



SUBSIDIARY BODY FOR SCIENTIFIC AND TECHNOLOGICAL ADVICE  
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**METHODOLOGICAL ISSUES: LONGER-TERM PROGRAMME OF WORK**

Note by the secretariat

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## I. INTRODUCTION

### A. Mandate

1. The Convention recognizes the importance of methodologies in several places, namely, in Articles 4.1(a), 4.1(f), 4.2(c), 7.2(d), 9.2(e) and 12.1(a). Moreover, the experience with preparing and reviewing national communications underlines the importance of adequate and comparable methodologies (FCCC/CP/1996/12 and Add.1 and 2).

2. At its first session, the Conference of the Parties (COP 1), by its decision 4/CP.1, decided "that the Subsidiary Body for Scientific and Technological Advice, drawing upon existing competent international bodies, including the Intergovernmental Panel on Climate Change, ... should ... consider the methodological issues arising from the review of national communications, including those identified in the compilation and synthesis of national communications and in available in-depth review reports, and make recommendations thereon to the Conference of the Parties at its second session" and "propose a work plan and timetable for longer-term activities relating to methodological questions (including inventory methodologies and methodologies for analysing impacts and mitigation options) and the establishment of working relationships with other bodies (in particular, the Intergovernmental Panel on Climate Change and its working groups and programmes)" (FCCC/CP/1995/7/Add.1).

3. At its third session, the Subsidiary Body for Scientific and Technological Advice (SBSTA) took note of a summary report by the secretariat of a meeting on methodologies (as discussed below), held with relevant international organizations. It requested the secretariat to prepare a report on the matter for the fourth session (FCCC/SBSTA/1996/13).

4. Furthermore, in anticipation of the budget for the 1998-1999 biennium being debated by the Conference of the Parties at its third session, the secretariat has to prepare a budget proposal in early 1997. In order to prepare this, the secretariat needs guidance on the activities it should undertake to support the needs of the Convention bodies for work on methodologies.

### B. Scope of the note

5. This note has been prepared in response to the above requests. The purpose of the note is to provide the SBSTA with an overview of current methodological programmes, to identify important gaps and to define options for consideration that would ensure that methods are available in the future.

6. The note is based on information provided by a number of United Nations bodies and specialized agencies as well as other intergovernmental organizations on current and future programmes to develop and disseminate methodologies relevant to the Convention. It is also based on the secretariat's experience in the review process for national communications and

the preparation of compilation and synthesis reports on national communications (FCCC/CP/1996/12 and Add.1 and 2) and in assisting other organizations to provide their support for national studies. The activities of national governments have not been specifically addressed in this document.

7. In order to prepare this note, the Executive Secretary convened a meeting of representatives from competent international organizations, including the Intergovernmental Panel on Climate Change (IPCC) (see attendance list in the annex below). The meeting was held in Geneva from 4 to 5 July 1996. The representatives provided the secretariat with information on their current and planned activities as described in document FCCC/SBSTA/1996/16/Add.1. A preliminary draft of the present note was subsequently circulated to the representatives who attended the meeting to determine the accuracy of the information reported therein. During this preliminary review process, the IPCC secretariat provided a special note indicating that it felt that it should not comment on section C of the present document.

8. The secretariat has focused on practical tools and products, including models, that can assist Parties in meeting their commitments, such as preparing national communications, assessing impacts, evaluating technologies and assessing policies and measures. Activities that contribute to the general improvement and development of methodologies, although not to specific products, are identified in some cases, but given less emphasis. This document does not address training activities. Yet, the secretariat is aware that these activities could be looked upon as an inherent step in the process of developing methods and can provide important information for the process of revising methods. Training is a component of some bilateral support programmes and multilateral enabling activities.

