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SUBSIDIARY BODY FOR SCIENTIFIC AND TECHNOLOGICAL ADVICE

Ninth session

Buenos Aires, 2-13 November 1998

Item 4 of the provisional agenda

### OTHER MATTERS

#### Approaches to resolving methodological issues related to national communications from Annex I Parties

##### Additional submissions by Parties

##### Note by the secretariat

1. At its eighth session, the Subsidiary Body for Scientific and Technological Advice (SBSTA) requested Parties which had not already done so to submit to the secretariat, by 15 August 1998, their views on possible approaches to resolving the methodological issues related to greenhouse gas inventories such as those identified in the annex on methodological issues contained in document FCCC/SBI/1997/19, for compilation into a miscellaneous document.\*
2. Three submissions have been received.\*\* In accordance with the procedure for miscellaneous documents, these submissions are attached and are reproduced in the language in which they were received and without formal editing.

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\* Previous submissions from Parties on this issue, made in response to a similar request from the SBSTA at its seventh session (see FCCC/SBSTA/1997/14, para. 16 (a)), are available in document FCCC/SBSTA/1998/MISC.2.

\*\* In order to make these submissions available on electronic systems, including the World Wide Web, these contributions have been electronically scanned and/or retyped. The secretariat has made every effort to ensure the correct reproduction of the texts as submitted.

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PAPER NO.1: AUSTRIA  
(ON BEHALF OF THE EUROPEAN COMMUNITY AND ITS MEMBER STATES)

METHODOLOGICAL ISSUES : (a) EMISSIONS INVENTORIES

Austria, on behalf of the European Community and its Member States, would like to submit the views on possible approaches to resolving methodological issues related to GHG inventories, as requested by SBSTA and contained in Doc. FCCC/SBSTA/1998/6.

The EU believes that inventory quality, improvement of comparability of reporting, completeness and verifiability are becoming more and more vital elements for successfully monitoring the Kyoto commitments and its compliance. Accurate, reliable, complete and up-to-date inventories will be the key elements for a successful implementation.

The EU's views on the information needs and approaches to resolving methodological issues connected with national inventories already raised in the Secretariat's paper FCCC/SBI/1997/19 are given in paper FCCC/SBSTA/1998/MISC.2. In this submission the EU recognised the need to keep the FCCC Annex I Reporting Guidelines under review, and in this context welcomed the list of methodological issues identified by the Secretariat as a result of its first compilation and synthesis of Second National Communications. However, the EU recognised that the list might be incomplete, and that the Kyoto agreement would probably raise further issues for consideration. The EU said that an overview could be contained in the full compilation and synthesis report based on Second National Communications, to be presented to COP4, which COP5 would then be able to take into account in deciding the next revision of the FCCC Guidelines for Annex I Communications.

The EU also recalls that Parties are requested to submit emissions inventories annually by 15th April to the Secretariat in accordance with Decision 9/CP.2 and that Parties are requested to respond by 15 August 1998 to the request by SBSTA-8 to make available to the Secretariat, for the purposes of comparison and transparency, their complete 1996 GHG inventories obtained using, when possible, best available methodologies and those using the current IPCC default methodologies.

The EU believes that the Kyoto agreement has indeed raised a number of methodological issues related to inventories which should be taken into account when developing guidelines for national systems under Art 5.1 of the Protocol, and when revising the guidelines for Annex I Communications. These include:

1. good practice standards and use of best national methodologies for inventory preparation within the IPCC Guidelines
2. need for IPCC to continue to review the scientific literature to reduce the uncertainties in national emission inventories using the 1996 guidelines, and in particular for gases originating from the agricultural sector, e.g. N<sub>2</sub>O.
3. standards of completeness of emissions estimates

