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**METHODOLOGICAL ISSUES**

**GUIDELINES UNDER ARTICLES 5, 7 AND 8 OF THE KYOTO PROTOCOL**

**Terms of service for lead reviewers and training to ensure the competence of  
experts in review teams**

**Note by the secretariat**

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## I. INTRODUCTION

### A. Mandate

1. The Conference of the Parties (COP), by its decision 23/CP.7, requested the Subsidiary Body for Scientific and Technological Advice (SBSTA), at its seventeenth session, to elaborate terms of service for the lead reviewers of expert review teams and to forward any draft decision on this subject to the COP at its eighth session, with a view to recommending it for adoption by the Conference of the Parties serving as the meeting of the Parties to the Kyoto Protocol (COP/MOP) at its first session after the entry into force of the Kyoto Protocol (FCCC/CP/2001/13/Add.3). The COP also requested the secretariat to prepare a document containing different options for the terms of service for lead reviewers of expert review teams, including financial implications and working arrangements, for consideration by the SBSTA at its seventeenth session.

2. By the same decision the COP requested the SBSTA to elaborate the characteristics of the relevant training, the subsequent assessment after completion of the training, and/or any other means needed to ensure the necessary competence of experts for participation in expert review teams, and to forward any draft decision on this issue to its eighth session, with a view to recommending it for adoption by the COP/MOP at its first session after the entry into force of the Protocol.

3. The SBSTA, at its sixteenth session, noted the need to ensure the necessary expertise of experts participating in greenhouse gas (GHG) inventory review teams under the Convention and decided to consider this issue, including the elaboration of the characteristics of the relevant training, at its seventeenth session, jointly with the similar item concerning Article 8 of the Kyoto Protocol, as requested in decision 23/CP.7.

4. The COP invited Parties to submit their views to the secretariat on the subject mentioned in paragraph 1 above by 1 July 2002, and on the subject referred to in paragraph 2 above by 15 September 2002, and requested the secretariat to compile these views in miscellaneous documents for consideration by the SBSTA at its seventeenth session. The SBSTA, at its sixteenth session, encouraged Parties to submit their views on the subject referred to in paragraph 1 above by 1 August 2002 to facilitate the consideration of this issue at its seventeenth session (FCCC/SBSTA/2002/6, para. 24 (m)). Submissions from Parties relevant to paragraph 1 above can be found in documents FCCC/SBSTA/2002/MISC.14 and for paragraph 2 above in FCCC/SBSTA/2002/MISC.17.

### B. Scope of the note

5. This note was prepared by the secretariat based on the experience of the trial period for GHG inventory reviews with the aim of facilitating consideration of the matters mentioned in paragraphs 1 and 2 above. It contains options for the terms of service for lead reviewers and for the training of experts to ensure their competence for participation in expert review teams under Article 8 of the Kyoto Protocol, in particular for the review of GHG inventories. These options may also be applicable for the review of GHG inventories under the Convention. Options for the review of national communications under Article 8 of the Kyoto Protocol are not included in this note and could be presented at a later stage.

6. The starting point for the elaboration of this note was the provisions relating to expert review teams, lead reviewers and training included in the guidelines for the review under Article 8 of the Kyoto Protocol (FCCC/CP/2001/13/Add.3), and the draft guidelines for the technical review of GHG inventories of Parties included in Annex I to the Convention (hereinafter referred to as Annex I Parties), agreed upon by the SBSTA at its sixteenth session (FCCC/SBSTA/2002/L.5/Add.2). To the extent possible, views from Parties contained in the submissions mentioned in paragraph 4 above were also taken into account.

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

7. The SBSTA is invited to consider the information contained in this note with a view to elaborating conclusions on the issues referred to in paragraphs 1 and 2 above and possible draft decisions to be forwarded to the COP for its consideration and recommendation for adoption by the COP/MOP.

8. Because the approach to technical reviews of GHG inventories is similar under the Convention, the SBSTA may wish to consider whether the same or similar decisions provided to the COP/MOP should be recommended for adoption and applied under the Convention.

## **II. TERMS OF SERVICE FOR LEAD REVIEWERS**

### **A. Background**

9. In accordance with the guidelines for review under Article 8 of the Kyoto Protocol,<sup>1</sup> expert review teams shall be composed of experts selected on an ad hoc basis from the UNFCCC roster of experts and will include lead reviewers. Lead reviewers should ensure that the reviews in which they participate are performed according to the review guidelines and are performed consistently across Parties by each expert review team. They should also ensure the quality and the objectivity of the reviews and should provide for continuity, comparability and timeliness of the review.

