Contributions by parties	Indicative 2013 contributions by parties
Afghanistan	0.004	0.000	0.000	0	0
Albania	0.010	0.000	0.000	0	0
Algeria	0.128	0.128	0.128	5 465	5 465
Andorra	0.007	0.000	0.000	0	0
Angola	0.010	0.000	0.000	0	0
Antigua and Barbuda	0.002	0.000	0.000	0	0
Argentina	0.287	0.287	0.287	12 255	12 255
Armenia	0.005	0.000	0.000	0	0
Australia	1.933	1.933	1.930	82 537	82 537
Austria	0.851	0.851	0.850	36 337	36 337
Azerbaijan	0.015	0.000	0.000	0	0
Bahamas	0.018	0.000	0.000	0	0
Bahrain	0.039	0.000	0.000	0	0
Bangladesh	0.010	0.000	0.000	0	0
Barbados	0.008	0.000	0.000	0	0
Belarus	0.042	0.000	0.000	0	0
Belgium	1.075	1.075	1.073	45 901	45 901
Belize	0.001	0.000	0.000	0	0
Benin	0.003	0.000	0.000	0	0

Party	United Nations scale of assessments for 2010–2012	United Nations scale adjusted to exclude non-contributors	Adjusted United Nations scale with 22% maximum assessment rate considered	2012 Contributions by parties	Indicative 2013 contributions by parties
Bhutan	0.001	0.000	0.000	0	0
Bolivia (Plurinational State of)	0.007	0.000	0.000	0	0
Bosnia and Herzegovina	0.014	0.000	0.000	0	0
Botswana	0.018	0.000	0.000	0	0
Brazil	1.611	1.611	1.608	68 788	68 788
Brunei Darussalam	0.028	0.000	0.000	0	0
Bulgaria	0.038	0.000	0.000	0	0
Burkina Faso	0.003	0.000	0.000	0	0
Burundi	0.001	0.000	0.000	0	0
Cambodia	0.003	0.000	0.000	0	0
Cameroon	0.011	0.000	0.000	0	0
Canada	3.207	3.207	3.202	136 935	136 935
Cape Verde	0.001	0.000	0.000	0	0
Central African Republic	0.001	0.000	0.000	0	0
Chad	0.002	0.000	0.000	0	0
Chile	0.236	0.236	0.236	10 077	10 077
China	3.189	3.189	3.184	136 167	136 167
Colombia	0.144	0.144	0.144	6 149	6 149
Comoros	0.001	0.000	0.000	0	0
Congo	0.003	0.000	0.000	0	0
Cook Islands	-	0.000	0.000	0	0
Costa Rica	0.034	0.000	0.000	0	0
Côte d'Ivoire	0.010	0.000	0.000	0	0
Croatia	0.097	0.000	0.000	0	0
Cuba	0.071	0.000	0.000	0	0

Party	United Nations scale of assessments for 2010–2012	United Nations scale adjusted to exclude non-contributors	Adjusted United Nations scale with 22% maximum assessment rate considered	2012 Contributions by parties	Indicative 2013 contributions by parties
Cyprus	0.046	0.000	0.000	0	0
Czech Republic	0.349	0.349	0.348	14 902	14 902
Democratic People's Republic of Korea	0.007	0.000	0.000	0	0
Democratic Republic of the Congo	0.003	0.000	0.000	0	0
Denmark	0.736	0.736	0.735	31 426	31 426
Djibouti	0.001	0.000	0.000	0	0
Dominica	0.001	0.000	0.000	0	0
Dominican Republic	0.042	0.000	0.000	0	0
Ecuador	0.040	0.000	0.000	0	0
Egypt	0.094	0.000	0.000	0	0
El Salvador	0.019	0.000	0.000	0	0
Equatorial Guinea	0.008	0.000	0.000	0	0
Eritrea	0.001	0.000	0.000	0	0
Estonia	0.040	0.000	0.000	0	0
Ethiopia	0.008	0.000	0.000	0	0
European Union	2.500	2.500	2.496	106 747	106 747
Fiji	0.004	0.000	0.000	0	0
Finland	0.566	0.566	0.565	24 168	24 168
France	6.123	6.123	6.113	261 445	261 445
Gabon	0.014	0.000	0.000	0	0
Gambia	0.001	0.000	0.000	0	0
Georgia	0.006	0.000	0.000	0	0
Germany	8.018	8.018	8.005	342 360	342 360
Ghana	0.006	0.000	0.000	0	0
Greece	0.691	0.691	0.690	29 505	29 505
Grenada	0.001	0.000	0.000	0	0

Party	United Nations scale of assessments for 2010–2012	United Nations scale adjusted to exclude non-contributors	Adjusted United Nations scale with 22% maximum assessment rate considered	2012 Contributions by parties	Indicative 2013 contributions by parties
Guatemala	0.028	0.000	0.000	0	0
Guinea	0.002	0.000	0.000	0	0
Guinea-Bissau	0.001	0.000	0.000	0	0
Guyana	0.001	0.000	0.000	0	0
Haiti	0.003	0.000	0.000	0	0
Holy See	0.001	0.000	0.000	0	0
Honduras	0.008	0.000	0.000	0	0
Hungary	0.291	0.291	0.291	12 425	12 425
Iceland	0.042	0.000	0.000	0	0
India	0.534	0.534	0.533	22 801	22 801
Indonesia	0.238	0.238	0.238	10 162	10 162
Iran (Islamic Republic of)	0.233	0.233	0.233	9 949	9 949
Iraq	0.020	0.000	0.000	0	0
Ireland	0.498	0.498	0.497	21 264	21 264
Israel	0.384	0.384	0.383	16 396	16 396
Italy	4.999	4.999	4.991	213 452	213 452
Jamaica	0.014	0.000	0.000	0	0
Japan	12.530	12.530	12.509	535 017	535 017
Jordan	0.014	0.000	0.000	0	0
Kazakhstan	0.076	0.000	0.000	0	0
Kenya	0.012	0.000	0.000	0	0
Kiribati	0.001	0.000	0.000	0	0
Kuwait	0.263	0.263	0.263	11 230	11 230
Kyrgyzstan	0.001	0.000	0.000	0	0
Lao People's Democratic Republic	0.001	0.000	0.000	0	0

Party	United Nations scale of assessments for 2010–2012	United Nations scale adjusted to exclude non-contributors	Adjusted United Nations scale with 22% maximum assessment rate considered	2012 Contributions by parties	Indicative 2013 contributions by parties
Latvia	0.038	0.000	0.000	0	0
Lebanon	0.033	0.000	0.000	0	0
Lesotho	0.001	0.000	0.000	0	0
Liberia	0.001	0.000	0.000	0	0
Libya	0.129	0.129	0.129	5 508	5 508
Liechtenstein	0.009	0.000	0.000	0	0
Lithuania	0.065	0.000	0.000	0	0
Luxembourg	0.090	0.000	0.000	0	0
Madagascar	0.003	0.000	0.000	0	0
Malawi	0.001	0.000	0.000	0	0
Malaysia	0.253	0.253	0.253	10 803	10 803
Maldives	0.001	0.000	0.000	0	0
Mali	0.003	0.000	0.000	0	0
Malta	0.017	0.000	0.000	0	0
Marshall Islands	0.001	0.000	0.000	0	0
Mauritania	0.001	0.000	0.000	0	0
Mauritius	0.011	0.000	0.000	0	0
Mexico	2.356	2.356	2.352	100 599	100 599
Micronesia (Federated State of)	0.001	0.000	0.000	0	0
Monaco	0.003	0.000	0.000	0	0
Mongolia	0.002	0.000	0.000	0	0
Montenegro	0.004	0.000	0.000	0	0
Morocco	0.058	0.000	0.000	0	0
Mozambique	0.003	0.000	0.000	0	0
Myanmar	0.006	0.000	0.000	0	0

Party	United Nations scale of assessments for 2010–2012	United Nations scale adjusted to exclude non-contributors	Adjusted United Nations scale with 22% maximum assessment rate considered	2012 Contributions by parties	Indicative 2013 contributions by parties
Namibia	0.008	0.000	0.000	0	0
Nauru	0.001	0.000	0.000	0	0
Nepal	0.006	0.000	0.000	0	0
Netherlands	1.855	1.855	1.852	79 206	79 206
New Zealand	0.273	0.273	0.273	11 657	11 657
Nicaragua	0.003	0.000	0.000	0	0
Niger	0.002	0.000	0.000	0	0
Nigeria	0.078	0.000	0.000	0	0
Niue	-	0.000	0.000	0	0
Norway	0.871	0.871	0.870	37 191	37 191
Oman	0.086	0.000	0.000	0	0
Pakistan	0.082	0.000	0.000	0	0
Palau	0.001	0.000	0.000	0	0
Panama	0.022	0.000	0.000	0	0
Papua New Guinea	0.002	0.000	0.000	0	0
Paraguay	0.007	0.000	0.000	0	0
Peru	0.090	0.000	0.000	0	0
Philippines	0.090	0.000	0.000	0	0
Poland	0.828	0.828	0.827	35 355	35 355
Portugal	0.511	0.511	0.510	21 819	21 819
Qatar	0.135	0.135	0.135	5 764	5 764
Republic of Korea	2.260	2.260	2.256	96 499	96 499
Republic of Moldova	0.002	0.000	0.000	0	0
Romania	0.177	0.177	0.177	7 558	7 558
Russian Federation	1.602	1.602	1.599	68 404	68 404



Party	United Nations scale of assessments for 2010–2012	United Nations scale adjusted to exclude non-contributors	Adjusted United Nations scale with 22% maximum assessment rate considered	2012 Contributions by parties	Indicative 2013 contributions by parties
Rwanda	0.001	0.000	0.000	0	0
Saint Kitts and Nevis	0.001	0.000	0.000	0	0
Saint Lucia	0.001	0.000	0.000	0	0
Saint Vincent and the Grenadines	0.001	0.000	0.000	0	0
Samoa	0.001	0.000	0.000	0	0
San Marino	0.003	0.000	0.000	0	0
Sao Tome and Principe	0.001	0.000	0.000	0	0
Saudi Arabia	0.830	0.830	0.829	35 440	35 440
Senegal	0.006	0.000	0.000	0	0
Serbia	0.037	0.000	0.000	0	0
Seychelles	0.002	0.000	0.000	0	0
Sierra Leone	0.001	0.000	0.000	0	0
Singapore	0.335	0.335	0.334	14 304	14 304
Slovakia	0.142	0.142	0.142	6 063	6 063
Slovenia	0.103	0.103	0.103	4 398	4 398
Solomon Islands	0.001	0.000	0.000	0	0
Somalia	0.001	0.000	0.000	0	0
South Africa	0.385	0.385	0.384	16 439	16 439
Spain	3.177	3.177	3.172	135 654	135 654
Sri Lanka	0.019	0.000	0.000	0	0
Sudan	0.010	0.000	0.000	0	0
Suriname	0.003	0.000	0.000	0	0
Swaziland	0.003	0.000	0.000	0	0
Sweden	1.064	1.064	1.062	45 432	45 432
Switzerland	1.130	1.130	1.128	48 250	48 250

Party	United Nations scale of assessments for 2010–2012	United Nations scale adjusted to exclude non-contributors	Adjusted United Nations scale with 22% maximum assessment rate considered	2012 Contributions by parties	Indicative 2013 contributions by parties
Syrian Arab Republic	0.025	0.000	0.000	0	0
Tajikistan	0.002	0.000	0.000	0	0
Thailand	0.209	0.209	0.209	8 924	8 924
The former Yugoslav Republic of Macedonia	0.007	0.000	0.000	0	0
Timor-Leste	0.001	0.000	0.000	0	0
Togo	0.001	0.000	0.000	0	0
Tonga	0.001	0.000	0.000	0	0
Trinidad and Tobago	0.044	0.000	0.000	0	0
Tunisia	0.030	0.000	0.000	0	0
Turkey	0.617	0.617	0.616	26 345	26 345
Turkmenistan	0.026	0.000	0.000	0	0
Tuvalu	0.001	0.000	0.000	0	0
Uganda	0.006	0.000	0.000	0	0
Ukraine	0.087	0.000	0.000	0	0
United Arab Emirates	0.391	0.391	0.390	16 695	16 695
United Kingdom of Great Britain and Northern Ireland	6.604	6.604	6.593	281 983	281 983
United Republic of Tanzania	0.008	0.000	0.000	0	0
United States of America	22.000	22.000	21.964	939 375	939 375
Uruguay	0.027	0.000	0.000	0	0
Uzbekistan	0.010	0.000	0.000	0	0
Vanuatu	0.001	0.000	0.000	0	0
Venezuela (Bolivarian Republic of)	0.314	0.314	0.313	13 407	13 407
Viet Nam	0.033	0.000	0.000	0	0
Yemen	0.010	0.000	0.000	0	0

Party	United Nations scale of assessments for 2010–2012	United Nations scale adjusted to exclude non-contributors	Adjusted United Nations scale with 22% maximum assessment rate considered	2012 Contributions by parties	Indicative 2013 contributions by parties
Zambia	0.004	0.000	0.000	0	0
Zimbabwe	0.003	0.000	0.000	0	0
<b>Total</b>	<b>102.501</b>	<b>100.165</b>	<b>100.000</b>	<b>4 276 933</b>	<b>4 276 933</b>

ADVANCED

## Annex VI

### Summaries of presentations by members of the assessment panels and technical options committees<sup>1</sup> during the preparatory segment

#### I. Supplemental report of the Technology and Economic Assessment Panel replenishment task force

1. Ms. Shiqiu Zhang, co-chair of the Technology and Economic Assessment Panel (TEAP) Replenishment Task Force (RTF), started the presentation and said that the total estimated funding requirement for the triennium 2012-2014 is likely to be in the range of US\$ 460 to US\$ 540 million. This amount was based on HPMPs approved through ExCom-64 and on amounts from six scenarios applied for not-yet-approved HPMPs (two HCFC reduction packages and three levels of funded phase-out), plus production closure funding that was assumed to take place in parallel. She mentioned that, for comparison, the funding range estimated in the May 2011 RTF report was US\$ 390-477 million, which is approximately US\$ 70 million lower.
2. After the Replenishment Report had been published in May 2011 and had been introduced at the thirty first meeting of the Open Ended Working Group (OEWG), a Contact Group was set up at the OEWG to formulate additional requests for a supplementary study. The Contact Group agreed on a list of issues for further study. That list included a request for an update on baselines, an update on HPMPs approved at the sixty fourth meeting of the Executive Committee, a study of reduction packages, a revised funding requirement for 2012-2014 and subsequent triennia, details on climate benefits, different funding scenarios for production closure, cost effectiveness aspects and considerations on low-GWP applications, the effect of inflation on Institutional Strengthening and the impact of zero and negative growth for supporting activities. The TEAP and its RTF performed the study August-September 2011 and submitted the supplement report to UNEP the beginning of October 2011; a brief addendum was subsequently issued the beginning of November.
3. Mr. Lambert Kuijpers continued the presentation and went back to the main points presented in the May 2011 report, which gave a funding range for 2012-2014 as US\$ 390-477 million with indicative funding ranges for the two subsequent triennia. In this report production phase-out was assumed to occur in parallel with consumption phase-down (as in the 2008 study). In September 2011, an additional 21 HPMPs were approved at the sixty fourth meeting of the Executive Committee in July 2011 at a total cost of US\$ 340 million, with 6 HPMPs approved for non-low volume consuming (LVC) countries including China. Parties had requested a study of the impact of funding options for swing plants (which produce about 18% of HCFC-22 produced in parties operating under paragraph 1 of Article 5), as well as an investigation of moving production sector funding tranches to later years. The Task Force had investigated options for three triennia, including the phasing out of 10% of production in 2012-14
4. On baseline data, Mr. Kuijpers said that, as of 1 September 2011, 86 Parties had submitted 2010 data, 59 Parties had not, which included China and India. Of the 86 Parties, 14 Parties were non-LVCs, where 5 had increased consumption levels (as much as 20%) and 9 Parties had decreased consumption levels (as much as 20% less), compared to the year 2009. The Task Force had taken into account all new available data to refine the baseline estimates in the revised funding requirement calculations. Mr. Kuijpers then presented a table with the different funding elements for the period 2011-2014 at a total of US\$ 492.73 million, plus the costs for new yet to be approved HPMPs, plus production closure costs. He explained how the calculations were done to come to an estimate of the funding range for the triennium 2012-2014. He also mentioned the production closure costs that need to be brought into the total and said that together, these factors yield a funding estimate for 2012-14 as US\$ 460-540 million, where the range for the funding estimate for 2012-14 without production amounts to US\$ 276-315 million.
5. The Task Force had done investigations on reduction packages. It noted that the foam percentage in the packages is relatively large, which would lead to “negative” consumption if the same package was used in estimates for subsequent triennia
6. The (new) 55-20-25% package chosen was the basis for the estimates for the two subsequent triennia (in ODP tonnes). Parties requested examination of the impact of the HCFC reductions expressed in Mt CO<sub>2</sub> eq. The baseline consumption equals 782 Mt CO<sub>2</sub> eq./year, where the total LVC

<sup>1</sup> The summaries in the present annex appear as submitted by the presenters, without formal editing.

and non-LVC HPMP approvals to date represent a reduction of 49 Mt CO<sub>2</sub> eq. per year. The complete Stage I HPMP contribution will be equivalent to a reduction of ~60 Mt CO<sub>2</sub> eq./yr, which is less than 10% of the baseline, because most phase-out is related to HCFC-141b, which contributes much less to GWP reductions than HCFC-22.

7. Ms. Zhang continued the presentation on the estimated funding requirements for 2015-2017 and 2018-2020, which were calculated on the basis of existing commitments, HPMPs, Institutional Strengthening, the funding of supporting activities, commitments of (new) HPMPs for LVCs and production closure costs, the latter of which contribute significantly to the total. For these triennia, new cost effectiveness values were used for Poly urethane foam, for the refrigeration and air conditioning subsector and for extruded polystyrene (XPS) foam. The Task Force estimates assumed that all non-LVCs can request stage II funding.

8. She said that the indicative funding requirement for the triennium 2015-2017 amounts to US\$ 479 million for HPMPs, US\$ 209 million for production closure plus about US\$ 112 million for other elements, giving a total funding requirement: US\$ 790 million. She said that the indicative funding requirement for the triennium 2018-2020 amounts to US\$ 461 million for HPMPs, US\$ 229 million for production closure plus about US\$ 107 million for other elements, giving a total funding requirement of US\$ 797 million.

9. Mr. Kuijpers said that Parties had requested the investigation of several elements in the production closure costs, including the production costs for each consumption scenario, the examination of approaches for swing plants and the consideration of possible redirection of controlled HCFC production to feedstock production not controlled by the Montreal Protocol. He mentioned that swing plants in Article 5 countries other than China account for 18% of total Article 5 country HCFC production and that for the 2012-2014 triennium, swing plant funding for HCFC-22 phase-out is US\$ 17.3-21.1 million. In 2015-2017 and 2018-2020, swing plant funding for HCFC-22 phase-out is US\$ 24 million and US\$ 27 million, respectively. Mr. Kuijpers mentioned that HCFC-22 feedstock production in Article 5 countries has doubled every three years during the last decade. A continuing growth trend would offer the potential for diversion of current controlled use production to feedstock; however, country-level, plant-based technical information on the practicalities of successful diversion was not yet available. He then gave specific funding range values for five production scenarios. Parties had also requested the task force to study the funding amounts for Institutional Strengthening (IS) dependent on inflation percentages. Mr. Kuijpers said that an annual 3% inflation would increase the IS funding for 2012-14 by US\$ 1.34 million, on a total of US\$ 500 million, and for 2015-17 by US\$ 4.32 million, on a total of US\$ 790 million. Parties had also asked the RTF to study the impact of 0% and -3% growth on funding for supporting activities. Mr. Kuijpers said that a -3% growth results in US\$ 5 million less per triennium for supporting activities, where the normal case results in an increase of about US\$ 6 million per triennium.

10. Mr. Daniel Colbourne, member of the Task Force continued the presentation with information on foam and refrigeration and air conditioning cost effectiveness values. He noted that the cost effectiveness for polyurethane foam depended mainly on chosen HCFC phase-out technology and size of the enterprise and the selection of technology is greatly influenced by the specific polyurethane market subsector and the size of the company to be converted

11. He mentioned that the weighted average for rigid and integral skin polyurethane foam was updated from US\$ 6.41/kg to US\$ 6.11/kg and that XPS conversion costs and the related cost effectiveness values were updated from US\$ 2.56/kg to US\$ 4.85/kg. Mr. Colbourne said that the Task Force had not adjusted the cost effectiveness values taking into account economies-of-scale. Improvements over time in cost effectiveness are considered to be 5-50%, with an average of 20%. He noted that this stemmed from more trained personnel and lower refrigerant and component costs, where it is not possible to determine a precise time scale. He also mentioned that the dependence on HPMPs with greater than 10% reduction is difficult to quantify, that global changes are very important and that cost effectiveness values from approved projects cannot be directly applied. For refrigeration and AC, the capital and operating costs had been re-evaluated. Mr. Colbourne stated that the cost effectiveness values from the May 2011 report were adjusted downward on the basis of a revised cost analysis and detailed information from project proposals, resulting in an average value of US\$ 8.8/kg, excluding funding increases for low-GWP refrigerants.

12. Mr. Colbourne concluded with a number of summarizing comments. He stated that the spreadsheet analysis has been completely updated for three triennia and that the supplement report contained a separate chapter on production in view of the overall impact on the replenishment. In this context, several approaches are available for funding the production sector with significant differences in funding levels and timing. The production closure funding is up to 30% of total funding when

production phase-out is in parallel with consumption phase-out and the lowest replenishment levels result from the choice of a 10% reduction from the production baseline. Mr. Colbourne emphasised that moving tranches of production closure funding to future triennia beyond 2020 does not help to decrease the calculated “triennia funding imbalance”. He also said that approved Stage I HPMPs incorporate a substantial ‘front loading’ of funding for consumption phase-out and that cost-effectiveness values used to calculate the second and third triennia, for stage II HPMPs, are assumed to be lower. He summarised the funding requirements again stating that all parameters together result in a funding of US\$ 500 million (+/-8%) funding for the first 2012-2014, US\$ 790 million for the second 2015-2017, and US\$ 797 million for the third triennium 2018-2020.

## II. Nominations for 2012 and 2013 for essential-use exemptions

13. Mr. Ashley Woodcock, co-chair of the Medical Technical Options Committee, presented the committee’s recommendations on essential use nominations for metered dose inhalers (MDIs) for 2012 and 2013, which remain unchanged from those reported in TEAP’s May Report. He provided an update on a bilateral meeting between China and co-chairs of the Medical Technical Options Committee during the Open-Ended Working Group meeting. Discussions focussed on the importance to China of locally made CFC MDIs containing anti-cholinergics. He explained that the Medical Technical Options Committee was not requested to review its assessment of China’s essential use nomination, and that therefore, the panel maintains its original recommendation that CFCs for inhalers with anti-cholinergics are not considered essential in China because more than one alternative is available, and China’s own phase-out strategy is satisfied. At that meeting it was suggested that China could choose to allocate CFCs for this use within the total allowance approved by Parties. He concluded by congratulating China for approval of the first locally made CFC-free salbutamol MDI in China. He also congratulated the United States for approval of a CFC-free albuterol and ipratropium combination inhaler, which paves the way for a complete and successful transition in the United States.

## III. Nominations for 2012 and 2013 critical-use exemptions

14. The co-chairs of the Methyl Bromide Technical Options Committee (MBTOC), Mr Mohamed Besri, Mr. Ian Porter, Ms Michelle Marcotte and Ms Marta Pizano provided a summary of findings of the final assessment of the Critical Use Nominations assessed during the 2011 round as set out in the final report of October 2011.

15. Introducing the issue, Mr. Besri presented a summary of the Methyl Bromide consumption in A5 and non Article 5 countries. He reported that, in 1991, 45,000 t of methyl bromide have been consumed in non Article 5 Parties and for 2013, only 704 t have been requested for preplant soil uses.

16. He explained that in 2011, three Parties, Australia, Canada and USA continue to use methyl bromide for preplant soil uses. He reported that Article 5 party consumption in 2010 was of 3,998 t, and this amount is due for phase out by 2015. This consumption was 25% of the total Article 5 party baseline of approximately 16,000 t.

17. He said that overall, critical use nominations (CUNs) continue to fall from 2010 to 2013 for the remaining four nominating Parties.

18. Regarding the available methyl bromide stocks, he said that Canada, Japan and USA have reported respectively 3.4 t, 6.3 t and 1,803 t. He explained also that MBTOC critical use recommendations did not take stocks into account. He concluded that stocks reported by USA in 2010 are 2.6 times the 2013 US nomination of 692 t.

19. He noted that the US withdrew the research nominations in October as the Party stated ‘it was now possible to conduct the program without a CUE’.

20. Mr. Porter then presented an overview of nominations received for pre-plant soil use of methyl bromide in 2012 and 2013. Seven nominations remained unchanged from the interim recommendations. MBTOC sought further information on 5 nominations and the US requested further re-evaluation of two nominations. At its second meeting, MBTOC reassessed 6 of the 13 CUNs submitted for the 2013 round. Reassessment of the nominations from Australia and Canada were not required.

21. The committee’s final recommendation was 563.463 t with 78.232 t not recommended.

22. Of the reassessed nominations, four were accepted in full, and the committee noted that the Party stated this would be the last nomination for the four vegetable nominations. MBTOC

maintained the interim recommendation for the ornamentals sector as a number of alternatives were still considered effective for a portion of the nomination.

23. MBTOC recommended a reduced amount for strawberry fruit with a majority of members agreeing that the further information provided by the Party for the strawberry fruit nomination in California did not demonstrate that technically and economically feasible alternatives were not available for specific soilborne pathogens, particularly for one region. MBTOC noted that the Party may wish to submit a supplementary bid next round if there is technical justification to show that all available methods of 1,3-D/Pic and Pic, with or without barrier films, are not effective for the circumstances of the nomination. He noted that a minority view was held on this assessment.

24. Recently, Canada advised the Secretariat that it had issued a permit for 1.9 t of MB under the 'Emergency Use' provisions of the Montreal Protocol. The Party stated that this was an unused quantity of the 2010 CUE amount approved for strawberry nurseries that was needed in early 2011.

25. Ms. Marcotte, MBTOC Co-Chair, reported that in 2011, MBTOC Structures and Commodities (SC), reviewed six CUNs. Additionally, it reviewed three elements of the US research CUN, although this CUN was later withdrawn by the Party. Flour and cereal mills in Canada and the United States remain the largest CUNs, although these have decreased significantly year over year. Commodities for which Parties have requested MB include packaged rice for Australia, fresh chestnuts for Japan, plus dried fruits (including fresh dates) and walnuts for the US, and Southern dry-cured pork.

26. MBTOC recommended the Canadian and US flour milling CUNs. Canada's nomination of 7.8 tonnes is a 29% reduction and the US nomination of 25.3 tonnes is a 66% reduction this year. MBTOC acknowledges the difficulties Parties have achieving effective fumigations in their large mills and under the cool temperatures observed during the usual fumigation times. Accordingly, MBTOC provided a special report with guidance about achieving greater efficacy with sulfuryl fluoride treatments.

27. Australia and Japan have indicated to MBTOC that methyl bromide use for rice and fresh chestnuts will cease in 2014. Australia nominated 2.3 tonnes for rice to allow their rice processors time to continue sustainable adoption of alternatives. This was a 35% reduction. Japan nominated a 5% reduction to 3.3 tonnes for fresh chestnuts, allowing Japan time to continued logistical improvements and farmer training programs which MBTOC believes are important for the safe use of the alternative. At the Open Ended Working Group meeting in July, MBTOC reported it was unable to assess the US nomination for dry-cured pork. Later submission by the Party of information about the research and the timing of available data allowed us to recommend the CUN in MBTOC's October report. There was however a minority view included in the MBTOC report.

28. Marcotte also noted that Decision XVI/4 Annex 16 requires MBTOC to meet twice a year to review CUNs. In view of the on-going lack of funding of members, we request clarification from the Parties to acknowledge that meetings can take place electronically. MBTOC cannot hold face to face meetings unless A(5) and Non A(5) members are funded to attend. MBTOC discusses this matter more thoroughly in its report section on resourcing.

## Annex VII

### **Draft decision XXIII/[ ]: Funding for hydrochlorofluorocarbon production facilities**

#### **Submission by India**

*The Twenty-Third Meeting of the parties decides:*

*Recalling* decision XIX/6, which states that funding through the Multilateral Fund for the Implementation of the Montreal Protocol shall be stable and sufficient to meet all agreed incremental costs to enable parties operating under paragraph 1 of Article 5 of the Montreal Protocol to comply with the accelerated phase-out schedule for hydrochlorofluorocarbons for both the production and consumption sectors,

*Recognizing* that there is limited time before the first hydrochlorofluorocarbon control measures for parties operating under paragraph 1 of Article 5 come into force with the freeze at the baseline level in 2013 and 10 per cent reduction from the baseline in 2015,

*Noting* that parties operating under paragraph 1 of Article 5 with hydrochlorofluorocarbon production facilities may be at risk of being in non-compliance with those obligations if adequate assistance is not provided through the Multilateral Fund,

To confirm the intent of decision XIX/6, which is to provide stable and sufficient funding through the Multilateral Fund to meet all agreed incremental costs to enable parties operating under paragraph 1 of Article 5 to comply with the accelerated hydrochlorofluorocarbon phase-out schedule, including the production sector without any prejudice to swing plants;

To urge the Executive Committee of the Multilateral Fund to finalize as a priority matter the guidelines for the funding of hydrochlorofluorocarbon production facilities.



## Annex VIII

### Summary of presentation on the eighth meeting of the Ozone Research Managers of the Parties to the Vienna Convention<sup>2</sup>

1. The 8th Ozone Research Managers (ORM) meeting was held in Geneva, Switzerland (2-4 May 2011) in accordance with decisions I/6 and III/8 of the Conference of the Parties. As in the past, this ORM report is highly complementary to the recent WMO-UNEP Scientific Assessments, but has a distinctly different purpose. Both the report and the assessments are required under the Vienna Convention and the Montreal Protocol. However, the Assessments enable the Parties to evaluate control measures under the Protocol and are communication devices between the research community (striving for better understanding) and decision makers (seeking informed action). The Assessments are neither policy recommendations nor research planning documents but provide input for both. The ORM reports, on the other hand, specifically address research and monitoring needs in light of scientific understanding from the assessments and make detailed recommendations to the Parties regarding international actions for improved research coordination and networking.

2. After a review of the recommendations from the 7<sup>th</sup> ORM Meeting and of activities under the Vienna Convention Trust Fund, the 8<sup>th</sup> ORM meeting continued with a number of invited presentations on the state of the ozone layer and its interactions with climate change. Subsequent talks summarized international research and monitoring programs and international satellite programs and were followed by national and regional reports of ozone and UV research and monitoring activities. This suite of presentations provided the bases for recommendations in the four principal areas of research needs, systematic observations, data archiving, and capacity building.

