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ON CLIMATE CHANGE

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**PROPOSALS FOR SPECIAL REPORTS, METHODOLOGY REPORTS
AND TECHNICAL PAPERS**

**Proposal for a Special Report on the greenhouse effect of substitutes for gases
affected by the Montreal Protocol (PFCs and HFCs)**

(Submitted by the Secretariat)

The Panel is invited to consider the proposal for a Special Report on the greenhouse effect of substitutes for gases affected by the Montreal Protocol (PFCs and HFCs). This proposal has been developed jointly by Working Groups I and III.

Safeguarding the ozone layer and the global climate system: issues related to hydrofluorocarbons and perfluorocarbons

Scoping Paper for a Special Report

1. INTRODUCTION

1.1 Scientific studies have demonstrated that chlorofluorocarbons and bromocarbons deplete the ozone layer, prompting policymakers to introduce control measures under the Montreal Protocol to phaseout of the use of these industrial chemicals. In many applications such as refrigeration, fire protection, solvents, etc., the ozone-depleting substances may be replaced with hydrofluorocarbons (HFCs) and perfluorocarbons (PFCs). The HFCs and PFCs, while non-ozone depleting, are greenhouse gases and hence contribute to global warming. Options exist to substitute for these gases in certain applications.

1.2 The global warming potentials of HFCs and PFCs have led to concerns in UNFCCC. In 1998, the issue appeared on the agendas of the Montreal Protocol and UNFCCC and its Subsidiary Body on Scientific and Technological Advise (SBSTA). Following a request from COP 4 of UNFCCC, IPCC and the Technology and Economic Assessment Panel (TEAP) of the Montreal Protocol, carried out a “Joint IPCC/TEAP Expert Meeting on Options for the Limitation of Emissions of HFCs and PFCs,” Petten, The Netherlands, 26-28 May 1999. Between 1999 and 2001, several assessments have been carried out both by TEAP and IPCC¹. Nevertheless, many stakeholders continue to seek scientific and technological information to assist their choices regarding how to comply with the phase-out of the Montreal protocol and at the same time address the objectives of the Climate Convention. Considerations in choosing among possible options include costs, availability, environment, energy and resource efficiency, medical, health and safety aspects for each of the many sectors and applications that are involved. Developing country users are particularly concerned that they could be subject to two consecutive substitution processes under two conventions.

1.3 In 2001, SBSTA 16 noted the importance of developing a balanced scientific, technical and policy-relevant information package to make policy-neutral, user-friendly information available to all Parties and stakeholders to assist them in making informed decisions, when evaluating alternatives to ozone-depleting substances, while at the same time contributing to the objectives of the Montreal Protocol and the UNFCCC. It invited IPCC and TEAP to consider jointly producing such an information package, including a scientific assessment of the interrelations between the ozone layer and climate change.

1.4 IPCC and TEAP responded positively to this request to the 17th session of SBSTA (October 2002). The response is contained in document FCCC/SBSTA/2002/Misc.23 (see separate document). Based on this positive response, the 8th Conference of Parties of UNFCCC decided in October 2002 to formally invite IPCC and TEAP- through the Montreal Protocol – to develop a balanced scientific, technical and policy-relevant special report as outlined in their response to the request by SBSTA. It also urged IPCC and TEAP to address all areas into one, single, integrated report. COP 8 requested to finalize the report by early 2005. This invitation was echoed one month later by the 14th Meeting of the Parties to the Montreal Protocol.

¹ These include: “The Implications to the Montreal Protocol of the Inclusion of HFCs and PFCs in the Kyoto Protocol,” Montreal Protocol TEAP HFC and PFC Task Force, October 1999; WG III published an annex on “Options to Reduce Global Warming Contributions from Substitutes for Ozone-Depleting Substances,” in the TAR WG III in 2001. IPCC has also assessed the science of ozone-depleting gases in climate change, and the global warming roles of a broad range of HFCs, PFCs, and CFCs, through the assessment reports of WGI, most recently in the WG I TAR.