10. The review guidelines also stipulate that:

(a) In any expert review team one lead reviewer shall be from an Annex I Party and one from a non-Annex I Party;

(b) Lead reviewers shall be experts from Parties to the Convention nominated to the UNFCCC roster by Parties, and their collective skills shall address all areas of the inventory submissions of Annex I Parties;

(c) Lead reviewers shall be assigned for a minimum period of two years and a maximum period of three years to ensure the continuity and consistency of the review process. Half of the lead reviewers shall be assigned initially for a term of two years and the other half for a term of three years;

(d) The terms of service of lead reviewers for a given period of service shall be designed and operationalized in accordance with relevant decisions of the COP and the COP/MOP.

### **B. Number of lead reviewers**

11. Annex B to the Kyoto Protocol lists 39 Parties with quantified emission limitation or reduction commitments during the period 2008–2012. Before, during and after this commitment period all of these Parties<sup>2</sup> will report information in their GHG inventory submissions and national communications. The information will be reviewed by expert review teams in accordance with the provisions of the review guidelines (see table 1).

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<sup>1</sup> Hereinafter, the guidelines for review under Article 8 of the Kyoto Protocol will be referred to as the review guidelines.

<sup>2</sup> Although some Parties may not ratify the Kyoto Protocol, for the purpose of this paper all Parties included in Annex I to the Convention have been considered.

**Table 1. Review activities under the Convention and the Kyoto Protocol for the period 2003–2014**

|  | 2003–2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 |
|--|-----------|------|------|------|------|------|------|------|
| <b>Reviews under the Convention</b>  |           |      |      |      |      |      |      |      |
| Annual GHG inventories <sup>a</sup>  | ✓         | ✓    | ✓    | ✓    | ✓    | ✓    | ✓    | ✓    |
| National communications <sup>b</sup>   | ✓         |      |      | ✓    |      |      |      | ✓    |
| <b>Reviews under the Kyoto Protocol</b>  |           |      |      |      |      |      |      |      |
| Review prior to the commitment period (GHG inventories, national systems, national registries, assigned amounts) | ✓         |      |      |      |      |      |      |      |
| Annual GHG inventories and supplementary information under Article 7, paragraph 1                                |           |      |      | ✓    | ✓    | ✓    | ✓    | ✓    |
| National communications and supplementary information under Article 7, paragraph 2 <sup>b</sup>                  | ✓         |      |      | ✓    |      |      |      | ✓    |

<sup>a</sup> In accordance with decision 6/CP.5, starting in 2003, the GHG inventories from all Parties included in Annex I will be subject to review on an annual basis.

<sup>b</sup> The frequency of submission of national communications and their review will be determined by the COP and the COP/MOP. Here it is assumed that they will be submitted every five years (decision 11/CP.4).

#### 1. Review of information submitted prior to the commitment period (2003–2007)

12. After the entry into force of the Kyoto Protocol and prior to the beginning of the commitment period, each Annex I Party which has ratified the Kyoto Protocol will submit to the secretariat a report containing information on its GHG emissions (in particular of the base year), on its national system and national registry and on its calculation of its assigned amount, in accordance with decision 19/CP.7.<sup>3</sup> This information will be reviewed together through an in-country review, which will have to be completed within 12 months from the receipt of the report by the secretariat. This implies that the secretariat will coordinate 39 expert review teams, each of which will have two lead reviewers.

13. Assuming that not all Parties will provide their reports at the same time, it is possible that each lead reviewer will participate in four to five in-country reviews over a period of two to three years. Thus about 16 to 20 lead reviewers will be engaged for this pre-commitment period review.

14. During the period 2003–2007, the reviews of GHG inventories of Annex I Parties will continue to take place in accordance with decision 6/CP.5 or any subsequent decision the COP may adopt on this matter.<sup>4</sup> Lead reviewers will be used for the review of GHG inventories under both the Convention and the Protocol.<sup>5</sup> Bearing in mind that it may be possible that both review processes run in parallel, future COP sessions may wish to consider ways to ensure the effectiveness of the two sets of review activities, including the involvement of lead reviewers.