3. There are many questions that remain on the expected ozone recovery from the influence of ozone-depleting substances (ODSs), especially with respect to the interactions between ozone depletion and climate change. Recent research reveals that ozone depletion has affected tropospheric climate and it is becoming clearer that greenhouse gases (GHGs) are altering the stratosphere, with a cooling of the upper stratosphere by GHGs expected to exceed 5K between the years 2000 and 2100. The ability to predict future ozone behavior requires further improvements in the quantification of the roles of chemical and dynamical processes responsible for ozone production, loss, transport, and distribution, and their respective uncertainties. The development of realistic scenarios of the future abundances of anthropogenic and biogenic trace gases in the stratosphere and troposphere is required, particularly with respect to a changing climate. Simulations from the 2010 Scientific Assessment of Ozone Depletion indicate future increases of UV levels in the tropics, but decreases at mid- and high latitudes due to ozone changes. The 2010 report of the Environmental Effects Assessment Panel (EEAP) concluded that research on the impacts of increases in UV radiation resulting from stratospheric ozone depletion has substantially advanced the understanding of the processes by which changes in UV radiation affect a range of organisms and processes. Recent research has highlighted the interactions between the diverse effects of changing UV radiation due to ozone depletion and the effects of climate change. These interactions may lead to feedbacks into climate change (e.g., modification of carbon cycling in terrestrial and aquatic ecosystems), but this remains poorly defined.

4. Coupled chemistry-climate models (CCMs) are more mature, but it is clear that more effort must be devoted to model improvement and validation. Earth System Models that include crude stratospheric ozone parameterizations are being developed, and these models should begin to incorporate improved CCM treatments of the solar forcing, dynamics, radiation, and photochemistry of ozone. In addition, long-term measurements represent an extremely important resource, and the continued and increased exploitation of these data for scientific process studies is strongly recommended. The dramatic contrast between the unusually large 2010 Northern Hemisphere ozone columns and the extreme 2011 Arctic ozone depletion has highlighted the close connection between ozone, meteorology, and climate. Finally, there is still a need for fundamental laboratory studies to estimate photochemical reaction rates, and to refine and update older measurements. In particular, photochemical parameters to improve our understanding of long-lived species and new industrial compounds in the atmosphere are very important.

5. Systematic observations are critical to understanding and monitoring long-term changes in atmospheric composition and the associated response in ground-level UV radiation. The ability to predict expected ozone recovery in a changing atmosphere and to understand the interactions

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<sup>2</sup> The summary in the present annex appears as submitted by the presenter, without formal editing.

with a changing climate requires observations of key trace gases and parameters highlighting the role of chemical and dynamical processes. Vertically resolved measurements, especially in the upper troposphere/lower stratosphere (UTLS) region and in the upper stratosphere, are of prime importance. Global data networks thus provide the backbone of our understanding of ozone, ozone- and climate-related trace gases, and UV, and involve many nations around the world. Their operations also provide training for atmospheric scientists in both developed and developing countries. The demands on these networks are high, in that they provide the basis for all research activities and decision-making. These networks fall into two categories, ground-based (including balloons) and space-based and their combined utilization place new demands of their operations and reporting.

6. Data archiving continues to be recognized as an essential component of all atmospheric measurements. While several notable achievements have been made in response to the recommendations in the 7<sup>th</sup> ORM meeting report, the continuing need for fully implementing other 7th ORM recommendations was emphasized. For example, before being archived, all data must be quality assured and include the metadata required by users. Other recommendations included the need for the recovery and assessment of historical data, the development of standard data quality assurance procedures, enhanced linkage among data centers (O<sub>3</sub>, UV, GHG, etc.) to ensure availability for validation and modeling efforts, and archiving of data obtained from regional process studies for improved accessibility.

7. While there has also been progress in capacity building since the 7<sup>th</sup> ORM, much remains to be accomplished. A number of key activities have been undertaken over the last three years that have had significant impact. Examples of some specific activities that could be conducted in the near term were presented. It was further recommended that specific metrics be developed for better assessing the success of capacity building over the next few years.

8. The full report of the 8<sup>th</sup> Meeting of Ozone Research Managers includes summaries of all of the oral presentations and all of the submitted national reports. It is available as “WMO Global Ozone Research and Monitoring Project, Report No. 51”.

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## Annex IX

### Bali Declaration<sup>3</sup>

#### Bali Declaration on Transitioning to Low Global Warming Potential Alternatives to Ozone Depleting Substances

We, the Parties to the Vienna Convention on the Protection of the Ozone Layer and its Montreal Protocol on Substances that Deplete the Ozone Layer, having met in Bali, Indonesia from 21 to 25 November 2011,

*Cognizant* that certain ozone depleting substances have high global warming potential and that the mitigation of ozone depleting substances could contribute to the reduction of greenhouse gas emissions,

*Recalling* the general obligation under Article 2 of the Vienna Convention that Parties take appropriate measures in accordance with the provisions of that Convention and of its protocol to which they are party to protect human health and the environment against adverse effects resulting or likely to result from human activities which modify or are likely to modify the ozone layer,

*Also recalling* decision XIX/6, in which the Meeting of the Parties decided to encourage parties to promote the selection of alternatives to ozone depleting substances that minimize environmental impacts,

*Mindful* that certain high global warming potential alternatives to ozone depleting substances are contributing to environmental degradation,

*Reaffirming* the need for a transition to alternatives which are technically proven, economically viable, and environmentally benign to ozone depleting substances,

*Recalling* the declaration signed by 90 Parties at the 22<sup>nd</sup> Meeting of the Parties to the Montreal Protocol in Bangkok 2010,

*Emphasizing* the importance of capacity building, financial, technical and other assistance needed by Parties operating under paragraph 1 of Article 5 of the Montreal Protocol for transitioning to low global warming potential alternatives,

*Acknowledging* the decision of the Parties at the 23<sup>rd</sup> Meeting of the Parties to the Montreal Protocol in Bali concerning additional information on alternatives to ozone depleting substances,

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<sup>3</sup> The Bali Declaration is presented here as submitted by its drafters, without formal editing.

*Hereby:*

1. *Note with appreciation* the efforts of the Parties operating under Paragraph 1 Article 5, which selected low global warming potential alternatives for implementing their HCFCs Phase-out Management Plans for compliance with the 2013 and 2015 control targets;

2. *Call on* Parties to conduct further studies on low global warming potential alternatives to ozone depleting substances, that include, but are not limited to, the economic impact and its feasibility, technical feasibility, market availability and impact on human health and safety of such alternatives in particular with enhanced engagement of stakeholders, particularly the industry;

3. *Invite* Parties and others in a position to do so, to provide suitable and sustainable financial as well as technical assistance, including technology transfer and capacity building needed by Parties, in particular Parties operating under paragraph 1 of Article 5 for transitioning to low global warming potential alternatives to ozone depleting substances that minimize environmental impacts;

4. *Call on* parties and the Ozone Secretariat to continue coordination between the Vienna Convention and its Montreal Protocol and the United Nations Framework Convention on Climate Change and its Kyoto Protocol to ensure their mutually supportive implementation and the achievement of their objectives;

5. *Call on* Parties, while recognizing national priorities, to explore further and pursue under the Montreal Protocol the most effective means of achieving the transition to low global warming potential alternatives to ozone depleting substances.

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## Annex X

### Summaries of presentations by members of the assessment panels on the 2010 quadrennial assessment<sup>4</sup> during the high-level segment

#### I. Environmental Effects Assessment Panel

1. The Environmental Effects Assessment Panel (EEAP) Co-Chair gave an overview of the key findings of the 2010 EEAP report, stating that the success of the Montreal Protocol has prevented large-scale environmental impacts of ozone depletion, such as increases in UV radiation and consequent damage to human health and ecosystems. Increases in sun-burning (erythematous) UV-B radiation due to ozone depletion have been small outside regions affected by the Antarctic ozone hole. As a result of the Montreal Protocol, major increases in skin cancer rates that would have occurred with uncontrolled ozone depletion have been prevented. Large reductions in the growth and productivity of plants and aquatic organisms, and hence significant changes to the global carbon cycle, also have been avoided. In the future, environmental effects on human health, biota, and materials will be compounded by new combinations of environmental factors resulting from the interaction of increasing atmospheric CO<sub>2</sub>, climate change, and UV radiation.

2. The EEAP Co-Chair then summarised the key consequences of ozone depletion, UV radiation and climate change interactions for human health, terrestrial and aquatic ecosystems, biogeochemical cycles, air quality and construction materials. It was noted that effects of UV-B radiation on human health include increased cataract and melanoma of the eye, decreased immunity for certain diseases, and increased skin cancer incidence. Interactions of climate variables, such as temperature, can exacerbate UV radiation effects on health. There is a need for further information to the public for following a balanced lifestyle to allow for sufficient Vitamin D production from UV-B radiation, which is important for maintaining bone structure and preventing certain diseases. Rising temperature, rainfall, extreme droughts and increasing carbon dioxide levels together with UV radiation result in complex responses and feedbacks for terrestrial ecosystems, raising concerns of significant implications for food security and food quality. The role of oceans as a sink for the rising carbon dioxide levels has contributed to the acidification of the water with negative effects for skeletal formation in calcified organisms, which increases their vulnerability to UV radiation. Nutrient cycling through terrestrial and aquatic ecosystems and the loss of carbon dioxide to the atmosphere are accelerated by UV radiation and climate change. The cleansing effect of hydroxyl radicals, produced in the atmosphere by solar UV radiation, will decrease with the expected recovery of stratospheric ozone. Such a decline in this cleansing effect would increase photochemical smog at low and middle latitudes, with negative implications for human health and the environment. Current research indicates that low concentrations of the breakdown products of HCFCs and HFCs (e.g., trifluoroacetic acid) currently do not constitute a significant risk to human health or the environment. However, this should be continuously assessed as the production of the substitutes increase. The effects of climate change and UV radiation on construction materials such as plastics and wood indicate increased damage by UV radiation in combination with high temperatures, humidity and atmospheric pollutants. Some of these effects can be offset by protective stabilisers and wood-plastic composites.

#### II. Scientific Assessment Panel

3. The Scientific Assessment Panel (SAP) Co-Chairs spoke on the science findings from the 2011 Synthesis Report and the Scientific Assessment of Ozone Depletion: 2010. The SAP Co-Chair noted that the Synthesis Report shows that the Montreal Protocol is working to protect the ozone layer, and that furthermore this finding has strengthened since the 2006 assessments. The total abundance of ozone depleting substances (ODSs) in the atmosphere continues to decline, even though atmospheric levels of ODS replacements such as hydrochlorofluorocarbons (HCFCs) are increasing as chlorofluorocarbons (CFCs) have been phased out. Ozone column amounts have neither increased nor decreased in the last decade, a finding that is consistent with both the small ODS changes during this period and the current understanding of the atmosphere.

4. The SAP Co-Chair summarized the overarching findings of the Synthesis Report on three topics. (1) *Ozone layer and climate*: the Synthesis Report finds that these two issues are intricately connected. Ozone as well as ODSs impact climate, and in turn, both are impacted by climate. Hence, it may be prudent to consider ozone layer and climate protection together when deciding upon control

<sup>4</sup> The summaries in the present annex appear as submitted by the presenters, without formal editing.

mechanisms for anthropogenic chemical emissions. The magnitude of the consequences of climate-ozone interactions for health, biodiversity, ecosystem function and feedbacks are currently uncertain. It is technically and economically feasible to accelerate the phase-out of ODSs that are greenhouse gases (GHGs), to phase down the use of high global warming potential (GWP) hydrofluorocarbons (HFCs), and to leapfrog the use of high-GWP HFCs as alternatives for most HCFC applications. (2) *Hydrofluorocarbons*: HFCs have essentially zero ozone depletion potentials (ODPs) but high GWPs; the Synthesis Report finds that alternatives with lower GWPs are emerging. If unabated, the current HFC levels could, by the year 2050, grow to become 20% of all GWP-weighted GHG emissions. Breakdown products from HFC and HCFC uses, such as trifluoroacetic acid (TFA), are not expected to be a significant risk to health or the environment. (3) *Methyl bromide*: the Synthesis Report finds that further control of methyl bromide is still possible. For example, approximately 20–35% of present global consumption of methyl bromide for quarantine and pre-shipment (QPS) uses could be replaced with available alternatives.

5. The SAP Co-Chair then summarized major findings of the 2010 SAP report, noting that (1) atmospheric abundances of ODSs are behaving as expected; (2) the coupling of climate and the ozone layer means that Montreal Protocol decisions can impact (and indeed already have impacted) both issues, and that climate change will become increasingly more important to the future ozone layer as ODSs decline; (3) the ozone hole continues to occur as expected and will persist until after midcentury; (4) global ozone depletion is much smaller than the ozone-hole depletion and will persist until about midcentury; and (5) changes in surface ultraviolet radiation have been small to date, and in the future will be more influenced by climate change than by ozone depletion.

6. The SAP co-chairs also noted that ozone depletion had been quite severe in both the Arctic and Antarctic in 2011. These depletions were noted to be consistent with our current understanding of polar ozone loss processes and the slow decline of ODSs in the polar stratosphere.

### III. Technology and Economic Assessment Panel

7. Mr. Ian Rae, Co-chair of the Chemicals Technical Options Committee started the presentation on the Technology and Economic Assessment Panel (TEAP) 2010 Assessment Report. He mentioned the six Technical Options Committees (TOCs) under the TEAP, i.e., the Chemicals TOC, the Foams TOC, the Halons TOC, the Medical TOC, the Methyl Bromide TOC and the Refrigeration, AC and Heat Pumps TOC. He said that each TOC reports annually on the progress in phasing out sector production and consumption, and on the impact on emissions of ozone depleting substances, that TEAP and its TOCs respond to specific requests from the Parties, that the TEAP establishes Task Forces to deal with special requests and that the TEAP is involved in reviewing and making recommendations on essential or critical use nominations. The TOCs have 1 or 2 meetings per year and TEAP has one one-week long meeting per year and also meets in the margins of the annual Open Ended Working Group and the Meeting of the Parties. He said that each TOC has a membership of 17 to 28 experts, except the MBTOC, which has 38 members. The TEAP has 20 members that are either co-chairs, TOC co-chairs or Senior Expert Members. In total, the TEAP and TOCs have 145 expert members, of which 88 are from non-Article 5 and 57 are from Article 5 Parties.

8. Mr. Ian Rae then continued the presentation on items related to the Chemicals Technical Options Committee in the 2010 TEAP Assessment Report. He mentioned that, during 2007-2010, 17 process agent uses were added to Table A, which contained the list of approved process agent uses, and 12 uses were deleted from the list as they were changed or abandoned. He suggested that Parties may wish to consider developing an improved standard method of reporting process agent emissions that were currently listed in Table B of the process agent decisions. He also said that analytical uses of ozone depleting substances, especially carbon tetrachloride are declining slowly as alternative methods are adopted. He noted that in-kind and not-in-kind alternatives have replaced 90% of solvent uses of ozone depleting substances, and that remaining ozone depleting substance solvent uses are now mainly found in parties operating under Article 5. Mr. Rae stated that a comprehensive review on carbon tetrachloride emissions was made but that there remains a significant discrepancy between the reported emissions and the observed atmospheric concentrations. He also stated that, during 2007 to 2010, little change had occurred in destruction technologies except for the cement-kiln use in one Article 5 Party. In terms of the way forward, Mr. Rae mentioned that it would be helpful to work with national and international standards bodies to establish new standard methods of analysis that do not use ozone depleting substances and that the reporting of ozone depleting substance volumes used for feedstock uses by Parties through the Ozone Secretariat may enable a more complete quantification of feedstock uses. He concluded by saying that a hurdle to overcome in the complete phase-out of ozone depleting substance solvents in Article 5 Parties will be the economic impact on small and medium size users who make up a major portion of the remaining solvent market. He also suggested that

further studies will be needed to improve and reconcile bottom-up and top-down calculations of the carbon tetrachloride emissions, to search for unreported emission sources and to critically analyse UNEP inventory data and to possibly revise the atmospheric lifetime of carbon tetrachloride.

9. Mr. Miguel Quintero, co-chair Foams TOC (FTOC), then continued the presentation on items related to the foams in the 2010 TEAP Assessment Report. He mentioned that the HCFC phase-out is complete in all non-Article 5 Parties, with the XPS industry in North America being among the last to make the transition. He also said that hydrocarbons are currently the primary substitute, but there is pressure to further optimise this option by blending and that unsaturated HCFCs and HFCs (HFOs) are showing better thermal performance than saturated HFCs in continuing evaluations. However, substantial further validation in both performance and cost is required to support emerging commercialisation plans in the 2013 to 2015 timeframe. He stressed that concerns persist over the availability of low-GWP replacements for HCFCs in Article 5 Parties and that current options (pre-blended hydrocarbons, water blown, methyl formate, etc.) may not provide adequate solutions for small and medium sized enterprises. The recovery of ozone depleting substances from appliance foams continues to be practised but cost effectiveness in carbon equivalents will decrease as the product mix shifts to HCFC-containing foams. Further analysis of ozone depleting substance banks confirms that flows of ozone depleting substance-based foams from buildings will be modest for the next decade to come. As the way forward Mr. Quintero said that, for the transition in Article 5 Parties, there continues to be a need to characterise the performance of foams made from low-GWP alternatives, especially for rigid foam applications. Pilot projects for methyl formate, methylal, pre-blended hydrocarbons and supercritical CO<sub>2</sub> funded by the Multilateral Fund were noted as being especially important. In non-Article 5 countries, the interest is in further improving energy efficiency. Additional pressure may arise if proposals to phase-down the use of saturated HFCs are adopted. Such measures may serve to strengthen research towards low-GWP solutions, in particular, towards the intelligent use of blends. Mr. Quintero said that further investigations are required to determine the most appropriate strategies for bank management in foams, in particular CFC management first, taking into account baseline release rates and other technical and economic factors. Furthermore, efficient ways of transferring existing destruction technologies from non-Article 5 to Article 5 Parties are needed.

10. Mr. Sergey Kopylov, co-chair Halon TOC, then continued the presentation on items related to the Halons in the 2010 TEAP Assessment Report. He mentioned estimates for the 2010 global bank of halons, and said that the use of Halon 2402 as a process agent by the Russian chemical industry has reducing the bank of this halon. He also said that there has been a lag in the establishment of banking and management programmes in Article 5 Parties and that the International Civil Aviation Organisation had adopted a revised resolution that amended the halon replacement dates to those recommended by the HTOC and industry. As regards the way forward Mr. Kopylov mentioned that, with no global production authorised for fire protection, the management of existing stocks is crucial to ensure halon availability for applications that need them and that Parties may wish to encourage national or regional banking schemes to maintain good records that minimise uncertainty in stored inventory. He stated that the destruction of halons for carbon credits may not provide the anticipated climate benefits. Mr. Kopylov said that, while there is no apparent shortage of recycled Halon 2402 on a global basis, there are regional shortages that Parties may wish to address. He noted that, despite the introduction of new halon alternatives and their adoption, there will be an ongoing need for halons, where the only halon alternative in a few applications will remain a high GWP HFC. He said that, given the 25-30 year life of civil aircraft, aviation dependency on halons will continue well beyond the time when recycled halons are readily available and that the cost to re-engineer some legacy halon systems can be expensive and, in many cases, industry will continue to rely on halons until retrofit will be mandated.

11. Ms. Marta Pizano, co-chair MBTOC, then continued the presentation on items related to Methyl Bromide in the 2010 TEAP Assessment Report. She mentioned that, in 2008, methyl bromide use was higher for quarantine and pre-shipment (QPS) applications than for controlled uses for the first time, whereas, in 2010, QPS consumption was 51% higher. She noted that the increased use of methyl bromide for QPS is offsetting the gains made by reductions in controlled uses. She noted that while there is no obligation or incentive under the Protocol to limit QPS uses or emissions, some Parties had nonetheless phased out methyl bromide for QPS, and others are committed to a phase-out in the near future. She stressed that 20-35% of present global QPS use can be replaced with alternatives available today and that Parties may wish to give increased consideration to adoption of alternatives for the major QPS uses (timber, WPM, grain, logs). In her closing remarks she mentioned that improved knowledge on remaining methyl bromide uses for QPS will help guide a successful phase-out.

12. Mr. Lambert Kuijpers, co-chair of the refrigeration TOC, then continued the presentation on items related to Refrigeration, AC and Heat Pumps in the 2010 TEAP Assessment Report. He mentioned that more than 60 new refrigerants, many of them blends, have been introduced for use since the 2006 Assessment Report. He then gave a very brief overview of specific issues from the different subsectors. In domestic refrigeration more than one-third of newly produced units globally use HC-600a; the balance use HFC-134a. In commercial refrigeration hydrocarbons (HCs) and R-744 (CO<sub>2</sub>) are gaining market share for stand-alone equipment in Europe and in Japan. HCFC-22 represents about 60% of the global commercial refrigerant bank. In non-Article 5 Parties, the replacement of HCFC-22 in supermarkets is dominated by R-404A and R-507A, with an increasing use of R-744. In industrial refrigeration, R-717 (ammonia) and HCFC-22 are the most common refrigerants. R-744 is gaining in low-temperature cascade systems where it primarily replaces R-717.

13. He said that in transport refrigeration virtually all new systems utilise HFC refrigerants (such as R-404A and HFC-134a). In air-to-air conditioners and heat pumps, R-410A, and to a limited degree R-407C, are still the major near-term replacements for HCFC-22. HFC-32 has been selected in some recent Multilateral Fund projects. Propane (HC-290) is being used in low charge split systems, window and portable air conditioners. In water-heating heat pumps, HCFC-22 is currently used in Article 5 Parties, while HFC blends are used elsewhere. R-744 based heat pumps have shown steady growth. In chillers, HFC-134a and R-410A are the most common options in smaller systems. The use of HCs and R-717 only forms a small fraction. Mr. Kuijpers noted that, in vehicle air conditioning, several HFC-134a replacement options for new cars (and light trucks) have been evaluated including R-744, HFC-152a and HFC-1234yf. The first vehicles using HFC-1234yf will be introduced in 2012.

14. Mr. Kuijpers noted that many of the lower GWP refrigerants are flammable, which increases the need to reduce refrigerant charge and to implement risk-mitigation technologies. He also flagged that there is a new emphasis on optimising system efficiency and reducing emissions of high-GWP refrigerants. He said that manufacturing of refrigeration, air-conditioning, and heat pump equipment by Article 5 Parties for export is expected to increase further. He said that in domestic refrigeration, and to a lesser extent in commercial stand-alone equipment, the trend will be a transition from HFC-134a to HC-600a. For two-temperature supermarket systems, R-744 is an option for the lower temperature level. In the near future, he said, the choices for the medium-temperature level will include new low GWP HFCs, R-744 and HCs. In air-to-air air conditioning and heat pumps, lower-GWP HFCs, HFC blends and HC-290 are the most likely near-term refrigerants to replace HCFC-22, while in future vehicle air conditioning, the front running candidate among global car manufacturers is HFC-1234yf. He concluded by saying that, in contrast to non-Article 5 Parties, the demand for service refrigerants in most Article 5 Parties will consist of HCFC-22 and HFC-based service blends.

15. Ms. Helen Tope, co-chair Medical TOC, then continued the presentation on items related to the Medical Technical Options in the 2010 Assessment Report. She said that technically satisfactory alternatives to CFC metered dose inhalers (MDIs) are available in almost all countries, for all key drug classes, for asthma/COPD and that most countries are expected to complete transition by about end of 2012, except China, which plans to phase out in 2016. She also noted that, with China supplying Russia's and its own CFCs, the rest of the world could complete the CFC MDI phase-out with careful management of existing CFC stockpiles. Technically and economically feasible alternatives are available for medical aerosol products other than MDIs, however, small use of CFCs remains in developing countries, presumably from stockpiles. Ms. Tope said that commercially available alternatives are replacing the use of CFCs and HCFCs in sterilisation and that an orderly phase-out of HCFCs in sterilisation is readily achievable to meet Montreal Protocol HCFC phase-out schedules.

16. Ms. Tope then continued the presentation by giving some key messages from the 2010 report. She said that the Montreal Protocol is working, with progress in every sector and many ozone depleting substance applications had phased out world-wide. Furthermore that it is technically and economically feasible to accelerate the phase-out of most ozone depleting substances, to reduce emissions in many applications, to collect and destroy surplus ozone depleting substances, and to phase down the use of high GWP HFCs in mobile air conditioning where ozone depleting substances have already been phased out. She mentioned that some metered-dose inhalers and laboratory and analytical uses still depend on new production of ozone depleting substances under essential use exemptions and that some fire protection applications depend on banked halons. She also mentioned that refrigeration and air conditioning servicing depends on banked CFCs, and banked and newly produced HCFCs and that some minor uses depend on a variety of ozone depleting substances.

17. Ms. Tope noted that there is no obligation or incentive under the Montreal Protocol to limit methyl bromide quarantine and pre-shipment uses or emissions. Nevertheless, she said, some Parties have entirely phased out QPS uses of methyl bromide and others are committed to phase-out in the near future. She stressed that the adoption of technologies in Article 5 countries for remaining soil and



commodity uses before 2015 will help guide successful phase-out of remaining uses. Ms. Tope stated that technology is available for Article 5 Parties to “leapfrog” HFCs in some applications, which would avoid a second transition out of HFCs and complications of an inventory of HFC equipment requiring servicing. She stressed that the same technology is available for non-Article 5 Parties to make the transition away from high-GWP HFCs in a new transition. On destruction, she said that the opportunity to destroy unwanted ozone depleting substances used as refrigerants is leaking away as equipment reaches end-of-life and those substances are discharged and that the co-benefits of ozone and climate protection from collecting and destroying those substances likely exceed the costs. It would not be profitable without payment for the environmental benefit itself, but it would be more profitable if enterprises were paid for the contribution to climate and ozone protection. Ms. Tope concluded the TEAP presentation by saying that economic incentives and infrastructure are not available in most Article 5 and non-Article 5 countries, and that it is counter-productive to compel collection and destruction without incentives, because owners may discharge ozone depleting substances that would otherwise be available for paid destruction.

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ADVANCE

**TWENTY-THIRD MEETING OF THE PARTIES TO THE MONTREAL PROTOCOL ON SUBSTANCES THAT DEplete THE OZONE LAYER AND THE NINTH CONFERENCE OF THE PARTIES TO THE VIENNA CONVENTION FOR THE PROTECTION OF THE OZONE LAYER: 21–25 NOVEMBER 2011**

The twenty-third Meeting of the Parties to the Montreal Protocol (MOP 23) and the ninth Conference of the Parties to the Vienna Convention begins today in Bali, Indonesia. The preparatory segment will take place from Monday to Wednesday, and the high-level segment will convene on Thursday and Friday. During the meeting, delegates are expected to consider decisions on a range of issues, *inter alia*: replenishment of the Multilateral Fund (MLF); ozone-depleting substances (ODS) on ships; methyl bromide issues; ODS alternatives; process agents and feedstocks; destruction of ODS; and the Technology and Economic Assessment Panel (TEAP) nominations process.

**A BRIEF HISTORY OF THE OZONE REGIME**

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

**VIENNA CONVENTION:** In May 1981, the UNEP Governing Council launched negotiations on an international agreement to protect the ozone layer and, in March 1985, the Vienna Convention for the Protection of the Ozone Layer was adopted. The Convention called for cooperation on monitoring, research and data exchange, but did not impose obligations to reduce the use of ODS. The Convention now has 196 parties.

**MONTREAL PROTOCOL:** In September 1987, efforts to negotiate binding obligations to reduce the use of ODS led to the adoption of the Montreal Protocol on Substances that Deplete the Ozone Layer. The Protocol introduced control measures for some CFCs and halons for developed countries (non-Article 5

parties). Developing countries (Article 5 parties) were granted a grace period allowing them to increase their ODS use before taking on commitments. The Protocol currently has 196 parties.

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

**LONDON AMENDMENT AND ADJUSTMENTS:**

Delegates to the second Meeting of the Parties (MOP 2), which took place in London, UK, in 1990, tightened control schedules and agreed to add ten more CFCs to the list of ODS, as well as carbon tetrachloride (CTC) and methyl chloroform. To date, 196 parties have ratified the London Amendment. MOP-2 also established the MLF, which meets the incremental costs incurred by Article 5 parties in implementing the Protocol's control measures and finances clearinghouse functions, including technical assistance, information, training, and the costs of the MLF Secretariat. The Fund is replenished every three years, and has received pledges of over US\$2.8 billion since its inception.

**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 and to establish an Implementation Committee (ImpCom). The ImpCom examines cases of possible non-compliance by parties, and makes recommendations to the MOP aimed at securing full compliance. To date, 194 parties have ratified the Copenhagen Amendment.

**MONTREAL AMENDMENT AND ADJUSTMENTS:**

At MOP 9, held in Montreal, Canada, in 1997, delegates agreed to a new licensing system for the import and export of ODS, in addition to tightening existing control schedules. They also agreed to ban trade in methyl bromide with non-parties to the Copenhagen Amendment. To date, 185 parties have ratified the Montreal Amendment.

**BEIJING AMENDMENT AND ADJUSTMENTS:**

At MOP 11, held in Beijing, China, in 1999, delegates agreed to controls on bromochloromethane and additional controls on HCFCs, and to reporting on methyl bromide for quarantine and pre-shipment (QPS) applications. At present, 171 parties have ratified the Beijing Amendment.