4. rules for recalculating inventory estimates to take account of improved scientific knowledge or better statistical data within the framework of the IPCC Methodology
5. handling of uncertainty in inventory estimates from Parties when assessing compliance with the commitments of Annex I Parties under article 3 of the Protocol and the handling of uncertainty in GWP values for subsequent budget periods according to article 5.3 of the Protocol
6. the definition of supplementary information requested under article 7.1 and 7.2 of the Protocol to be incorporated into national inventories for the purposes of ensuring compliance with commitments under Article 3. Furthermore, guidelines should be elaborated to ensure the preparation of information as requested in article 7.4
7. provision of supplementary inventory data identifying the sink categories that Parties may use in meeting commitments referred to under article 3
8. standards for national systems for estimation of greenhouse gas emissions by sources and removals by sinks, covering matters such as documentation for independent auditing and verification, expert review, openness, comparison with international data sources and other methods for objective assessment of data quality
9. guidelines for the calculation on a project basis of emission reduction units to be transferred between Parties under the provisions of article 6, or emission reductions certified for use in contributing towards compliance under article 12, developed within the definition of principles, modalities, rules and guidelines for the mechanisms defined in articles 6, 12 and 17 of the Kyoto Protocol (NL: delete this item)
10. the provision by Parties to SBSTA of data to establish the level of carbon stocks in 1990 and changes in subsequent years, consistent with the requirement in Article 3.4 of the Protocol
11. the provision of actual as well as potential emissions of fluorinated compounds, consistent with paragraph 2 of decision 2/CP.3.

In this context, the EU believes that a cooperation between the secretariat and IPCC for drawing up a workplan for the further elaboration of these issues would be valuable. This workplan should take into account the different responsibilities of the IPCC and UN-FCCC bodies.

In the EU's view the development of agreed criteria for the acceptability of emissions estimates to be used in assessing compliance should be the guiding principle from which all else flows, because without agreed criteria it will be impossible to decide whether Parties are meeting their commitments.

The EU recalls the request by SBSTA-8 to the secretariat to organise a workshop in order to develop proposals to resolve the methodological issues, and stresses the need to finalise the conclusions of the workshop in good time before SBSTA-10. Further work on hydrofluorocarbons, perfluorocarbons and sulphur hexafluoride, i.a. on guidance and reporting of the inventories, has to be done. The EU welcomes the notion of ongoing close collaboration between the secretariat and other relevant bodies like the IPCC and the OECD/IEA in this field.

PAPER NO.2: SWITZERLAND

METHODOLOGICAL ISSUES CONCERNING EMISSIONS INVENTORIES

In response to the call for comments at the eighth session of the Subsidiary Body for Scientific and Technological Advice concerning methodological issues related to GHG inventories, Switzerland presents the following views.

1. GHG emissions inventories are key elements for the assessment of progress made towards achieving the objective of the UNFCCC. At the same time they are the most eminent prerequisite for the consideration of Parties' compliance with commitments under the UNFCCC. Thus, the present approach aiming at uniform, transparent, comparable and complete emissions inventories based on commonly agreed methodologies should be maintained and developed further to meet the needs emanating from the Kyoto Protocol.

2. The Convention secretariat, in the annex to its document FCCC/SBI/1997/19, has compiled a very useful overview of problems and questions that arise from experience gained with Annex I Party inventories so far. This document clearly shows that compliance with IPCC inventory and FCCC reporting guidelines is in many instances achieved only to a limited degree. Switzerland considers this an alarming outcome in the light of the importance emissions inventories have for the Convention process. Every effort should be made to remedy this situation by, i.a.,

- (i) providing Parties with adequate assistance to establish their inventories in line with agreed guidelines;
- (ii) amending present guidelines in order to facilitate reporting without compromising quality standards;
- (iii) foreseeing, where appropriate, additional elements within the review process that allow for the sound assessment of implications non-compliance with guidelines may have on reported data levels.

3. Given the wide variety of circumstances under which emissions inventory guidelines are applied by Parties, their uniform and full application is an ambitious goal. However, in the interest of transparency and comparability the use of common reporting formats and methodologies should remain a first priority task for Parties. In order to achieve this, any guideline revision should carefully analyze where the cost benefit ratio of the preparation of inventories might be optimized in the light of the Conventions' needs as well as Parties' experience.