<sup>3</sup> In accordance with Article 5, paragraph 1, of the Kyoto Protocol, Parties included in Annex I shall have in place no later than one year prior to the start of the commitment period (i.e. by 1 January 2007) their national systems for the estimation of GHG emissions by sources and removals by sinks. Although there is no requirement to submit these reports at an early date, for the purposes of this paper it is assumed that Parties will start implementing their national systems prior to this date and that they will be able to provide the required information earlier than 1 January 2007.

<sup>4</sup> It is expected that the COP at its eighth session will adopt a decision on the revision of the guidelines, contained in decision 6/CP.5, for the technical review of GHG inventories of Annex I Parties.

<sup>5</sup> Provisions for the use of lead reviewers exist in the guidelines for the review under Article 8 of the Kyoto Protocol and in the guidelines for the technical review of GHG inventories of Annex I Parties mentioned in footnote 4.

## 2. Review of information for the years of the commitment period

15. In accordance with the guidelines for the preparation of national communications by Annex I Parties, Part I UNFCCC reporting guidelines on annual inventories (decision 3/CP.5)<sup>6</sup> there is a 15.5 month lag between the due date for submissions and the end of the year for which the latest GHG information is provided (i.e. the submission due by 15 April 2002 contains information from the base year or period up to and including the year 2000).

16. Article 7, paragraph 3, of the Kyoto Protocol stipulates that information under Article 7, paragraph 1, of the Kyoto Protocol shall be submitted annually by each Annex I Party, beginning with the first inventory due under the Convention for the first year of the commitment period after the Protocol has entered into force for that Party. Therefore, the GHG inventory information for 2008 and the supplementary information under Article 7, paragraph 1, shall be provided in the submission due by 15 April 2010. Although the draft CMP decision on the guidelines for review under Article 8 of the Kyoto Protocol (FCCC/CP/2001/13/Add.3) contains provisions for the reporting of this information earlier than 2010 on a voluntary basis, for the purpose of this paper it is assumed that all Parties will start providing the necessary information in 2010.

17. Based on this assumption, and taking into account the provisions of decision 6/CP.5, the reviews of GHG inventories will continue on an annual basis following the completion of the review process prior to the commitment period, but as of 2010 the reviews will also have to consider the supplementary information reported under Article 7, paragraph 1, of the Kyoto Protocol. This cycle of reviews will be completed by April 2015 at the latest, with the publication of the final review reports covering the information for the year 2012.

18. In accordance with the review guidelines, the GHG inventory submission of each Annex I Party will be subject to an annual individual review. In particular, it will be subject to an in-country review once during the period 2010–2014, and for the other years it will be subject to a centralized or desk review. Assuming eight in-country reviews, three centralized reviews (each considering eight inventories) and two desk reviews (each considering three to four inventories) per year during any one year of the period 2010–2014, the secretariat will coordinate 13 expert review teams annually.

19. Although 26 lead reviewers are needed for these review activities, it may be possible to reduce this number to 14 by scheduling the individual reviews such that each lead reviewer participates in two reviews, taking into account that all in-country, centralized and desk reviews should take place between June and September of each year.<sup>7</sup> The lead reviewers will be assigned for a minimum of two years and a maximum of three years, so at least 28 lead reviewers will be needed during the period 2010–2015.

20. In addition to the regular reviews mentioned above, there may be a need to establish additional expert review teams to review, in an expedited manner, information submitted for the reinstatement of eligibility to use the mechanisms established under Articles 6, 12 and 17 of the Kyoto Protocol. The lead reviewers for such teams could be either some of the lead reviewers mentioned in paragraph 19 above or additional experts who will be assigned specifically for this purpose on an ad hoc basis.

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<sup>6</sup> A revised version of these guidelines (FCCC/SBSTA/2002/L.6/Add.1) is expected to be adopted by the COP at its eighth session.

<sup>7</sup> In accordance with the review guidelines, the status report for each Annex I Party shall be finalized within 10 weeks from the submission due date (i.e. by 24 June of each year) and the expert review teams shall have listed all problems identified, indicating which would need an adjustment, within 25 weeks from the submission due date (i.e. by 7 October of each year).