**MOP 15 AND FIRST EXTRAORDINARY MOP:**

MOP 15, held in Nairobi, Kenya, in 2003, resulted in decisions on issues including the implications of the entry into force of

This issue of the *Earth Negotiations Bulletin* © <enb@iisd.org> is written and edited by Melanie Ashton, Catherine Benson, Cherelle Jackson, Delia Paul and Kunbao Xia. The Digital Editor is Angeles Estrada. The Editor is Pamela S. Chasek, Ph.D. <pam@iisd.org>. The Director of IISD Reporting Services is Langston James "Kimo" Goree VI <kimo@iisd.org>. The Sustaining Donors of the *Bulletin* are the Government of the United States of America (through the Department of State Bureau of Oceans and International Environmental and Scientific Affairs), the Government of Canada (through CIDA), the Danish Ministry of Foreign Affairs, the German Federal Ministry for Economic Cooperation and Development (BMZ), the German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU), the European Commission (DG-ENV), and the Italian Ministry for the Environment, Land and Sea. General Support for the *Bulletin* during 2011 is provided by the Norwegian Ministry of Foreign Affairs, the Government of Australia, the Ministry of Environment of Sweden, the New Zealand Ministry of Foreign Affairs and Trade, SWAN International, Swiss Federal Office for the Environment (FOEN), the Finnish Ministry for Foreign Affairs, the Japanese Ministry of Environment (through the Institute for Global Environmental Strategies - IGES), the Japanese Ministry of Economy, Trade and Industry (through the Global Industrial and Social Progress Research Institute - GISPRI) and the United Nations Environment Programme (UNEP). Funding for translation of the *Bulletin* into French has been provided by the Government of France, the Belgium Walloon Region, the Province of Québec, and the International Organization of the Francophone (OIF and IEPF). Funding for translation of the *Bulletin* into Spanish has been provided by the Spanish Ministry of the Environment and Rural and Marine Affairs. The opinions expressed in the *Bulletin* are those of the authors and do not necessarily reflect the views of IISD or other donors. Excerpts from the *Bulletin* may be used in non-commercial publications with appropriate academic citation. For information on the *Bulletin*, including requests to provide reporting services, contact the Director of IISD Reporting Services at <kimo@iisd.org>, +1-646-536-7556 or 300 East 56th St., 11D, New York, NY 10022, United States of America. The ENB Team at COP9/MOP23 can be contacted by e-mail at <melanie@iisd.org>. 代表団の友

the Beijing Amendment. However, disagreements surfaced over exemptions allowing the use of methyl bromide beyond 2004 for critical uses where no technically or economically feasible alternatives were available. Delegates could not reach agreement and agreed to convene an “extraordinary” MOP. The first Extraordinary Meeting of the Parties to the Montreal Protocol (ExMOP 1) took place in March 2004, in Montreal, Canada. Parties agreed to critical-use exemptions (CUEs) for methyl bromide for 2005 only. The introduction of a “double-cap” concept distinguishing between old and new production of methyl bromide was central to this compromise. Parties agreed to a cap on new production of 30% of parties’ 1991 baseline levels, meaning that where the capped amount was insufficient for approved critical uses in 2005, parties were required to use existing stockpiles.

**MOP 16 AND EX-MOP 2:** MOP 16 took place in Prague, the Czech Republic, in 2004. Work on methyl bromide exemptions for 2006 was not completed and parties decided to hold a second ExMOP. ExMOP 2 was held in July 2005, in Montreal, Canada. Parties agreed to supplementary levels of CUEs for 2006. Under this decision, parties also agreed that: CUEs allocated domestically that exceed levels permitted by the MOP must be drawn from existing stocks; methyl bromide stocks must be reported; and parties must “endeavor” to allocate CUEs to the particular use categories specified in the decision.

**COP 7/MOP 17:** MOP 17 was held jointly with the seventh Conference of the Parties to the Vienna Convention (COP 7) in Dakar, Senegal, in December 2005. Parties approved essential-use exemptions for 2006 and 2007, supplemental CUEs for 2006 and CUEs for 2007, and production and consumption of methyl bromide in non-Article 5 parties for laboratory and analytical critical uses. Other decisions included a US\$470.4 million replenishment of the MLF for 2006-2008, and agreement on terms of reference for a feasibility study on developing a monitoring system for the transboundary movement of controlled ODS.

**MOP 18:** MOP 18 took place in New Delhi, India, from 30 October - 3 November 2006. Parties adopted decisions on, *inter alia*: future work following the Ozone Secretariat’s workshop on the Special Report of the Intergovernmental Panel on Climate Change (IPCC) and the Technical and Economic Assessment Panel (TEAP); difficulties faced by some Article 5 parties manufacturing CFC-based metered dose inhalers (MDIs); treatment of stockpiled ODS relative to compliance; and a feasibility study on developing a system for monitoring the transboundary movement of ODS.

**MOP 19:** MOP 19 took place in Montreal, Canada in September 2007. Parties agreed to the accelerated phase-out of HCFCs, and also adopted decisions on: essential-use nominations and other issues arising out of the 2006 reports of the TEAP; critical-use nominations for methyl bromide; and monitoring transboundary movements and illegal trade in ODS.

**COP 8/MOP 20:** MOP 20 was held jointly with COP 8 of the Vienna Convention in Doha, Qatar in November 2008. Parties agreed to replenish the MLF with US\$490 million for 2009-2011 and adopted other decisions concerning, *inter alia*: the environmentally sound disposal of ODS; approval of 2009 and 2010 CUEs for methyl bromide; and compliance and reporting issues. This meeting was the Protocol’s first paperless meeting.

**MOP 21:** MOP 21 took place in Port Ghalib, Egypt, from 4-8 November 2009 and adopted decisions on: alternatives to HCFCs; institutional strengthening; essential uses; environmentally sound management of banks of ODS; methyl

bromide; budget; and data and compliance issues. Delegates considered a proposal to amend the Montreal Protocol to include HFCs, but this was not agreed.

**MOP 22:** MOP 22 took place in Bangkok, Thailand, from 8-12 November 2010 and adopted decisions on, *inter alia*: the terms of reference for the TEAP study on the MLF replenishment and for the evaluation of the financial mechanism; and assessment of technologies for ODS destruction. Delegates considered, but did not agree to, two proposals to amend the Montreal Protocol to address HFCs, one submitted by the US, Mexico and Canada, and another submitted by the Federated States of Micronesia.

**CURRENT ODS CONTROL SCHEDULES:** Under the amendments to the Montreal Protocol, non-Article 5 parties were required to phase out production and consumption of: halons by 1994; CFCs, CTC, hydrobromochlorofluorocarbons and methyl chloroform by 1996; bromochloromethane by 2002; and methyl bromide by 2005. Article 5 parties were required to phase out production and consumption of hydrobromochlorofluorocarbons by 1996 and bromochloromethane by 2002. Article 5 parties must still phase out: production and consumption of CFCs, halons and CTC by 2010; and methyl chloroform and methyl bromide by 2015. Under the accelerated phase-out of HCFC adopted at MOP 19, HCFC production and consumption by Article 2 countries was to be frozen in 2004 and phased-out by 2020, while in Article 5 parties, HCFC production and consumption is to be frozen by 2013 and phased-out by 2030 (with interim targets prior to those dates, starting in 2015 for Article 5 parties). There are exemptions to these phase-outs to allow for certain uses lacking feasible alternatives.

#### INTERSESSIONAL HIGHLIGHTS

**OPEN-ENDED WORKING GROUP:** The thirty-first meeting of the Montreal Protocol’s Open-ended Working Group (OEWG 31) convened in Montreal, Canada from 1-5 August 2011. Delegates considered several issues arising from the 2011 Progress Report of the TEAP including: a review of nominations of essential-use exemptions for 2012 and 2013; a review of nominations for methyl bromide CUEs for 2012 and 2013; and methyl bromide use for QPS. Parties also discussed the results of the TEAP Replenishment Task Force assessment of the funding requirement for the replenishment of the Multilateral Fund for the Implementation of the Montreal Protocol (MLF) for the period 2012-2014. OEWG 31 considered two proposals to amend the Montreal Protocol related to HFCs: the first by the Federated States of Micronesia, and the second by the US, Canada and Mexico.

**TEAP AND TOCs:** Several of the Technical Options Committees (TOCs) met between May and October 2011 to further their work in the lead-up to MOP 23. The work of the TOCs and the Task Force are included in the TEAP’s 2011 reports, which will be considered at MOP 23.

**EXECUTIVE COMMITTEE:** The Executive Committee of the MLF held its sixty-fifth meeting from 14-18 November 2011 in Bali, Indonesia. The Committee approved investment projects and work programme activities including several national HCFC phase-out management plans.

**IMPLEMENTATION COMMITTEE:** The forty-seventh meeting of the ImpCom under the Non-Compliance Procedure convened in Bali, Indonesia, from 18-19 November 2011. The ImpCom considered information provided by the Secretariat of the MLF on relevant decisions of the MLF Executive Committee and on activities carried out by implementing agencies, and issues related to non-compliance. Its recommendations will be considered at MOP 23.

**COP 9/MOP 23 HIGHLIGHTS:  
MONDAY, 21 NOVEMBER 2011**

The preparatory segment of the ninth meeting of the Conference of the Parties (COP 9) to the Vienna Convention for the Protection of the Ozone Layer and the twenty-third Meeting of the Parties to the Montreal Protocol on Substances that Deplete the Ozone Layer (MOP 23) opened in Bali, Indonesia, on Monday, 21 November 2011.

In the morning, delegates heard opening statements, addressed organizational matters, and heard reports of the Technology and Economic Assessment Panel (TEAP) replenishment task force.

During the afternoon, delegates discussed essential use exemptions and critical use nominations.

**OPENING OF THE PREPARATORY SEGMENT**

Marco González, Executive Secretary, Ozone Secretariat, described the accomplishments of the Montreal Protocol, *inter alia*: full compliance in phasing out CFCs and halons by over 95% of the parties in 2010; and the phase out of 98% of all substances controlled under the Protocol. He urged parties to continue their efforts and commitments, and underscored linkages with climate change and sustainable development, noting that one treaty and one group alone cannot protect the complex global environment. González highlighted agenda items on the: replenishment of the Multilateral Fund (MLF); proposals to expand the Protocol to address HFCs; reviewing the findings of assessment panels and essential and critical-use exemptions; and TEAP operations.

The Indonesian Minister for Environment, Balthasar Kambuaya, opened MOP 23, and introduced the draft Bali declaration, which he said was a way forward for the transition towards low global warming potential alternatives (GWP) to ODS. He encouraged parties to support it.

**ORGANIZATIONAL MATTERS**

Preparatory Segment Co-Chair Gudi Alkemade (the Netherlands), introduced the agenda.

BURKINA FASO proposed consideration of their draft decision to mobilize funds other than the MLF to accelerate the phase-out of hydrochlorofluorocarbons (HCFCs) in Africa under other matters, and delegates agreed.

ARGENTINA proposed addressing adjustment for inflation in national programmes, and parties agreed this issue would be discussed under the item on replenishment.

On methyl bromide alternatives in agriculture, EGYPT highlighted ongoing difficulties for farmers, requesting more sensitive application of measures from 2014, proposing discussion of this under other matters.

UGANDA requested information on all the Secretariat's promotions and appointments made over the past ten years, as well as related budgets and financial reports, and Co-Chair Alkemade asked the Secretariat to provide this.

INDONESIA suggested including a Bali declaration proposed by Indonesia in the agenda to be discussed under other matters, and the parties agreed.

INDIA, supported by CHINA, BAHRAIN, KUWAIT, LEBANON, MALAYSIA, VENEZUELA, and BRAZIL proposed the deletion of the agenda item on the two proposals to amend the Montreal Protocol to include HFCs, stating that HFCs are outside the mandate of the Montreal Protocol, proposing instead that parties concentrate on priority issues within the Protocol's mandate.

Stating that the amendment proposals on HFCs were submitted in accordance with correct procedure, six months in advance of MOP 23, the US, supported by the EU and SWITZERLAND, said this issue should be discussed in a contact group. The EU and CANADA noted that at MOP 22 in Bangkok, 91 parties signed a declaration on the global transition away from HCFCs and CFCs to environmentally-sound alternatives, which declares the signatories intent to pursue further action under the Montreal Protocol aimed at transitioning the world to environmentally sound alternatives to HCFCs and CFCs. BURKINA FASO, MOROCCO, NIGERIA, and the DOMINICAN REPUBLIC supported discussion of this issue in a contact group. The FEDERATED STATES OF MICRONESIA underscored that the increased production of HFCs is being driven by the Protocol's agreement to phase out HCFCs.

MEXICO, emphasizing the contribution of the scientific community, underscored the need to discuss impacts of alternatives to ODS.

Co-Chair Alkemade proposed that the issue remain on the agenda for a "timed discussion." She said concerns of all parties would be reflected in the meeting report. Delegates agreed and the agenda was adopted.

**CONSIDERATION OF VIENNA CONVENTION AND COMBINED VIENNA CONVENTION AND MONTREAL PROTOCOL ISSUES**

**FINANCIAL REPORTS AND BUDGETS OF THE TRUST FUNDS FOR THE VIENNA CONVENTION AND THE MONTREAL PROTOCOL:** Preparatory Segment Co-Chair Ndiaye Cheikh Sylla (Senegal) introduced this item, to which CANADA, JAPAN, SWITZERLAND, SWEDEN, GERMANY, the GAMBIA, FRANCE, MEXICO, the US, and DENMARK volunteered to participate in a budget committee, chaired by Alessandro Giuliana Peru (Italy).

**STATUS OF RATIFICATION OF THE VIENNA CONVENTION, THE MONTREAL PROTOCOL, AND THE AMENDMENTS TO THE MONTREAL PROTOCOL:** The Secretariat introduced this item and parties requested a draft decision be prepared for consideration of the high-level segment.

**MONTREAL PROTOCOL ISSUES**

**REPLENISHMENT OF THE MULTILATERAL FUND FOR THE IMPLEMENTATION OF THE MONTREAL PROTOCOL: Supplemental report of the TEAP replenishment task force:** TEAP members Shiqu Zhang, Lambert Kuijpers, and Daniel Goldberg presented the

supplemental report of the TEAP replenishment task force (RTF) for 2012-2014 and beyond. Total required funding is estimated at US\$460-540 million, compared to US\$390-477 million in the main report. The study is based on: HCFC Phase-Out Management Plans (HPMPs) approved by the MLF Executive Committee; six scenarios applied for not yet approved HPMPs; and production closure funding. Findings include, *inter alia*: 86 parties have submitted 2010 baseline data while 59 parties have not; production closure funding ranges from US\$193-218 million; HCFC feedstock production doubled every 3 years during the last decade; and institutional strengthening costs, using a 3% inflation rate, would increase by \$1.34 million.

Goldberg presented the RTF's assessment, proposing funding levels of approximately US\$500 million, US\$790 million, and US\$797 million, for the first, second, and third trienniums respectively.

INDIA and SWITZERLAND sought clarification on whether the closure of swing plants was eligible for funding; and Goldberg affirmed this had been considered as an option.

CHINA stressed that funding levels should be based on needs of developing countries, calling on parties to recognize the need for "efficient and sustained funding" for compliance.

CANADA requested indication of replenishment levels based on different scenarios such as: funding of 10% of a production baseline, "exclusion of funding for swing plants," and redirection of some HCFCs to feedstock uses.

Co-Chair Sylla proposed, and delegates agreed, that representatives from Belgium and St Lucia chair the Replenishment Contact Group to continue discussion of these issues. Co-Chair Sylla welcomed comments by parties on the TEAP presentation.

SWITZERLAND supported by the US, suggested an "open" first meeting of the Contact Group, with subsequent meetings being "closed." The US noted budgetary constraints, urging prudent measures to assist parties in meeting compliance and provision of assistance for transitions in the most cost-effective manner possible. He proposed limiting the number of parties in the Contact Group, suggesting ten Article 5 members and ten non-Article 5 parties.

POLAND, on behalf of 27 EU member states, expressed concerns with the calculations regarding the funding requirement for the triennium 2012-2014 in the production sector in the TEAP supplement report, and, with AUSTRALIA, committed to a successful replenishment, taking into account the current economic situation. Highlighting financial difficulties faced by non-Article 5 parties, JAPAN stressed the need to fund the MLF through both traditional funding sources, and from other sources, including Article 5 parties.

The ENVIRONMENTAL INVESTIGATION AGENCY (EIA) stated that this COP/MOP must send a clear signal that adequate financial resources are mobilized for the transition to climate-friendly alternatives.

Co-Chair Sylla asked the regional groups to nominate representatives to the Contact Group. BRAZIL, supported by MEXICO, proposed that the Replenishment Contact Group be open to all parties, while the US favored limiting its number for efficiency's sake. Co-Chair Sylla proposed, and delegates agreed, that the contact group's first meeting would be open, and that subsequent meetings may be limited to nominated representatives.

**Extension of the fixed-exchange-rate mechanism:** Parties agreed to forward a draft decision on extending a provision for the fixed-exchange-rate mechanism to the high-level segment (UNEP/OzL.Conv.9/3-UNEP/OzL.Pro.23/3, XXIII/[B]).

## ISSUES RELATED TO EXEMPTIONS FROM ARTICLE 2 OF THE MONTREAL PROTOCOL: Nominations for essential-use exemptions:

On this matter, the EU reminded the Medical Technical Options Committee (MTOC) that it had outstanding questions from the 31st Open-Ended Working Group (OEWG), and SWITZERLAND endorsed the TEAP recommendations. BANGLADESH, supported by the US, asked for approval of its requested essential-use exemption for metered-dose inhalers (MDIs), rather than MTOC's proposed amount, stating that it will not request further exemption in 2013. CANADA urged parties with essential-use exemptions to use stockpiled CFCs, and recommended speeding up transitions to CFC alternatives. CHINA said that such transitions take time,

underscoring complex approval and administration processes. Co-Chair Sylla invited the MTOC, China, and interested parties to submit a report to the plenary.

Marco González, Executive Secretary, informed parties on the Secretariat's authorization, in coordination with the TEAP, of an emergency exemption request by Mexico for pharmaceutical grade CFC-12 for production of MDIs, noting that Mexico agreed to offset consumption by destroying an equal amount of CFC-11.

**Essential-use exemption for chlorofluorocarbon-113 for aerospace applications in the Russian Federation:** The RUSSIAN FEDERATION to hold technical discussions with the EU and the US and to report back.

**Nominations for 2012 and 2013 critical-use exemptions:** Methyl Bromide Technical Options Committee (MBTOC) Co-Chairs Mohamed Besri (Morocco), Michelle Marcotte (Canada), Marta Pizano (Colombia) and Ian Porter (Australia) presented detailed trends in methyl bromide critical-use nominations (CUNs) and the MBTOC's recommendations, highlighting reductions and possible phase-out by 2015.

Porter sought guidance from parties in light of the reduction in CUNs, resource limitations, and the possibility of holding meetings electronically.

CUBA requested more information about criteria used in the approval process, emphasizing that the mandate given to MBTOC should be respected.

JORDAN proposed that the MLF support a project on control of methyl bromide in quarantine and pre-shipment (QPS).

Porter advised that MBTOC needs research trials and information to be provided by parties. Marcotte added that alternatives to the use of methyl bromide are specific to the commodity, crop, and situation, noting fresh dates are covered in MBTOC's reports. Pizano advised that 30-35% of present QPS use can be replaced by existing alternatives, and offered to provide further information.

The US highlighted its progress on phasing out the use of methyl bromide since 1991. He expressed concern at MBTOC's reduction of US CUNs, noting MBTOC has been unable to reach consensus, resulting in five minority reports this year. He advised that the US will submit a CRP to the Secretariat on this matter, suggesting the MBTOC continue to meet in person when "substantive work" is needed in order to reach consensus.

AUSTRALIA requested the MBTOC to provide sufficient information on methodology, so parties can better understand the conclusions.

The EU noted inconsistencies in some figures and that more work is needed to clarify the process used by MBTOC. CANADA urged MBTOC to find solutions and deal with issues of process. SWITZERLAND raised concerns regarding process of assessment of CUNs.

The Natural Resources Defense Council (NRDC) noted that the US continues to use methyl bromide for non-critical uses. He suggested that existing stocks be used against critical uses and not over and above critical uses.

Parties agreed to continue discussions bilaterally.

## IN THE CORRIDORS

As outside temperatures soared in tropical Bali, COP 9/MOP 23 delegates spent significant time debating issues related to hot air -HFCs, compounds used as replacements for CFCs and HCFCs, that are also potent greenhouse gases. Parties quickly reestablished battle lines drawn at MOP 21 and MOP 22 over the prospect of amending the Protocol to address the phase-down of HFCs. While it was agreed the issue would remain on the agenda, most concluded it was unlikely that much progress could be made on the matter this week.

Some hoped to advance the issue through a Bali declaration, proposed by Indonesia. They noted the draft declaration proposes to explore the development of a road map to phase down high GWP alternatives to ODS (code for HFCs). Others were more circumspect, suggesting parties opposed to discussing HFC issues under the Protocol may not be prepared to support a declaration on developing a road map on the phase-down of such substances.

**COP 9/MOP 23 HIGHLIGHTS:  
TUESDAY, 22 NOVEMBER 2011**

The preparatory segment of COP 9 to the Vienna Convention and MOP 23 to the Montreal Protocol convened for its second day in Bali, Indonesia, on Tuesday, 22 November 2011.

In the morning, delegates addressed issues related to exemptions from Article 2, and began discussions on updating the TEAP nomination process and information on ODS alternatives.

During the afternoon, delegates heard reports of the Implementation Committee and the recommendations from the Ozone Research Managers (ORM) meeting. In the late afternoon and in an evening plenary session, delegates discussed proposals to amend the Montreal Protocol.

Contact groups on replenishment and QPS uses of methyl bromide met throughout the day and into the evening.

**MONTREAL PROTOCOL ISSUES**

**ISSUES RELATED TO EXEMPTIONS FROM ARTICLE 2 OF THE MONTREAL PROTOCOL: QPS uses of methyl bromide:** The EU introduced their draft decision (UNEP/OzL.Pro.23/CRP.6) requesting, *inter alia*, the TEAP to provide data on trends in methyl bromide consumption and the Secretariat to work with the International Plant Protection Convention (IPPC) to determine phytosanitary needs. Supported by SWITZERLAND, he called for strengthened relations between the Montreal Protocol and the IPPC.

INDIA, supported by ARGENTINA, objected to the draft decision, noting the use of methyl bromide in QPS is not controlled by the Montreal Protocol. MEXICO, supported by COLOMBIA, AUSTRALIA, and JAPAN called for better information on current methyl bromide usage. INDONESIA, JAPAN, and NEW ZEALAND highlighted its use for the export of food and other biological products, with NEW ZEALAND suggesting this issue falls within the domain of sovereign and bilateral decision making.

CHINA, ARGENTINA, and INDIA said parties should provide detailed information on methyl bromide use for QPS on a voluntary basis. They also said this may require financial and technical assistance.

BRAZIL, the US, the PHILIPPINES, and MAURITIUS proposed further discussions, and delegates agreed to convene a contact group.

**Global laboratory and analytical-use exemption:** CHINA, AUSTRALIA, the EU, and the US announced that they had drafted a CRP proposing a grace period for developing countries on exemptions for ODS in laboratory and analytical use, to be submitted for plenary discussion.

**Sustained mitigation of ODS emissions from feedstock and process-agent uses:** Co-Chair Alkemade introduced a TEAP study on the feasibility of reducing or eliminating ODS emissions from feedstock and process-agent uses, highlighting, *inter alia*: a lack of viable alternatives for ODS use in feedstocks; uncertain estimates of feedstock emissions;

and inconsistencies between carbon tetrachloride emissions. The EU described intersessional progress, resulting in a CRP on feedstocks (UNEP/OzL.Pro.23/CRP.4) and one on process agents (UNEP/OzL.Pro.23/CRP.5). The US emphasized intersessional efforts to resolve top-down and bottom-up measurements of carbon tetrachloride. The EU, supported by the US, AUSTRALIA, and CANADA, but opposed by INDIA, proposed forming a contact group. Co-Chair Alkemade proposed, and parties agreed, to establish a contact group chaired by Blaise Horisberger (Switzerland).

**UPDATING THE NOMINATION PROCESSES AND RECUSAL GUIDELINES FOR THE TEAP:** Co-Chair Sylla introduced the agenda item on updating the nomination process and recusal guidelines for the TEAP. Delegates agreed to establish a contact group, co-chaired by Masami Fujimoto (Japan) and Javier Camargo (Colombia).

**TREATMENT OF OZONE-DEPLETING SUBSTANCES USED TO SERVICE SHIPS:** Co-Chair Alkemade introduced the draft decision (UNEP/OzL.Conv.9/3-UNEP/OzL.Pro.23/3[K]) on reporting and regulation responsibilities of flag-of-convenience countries, requesting parties to provide a consensus proposal. Delegates agreed to convene a contact group co-chaired by Marissa Gowrie (Trinidad and Tobago) and Cornelius Rhein (EU).

**ADDITIONAL INFORMATION ON ALTERNATIVES TO ODS:** Delegates agreed to continue discussions on a proposed study of low and high-GWP alternatives to CFCs and HCFCs (UNEP/OzL.Conv.9/3-UNEP/OzL.Pro.23/3[J]) tabled by Switzerland, in a contact group co-chaired by Leslie Smith (Grenada) and Mikkel Sørensen (Denmark).

**USE OF METHYL BROMIDE IN AFRICA:** Co-Chair Alkemade introduced the draft decision (UNEP/OzL.Conv.9/3-UNEP/OzL.Pro.23/3[A]) for TEAP to review consumption trends in Africa, study phase-out implications, and recommend activities. Parties agreed to defer discussion until Egypt's CRP is available.

**PROPOSED AMENDMENTS TO THE MONTREAL PROTOCOL:** The Chair invited proponents to brief the plenary on elements of their proposals. Introducing its proposal (UNEP/OzLPro.23/5), the FEDERATED STATES OF MICRONESIA (FSM) appealed to parties to consider their moral and ethical obligations to include HFCs under the Montreal Protocol. The US, CANADA and MEXICO discussed the North American proposal (UNEP/OzL.Pro.23/6) and highlighted the recently released UNEP study linking climate and ozone through HFCs. The US reiterated the responsibility of parties to the Vienna Convention to prevent negative environmental impacts due to phase-out decisions.

In response to the proposals, BURKINA FASO, BRAZIL, the COOK ISLANDS, GEORGIA, SENEGAL, UGANDA, the FORMER YUGOSLAV REPUBLIC OF MACEDONIA, BENIN, COLOMBIA, NIGERIA, EU, SAINT LUCIA, GRENADA, BANGLADESH, SWITZERLAND, the

MARSHALL ISLANDS, BELARUS, AUSTRALIA, INDONESIA, the DOMINICAN REPUBLIC, JAPAN, and KENYA supported establishing a contact group to discuss the amendments. MOZAMBIQUE supported the amendment proposals.

GEORGIA emphasized that with so many critical issues to be resolved under the Kyoto Protocol, UNFCCC negotiators are unlikely to concentrate on HFCs. He called for clear signals to industry regarding phase-out of HFCs. KUWAIT and the FORMER YUGOSLAV REPUBLIC OF MACEDONIA called for urgent action, noting the high temperatures in Gulf countries, and recent flood and drought events, respectively.

ARGENTINA maintained that HFCs fall under the ambit of the Kyoto Protocol, and said the Montreal Protocol should instead focus on providing incentives for low-GWP alternatives through the MLF. VENEZUELA, CHINA, and INDIA also objected to establishing a contact group on the issue.

MALAYSIA proposed deferring discussion of the amendment proposals. Noting lack of agreement among parties to continue discussions in a contact group, Co-Chair Alkemade proposed parties continue discussions informally. The US and CANADA expressed disappointment, stating that many parties were prepared to discuss the issue. Co-Chair Alkemade suggested parties raise issues related to the proposals in the ODS Alternatives Contact Group.

**POTENTIAL AREAS OF FOCUS FOR THE ASSESSMENT PANELS' 2014 QUADRENNIAL REPORTS:** Co-Chair Sylla introduced the Secretariat's compilation of ideas from the assessment panels, and suggested the EU's CRP be posted online to determine parties' interest in establishing a contact group, and parties agreed.

**STATUS OF NEPAL RELATIVE TO THE COPENHAGEN AMENDMENT TO THE MONTREAL PROTOCOL:** Chair Sylla introduced Nepal's request for MOP to consider its compliance status. NEPAL, supported by EGYPT, GRENADA, and KUWAIT, urged parties to consider Nepal as a full compliant party, allowing it access to finance from the MLF.

A representative of the Implementation Committee outlined that this issue was considered at its meeting on 18 November, noting that Nepal is in compliance with the Protocol, but is yet to ratify the Copenhagen Amendment; therefore, the status of Nepal is that of a non-ratifying party. Parties agreed to revisit the issue at MOP 24.

**COMPLIANCE AND REPORTING ISSUES CONSIDERED BY THE IMPLEMENTATION COMMITTEE:** Ghazi Al Odat (Jordan) reported on compliance discussions at the ImpCom's 46th and 47th meetings. He presented draft decisions on: parties who have not submitted reports; non-compliance in Libya, Iraq, and Yemen; trade with Kazakhstan by the EU and the Russian Federation; revisions of baseline numbers; decimal places; and licensing. Co-Chair Alkemade proposed, and delegates agreed, to forward the draft decisions (UNEP/OzL.Pro.23/CRP.3) to the high-level segment.

### VIENNA CONVENTION ISSUES

**REPORT OF THE EIGHTH MEETING OF THE OZONE RESEARCH MANAGERS OF THE PARTIES TO THE VIENNA CONVENTION:** Michael Kurylo, Chair of the 8th Ozone Research Managers (ORM) meeting, presented recommendations, including: continuing and expanding systematic tracking and analysis of ozone and climate-related gases; study of the relationships between ozone and climate variability and change; data archiving; and national capacity building (UNEP/OzL.Conv.9/6).

CHINA expressed concern over duplication of observation work under the climate change framework. Kurylo responded that efforts would be complementary.

SRI LANKA introduced a draft decision (CRP.2) adopting the ORM recommendations, and AUSTRALIA suggested discussion on this be combined with the draft decision on the Vienna Convention Trust Fund financing of such activities (CRP.1). CHINA requested more time for discussion, as CRP.2 refers to increasing concentrations of GHGs and associated climate

change. Brazil shared China's concerns regarding the climate change regime, which, he said, has a systematic monitoring and observatory programme. The EU supported the decision, while the US proposed further discussion.

**STATUS OF THE GENERAL TRUST FUND FOR FINANCING ACTIVITIES ON RESEARCH AND SYSTEMATIC OBSERVATIONS RELEVANT TO THE VIENNA CONVENTION:** The Secretariat introduced the Trust Fund discussion. Sri Lanka also introduced a draft decision on financing activities (UNEP/OzL.Conv.9/CRP.1), which the EU supported.

Co-Chair Sylla suggested, and delegates agreed, to revisit the discussion of Vienna Convention issues later in the week, once parties have considered the draft decisions.

### OTHER MATTERS

Co-Chair Alkemade reported that Indonesia is further revising the Bali Declaration (CRP.8), taking into consideration the views expressed by other parties during informal consultations.

### CONTACT GROUPS

**REPLENISHMENT:** Co-Chaired by Jozéf Buys (Belgium) and Donnalyn Charles (Saint Lucia), the Contact Group met in the morning, afternoon, and evening. In its first meeting, the parties discussed the composition of the group. Parties agreed to a limited number of members, with some favoring 12 from Article 5 parties and 12 from non-Article 5 parties, while others preferred 11 from each. After further deliberations, Co-Chair Buys proposed, and the group agreed, that the regional groups would nominate representative parties, with 11 from Article 5 parties and 11 from non-Article 5 parties.

In the afternoon session, TEAP introduced five production sector funding scenarios, which the group discussed. One delegate asked about the funding allocation for 2015 for 10% reduction of HCFCs, with the Secretariat confirming an allocation of US\$51.76 million.