9. Also at its third session, the SBSTA considered the issue of communications from Parties included in Annex I to the Convention, including methodological issues identified in documents FCCC/SBSTA/1996/9/Add.1 and 2. The issues referred to in these documents, namely, electricity trades, international emissions associated with bunker fuels, the use of global warming potentials, land-use change and forestry, and temperature adjustments, are primarily concerned with methods needed in the near term for calculating, allocating and reporting emission inventory information. The SBSTA invited Parties to submit comments on these issues for consideration at the fourth session of the SBSTA (see FCCC/SBSTA/1996/MISC.5). They are not treated in this document but will be considered separately under this agenda item.

### **C. Possible actions by the SBSTA**

10. The SBSTA may wish to consider the issues in section IV below and, on that basis:

(a) Give a preliminary indication of the areas of methodological work that should be given the highest priority in the context of the needs of the Convention, taking account of the suggestions in paragraph 23 below;

(b) Invite the Joint Working Group of officers of the IPCC and the Convention (JWG) to advise on an appropriate division of methodological tasks between the IPCC and the Convention bodies, particularly on methods for emission inventories, assessing impacts of climate change and assessing mitigation and adaptation options, taking account of the need for sustainable financing of these tasks and of work under way by other international organizations (see document FCCC/SBSTA/1996/16/Add.1);

(c) Review, at its fifth session, the advice of the JWG and on that basis decide what should be done by the Convention bodies and, as appropriate, express its views to the IPCC;

(d) Review, at its fifth session, the methodological component of the secretariat's outline of the Convention budget for the biennium 1998-1999, in the light of, *inter alia*, the advice of the JWG, and advise the SBI thereon;

(e) Invite the SBI to consider whether future policy guidance from the COP to the Global Environment Facility (GEF) could highlight the importance of securing adequate financial support from the GEF for the priority methodological work needed by the Convention, ensuring that such work corresponds to the programme priorities established by the COP and the resultant operational programmes of the GEF and that it is done in a cost-effective and non-duplicative manner;

(f) Keep under review, at one session each year, the progress of work on methodological questions and its financing and, in support of this review, request its Vice-Chairman to convene informal open-ended consultations on these questions, in conjunction with its sessions.

## II. BACKGROUND

11. The secretariat has identified a preliminary list of methodologies, with relevance to the Convention, as listed in paragraph 13 below. For the purpose of this paper, a methodology is defined as a method, procedure, model, or similar tool needed by the Parties to support the implementation of their commitments under the Convention. Methods needed for scientific purposes, such as for the systematic observation of the atmosphere or the oceans, while clearly relevant to the Convention, have not been included.<sup>1</sup>

12. The activities undertaken by international organizations to produce methods include:

- Development of methodologies
- Preparation of documentation

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<sup>1</sup> For example, the World Meteorological Organization Technical Commission for Climatology is examining data and methods to detect global climate change.

- Testing at the national level
- Revision
- Peer review
- Dissemination
- Training <sup>2</sup>

13. The following is a list of areas relevant to implementation of the Convention where methodologies need to be developed or revised over time.

Examples of national/regional level methodologies

*Inventorying greenhouse gas (GHG) emissions* - methods to estimate GHG emissions from sources or sequestration by sinks

*Projecting national GHG emissions* - methods to estimate future GHG emissions or removals by sinks, for example, extrapolation, expert judgement, linear programmes and macroeconomic models

*Evaluating national technology needs and financial requirements* - procedures for determining the types of technologies needed by a country to achieve its national climate change goals, including the related financial requirements, in the context of its economic and social objectives

*Assessing technology transfer activities* - procedures for identifying and evaluating the impacts and effectiveness of technologies that have been transferred from one Party to another

*Assessing mitigation and adaptation technologies* - methods for evaluating different technologies by determining, for example, performance, costs, and environmental impacts over time <sup>3</sup>

*Assessing mitigation measures and policies* - methods for estimating the potential emission reductions, costs and other operational requirements of a single measure or combination of measures and policies over some period of time

*Evaluating the effectiveness of policies and measures to limit emissions or enhance removals of GHG or to adapt to climate change* - methods to determine whether or to what extent a measure or policy achieved its intended objective

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<sup>2</sup> Identified for completeness, but not treated in this document.