1.5 In preparing a follow-up on this invitation, and pending approval of the Plenary, IPCC and TEAP formed a joint provisional Steering Committee to respond to invitations of the UNFCCC and the MP Parties. This provisional Steering Committee consists of 3 co-chairs of IPCC (Bert Metz and Ogunlade Davidson from WG III and Susan Solomon from WG I) and 3 co-chairs of TEAP (Lambert Kuijpers, Stephen Andersen, and José Pons). It prepared the scoping document at hand. This Committee further drafted a Terms of Reference (See Annex A to this document) with the objective to oversee the preparation of the Special Report. This scoping paper and TOR is submitted to IPCC for its approval at its Twentieth Session. The proposed TOR contains two annexes: Annex A1 with the decisions of COP 8 and MOP 14, and Annex A2 with the contact details of the members of the provisional Steering Committee.

2. WHY A SPECIAL REPORT

2.1 There are several reasons for IPCC to prepare a Special Report on the ozone-climate relation and the role of fluorocarbons and its alternatives.

- The need for a scientific/technical, policy neutral, comprehensive and user-friendly and complete information package has been expressed by all Parties under the Climate convention. Their appeal has been endorsed by the Parties to the Montreal protocol. There are formal and detailed invitations from COP 8 of UNFCCC (October 2002) and MOP 14 of Montreal Protocol (November 2002) to IPCC and TEAP to develop a balanced scientific, technical and policy-relevant special report as outlined in their response to a request by the SBSTA.
- HFCs and PFCs as replacements for Ozone Depleting Substances contribute significantly to global warming – it is therefore a significant issue for IPCC.
- Substantial and new scientific and technical information is available, although it is quite dispersed and not easily accessible for the policy community and other users. Policy neutral, user friendly and comprehensive information on ozone-climate interaction and replacement options that simultaneously address the objectives of UNFCCC and Montreal Protocol are now not available.
- An IPCC Technical Paper would not meet the demand – it would be incomplete due to the rapid evolution of technological options.
- Separate TEAP and IPCC reports would require a duplication of efforts, and at the same time they would be less complete
- Inclusion of the issue in the AR4 in 2007 is not an attractive option. Developing countries in particular are now making choices regarding suitable and sustainable replacements for CFCs. A Special Report can be delivered a few years earlier than the AR4 and would therefore give an added value.

3. PROPOSED CONTENT

SPM

General Introduction

- Liability Disclaimer
- Requests from UNFCCC and Montreal Protocol in 2002 and its background
- Reference to earlier work of IPCC, TEAP, UNEP and other on this issue
- Directions for Use: where to find what in this Special Report

Part A: Ozone depletion and the Climate system

This part will contain a brief summary of relevant findings regarding the relation of ozone layer depletion and global warming based upon the TAR and UNEP/WMO 1998 and 2002 reports. It will be co-ordinated by WG I of IPCC.

Chapter A. 1. Ozone and Climate: A Review of Interconnections .

Short summary of relevant processes as well as key conclusions, drawing where appropriate from the UNEP/WMO Scientific Assessment of Ozone Depletion, 2002 and IPCC TAR, 2001, covering:

- Introduction: processes linking ozone chemistry to temperature/dynamics in various parts of the stratosphere (lower, upper, mid-latitude, polar); processes linking temperature/dynamics to radiative forcing agents in troposphere and stratosphere.
- Review of assessment conclusions regarding (i) effects of ozone depletion on climate change and (ii) effects of climate change on ozone depletion.

Chapter A.2. Chemical and Radiative Effects of HFCs, PFCs, and Their Possible Replacements

This part will include an assessment of toxicity, atmospheric chemistry effects (e.g., air quality) and potential build up of degradation products in the atmosphere, as well as build-up of the parent gases.

- Radiative properties (infrared absorption characteristics)
- Time series of available concentrations and relation with emission data
- Decomposition products (including TFA, toxicity),
- GWP updates and estimated radiative forcings for given scenarios (to be defined)
- Interface with air quality issues

Part B: Options for ODS phaseout and reducing GHG emissions

This part will cover relevant considerations in choosing among options to replace ozone-depleting substances. The choice among options involves a number of environmental, health, safety, availability and technical performance considerations in addition to consideration of direct and indirect greenhouse gas emissions. For each chemical application the Special Report will cover the relevant technical/scientific considerations, including:

- Technical information relevant to the evaluation, including cost, availability, health, environment and safety considerations, technical performance, energy and resource efficiency and all greenhouse gas emissions, using a systematic approach, such as the total equivalent warming impact (TEWI) and Life Cycle Climate Performance (LCCP), to be co-ordinated by IPCC WG III and TEAP.
- Technical options to reduce greenhouse gas emissions, e.g. through containment, recovery, recycling, destruction, the use of alternative fluids and not-in-kind technologies. Where appropriate, reference should be made to examples of relevant policies and measures. This part will be co-ordinated by IPCC WG III and TEAP. The industrial and consumer health/safety considerations will be co-ordinated by TEAP. The SR will have an appropriate liability disclaimer.