In the evening, Colombia presented a list of 11 Article 5 parties nominated to the contact group. The TEAP presented a revised table on all the non-HCFC production elements of the replenishment with total funding requirements of US\$316.86-339.75 million, which it reported reflected recent Executive Committee decisions.

**QPS USES OF METHYL BROMIDE:** On Tuesday afternoon, the EU outlined its proposed decision (CRP.6) and parties discussed, *inter alia*: collation of data on current usage of methyl bromide as a phytosanitary measure; provision of data on methyl bromide used for QPS applications; and information on alternatives. Some parties discussed the voluntary nature of reporting and the accuracy of data submitted as a basis of analysis by the TEAP and MBTOC. The contact group agreed to reconvene when co-chairs are identified.

### IN THE CORRIDORS

As parties haggled on Tuesday over the balance of representatives participating in the replenishment negotiations, and donors hinted they were short on funds, many predicted a fraught few days.

On the sidelines, environmental NGOs were busy drawing links between the replenishment process and climate change mitigation activities. They, and some Article 5 parties, argued that replenishment negotiations provide an opportunity to "make good" on the original promise of climate benefits from HCFC phase-out. Recalling the TEAP prediction of mitigation benefits through the conversion to climate-friendly alternatives and energy-efficient technologies (avoiding up to 17.5-25.5 gigatonnes CO<sub>2</sub> equivalent), NGOs said parties must commit adequate funds to ensure this transition. They said investments into low-GWP alternative technologies would be consistent with the frequent calls for transition to a green economy, through investment in commercializing such alternatives.

**COP 9/MOP 23 HIGHLIGHTS:  
WEDNESDAY, 23 NOVEMBER 2011**

The preparatory segment of COP 9 to the Vienna Convention and MOP 23 to the Montreal Protocol convened for its third day in Bali, Indonesia, on Wednesday, 23 November 2011.

Throughout the day, delegates worked in contact groups on replenishment, ODS alternatives, process agents and feedstocks, QPS use of methyl bromide, ODS service to ships, and TEAP nominations.

In the late afternoon, delegates attended the opening of the high-level segment. In the evening, plenary convened to hear reports from the contact groups and consider associated draft decisions.

**CONTACT GROUPS**

**REPLENISHMENT:** Co-chaired by Jozéf Buys (Belgium) and Donnalyn Charles (Saint Lucia), the group met in the morning, afternoon, and evening.

In the morning, TEAP presented a new table on all the non-HCFC production elements of replenishment from 2012-2014, with amendments made based on Tuesday's discussions. The total funding requirements are US\$314.13-337.03 million. The group agreed on US\$1.3 million for CFC production by India, and US\$7.91 million for methyl bromide. Delegates did not agree on ODS destruction (US\$15.25 million), with Article 5 parties supporting the line and figure, and non-Article 5 parties asking for its deletion. Regarding the figure of US\$4.8 million for Stage II preparation of HPMPs, non-Article 5 parties stated that since significant experience had been accumulated in the first stage, this figure should be lowered, while Article 5 parties supported it, with one party stating the figure is too low.

In the afternoon, the group discussed supporting activities (US\$67.47 million). Non-Article 5 parties suggested lowering the figure while other parties supported maintaining it. On Future HPMPs (US\$27.43 - 50.33 million), TEAP explained that it was based on 10%-20% reduction of the 2009-2010 average consumption. Article 5 parties supported the higher figure, while non-Article 5 parties supported the lower one. On institutional strengthening (US\$22 million), one Article 5 party introduced a draft decision (CRP.7) on accounting for inflation in funding for institutional strengthening projects and, supported by other Article 5 parties, suggested increasing the figure to US\$24.27 million, to which non-Article 5 parties objected. One non-Article 5 party raised the issue of double accounting with the line of "HPMP commitments", and asked for its removal. TEAP presented a revised table on production sector scenarios and funding, and this was briefly discussed.

In the evening, TEAP delegates discussed the above-mentioned tables on funding and presented requirements from 2012-2014 with further amendments.

**QPS USES OF METHYL BROMIDE:** The group chaired by Alice Gaustad (Norway) met on Wednesday to discuss a draft decision on QPS uses of methyl bromide (CRP.6). Parties clarified the type of data recorded and collated on current usage of methyl bromide for phytosanitary purposes and agreed to include this in the draft decision.

Parties also agreed to include reference to the process of collating data on quantities of methyl bromide used for QPS, descriptions of any articles fumigated, and to distinguish between methyl bromide used on import or export commodities.

The group discussed and agreed to include references to the sharing of information on alternatives approved by their respective national plant protection organizations, with parties to the IPPC. They noted the importance of disseminating accurate data.

**ODS ALTERNATIVES:** The Contact Group, co-chaired by Mikkel Sørensen (Denmark) and Leslie Smith (Grenada), met in the morning and evening. Participants discussed elements of the draft decision on additional information on alternatives to ODS (UNEP/OzL.Conv.9/3-UNEP/OzL.Pro.23/3[J]). They deliberated on the content of a proposed report to be prepared by the TEAP for consideration by the OEWG at its 32nd meeting.

Parties discussed asking the TEAP to report on low-GWP and high-GWP alternatives to ODS. Some parties preferred the TEAP focus on only high-GWP alternatives, but most parties preferred the TEAP look at both low- and high-GWP alternatives. Several non-Article 5 parties emphasized the need to integrate costs of alternative technologies in the report.

Parties deliberated references to the UNFCCC and IPCC in the text, and ways to incorporate their work into the TEAP report.

**PROCESS AGENTS AND FEEDSTOCKS:** The Contact Group, chaired by Blaise Horisberger (Switzerland) met in the morning. Deliberations focused on the two CRPs submitted to the COP 9/MOP 23 on process agents (CRP.5) and feedstocks (CRP.4).

Participants first focused on uses of controlled substances as process agents. The EU introduced its proposed decision (CRP.5), noting that Tables A and B, contained in the draft decisions annex, and which the draft decision seeks to update, contain lists of uses of controlled substances as process agents and limits for process agents uses.

One party expressed concern about the classification of its use of carbon tetrachloride (CTC) in vinyl chloride monomer (VCM) production for process agent purposes, arguing that it is actually used as feedstock. Another party highlighted that the only difference in treatment of controlled substances considered as process agents and feedstocks was that the Protocol requires emission reporting for process agents. After protracted discussion, parties agreed to ask TEAP to assess the situation and for the issue to be considered again at MOP 24. In the

This issue of the *Earth Negotiations Bulletin* © <enb@iisd.org> is written and edited by Melanie Ashton, Catherine Benson, Cherrille Jackson, Delia Paul and Kunbao Xia. The Digital Editor is Angeles Estrada. The Editor is Pamela S. Chasek, Ph.D. <pam@iisd.org>. The Director of IISD Reporting Services is Langston James "Kimo" Goree VI <kimo@iisd.org>. The Sustaining Donors of the *Bulletin* are the Government of the United States of America (through the Department of State Bureau of Oceans and International Environmental and Scientific Affairs), the Government of Canada (through CIDA), the Danish Ministry of Foreign Affairs, the German Federal Ministry for Economic Cooperation and Development (BMZ), the German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU), the European Commission (DG-ENV), and the Italian Ministry for the Environment, Land and Sea. General Support for the *Bulletin* during 2011 is provided by the Norwegian Ministry of Foreign Affairs, the Government of Australia, the Ministry of Environment of Sweden, the New Zealand Ministry of Foreign Affairs and Trade, SWAN International, Swiss Federal Office for the Environment (FOEN), the Finnish Ministry for Foreign Affairs, the Japanese Ministry of Environment (through the Institute for Global Environmental Strategies - IGES), the Japanese Ministry of Economy, Trade and Industry (through the Global Industrial and Social Progress Research Institute - GISPRI) and the United Nations Environment Programme (UNEP). Funding for translation of the *Bulletin* into French has been provided by the Government of France, the Belgium Walloon Region, the Province of Québec, and the International Organization of the Francophone (OIF and IEPF). Funding for translation of the *Bulletin* into Spanish has been provided by the Spanish Ministry of the Environment and Rural and Marine Affairs. The opinions expressed in the *Bulletin* are those of the authors and do not necessarily reflect the views of IISD or other donors. Excerpts from the *Bulletin* may be used in non-commercial publications with appropriate academic citation. For information on the *Bulletin*, including requests to provide reporting services, contact the Director of IISD Reporting Services at <kimo@iisd.org>, +1-646-536-7556 or 300 East 56th St., 11D, New York, NY 10022, United States of America. The ENB Team at COP9/MOP23 can be contacted by e-mail at <melanie@iisd.org>. 代表団の友



interim, it was agreed that the party's CTC use in VCM would be classified as a feedstock. The Contact Group will convene again on Thursday.

**ODS SERVICE TO SHIPS:** The contact group, co-chaired by Marissa Gowrie (Trinidad and Tobago) and Cornelius Rhein (EU), discussed the draft decision (UNEP/OzL.Conv.9/3-UNEP/OzL.Pro.23/3[K]) on reporting and regulation responsibilities of ODS consumption on ships in the morning and afternoon. Participants agreed to use "ships from other flag states" rather than the term "flags-of-convenience" throughout the document. The Secretariat stated that intersessional communication from 18 parties illustrates the diverse ways in which parties treat deliveries of ODS and HCFCs to ships, with the majority considering deliveries as exports. Parties agreed in principle that more information is needed on how parties treat sales in serving ships; and the Secretariat could consult with relevant bodies, particularly the IMO and World Customs Organization, to collect information on how they regulate trade in and reporting of ODS onboard ships, though text on the latter remains bracketed. Parties agreed to request the Secretariat to prepare a document for the 32nd meeting of the OEWG on current ODS sales to ships for onboard servicing and use, including how parties calculate consumption. Parties also discussed, *inter alia*: jurisdictional concerns on ODS management on ships; classification of ODS as imports versus exports; and under-reporting of import consumption because some flag ships do not enter national waters.

**TEAP NOMINATIONS:** Co-Chairs Masami Fujimoto (Japan) and Javier Camargo (Colombia) facilitated discussion on nominations to TEAP, Technical Options Committees (TOCs) and temporary subsidiary bodies, especially on how to ensure balanced perspectives and geographic representation, in the draft decision (UNEP/OzL.Conv.9/3-UNEP/OzL.Pro.23/3, XXIII/[D]). Parties introduced text stipulating that experts with "appropriate expertise" may be nominated only by their passport countries. On length of service, they agreed to limit terms of experts nominated at this meeting to four years, with options for re-nominations.

Parties also discussed formalizing the relationship of the Executive Secretary in relation to the TEAP, the type of advice he/she would provide, and the Secretariat's ability to give support. Some parties expressed concern regarding potential for intervention by the Secretariat in parties' decision making. Parties agreed that the Ozone Secretariat should attend TEAP meetings wherever possible and provide ongoing institutional advice on administrative matters.

They also suggested that appointments to TEAP, but not TOCs, be approved by the MOPs and that parties consider membership sizes of subsidiary bodies, to ensure consistency with their respective workloads.

#### **OPENING OF THE HIGH-LEVEL SEGMENT**

Anak Agung Alit Sastrawan, representing the Governor of Bali, welcomed delegates and explained that the increasing population in Bali is putting pressure on the island's ecosystems. He said that ODS are still used in Bali due to lack of widespread awareness. Sastrawan wished COP 9/MOP 23 a successful meeting and expressed hope that effective recommendations will be made.

Marco Gonzáles, Executive Secretary, Ozone Secretariat, noted that the Protocol is nearing its 25th year of implementation. He underscored that the Protocol is grounded in core sustainable development principles, including the precautionary principle, and common but differentiated responsibilities. Gonzáles reflected on the Protocol's successful "start and strengthen" approach, highlighting numerous adjustments and amendments to strengthen the Protocol. Despite its success, he said the Protocol still faced several challenges including the battle to comply with HCFC phase-out targets over the next four years. Acknowledging the economic challenges faced by many parties, Gonzales encouraged parties to approach the replenishment negotiations with a sense of understanding and compromise.

Indonesian Minister of Environment Balthasar Kambuaya opened the high-level segment of the meeting with a call to delegates to ensure that phase-out programmes for ODS are comprehensively and effectively implemented, emphasizing the linkages between measures needed for recovery of the ozone layer as well as reduction of GHG emissions and low-carbon development.

#### **PLENARY**

Delegates convened in plenary during the evening and considered decisions to be forwarded to the high-level segment.

Parties forwarded the draft decision on adoption of new destruction technologies for ODS by Australia and Canada (CRP.1/Rev.1) to the high-level segment for consideration.

Parties agreed to further discuss the following CRPs on Thursday: mobilization of financing for the accelerated phase-out of HCFCs in Africa (CRP.2); sustained mitigation of emissions of ODS from feedstocks (CRP.4); uses of controlled substances as process agents by the EU (CRP.5); and QPS uses of methyl bromide (CRP.6).

INDIA introduced a draft decision (CRP.11) on funding for HCFC production facilities to confirm the intent of decision XIX/6, to provide stable and sufficient funding through the MLF for accelerated HCFC phase-out and to urge the Executive Committee to finalize guidelines on this matter urgently. The US, AUSTRALIA, and CANADA noted that the Executive Committee is working on this and questioned which agenda item this decision was classified under. After lengthy discussion on the matter Co-Chair Sylla recommended, and delegates agreed, that India should raise the issues addressed in this CRP in the Contact Group on Replenishment.

The EU introduced a draft decision on potential areas of focus in 2014 quadrennial reports of the Scientific Assessment Panel, the Environmental Effects Assessment Panel and the TEAP (CRP.12). Interested parties agreed to discuss informally with the EU.

CHINA introduced a draft decision on essential-use nominations for controlled substances for 2012 (CRP.13), proposing Bangladesh lead the follow-up of work where consensus has not been reached, and parties agreed to revisit the issue on Thursday.

On the phase-out of HFC-23, the US presented the draft decision on HFC-23 emissions from HCFC- 22 production (UNEP/OzL.Conv.9/3-UNEP/OzL.Pro.23/3, XXIII/[C]). INDIA, CHINA, BRAZIL, ARGENTINA, and VENEZUELA said the issue is outside the Protocol. The EU and CANADA emphasized the value of addressing both climate and ozone issues. The chair noted consensus could not be reached on this matter and the matter was deferred.

#### **IN THE CORRIDORS**

On a day crammed with back-to-back contact groups, delegates were seen running from one room to the next in an attempt to keep up with parallel deliberations on key substantive matters. Reports on progress from the MLF replenishment group indicated parties were facing "many differences."

As participants arrived for the opening of the high-level segment they were greeted by high-level hopes that parties can overcome their differences – drawing on the spirit of understanding and compromise that the Protocol has come to be known for.

The opening ceremony also provided delegates a surprise opportunity to literally "get in tune" with each other, with a lesson from a musician in the playing of the traditional Balinese *angklung*. Each participant received a bamboo *angklung* and a quick lesson in technique. COP 9/MOP 23 participants then played "You Raise Me Up", made famous by Josh Groban.

As the fun subsided and the plenary got back down to business in the early evening Co-Chair Sylla observed with optimism, that delegates "may not be able to play every single note" but could still endeavour to be harmonious. As the evening plenary got under way, however, it appeared that musical accord may have given way to diplomatic discord.

**COP 9/MOP 23 HIGHLIGHTS:  
THURSDAY, 24 NOVEMBER 2011**

The high-level segment of COP 9 to the Vienna Convention and MOP 23 to the Montreal Protocol convened for its first day in Bali, Indonesia, on Thursday, 24 November 2011.

Throughout the day delegates convened in plenary throughout the day to hear high-level statements from heads of delegations.

Contact groups on replenishment, ODS alternatives, QPS use of methyl bromide, and process-agents and feedstocks worked throughout the day.

**HIGH-LEVEL SEGMENT**

Patali Ranawaka, Minister of Environment, Sri Lanka, President of COP 8, emphasized the cooperative nature of participants in contributing to the successful implementation of the Montreal Protocol. He stressed the need for increased funding of research activities, citing Sri Lanka's complete phase-out of methyl bromide in 2006 in its tea plantation as a result of research into alternatives.

Deborah Owens (UK), MOP 22 President, hoped delegates would negotiate in a spirit of compromise and consensus. On replenishment, she stressed the importance of sending positive signals to Article 5 countries to sustain their efforts to phase out HCFCs and other remaining ODS.

**ORGANIZATIONAL MATTERS**

COP 9 elected by acclamation Mikheil Tushishvili (Georgia) as President, Alain Wilmart (Belgium), Marissa Gowrie (Trinidad and Tobago), Ezzat Agaiby (Egypt), as Vice Presidents, and Arief Yuwono (Indonesia) as Rapporteur.

MOP 23 elected by acclamation Sianga Abilio (Angola) as President, Azra Rogovic-Grubic (Bosnia and Herzegovina), Javier Ernesto Camargo (Colombia), as Vice Presidents, and Bernard Made (Canada) as Rapporteur.

Delegates also adopted the agenda (UNEP/OzL.Conv.9/1-UNEP/OzL.Pro.23/1).

**PRESENTATIONS OF ASSESSMENT PANELS ON THEIR QUADRENNIAL ASSESSMENT**

John Pyle reported on behalf of the assessment panels, that the Montreal Protocol continues to work effectively, noting that ODS levels in the atmosphere have declined, providing co-benefits to climate systems. He described three synthesis report findings on: coupled interactions of stratospheric ozone and climate change; potential climate implications of HFCs, which have low-ODP but high-GWP; and further control of methyl bromide.

Paul Newman presented key findings of the Scientific Assessment Panel (SAP): declining ODS levels; coupled ozone and climate change interactions; persistence of Antarctic and global ozone holes; and influences on global UV changes.

Janet Bornman explained that the Environmental Effects Assessment Panel (EEAP) examined the effects of ozone depletion and climate change on UV radiation in relation to human health, terrestrial and aquatic ecosystems, biogeochemical cycles, air quality, and construction materials. Bornman also noted there would have been three times the amount of UV radiation without the Montreal Protocol. Nigel Paul emphasized that current and future change interactions contribute to the uncertainty of many environmental effects.

The TEAP 2010 Assessment Report was presented jointly by Co-Chairs Ian Rae (CTOC), Miguel Quintero (FTOC), Sergey Kopylov (HTOC), Marta Pizano (MBTOC), Lambert Kuijpers (RTOC), and Helen Tope (MTOC), who reported their respective TOCs. Tope presented the key conclusions, highlighting that: the Montreal Protocol is working, with progress in every sector and many ODS applications phased out world-wide; technology is not yet available for replacement of some ODS uses; 20-35% of present global use of methyl bromide can be replaced with alternatives available today; leapfrog technology is available in some applications; and banked ODS are leaking.

**PRESENTATION BY THE MULTILATERAL FUND**

Chair of the Executive Committee of the MLF, Patrick McInerney (Australia), outlined the work of the Executive Committee from its 62nd-64th meetings (UNEP/OzL.Pro.23/8), noting it had approved 349 projects and activities, equating to over US\$270 million. He also noted, *inter alia*: the establishment of a window for ODS destruction for low-volume consuming countries; and the Committee's progress in agreeing on guidelines for the production sector.

He outlined efforts by the UNDP, UNEP, the UN Industrial Development Organization (UNIDO), and the World Bank to assist in implementation of the Protocol, particularly for Article 5 countries, including in: HCFC phase-outs, assessing new technology developments, progressing ODS destruction projects, and assisting newly appointed ozone officers.

**STATEMENTS BY HEADS OF DELEGATIONS**

SRI LANKA outlined its efforts in planting over one million trees, as well as completely phasing out CFCs. The MALDIVES underscored its efforts to become the first carbon-neutral country, and stressed the need for a mechanism under the MLF to fund projects based on ozone and climate co-benefits.

IRAN highlighted the importance of addressing energy efficiency and GWP issues in ozone projects. INDONESIA highlighted the need to explore incentives for all partners in ODS destruction and stressed that information sharing on alternatives should be complemented by capacity building and technological transfer.

Stating that stable and sufficient financing was necessary for Article 5 countries, CHINA said the upcoming UNFCCC COP may address HFC reduction, and called for increased cooperation between the Protocol and the UNFCCC.

This issue of the *Earth Negotiations Bulletin* © <enb@iisd.org> is written and edited by Melanie Ashton, Catherine Benson, Cherrille Jackson, Delia Paul and Kunbao Xia. The Digital Editor is Angeles Estrada. The Editor is Pamela S. Chasek, Ph.D. <pam@iisd.org>. The Director of IISD Reporting Services is Langston James "Kimo" Goree VI <kimo@iisd.org>. The Sustaining Donors of the *Bulletin* are the Government of the United States of America (through the Department of State Bureau of Oceans and International Environmental and Scientific Affairs), the Government of Canada (through CIDA), the Danish Ministry of Foreign Affairs, the German Federal Ministry for Economic Cooperation and Development (BMZ), the German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU), the European Commission (DG-ENV), and the Italian Ministry for the Environment, Land and Sea. General Support for the *Bulletin* during 2011 is provided by the Norwegian Ministry of Foreign Affairs, the Government of Australia, the Ministry of Environment of Sweden, the New Zealand Ministry of Foreign Affairs and Trade, SWAN International, Swiss Federal Office for the Environment (FOEN), the Finnish Ministry for Foreign Affairs, the Japanese Ministry of Environment (through the Institute for Global Environmental Strategies - IGES), the Japanese Ministry of Economy, Trade and Industry (through the Global Industrial and Social Progress Research Institute - GISPRI) and the United Nations Environment Programme (UNEP). Funding for translation of the *Bulletin* into French has been provided by the Government of France, the Belgium Walloon Region, the Province of Québec, and the International Organization of the Francophone (OIF and IEPF). Funding for translation of the *Bulletin* into Spanish has been provided by the Spanish Ministry of the Environment and Rural and Marine Affairs. The opinions expressed in the *Bulletin* are those of the authors and do not necessarily reflect the views of IISD or other donors. Excerpts from the *Bulletin* may be used in non-commercial publications with appropriate academic citation. For information on the *Bulletin*, including requests to provide reporting services, contact the Director of IISD Reporting Services at <kimo@iisd.org>, +1-646-536-7556 or 300 East 56th St., 11D, New York, NY 10022, United States of America. The ENB Team at COP9/MOP23 can be contacted by e-mail at <melanie@iisd.org>. 代表団の友

JAPAN highlighted its effective and efficient technologies to destroy ODS, and offered to share these with Article 5 countries.

SWITZERLAND underscored the importance of addressing HFCs under the Protocol, cautioning that failure to do so may cause HFC emissions to offset the climate benefits of the Protocol. She also offered to host MOP 24 in Geneva, Switzerland.

The EU outlined its efforts to review its fluorinated gases legislation and to reach ambitious targets, and stressed the need for the Protocol to seize the opportunity to mitigate climate change in a cost-effective manner.

LAOS discussed its efforts in revising national legislation on ozone. CAMBODIA shared its experiences in phasing out halons, CFCs, and CTC. PANAMA emphasized the necessity for increased finance for Article 5 parties for institutional strengthening. INDIA stressed remaining challenges in ozone protection, including sustainable financing. GUINEA noted its intent to ratify the Copenhagen, Montreal, and Beijing Amendments.

KENYA highlighted the need to ensure that solving one environmental problem does not lead to the creation of another. PAKISTAN asked the Montreal Protocol to do whatever possible to cooperate on climate change and emphasized institutional strengthening as essential for the Protocol's continued success. UZBEKISTAN described its successful national program and commitment to the Vienna Convention and Montreal Protocol.

ZIMBABWE described the challenges of safely disposing of ODS seized by customs officials, proposing local or mobile containment mechanisms for seized ODS. IRAQ requested special consideration of the high temperatures recently experienced in West Asia.

COTE D'IVOIRE said it intended to ratify all Protocol Amendments, and offered to host MOP 25. BAHRAIN stressed it requires technology and financial assistance, and objected to addressing HFCs under the Montreal Protocol. PALAU said it will freeze consumption of HCFCs in 2013, contributing to achieving 10% HCFC reduction by 2015. MALAYSIA said HFCs should not be addressed under the Protocol and proposed that the MLF provide sufficient funds for destruction of ODS banks.

The SEYCHELLES requested consistent support for their efforts in meeting their obligations under the Protocol, and supported HFC amendment proposals. Nepal reported on its HPMP.

The REPUBLIC OF SOUTH SUDAN stated its commitment to: maintaining a country free of ODS; ensuring environmental rehabilitation and sustainability; and ratifying the Vienna Convention and the Montreal Protocol.

## PLENARY

In the late afternoon, the preparatory segment reconvened. Michael Church (Grenada) reported on his efforts to extend Marco González's term as Executive Secretary of the Ozone Secretariat, and stated that the Secretary General has extended his tenure by two years, through October 2013.

The EU reported on the consultations on the draft decision on potential areas of focus for the 2014 quadrennial reports of SAT, EEAP, and TEAP (CRP.12), noting several amendments, and parties agreed to forward the draft decision to the high-level segment for adoption.

BURKINA FASO informed parties it has withdrawn its proposed decision on mobilization of financing for the accelerated phase-out of HCFCs in Africa from sources other than MLF (CRP.2).

Parties agreed to forward the draft decision on endorsing a new Co-Chair of the CTOC and a senior expert of the TEAP (UNEP/OzL.Conv.9/3-UNEP/OzL.Pro.23/3, XXIII/[I]) to the high-level segment for its consideration.

## CONTACT GROUPS

**REPLENISHMENT:** Co-chaired by Jozéf Buys (Belgium) and Donnalyn Charles (Saint Lucia), the group met in the morning, afternoon, and in the early evening in a closed session. Parties discussed an overall replenishment range, and in the evening session began narrowing that range.

**ODS ALTERNATIVES:** The Contact Group, co-chaired by Mikkel Sørensen (Denmark) and Leslie Smith (Grenada), discussed and agreed on the draft decision (UNEP/OzL.Conv.9/3-UNEP/OzL.Pro.23/3 XXIII/[J]) requesting TEAP to conduct a joint study with other scientific experts for consideration at the 32nd OEWG, to provide information on alternatives to HCFCs. Discussion focused on whether current use of CFCs as refrigerants in chillers with a long lifespan is included in the definition of "consumption" under countries' Protocol obligations. Parties decided to remove proposed text asking the TEAP to consider availability and market penetration of alternatives, and exclude CFCs from the study. Also deleted were draft preambular paragraphs recognizing and expressing appreciation of a 2005 Special Report produced jointly with the IPCC on safeguarding the ozone layer and the global climate system, and text proposing to study the extent to which the Executive Committee's funding guidelines provide for full incremental costing of the adoption of low-GWP HCFC alternatives.

**PROCESS AGENTS AND FEEDSTOCKS:** The Contact Group, chaired by Blaise Horisberger, (Switzerland) met during the afternoon and finalized the decision on process-agents (CRP.5). The EU then introduced its draft decision on feedstocks (CRP.4) which *inter alia*: calls on parties to refrain from commissioning new production facilities planning to use ODS as feedstocks; requests parties to provide a list of processes in which ODS feedstock is used, and those which have been converted; and requests TEAP to continue its work and provide information on alternatives to ODS for feedstock use. In the discussion, one party asserted that feedstocks were not controlled under the Protocol. Another party suggested refocusing the CRP resolving the discrepancy between reported and observed emissions of ODS, specifically CTC in feedstock uses. Parties agreed to work together informally to draft a revised decision.

**ODS SERVICE TO SHIPS:** In the contact group, co-chaired by Marissa Gowrie (Trinidad and Tobago) and Cornelius Rhein (EU), parties agreed to insert a paragraph requesting the Ozone Secretariat to work with relevant bodies, including the IMO and the WCO, on how these bodies address trade in ODS onboard ships, the use of ODS onboard ships, and to provide a general overview of the framework applied by these bodies to manage relevant activities. Parties debated a reference to calculating consumption of sales of ODS to ships, ultimately deleting the proposed paragraph to retain the focus on gathering information for MOP 24 to take an informed decision.

## IN THE CORRIDORS

Increasing pressure on negotiators on Thursday came to boiling point in the contact group discussion of alternatives to ODS, as negotiators struggled to reach agreement on what seemed to be a simple request to TEAP to undertake another joint study with the Intergovernmental Panel on Climate Change.

As preambular text referring to a previous ozone and climate study was dumped, one delegate noted in exasperation "an almost philosophical issue...of negating history". Others expressed fears that the Protocol is entering dangerous territory, as positions begin to harden and what should be purely information gathering and technical work becomes increasingly politicized.

Simultaneously, the MOP 22 "open" North American Declaration on Low-GWP Alternatives began circulating again, apparently aiming to move signatories from 91 to over 100. While it was generally accepted that it was too late in the COP/MOP for the amendment proposals to gain traction, even proposal proponents wondered if the Declaration could muster enough groundswell by MOP 24 to bear any influence on those so deeply opposed to addressing HFCs under the Protocol.

**ENB SUMMARY AND ANALYSIS:** The *Earth Negotiations Bulletin* summary and analysis of COP 9/MOP 23 will be available on Monday, 28 November 2011 online at: <http://www.iisd.ca/ozone/mop23/>

## SUMMARY OF THE TWENTY-THIRD MEETING OF THE PARTIES TO THE MONTREAL PROTOCOL AND NINTH MEETING OF THE CONFERENCE OF THE PARTIES TO THE VIENNA CONVENTION: 21-25 NOVEMBER 2011

The ninth Conference of the Parties to the Vienna Convention for the Protection of the Ozone Layer and the twenty-third Meeting of the Parties to the Montreal Protocol on Substances that Deplete the Ozone Layer (COP 9/MOP 23) took place in Bali, Indonesia, from 21-25 November 2011. Over 500 participants attended the joint meeting, representing governments, UN agencies, intergovernmental and non-governmental organizations, academia, industry, and the agricultural sector.

COP 9/MOP 23 opened with a preparatory segment from Monday to Wednesday that addressed the COP/MOP's substantive agenda items and related draft decisions. This was followed by a high-level segment, which opened on Wednesday evening and continued Thursday and Friday and adopted the decisions forwarded to it by the preparatory segment. As the preparatory segment did not conclude its work on a number of contentious issues by Wednesday, it reconvened several times during the high-level segment to address outstanding issues, including the replenishment of the Multilateral Fund (MLF).

Despite, in the words of some delegates, being one of the most difficult and tiresome meetings in the Protocol's recent history, COP /MOP 23 concluded late Friday evening with eventual agreement on key issues. COP 9/MOP 23 adopted more than 25 decisions, including: a US\$450 million replenishment of the MLF for the period of 2012-2014; issues related to exemptions; mitigation of ozone depleting substances (ODS) emissions from feedstock and process-agent uses; updating the nomination processes and recusal guidelines for the Technology and Economic Assessment Panel (TEAP); the treatment of ODS used to service ships; and additional information on alternatives.