<sup>3</sup> Parties may wish to refer to document FCC/SBSTA/1996/4 for a definition of technology.

*Evaluating activities implemented jointly and developing methodologies relevant for joint implementation* - procedures for determining the effectiveness of AIJ programmes and projects identified by Parties and further development of the concept of joint implementation

*Assessing the impacts of climate change* - methods for projecting the impacts of climate change on a geographical region, economic sector, human health, food production, or ecological system <sup>4</sup>

*Evaluating adaptation options* - methods for comparing different technologies and practices to adapt to climate change by determining, for example, costs and impacts over time

#### Examples of global level methodologies

*Projecting global GHG emissions* - methods to estimate future global GHG emissions or removals by sinks

*Assessing the aggregate effects of policies and measures* - methods for estimating combined effects of different measures (economic instruments, voluntary agreements, and regulation) initiated by all Parties on global emissions

*Financial investment flows* - procedures for estimating current and future investment flows likely to affect GHG emissions and removals by sinks

### **III. METHODOLOGICAL WORK BY INTERNATIONAL ORGANIZATIONS**

#### What is being done or planned by international organizations

14. A review indicates that two topics have received or are receiving particular attention by the IPCC, namely, methods to inventory GHG emissions and methods to assess the impacts of climate change. In addition, the IPCC has developed methods to assess mitigation measures and policies (options).

15. The IPCC, with the cooperation of the Organisation for Economic Co-operation and Development (OECD) and the International Energy Agency (IEA), has led efforts to develop and improve national GHG inventory methods. Recently, the IPCC at its twelfth plenary session, held from 11 to 13 September 1996 in Mexico City, approved *Revised 1996 Guidelines for National Greenhouse Gas Inventories* (FCCC/SBSTA/1996/18/Add.1). Plans for additional work on this topic are identified in the report of the twelfth plenary of the

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<sup>4</sup> It should be noted that many methods to assess the impacts of climate change are the same as methods to assess the impacts of climate and its normal variability on natural ecosystems and socio-economic activities.

IPCC and are summarized in FCCC/SBSTA/1996/18. The IPCC's GHG inventory programme, which aims at publishing the *Revised 1996 Guidelines for National Greenhouse Gas Inventories* and assessing a number of special topics, will cost approximately SwF1 million in 1997 and will be paid for from the IPCC budget.

16. The United Nations Environment Programme (UNEP), in collaboration with the University of Amsterdam, is identifying methods to assess impacts of climate change for the following sectors: water resources, coastal zones, agriculture, human health, energy and industry, human settlements, forests, wildlife and biodiversity and fisheries. A draft handbook has been developed and is undergoing testing in eight developing countries. The handbook does not contain "software", but identifies where Parties may obtain software for their use. After revisions, UNEP will submit an advanced version of the handbook for peer review and approval by the IPCC in late 1997. UNEP is also working on methodologies to assess mitigation measures and policies in collaboration with the Centre on Energy and the Environment (Riso). The objective is to develop a methodological framework for climate change mitigation analysis. The completion date for the project is April 1998. The above-mentioned projects are being primarily funded by the GEF and national governments.

17. The United Nations Industrial Development Organization (UNIDO) is developing a methodology for assessing options in the industrial sector. The development of the methodology will be completed in December 1996 and field testing, dissemination and training will be undertaken in 1997.

18. Other international organizations are developing methods and data of a general nature that might have potential applicability in the long term. In some cases, they support basic work to develop databases that Parties might have access to. In other cases, they conduct workshops to assess methodological issues. The relevance of these activities and the applicability of the products that emerge vary widely.

19. Financial support for the development, distribution and training associated with methods is precarious at best. Most organizations' resources for the development of methods to support the Convention are declining. However, the current COP 1 guidance to GEF and the GEF guidelines limit the prospects for resources to support further work on methodologies. With regard to the GEF mandate, it should be noted that the development of methodologies is different from the conduct of research. Both of these topics are under consideration by the STAP.