The following division in chapters and sub sections is chosen:

B.1 Methodologies

(This chapter provides a description of available methodologies to characterize or analyze technologies, enabling the user to evaluate and compare different options)

- Technical performance characteristics
- Characteristics in respect to health and safety
- Costing approaches
- Comparing energy efficiency
- Assessing climate and environmental impacts
 - Total equivalent warming impact (TEWI)
 - Lifecycle climate performance (LCCP)
 - Lifecycle assessment (LCA)
- Other systems based approaches
- Future developments

B.2 Sub-sectors, Practices and Technologies

The chapters of this part are structured along the relevant sub-sectors with each an introductory and concluding chapter. The selection of the sectors and sub-sectors is based on the 1999 TEAP Task Force Report and Annex to chapter 3 of Working Group III of the IPCC Third Assessment Report, supplemented with information on new HFC, PFC applications as substitutes and alternatives to ozone-depleting substances controlled under the Montreal Protocol:

It is further proposed that the chapters on each sub-sector are structured in a similar manner, first listing and discussing *relevant practices* to reduce emissions of HFCs and PFCs and net global warming impact, and then listing, discussing and comparing *alternative technologies* that can be used in that sub-sector. An overview of each sector and technologies used will be given. Consumption and emission of HFCs and PFCs in each sector will be reviewed. The comparison of the practices and technologies should include lists and tables to provide a summarized overview.

B.2.1 Refrigeration, Air Conditioning and Heat Pumps

- B.2.1.1 Mobile Air Conditioning
- B.2.1.2 Domestic Refrigeration
- B.2.1.3 Commercial Refrigeration
- B.2.1.4 Residential and Commercial Air Conditioning and Heating
- B.2.1.5 Food processing and Cold Storage
- B.2.1.6 Industrial Refrigeration
- B.2.1.7 Transport Refrigeration
- B.2.1.8 Miscellaneous

B.2.2 Foams

- B.2.2.1 Insulating² Foams in Appliances
- B.2.2.2 Insulating Foams in Residential Buildings
- B.2.2.3 Insulating Foams in Commercial Buildings
- B.2.2.4 Insulating Foams in Transportation
- B.2.2.5 Other Insulating Foams
- B.2.2.6 Non-Insulating Foams (Safety, packaging, etc.)
- B.2.2.7 Miscellaneous

B.2.3 Solvents, Coatings, Adhesives

- B.2.3.1 Solvents
- B.2.3.2 Coatings
- B.2.3.3 Adhesives
- B.2.3.4 Other

B.2.4 Aerosol Products

- B.2.4.1 Cosmetic and Convenience Aerosol Products
- B.2.4.2 Technical and Pharmaceutical Aerosol Products
- B.2.4.3 MDIs for oral inhalation for the treatment of Asthma and Chronic Obstructive Pulmonary Diseases (COPD)
- B.2.4.4 Other Aerosol Products

B.2.5 Fire Protection

- B.2.5.1 Portable systems
- B.2.5.2 Fixed systems

² Both thermal and acoustic insulation will be taken into account.

B.2.6 Miscellaneous

This part will address those fluorinated compounds that are directly related to the phase-out of Ozone Depleting Substances, but do not belong to the applications mentioned above for instance HFC –23 emissions coming from HCFC-22 production.

Furthermore, TEAP will provide an appropriate summary of a forthcoming report on HCFCs in Developing Countries.