### **C. Time requirements**

21. The lead reviewers, with the support of the secretariat, will be involved during different stages of each review activity. In particular:

(a) Prior to each review activity, they will prepare a brief work plan and verify that the reviewers have all the necessary information provided by the secretariat;

(b) During a review activity, they will monitor the progress of the activity, coordinate queries of the expert review team to the Party, coordinate the inclusion of the answers in the review reports, provide technical advice to the ad hoc experts, if needed, and ensure that the review is performed and the review report is prepared in accordance with the relevant guidelines;

(c) For inventory reviews, they will verify that the review team gives priority to individual source categories for review in accordance with the guidelines and will advise on the standardized data comparisons of inventory information to be performed by the secretariat;

(d) They will prepare an annual report to the SBSTA with suggestions on how to improve the review process.

22. For the preparation of the work plans and of the report to the SBSTA the lead reviewers may need to meet twice a year (possibly in Bonn). The first meeting would take place prior to the beginning of the review activities:

(a) To discuss issues relating to the schedule of the reviews and the distribution of the activities;

(b) To agree on a common approach that will be followed during the review activities, and to provide advice to the secretariat on the standardized comparisons to be performed.

23. The second meeting could serve as an opportunity to exchange information on the progress of the review activities, on individual or common problems and how they should be or have already been resolved and on lessons learned, and to prepare the first draft for the annual report to the SBSTA. This meeting could also be combined with a specific training session for lead reviewers.

24. From the experience gained during the trial period for the review of GHG inventories under the Convention, in-country reviews can be conducted within one week, centralized reviews of up to eight inventories within 10 days, and desk reviews of three to four inventories within three weeks. In accordance with the review guidelines experts (including lead reviewers) will need to be involved after the review of the submitted information is completed:

(a) For considering any revised estimates submitted by the Parties and preparing a draft individual inventory review report which includes, where appropriate, adjusted estimates calculated according to guidance under Article 5, paragraph 2 (eight weeks);

(b) For preparing a final individual inventory review report (four weeks).

25. From the above, it is anticipated that the involvement of each lead reviewer during each individual review activity should not exceed four months.

### **D. Options for location of lead reviewers, working arrangements and financial implications**

26. Two options for the location of lead reviewers are considered for this paper.<sup>8</sup> The first is for lead reviewers to be based in Bonn for the periods during which they are required to perform their tasks as

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<sup>8</sup> These estimations do not consider lead reviewers for national communications.

members of the expert review teams (Bonn-based), and the second is for them to be based and work in their home countries but attend meetings in Bonn as necessary (home-based). The assumptions made for both options are summarized in Table 2.

**Table 2. Assumptions for the two options for the review of GHG inventories**

|  | Prior to the commitment period |                 | During and after the commitment period |                |
|--|--------------------------------|-----------------|--|----------------|
|  | Bonn-based                     | Home-based      | Bonn-based                             | Home-based     |
| Duration of review process (years)   | 2–3                            | 2–3             | 1                                      | 1              |
| Total number of lead reviewers   | 16                             | 16              | 14                                     | 14             |
| Total funded lead reviewers  | 10                             | 10              | 9                                      | 9              |
| Average number of in-country/centralized or desk reviews per lead reviewer | 5/0                            | 5/0             | 1/1                                    | 1/1            |
| Total number of trips  | 6                              | 11 <sup>a</sup> | 3                                      | 3 <sup>a</sup> |
| Total time involvement per lead reviewer (weeks)                           | 85                             | 85              | 17                                     | 17             |
| <i>of which in countries for reviews</i>                                   | 5                              | 5               | 1                                      | 1              |
| <i>of which in Bonn</i>  | 80                             | 9               | 16                                     | 3              |

<sup>a</sup> Including two trips to Bonn per year on average for coordination and training.

27. Lead reviewers will not be considered as secretariat staff members during their assignment. However, when they are in Bonn for review-related activities, the secretariat will provide them with appropriate working conditions (office space, PC) and administrative assistance.

28. The review guidelines stipulate that participating experts from non-Annex I Parties and Annex I Parties with economies in transition shall be funded according to the existing procedures for participation in UNFCCC activities, and experts from other Annex I Parties shall be funded by their governments. The necessary financial resources to cover daily subsistence allowance (DSA) and travel costs are summarized in table 3.