## 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 were first raised in the early 1970s. At that time, scientists warned that the release of these substances into the atmosphere could deplete the ozone layer, hindering its ability to prevent harmful ultraviolet rays from reaching the Earth. This would adversely affect ocean ecosystems, agricultural productivity and animal populations, and harm humans through higher rates of skin cancers, cataracts, and weakened immune systems. In response to this growing concern, the United Nations Environment Programme (UNEP) convened a conference in March 1977 that adopted a World Plan of Action on the Ozone Layer and established a Coordinating Committee to guide future international action on ozone protection.

**VIENNA CONVENTION:** In May 1981, the UNEP Governing Council launched negotiations on an international agreement to protect the ozone layer and, in March 1985, the Vienna Convention for the Protection of the Ozone Layer was adopted. The Convention called for cooperation on monitoring, research and data exchange, but did not impose obligations to reduce the use of ODS. The Convention now has 196 parties.

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**MONTREAL PROTOCOL:** In September 1987, efforts to negotiate binding obligations to reduce the use of ODS led to the adoption of the Montreal Protocol on Substances that Deplete the Ozone Layer. The Protocol introduced control measures for some CFCs and halons for developed countries (non-Article 5 parties). Developing countries (Article 5 parties) were granted a grace period allowing them to increase their ODS use before taking on commitments. The Protocol currently has 196 parties.

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

**LONDON AMENDMENT AND ADJUSTMENTS:**

Delegates to the second Meeting of the Parties (MOP 2), which took place in London, UK, in 1990, tightened control schedules and agreed to add ten more CFCs to the list of ODS, as well as carbon tetrachloride (CTC) and methyl chloroform. To date, 196 parties have ratified the London Amendment. MOP-2 also established the MLF, which meets the incremental costs incurred by Article 5 parties in implementing the Protocol's control measures and finances clearinghouse functions, including technical assistance, information, training, and the costs of the MLF Secretariat. The Fund is replenished every three years, and has received pledges of over US\$2.8 billion since its inception.

**COPENHAGEN AMENDMENT AND ADJUSTMENTS:**

At MOP 4, in Copenhagen, Denmark in 1992, delegates tightened existing control schedules and added controls on methyl bromide, hydrobromofluorocarbons, and hydrochlorofluorocarbons (HCFCs). MOP 4 also agreed to enact non-compliance procedures and to establish an Implementation Committee (ImpCom). The ImpCom examines cases of possible non-compliance by parties, and makes recommendations to the MOP aimed at securing full compliance. To date, 194 parties have ratified the Copenhagen Amendment.

**MONTREAL AMENDMENT AND ADJUSTMENTS:**

At MOP 9, held in Montreal, Canada, in 1997, delegates agreed to a new licensing system for the import and export of ODS, in addition to tightening existing control schedules. They also agreed to ban trade in methyl bromide with non-parties to the Copenhagen Amendment. To date, 185 parties have ratified the Montreal Amendment.

**BEIJING AMENDMENT AND ADJUSTMENTS:**

At MOP 11, held in Beijing, China, in 1999, delegates agreed to controls on bromochloromethane and additional controls on HCFCs, and to reporting on methyl bromide for quarantine and pre-shipment (QPS) applications. At present, 172 parties have ratified the Beijing Amendment.

**MOP 15 AND FIRST EXTRAORDINARY MOP:** MOP 15, held in Nairobi, Kenya, in 2003, resulted in decisions on issues including the implications of the entry into force of the Beijing Amendment. However, disagreements surfaced over exemptions allowing the use of methyl bromide beyond 2004 for critical uses where no technically or economically feasible alternatives were available. Delegates could not reach agreement and agreed to convene an "extraordinary" MOP. The first Extraordinary Meeting of the Parties to the Montreal Protocol (ExMOP 1)

took place in March 2004, in Montreal, Canada. Parties agreed to critical-use exemptions (CUEs) for methyl bromide for 2005 only. The introduction of a "double-cap" concept distinguishing between old and new production of methyl bromide was central to this compromise. Parties agreed to a cap on new production of 30% of parties' 1991 baseline levels, meaning that where the capped amount was insufficient for approved critical uses in 2005, parties were required to use existing stockpiles.

**MOP 16 AND EXMOP 2:** MOP 16 took place in Prague, the Czech Republic, in 2004. Work on methyl bromide exemptions for 2006 was not completed and parties decided to hold a second ExMOP. ExMOP 2 was held in July 2005, in Montreal, Canada. Parties agreed to supplementary levels of CUEs for 2006. Under this decision, parties also agreed that: CUEs allocated domestically that exceed levels permitted by the MOP must be drawn from existing stocks; methyl bromide stocks must be reported; and parties must "endeavor" to allocate CUEs to the particular use categories specified in the decision.

**COP 7/MOP 17:** MOP 17 was held jointly with the seventh Conference of the Parties to the Vienna Convention (COP 7) in Dakar, Senegal in December 2005. Parties approved essential-use exemptions for 2006 and 2007, supplemental CUEs for 2006 and CUEs for 2007, and production and consumption of methyl bromide in non-Article 5 parties for laboratory and analytical critical uses. Other decisions included a US\$470.4 million replenishment of the MLF for 2006-2008, and agreement on terms of reference for a feasibility study on developing a monitoring system for the transboundary movement of controlled ODS.

**MOP 18:** MOP 18 took place in New Delhi, India from 30 October - 3 November 2006. Parties adopted decisions on, *inter alia*: future work following the Ozone Secretariat's workshop on the Special Report of the Intergovernmental Panel on Climate Change (IPCC) and the TEAP; difficulties faced by some Article 5 parties manufacturing CFC-based metered dose inhalers (MDIs); treatment of stockpiled ODS relative to compliance; and a feasibility study on developing a system for monitoring the transboundary movement of ODS.

**MOP 19:** MOP 19 took place in Montreal, Canada in September 2007. Parties agreed to the accelerated phase-out of HCFCs, and also adopted decisions on: essential-use nominations and other issues arising out of the 2006 reports of the TEAP; critical-use nominations for methyl bromide; and monitoring transboundary movements and illegal trade in ODS.

**COP 8/MOP 20:** MOP 20 was held jointly with COP 8 of the Vienna Convention in Doha, Qatar in November 2008. Parties agreed to replenish the MLF with US\$490 million for 2009-2011 and adopted other decisions concerning, *inter alia*: the environmentally sound disposal of ODS; approval of 2009 and 2010 CUEs for methyl bromide; and compliance and reporting issues. This meeting was the Protocol's first paperless meeting.

**MOP 21:** MOP 21 took place in Port Ghalib, Egypt, from 4-8 November 2009 and adopted decisions on: alternatives to HCFCs; institutional strengthening; essential uses; environmentally sound management of banks of ODS; methyl bromide; budget; and data and compliance issues. Delegates considered a proposal to amend the Montreal Protocol to include hydrofluorocarbons (HFCs), but this was not agreed.

**MOP 22:** MOP 22 took place in Bangkok, Thailand, from 8-12 November 2010 and adopted decisions on, *inter alia*: the terms of reference for the TEAP study on the MLF replenishment and for the evaluation of the financial mechanism; and assessment of technologies for ODS destruction. Delegates considered, but did not agree to, two proposals to amend the Montreal Protocol to address HFCs, one submitted by the US, Mexico, and Canada, and another submitted by the Federated States of Micronesia.

**CURRENT ODS CONTROL SCHEDULES:** Under the amendments to the Montreal Protocol, non-Article 5 parties were required to phase out production and consumption of: halons by 1994; CFCs, CTC, hydrobromochlorofluorocarbons and methyl chloroform by 1996; bromochloromethane by 2002; and methyl bromide by 2005. Article 5 parties were required to phase out production and consumption of hydrobromochlorofluorocarbons by 1996 and bromochloromethane by 2002. Article 5 parties must still phase out: production and consumption of CFCs, halons and CTC by 2010; and methyl chloroform and methyl bromide by 2015. Under the accelerated phase-out of HCFC adopted at MOP 19, HCFC production and consumption by Article 2 countries was to be frozen in 2004 and phased-out by 2020, while in Article 5 parties, HCFC production and consumption is to be frozen by 2013 and phased-out by 2030 (with interim targets prior to those dates, starting in 2015 for Article 5 parties). There are exemptions to these phase-outs to allow for certain uses lacking feasible alternatives.

## COP 9/MOP 23 REPORT

### PREPARATORY SEGMENT

On Monday morning, Marco González, Executive Secretary, Ozone Secretariat, opened the joint meeting and described the accomplishments of the Montreal Protocol, *inter alia*: full compliance in phasing out CFCs and halons by over 95% of the parties in 2010; and the phase-out of 98% of all substances controlled under the Protocol. He urged parties to continue their efforts and commitments, and underscored linkages with climate change and sustainable development, noting that one treaty and one group alone cannot protect the complex global environment.

The Indonesian Minister for Environment, Balthasar Kambuaya, opened MOP 23, and introduced the draft Bali declaration, as a way forward for the transition towards low global warming potential alternatives (GWP) to ODS.

The Preparatory Segment was co-chaired by Gudi Alkemade (the Netherlands) and Ndiaye Cheikh Sylla (Senegal). Co-Chair Alkemade introduced the draft agenda (UNEP/OzL.Conv.9/1-UNEP/OzL.Pro.23/1). In response, Burkina Faso proposed consideration of its draft decision to mobilize funds other than the MLF to accelerate the phase-out of HCFCs in Africa, and delegates agreed to consider it under other matters. Indonesia proposed, and parties agreed, to discuss consider a Bali declaration, under other matters.

India, supported by China, Brazil and others, proposed deleting the agenda item on the two proposals to amend the Montreal Protocol to include HFCs, stating that HFCs are outside the mandate of the Protocol. Highlighting that the amendment proposals on HFCs were submitted in accordance with correct procedure six months in advance of MOP 23, the

US, supported by the European Union (EU) and Switzerland, said this issue should be discussed in a contact group. The EU and Canada also noted that at MOP 22 in Bangkok, 91 parties signed a declaration on the global transition away from HCFCs and CFCs to environmentally-sound alternatives, which declares the signatories intent to pursue further action under the Montreal Protocol aimed at transitioning the world to environmentally sound alternatives to HCFCs and CFCs. Burkina Faso, Morocco, Nigeria and the Dominican Republic supported discussion of this issue in a contact group. The Federated States of Micronesia underscored that the increased production of HFCs is being driven by the Protocol's agreement to phase out HCFCs.

In response to the interventions, Co-Chair Alkemade proposed that the issue remain on the agenda for a "timed discussion." She said concerns of all parties would be reflected in the meeting's report. Delegates agreed and adopted the agenda.

Throughout COP 9/MOP 23, delegates discussed agenda items and corresponding draft decisions in plenary, contact groups, and bilateral consultations. Rather than addressing agenda items in numerical order, issues likely to lead to the establishment of contact groups were addressed first, in an effort to ensure as little overlap between contact groups as possible. Draft decisions were approved by the preparatory segment and forwarded to the high-level segment for adoption. The description of the negotiations, the summary of the decisions, and other outcomes can be found below.

### HIGH-LEVEL SEGMENT

On Wednesday afternoon, Anak Agung Alit Sastrawan, representing the Governor of Bali, welcomed delegates and said that ODS are still used in Bali due to lack of widespread awareness.

Noting that the Protocol is nearing its 25th year of implementation, Marco González, Executive Secretary, Ozone Secretariat, underscored that the Protocol is grounded in core sustainable development principles, including the precautionary principle, and common but differentiated responsibilities. González reflected on the Protocol's successful "start and strengthen" approach, highlighting numerous adjustments and amendments to strengthen the Protocol. Acknowledging the economic challenges faced by many parties, González encouraged parties to approach the MLF replenishment negotiations with a sense of understanding and compromise.

Indonesian Minister of Environment Balthasar Kambuaya opened the high-level segment of the meeting with a call to delegates to ensure that phase-out programmes for ODS are comprehensively and effectively implemented, emphasizing the linkages between measures needed for recovery of the ozone layer as well as reduction of greenhouse gas emissions and low-carbon development.

The high-level segment continued on Thursday where COP 8 President Anura Priyadharshana Yapa, Minister of Environment, Sri Lanka, emphasized the cooperative nature of participants in contributing to the successful implementation of the Montreal Protocol. He stressed the need for increased funding of research activities, citing Sri Lanka's complete phase-out of methyl bromide in 2006 in its tea plantations, as a result of research into alternatives.

MOP 22 President Deborah Owens (UK) hoped delegates would negotiate in a spirit of compromise and consensus. On replenishment, she stressed the importance of sending positive signals to Article 5 countries to sustain their efforts to phase out HCFCs and other remaining ODS.

COP 9 elected by acclamation Mikheil Tushishvili (Georgia) as President, Alain Wilmart (Belgium), Marissa Gowrie (Trinidad and Tobago), and Ezzat Agaiby (Egypt) as Vice Presidents, and Arief Yuwono (Indonesia) as Rapporteur.

MOP 23 elected by acclamation Sianga Abilio (Angola) as President, Azra Rogovic-Grubic (Bosnia and Herzegovina) Javier Ernesto Camargo Cubilos (Colombia), and Arief Yuwono (Indonesia) as Vice Presidents, and Bernard Made (Canada) as Rapporteur. Delegates also adopted the agenda (UNEP/OzL.Conv.9/1-UNEP/OzL.Pro.23/1).

#### PRESENTATIONS BY THE ASSESSMENT PANELS:

John Pyle (Scientific Assessment Panel) reported on behalf of the assessment panels that the Montreal Protocol continues to work effectively, noting that ODS levels in the atmosphere have declined, providing co-benefits to climate systems. He described three synthesis report findings on: coupled interactions of stratospheric ozone and climate change; potential climate implications of HFCs, which have low-ozone-depleting potential but high-GWP; and further control of methyl bromide.

**Scientific Assessment Panel:** Paul Newman presented key findings of the Scientific Assessment Panel (SAP), including: declining ODS levels; coupled ozone and climate change interactions; persistence of Antarctic and global ozone holes; and influences on global ultraviolet changes.

**Environmental Effects Assessment Panel:** Janet Bornman explained that the Environmental Effects Assessment Panel (EEAP) examined the effects of ozone depletion and climate change on ultraviolet radiation in relation to human health, terrestrial and aquatic ecosystems, bio-geochemical cycles, air quality, and construction materials. Bornman also noted there would have been three times the amount of ultraviolet radiation without the Montreal Protocol. Nigel Paul emphasized that current and future change interactions contribute to the uncertainty of many environmental effects.

**Technology and Economic Assessment Panel (TEAP):** The TEAP 2010 Assessment Report was presented jointly by Co-Chairs Ian Rae (Chemical Technical Options Committee (CTOC)), Miguel Quintero (Foam TOC), Sergey Kopylov (Halons TOC), Marta Pizano (Methyl Bromide TOC), Lambert Kuijpers (Refrigeration TOC), and Helen Tope (Medical TOC), who reported the findings of their respective TOCs. Tope presented the key conclusions, highlighting that: the Montreal Protocol is working, with progress in every sector and many ODS applications phased-out world-wide; technology is not yet available for replacement of some ODS uses; 20-35% of present global use of methyl bromide can be replaced with alternatives available today; leapfrog technology is available in some applications; and banked ODS are leaking.

#### PRESENTATION BY THE MULTILATERAL FUND ON THE WORK OF THE EXECUTIVE COMMITTEE

**(EXCOM):** Chair of the ExCom of the MLF, Patrick McInerney (Australia), outlined the work of the ExCom from its 62nd-64th meetings (UNEP/OzL.Pro.23/8), noting it had approved 349

projects and activities, equating to over US\$270 million. He also noted, *inter alia*: the establishment of a window for ODS destruction for low-volume consuming countries; and the ExCom's progress in agreeing on guidelines for the production sector.

He outlined efforts by the UN Development Programme, UN Environment Programme, the UN Industrial Development Organization and the World Bank to assist in implementation of the Protocol, particularly for Article 5 countries, including in: HCFC phase-outs, assessing new technology developments, progressing ODS destruction projects, and assisting newly appointed ozone officers.

**COUNTRY STATEMENTS:** Sri Lanka outlined its efforts in planting over one million trees, as well as completely phasing out CFCs. The Maldives underscored its efforts to become the first carbon-neutral country, and stressed the need for a mechanism under the MLF to fund projects based on ozone and climate co-benefits.

Iran highlighted the importance of addressing energy efficiency and GWP issues in ozone projects. Indonesia highlighted the need to explore incentives for all partners in ODS destruction and stressed that information sharing on alternatives should be complemented by capacity building and technological transfer. China said the upcoming UN Framework Convention on Climate Change COP may address HFC reduction, and called for increased cooperation between the Protocol and the United Nations Framework Convention on Climate Change (UNFCCC).

Japan highlighted its effective and efficient technologies to destroy ODS, and offered to share these with Article 5 countries. Switzerland underscored the importance of addressing HFCs under the Protocol, cautioning that failure to do so may cause HFC emissions to offset the climate benefits of the Protocol. She also offered to host MOP 24 in Geneva, Switzerland. The EU outlined its efforts to review its fluorinated gases legislation, and stressed the need for the Protocol to seize the opportunity to mitigate climate change in a cost-effective manner.

Laos discussed its efforts in revising national legislation on ozone. Cambodia shared its experiences in phasing out halons, CFCs and CTC. Panama emphasized the necessity for increased finance for Article 5 parties for institutional strengthening. India stressed remaining challenges in ozone protection, including sustainable financing. Guinea noted its intent to ratify the Copenhagen, Montreal and Beijing Amendments.

Kenya highlighted the need to ensure that solving one environmental problem does not lead to the creation of another. Pakistan asked the Montreal Protocol to do whatever possible to cooperate on climate change and emphasized institutional strengthening as essential for the Protocol's continued success. Uzbekistan described its successful national programme and commitment to the Vienna Convention and Montreal Protocol.

Zimbabwe described the challenges of safely disposing of ODS seized by customs officials, proposing local or mobile containment mechanisms for seized ODS. Iraq requested special consideration of the high temperatures recently experienced in West Asia.

Côte d'Ivoire said it intended to ratify all Protocol Amendments, and offered to host MOP 25. Bahrain stressed it requires technology and financial assistance, and objected to

addressing HFCs under the Montreal Protocol. Palau said it will freeze consumption of HCFCs in 2013, contributing to achieving 10% HCFC reduction by 2015. Malaysia said HFCs should not be addressed under the Protocol and proposed that the MLF provide sufficient funds for destruction of ODS banks.

The Seychelles requested consistent support for their efforts in meeting their obligations under the Protocol, and supported HFC amendment proposals. Nepal reported on its HCFC Phase-Out Management Plan (HPMP).

The Republic of South Sudan stated its commitment to: maintaining a country free of ODS; ensuring environmental rehabilitation and sustainability; and ratifying the Vienna Convention and the Montreal Protocol. Mozambique noted its vulnerability to climate change impacts, and desire to phase out HFCs in developing countries. Mongolia explained that demand for HFCs continues to grow, but that his country is taking measures to phase them down. Bangladesh underscored that alternatives should be ozone and climate friendly, and not lead to further phase-out activities.

The International Institute of Refrigeration committed to assisting in Protocol implementation. Greenpeace said the lack of progress on HFCs was regrettable, citing the manipulative influence of the chemical industry.

#### **COP 9/MOP 23 OUTCOMES AND DECISIONS**

**FINANCIAL REPORTS AND BUDGETS OF THE TRUST FUNDS FOR THE VIENNA CONVENTION AND THE MONTREAL PROTOCOL:** On Monday, Preparatory Segment Co-Chair Ndiaye Cheikh Sylla (Senegal) introduced this item, and Canada, Japan, Switzerland, Sweden, Germany, the Gambia, France, Mexico, the US and Denmark volunteered to participate in a budget committee, chaired by Alessandro Giuliani Peru (Italy).

The budget committee reported to preparatory segment on Friday that it had completed its work and parties agreed to forward the draft decision (UNEP/OzL.Conv.9/CRP.3) to the high-level segment, where it was adopted on Friday.

**Final Decision:** In the decision (UNEP/OzL.Conv.9/CRP.3), the COP decides to:

- take note with appreciation of the financial statement of the Trust Fund for the biennium 2010-2011 and the report on the actual expenditures for 2010 as compared to the approvals for that year;
- approve the 2012 budget for the Trust Fund in the amount of US\$723,063, the budget for 2013 in the amount of US\$735,622, and the budget for 2014 in the amount of US\$1,280,311, as set out in Annex I to the report of the COP 9 of the Vienna Convention;
- authorize the Secretariat to draw down the amounts of US\$120,063 in 2012, US\$132,622 in 2013, and US\$677,311 in 2014, respectively, from the Fund balance for the purpose of reducing that balance;
- ensure, as a consequence of the drawdowns, that the contributions to be paid by the parties amount to US\$603,000 for each of the years 2012, 2013 and 2014 as set out in Annex II to the report of COP 9 to the Vienna Convention; and
- urge all parties to pay their outstanding contributions as well as their future contributions promptly and in full.

**STATUS OF RATIFICATIONS:** The Secretariat introduced this item on Monday and parties requested a draft decision be prepared for consideration in the high-level segment, where it was adopted on Friday.

**Final Decision:** The decision on ratification of the Vienna Convention, the Montreal Protocol and the London, Copenhagen, Montreal and Beijing amendments to the Montreal Protocol (UNEP/OzL.Conv.9/L.2-UNEP/OzL.Pro.23/L.2,I), the COP notes the number of countries who have ratified the Vienna Convention and the Montreal Protocol and urges states who have not yet done so to ratify, approve, or accede to the amendments to the Montreal Protocol, highlighting that universal participation is necessary to ensure the protection of the ozone layer.

**REPLENISHMENT OF THE MLF: Supplemental report of the TEAP replenishment task force:** On Monday, TEAP members Shiqiu Zhang, Lambert Kuijpers and Daniel Colbourne presented the supplemental report of the TEAP replenishment task force for 2012-2014. The total required funding is estimated at US\$460-540 million. The study is based on: HPMPs approved by the MLF ExCom; six scenarios applied for not yet approved HPMPs; and production closure funding. Findings include, *inter alia*: 86 parties have submitted 2010 baseline data while 59 parties have not; production closure funding ranges from US\$193-218 million; HCFC feedstock production doubled every three years during the last decade; and institutional strengthening costs, using a 3% inflation rate, would increase by \$1.34 million.

China stressed that funding levels should be based on needs of developing countries, calling on parties to recognize the need for “efficient and sustained funding” for compliance. Canada requested indication of replenishment levels based on different scenarios such as: funding of 10% of a production baseline, “exclusion of funding for swing plants,” and redirection of some HCFCs to feedstock uses. Poland, on behalf of 27 EU member states, expressed concern with the calculations regarding the funding requirement for the triennium 2012-2014 in the production sector in the TEAP supplement report. Australia committed to a successful replenishment, taking into account the current economic situation. Highlighting financial difficulties faced by non-Article 5 parties, Japan stressed the need to fund the MLF through both traditional funding sources and from other sources including Article 5 parties.

Co-Chair Sylla proposed, and delegates agreed, to establish a contact group on replenishment with Jozef Buys (Belgium) and Donnalyn Charles (Saint Lucia) as Co-Chairs to continue discussion.

On Tuesday, the Replenishment Contact Group held a meeting open to all parties. The group discussed its composition and decided to have 11 members from Article 5 parties and 11 from non-Article 5 parties.

The TEAP presented a table on all the non-HCFC production elements of the replenishment for 2012-2014 with a total funding requirement of US\$316.86-339.75 million, which it reported reflected recent ExCom decisions. TEAP also presented a table on production sector scenarios and funding. Parties discussed each line of these two tables, and had agreement on some of the budget lines, but differed on others with Article 5 parties favoring higher figures and non-Article 5 parties insisting on



lower figures. Based on the discussions, TEAP revised these tables twice.

With the understanding that these budget lines would be decided by the ExCom, the group discussed the total budget for the MLF for 2012-2014. On Thursday and Friday, parties discussed an overall replenishment range between US\$400-490 million, with non-Article 5 parties supporting the lower figure and Article 5 parties insisting on the higher figure. Article 5 parties argued that in order to meet the target of freezing HCFC consumption by 2013 and reducing it by 10% by 2015, the funding provided should not be less than the previous period. Non-Article 5 parties insisted that they could not support a higher figure, considering the current economic situation.

On Friday at 7:30 pm, Co-Chair Charles reported to the preparatory segment plenary that the Group had discussed a range of the total figure between US\$400-490 million, and had not reached consensus. She said that the Co-Chairs had proposed the figure of US\$450 million as a compromise. Malaysia said Article 5 parties had proposed US\$470 million. Nigeria, for the African Group, and Mexico stated due to current economic realities, they could accept the figure of US\$450 million, although it might pose some difficulties for them to meet the compliance targets for HCFC phase-out. Plenary Co-Chair Sylla urged parties to continue efforts to reach consensus. The Contact Group then resumed its meeting.

At 10:30 pm, Co-Chair Charles reported to the plenary that the group had agreed to US\$450 million. The US said that it was a remarkable achievement in this difficult time, and it remained committed to the Montreal Protocol. Canada said this was the most difficult replenishment negotiation they had experienced, and appealed to parties to work together to achieve the goal of the Protocol. China, India, and Brazil stated they had mixed feelings towards this result, noting that the figure is the lowest in history, and hoped it would not become a precedent. Brazil said they were not ready to take on any new commitments under such circumstances.

The preparatory segment then forwarded the draft decision on 2012-2014 replenishment of the MLF to the high-level segment, where it was adopted, without amendment.

**Final Decision:** In the decision (UNEP/OzL.Pro.23/CRP.24), the MOP decides:

- to adopt a budget for the MLF for 2012-2014 of US\$450 million on the understanding that US\$34.9 million of that budget will be provided from anticipated contributions due to the MLF and other sources for the triennium, and that US\$15.1 million will be provided from interest accruing to the Fund during the 2012-2014 triennium;
- to adopt the scale of contributions for the MLF based on a replenishment of US\$133,333,334 for 2012, US\$133,333,333 for 2013, and US\$133,333,333 for 2014; and
- that the ExCom should take action to ensure, that the whole of the budget for 2012-2014 is committed by the end of 2014, and that non-Article 5 parties should make timely payments.

**Extension of the fixed-exchange-rate mechanism:** On Monday in plenary, this issue was open for discussion, but no comments were made, and parties agreed to forward the draft decision on extending a provision for the fixed-exchange-rate

mechanism to the high-level segment. It was adopted in the high-level segment on Friday.

**Final Decision:** In the decision (UNEP/OzL.Conv.9/L.2-UNEP/OzL.Pro.23/L.2,III.[K]), parties decided:

- to direct the treasurer to extend the fixed-exchange-rate mechanism to the period 2012-2014;
- that parties choosing to pay their contributions to the MLF in national currencies will calculate their contributions based on the average UN exchange rate for the six-month period commencing 1 January 2011;
- that parties not choosing to pay in national currencies pursuant to the fixed-exchange-rate mechanism will continue to pay in US dollars; and
- that no party should change the currency selected for its contribution in the course of the triennium 2012-2014.

**ISSUES RELATED TO EXEMPTIONS FROM ARTICLE 2 OF THE MONTREAL PROTOCOL: Nominations for 2012 and 2013 for essential-use exemptions:** On Monday,

Bangladesh, supported by the US, requested approval of its nomination of metered-dose inhalers (MDIs). Canada urged parties with essential-use exemptions to use stockpiled CFCs, and recommended speeding up transition to alternatives. China responded that such transitions take time, noting administrative and other barriers. Co-Chair Sylla invited the MTOC, China, and other interested parties to submit a report to the plenary. Marco González, Executive Secretary, referred to Mexico's agreement to offset its requested exemption for pharmaceutical grade CFC-12 for production of MDIs by destruction of CFC-11.

On Wednesday, China introduced a draft decision on essential-use nominations for controlled substances for 2012, and on Friday evening, a consensus version (UNEP/OzL.Pro.23/CRP.13/Rev.1), noting agreement that Bangladesh will not apply for essential-use nominations beyond 2012.

**Final Decision:** Parties adopted UNEP/OzL.Pro.23/CRP.13/Rev.1, in which the MOP authorizes the levels of production and consumption for 2012 necessary to satisfy essential uses of CFCs for metered-dose inhalers, and requesting the nominating parties—China, Bangladesh, Pakistan and the Russian Federation—to supply information to the MTOC to enable assessment. They also encouraged parties to source from stockpiles where possible, consider domestic regulations, and speed up transition to alternatives. Parties approved Mexico's application for emergency essential use of six metric tonnes of CFC-12 for MDIs in 2011-2012.

**Essential-use exemption for CFC-113 for aerospace applications in the Russian Federation:** On Monday, the Russian Federation offered to meet with the EU and the US to further discuss its application and technical issues regarding alternatives. On Friday morning, the EU reported slow progress, while Co-Chair Alkemade urged parties to reach a conclusion. After further consultation parties announced they had reached agreement.

**Final Decision:** Parties adopted the decision (UNEP/OzL.Pro.23/CRP.23/Rev.2), in which the MOP: authorizes an essential-use exemption for the production and consumption in 2012 of 100 metric tonnes of CFC-113 in the Russian Federation for applications in its aerospace industry, while requesting it to consider importing the required substance from available

global stocks, and to provide a final phase-out plan in their next essential-use nomination.

**Nominations for 2012 and 2013 CUEs:** On Monday, MBTOC Co-Chairs Mohamed Besri (Morocco), Michelle Marcotte (Canada), Marta Pizano (Colombia) and Ian Porter (Australia) presented trends in methyl bromide critical-use nominations and the MBTOC's recommendations, highlighting reductions and possible phase-out by 2015.

Porter sought guidance from parties for the MBTOC's future work, considering the reduction in nominations, resource limitations, and the possibility of holding meetings electronically. Cuba and Australia requested more information about criteria and methodology used in the approval process, while the EU, Canada and Switzerland raised concerns about process.

On QPS, Jordan proposed that the MLF support a project on control of methyl bromide in QPS. The MBTOC Co-Chairs welcomed research trials by parties, noting that 30-35% of present use of methyl bromide for QPS can be replaced by existing alternatives.

The US expressed concern at MBTOC's reduction of US nominations, noting MBTOC has been unable to reach consensus. The Natural Resources Defense Council (NRDC) noted that the US continues to use methyl bromide for non-critical uses.

On Friday morning, the US submitted UNEP/OzL.Pro.23/CRP.9 on critical use nominations by Australia, Canada, Japan and the US containing reduced figures for the US nomination: from 531,737 to 461,186 metric tonnes for strawberry runners, and from 632,877 to 562,326 metric tonnes for total production and consumption of methyl bromide. He stressed that the US did not concur with the MBTOC's decision, and reserved the right to introduce an additional submission next year.

**Final Decision:** Parties adopted UNEP/OzL.Pro.23/CRP.9 on critical use exemptions for methyl bromide in 2013 in several categories including strawberry runners, ornamentals, and mills and food processing structures, requesting the TEAP to analyze the impact of national, subnational and local regulations and law on the potential use of alternatives, and to include "members with relevant expertise" in developing the MBTOC's recommendations.

