

HANDBOOK FOR REVIEW OF NATIONAL GHG INVENTORIES

CHAPTER I: INTRODUCTION AND GENERAL GUIDANCE FOR THE REVIEWERS

INTRODUCTION	2
I. OVERVIEW	3
Objective of the FCCC review guidelines	3
Purposes of the technical review of greenhouse gas inventories	3
General approach	3
Initial check of annual inventories	4
Synthesis and assessment of annual inventories	4
Review of individual annual inventories	6
Individual review reports	7
II. GENERAL GUIDANCE FOR THE REVIEWERS	8
Material to be reviewed	8
The National Inventory Report	8
The CRF tables	8
Additional material available to the reviewers	8
Tasks and priorities	9
Individual preparations for the review	10
Investigations by team members during the scheduled review	10
Documentation of the review and preparation of the review report	11

INTRODUCTION

This handbook contains seven chapters:

Chapter I. Overview and General guidance for reviewers. This chapter provides a brief summary of the UNFCCC Guidelines for the Technical Review of Greenhouse Gas Inventories from Parties included in Annex I, a description of materials to be reviewed, as well as the additional information available from the Secretariat. The chapter also explains the tasks to be performed by the reviewers and the additional tasks for the lead reviewers.

Chapter II. Cross-cutting Issues. The second chapter provides guidance for the review of the cross cutting issues, including key category analysis, uncertainty and QA/QC.

Chapters III-VII: Sector-specific Issues: These chapters provide guidance on assessment of specific issues for each inventory sectors: This guidance consists of a set of tables, organized by IPCC source category. The tables provide relevant questions and elaboration to assist the reviewer in the evaluation of the methodology, activity data, emission factors, completeness, recalculation and consistency of time series, uncertainty, QA/QC and reporting and documentation.

I. OVERVIEW

Objective of the UNFCCC review guidelines

1. The objective of the Guidelines for the Technical Review of Greenhouse Gas Inventories from Parties included in Annex I to the Convention is to promote consistency in the review of annual greenhouse gas (GHG) inventories of Parties included in Annex I to the Convention (Annex I Parties), and to establish a process for a thorough and comprehensive technical assessment, of national inventories.

Purposes of the technical review of greenhouse gas inventories

2. The purpose of the technical review of Annex I Parties' GHG inventories is:

(a) To ensure that the Conference of the Parties (COP) has adequate and reliable information on annual inventories and emission trends of anthropogenic emissions by sources and removals by sinks of greenhouse gases not controlled by the Montreal Protocol;

(b) To provide the COP with an objective, consistent, transparent, thorough and comprehensive technical assessment of the annual quantitative and qualitative inventory information submitted by Annex I Parties, and a technical assessment of the implementation of Annex I Parties' commitments under Article 4, paragraph 1 (a) and Article 12, paragraph 1 (a), of the Convention;

(c) To examine, in a facilitative and open manner, the reported inventory information for consistency with the "Guidelines for the preparation of national communications by Parties included in Annex I to the Convention, Part I: UNFCCC reporting guidelines on annual inventories"¹ and the *Revised 1996 Intergovernmental Panel on Climate Change (IPCC) Guidelines for National Greenhouse Gas Inventories*² as elaborated by the IPCC report entitled *Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories*,³ and the *IPCC Good Practice Guidance for Land Use, Land-Use Change and Forestry*.⁴

(d) To assist Annex I Parties in improving the quality of their GHG inventories.

General approach

3. Greenhouse gas inventory submissions from all Annex I Parties will be subject to an annual technical review. The technical review process for GHG inventories, as outlined in these guidelines, comprises three stages which consider different aspects of the inventories in such a way that all of the purposes described above are achieved by the end of the process. The three stages are:

¹ In these guidelines, the guidelines for the preparation of national communications by Parties included in Annex I to the Convention, *Part I: UNFCCC reporting guidelines on annual inventories* are referred to as the reporting guidelines.

² In these guidelines, the *Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories* are referred to as the IPCC Guidelines.