Within each chapter B.2.1 - B.2.6, the description of the practices, technologies, and options to reduce GHG emissions will be given.. The description should as far as reliable information is available and relevant - include the following elements in the indicated order:

Relevant Practices to reduce HFC and PFC emissions during a life cycle: production, process improvement in applications, improved containment, end-of-life recovery, recycling, disposal and destruction

- Name
- Description
- Direct and indirect greenhouse gas emission reduction
- Consideration of health, safety, resource efficiency and other environmental effects
- Cost – regionally differentiated
- Current market data and availability in different regions
- References to any policies regarding this practice
- Sources of additional information

Alternative Technologies for HFCs and PFCs

(Using HFCs / PFCs or other fluids, gases or aerosols with negligible or lower global warming potential, or not-in-kind technologies including systems with reduced end energy consumption)

- Name
- Description
- Technical performance
- direct and indirect greenhouse gas emissions (using LCCP, TEWI)
- Other environmental effects
- Resource efficiency, including energy use
- Health, safety considerations
- Cost – regionally differentiated (as far as available)
- Current market availability in different regions
- References to any policies regarding this technology
- Sources of additional information.

Part C: Future estimation and availability of HFCs and PFCs

This part will cover publicly available information on currently installed and planned global production capacities. Additionally, a summary will be provided of available demand and emission projections of HFCs and PFCs from previous IPCC and TEAP reports. This part will be co-ordinated by TEAP, subject to IPCC procedures.

The following division is chosen:

- Installed and planned production capacities including regional distribution
- Summarized estimates of future HFC and PFC demand and /or emissions, including regional distribution, drawn upon available IPCC and TEAP reports
- Comparison of HFC and PFC production capacities and demand

4. PLANNING AND COSTS

4.1 Time table:

- Call for nominations of CLA, LAs and RE have gone out in January. Deadline 20 March 2003
- A written approval of the selected CLA, LAs and REs will be done by the Bureaux of WG I and WG III in April
- Stakeholder consultations in May 2003 by Steering Committee
- Date first LA meeting: 3 days, June 2003
- Date second LA meeting: following COP 9, December 2003
- June 2004, December 2004 third and Fourth LA meetings
- March/April 2005, combined WG I/WG III plenary with approval of the SPM and acceptance of the main Special Report

4.2 Deliverables:

- Final Text and approved SPM will be available before SBSTA 22 and the Open Ended Working Group of the Montreal Protocol in June 2005
- Hard Copy Book, a CD ROM will be available by September 2005
- Outreach activities will be 2nd half of 2005

4.3 IPCC budget:

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|---|-------------|
| • 2003: 2 LA meetings , 2 * 25 journeys from DC, | 315.700 CHF |
| • 2004: 2 LA meetings, 2 * 25 journeys from DC, | 315.700 CHF |
| • 2005: WG I/WG III panel combined with
SR CO2 storage, 120 journeys | 844.800CHF |
| • Outreach activities, CD ROM | placeholder |

**PROPOSED TERMS OF REFERENCE
IPCC/TEAP STEERING COMMITTEE FOR SPECIAL REPORT:
SAFEGUARDING THE OZONE LAYER AND THE GLOBAL CLIMATE SYSTEM: ISSUES
RELATED TO HYDROFLUOROCARBONS AND PERFLUOROCARBONS**

In response to the decisions by the Eighth Conference of the Parties to the UN Framework Convention on Climate Change (UNFCCC) (see Annex A I), and the Fourteenth Meeting of the Parties to the Montreal Protocol (see Annex A I), the XXth Session of the Intergovernmental Panel on Climate Change has established a Steering Committee to oversee the preparation of a Special Report entitled: Safeguarding the ozone layer and the global climate system: issues related to hydrofluorocarbons and perfluorocarbons, with the role and terms of reference as given below.

Role

2. The Steering Committee will act in a fashion consistent with the processes of the IPCC and the TEAP to produce the Special Report. A single integrated report is recommended by the Steering Committee, by the UNFCCC, and by the Montreal Protocol.
3. The role of the Steering Committee is to oversee the preparation of the above Special Report with an aim to complete the task so that the report can be submitted to the 22nd session of the UNFCCC-SBSTA meeting and to the Montreal Protocol 25th Open-ended Working Group, which both take place in the second quarter of 2005.
4. To this end, the Steering Committee shall prepare any draft decisions it considers necessary on the matter for submission to the IPCC Plenary.

Composition (see Annex A II)

5. The Steering Committee will be comprised of:
 - (a) Three representatives nominated by the TEAP; and
 - (b) Three representatives nominated by the IPCC.
6. The Steering Committee will elect its own Chair.