**QPS uses of methyl bromide:** This item was introduced in plenary on Tuesday and then discussed in a contact group throughout the week.

On Wednesday, in a contact group chaired by Alice Gaustad (Norway), parties discussed the draft decision (UNEP/OzL.Pro.23/CRP.6). Parties clarified the type of data recorded and collated on current usage of methyl bromide for phytosanitary purposes and agreed to include this in the draft decision. Parties also agreed to include reference to the process of collating data on quantities of methyl bromide used for QPS, descriptions of any articles fumigated, and to distinguish between methyl bromide used on import or export commodities. The group discussed and agreed to include references to the sharing of information on alternatives approved by their respective national plant protection organizations, with parties to the International Plant Protection Convention (IPPC). They noted the importance of disseminating accurate data.

The draft decision was presented to plenary on Friday and forwarded to the high-level segment, where it was adopted without amendment.

**Final Decision:** In the decision on QPS uses of methyl bromide (UNEP/OzL.Pro.23/CRP.6), the MOP decides to:

- encourage parties to follow the recommendation of the Commission on Phytosanitary Measures that data on current usage of methyl bromide as a phytosanitary measure should be accurately recorded and collated;
- urge parties to comply with the reporting requirements of Article 7 and to provide data on the amount of methyl bromide used for QPS applications annually and to invite parties to supplement such data by reporting to the Secretariat information on methyl bromide uses recorded and collated;
- invite parties to share information on alternatives approved by their national plant protection organizations with the other parties to the IPPC;
- request parties to ensure that their national plant, animal, environmental, health, and stored product regulations do not require that consignments be treated with methyl bromide twice (both before shipment and upon arrival) unless a risk of an infestation with a targeted pest has been identified;
- request the TEAP to provide, for the Open-Ended Working Group (OEWG), a report determining for each region the trend in methyl bromide consumption for QPS uses or any significant variation in consumption over the past years, and providing an explanation for trends and variations; and
- request the Secretariat to consult the IPPC Secretariat on how to ensure and improve the exchange of information on methyl bromide uses and alternative treatments between the Convention and Montreal Protocol bodies and on how to facilitate access to such information by national authorities and private organizations, and to report to OEWG 32.

**Global laboratory and analytical-use exemptions:** On Tuesday, China, Australia, the EU and the US put forward a draft decision on global laboratory and analytical-use exemption (UNEP/OzL.Pro.23/CRP.14), addressing the difficulty faced by parties in employing alternatives, and proposing a grace period until 31 December 2014.

**Final Decision:** In the decision (UNEP/OzL.Conv.9/L.2-UNEP/OzL.Pro.23/L.2,III.[M]), parties agreed to: a grace period for individual parties using carbon tetrachloride (CTC) for the testing of oil, grease, and total petroleum hydrocarbons in water, requesting parties to report on such use; and requested the TEAP to review the reports, advise on transition to non-ODS, and continue reviewing international standards that mandate the use of ODS.

**Sustained mitigation of ODS emissions from feedstock and process-agent uses:** This issue was addressed in plenary on Tuesday and in a contact group on Wednesday, Thursday and Friday. On Tuesday Co-Chair Alkemade introduced a TEAP study on the feasibility of reducing or eliminating ODS emissions from feedstock and process-agent uses, highlighting, *inter alia*: a lack of viable alternatives for ODS use in feedstocks; uncertain estimates of feedstock emissions; and inconsistencies between carbon tetrachloride uses and emissions. The EU described intersessional progress, resulting in draft decisions on feedstocks (UNEP/OzL.Pro.23/CRP.4) and

process agents (UNEP/OzL.Pro.23/CRP.5). The US emphasized intersessional efforts to resolve top-down and bottom-up measurements of carbon tetrachloride. The EU, supported by the US, Australia and Canada, but opposed by India, proposed creating a contact group. A contact group, chaired by Blaise Horisberger (Switzerland), was established.

On Wednesday the Contact Group met and the EU introduced its proposed decision on process agents (UNEP/OzL.Pro.23/CRP.5), noting that Tables A and B in the draft decision's annex, which the draft decision seeks to update, contain lists of uses of controlled substances as process agents and limits for process agents uses.

One party expressed concern about the classification of its use of CTC in vinyl chloride monomer (VCM) production for process agent purposes, arguing that it is actually used as feedstock. One party highlighted that the only difference in treatment of controlled substances considered as process agents and feedstocks was that the Protocol requires emission reporting for process agents. After protracted discussion, parties agreed to ask TEAP to assess the situation and for the issue to be considered again at MOP 24. In the interim, it was agreed that the party's CTC use in VCM would be classified as a feedstock.

On Thursday, the EU introduced its draft decision on feedstocks (UNEP/OzL.Pro.23/CRP.4), which *inter alia*: calls on parties to refrain from commissioning new production facilities planning to use ODS as feedstocks; and requests TEAP to continue its work and provide information on alternatives to ODS for feedstock use. In the discussion, one party asserted that feedstocks were not controlled under the Protocol. Another party suggested refocusing the draft decision on resolving the discrepancy between reported and observed emissions of ODS, specifically CTC in feedstock uses. Parties agreed to work together informally to draft a revised decision.

On Friday, Horisberger reported to the plenary that the Contact Group had reached consensus on a revised draft decision (UNEP/OzL.Pro.23/CRP.4/Rev.1), and delegates forwarded it, together with the draft decision on process agents (UNEP/OzL.Pro.23/CRP.5/Rev.1) to the high-level segment for adoption, where they were adopted without amendment.

**Final Decisions:** In the decision on process agents (UNEP/OzL.Pro.23/CRP.5/Rev.1), the MOP, decides to:

- update Table A (list of controlled substances) and Table B (emission limits), as set out in the annex to the present decision;
- urge those parties yet to submit information on process agent uses to do so as a matter of urgency, and no later than 31 March 2012;
- remind parties that have provided information in accordance with decision XXI/3 indicating that they have process agent uses to provide further information, in particular on controlled substances and process agent applications in accordance with decision X/14;
- urge parties listed in Table B to revisit their maximum values and to report to the TEAP on how those values might be reduced, particularly in view of the process agent uses that have ceased;
- request TEAP, as further uses cease in the future, to consider corresponding reductions in make-up or consumption

and maximum emissions accordingly in future proposals concerning Table B, and to provide OEWG 32 a summary report updating its findings on process agent uses, taking into account relevant information from previous investigations;

- revisit the use of controlled substances as process agents at OEWG 33;
- consider the use of CTC for the production of VCM for the purpose of calculated levels of production and consumption, on an exceptional basis, to be a feedstock use until 31 December 2012; and
- request the TEAP to review the use of CTC for the production of VCM process in India and other parties, if applicable, and to report on the results in its 2012 progress report.

In the decision on feedstocks (UNEP/OzL.Pro.23/CRP.4/Rev.1), the MOP decides to:

- request the TEAP, in cooperation with the SAP, to continue to investigate the possible reasons for the identified feedstocks discrepancy, considering in particular the extent to which the discrepancy could be due to: incomplete or inaccurate historical reporting of CTC produced; uncertainties in the atmospheric life-time of CTC; and CTC from unreported or underestimated sources from both Article 5 and non-Article 5 parties.

**ENVIRONMENTALLY SOUND DISPOSAL OF ODS:** On Friday morning, parties forwarded the draft decision on adoption of new destruction technologies for ODS, submitted by Australia and Canada (UNEP/OzL.Pro.23/CRP.1/Rev.1), to the high-level segment, where it was adopted without amendment.

**Final Decision:** In the decision (UNEP/OzL.Conv.9/L.2-UNEP/OzL.Pro.23/L.2,III.[L]), the MOP decides to approve the highlighted destruction processes in the annex for the purposes of paragraph 5 of Article 1 of the Montreal Protocol, as additions to already accepted technologies. MOP 23 requests the TEAP to continue to assess the plasma destruction technology for methyl bromide in the light of additional information that may become available and to report to the parties when appropriate; and investigate the issues raised in its 2011 progress report regarding performance criteria for destruction and removal efficiency compared to destruction efficiency, and regarding verification criteria for the destruction of ODS at facilities that use approved destruction technologies, and to submit a report to OEWG 32.

Annex A includes approval details for the destruction and efficient removal of the following sixteen substances: argon plasma arc, cement kilns, chemical reaction with H<sub>2</sub> and CO<sub>2</sub>, gas phase catalytic de-halogenation, gaseous/fume oxidation, inductively coupled radio frequency plasma, liquid injection incineration, microwave plasma, municipal solid waste incineration, nitrogen plasma arc, porous thermal reactor, portable plasma arc, reactor cracking, rotary kiln incineration, superheated steam reactor, and thermal reaction with methane. Each is approved under all of the concentrated source categories, with the exception of chemical reaction with H<sub>2</sub> and CO<sub>2</sub> and reactor cracking, which are not approved for Annex A halons.

**UPDATING THE NOMINATION PROCESSES AND RECUSAL GUIDELINES FOR TEAP:** On Tuesday, Co-Chair Sylla introduced the agenda item and delegates agreed to establish a contact group co-chaired by Masami Fujimoto (Japan) and Javier Camargo (Colombia).

On Wednesday, the contact group discussed a draft decision (UNEP/OzL.Pro.23/CRP.21) on nominations to TEAP, TOCs and temporary subsidiary bodies, especially on how to ensure balanced perspectives and geographic representation. Parties introduced text stipulating that experts may be nominated only by their passport countries. On length of service, they proposed to limit terms of experts nominated at this meeting to four years, with possible re-nominations.

Parties also discussed formalizing the relationship of the Executive Secretary to TEAP; approval of appointments to TEAP (but not TOCs) by MOPs, and membership sizes of subsidiary bodies to ensure consistency with their respective workloads.

On Friday, Switzerland raised concerns over text potentially restricting the selection of technical experts by nationality, suggesting that experts' countries of domicile could also be taken into account. After last-minute discussions on the margins, an agreed text was presented to plenary that evening, deleting the requirement for experts to be nominated only by their passport countries, instead requesting TEAP to ensure that all nominations are agreed to by the national focal points of "the relevant party," and undertaken in full consultation with them. The draft decision was adopted at the high-level segment.

**Final Decision:** In the decision (UNEP/OzL.Pro.23/CRP.21/Rev.1), the MOP decides to: request TEAP to reflect a balance of appropriate expertise in TOCs and temporary subsidiary bodies, to update and publicize a matrix of needed capabilities and expertise, and to standardize the information required for potential nominations of experts. The final version includes the compromise text agreed on Friday, requesting TEAP to ensure that all nominations are agreed to by the national focal points of "the relevant party," and undertaken in full consultation with them. In addition to the four-year rule regarding expert appointments, parties agreed that the terms of all members of the TEAP and its TOCs will expire at the end of 2013 and 2014 respectively, unless reappointed before then under these new terms.

**TREATMENT OF ODS USED TO SERVICE SHIPS:** On Tuesday, Co-Chair Alkemade introduced the draft decision on treatment of ODS used to service ships (UNEP/OzL.Conv.9/3-UNEP/OzL.Pro.23/3,III.[K]) on reporting and regulation responsibilities of ships from other flag states.

On Wednesday, a contact group, co-chaired by Marissa Gowrie (Trinidad and Tobago) and Cornelius Rhein (EU), discussed the draft decision. Parties proposed that: more information is needed on how parties treat sales of ODS to ships; and the Secretariat could consult with relevant bodies, particularly the International Maritime Organization (IMO) and World Customs Organization (WCO), to collect information on how they regulate trade in and reporting of ODS on board ships. Parties agreed to request the Secretariat to prepare a document for OEWG 32 on current ODS sales to ships for onboard servicing and use, including how parties calculate consumption.

On Thursday evening, parties finalized the draft decision in the contact group. Parties agreed to insert a paragraph requesting the Ozone Secretariat to work with relevant bodies, including the IMO and the WCO, on how these bodies address trade in ODS

on board ships, the use of ODS on board ships, and to provide a general overview of the framework applied by these bodies to manage relevant activities.

On Friday morning, parties agreed to forward the draft decision on ODS for servicing ships to the high-level segment where it was adopted without amendment.

**Final Decision:** In the decision (UNEP/OzL.Pro.23/CRP.19), MOP 23 requests the Secretariat to:

- prepare a document that collects current information about the sale of ODS to ships, including ships from other flag states, for onboard servicing and other onboard uses, including on how parties calculate consumption with regard to such sales, and that identifies issues relevant to the treatment of the consumption of ODS used to service ships, including flag ships, for onboard uses for submission to OEWG 32 to enable MOP 24 to take a decision on the matter;
- include in the document any guidance and/or information on ozone depleting substances previously provided to the parties regarding sales to ships for onboard uses;
- consult, when preparing the document, with relevant international bodies, in particular the IMO and the WCO, to include in the document information on whether and how those bodies address: trade in ODS for use on board ships; use of ODS on board ships; and to provide a general overview on the framework applied by those bodies to manage relevant activities;
- include the information provided by the parties in an annex to the document; and
- request the Panel to provide in its 2012 progress report a summary on the available data concerning the use of ODS on ships, including the quantities typically used on different types of ships, the estimated refrigerant bank on ships and an estimation of emissions.

MOP 23 requests the parties to provide information to the Secretariat on:

- the current system used by the parties, if any, to regulate and report on ODS supplied for the purpose of servicing ships, including ships from other flag states, for onboard use;
- how they calculate consumption with regard to such ODS;
- any relevant cases in which they have supplied, imported or exported such ODS; and
- relevant data concerning the use of ODS on ships, including the quantities typically used on different types of ships, the estimated refrigerant bank on ships, and an estimation of emissions.

**ADDITIONAL INFORMATION ON ALTERNATIVES TO ODS:** This issue was introduced in plenary on Tuesday and then discussed in a contact group, co-chaired by Leslie Smith (Grenada) and Mikkel Sørensen (Denmark).

On Tuesday, contact group participants agreed to continue discussions on a proposed study of low and high-GWP alternatives to CFCs and HCFCs (UNEP/OzL.Conv.9/3-UNEP/OzL.Pro.23/3,[J]) tabled by Switzerland.

On Wednesday parties discussed the content of a proposed report to be prepared by the TEAP for consideration by OEWG 32. Parties deliberated references to the UNFCCC and IPCC in the text, and ways to incorporate their work into the TEAP report. Parties discussed asking the TEAP to report on low-GWP

and high-GWP alternatives to ODS. Some parties preferred the TEAP to focus on only high-GWP alternatives, but most parties preferred the TEAP to look at both low- and high-GWP alternatives. Several non-Article 5 parties emphasized the need to integrate costs of alternative technologies in the report.

On Thursday, the group agreed to the draft decision (UNEP/OzL.Conv.9/3-UNEP/OzL.Pro.23/3[J]) requesting TEAP to conduct a joint study with other scientific experts for consideration at OEWG 32, to provide information on alternatives to HCFCs. The revised version of this decision was presented to plenary on Friday, and forwarded to the high-level segment where it was adopted without amendment.

**Final Decision:** In the decision (UNEP/OzL.Pro.23/CRP.18), the MOP requests the TEAP to prepare a report in consultation with the other scientific experts, if necessary, for consideration by OEWG 32 containing information on, *inter alia*:

- the cost of alternatives to HCFCs that are technically proven, economically viable, and environmentally benign;
- alternatives to HCFCs that are technically proven, economically viable, environmentally benign and suitable for use in high ambient temperatures, including how such temperatures may affect efficiency or other factors;
- quantities and types of alternatives already and projected to be phased in as replacements for HCFCs, disaggregated by application, both in Article 5 and non-Article 5 parties; and
- an assessment of the technical, economic and environmental feasibility of options in consultation with scientific experts.

**USE OF METHYL BROMIDE IN AFRICA:** On Tuesday, Co-Chair Alkemade introduced the draft decision (UNEP/OzL.Conv.9/3-UNEP/OzL.Pro.23/3[A]) for TEAP to review consumption trends in Africa, study phase-out implications, and recommend activities. Several African countries prepared a draft decision on key challenges facing methyl bromide phase-out in Article 5 parties operating under paragraph 1 of Article 5. A contact group was established and met several times.

On Friday, in the preparatory segment plenary, Kenya informed that the contact group had agreed to this draft decision. With some editorial changes and deletion of some words in the brackets proposed by Canada, delegates decided to forward the draft decision to the high-level segment, which adopted it.

**Final Decision:** In the decision (UNEP/OzL.Pro.23/CRP.10/Rev.3), the MOP decides to:

- request the Executive Committee of the MLF to consider asking its senior monitoring and evaluation officer, when carrying out the evaluation approved at its 65th meeting on methyl bromide projects in Africa, to consider options for a strategy to achieve the sustainable use of effective alternatives to methyl bromide in Africa; and
- request the TEAP to consider whether the guidelines and criteria for the preparation of critical use nominations of methyl bromide need any modification to take into account the situation of parties operating under Article 5 and to report to OEWG 33.

**PROPOSED AMENDMENTS TO THE MONTREAL PROTOCOL:** On Tuesday, Co-Chair Sylla invited proponents to brief the plenary on their proposals. Introducing its proposal (UNEP/OzL.Pro.23/5), the Federated States of Micronesia appealed to parties to consider their moral and ethical obligations

to include HFCs under the Montreal Protocol. The US, Canada and Mexico discussed the North American proposal (UNEP/OzL.Pro.23/6), and the US reiterated the responsibility of parties to the Vienna Convention to prevent negative environmental impacts due to phase-out decisions.

In response to the proposals, Burkina Faso, Brazil, the Cook Islands, Georgia, Senegal, Uganda, the Former Yugoslav Republic of Macedonia, Benin, Colombia, Nigeria, the EU, Saint Lucia, Grenada, Bangladesh, Switzerland, the Marshall Islands, Belarus, Australia, Indonesia, the Dominican Republic, Japan and Kenya supported establishing a contact group to discuss the amendments.

Georgia emphasized that with so many critical issues to be resolved under the Kyoto Protocol, UNFCCC negotiators are unlikely to concentrate on HFCs. He called for clear signals to industry regarding phase-out of HFCs. Kuwait and the Former Yugoslav Republic of Macedonia called for urgent action, noting the high temperatures in Gulf countries, and recent flood and drought events, respectively.

Argentina maintained that HFCs fall under the ambit of the Kyoto Protocol, and said the Montreal Protocol should instead focus on providing incentives for low-GWP alternatives through the MLF. Venezuela, China and India also objected to establishing a contact group on the issue.

Malaysia proposed deferring discussion of the amendment proposals. Noting the lack of agreement among parties to continue discussions in a contact group, Co-Chair Alkemade proposed parties continue discussions informally. The US and Canada expressed disappointment, stating that many parties were prepared to discuss the issue. Co-Chair Alkemade suggested parties raise issues related to the proposals in the ODS Alternatives Contact Group, and parties agreed.

#### **POTENTIAL AREAS OF FOCUS FOR THE ASSESSMENT PANELS' 2014 QUADRENNIAL REPORTS:**

On Tuesday, Co-Chair Sylla introduced the Secretariat's compilation of ideas from the assessment panels on this issue. The EU informed it had prepared a draft decision (UNEP/OzL.Pro.23/CRP.12), and Sylla proposed and parties agreed to establish a contact group, which met several times.

At Thursday's preparatory segment plenary, the EU reported on the consultations on the draft decision on potential areas of focus for the 2014 quadrennial reports of SAP, EEAP and TEAP. After several amendments, parties agreed to forward the draft decision to the high-level segment, which adopted it (UNEP/OzL.Conv.9/L.2-UNEP/OzL.Pro.23/L.2,III.[R]).

**Final Decision:** In the decision, the MOP decided, *inter alia*:

- to request the three assessment panels to update their 2010 reports in 2014 and submit them to the Secretariat by 31 December 2014 for consideration by the OEWG and MOP 27;
- that for its 2014 report, EEAP should consider the most recent scientific information regarding effects on human health and the environment of changes in the ozone layer and in ultraviolet radiation, taking into account interactions between them;
- that the 2014 report of SAP should include: assessment of the state of the ozone layer and stratospheric climate and their future evolution; evaluation of the Antarctic ozone hole and Arctic winter/spring ozone depletion and the predicted

changes in these phenomena, with a particular focus on temperatures in the polar stratosphere; evaluation of trends in the concentration in the atmosphere of ozone-depleting substances and the substitutes for ODS and their consistency with reported production and consumption of those substances and the likely implications for the state of the ozone layer and climate, taking into account the regional distribution of emissions, including carbon tetrachloride; assessment of the two-way interaction between climate change and changes in the ozone-layer; description and interpretation of observed ozone changes and ultraviolet radiation, along with future projections and scenarios for those variables; assessment of the effects of very short-lived substances and non-controlled substances with ozone depletion potential; and identification and reporting, as appropriate, on any other threats to the ozone layer, including an assessment of the effect of recent volcanic activities and of possible geoengineering;

- that in its 2014 report, TEAP should consider the following topics: technical progress in all sectors, including the recovery, reuse and destruction of ODS; accounting for production and use for the various applications of ODS and new substances; technically and economically feasible alternatives to ODS; identification and technical evaluation of uses for which currently acceptable alternatives are not available, including process-agent uses; status of banks containing ozone-depleting substances; challenges facing Article 5 parties in phasing out remaining ODS such as methyl bromide and maintaining the phase-outs already achieved; and assessment of subsidies that undermine efforts to protect the stratospheric ozone layer and the global climate.

#### PHASE-OUT OF HFC-23 BY-PRODUCT EMISSIONS:

Canada, Mexico and the US submitted a draft decision on limiting the emissions of HFC-23 as a by-product of the production of HCFC-22 (UNEP/OzL.Conv.9/3-UNEP/OzL.Pro.23/3,[C]). On Wednesday evening, the US presented the draft decision to the plenary. India, China, Brazil, Argentina and Venezuela said the issue is outside the Protocol. The EU and Canada emphasized the value of addressing both climate and ozone issues. After plenary discussion, the Chair noted consensus could not be reached, and the matter was deferred.

**STATUS OF NEPAL RELATIVE TO THE COPENHAGEN AMENDMENT:** On Tuesday, Chair Sylla introduced Nepal's request for the MOP to consider its compliance status. Nepal urged parties to consider Nepal as a full compliant party, allowing it access to finance from the MLF.

A representative of the ImpCom outlined that this issue was considered at its meeting on 18 November, noting that Nepal is in compliance with the Protocol, but is yet to ratify the Copenhagen Amendment. Therefore, Nepal's status is that of a non-ratifying party. Parties agreed to revisit the issue at MOP 24.

**CONSIDERATION OF MEMBERSHIP OF MONTREAL PROTOCOL BODIES FOR 2012: Members of the Implementation Committee:** This decision (UNEP/OzL.Conv.9/L.2-UNEP/OzL.Pro.23/L.2,III.[N]) was forwarded by the preparatory segment to the high-level segment, where it was adopted on Friday without amendment.

**Final Decision:** In the decision the MOP: confirms the positions of Armenia, Guinea (replacing Algeria), Nicaragua, Sri Lanka and the US as members of the Committee for one further year, and selects Germany, Lebanon, Poland, Saint Lucia and Zambia as members of the Committee for a two-year period beginning on 1 January 2012. W.L. Sumathipala (Sri Lanka) is to serve as President and Janusz Kozakiewicz (Poland) is to serve as Vice-President and Rapporteur.

**Members of the ExCom of the MLF:** A draft decision was forwarded by the preparatory segment to the high-level segment for adoption on Friday. Switzerland noted that the reference to Switzerland should be substituted with Belgium, and the decision was adopted with the amendment.

**Final Decision:** In the decision (UNEP/OzL.Conv.9/L.2-UNEP/OzL.Pro.23/L.2,III[O]), the MOP decides to: endorse the selection of Canada, Finland, Japan, Romania, Belgium, the UK and the US as members of the ExCom representing non-Article 5 parties; and Argentina, China, Cuba, India, Kenya, Jordan and Mali as Article 5 representatives, for one year beginning January 2012. Xiao Xuezhi will serve as Chair and Fiona Walters will serve as Vice-Chair.

**Co-Chairs of the OEWG:** In the preparatory segment on Thursday, parties agreed to a draft decision on the Co-Chairs of the OEWG (UNEP/OzL.Conv.9/L.2-UNEP/OzL.Pro.23/L.2,III.[P]). The high-level segment approved the draft decision without amendment on Friday.

**Final Decision:** In the decision on OEWG membership, the MOP decides to endorse the selection of Ghazi Odat (Jordan) and Gudi Alkemade (Netherlands) as Co-Chairs of the Montreal Protocol OEWG in 2012.

**Endorsement of new Co-Chair of the Chemicals TOC and a senior expert of the TEAP:** In the preparatory segment on Thursday, parties agreed to a draft decision (UNEP/OzL.Conv.9/L.2-UNEP/OzL.Pro.23/L.2,III[Q]) on the Co-Chair of the CTOC and a TEAP member.

**Final Decision:** In the decision the MOP decides to: endorse Masaaki Yamabe (Japan) as senior TEAP expert and to endorse Keiichi Ohnishi (Japan) as CTOC Co-Chair for four years.

**COMPLIANCE AND REPORTING ISSUES CONSIDERED BY THE IMPCOM:** On Tuesday, Ghazi Odat (Jordan) reported on compliance discussions at the ImpCom's 46th and 47th meetings. He presented draft decisions on: parties who have not submitted reports; non-compliance in Libya, Iraq and Yemen; trade with Kazakhstan by the EU and the Russian Federation; revisions of baseline numbers; decimal places; and licensing. Co-Chair Alkemade proposed, and delegates agreed, to forward the draft decision, containing the ImpCom reports (UNEP/OzL.Pro.23/CRP.3) to the high-level segment, where it was adopted.

**Final Decision:** On Friday, MOP 23 adopted the ImpCom report (UNEP/OzL.Pro.23/CRP.3), including its ten decisions, without amendment.

**REPORT OF THE EIGHTH MEETING OF THE OZONE RESEARCH MANAGERS (ORM) OF THE PARTIES TO THE VIENNA CONVENTION AND STATUS OF THE GENERAL TRUST FUND FOR FINANCING ACTIVITIES ON RESEARCH AND SYSTEMATIC OBSERVATIONS RELEVANT TO THE VIENNA**

**CONVENTION:** On Tuesday, Michael Kurylo, Chair of the 8th ORM meeting, presented their recommendations, including: continuing and expanding systematic tracking and analysis of ozone and climate-related gases; study of the relationships between ozone and climate variability and change; data archiving; and national capacity building (UNEP/OzL.Conv.9/6).

China and Brazil expressed concerns over duplication of observation work carried out under the climate change framework. Kurylo responded that efforts would be complementary.

Sri Lanka introduced a draft decision (UNEP/OzL.Pro.23/CRP.2) proposing to adopt the ORM recommendations. Australia suggested combining this with UNEP/OzL.Pro.23/CRP.1 on the Vienna Convention Trust Fund financing of such activities as the contents were related. The EU supported this. Parties agreed to merge the two draft decisions, presenting the final version as UNEP/OzL.Conv.9/CRP.4/Rev.1. On Friday, final text was provided after deletion of the words “associated climate change” in a preambular paragraph, and addition of further text encouraging parties to adopt the research recommendations.

**Final Decision:** Parties adopted UNEP/OzL.Conv.9/CRP.4/Rev.1, appreciating the Trust Fund’s support of joint activities implemented by the World Meteorological Organization (WMO) and the Ozone Secretariat, and encouraging parties to maintain research capabilities for scientific measurement and understanding of ozone depletion. The decision adopted previous recommendations of the WMO regarding systematic observations, data archiving, and specific capacity-building activities, including the transfer of equipment to developing countries for ozone and ultraviolet observation stations, and support to attend training workshops.

**OTHER MATTERS: Bali Declaration:** The Bali Declaration on a way forward for the transition towards low-GWP alternatives to ODS (UNEP/OzL.Pro.23/CRP.8) was introduced by Indonesia on Monday, and parties agreed to consider it under Other Matters. Throughout the week Indonesia consulted informally with parties and, on Friday morning, held an informal briefing with parties to discuss the Declaration.

During Friday’s plenary, Indonesia explained that 76 countries had signed the Bali Declaration. He explained the Declaration would remain open and expressed hope that other countries would sign on. The EU explained it was still consulting internally, but said it hoped to sign soon. Australia, the Bahamas, and the US also supported the Declaration. The US noted that its Bangkok Declaration was now closed, and expressed hope that the 107 parties that had signed it, would now sign on to the Bali Declaration on a way forward for the transition towards low-GWP alternatives to ODS.

### **CLOSING PLENARY**

On Friday afternoon, the high-level segment convened and considered the report of the meeting (UNEP/OzL.Conv.9/L.1-UNEP/OzL.Pro.23/L.1, Add.1 and Add.2), and adopted it after lengthy debate by parties on the reflection of the discussion on HFC amendment proposals. India objected to the reference to “many” parties supporting discussing the US amendment proposal. Several parties intervened indicating that they did support discussing the proposal. Parties eventually agreed to replace the reference to “many” with “some” parties. Venezuela

objected to the reference to “significant time” being spent on the discussion, stating that the time spent was not significant. Parties agreed to remove this reference.

Delegates also adopted the compilation of draft decisions (UNEP/OzL.Conv.9/1-UNEP/OzL.Pro.23/L.2), and CRPs that had been forwarded from the plenary.

Delegates then turned their attention to administrative decisions and adopted decisions on the location and dates of the next MOP and COP. In one decision (UNEP/OzL.Conv.9/1-UNEP/OzL.Pro.23/3,II.[F]), the MOP decides to convene MOP 24 to the Montreal Protocol in Geneva, Switzerland in November 2012 and to announce the firm dates and venue for the meeting as soon as possible. In a second decision (UNEP/OzL.Conv.9/1-UNEP/OzL.Pro.23/3,II.[G]), the COP decides: to convene COP 10 to the Vienna Convention back-to-back with MOP 26 to the Montreal Protocol.

Late in the afternoon, plenary reconvened briefly and heard a report from the contact group on QPS use of methyl bromide, which reported it had completed its work. The Contact Group on Replenishment reported it had failed to make progress on the agreement of a replenishment amount and plenary was suspended.

At 7:30 pm plenary reconvened and the Contact Group on Replenishment reported it had not reached agreement. Parties agreed to grant the group an additional hour in a final attempt to agree on a replenishment amount.

At 10:29 pm plenary reconvened and the Replenishment Contact Group announced an agreement of US\$450 million for 2012-2014, and parties agreed to forward the associated decision to the high-level segment, which then convened and adopted the decision.

China, India and Brazil commented on the result of the replenishment negotiation with mixed feelings, noting their disappointment with the level of the agreed figure. President Abilio thanked participants, the Secretariat and the Government of Indonesia and gavelled COP 9/MOP 23 to a close at 11:15 pm.