³ In these guidelines, the IPCC report entitled *Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories* is referred to as the IPCC good practice guidance.

⁴ In these guidelines, the IPCC report entitled *Good Practice Guidance Land Use, Land-Use change and Forestry* is referred to as the IPCC good practice guidance for LULUCF.

- (a) Initial check of annual inventories;
 - (b) Synthesis and assessment of annual inventories; and
 - (c) Review of individual annual inventories.
4. The stages of the technical review process complement each other so that, in general, for each Annex I Party, one stage is concluded before the next one is undertaken.
5. At all stages of the inventory review process, individual Annex I Parties under review will have the opportunity to clarify issues or provide additional information. The secretariat will send to these Parties drafts of their status report, the synthesis and assessment report and a preliminary analysis of the respective Party's inventory, and their individual inventory review report. Every effort will be made to reach agreement with each Party on the content of a report prior to its publication. In the case of a Party and the expert team being unable to agree on an issue, the Party may provide explanatory text to be included in a separate section of the report.

Initial check of annual inventories

6. The secretariat will conduct annually an initial check of the annual GHG inventory submissions from Annex I Parties in order to determine promptly whether the information provided is complete and in the correct format, and to enable subsequent review stages to take place.
7. The initial check will cover the national inventory submission and the data submitted electronically in the common reporting format (CRF), using the CRF Reporter software.
8. The results of the initial check for each Annex I Party will be published on the UNFCCC web site as a status report, mainly in a tabular format. The status report will, *inter alia*:
- (a) Indicate the date of receipt by the secretariat;
 - (b) Indicate whether the NIR and the CRF have been submitted;
 - (c) Determine whether the inventory information has been provided in the correct format as called for in the reporting guidelines;
 - (d) Determine whether the submission is complete and will identify any gaps in the reported data, covering the elements listed in paragraph 7, above.
9. The initial check for each Annex I Party should be finalized and the status report published on the UNFCCC web site within seven weeks of the date of receipt of the submission by the secretariat.

Synthesis and assessment of annual inventories

10. The secretariat will conduct a synthesis and assessment of Annex I Parties' greenhouse gas inventories to facilitate the consideration of inventory data and other information across Parties, and to identify issues for further consideration during the review of individual inventories.
11. The synthesis and assessment will cover the national inventory submission and previous national inventory submissions, where relevant, and will include a standardized set of data comparisons of:

(a) Implied emission factors and other inventory data across Annex I Parties to identify any irregularities or inconsistencies;

(b) Emission or removal estimates, activity data, implied emission factors and any recalculations with data from previous submissions to identify any irregularities or inconsistencies;

(c) Activity data of each Annex I Party with relevant authoritative sources, if feasible, to identify cases where there are significant differences.

12. To facilitate the analysis of the inventory data, the secretariat will, for each individual Annex I Party, identify and consider those sources that are *key categories* both in level and in terms of their trend assessment, applying the Tier 1 level assessment as described in the IPCC good practice guidance for LULUCF. In addition, the secretariat will also consider other sources (i.e., emissions from bunker fuels etc.) and non-key categories for which irregularities or inconsistencies are identified, based on their significance for specific sectors or for the whole GHG inventory.

13. The synthesis and assessment will consist of two parts. The results of part I will be published on the UNFCCC web site as a synthesis and assessment report. The results of part II, together with the comments provided by the respective Party, will be provided to the corresponding expert review team as input for the individual review.

14. Part I of the synthesis and assessment report will provide information to allow comparisons across Annex I Parties and to describe common methodological issues. This report will compile and compare information across Parties in a tabular and graphical format.

15. Part II of the synthesis and assessment report will contain a preliminary analysis of individual Annex I Party inventories based on the information contained in the synthesis and assessment report, and will, for each individual inventory:

(a) Identify issues within source or sink categories requiring further consideration or clarification during the individual review stage;

(b) Identify any recurring problems with reporting;

(c) Examine inventory recalculations and consistency of the time series;

(d) Assess the availability of documentation on:

(i) National self-verification procedures or independent review in the technical review process;

(ii) The application of the IPCC good practice guidance, including estimations of uncertainties;

(e) Assess the consistency of information on methodologies and emission factors in the CRF with related information in the NIR.

