

# UNFCCC EXPERT MEETING TO ASSESS EXPERIENCES IN THE USE OF THE REPORTING AND REVIEW GUIDELINES

Bonn, Germany, 4 – 6 December 2001

## Working paper No. 6 (2001): Possible modifications to the UNFCCC reporting guidelines to reflect the IPCC good practice guidance

- Unedited -

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## **I. INTRODUCTION**

### **A. Mandate**

1. By its decision 3/CP.5, the Conference of the Parties (COP) requested the secretariat to prepare a report on the use of the guidelines for the preparation of national communications by Parties included in Annex I to the Convention (Annex I Parties), Part I: UNFCCC reporting guidelines on annual inventories (hereinafter referred to as the reporting guidelines)<sup>1</sup>, in particular the common reporting format (CRF), taking into account, *inter alia*, experiences gained by Parties in using those guidelines, and by the secretariat in processing the CRF, and input from the Intergovernmental Panel on Climate Change (IPCC).

2. In preparing the above-mentioned report, the secretariat was requested by the SBSTA at its twelfth session, to consider whether any modifications to these guidelines are needed to reflect the IPCC *Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories* (hereinafter referred to as the IPCC good practice guidance).

### **B. Background**

3. A report on *Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories* was prepared by the IPCC in response to a request from the SBSTA at its eighth session. The report includes good practice guidance for estimating emissions from most of the sources of greenhouse gases (GHG) covered in the Revised 1996 IPCC Guidelines for National GHG Inventories (hereinafter referred to as the IPCC Guidelines). Good practice guidance for land use change and forestry are not included in that report, but will be developed at a later stage. Each of the sources are evaluated with respect to (1) choice of method (tier) including a decision tree, (2) choice of emission factors (3) choice of activity data (4) completeness (5) developing a consistent time series (6) uncertainty assessment (7) reporting and documentation and quality assurance and quality control. Further, it provides a practical guide to estimating uncertainty, crosscutting guidance for determining the key sources of the inventory and general quality assurance and quality control routines. Application and reporting of good practice guidance is expected to improve the quality and transparency of the national inventories, and facilitate the review process.

4. The reporting guidelines, including the CRF and the national inventory report (NIR), were developed in parallel with the development of the IPCC good practice guidance. General reference to good practice guidance was made with the possibility to revise the reporting guidelines after completion of the good practice guidance.

### **C. Scope**

5. This working paper was prepared by the secretariat in response to the mandate mentioned in paragraph 2 above. It complements the report on the use of the UNFCCC reporting guidelines on annual inventories (FCCC/SBSTA/2001/5 and Add.1), which was prepared in response to the mandate mentioned in paragraph 1 above. This paper suggests inclusion of additional elements in the reporting guidelines in order to facilitate application and reporting of good practice guidance. The suggestions build on the recommendations in the IPCC good practice guidance and views provided by the Parties on their experience in using good practice guidance, as contained in document FCCC/SBSTA/2001/MISC.5.

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<sup>1</sup> The full text of the reporting guidelines and decision 3/CP.5 is contained in document FCCC/CP/1999/7.

6. The cross-sectoral suggestions provided in this working paper may also be applied to Land use Change and Forestry, once good practice guidance for this sector is agreed upon by the COP.

7. This paper does not cover sectoral tables of the CRF. Possible modifications to the sectoral tables resulting from the experience gained during the trial period and for considering the application of good practice guidance at the sectoral level, are addressed in a separate paper.

8. The proposals and options presented below are not comprehensive. Other proposals and options may exist and could be identified by experts at the expert meeting or by Parties for their consideration at the sixteenth session of the subsidiary bodies.

## **II. GUIDELINES FOR THE PREPARATION OF NATIONAL COMMUNICATIONS BY PARTIES INCLUDED IN ANNEX I TO THE CONVENTION, PART I: UNFCCC REPORTING GUIDELINES ON ANNUAL INVENTORIES**

### **A. Approach**

9. The issues in this paper are discussed in relation to the relevant paragraphs from document FCCC/CP/1999/7. This paper follows the same disposition and the relevant paragraphs from the document are quoted in *italics* followed by a description of the issue and a suggestion. The suggestions are provided in revision mode where deletions are struck out and new texts are underlined. Paragraphs without any suggested changes are not included in this document. Changes to the CRF are also provided in the same format as the text, describing the issue and a suggestion. New tables suggested are however included in this paper.

### **B. Principles and definitions**

10. Paragraph 3

*Inventories should be prepared using comparable methodologies agreed upon by the Conference of the Parties (COP), as indicated in paragraph 7 below, and any good practices agreed upon by the COP at a future session.*

Footnote to “good practices” in paragraph 3

*The Intergovernmental Panel on Climate Change (IPCC) is currently developing guidance on good practices as part of its work related to uncertainties in inventories. This guidance may be available for consideration by the Subsidiary Body for Scientific and Technological Advice (SBSTA) in 2000. Guidance on good practices may include, inter alia, advice on the choice of methodology, emission factors, activity data, and uncertainties, and on a series of quality assessment and quality control procedures, which may be applied during the preparation of inventories.*

Issue	Suggestion
<p>The IPCC good practice guidance was discussed at the twelfth session of the SBSTA who concluded that the IPCC good practice guidance should be used by Annex I Parties for inventories due in 2003 and beyond. Application of these guidelines is discussed in several paragraphs including paragraph 7. There may not be a need for this general reference and the footnote any longer.</p>	<p>Inventories should be prepared using comparable methodologies agreed upon by the Conference of the Parties (COP), as indicated in paragraph 7 below, <del>and any good practices.</del></p> <p>Delete footnote.</p>