### **A BRIEF ANALYSIS OF THE MEETING**

“One treaty alone, one group alone, may not be sufficient to protect the complex global environment of our planet” was the opening message by Executive Secretary Marco González to COP 9/MOP 23. González reminded delegates that their actions in Bali could support or constrain efforts that address climate change and urged parties to take action that protects the ozone layer while also providing climate benefits. His statement underscored the increased inter-linkages between economic and environmental issues within a policy space where treaties are still primarily focused on single issues. The challenges faced by delegates at COP 9/MOP 23—phasing down HFCs, climate change and replenishment of the Multilateral Fund—reflected these inter-linkages and tested delegates with some of the most difficult negotiations the Protocol has ever experienced.

COP 9/MOP 23 were unsuccessful in their efforts to make progress in phasing-down HFCs and to address climate change through the Protocol, but succeeded in agreeing on US\$450 million for the MLF replenishment, a credible achievement in tough economic times. This decision was achieved in a tough negotiating environment: both Article 5 and non-Article 5 parties

described the replenishment negotiations as the most difficult and tiresome they had ever experienced. The two main challenges that plagued delegates at this meeting—financial replenishment and linkages with climate change—are issues outside the Protocol itself. The economic crisis and the collapse of climate change negotiations influenced the flexibility some delegates had to negotiate in Bali and hinted that outside factors and tensions are infusing the atmosphere of the Protocol.

The continued success of the Protocol depends on whether it can continue to achieve consensus among parties to strengthen and expand the coverage of Protocol, and adequately finance these activities. This analysis examines COP 9/MOP 23 in light of these challenges, and in the context of an increasingly complex global environment.

### **REPLENISHING INFINITY AND BEYOND**

The Multilateral Fund provides funding for 147 of the 196 parties to the Montreal Protocol to meet their commitments to phase out their consumption and production of ODS. Since its establishment in 1991, the fund has been replenished seven times, with the US\$450 million replenishment agreed in Bali representing the eighth replenishment. Article 5 countries originally favored a figure of US\$490 million while non-Article 5 countries proposed US\$400 million. As the two sides failed to reach agreement, the contact group Co-Chairs proposed a “Co-Chairs’ compromise” figure of US\$445 million. Neither Article 5 nor non-Article 5 parties accepted this amount, leaving the contact group at a stalemate. After plenary statements signaled that the future of the Protocol hinged on an agreement, the contact group returned to negotiations and settled on US\$450 million.

While this flexibility allowed parties to leave Bali with an agreement, many Article 5 countries were left deeply unhappy with what they considered to be an insufficient replenishment. Still, several participants pointed out that several hundred million dollars is a credible achievement, with one participant saying it is still “impressive under the circumstances,” referring to the economic constraints faced by many non-Article 5 countries. Moreover, despite the historically low replenishment, the very existence of a dedicated financial mechanism remains the envy of other MEAs.

While the MLF replenishment represents an acceptance of the status quo, which is how the Protocol has worked for the past 20 years, the global economy is changing. Some non-Article 5 parties went as far as to suggest the emergence of a new world order, noting that several Article 5 countries have higher GDPs than some non-Article 5 countries. Some quipped that non-Article 5 countries borrow from Article 5 countries to meet their financial commitments under the MLF. Such a situation is becoming increasingly unsettling for many donor countries, with Japan indicating in its opening remarks that the current arrangement cannot continue *ad infinitum*.

Looking to the future, some suggested that while the Protocol has no plans to reclassify Article 5 parties, South Africa and South Korea have already set a precedent in not using MLF financing to fund their final CFC phase-out. In addition, a few Article 5 countries have agreed to make contributions to the cost of their respective HCFC phase-out management plans. Some

participants voiced a desire for the MLF to move towards a more nuanced funding structure in the future, suggesting the concept of co-financing, akin to the Global Environment Facility.

Article 5 countries also sent clear signals that they require confirmation of sufficient funding before taking on new obligations. India warned that his country would step out of the accelerated phase-out agreement if adequate financing was not provided. Argentina cautioned that, while they are a proponent of accelerated elimination, this position was based on an understanding of stable and sufficient funding. Brazil echoed this sentiment, stating that before they would be willing to take on new commitments, they would require assurance of sufficient funding. These statements underscored the unwillingness of some Article 5 countries to consider future obligations that address the interlinkages between the Protocol and other MEAs, such as the UNFCCC and HFC phase-down, at a time when many parties lack confidence in the sustainability of the funding stream. While negotiating dynamics are likely to be more acute during replenishment years, the broader debate about whether the role of Protocol vis-à-vis other MEAs is likely to cause tensions in future MOP negotiations.

### **TO AMEND OR NOT TO AMEND**

HFCs, substances originally proposed as HCFC alternatives because of their low-ozone depleting potential, are now recognized as having high-global warming potential (GWP) and are included in the UNFCCC “basket of greenhouse gases.” Yet, any hopes that COP 9/MOP 23 would expand its mandate to ban HFCs to achieve positive outcomes for both the atmosphere and the climate were dashed when India and China refused to consider two proposals to phase-down HFCs from being discussed in a contact group, arguing that such discussions were outside the mandate of the Protocol. This decision disappointed many parties, who were realistic enough to know 2011 was not to be the “amendment year,” but felt that incremental progress might have been possible through contact group discussions.

This lack of traction led some to question the need to consider other options for addressing HFC emissions under the Protocol. Currently the MLF will pay a small premium for countries that use low-GWP alternatives—but that payment is limited to specific sectors. Other options include revising MLF guidelines to seize funding conversions to HFCs. Several NGOs stressed the importance of MLF investment in low-GWP alternatives to assist in the commercialization of alternatives, making them increasingly affordable while investing in HFC conversions represented wasted money. Most recognize, however, that the MLF finance will not stretch that far, pointing to a discernible gap between HFC amendment ambition and ability to finance.

The HFC situation presents both challenges and opportunities for the Protocol. There is potential for joint wins with the climate regime, which could benefit from addressing HFCs under the Montreal Protocol, which has a proven track record for phasing out specific substances.

Tension during Protocol discussions that touched upon climate change continued as contact groups met through the week, such as during the ODS alternatives contact group debate over whether to request TEAP to undertake a study, taking into account the work of the Intergovernmental Panel on Climate Change (IPCC). TEAP and the IPCC conducted a



joint study in 2005, setting a precedent for such joint studies and work; however, reaching consensus on a similar proposal proved difficult. Parties expressed reservations about integrating IPCC and UNFCCC work into the study, noting that scientific input can be provided by other experts. The hardened position towards this proposal caused several to lament that parties were actually regressing. Furthermore, the inability to consider the potential joint benefits of the HFC proposals suggests a missed opportunity for the Protocol to lead the way in joint action with complementary MEAs to address future challenges of an increasingly complex world.

### NAVIGATING THE POLITICAL DIVIDE

Despite its historical success as a science-based regime, COP 9/MOP 23 showed that the Montreal Protocol can also become victim to politicized discussions and aggressive posturing. Time and again in both contact groups and the plenary, parties argued over the inclusion of previously agreed text in decisions, the substances controlled under the Protocol, and even in the reflection of statements in the meeting report. The usual harmonious and conciliatory tone of negotiations eroded at COP 9/MOP 23, with traditional diplomatic gestures at a minimum, and drawing one response in plenary, noting "the tenor of speech, which would indicate that nothing was acceptable." Several mentioned the temporal proximity of the Durban Climate Change Conference as one explanation for the tension, and hoped that MOP 24 would see a resumption of mutual respect.

Despite the challenges faced in Bali, key elements of the Protocol's work remain alive and well. Scientific and technical experts confirmed the Montreal Protocol's success in phasing out CFCs, halons and carbon tetrachloride, and provided guidance for further action. In addition, successful discussions on formalizing the TEAP and its membership signify the Protocol's commitment to ensuring informed scientific and technical expertise, but also to limiting potential for vested interests and to institute greater accountability in its administrative processes around selection of experts. With parties' increased leverage, however, comes the risk that country positions on the Kyoto Protocol begin to influence these processes, with the risk of devaluing the impartiality of scientific and technical advice that drives decision making under the Montreal Protocol.

The Protocol still faces many challenges including defining the best avenues for activities with mutual benefits to the broader global environment. The continued stalemate with the HFC amendment suggests the necessity for high-level discussions, a step some recalled was also necessary to agree to HCFC phase-out acceleration. Many hoped that the proponents would initiate this before MOP 24 to allow the Protocol to move forward, as opposed to using significant MOP negotiating time, at the expense of other issues.

Furthermore, the compromise represents a commitment to the regime's credibility. The flexibility of parties to compromise on a figure that they clearly had reservations about, in a fraught negotiating climate, signifies that the most successful treaty is not a myth but a reality. Three options remain for parties at MOP 24 on the issues of HFCs: to address HFCs under the Protocol; to consider cooperation with the UNFCCC; or to firmly decide that the Protocol will not expand its mandate. Such decisions have the potential to reinforce an inward-looking global environmental

governance regime in which treaties focus on single issues or to send a signal to other MEAs that broader cooperation and a new environmental governance regime is necessary to address today's complex, inter-linked economic and environmental challenges.

### UPCOMING MEETINGS

**UNFCCC COP 17 and COP/MOP 7:** The 17th session of the UNFCCC Conference of the Parties (COP 17) and the 7th session of the Meeting of the Parties (MOP 7) to the Kyoto Protocol will take place in Durban, South Africa. The 35th session of the Subsidiary Body for Implementation (SBI), the 35th session of the Subsidiary Body for Scientific and Technological Advice (SBSTA), the *Ad Hoc* Working Group on Further Commitments for Annex I Parties under the Kyoto Protocol (AWG-KP), and the *Ad Hoc* Working Group on Long-term Cooperative Action under the Convention (AWG-LCA) will also meet. **dates:** 28 November - 9 December 2011 **location:** Durban, South Africa **contact:** UNFCCC Secretariat **phone:** +49-228-815-1000 **fax:** +49-228-815-1999 **email:** secretariat@unfccc.int **www:** <http://unfccc.int/> and <http://www.cop17durban.com>

**42nd International Congress on Heating, Air Conditioning and Refrigeration:** This international congress is co-sponsored by the Serbian Society for Heating, Refrigeration and Air-Conditioning and the International Institute of Refrigeration, an intergovernmental science and technology-based organization promoting knowledge of refrigeration and associated technologies. **dates:** 30 November - 2 December 2011 **location:** Belgrade, Serbia **contact:** Branko Todorovic **phone:** +381-11-3230-041 **fax:** +381-11-3231-372 **email:** office@smeits.rs **www:** <http://www.kgh-kongres.org/eng/>

**Workshop on Competitiveness, Innovation and REACH:** This workshop, organized by DG Enterprise and Industry, in collaboration with DG Environment, will focus on the impact of the REACH regulation on the competitiveness and innovativeness of the EU chemical industry. **date:** 6 December 2011 **location:** Brussels, Belgium **contact:** DG Enterprise and Industry, European Commission **email:** entr-reach@ec.europa.eu **www:** [http://ec.europa.eu/enterprise/sectors/chemicals/reach/events/index\\_en.htm#h2-1](http://ec.europa.eu/enterprise/sectors/chemicals/reach/events/index_en.htm#h2-1)

**Thematic workshop on Assessment of compliance status and HPMP implementation:** This workshop will assess the compliance status and HCFC Phase-out Management Plan for French-speaking Central Africa. **dates:** 13-16 December 2011 **location:** Bangui, Central African Republic **contact:** OzonAction Branch, Division of Technology, Industry and Economics, UNEP Regional Office for Africa **email:** Jeremy.Bayze@unep.org **www:** <http://www.unep.org/ozonaction/Events/tabid/6255/Default.aspx>

**Alternatives Identification and Assessment Training:** The training is organized by the Regional Activity Centre for Cleaner Production under the EU life project SUBSPORT and intends to provide authorities, industry, trade unions, NGOs and other interested parties with information and tools to facilitate the substitution of hazardous chemicals in products and processes with safer alternatives to the use of POPs and other chemicals. **date:** 13 December 2011 **location:** Barcelona, Spain **contact:**

Enrique de Villamore **phone:** +34-93-553-8795 **fax:** +34-93-553-8795 **email:** vvidal.tecnic@cprac.org **www:** <http://www.cprac.org/>

**First International Exhibition on Waste Management, Recycling and Biomass:** This international exhibition is organized with the cooperation of the regional centres of the Basel and Stockholm conventions in Tehran. **dates:** 8-11 January 2012 **location:** Tehran, Iran **contact:** Simatin Management Service Institute **phone:** +98-21-882-33209 **fax:** +98-21-882-33144 **email:** wastemanagement@simatin.ir **www:** [www.wastemanagement.simatin.ir](http://www.wastemanagement.simatin.ir)

**Twelfth Special Session of the UNEP Governing Council/Global Ministerial Environment Forum:** The Governing Council/Global Ministerial Environment Forum of the UN Environment Programme (UNEP) will focus on the UNCSDD themes of the green economy and the institutional framework for sustainable development. **dates:** 20-22 February 2012 **location:** Nairobi, Kenya **contact:** Secretary, Governing Bodies, UNEP **phone:** +254-20-762-3431 **fax:** +254-20-762-3929 **email:** sgc.sgb@unep.org **www:** <http://www.unep.org/resources/gov/>

**Eighth Meeting of the Chemicals Review Committee:** The next meeting of the Rotterdam Convention Chemicals Review Committee will take place in March 2012. **dates:** 18-23 March 2012 **location:** Geneva, Switzerland **contact:** Rotterdam Convention Secretariat **phone:** +41-22-917-8296 **fax:** +41-22-917-8082 **email:** pic@pic.int **www:** <http://www.pic.int/>

**Planet Under Pressure Conference:** The conference will provide a comprehensive update and discussion of solutions at all scales to move societies on to a sustainable pathway, providing scientific leadership towards the 2012 UN Conference on Sustainable Development (Rio+20). The conference is organized by the International Geosphere-Biosphere Programme, DIVERSITAS, the International Human Dimensions Programme on Global Environmental Change, the World Climate Research Programme and Earth System Science Partnership. **dates:** 26-29 March 2012 **location:** London, United Kingdom **phone:** +44-1865-84-3000 **email:** customerservice-planetupressure12@elsevier.com **www:** <http://www.planetunderpressure2012.net/index.asp>

**66th meeting of the Executive Committee to the Multilateral Fund of the Montreal Protocol:** The next meeting of the Excom will be in Montreal. **dates:** 16-20 April 2012 **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/>

**Fourth Session of the INC to Prepare a Global Legally Binding Instrument on Mercury:** This meeting is scheduled to be the fourth of five INC meetings to negotiate a legally binding instrument on mercury. **dates:** 25-29 June 2012 **location:** Punta del Este, Uruguay **phone:** +41-22-917-8192 **fax:** +41-22-797-3460 **email:** mercury.chemicals@unep.org **www:** <http://www.unep.org/hazardoussubstances/Mercury/Negotiations/tabid/3320/Default.aspx>

**United Nations Conference on Sustainable Development:** The UNCSDD (or Rio+20) will focus on the themes of green economy in the context of sustainable development and poverty eradication and institutional framework for sustainable

development. **dates:** 20-22 June 2012 **location:** Rio de Janeiro, Brazil **contact:** UNCSDD Secretariat **email:** uncsd2012@un.org **www:** <http://www.uncsd2012.org/>

**OEWG 32:** The 32nd session of the Open-Ended Working Group of the Montreal Protocol is scheduled to convene in mid-2012. **dates:** tbc **location:** tbc **contact:** Ozone Secretariat **phone:** +254-20-762-3851 **fax:** +254-20-762-4691 **email:** ozoneinfo@unep.org **www:** <http://montreal-protocol.org>

**Eighth meeting of the Persistent Organic Pollutants Review Committee (POPRC-8):** POPRC-8 will consider draft risk profiles for HCBd, CNs and SCCPs, and continue their consideration of PCP. They will also continue their work on newly listed POPs and prepare recommendations for COP-6. **dates:** 15-19 October 2012 **location:** Geneva, Switzerland **contact:** Stockholm Convention Secretariat **phone:** +41-22-917-8729 **fax:** +41-22-917-8098 **email:** scc@unep.ch **www:** <http://www.pops.int>

**24th Montreal Protocol MOP:** The 24th session of the Meeting of the Parties to the Montreal Protocol on Substances that Deplete the Ozone Layer (MOP 24) is scheduled to take place in Geneva. **dates:** 12-16 November 2012 **location:** Geneva, Switzerland **contact:** Ozone Secretariat **phone:** +254-20-762-3851 **fax:** +254-20-762-4691 **email:** ozoneinfo@unep.org **www:** <http://montreal-protocol.org>

## GLOSSARY

CFCs	Chlorofluorocarbons
COP	Conference of the Parties
CTC	Carbon tetrachloride
CTOC	Chemical Technical Options Committee
CUE	Critical-use exemption
EEAP	Environmental Effects Assessment Panel
ExCom	Executive Committee
GWP	Global warming potential
HCFC	Hydrochlorofluorocarbons
HFC	Hydrofluorocarbons
HPMP	HCFC Phase-Out Management Plan
ImpCom	Implementation Committee
IPCC	Intergovernmental Panel on Climate Change
MTOC	Medical Technical Options Committee
MBTOC	Methyl Bromide Technical Options Committee
MDI	Metered-dose inhaler
MLF	Multilateral Fund
MOP	Meeting of the Parties
ODS	Ozone depleting substances
OEWG	Open-ended Working Group
QPS	Quarantine and pre-shipment
SAP	Scientific Assessment Panel
TEAP	Technology and Economic Assessment Panel
TOC	Technical Options Committee
UNFCCC	United Nations Framework Convention on Climate Change



## International Institute for Sustainable Development Reporting Services (IISD RS) Knowledge Management Resources

IISD RS, publisher of the *Earth Negotiations Bulletin*, also maintains online knowledgebases that are updated daily with information regarding meetings, publications and other activities related to international sustainable development policy and its implementation.

Each knowledgebase project consists of several integrated resources, to help the sustainable development policy and practice communities assess trends and activities at the international level. These resources are:

- Daily news reports researched and written by our own experts and organized in a **freely accessible, searchable on-line knowledgebase**;
- A **comprehensive calendar of upcoming events** related to international sustainable development policy, which can be downloaded to your own online calendar;
- And a **community listserve**, which exclusively delivers email updates of the most recent additions to our knowledgebases, as well as announcements by listserve members regarding their organizations' sustainable development activities.

Each knowledgebase focuses on a specific environmental challenge or region, as noted below:



**Sustainable Development Policy & Practice**  
<http://uncsd.iisd.org/>



**Climate Change Policy & Practice**  
<http://climate-l.iisd.org/>



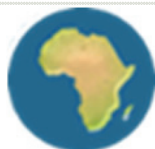
**SIDS Policy & Practice**  
<http://sids-l.iisd.org/>



**Biodiversity Policy & Practice**  
<http://biodiversity-l.iisd.org/>



**Latin America & Caribbean Regional Coverage**  
<http://larc.iisd.org/>



**African Regional Coverage**  
<http://africasd.iisd.org/>

## 蒙特婁議定出締約國名單 Status of Ratification

Ratification of:	Vienna Convention	Montreal Protocol	London Amendment	Copenhagen Amendment	Montreal Amendment	Beijing Amendment
Total number of countries	197	197	196	194	185	172

The table below shows the status of Ratification, Accession, or Approval of the agreements on the protection of the stratospheric ozone layer as provided by the Depositary, the United Nations Office of Legal Affairs, New York.

**As of 12 January 2012, the status of ratification is as follows:**

COUNTRY	Signature Vienna Convention	Signature Montreal Protocol	Vienna Convention	Montreal Protocol	London Amendment	Copenhagen Amendment	Montreal Amendment	Beijing Amendment
<b>TOTALS</b>	<b>28</b>	<b>46</b>	<b>197</b>	<b>197</b>	<b>196</b>	<b>194</b>	<b>185</b>	<b>172</b>
Afghanistan <sup>1</sup>	-	-	2004-06-17 Ac	2004-06-17 Ac	2004-06-17 Ac	2004-06-17 Ac	2004-06-17 Ac	2004-06-17 Ac
Albania	-	-	1999-10-08 Ac	1999-10-08 Ac	2006-05-25 Ac	2006-05-25 Ac	2006-05-25 Ac	2006-05-25 Ac
Algeria	-	-	1992-10-20 Ac	1992-10-20 Ac	1992-10-20 Ac	2000-05-31 R	2007-08-06 R	2007-08-06 R
Andorra	-	-	2009-01-26 Ac	2009-01-26 Ac	2009-01-26 Ac	2009-01-26 Ac	2009-01-26 Ac	2009-01-26 Ac
Angola	-	-	2000-05-17 Ac	2000-05-17 Ac	2011-06-21 Ac	2011-06-21 Ac	2011-06-21 Ac	2011-06-21 Ac
Antigua and Barbuda	-	-	1992-12-03 Ac	1992-12-03 Ac	1993-02-23 Ac	1993-07-19 Ac	2000-02-10 R	2010-06-29 Ac
Argentina	1985-03-22	1988-06-29	1990-01-18 R	1990-09-18 R	1992-12-04 R	1995-04-20 Ac	2001-02-15 R	2006-08-28 R
Armenia	-	-	1999-10-01 Ac	1999-10-01 Ac	2003-11-26 Ac	2003-11-26 Ac	2008-12-18 R	2008-12-18 R
Australia	-	1988-06-08	1987-09-16 Ac	1989-05-19 R	1992-08-11 At	1994-06-30 At	1999-01-05 At	2005-08-17 At
Austria	1985-09-16	1988-08-29	1987-08-19 R	1989-05-03 R	1992-12-11 R	1996-09-19 Ap	2000-08-07 R	2004-09-23 R
Azerbaijan	-	-	1996-06-12 Ac	1996-06-12 Ac	1996-06-12 Ac	1996-06-12 Ac	2000-09-28 Ap	-
Bahamas	-	-	1993-04-01 Ac	1993-05-04 Ac	1993-05-04 Ac	1993-05-04 Ac	2005-03-16 At	2005-03-16 At
Bahrain <sup>2</sup>	-	-	1990-04-27 Ac	1990-04-27 Ac	1992-12-23 At	2001-03-13 R	2001-03-13 R	-
Bangladesh	-	-	1990-08-02 Ac	1990-08-02 Ac	1994-03-18 R	2000-11-27 At	2001-07-27 At	2010-08-24 Ac
Barbados	-	-	1992-10-16 Ac	1992-10-16 Ac	1994-07-20 At	1994-07-20 At	2002-12-10 Ac	2002-12-10 Ac
Belarus	1985-03-22	1988-01-22	1986-06-20 At	1988-10-31 At	1996-06-10 R	2007-03-13 At	2007-03-13 At	2007-03-13 At
Belgium	1985-03-22	1987-09-16	1988-10-17 R	1988-12-30 R	1993-10-05 R	1997-08-07 R	2004-08-11 R	2006-04-06 R
Belize	-	-	1997-06-06 Ac	1998-01-09 Ac	1998-01-09 Ac	1998-01-09 Ac	2008-01-17 Ap	2008-01-17 Ap
Benin	-	-	1993-07-01 Ac	1993-07-01 Ac	2000-06-21 R	2000-06-21 R	2007-11-16 At	2007-11-16 At
Bhutan	-	-	2004-08-23 Ac	2004-08-23 Ac	2004-08-23 Ac	2004-08-23 Ac	2004-08-23 Ac	2004-08-23 Ac
Bolivia	-	-	1994-10-03 Ac	1994-10-03 Ac	1994-10-03 Ac	1994-10-03 Ac	1999-04-12 Ac	-
Bosnia and Herzegovina	-	-	1993-09-01 Sc	1993-09-01 Sc	2003-08-11 Ac	2003-08-11 Ac	2003-08-11 Ac	2011-10-11 Ac
Botswana	-	-	1991-12-04 Ac	1991-12-04 Ac	1997-05-13 Ac	1997-05-13 Ac	-	-
Brazil	-	-	1990-03-19 Ac	1990-03-19 Ac	1992-10-01 At	1997-06-25 R	2004-06-30 R	2004-06-30 R
Brunei Darussalam	-	-	1990-07-26 Ac	1993-05-27 Ac	2009-03-03 Ac	2009-03-03 Ac	2009-03-03 Ac	2009-03-03 Ac
Bulgaria	-	-	1990-11-20 Ac	1990-11-20 Ac	1999-04-28 R	1999-04-28 R	1999-11-24 R	2002-04-15 R
Burkina Faso	1985-12-12	1988-09-14	1989-03-30 R	1989-07-20 R	1994-06-10 R	1995-12-12 R	2002-11-11 R	2002-11-11 R

Burundi	-	-	1997-01-06 Ac	1997-01-06 Ac	2001-10-18 At	2001-10-18 At	2001-10-18 At	2001-10-18 At
Côte d'Ivoire	-	-	1993-04-05 Ac	1993-04-05 Ac	1994-05-18 R	2003-10-08 R	-	-
Cambodia	-	-	2001-06-27 Ac	2001-06-27 Ac	2007-01-31 Ac	2007-01-31 Ac	2007-01-31 Ac	2007-01-31 Ac
Cameroon	-	-	1989-08-30 Ac	1989-08-30 Ac	1992-06-08 At	1996-06-25 At	2009-08-21 R	2009-08-21 R
Canada	1985-03-22	1987-09-16	1986-06-04 R	1988-06-30 R	1990-07-05 At	1994-03-16 R	1998-03-27 R	2001-02-09 At
Cape Verde	-	-	2001-07-31 Ac	2001-07-31 Ac	2001-07-31 Ac	2001-07-31 Ac	2001-07-31 Ac	2011-11-30 R
Central African Republic	-	-	1993-03-29 Ac	1993-03-29 Ac	2008-05-29 R	2008-05-29 R	2008-05-29 R	2008-05-29 R
Chad	-	-	1989-05-18 Ac	1994-06-07 R	2001-05-30 R	2001-05-30 R	2001-05-30 R	-
Chile <sup>3</sup>	1985-03-22	1988-06-14	1990-03-06 R	1990-03-26 R	1992-04-09 At	1994-01-14 R	1998-06-17 R	2000-05-03 R
China <sup>4</sup>	-	-	1989-09-11 Ac	1991-06-14 Ac	1991-06-14 Ac	2003-04-22 Ac	2010-05-19 At	2010-05-19 At
Colombia	-	-	1990-07-16 Ac	1993-12-06 Ac	1993-12-06 Ac	1997-08-05 At	2003-06-16 Ac	2006-09-15 Ac
Comoros	-	-	1994-10-31 Ac	1994-10-31 Ac	1994-10-31 Ac	2002-12-02 Ac	2002-12-02 Ac	2002-12-02 Ac
Congo	-	1988-09-15	1994-11-16 Ac	1994-11-16 Ac	1994-11-16 R	2001-10-19 Ac	2001-10-19 Ac	2001-10-19 Ac
Cook Islands	-	-	2003-12-22 Ac	2003-12-22 Ac	2003-12-22 Ac	2003-12-22 Ac	2003-12-22 Ac	2003-12-22 Ac
Costa Rica	-	-	1991-07-30 Ac	1991-07-30 Ac	1998-11-11 R	1998-11-11 R	2005-12-01 R	2008-12-01 R
Croatia	-	-	1992-09-21 Sc	1992-09-21 Sc	1993-10-15 R	1997-02-11 R	2000-09-08 R	2002-04-25 R
Cuba	-	-	1992-07-14 Ac	1992-07-14 Ac	1998-10-19 R	1998-10-19 Ap	2005-09-12 At	2005-09-12 At
Cyprus	-	-	1992-05-28 Ac	1992-05-28 Ac	1994-10-11 At	2003-06-02 At	2003-06-02 At	2004-09-02 R
Czech Republic	-	-	1993-01-01 Sc	1993-01-01 Sc	1996-12-18 Ac	1996-12-18 Ac	1999-11-05 Ap	2001-05-09 At
Democratic People's Republic of Korea	-	-	1995-01-24 Ac	1995-01-24 Ac	1999-06-17 Ac	1999-06-17 Ac	2001-12-13 Ac	2001-12-13 Ac
Democratic Republic of the Congo	-	-	1994-11-30 Ac	1994-11-30 Ac	1994-11-30 Ac	1994-11-30 Ac	2005-03-23 Ac	2005-03-23 Ac
Denmark <sup>5</sup>	1985-03-22	1987-09-16	1988-09-29 R	1988-12-16 R	1991-12-20 Ac	1993-12-21 At	2003-09-24 At	2003-09-24 At
Djibouti	-	-	1999-07-30 Ac	1999-07-30 Ac	1999-07-30 Ac	1999-07-30 Ac	1999-07-30 Ac	-
Dominica	-	-	1993-03-31 Ac	1993-03-31 Ac	1993-03-31 Ac	2006-03-07 Ac	2006-03-07 Ac	2006-03-07 Ac
Dominican Republic	-	-	1993-05-18 Ac	1993-05-18 Ac	2001-12-24 Ac	2001-12-24 Ac	2009-10-01 Ac	2009-10-01 Ac
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Egypt	1985-03-22	1987-09-16	1988-05-09 R	1988-08-02 R	1993-01-13 R	1994-06-28 R	2000-07-20 R	2009-03-06 R
El Salvador	-	-	1992-10-02 Ac	1992-10-02 Ac	2000-12-08 Ac	2000-12-08 Ac	2000-12-08 Ac	2007-11-13 Ac
Equatorial Guinea	-	-	1988-08-17 Ac	2006-09-06 Ac	2007-07-11 Ac	2007-07-11 Ac	2007-07-11 Ac	2007-07-11 Ac
Eritrea	-	-	2005-03-10 Ac	2005-03-10 Ac	2005-07-05 Ac	2005-07-05 Ac	2005-07-05 Ac	2005-07-05 Ac
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Finland	1985-03-22	1987-09-16	1986-09-26 R	1988-12-23 R	1991-12-20 Ac	1993-11-16 At	2001-06-18 At	2001-06-18 At
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Gambia	-	-	1990-07-25 Ac	1990-07-25 Ac	1995-03-13 R	2008-04-30 R	2008-04-30 R	2008-04-30 R
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Germany <sup>6</sup>	1985-03-22	1987-09-16	1988-09-30 R	1988-12-16 R	1991-12-27 R	1993-12-28 R	1999-01-05 R	2002-10-28 R
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Greece	1985-03-22	1987-10-29	1988-12-29 R	1988-12-29 R	1993-05-11 R	1995-01-30 R	2006-01-27 R	2006-01-27 R