16. The synthesis and assessment will be conducted annually. The preliminary analysis of individual Annex I Party inventories (part II of the synthesis and assessment) will be completed at least four weeks prior to the scheduled individual review for the Party concerned.

Review of individual annual inventories

17. Expert review teams, coordinated by the secretariat, will conduct reviews of individual greenhouse gas inventories in order to assess whether the COP has adequate and

reliable information on annual GHG inventories. The individual reviews will provide for a detailed examination of the inventory estimates, procedures and methodologies used in the preparation of inventories, covering each Annex I Party's national inventory submission, supplementary material submitted by the Party and, as appropriate, previous inventory submissions. The results of this stage of the review process will be communicated to Annex I Parties.

18. Three operational approaches may be used, namely desk reviews, centralized reviews and in-country reviews. During a desk review, inventory information of Annex I Parties will be sent to experts, who will conduct the review in their own countries. During a centralized review, the experts will meet in a single location to review the inventory information of Annex I Parties. During an in-country review, experts will visit an Annex I Party to review the inventory information of this Party.

19. The review of most individual inventories of Annex I Parties will be conducted annually as a desk review or as a centralized review. In addition, the GHG inventory of each Annex I Party will be subject to an in-country visit by an expert review team once every five years. In a year when an in-country review is scheduled, a desk or centralized review of the Party's GHG inventory will not take place. In-country visits will be scheduled, planned and take place with the consent of, and close coordination with, the Party subject to review. In general, during a centralized review, up to eight GHG inventories should be reviewed; during a desk review up to five GHG inventories should be reviewed.

20. Expert review teams should pay particular attention to those areas of the inventory where problems have been identified in previous reviews, or stages of the review, or where changes have been reported by the Party.

21. Each expert review team will:

(a) Examine application of the requirements of the reporting guidelines and the IPCC Guidelines, as elaborated by the IPCC good practice guidance, and identify any departure from these requirements;

(b) Examine whether the IPCC good practice guidance was applied and documented, in particular noting the identification of key categories, selection and use of methodologies and assumptions, development and selection of emission factors, collection and selection of activity data, reporting of recalculations and consistent time-series, reporting of uncertainties related to inventory estimates, methodologies used for estimating those uncertainties and quality assurance and quality control procedures, and identify any inconsistencies;

(c) Compare emission or removal estimates, activity data, implied emission factors and any recalculations with data from previous submissions of the Party included in Annex I to identify any irregularities or inconsistencies;

(d) Identify any missing sources and examine any explanatory information relating to their exclusion from the GHG inventory;

(e) Identify the reason for any differences between the Party's and the secretariat's key category determination;

(f) Assess the consistency of information in the CRF with that in the NIR;

(g) Assess the extent to which issues raised in the synthesis and assessment of annual inventories, and issues and questions raised by expert review teams in previous reports have been addressed and resolved;

22. Identify areas for further improvement of the inventories and note possible ways for improving the estimation and the reporting of inventory information.

23. In addition to the tasks mentioned in paragraphs 21 and 22, above, expert review teams conducting in-country reviews will consider the “paper trail” of the inventory from the collection of data to the reported emission estimates, and will examine procedures and institutional arrangements for inventory development and management, including quality assurance and quality control, record-keeping and documentation procedures. During subsequent desk or centralized reviews, the expert review teams will identify any changes that may have occurred in these procedures and institutional arrangements, based on the information provided in the NIRs of Annex I Parties.

24. The expert review team may use relevant technical information in the review process, such as information from international organizations.

Individual review reports

25. Under its collective responsibility, the expert review team will produce an individual inventory review report for publication in electronic format on the UNFCCC web site. The review reports should contain an objective assessment of the adherence of the inventory information to the reporting guidelines and the provisions of relevant decisions by the COP and should not contain any political judgement.