**Table 3. Estimated financial resources (in US\$) for lead reviewers participating in the review of GHG inventories**

| Activity  | Duration of review activities (years) | Daily subsistence allowance | Travel  | Total for duration of review process | Total per annum |
|---|---------------------------------------|-----------------------------|---------|--------------------------------------|-----------------|
| <i>Prior to the commitment period (2004–2007)</i>         |                                       |                             |         |                                      |                 |
| Bonn-based  | 2–3                                   | 1,100,000                   | 150,000 | 1,250,000                            | 625,000–420,000 |
| Home-based  | 2–3                                   | 180,000                     | 275,000 | 455,000                              | 227,500–152,000 |
| <i>During and after the commitment period (2008–2014)</i> |                                       |                             |         |                                      |                 |
| Bonn-based  | 1                                     | 200,000                     | 75,000  | 275,000                              | 275,000         |
| Home-based  | 1                                     | 55,000                      | 75,000  | 130,000                              | 130,000         |

29. In addition to the resources for lead reviewers, funds are also needed for the participation of other funded experts in the review teams. It is estimated that for the participation of funded experts in the GHG inventory reviews prior to the commitment period approximately \$550,000 (over a 2–3 year period) will be needed, and for the annual reviews approximately \$170,000 per year will be needed.<sup>9</sup>

30. In the secretariat's budget for the biennium 2002-2003, a total of about \$190,000 per year has been allocated for the participation of experts in GHG review-related activities. The introduction of lead reviewers, assuming the most economic option (home-based), would require an additional \$110,000 per

<sup>9</sup> This assumes a ratio of 3/2/1 for non-Annex I Parties/Annex II Parties/ Annex I Parties with economies in transition for in-country reviews (7 days) and centralized reviews (10 days).



year to cover the additional cost of travel and DSA during any one year of the commitment period. For the review prior to the commitment period, the additional resources (for home-based lead reviewers) are about \$130,000 per year for a three-year review period.

### III. TRAINING OF EXPERTS

#### A. Background

31. The review guidelines state that participating experts shall have recognized competence in the areas to be reviewed according to these guidelines. The training to be provided to experts, and the subsequent assessment after the completion of the training<sup>10</sup> and/or any other means needed to ensure the necessary competence of experts for participation in expert review teams, shall be designed and operationalized in accordance with relevant decisions of the COP and the COP/MOP.

32. During the trial period<sup>11</sup> for assessing the guidelines for the technical review of GHG inventories covering submissions due in 2000, 2001 and 2002, 117 national inventory experts participated 170 times in 22 different review activities. Three synthesis and assessment reviews and 51 individual inventory reviews have been conducted and most of the corresponding review reports have been published on the web site of the secretariat.<sup>12</sup> Parties, participating experts and the secretariat have gained considerable experience with the technical review of GHG inventories.

33. This experience indicates that:

(a) The competence of participating experts is the most important element for the effectiveness of the review. The ability to identify problems and to recommend adequate solutions is directly related to the expert's expertise and preparation;

(b) Almost all participating experts showed good knowledge of the *Revised 1996 IPCC Guidelines for National GHG Inventories* (hereinafter referred to as the IPCC Guidelines), but many of them did not have similar knowledge of the *IPCC Good Practice Guidance and Uncertainty Management in National GHG Inventories* (hereinafter referred to as the IPCC Good Practice Guidance), nor of the UNFCCC guidelines for reporting and review of GHG inventories under the Convention. A good knowledge of the IPCC Good Practice Guidance and of the Convention guidelines is a key element for an effective review;

(c) Technical work done jointly by review team experts and communication with experts of Parties under review, as well as the preparatory work prior to the review, have substantially enhanced the competence of experts. Participation of inventory experts in the review activities during the trial period was in itself a massive training exercise that contributed to the creation of a pool of experts able to conduct high quality technical reviews of GHG inventories;

(d) Experts without adequate experience in preparing national GHG inventories, no matter how extensive their experience in other fields, are not well suited to participate in review activities. In some cases, this lack of experience has affected the effectiveness of the review activities and resulted in an unequal distribution of workload within the review teams;

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<sup>10</sup> Those experts who opt not to participate in the training have to undergo a similar assessment successfully in order to qualify for participation in expert review teams.

<sup>11</sup> A trial period for assessing the experience in reviewing inventory submissions due in the years 2000–2002 was adopted by decisions 6/CP.5 and 34/CP.7.