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Holy See	-	-	2008-05-05 <a href="#">Ac</a>	2008-05-05 <a href="#">Ac</a>	2008-05-05 <a href="#">Ac</a>	2008-05-05 <a href="#">Ac</a>	2008-05-05 <a href="#">Ac</a>	2008-05-05 <a href="#">Ac</a>
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India	-	-	1991-03-18 <a href="#">Ac</a>	1992-06-19 <a href="#">Ac</a>	1992-06-19 <a href="#">Ac</a>	2003-03-03 <a href="#">Ac</a>	2003-03-03 <a href="#">Ac</a>	2003-03-03 <a href="#">Ac</a>
Indonesia	-	1988-07-21	1992-06-26 <a href="#">Ac</a>	1992-06-26 <a href="#">R</a>	1992-06-26 <a href="#">Ac</a>	1998-12-10 <a href="#">Ac</a>	2006-01-26 <a href="#">R</a>	2006-01-26 <a href="#">R</a>
Iran (Islamic Republic of)	-	-	1990-10-03 <a href="#">Ac</a>	1990-10-03 <a href="#">Ac</a>	1997-08-04 <a href="#">At</a>	1997-08-04 <a href="#">At</a>	2001-10-17 <a href="#">At</a>	-
Iraq	-	-	2008-06-25 <a href="#">Ac</a>	2008-06-25 <a href="#">Ac</a>	2008-06-25 <a href="#">Ac</a>	2008-06-25 <a href="#">Ac</a>	2008-06-25 <a href="#">Ac</a>	2008-06-25 <a href="#">Ac</a>
Ireland	-	1988-09-15	1988-09-15 <a href="#">Ac</a>	1988-12-16 <a href="#">R</a>	1991-12-20 <a href="#">At</a>	1996-04-16 <a href="#">At</a>	2005-10-06 <a href="#">At</a>	2005-10-06 <a href="#">At</a>
Israel <sup>7</sup>	-	1988-01-14	1992-06-30 <a href="#">Ac</a>	1992-06-30 <a href="#">R</a>	1992-06-30 <a href="#">R</a>	1995-04-05 <a href="#">R</a>	2003-05-28 <a href="#">R</a>	2004-04-15 <a href="#">R</a>
Italy	1985-03-22	1987-09-16	1988-09-19 <a href="#">R</a>	1988-12-16 <a href="#">R</a>	1992-02-21 <a href="#">Ap</a>	1995-01-04 <a href="#">R</a>	2001-05-01 <a href="#">R</a>	2004-10-22 <a href="#">R</a>
Jamaica	-	-	1993-03-31 <a href="#">Ac</a>	1993-03-31 <a href="#">Ac</a>	1993-03-31 <a href="#">Ac</a>	1997-11-06 <a href="#">R</a>	2003-09-24 <a href="#">Ac</a>	2003-09-24 <a href="#">Ac</a>
Japan	-	1987-09-16	1988-09-30 <a href="#">Ac</a>	1988-09-30 <a href="#">At</a>	1991-09-04 <a href="#">At</a>	1994-12-20 <a href="#">At</a>	2002-08-30 <a href="#">At</a>	2002-08-30 <a href="#">At</a>
Jordan	-	-	1989-05-31 <a href="#">Ac</a>	1989-05-31 <a href="#">Ac</a>	1993-11-12 <a href="#">R</a>	1995-06-30 <a href="#">R</a>	1999-02-03 <a href="#">R</a>	2001-02-01 <a href="#">R</a>
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Kenya	-	1987-09-16	1988-11-09 <a href="#">Ac</a>	1988-11-09 <a href="#">R</a>	1994-09-27 <a href="#">R</a>	1994-09-27 <a href="#">R</a>	2000-07-12 <a href="#">R</a>	-
Kiribati	-	-	1993-01-07 <a href="#">Ac</a>	1993-01-07 <a href="#">Ac</a>	2004-08-09 <a href="#">Ac</a>	2004-08-09 <a href="#">Ac</a>	2004-08-09 <a href="#">Ac</a>	2004-08-09 <a href="#">Ac</a>
Kuwait	-	-	1992-11-23 <a href="#">Ac</a>	1992-11-23 <a href="#">Ac</a>	1994-07-22 <a href="#">Ac</a>	1994-07-22 <a href="#">Ac</a>	2003-06-13 <a href="#">Ac</a>	2007-07-30 <a href="#">Ac</a>
Kyrgyzstan	-	-	2000-05-31 <a href="#">Ac</a>	2000-05-31 <a href="#">Ac</a>	2003-05-13 <a href="#">R</a>	2003-05-13 <a href="#">R</a>	2003-05-13 <a href="#">R</a>	2005-10-05 <a href="#">R</a>
Lao People's Democratic Republic	-	-	1998-08-21 <a href="#">Ac</a>	1998-08-21 <a href="#">Ac</a>	2006-06-28 <a href="#">Ac</a>	2006-06-28 <a href="#">Ac</a>	2006-06-28 <a href="#">Ac</a>	2006-06-28 <a href="#">Ac</a>
Latvia	-	-	1995-04-28 <a href="#">Ac</a>	1995-04-28 <a href="#">Ac</a>	1998-11-02 <a href="#">At</a>	1998-11-02 <a href="#">At</a>	2002-06-14 <a href="#">At</a>	2004-07-09 <a href="#">At</a>
Lebanon	-	-	1993-03-30 <a href="#">Ac</a>	1993-03-31 <a href="#">Ac</a>	1993-03-31 <a href="#">Ac</a>	2000-07-31 <a href="#">Ac</a>	2000-07-31 <a href="#">Ac</a>	2008-11-21 <a href="#">Ac</a>
Lesotho	-	-	1994-03-25 <a href="#">Ac</a>	1994-03-25 <a href="#">Ac</a>	2010-04-15 <a href="#">Ac</a>	2010-04-15 <a href="#">Ac</a>	2010-04-15 <a href="#">Ac</a>	2010-04-15 <a href="#">Ac</a>
Liberia	-	-	1996-01-15 <a href="#">Ac</a>	1996-01-15 <a href="#">Ac</a>	1996-01-15 <a href="#">Ac</a>	1996-01-15 <a href="#">Ac</a>	2004-11-30 <a href="#">Ac</a>	2004-11-30 <a href="#">Ac</a>
Libya	-	-	1990-07-11 <a href="#">Ac</a>	1990-07-11 <a href="#">Ac</a>	2001-07-12 <a href="#">Ac</a>	2004-09-24 <a href="#">Ac</a>	-	-
Liechtenstein	-	-	1989-02-08 <a href="#">Ac</a>	1989-02-08 <a href="#">Ac</a>	1994-03-24 <a href="#">R</a>	1996-11-22 <a href="#">Ac</a>	2003-12-23 <a href="#">At</a>	2003-12-23 <a href="#">At</a>
Lithuania	-	-	1995-01-18 <a href="#">Ac</a>	1995-01-18 <a href="#">Ac</a>	1998-02-03 <a href="#">R</a>	1998-02-03 <a href="#">R</a>	2004-03-17 <a href="#">At</a>	2004-03-17 <a href="#">At</a>
Luxembourg	1985-04-17	1988-01-29	1988-10-17 <a href="#">R</a>	1988-10-17 <a href="#">R</a>	1992-05-20 <a href="#">R</a>	1994-05-09 <a href="#">R</a>	1999-02-08 <a href="#">R</a>	2001-01-22 <a href="#">R</a>
Madagascar	-	-	1996-11-07 <a href="#">Ac</a>	1996-11-07 <a href="#">Ac</a>	2002-01-16 <a href="#">Ac</a>	2002-01-16 <a href="#">Ac</a>	2002-01-16 <a href="#">Ac</a>	2002-01-16 <a href="#">Ac</a>
Malawi	-	-	1991-01-09 <a href="#">Ac</a>	1991-01-09 <a href="#">Ac</a>	1994-02-08 <a href="#">At</a>	1994-02-28 <a href="#">Ac</a>	2009-02-27 <a href="#">Ac</a>	2009-02-27 <a href="#">Ac</a>
Malaysia	-	-	1989-08-29 <a href="#">Ac</a>	1989-08-29 <a href="#">Ac</a>	1993-06-16 <a href="#">Ac</a>	1993-08-05 <a href="#">Ac</a>	2001-10-26 <a href="#">R</a>	2001-10-26 <a href="#">R</a>
Maldives	-	1988-07-12	1988-04-26 <a href="#">Ac</a>	1989-05-16 <a href="#">R</a>	1991-07-31 <a href="#">R</a>	2001-09-27 <a href="#">R</a>	2001-09-27 <a href="#">R</a>	2002-09-03 <a href="#">Ac</a>
Mali	-	-	1994-10-28 <a href="#">Ac</a>	1994-10-28 <a href="#">Ac</a>	1994-10-28 <a href="#">Ac</a>	2003-03-07 <a href="#">At</a>	2003-03-07 <a href="#">At</a>	2004-03-25 <a href="#">At</a>
Malta	-	1988-09-15	1988-09-15 <a href="#">Ac</a>	1988-12-29 <a href="#">R</a>	1994-02-04 <a href="#">Ap</a>	2003-12-22 <a href="#">At</a>	2003-12-22 <a href="#">At</a>	2003-12-22 <a href="#">At</a>
Marshall Islands	-	-	1993-03-11 <a href="#">Ac</a>	1993-03-11 <a href="#">Ac</a>	1993-03-11 <a href="#">Ac</a>	1993-05-24 <a href="#">Ac</a>	2003-01-27 <a href="#">Ac</a>	2004-05-19 <a href="#">Ac</a>
Mauritania	-	-	1994-05-26 <a href="#">Ac</a>	1994-05-26 <a href="#">Ac</a>	2005-07-22 <a href="#">At</a>	2005-07-22 <a href="#">At</a>	2005-07-22 <a href="#">At</a>	-
Mauritius <sup>8</sup>	-	-	1992-08-18 <a href="#">Ac</a>	1992-08-18 <a href="#">Ac</a>	1992-10-20 <a href="#">Ac</a>	1993-11-30 <a href="#">R</a>	2003-03-24 <a href="#">At</a>	2003-03-24 <a href="#">At</a>
Mexico	1985-04-01	1987-09-16	1987-09-14 <a href="#">R</a>	1988-03-31 <a href="#">At</a>	1991-10-11 <a href="#">At</a>	1994-09-16 <a href="#">At</a>	2006-07-28 <a href="#">At</a>	2007-09-12 <a href="#">At</a>

Micronesia (Federated States of)	-	-	1994-08-03 <a href="#">Ac</a>	1995-09-06 <a href="#">Ac</a>	2001-11-27 <a href="#">Ac</a>	2001-11-27 <a href="#">Ac</a>	2001-11-27 <a href="#">Ac</a>	2001-11-27 <a href="#">Ac</a>
Monaco	-	-	1993-03-12 <a href="#">Ac</a>	1993-03-12 <a href="#">Ac</a>	1993-03-12 <a href="#">Ac</a>	1999-06-15 <a href="#">At</a>	2001-07-26 <a href="#">At</a>	2003-04-03 <a href="#">At</a>
Mongolia	-	-	1996-03-07 <a href="#">Ac</a>	1996-03-07 <a href="#">Ac</a>	1996-03-07 <a href="#">Ac</a>	1996-03-07 <a href="#">Ac</a>	2002-03-28 <a href="#">R</a>	2008-06-24 <a href="#">R</a>
Montenegro	-	-	2006-10-23 <a href="#">Sc</a>	2006-10-23 <a href="#">Sc</a>	2006-10-23 <a href="#">Sc</a>	2006-10-23 <a href="#">Sc</a>	2006-10-23 <a href="#">Sc</a>	2006-10-23 <a href="#">Sc</a>
Morocco	1986-02-07	1988-01-07	1995-12-28 <a href="#">R</a>	1995-12-28 <a href="#">R</a>	1995-12-28 <a href="#">Ac</a>	1995-12-28 <a href="#">Ac</a>	-	-
Mozambique	-	-	1994-09-09 <a href="#">Ac</a>	1994-09-09 <a href="#">Ac</a>	1994-09-09 <a href="#">Ac</a>	1994-09-09 <a href="#">Ac</a>	2010-11-11 <a href="#">Ac</a>	2010-11-11 <a href="#">Ac</a>
Myanmar	-	-	1993-11-24 <a href="#">Ac</a>	1993-11-24 <a href="#">Ac</a>	1993-11-24 <a href="#">Ac</a>	2009-05-22 <a href="#">Ac</a>	-	-
Namibia	-	-	1993-09-20 <a href="#">Ac</a>	1993-09-20 <a href="#">Ac</a>	1997-11-06 <a href="#">R</a>	2003-07-28 <a href="#">At</a>	2007-10-01 <a href="#">At</a>	2007-10-01 <a href="#">At</a>
Nauru	-	-	2001-11-12 <a href="#">Ac</a>	2001-11-12 <a href="#">Ac</a>	2004-09-10 <a href="#">Ac</a>	2004-09-10 <a href="#">Ac</a>	2004-09-10 <a href="#">Ac</a>	2004-09-10 <a href="#">Ac</a>
Nepal	-	-	1994-07-06 <a href="#">Ac</a>	1994-07-06 <a href="#">Ac</a>	1994-07-06 <a href="#">Ac</a>	-	-	-
Netherlands <sup>9</sup>	1985-03-22	1987-09-16	1988-09-28 <a href="#">Ac</a>	1988-12-16 <a href="#">At</a>	1991-12-20 <a href="#">At</a>	1994-04-25 <a href="#">Ac</a>	2000-02-21 <a href="#">At</a>	2001-11-13 <a href="#">At</a>
New Zealand <sup>10</sup>	1986-03-21	1987-09-16	1987-06-02 <a href="#">R</a>	1988-07-21 <a href="#">R</a>	1990-10-01 <a href="#">At</a>	1993-06-04 <a href="#">R</a>	1999-06-03 <a href="#">R</a>	2001-06-08 <a href="#">R</a>
Nicaragua	-	-	1993-03-05 <a href="#">Ac</a>	1993-03-05 <a href="#">Ac</a>	1999-12-13 <a href="#">R</a>	1999-12-13 <a href="#">R</a>	-	-
Niger	-	-	1992-10-09 <a href="#">Ac</a>	1992-10-09 <a href="#">Ac</a>	1996-01-11 <a href="#">Ac</a>	1999-10-08 <a href="#">R</a>	1999-10-08 <a href="#">R</a>	2005-08-25 <a href="#">R</a>
Nigeria	-	-	1988-10-31 <a href="#">Ac</a>	1988-10-31 <a href="#">Ac</a>	2001-09-27 <a href="#">R</a>	2001-09-27 <a href="#">R</a>	2001-09-27 <a href="#">R</a>	2004-05-24 <a href="#">R</a>
Niue	-	-	2003-12-22 <a href="#">Ac</a>	2003-12-22 <a href="#">Ac</a>	2003-12-22 <a href="#">Ac</a>	2003-12-22 <a href="#">Ac</a>	2003-12-22 <a href="#">Ac</a>	2003-12-22 <a href="#">Ac</a>
Norway	1985-03-22	1987-09-16	1986-09-23 <a href="#">R</a>	1988-06-24 <a href="#">R</a>	1991-11-18 <a href="#">R</a>	1993-09-03 <a href="#">R</a>	1998-12-30 <a href="#">R</a>	2001-11-29 <a href="#">R</a>
Oman	-	-	1999-06-30 <a href="#">Ac</a>	1999-06-30 <a href="#">Ac</a>	1999-08-05 <a href="#">Ac</a>	1999-08-05 <a href="#">Ac</a>	2005-01-19 <a href="#">R</a>	2005-01-19 <a href="#">R</a>
Pakistan	-	-	1992-12-18 <a href="#">Ac</a>	1992-12-18 <a href="#">Ac</a>	1992-12-18 <a href="#">Ac</a>	1995-02-17 <a href="#">R</a>	2005-09-02 <a href="#">R</a>	2005-09-02 <a href="#">R</a>
Palau	-	-	2001-05-29 <a href="#">Ac</a>	2001-05-29 <a href="#">Ac</a>	2001-05-29 <a href="#">Ac</a>	2001-05-29 <a href="#">Ac</a>	2001-05-29 <a href="#">Ac</a>	2001-05-29 <a href="#">Ac</a>
Panama	-	1987-09-16	1989-02-13 <a href="#">Ac</a>	1989-03-03 <a href="#">R</a>	1994-02-10 <a href="#">R</a>	1996-10-04 <a href="#">Ac</a>	1999-03-05 <a href="#">R</a>	2001-12-05 <a href="#">R</a>
Papua New Guinea	-	-	1992-10-27 <a href="#">Ac</a>	1992-10-27 <a href="#">Ac</a>	1993-05-04 <a href="#">Ac</a>	2003-10-07 <a href="#">Ac</a>	-	-
Paraguay	-	-	1992-12-03 <a href="#">Ac</a>	1992-12-03 <a href="#">Ac</a>	1992-12-03 <a href="#">Ac</a>	2001-04-27 <a href="#">R</a>	2001-04-27 <a href="#">R</a>	2006-07-18 <a href="#">Ac</a>
Peru	1985-03-22	-	1989-04-07 <a href="#">R</a>	1993-03-31 <a href="#">Ac</a>	1993-03-31 <a href="#">Ac</a>	1999-06-07 <a href="#">Ac</a>	2008-05-20 <a href="#">Ac</a>	-
Philippines	-	1988-09-14	1991-07-17 <a href="#">Ac</a>	1991-07-17 <a href="#">R</a>	1993-08-09 <a href="#">R</a>	2001-06-15 <a href="#">R</a>	2006-05-23 <a href="#">R</a>	2006-05-23 <a href="#">R</a>
Poland	-	-	1990-07-13 <a href="#">Ac</a>	1990-07-13 <a href="#">Ac</a>	1996-10-02 <a href="#">Ac</a>	1996-10-02 <a href="#">Ac</a>	1999-12-06 <a href="#">R</a>	2006-04-13 <a href="#">R</a>
Portugal <sup>11</sup>	-	1987-09-16	1988-10-17 <a href="#">Ac</a>	1988-10-17 <a href="#">R</a>	1992-11-24 <a href="#">R</a>	1998-02-24 <a href="#">R</a>	2003-10-03 <a href="#">R</a>	2006-05-08 <a href="#">R</a>
Qatar	-	-	1996-01-22 <a href="#">Ac</a>	1996-01-22 <a href="#">Ac</a>	1996-01-22 <a href="#">Ac</a>	1996-01-22 <a href="#">Ac</a>	2009-01-29 <a href="#">R</a>	2009-01-29 <a href="#">R</a>
Republic of Korea	-	-	1992-02-27 <a href="#">Ac</a>	1992-02-27 <a href="#">Ac</a>	1992-12-10 <a href="#">Ac</a>	1994-12-02 <a href="#">At</a>	1998-08-19 <a href="#">At</a>	2004-01-09 <a href="#">At</a>
Republic of Moldova	-	-	1996-10-24 <a href="#">Ac</a>	1996-10-24 <a href="#">Ac</a>	2001-06-25 <a href="#">Ac</a>	2001-06-25 <a href="#">Ac</a>	2005-05-24 <a href="#">Ac</a>	2006-12-05 <a href="#">Ac</a>
Romania	-	-	1993-01-27 <a href="#">Ac</a>	1993-01-27 <a href="#">Ac</a>	1993-01-27 <a href="#">Ac</a>	2000-11-28 <a href="#">At</a>	2001-05-21 <a href="#">R</a>	2005-11-17 <a href="#">At</a>
Russian Federation <sup>12</sup>	1985-03-22	1987-12-29	1986-06-18 <a href="#">At</a>	1988-11-10 <a href="#">At</a>	1992-01-13 <a href="#">At</a>	2005-12-14 <a href="#">At</a>	2005-12-14 <a href="#">At</a>	2005-12-14 <a href="#">At</a>
Rwanda	-	-	2001-10-11 <a href="#">Ac</a>	2001-10-11 <a href="#">Ac</a>	2004-01-07 <a href="#">Ac</a>	2004-01-07 <a href="#">Ac</a>	2004-01-07 <a href="#">Ac</a>	2004-01-07 <a href="#">Ac</a>
Saint Kitts and Nevis	-	-	1992-08-10 <a href="#">Ac</a>	1992-08-10 <a href="#">Ac</a>	1998-07-08 <a href="#">Ac</a>	1998-07-08 <a href="#">R</a>	1999-02-25 <a href="#">R</a>	2009-01-08 <a href="#">R</a>
Saint Lucia	-	-	1993-07-28 <a href="#">Ac</a>	1993-07-28 <a href="#">Ac</a>	1999-08-24 <a href="#">Ac</a>	1999-08-24 <a href="#">Ac</a>	1999-08-24 <a href="#">Ac</a>	2001-12-12 <a href="#">R</a>
Saint Vincent and the Grenadines	-	-	1996-12-02 <a href="#">Ac</a>	1996-12-02 <a href="#">Ac</a>	1996-12-02 <a href="#">Ac</a>	1996-12-02 <a href="#">Ac</a>	2009-05-11 <a href="#">Ac</a>	2009-05-11 <a href="#">Ac</a>
Samoa	-	-	1992-12-21 <a href="#">Ac</a>	1992-12-21 <a href="#">Ac</a>	2001-10-04 <a href="#">At</a>	2001-10-04 <a href="#">At</a>	2001-10-04 <a href="#">At</a>	2001-10-04 <a href="#">At</a>
San Marino	-	-	2009-04-23 <a href="#">Ac</a>	2009-04-23 <a href="#">Ac</a>	2009-04-23 <a href="#">Ac</a>	2009-04-23 <a href="#">Ac</a>	2009-04-23 <a href="#">Ac</a>	2009-04-23 <a href="#">Ac</a>
Sao Tome and Principe	-	-	2001-11-19 <a href="#">Ac</a>	2001-11-19 <a href="#">Ac</a>	2001-11-19 <a href="#">Ac</a>	2001-11-19 <a href="#">Ac</a>	2001-11-19 <a href="#">Ac</a>	2001-11-19 <a href="#">Ac</a>
Saudi Arabia	-	-	1993-03-01 <a href="#">Ac</a>	1993-03-01 <a href="#">Ac</a>	1993-03-01 <a href="#">Ac</a>	1993-03-01 <a href="#">Ac</a>	-	-
Senegal	-	1987-09-16	1993-03-19 <a href="#">Ac</a>	1993-05-06 <a href="#">R</a>	1993-05-06 <a href="#">R</a>	1999-08-12 <a href="#">Ac</a>	1999-08-12 <a href="#">Ac</a>	2003-10-08 <a href="#">R</a>
Serbia <sup>14</sup>	-	-	2001-03-12 <a href="#">Sc</a>	2001-03-12 <a href="#">Sc</a>	2005-03-22 <a href="#">Ac</a>	2005-03-22 <a href="#">Ac</a>	2005-03-22 <a href="#">Ac</a>	2005-03-22 <a href="#">Ac</a>
Seychelles	-	-	1993-01-06 <a href="#">Ac</a>	1993-01-06 <a href="#">Ac</a>	1993-01-06 <a href="#">Ac</a>	1993-05-27 <a href="#">R</a>	2002-08-26 <a href="#">Ac</a>	2002-08-26 <a href="#">Ac</a>

Sierra Leone	-	-	2001-08-29 Ac	2001-08-29 Ac	2001-08-29 Ac	2001-08-29 Ac	2001-08-29 Ac	2001-08-29 Ac	2001-08-29 Ac
Singapore	-	-	1989-01-05 Ac	1989-01-05 Ac	1993-03-02 Ac	2000-09-22 Ac	2000-09-22 Ac	2007-01-10 Ac	
Slovakia	-	-	1993-05-28 Sc	1993-05-28 Sc	1994-04-15 Ap	1998-01-08 Ac	1999-11-03 Ap	2002-05-22 R	
Slovenia	-	-	1992-07-06 Sc	1992-07-06 Sc	1992-12-08 At	1998-11-13 At	1999-11-15 R	2003-01-23 R	
Solomon Islands	-	-	1993-06-17 Ac	1993-06-17 Ac	1999-08-17 Ac	1999-08-17 Ac	1999-08-17 Ac	2011-09-22 R	
Somalia	-	-	2001-08-01 Ac	2001-08-01 Ac	2001-08-01 Ac	2001-08-01 Ac	2001-08-01 Ac	2001-08-01 Ac	
South Africa	-	-	1990-01-15 Ac	1990-01-15 Ac	1992-05-12 Ac	2001-03-13 Ac	2004-11-11 Ac	2004-11-11 Ac	
South Sudan	-	-	2012-01-12 Ac	2012-01-12 Ac	-	-	-	-	
Spain	-	1988-07-21	1988-07-25 Ac	1988-12-16 R	1992-05-19 At	1995-06-05 At	1999-05-11 At	2002-02-19 At	
Sri Lanka	-	-	1989-12-15 Ac	1989-12-15 Ac	1993-06-16 Ac	1997-07-07 Ac	1999-08-20 Ac	2002-11-27 Ac	
Sudan	-	-	1993-01-29 Ac	1993-01-29 Ac	2002-01-02 Ac	2002-01-02 Ac	2004-05-18 Ac	2004-05-18 Ac	
Suriname	-	-	1997-10-14 Ac	1997-10-14 Ac	2006-03-29 Ac	2006-03-29 Ac	2006-03-29 Ac	2006-03-29 Ac	
Swaziland	-	-	1992-11-10 Ac	1992-11-10 Ac	2005-12-16 Ac	2005-12-16 Ac	2005-12-16 Ac	2005-12-16 Ac	
Sweden	1985-03-22	1987-09-16	1986-11-26 R	1988-06-29 R	1991-08-02 R	1993-08-09 R	1999-07-12 R	2002-03-28 R	
Switzerland	1985-03-22	1987-09-16	1987-12-17 R	1988-12-28 R	1992-09-16 R	1996-09-16 R	2002-08-28 R	2002-08-28 R	
Syrian Arab Republic	-	-	1989-12-12 Ac	1989-12-12 Ac	1999-11-30 Ac	1999-11-30 Ac	1999-11-30 Ac	-	
Tajikistan	-	-	1996-05-06 Ac	1998-01-07 Ac	1998-01-07 Ac	2009-05-07 Ac	2009-05-07 Ac	2009-05-07 Ac	
Thailand	-	1988-09-15	1989-07-07 Ac	1989-07-07 R	1992-06-25 R	1995-12-01 R	2003-06-23 R	2006-11-14 R	
The Former Yugoslav Republic of Macedonia	-	-	1994-03-10 Sc	1994-03-10 Sc	1998-11-09 R	1998-11-09 R	1999-08-31 Ac	2002-05-23 Ac	
Timor-Leste	-	-	2009-09-16 Ac	2009-09-16 Ac	2009-09-16 Ac	2009-09-16 Ac	2009-09-16 Ac	2009-09-16 Ac	
Togo	-	1987-09-16	1991-02-25 Ac	1991-02-25 R	1998-07-06 At	1998-07-06 At	2001-11-26 At	2001-11-26 At	
Tonga	-	-	1998-07-29 Ac	1998-07-29 Ac	2003-11-26 R	2003-11-26 R	2003-11-26 R	2003-11-26 R	
Trinidad and Tobago	-	-	1989-08-28 Ac	1989-08-28 Ac	1999-06-10 R	1999-06-10 R	1999-06-10 R	2003-10-29 R	
Tunisia	-	-	1989-09-25 Ac	1989-09-25 Ac	1993-07-15 Ac	1995-02-02 Ac	1999-10-19 R	2005-05-16 Ac	
Turkey	-	-	1991-09-20 Ac	1991-09-20 Ac	1995-04-13 R	1995-11-10 R	2003-10-24 R	2003-10-24 R	
Turkmenistan	-	-	1993-11-18 Ac	1993-11-18 Ac	1994-03-15 Ac	2008-03-28 Ac	2008-03-28 Ac	2008-03-28 Ac	
Tuvalu	-	-	1993-07-15 Ac	1993-07-15 Ac	2000-08-31 At	2000-08-31 At	2000-08-31 At	2004-10-04 At	
Uganda	-	1988-09-15	1988-06-24 Ac	1988-09-15 R	1994-01-20 R	1999-11-22 Ac	1999-11-23 Ac	2007-07-27 Ac	
Ukraine	1985-03-22	1988-02-18	1986-06-18 At	1988-09-20 At	1997-02-06 R	2002-04-04 R	2007-05-04 R	2007-05-04 R	
United Arab Emirates	-	-	1989-12-22 Ac	1989-12-22 Ac	2005-02-16 Ac	2005-02-16 Ac	2005-02-16 Ac	2005-02-16 Ac	
United Kingdom of Great Britain and Northern Ireland Ireland <sup>13</sup>	1985-05-20	1987-09-16	1987-05-15 R	1988-12-16 R	1991-12-20 R	1995-01-04 R	2001-10-12 R	2001-10-12 R	
United Republic of Tanzania	-	-	1993-04-07 Ac	1993-04-16 Ac	1993-04-16 Ac	2002-12-06 R	2002-12-06 R	2002-12-06 R	
United States of America	1985-03-22	1987-09-16	1986-08-27 R	1988-04-21 R	1991-12-18 R	1994-03-02 R	2003-10-01 R	2003-10-01 R	
Uruguay	-	-	1989-02-27 Ac	1991-01-08 Ac	1993-11-16 R	1997-07-03 Ac	2000-02-16 Ac	2003-09-09 Ac	
Uzbekistan	-	-	1993-05-18 Ac	1993-05-18 Ac	1998-06-10 Ac	1998-06-10 Ac	2006-10-31 R	2006-10-31 R	
Vanuatu	-	-	1994-11-21 Ac	1994-11-21 Ac	1994-11-21 At	1994-11-21 At	2011-07-21 Ac	2011-07-21 Ac	
Venezuela (Bolivarian Republic of)	-	1987-09-16	1988-09-01 Ac	1989-02-06 R	1993-07-29 R	1997-12-10 R	2002-05-13 R	2006-12-22 R	
Viet Nam	-	-	1994-01-26 Ac	1994-01-26 Ac	1994-01-26 Ac	1994-01-26 Ac	2004-12-03 R	2004-12-03 R	
Yemen	-	-	1996-02-21 Ac	1996-02-21 Ac	2001-04-23 Ac	2001-04-23 Ac	2001-04-23 Ac	2009-10-13 Ac	
Zambia	-	-	1990-01-24 Ac	1990-01-24 Ac	1994-04-15 R	2007-10-11 Ac	2007-10-11 Ac	2007-10-11 Ac	
Zimbabwe	-	-	1992-11-03 Ac	1992-11-03 Ac	1994-06-03 R	1994-06-03 R	-	-	
<b>TOTALS</b>	<b>28</b>	<b>46</b>	<b>197</b>	<b>197</b>	<b>196</b>	<b>194</b>	<b>185</b>	<b>172</b>	



## Notes

R Ratification Ac Accession At Acceptance Ap Approval Sc Succession

\* Entry into force is after ninety days following the date of ratification/accession/acceptance/approval of the treaties for new Parties.

Vienna Convention (22.9.1988)

Montreal Protocol (1.1.1989)

London Amendment (10.8.1992)

Copenhagen Amendment (14.6.1994)

Montreal Amendment (10.11.1999);

Beijing Amendment (25.2.2002)