26. The report of all in-country reviews should not exceed 25-30 pages, including a 2-3 page summary. For desk and centralized reviews the report should not exceed 10 pages, and should focus on particular strengths and identified problems, as well as on an overall appraisal of the quality and reliability of the inventory, emission trends, actual emission factors and activity data, and on the degree of adherence to the reporting guidelines and the IPCC good practice guidance. Both types of review reports should include standardized tables, whenever possible, to increase the efficiency of communication.

27. Each desk or centralized review should be completed within 20 weeks and 25 weeks, respectively, and each in-country review should be completed within 14 weeks.

II. GENERAL GUIDANCE FOR REVIEWERS

28. This chapter introduces the material to be reviewed as well as the additional information available from the Secretariat. Furthermore it identifies the tasks to be performed by the reviewers and the additional tasks for the lead reviewer.

Material to be reviewed

29. The Party's inventory submission, which includes the common reporting format (CRF) and the national inventory report (NIR), will be the focus of the review.

The National Inventory Report

30. The NIR is prepared following the UNFCCC reporting guidelines on annual inventories. Annex I of document FCCC/SBSTA/2004/8 contains a recommended outline of the structure of the NIR.

31. The NIR as the main source of information will describe the methodology used, available activity data, emission factors and the rationale for these choices. Information on the implementation of uncertainty and quality assurance/quality control (QA/QC) procedures and information on any recalculations related to previously submitted data will also be included. A separate section will identify changes from previous years regarding methodologies used, sources of information and assumptions, as well as responses to the review process. The result of the uncertainty evaluation is also included in the NIR.

The CRF tables

32. The information provided in the CRF tables includes all emission estimates for the whole time series, activity data and other related data, including calculated implied emission factors for all sources and sinks. The result of the key category analysis is also included in the CRF. The CRF tables are an integral part of the inventory submission and should be consulted together with the NIR throughout the whole process of the individual review.

Additional material available to the reviewers

33. In addition to the inventory report submitted by the Parties are several documents available to the reviewer:

- (a) The status report by the Secretariat;
- (b) The synthesis and assessment report;
- (c) The Party's comments on the status report and synthesis and assessment report;
- (d) Results from previous inventory reviews;
- (e) Key category assessment by the Secretariat; and
- (f) Background information from the Party.

34. The status report is the result of the initial check stage of UNFCCC inventory review. It summarises the contents of a Party's submission and gives an indication as to the

completeness of the inventory submission (i.e. gases and years provided, tables provided for each inventory year, submission of a national inventory report and a short description of its content).

35. The purpose of the synthesis and assessment (S & A) of Annex I Parties' greenhouse gas inventories is to facilitate the consideration of inventory data and other information across Parties, and to identify issues for further consideration during the review of individual inventories. This report consists of two sections.

36. Part I of S & A contains information on Parties' inventories in a tabular format to provide comparisons of data across Parties. It presents emission data, implied emission factors, activity data and information on methods and emission factors used, as reported in the CRF, data from international sources, and other information related to greenhouse gas inventory estimates. This section of the report focuses mainly on those source categories that are key categories for most of the countries.

37. Prior to the individual inventory review, the inventory information is analysed during the synthesis and assessment phase to identify issues for further consideration during the individual review. Part II of the synthesis and assessment report contains these identified issues on a country-by-country basis. This part of the synthesis and assessment report goes into more details in the findings than in initial checks. It also assesses the consistency of the CRF tables with the national inventory report, time series consistency, recalculations, self-verification, information on the status report, and a sector-by-sector analysis.

38. The Party has the opportunity to comment on the status report and the synthesis and assessment report. The Party being reviewed may address the issues raised in these first stages of the review process and provide explanations and additional information. This information is an important supplement to the submitted national inventory report.

39. The secretariat will complete the identification of the key categories of all Parties reporting with the CRF Tables, by applying the Tier 1 level and trend assessment of the IPCC good practice guidance for LULUCF (see page 5.33 of the IPCC good practice guidance for LULUCF). In addition, the secretariat will consider other sources (e.g., emissions from bunker fuels, etc.) and non-key categories for which irregularities or inconsistencies are identified, based on their significance for specific sources or for the whole GHG inventory.