<sup>12</sup> When this note was written, five review reports were being prepared. All other reports are available at <http://unfccc.int/program/mis/ghg/index.html>

(e) Participating experts should have adequate working knowledge of English in order to communicate with other experts in the team and with the experts of the Party under review, and to participate fully in the preparation of the review reports.

### **B. Proposed approach for training activities**

34. The following suggestions, prepared on the basis of the experience gained during the trial period and the future needs of the review process of GHG inventories, may be considered when elaborating the characteristics of the relevant training and the assessment of competencies after completion of the training:

(a) A basic course<sup>13</sup> should provide training on methodologies and guidelines adopted by the COP and/or the COP/MOP to prepare, report and review GHG inventories, and on means to facilitate effective reviews;

(b) Only national experts from the UNFCCC roster of experts with proven practical experience in the preparation of GHG inventories should be trained;

(c) The secretariat should inform the national focal points of the selection of potential trainees;

(d) All trainees should be examined to assess their basic scientific/technical knowledge, by simulating real tasks that a review expert is likely to encounter;

(e) Trainees who are successful in the examination should be invited to participate in centralized or in-country reviews of GHG inventories, working together with experienced experts, as a final step of the training;

(f) Experts from the UNFCCC roster of experts with experience in preparing GHG inventories who opt not to participate in the training should undergo a similar examination as the trainees. They should request the secretariat, with the consent of the national focal point, to be included in the examination process of the corresponding annual training course. Experts who pass the examination should also be invited to participate in centralized or in-country reviews, working together with experienced experts;

(g) If the number of experts who have successfully passed the examination exceeds the demand for expert review teams of centralized and in-country reviews, priority will be given to those experts that have undergone the full-time training, in particular from non-Annex I Parties and from Annex I Parties with economies in transition;

(h) Priority for participation in the training courses should be given to experts from those Parties that did not have experts participating in any previous review activities;

(i) Experts selected for training, and those who opt not to participate in the training but intend to be examined as described in paragraph 34 (f) above, should have adequate working knowledge of English;

(j) Experts who participated in the review of GHG inventories during the trial period and accomplished their assigned tasks can continue to participate in individual reviews of GHG inventories without receiving the basic training.

35. The preliminary suggestions included in this note are not comprehensive. They are presented to facilitate the consideration of the issues mentioned in paragraph 2 above and they could be expanded or modified, as appropriate.

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<sup>13</sup> The content of the basic training is described in paragraph 40.

### **C. Number of trainees**

36. As mentioned in paragraph 34 (e) above, trainees who pass the examination will participate in centralized and/or in-country reviews as a final step of the training. This limits the number of experts that could be officially trained annually to review GHG inventories to the quantity of experts that could be assimilated in the review teams.

37. About 30 experts should be trained annually, assuming that up to two new experts could be integrated into each of the eight planned annual in-country reviews and that up to six new experts could be integrated into the three planned annual centralized reviews.

### **D. Content of training courses**

38. The basic training course to prepare experts to review GHG inventories comprises eight modules that in general follow the main sectors of the IPCC Guidelines:

- (a) General aspects of inventory preparation;<sup>14</sup>
- (b) Guidelines for preparing, reviewing and reporting GHG inventories under the UNFCCC;<sup>15</sup>
- (c) Energy;
- (d) Fugitive emissions;
- (e) Industrial processes;
- (f) Agriculture;
- (g) Land use, land-use change and forestry;
- (h) Waste.

39. Each trainee should be tested on modules (a) and (b), which are mandatory for all trainees, and on one of the other modules.<sup>16</sup> In addition, during a training course, a trainee may opt to study and to be tested on one more of the other modules.

40. The modules will be based on existing materials, namely the IPCC Guidelines, the IPCC Good Practice Guidance, the relevant guidelines adopted by the COP and/or the COP/MOP for reporting and reviewing GHG inventories, and other available materials to facilitate the review process.<sup>17</sup>

41. Other basic training courses may be necessary prior to the beginning of the commitment period, such as courses to prepare experts to review registries and the supplementary information under

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<sup>14</sup> This includes general methodological approaches and sectoral definitions, overview of source and sink categories including linkages, double-counting, keys source determination, choice of methods, use of different tiers, recalculations, uncertainty and quality assurance/quality control in accordance with the Revised 1996 IPCC Guidelines and the IPCC Good Practice Guidance. The use of the IPCC Emission Factor Data Base currently under development may be included in this module.