Report Preparation

7. The Special report will contain three distinct parts to be coordinated by IPCC WG I, WG III, and/or TEAP, drawing upon the experience and technical focus of each. A high degree of cooperation and interaction is envisaged in all cases:
 - (a) Part (a) will cover a brief summary of relevant findings regarding the relation of ozone layer depletion and global warming based upon the TAR and UNEP/WMO 1998 and 2002 reports. This part will also cover an assessment of toxicity, atmospheric chemistry effects (e.g., air quality) and potential build up of degradation products in the atmosphere, as well as build-up of the parent gases. This part will be co-ordinated by WG I of IPCC.
 - (b) Part (b) will cover relevant considerations in choosing among options to replace ozone-depleting substances. The choice among options involves a number of environmental, health, safety, availability and technical performance considerations in addition to consideration of direct and indirect greenhouse gas emissions.

For each chemical application the Special Report will cover the relevant technical/scientific considerations, including:

- Technical information relevant to the evaluation, including cost, availability, health, environment and safety considerations, technical performance, energy and resource efficiency and all greenhouse gas emissions, using a systematic approach, such as the total equivalent warming impact (TEWI) and Life Cycle Climate Performance (LCCP), to be co-ordinated by IPCC WG III and TEAP.
 - Technical options to reduce greenhouse gas emissions, e.g. through containment, recovery, recycling, destruction, the use of alternative fluids and not-in-kind technologies. Where appropriate, reference should be made to examples of relevant policies and measures. This part will be co-ordinated by IPCC WG III and TEAP. It is noted that industrial and consumer health/safety considerations will be co-ordinated by TEAP. The SR will have an appropriate liability disclaimer.
- (c) Part (c) will cover publicly available information on currently installed and planned global production capacities. Additionally, a summary will be provided of available demand and emission projections of HFCs and PFCs from previous IPCC and TEAP reports. No new assessment of future demand will be made. This part will be co-ordinated by TEAP, subject to IPCC procedures.

8. The Steering Committee will take account of overlaps and synergies between TEAP, IPCC WG III, and WG I. The Steering Committee will guarantee a high degree of co-operation between the three groups. The Steering Committee will make every effort to produce a user-friendly report.

9. Expert author teams are expected to include experts drawn from the TEAP and IPCC WG I and III communities. The Steering Committee will be responsible for proposing a slate of lead authors and review editors to the IPCC Bureau.

10. The Steering Committee will be responsible for supervising the timeline and for staying within the budget of the IPCC Trust Fund as approved by the IPCC Sessions for the preparation of the Special Report, and for staying within the budget of the Montreal protocol trust Fund where it concerns participation of developing country experts.

Reporting Arrangements

11. The Chair of the Steering Committee will, in person or through a delegate, regularly report on progress with the preparation of the Special Report(s) to the Subsidiary Body on Scientific and Technical Advice (SBSTA) of the UN FCCC, to the Open ended Working Group and the Meeting of the Parties under the Montreal Protocol, and the IPCC Plenary.

ANNEX A I: UNFCCC AND MONTREAL PROTOCOL DECISIONS

1. DECISION OF COP 8 OF UNFCCC, OCTOBER 2002, New Delhi
(see <http://unfccc.int/cop8/index.html>)

Relationship between efforts to protect the stratospheric ozone layer and efforts to safeguard the global climate system: issues relating to hydrofluorocarbons and perfluorocarbons

The Conference of the Parties,

Expressing its appreciation to the Intergovernmental Panel on Climate Change and the Technology and Economic Assessment Panel of the Montreal Protocol for their timely and complete response to the request of the Subsidiary Body for Scientific and Technological Advice,

Having considered the conclusions of the Subsidiary Body for Scientific and Technological Advice at its sixteenth and seventeenth sessions,

Recalling that the Convention provides flexibility for Parties included in Annex I to the Convention to optimize their approaches in minimizing the overall carbon dioxide equivalent emissions of greenhouse gases in their actions to address climate change,

Recognizing the role of the use of hydrofluorocarbons, hydrocarbons, ammonia, carbon dioxide and other options in the phase-out of ozone-depleting substances under the Montreal Protocol,

Recognizing also the need for governments to engage in or continue dialogues with relevant industries and stakeholders to advance information regarding replacement options for ozone-depleting substances in a manner that contributes to the objectives of the Montreal Protocol and the Convention,

Noting the importance of continuing research and development on technologies that safeguard the ozone layer while at the same time contributing to the objectives of the Montreal Protocol and the Convention,

Noting also that the Multilateral Fund under the Montreal Protocol is funding the replacement of ozone-depleting substances in developing countries by alternatives, some of which are also greenhouse gases,