4. The IPCC/OECD/IEA Programme on National GHG Inventories has taken the initiative to conduct a campaign assessing national feedback on the Revised 1996 IPCC Guidelines for National GHG Inventories. Switzerland welcomes this initiative and invites the Secretariat to provide an adequate occasion for the presentation of its results before the Convention bodies in due time. Depending on the outcome of this initiative, on the results of the feedback process on the FCCC reporting guidelines initiated by SBSTA at its eighth session, and on the basis of the assessment the Secretariat will prepare in its synthesis report on the second national communications by Annex I Parties, the Convention bodies may

consider further action with the aim of reaching the necessary degree of data completeness, reliability and comparability.

5. In the short term, Switzerland feels that immediate action should be taken to reduce cases of non-compliance with inventory related guidelines as they have been identified by the Secretariat in document FCCC/SBI/1997/19. For this purpose, a set of criteria and standards (e.g., minimum level of data completeness and quality) needs to be agreed where matters of compliance with commitments under the Kyoto Protocol and progress towards the objective of the Convention are to be assessed. Highest standards should be applied where comparability and transparency of data are concerned. The IPCC reference approach may be a well-suited element in this context as a minimum requirement for compliance with inventory reporting commitments.

6. Document FCCC/SBI/1997/19 raises the issue of changes in estimates introduced for reasons other than the use of the revised guidelines. The improvement of data quality and data completeness are first priority tasks in the context of emissions accounting. Thus revisions to data delivered at earlier stages inevitably are a feature of emissions inventories. In Switzerland's view, two aspects require short-term action by the Convention bodies: (i) definition of a common framework for recalculating inventory data; (ii) guidance to expert review teams for the assessment of changes in estimates.

7. Given the new situation that has occurred with the Kyoto Protocol with reduction commitments defined in terms of CO<sub>2</sub>-equivalents, the next revision of FCCC guidelines should clearly define which GWP values are the mandatory common reference for related calculations. Switzerland favours the already widespread use of the values associated with a 100 year horizon published in the IPCC SAR. However, it should be left to individual Parties to present additional figures calculated for other time horizons, if they wish to do so.

8. Switzerland is very concerned about the difficulties encountered by the Secretariat in carrying out its synthesis when assessing data in the LUCF sector. In the light of the Kyoto Protocol, which foresees the inclusion of selected activities of the LUCF sector, highest priority should be given to these particular areas. Broadly applicable ways to generate reliable data and to assure their reporting in a fully transparent manner are a prerequisite for the credible implementation of the Kyoto Protocol.

9. Regarding the „new gases“, Switzerland strongly favours an approach that covers both potential and actual emissions. Experience in the context of the Montreal Protocol indicates that actual data alone are not a reliable basis for emissions accounting. The conclusions on reporting emissions of HFCs, PFCs and SF<sub>6</sub> adopted by SBSTA at its fourth session need to be amended in order to assure that disaggregated data are submitted for both approaches on a mandatory basis. FCCC guidelines should be revised accordingly.

## PAPER NO. 3: UNITED STATES OF AMERICA

### VIEWS ON POSSIBLE APPROACHES AIMED AT RESOLVING METHODOLOGICAL ISSUES

The United States looks forward to receipt and study of the complete compilation and synthesis of 2nd National Communications from all Parties. We anticipate that report will provide valuable input to the Parties on issues to be resolved with respect to methodological issues and revisions to the guidelines. In the interim, we offer the following comments on the methodological issues raised by the Secretariat in its first, preliminary compilation and synthesis of second national communications from Annex I Parties (FCCC/SBI/1997/19, in its Annex I).

In light of the accomplishments in Kyoto, the United States believes that Parties should begin to look to future information needs when considering methodological issues and revision of the guidelines for national communications. In particular, we anticipate the Parties will need detailed information on emissions of individual gases and sequestration in land use, land use change and forestry. These trends will provide substantive documentation of Parties' implementation of the Convention – and over the longer term, are considerably more important than either emissions projection profiles or national reporting on policies and measures to mitigate climate change. In addition, guidelines will be required to properly document emissions trading, joint implementation and CDM activities.