40. The Party may also have background information available either in hard copy or posted on the Internet. A list of such documentation or references may often be found in the back of the NIR.

Tasks and priorities

41. The tasks for the review team may be divided into three phases (1) individual preparations at home office, (2) investigations by team members during the scheduled review period of the Party and (3) documentation of the review preparation of the review report. The tasks and priorities of these stages are elaborated below.

Individual preparations for the review

42. The secretariat will provide the review experts with the basic information package needed for the review in due time for preparations at home office. The information package consists of the NIR including the CRF, the status report, the synthesis and assessment report (S & A), comments and clarifications from the Party to the status report and the S & A and the review report from previous year. In addition the review transcripts (where experts document the review) from the previous year will be provided to the review team.

43. Each review team member is encouraged to study the basic information package and also familiarise itself with these materials as part of the preparation for the individual review:

- (a) The UNFCCC reporting guidelines (FCCC/SBSTA/2004/8);
- (b) The UNFCCC guidelines for the technical review of GHG inventories from Annex I Parties (FCCC/CP/2002/8, Annex II), which provide guidance on how the review should be conducted.
- (c) The IPCC Guidelines, IPCC good practice guidance and IPCC good practice guidance for LULUCF used in the preparations of the national inventory, see <http://www.ipcc-nggip.iges.or.jp/public/gl/invs1.htm> <http://www.ipcc-nggip.iges.or.jp/public/gp/gpgaum.htm> and <http://www.ipcc-nggip.iges.or.jp/public/gpglulucf/gpglulucf.htm>, respectively.

44. The status report may give the reviewer a first “hint” if something might be missing from the submitted inventory. The reviewer should check if the Party has provided any additional information to explain the missing data. The S & A report will further identify issues and questions about the source categories. The reviewers should also look at questions raised in previous year reviews for the whole inventory and for each sector and key category.

Investigations by team members during the scheduled review

45. Because the time available for inventory review is limited, expert reviews should focus mainly on the key categories during the individual review. Start with the largest key category for each sector and go through in descending order. Identify some additional sources to be reviewed in the same detail as key categories. Experts should select for a detailed review at least one or two additional source categories in sectors where there are not many key categories. Preferably, these should be sources that have not been thoroughly reviewed in previous years.

46. Reviewers should follow up on all potential issues/problems identified in the preliminary findings, after checking if the Party has provided any additional information with explanations/reasons for the questions/findings raised in the synthesis and assessment report. The issues described in previous review reports should also be the focus for detailed assessment in the current review period to evaluate the Party’s progress over time.

47. Reviewers are recommended to assess in depth the information provided by the Party under review and compare the national data with data from other Parties and, if available, data from International organizations (United Nations, International Energy Agency, etc.).

48. For this purpose reviewers are recommended to use the information on the national inventories under review in all tables of part I of the S & A. For example, it is possible to compare implied emission factors for many sources to those of other Parties. Such comparisons do not necessarily identify problems with an inventory but may help to focus the review.

49. Where possible, but in particular for the in-country review, the review team looks at the institutional arrangements, documentation and archiving procedures. During the centralized and the desk review two experts work on the same sector, so close co-operation between them is necessary. The review experts should share their views and consolidate their conclusions on the identified findings for each individual GHG inventory under review.

Documentation of the review and preparation of the review report

50. Reviewers are requested to prepare questions to the Party that are necessary to be clarified to complete the review report and send them to the Party (through the lead reviewers).

51. The reviewers should address the issues identified in previous reviews explicitly in the final report. The reviewers having examined the Party's inventory submission and identified issues and problems, should also recommend areas for improvement.

52. A draft version of the review report will be sent to Parties for comments, in accordance with the provisions of the review guidelines. The comments from the Parties, if any, will be sent to the lead reviewer who may discuss with the team and take them into account in the finalization of the report before it is published on the UNFCCC web site.