Noting further that many developing countries Parties to the Montreal Protocol use Hydrofluorocarbons in applications and depend on imports of these substances, and that any conversion has implications, including technological and economic implications, for those countries,

Considering the wide dissemination of policy-neutral information to be vital in allowing enterprises and governments to make fully informed choices regarding replacement options for ozone-depleting substances,

1. *Invites* the Intergovernmental Panel on Climate Change and, through the Meeting of the Parties to the Montreal Protocol, the Technology and Economic Assessment Panel of the Montreal Protocol to develop a balanced scientific, technical and policy-relevant special report as outlined in their response to a request by the Subsidiary Body for Scientific and Technological Advice,

2. *Urges* the Intergovernmental Panel on Climate Change and the Technology and Economic Assessment Panel of the Montreal Protocol to address all areas into one, single, integrated report and finalize the report by early 2005;

3. *Encourages* Parties to ensure that their actions to address ozone depletion are undertaken in a manner that also contributes to the objective of the Convention;
4. *Encourages* governments to engage in or continue dialogues with relevant industries and stakeholders to advance information regarding replacement options for ozone-depleting substances in a manner that contributes to the objectives of the Montreal Protocol and the Convention;
5. *Encourages* relevant organizations to continue to make available policy-neutral information, particularly to developing countries, including through the Convention web site;
6. *Encourages* Parties to work towards continuing research and development on technologies that safeguard the ozone layer while at the same time contributing to the objectives of the Montreal Protocol and the Convention;
7. *Invites* Parties to consider project funding in addition to funding by the Multilateral Fund under the Montreal Protocol, in particular through the Global Environment Facility and the clean development mechanism;
8. *Requests* the Convention secretariat to bring this decision to the attention of the Intergovernmental Panel on Climate Change and the Meeting of the Parties to the Montreal Protocol through their respective secretariats;
9. *Decides* that:
 - (a) Until the acceptance by the Intergovernmental Panel on Climate Change and the Technology and Economic Assessment Panel of the Montreal Protocol to undertake the work referred to in paragraph 1 above, the Subsidiary Body for Scientific and Technological Advice shall continue its consideration of the issues under the agenda item “Relationship between efforts to protect the stratospheric ozone layer and efforts to safeguard the global climate systems: issues relating to hydrofluorocarbons and perfluorocarbons”;
 - (b) Upon receipt of the acceptance by the Intergovernmental Panel on Climate Change and the Technology and Economic Assessment Panel of the Montreal Protocol, the issues referred to in paragraph 9 (a) above will be considered under the agenda item “Cooperation with relevant international organizations”;
 - (c) Consideration of these issues under the new agenda item will resume at the Subsidiary Body for Scientific and Technological Advice session immediately following receipt of the report but not later than 2005.

2. DECISION FROM THE 14TH MEETING OF THE PARTIES TO THE MONTREAL PROTOCOL, ROME, NOVEMBER 2003
(see UNEP/OzC.Pro.14/9, 5 December 2002)

The Fourteenth Meeting of the Parties decides:

XIV/10. Relationship between efforts to protect the stratospheric ozone layer and efforts to safeguard the global climate system: issues relating to hydrofluorocarbons and perfluorocarbons

Welcoming Decision X/CP.8 taken at the Eight Conference of Parties to the United Nations Framework Convention on Climate Change on the relationship between efforts to protect the stratospheric ozone layer and efforts to safeguard the global climate system,

Noting that the Intergovernmental Panel on Climate Change and the Technology and Economic Assessment Panel are invited by the Convention on Climate Change to develop a balanced scientific, technical and policy-relevant special report as outlined in their responses to a request by the Subsidiary Body of the United Nations Framework Convention on Climate Change (FCCC/SBSTA/2002/MISC.23),

To request the TEAP to work with the IPCC in preparing the report mentioned above and to address all areas in one single integrated report to be finalised by early 2005. The report should be completed in time to be submitted to the OEWG for consideration in so far as it relates to actions to address ozone depletion and the SBSTA of UNFCCC simultaneously.

ANNEX A II. MEMBERS OF THE IPCC/TEAP STEERING COMMITTEE

Special Report ON Safeguarding the ozone layer AND THE global climate system: issues related to hydrofluorocarbons and perfluorocarbons

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