#### Transparency, Comparability & Completeness

The Secretariat notes that standard tables will not be required for the revised 1996 inventory guidelines. In our view, the Secretariat's compilation demonstrates the need for standard tables; without them it is extremely difficult to compare communications, and to assure adequate transparency in the evaluation process. The US believes that such tables would also significantly facilitate the work of the Secretariat – particularly if standard electronic formats were developed for the data tables. Furthermore, the utility of the information to all users would be greatly enhanced through the use of such tables or formats. The development of standard tables need not be overcomplicated – standard tables could, for example, include the already developed worksheet information (e.g., for the energy sector).

We echo the calls for additional information discussed in SBI/1997/19/Annex I, paragraph 12, particularly noting that many inventories are neither complete nor did they fully meet agreed guidelines. Some set of standard indicators to fill in blanks in the tables, such as to indicate differences among “not estimated”, “not applicable”, “below threshold levels”, “insignificant amounts”, etc., would also be quite useful.

We believe that transparency, comparability and completeness will remain critical to the implementation of the Convention; we also anticipate that with additional emphasis on all six greenhouse gases, overall quality of reporting will improve.



### Confidence levels

Further work is needed both to evaluate and then to improve the quality of data reported. All Parties should be held to the highest standard possible, not judged by the lowest standard presented. This evaluation will aid not only in improving the data quality but also aid in verification. We note the continuing IPCC /OECD/IEA work on this issue, and look forward to its results.

### Re-calculation of base year inventory

The compilation notes that most Parties recalculated the emissions estimates for the base year, a practice that can be expected to continue as inventory methods and emissions coefficients develop. However, in some cases, Parties did not use the same method to calculate base year and most recent year emissions estimates, making the values difficult – if not impossible – to compare. The Secretariat should continue to evaluate and report on the changes made to baseline emissions levels, and to highlight instances in which comparable methods were not used for both base levels and current emissions. In addition, while recalculations for the base year can be expected, they must be transparent. Furthermore, with the methods for inventories now “frozen” using the revised 1996 methods (until the end of the first compliance period under the Kyoto Protocol), the need for this recalculation should diminish. Indeed, at some point, modification of long-past activity levels becomes questionable.

In the U.S. view, the COP/SBSTA must ultimately address the recalculation issue, determining when and how much of a recalculation is warranted and when it may be legitimately questioned. Transparency and verifiability should be paramount in any decisions on this matter.

### Use of GWPs & Reporting of other GHGs

Decisions taken at COP4 (and those required to implement the Kyoto Protocol) should provide new impetus for all Parties to improve data and reporting, in particular to resolve the global warming potential (GWP) issues raised by the Secretariat. In this context, we note that the reporting of the synthetic gases, with their widely varying GWPs, makes even more important the presentation of fully disaggregated data for comparability and transparency; to this end we anticipate a need for new tables or worksheets to be developed and utilized. Parties should provide accounting for all gases in both mass and in GWP-weighted formats; in addition, Parties need to be absolutely explicit as to whether they used actual or potential methods for emissions estimation.

We believe that parties should begin to voluntarily report the emissions of other gases with high-GWPs, even though the gas may not be listed in the inventory methodologies. One example of this is NF<sub>3</sub>, for which the US now collecting data. We note that the gases may not yet have an agreed GWP, but the gases are significant. To this end, we offer a table (attached) listing all of the known HFCs and PFCs as well as those gases that are expected to have high-GWPs.

### Emissions from LUCF

We note that the issue of land use change and forestry has been the subject a prolonged and contentious debate in both Bonn and Kyoto over the last year. It is clear that overall reporting in these sectors has been inadequate to date. Thus, worksheets were often not provided by Parties in reporting activities in the LUCF sector – and countries often used methods that were different from the agreed default methods. Not only is the existing documentation inadequate to support the Convention, it will also be inadequate to support the requirements of the Kyoto Protocol. Thus, new data and reporting requirements will need to be established. We anticipate that the IPCC's Special Report on Land Use Change and Forestry will contribute substantially to this effort, and have provided comments on the Special Report in a separate submission.

### Summary Tables

The summary tables given in the Secretariat's Compilation and Synthesis Report are very useful, both for a thorough evaluation of the above discussed issues, and to assess the global response to the climate change problem. We thus encourage all parties to make better use of the tabular format, and encourage the Secretariat to continue to use this kind of comprehensive and summary tabulation in its effort to synthesize inventory data from National Communications.