#### **IV. ISSUES FOR CONSIDERATION BY THE SUBSIDIARY BODY FOR SCIENTIFIC AND TECHNOLOGICAL ADVICE**

20. The SBSTA may wish to give consideration to the following substantive, institutional and financial issues.

##### *Topics to be given priority*

21. The SBSTA will need to determine firstly which methods listed in this paper warrant attention at the international level and secondly which topics should be given priority. Bearing in mind the limited financial and personnel resources available for additional activities, the following criteria for determining priorities of future work appear to be relevant (in random order):

- Would the method contribute to understanding the magnitude of the global problem?
- Would the method enable Parties to understand the damages and benefits of climate change?
- Is the method necessary for the preparation of national communications by Parties included in Annex I to the Convention (Annex I Parties) and/or Parties not included in Annex I to the Convention (non-Annex I Parties)?
- Would the method support the review of communications, build confidence among Parties and encourage transparency and consistency in reporting?
- Would the method improve decision making and lower programme implementation costs?
- Would the method enable Parties to attract investment capital for technology to limit GHGs or adapt to climate change?
- Is the method technically feasible? Could it be produced at a reasonable cost and on time?

22. In addition, the following factors may need to be weighed:

(a) Whether greater use could be made of methods developed for use at the national level. Often these could gain acceptance by the international community, if they are modified to account for varying circumstances, but such revisions require additional funding;

(b) Whether the Convention process needs to be involved in the development, dissemination and training of all methods. For example, there are currently several technical teams that are supported by national governments, developing methods to project global



emissions. While the products of such activities need synthesis and peer review, it may not be necessary for a single "standard" method <sup>5</sup> to be agreed upon and distributed to all Parties;

(c) Whether the needs of Annex I and non-Annex I Parties for methodologies are significantly different and, if so, how these needs should be reflected in priorities that the Parties may wish to consider.

*Methodological topics that may warrant special consideration*

23. Recognizing the programme of work of the IPCC and other organizations, particularly in the areas of inventories, impacts and mitigation methods, and considering the experience from the review process, the secretariat suggests that the following topics are among those that warrant additional special considerations at the international level:

- **Methods for assessing mitigation measures and policies** - Often Parties have not identified in their national communications the projected effects of measures on national GHG emissions. In other cases, the possible interactive effects of measures are not clearly presented. Methods are needed in order to determine whether policies will be cost-effective and to provide information to other Parties in a transparent manner
- **Methods for projecting emissions** - In many cases Parties have not included projections of emissions for all important sources of GHGs in their national communications; for example, projections of emissions and removals of GHGs were often omitted for the land-use change and forestry sector
- **Methods for evaluating and monitoring the effectiveness of specific policies and measures to limit or enhance removals of GHGs** - While many measures are just in the process of being implemented, it should be possible in the near future to evaluate how effective certain measures have been in reducing emissions. In other words, have they performed as anticipated? This would enable Parties to track the performance of measures and to learn from the success or failure of other Parties
- **Methods to assess mitigation technologies** - The secretariat has identified several types of software that might be used by Parties, particularly developing country Parties, to evaluate technologies (FCCC/SBSTA/1996/4/Add.2). The availability of such software does not suggest that it can be readily used by analysts in many developing countries. Further work may be required to test, revise and/or train personnel in developing countries. Also note project 16 in document FCCC/SBSTA/1996/16/Add.1

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<sup>5</sup> Each such method should be transparent enough to be understood by a third party.

- **Methods to evaluate activities implemented jointly and to develop the concept of joint implementation** - The secretariat has suggested a list of methodological issues that require additional work, for example, methods to develop uniform baselines and to calculate emission reductions (FCCC/CP/1996/14, para. 27). It will conduct an experts meeting to identify a list of methodological issues (FCCC/SBSTA/1996/19)

In addition, the secretariat suggests that there is a need to analyse how methods have been applied by the Parties in national communications. For example, there has been no assessment of how the Parties have used the *Guidelines for National Greenhouse Gas Inventories* (1995) or optional methods. This type of analysis would be useful prior to revising existing methods. It would help to determine the comparability of national inventories.