<sup>15</sup> This includes reporting and review guidelines under the Convention and the Kyoto Protocol, including guidelines for national systems under Article 5.1 (decision 20/CP.7) and good practice guidance and adjustments under Article 5.2 (decision 21/CP.7). Other related documents and software prepared for supporting the technical review of GHG inventories are also covered under this module.

<sup>16</sup> Module (d) cannot be studied in isolation, but together with modules (c) or (h).

<sup>17</sup> A software tool for comparative searching of inventory data across Parties and along time series has been developed by the secretariat. A review handbook for facilitating the review of each sector of national GHG inventories is in preparation.

Article 7, paragraph 1, of the Kyoto Protocol. Specific courses for lead reviewers may also be necessary, such as on conflict management including techniques for group based problem solving.

### **E. Options for training**

42. Two training options could be considered: traditional training courses (face-to-face), and e-learning (short for electronic learning, which is based on the Internet and computer technology to deliver interactive training). In both options, the training courses should be followed and finalized by a practical application of the knowledge acquired during the courses, namely participating in a real review of GHG inventories.

#### **1. Traditional training courses**

43. Traditional training courses have the advantages of ensuring good communication between the trainer and trainees, and between the trainees themselves, thus facilitating effective exchange of ideas and experience. Trainers are better able to assess the individual performance of trainees and the examination phase is more reliable.

44. Only those trainees that can physically attend the training courses could benefit from their advantages. Another disadvantage is the high cost especially for long training periods or when trainers and trainees have to travel far to the course venue. During a training course trainees can only devote a fixed amount of time to a particular topic.

#### **2. E-learning courses**

45. The most obvious advantage of e-learning is its flexibility and its ability to bridge geographical gaps making it possible to offer training to a larger and disperse audience. Once a course is developed, it can be implemented as many times as needed for a fraction of its development cost. E-learning reduces costs by limiting physical meetings and optimizing the time of trainees and trainers. It provides for easy updates in material that could be readily provided to the trainees. For trainees the e-learning option enables non-stop and independent of place access to the training materials during all year. Trainees are able to decide on the intensity and speed of training.

46. The main limitations of the e-learning option are that there is no face-to-face contact between trainer and trainee; that the initial cost for developing on-line training courses is higher than for traditional training courses so that using e-learning for a single course or for occasional training activities is less cost-effective; and that e-learning requires more systematic attention and time investment for the “teaching” organization than does traditional training. Assessment of the trainees also poses problems: trainees essentially take an “open-book” examination and it is difficult to assess whether they received assistance.

### **F. Cost implications of training options**

47. Costs for providing basic training to 25 funded trainees, for both options, over five years, are summarized in table 4.

**Table 4. Estimated costs for two training options<sup>18</sup>**

| Activity  | Cost [US\$]               |  |
|---|---------------------------|--|
|   | Traditional training      | E-learning                               |
| Development of the basic training package       | 75,000                    | 75,000                                   |
| Design and implementation of the on-line course | –                         | 140,000                                  |
| Implementation (course delivery, hosting)       |                           |  |
| - logistics/hosting                             | 15,000 (rooms, computers) | 15,000 (website maintenance and support) |
| - trainers fees:                                | 32,000                    | 32,000                                   |
| travel  | 20,000                    | 0  |
| - trainees travel and DSA                       | 94,700                    | 0  |
| Total implementation:                           | 161,700                   | 47,000                                   |
| TOTAL: 1 year                                   | 236,700                   | 262,000                                  |
| TOTAL: 5 years                                  | 883,500                   | 450,000                                  |

48. E-learning limits travel costs of trainees and trainers and other logistical costs related to the organization and attendance of a traditional training. It also allows for the possibility of organizing new courses more easily and at a lower cost than the initial one. Those subsequent training courses would benefit from the resources invested in the first one and therefore, their development would require lower resources. This could be possible due to the continuous use of the supporting e-learning software and of the structures and formats that may be adapted to the needs of the new course.

#### **G. Ways to overcome limited Internet access for e-learning**

49. E-learning requires access to a computer and to the Internet. Currently standard dial-up modem technology needed for effective e-learning is increasingly wide-spread throughout the world. However, access to e-learning courses may be difficult for trainees with limited access or slow connections to the Internet, but this constraint may be overcome by loading courses onto CD-ROMs and sending these to trainees by mail. The trainees may interact with the course instructor and their fellow trainees via conventional e-mail. The existence of this alternative ensures that experts from each Party of the Convention who meet the requisites to be trained have adequate access to the e-learning activities.