### Policies and Measures

The (in FCCC/SBI/1997/19, Section III.A) questions the value of the large number of policies and measures reported, and suggests that it might be advisable to limit them, perhaps employing criteria which call for a threshold level of impact in order to report. The United States does not view this as a useful approach. While recognizing that some measures may not create substantial emissions reductions in any given country, the same measure, applied to another country, may lead to significant – and possibly extremely cost-effective – reductions. Often, in fact, there is value and innovation available in the 'smaller' policies and measures.

It may be valuable, in the development of the questionnaire on National Communications guidelines called for by the SBSTA at its eighth session, for the Secretariat to request additional information on the use of tables in reporting on policies and measures. For example, the Secretariat may inquire why Parties which did not employ the tables found them objectionable – or how the information might be more usefully represented. In this context, it will also be critical to elaborate on the element of the guidelines addressing monitoring – where few Parties fully complied with reporting criteria.

### Projections and Effects of Measures

Most Parties now give both “with measures” and “without measures” projections, as called for in the reporting guidelines. Recognizing the difficulty in making such projections, we continue to urge that these projections be provided in communications. In addition, we urge all Parties to continue efforts to more fully report on the descriptions of the models used

(including specific assumptions made) in making their projections; without such descriptions, it is impossible to assess the validity of the conclusions. We also note that while standard tables have been recommended, they were not used by many Parties. The Secretariat may choose to explore this issue in its questionnaire (e.g., do the tables require modification, or was it only impossible to fill them in due to time pressures?). One of the least developed aspects of this component of communications related to projections on the 'other gases'. While again recognizing the difficulty in undertaking such analyses, such projections become increasingly important under the Kyoto Protocol's six gas regime.

### Finance and Technology Transfer

The United States sought to provide a comprehensive assessment of our technology transfer activities to developing countries in Chapter 8 (International Activities) of our Second National Communication, the U.S. Climate Action Report -- 1997. However, we found it very difficult to complete Tables 9 and 10 in the Guidelines for Annex I Communications for the following reasons:

- it was often impossible to distinguish which activities were specifically targeted to address climate change and which were non-climate specific; and
- it was difficult to distinguish between "new and additional" and "ongoing" activities.

The SBSTA and/or SBI may need to reconsider what information is reported in the tables (and the value-added if Parties cannot properly complete them) if they are to be retained – or consider alternate modalities to report on this information if the tables are deleted.

### Conclusions

The United States looks forward to seeing the completed Compilation and Synthesis Report of Annex I Parties' Second National Communications. We anticipate that other issues may be raised once the full assessment has been prepared.

We also note that the issue of frequency of changes in the guidelines may need to be separately addressed by the Parties. On the one hand, considering the improvements made in Second National Communications submitted to date, we may anticipate that the third communication may be substantially improved with no modification to the guidelines themselves. However, due to the increased demands put on reporting obligations by the legally binding nature of the Kyoto Protocol, it seems more likely that increased stringency in reporting guidelines will become necessary. We look forward to our continued discussion of this aspect of the FCCC's work in the future.