*Relationships between the Convention bodies and other international organizations, for example, UNEP, WHO, UNIDO, and OECD?*

24. Such working arrangements could take many forms. First, the SBSTA may wish to determine whether it wants to simply monitor activities, to promote their coordination, and/or, after consultations, to assign 'lead' responsibilities for specific activities to particular international organizations. With regard to monitoring, the secretariat could be requested to track and assess the work of other organizations and report to the SBSTA. If the SBSTA wishes to promote greater coordination, mechanisms could be developed individually or collectively with international organizations, along the lines of the Joint Working Group with the IPCC. Should the SBSTA prefer to request that a single international organization be responsible for the development and coordination of a particular method, specific arrangements may be needed.

25. In the near term, the SBSTA may wish to encourage UNEP to work in cooperation with the IPCC to expeditiously test, revise and peer review the handbook on methods to assess impacts of climate change and the OECD and IEA to continue their support to the IPCC for methods development activities. Also, given the relationship of these activities to national communications, these activities could benefit from the feedback which occurs during the review process. The secretariat could be asked to strengthen coordination with these and other international organizations so as to enhance the relevance of their work to the Convention.

*Role of the IPCC in support of the Convention*

26. The IPCC, in collaboration with other international organizations, has played a unique role in supporting the Convention, particularly the development of guidelines on national GHG inventories, impact assessments of climate change and methods to assess mitigation options. It has published documents and collaborated in training in some cases and has an expert and governmental review process that helps to ensure suitability of particular options.<sup>6</sup> On the other hand, many methodological issues are closely tied to policy considerations which need to be addressed directly by the Convention bodies. In some cases the emphasis is now shifting from developing methods to improving them based on the experience in applying them in national communications. The SBSTA may wish to consider which methods the IPCC should focus on and whether the IPCC should be encouraged to play a more expansive role in the coordination and development of methods.

*Activities of the SBSTA*

27. Heretofore, the SBSTA has not determined which methodologies should be considered and what role it wishes to play. Given the importance of methodologies to the work of the Convention, the need to set priorities and the need to address complex institutional issues, it may wish to define its role in this respect and consider appropriate organizational arrangements.

*Financing methodological activities*

28. The development, testing and diffusion of methods will be likely to require additional financial support, although the needs will depend on the extensiveness of the effort. Several options may be considered, such as: (a) encouraging governments to provide greater support to national, regional and international institutions; (b) requesting the governing bodies of international organizations to give a high priority to work in support of the UNFCCC process; (c) revising the guidance to the GEF so as to encourage support for specific methodological issues; and (d) providing for additions to the secretariat budget and/or contributions to the supplementary fund for the period 1998-1999.

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<sup>6</sup>Other international organizations also have at a minimum scientific review processes. Generally, these are focused on ensuring that the needs of the parent organization are met.

Annex

**ATTENDANCE**

The meeting on methodologies hosted by the secretariat on 4 to 5 July 1996 (see paragraph 7 above) was attended by representatives of the following organizations:

United Nations Environment Programme (UNEP)  
United Nations Development Programme (UNDP)  
United Nations Industrial Development Organization (UNIDO)  
Food and Agriculture Organization of the United Nations (FAO)  
Intergovernmental Oceanographic Commission (UNESCO/IOC)  
World Health Organization (WHO)  
World Meteorological Organization (WMO)  
Scientific and Technical Advisory Panel (STAP) of the Global Environment Facility (GEF)  
Intergovernmental Panel on Climate Change (IPCC)  
International Energy Agency (IEA)  
Organisation for Economic Co-operation and Development (OECD)

The following organizations were unable to attend the meeting:

United Nations Conference on Trade and Development (UNCTAD)  
Economic Commission for Europe (ECE)  
Economic and Social Commission for Asia and the Pacific (ESCAP)  
World Bank  
International Atomic Energy Agency (IAEA)  
International Council of Scientific Unions (ICSU)

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