#### **H. Access to the training materials by Parties, organizations and experts**

50. Lead reviewers under the Convention and under Article 8 of the Kyoto Protocol may have free access to all training materials, if they wish so. In addition they could take advantage of the contact with the trainers and address any questions for clarification.

51. In addition to the officially participating trainees, others may access the training materials through e-learning over the Internet. Different approaches in this direction are possible, such as:

(a) Full access to the course materials to all interested users;

(b) Full access to the course materials only to Parties, including national experts and organizations designated by the Party, as well as to relevant intergovernmental and non-governmental organizations accredited to the Convention.

<sup>18</sup> Costs related to the time away from workplace of trainees were not included in this comparison, because they are not expenses incurred by the secretariat in organizing the training activities.

### **I. Reasons for an immediate start of training activities**

52. There is an urgent need to increase the number of competent review experts to implement decision 6/CP.5 that mandates the annual review of the national GHG inventories of all Annex I Parties starting in 2003, for four important reasons:

(a) The existing pool of review experts who participated in the review activities of the trial period is not sufficient to cover all planned review activities;

(b) The need to systematically integrate new competent experts to this pool to facilitate the annual coordination of 12 to 14 expert review teams without using the same experts in subsequent review activities;

(c) The need to broaden the participation of experts from as many Parties to the Convention as possible;

(d) The need to gain experience on how to effectively conduct the relevant training to ensure the competence of the review experts.

### **J. Characteristics of the immediate training**

53. The secretariat has sufficient resources in its 2002 budget to organize a first training course for GHG inventory review from 2 to 6 December 2002 with the participation of 30 inventory experts from the UNFCCC roster who have not participated in the technical review activities during the trial period. The timing of the course is chosen with the view to ensuring that the intensive review activities planned for 2003 can be undertaken. It will take place in Geneva and will be developed in close collaboration with UNCTAD.

54. The training will follow the approach and the content of the basic course described in this note, except that the module on land use, land-use change and forestry (para. 38 (g)) will not be included.<sup>19</sup> The secretariat will adjust any of these elements as a result of any conclusions on these matters to be agreed upon by SBSTA at its seventeen session and/or any decisions to be adopted by COP at its eighth session.

55. Priority will be given to experts from those Parties whose experts have not participated in the review activities during the trial period, keeping in mind the necessary balance of experts to attend the different learning modules corresponding to the different IPCC sectors. Preference will also be given to those experts willing to participate in the review activities for at least the next two years.

56. Traditional and e-learning training options will be used. One or two experimental e-learning modules, i.e. general aspects of inventory preparation and waste, will be available on the Internet<sup>20</sup> 15 days before the face-to-face course begins. The trainees will use the e-learning modules and will come prepared for the Geneva training course with their questions, suggestions and comments. A simulated long e-learning course for the module(s) is planned on-site with the trainers, in order to gain experience on the use of e-learning for training review experts. The rest of the modules would be developed following traditional face-to-face training.

57. The initial experimental e-learning module(s) will be developed in collaboration with UNCTAD using an e-learning centre hosted by [www.LearnSD.org](http://www.LearnSD.org). Other appropriate arrangements to host the e-learning activities could be used in the future.

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<sup>19</sup> The Good Practice Guidance report on Land Use, Land-Use Change and Forestry is not yet finished.

<sup>20</sup> For trainees without appropriate Internet connection, the e-learning modules will be sent on CD-ROMs.

58. Trainees will be examined and those who successfully pass the examination will be invited to participate in centralized or in-country reviews that will take place in 2003 and onwards.
59. If positive results are achieved with the experimental testing of the e-learning module(s), and if the SBSTA or the COP do not decide otherwise and pending availability of resources, the secretariat would continue to develop and complete a full e-learning training course including all modules of the basic course to review GHG inventories in 2003. This first e-learning course is tentatively planned to finish with a two-day on-site meeting to complete the examination of the trainees and to assess the effectiveness of the course.
60. A report of the experience from the training in Geneva and the e-learning training course will be prepared by the secretariat to be considered by the SBSTA at its twentieth session. This report may assist in planning and delivering other necessary training for the review under the Convention and under Article 8 of the Kyoto Protocol.

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