Attachment

HIGH GWP CHEMICALS			
As of August 21, 1998			
Chemical	Life-time (yrs)	GWP (100-yr)	Use
HFCs			
HFC-23	264	11,700	Byproduct of HCFC-22, used in very-low temperature refrigeration, blend component in fire suppression, and plasma etching and cleaning in semiconductor production.
HFC-32	5.6	650	Blend component of numerous refrigerants.
HFC-41	3.7	150	Not in commercial use today.
HFC-43-10mee	17.1	1,300	Cleaning solvent.
HFC-125	32.6	2,800	Blend component of numerous refrigerants and a fire suppressant.
HFC-134	10.6	1,000	Not in commercial use today.
HFC-134a	14.6	1,300	Most widely used refrigerant, blend component of other refrigerants, propellant in metered-dose inhalers and aerosols, and foam blowing agent.
HFC-152a	1.5	140	Blend component of several refrigerant blends.
HFC-143	3.8	300	Not in commercial use today.
HFC-143a	48.3	3,800	Refrigerant blend.
HFC-227ea	36.5	2,900	Fire suppressant and propellant for metered-dose inhalers.
HFC-236fa	209	6,300	Refrigerant and fire suppressant.
HFC-236ea	8 <sup>1</sup>	710 <sup>1</sup>	Not in commercial use today.
HFC-245fa	7.7 <sup>2,3</sup>	?	Foam blowing agent and refrigerant—near commercialization.
HFC-245ca	6.6	560	Not in commercial use today, possible refrigerant in the future.
HFC-365mfc	?	?	Under study for use as foam blowing agent.
PFCs			
CF4	50,000	6,500	Byproduct of aluminum production. Plasma etching and cleaning in semiconductor production and low temperature refrigerant.
C2F6	10,000	9,200	Byproduct of aluminum production. Plasma etching and cleaning in semiconductor production
C3F8	2,600	7,000	Low-temperature refrigerant, and fire suppressant.
C4F10	2,600	7,000	Fire suppressant
c-C4F8	3,200	8,700	Not much use if any today.

C5F12	4,100	7,500	Not much use if any today.
C6F14	3,200	7,400	Precision cleaning solvent - low volume use.
NF3			
NF3	740 <sup>4</sup>	8,000 <sup>4</sup>	Plasma etching and cleaning in semiconductor production
SF6			
SF6	3,200	23,900	Cover gas in magnesium production and casting, dielectric gas and insulator in electric power equipment, fire suppression discharge agent in military systems, atmospheric and subterranean tracer gas, sound insulation, process flow-rate measurement, medical applications, and formerly an aerosol propellant.
HFEs			
C4F9OCH3	4.1 <sup>5,6</sup>	500 <sup>5,6</sup>	Cleaning solvent and heat transfer fluid.
C4F9OC2H5	0.9 <sup>7,8</sup>	100 <sup>7,8</sup>	Near commercialization for use as a cleaning solvent.

GWPs and atmospheric lives are reprinted from the Intergovernmental Panel on Climate Change, Second Assessment Report, 1995, except as noted below:

<sup>1</sup> Personal communication between Don Wuebbles, University of Illinois at Urbana-Campaign and Peter Mullenhard, U.S. Navy CFC & Halon Clearinghouse, November 1, 1996.

<sup>2</sup> Junyi Chen, Valerie Young, and Hiromi Niki, Kinematic and Mechanistic Studies for Reaction of CF<sub>3</sub>CH<sub>2</sub>CHF<sub>2</sub> (HFC-245fa) Initiated by H-Atom Abstraction Using Atomic Chlorine, *J. Phys. Chem. A* 1997, 101, 2648-2653.

<sup>3</sup> Personal communication between Don Wuebbles, University of Illinois at Urbana-Campaign and Reynaldo Forte, U.S. Environmental Protection Agency, August 20, 1998

<sup>4</sup> Luisa T. Molina, Paul J. Woodbridge and Mario Molina, Atmospheric reactions and ultraviolet and infrared absorptivities of nitrogen trifluoride, *Geophysical Research Letters*, Vol 22, No. 14

<sup>5</sup> Communication by fax between Malcolm Ko of Atmospheric and Environmental Research, Inc. and Eric Reiner and John Owens of 3M Specialty Chemical Division, subject: Preliminary results, May 11, 1995.

<sup>6</sup> Mario J. Molina and Paul J. Wooldridge, Atmospheric Chemistry of Some Hydrofluoroalkyl Ethers (L-13452), Prepared for 3M Specialty Chemicals Division, November 1994.

<sup>7</sup> Internal correspondence between J. Owens and S. Loushin of 3M Specialty Chemicals Division, Global Warming Potentials for C<sub>4</sub>F<sub>9</sub>OC<sub>2</sub>H<sub>5</sub>, March 26, 1997

<sup>8</sup> Mario J. Molina and Paul Wooldridge, Atmospheric Chemistry of Some Hydrofluoroalkyl Ethers (L-13453), Prepared for 3M Specialty Chemicals Division, November 1994.