#### 11. Paragraph 4

*In the context of these UNFCCC reporting guidelines on annual inventories:*

Issue	Suggestion
<p>The IPCC good practice guidance makes use of additional terms. These are: good practice, decision tree, recalculation, key source category, quality control and quality assurance. Defining these terms in the reporting guidelines may be useful.</p>	<p>Include the following additional definitions:</p> <p><u><i>Good practice guidance</i> is a set of procedures intended to ensure that greenhouse gas inventories are accurate in the sense that they are systematically neither over- nor underestimated as far as can be judged, and that uncertainties are reduced as far as possible. Good practice covers choice of estimation methods appropriate to national circumstances, quality assurance and quality control at the national level, quantification of uncertainties, and data archiving and reporting to promote transparency</u></p> <p><u><i>Decision tree</i> is a flow-chart describing the specific ordered steps which need to be followed to develop an inventory or an inventory component in accordance with the principles of good practice.</u></p> <p><u><i>Recalculation</i>, consistent with the UNFCCC reporting guidelines on annual inventories, is a procedure for re-estimating anthropogenic greenhouse gas emissions by sources and removals by sinks of previously submitted inventories as a consequence of changes in methodologies, changes in the manner in which emission factors and activity data are obtained and used, or the inclusion of new</u></p>

<p>The method for identifying the key Source categories applies a threshold for the accumulated contribution to the emission level and trend. Based on analysis of several inventories, Good practice guidance recommends a general threshold of 95 % for both level and trend assessment.</p>	<p><u>source and sink categories.</u></p> <p><u>A Key source category means one that is prioritised within the national inventory system because its estimate has a significant influence on a country's total inventory of direct greenhouse gases in terms of level of emissions, the trend in emissions, or both. Key Source categories are those that contribute up to 95 % of the total national inventory in terms of CO2 equivalent to emission level and trend. The summation accounts for the sources in descending order relative to the contribution to the level and trend.</u></p> <p><u>Quality control (QC) is a system of routine technical activities to measure and control the quality of the inventory as it is being developed. The QC system is designed to:</u></p> <ul style="list-style-type: none"> <li><u>- Provide routine and consistent checks to ensure data integrity, correctness and completeness;</u></li> <li><u>- Identify and address errors and omissions;</u></li> <li><u>- Document and archive inventory material and record all QC activities.</u></li> </ul> <p><u>QC activities include general methods such as accuracy checks on data acquisition and calculations and the use of approved standardized procedures for emission calculations, measurements, estimating uncertainties, archiving information and reporting. Higher tier QC activities also include technical reviews of source categories, activity and emission factor data and methods</u></p> <p><u>Quality assurance (QA) activities include a planned system of review procedures conducted by personnel not directly involved in the inventory compilation development process, to verify that data quality objectives were met, ensure that the inventory represents the best possible estimate of emissions and sinks given the current state of scientific knowledge and data available, and support the effectiveness of the QC programme</u></p>
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## C. Methods

### Methodology

#### 12. Paragraph 7

*Parties shall use the Revised 1996 Intergovernmental Panel on Climate Change Guidelines for National Greenhouse Gas Inventories, referred to below as the IPCC Guidelines, to estimate and report on anthropogenic emissions by sources and removals by sinks of greenhouse gases not controlled by the Montreal Protocol. In accordance with the IPCC Guidelines, Parties may use different methods (tiers) included in those guidelines, giving priority to those methods, which are believed to produce the most accurate estimates, depending on the data available. In accordance with the IPCC Guidelines, Parties can also use national methodologies which they consider better able to reflect their national situation provided that these methodologies are compatible with the IPCC Guidelines and are well documented.*

Issue	Suggestion
A general reference to the application of good practice guidance may be made in the introductory text (first sentence of paragraph 7).	1 <sup>st</sup> sentence of paragraph 7: Parties shall use the IPCC Guidelines <u>and the IPCC Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories, referred to below as the IPCC good practice guidance</u> , to estimate and report on anthropogenic emissions by sources and removals by sinks of greenhouse gases not controlled by the Montreal Protocol.
The good practice guidance includes source-by-source recommendations regarding choice of method (Tier). This is provided in the form of decision trees followed by explanatory text. It may be specified that priority shall be given to those methods that according to good practice, are believed to produce the most accurate estimates, depending on the data available.	2 <sup>nd</sup> sentence of paragraph 7: In accordance with the IPCC Guidelines, Parties may use different methods (tiers) included in those guidelines, giving priority to those methods <u>that according to the IPCC good practice guidance</u> , are believed to produce the most accurate estimates, depending on the data available.
Idem.	3 <sup>rd</sup> sentence of paragraph 7: In accordance with the IPCC Guidelines, Parties can also use national methodologies which they consider better able to reflect their national situation, provided that these methodologies are compatible with the IPCC Guidelines <u>and the IPCC good practice guidance</u> , and are well documented.

7bis. New paragraph

Key source category determination

Issue	Suggestion
<p>The Good practice guidance provides a method to determine what sources of emission that contribute significantly to the emission level, to the trend or both. These sources will thus be the most important for the accuracy of the total emission and the trend in total emissions. Two different tiers are developed where the Tier 2 incorporates the national uncertainty estimates. Identifying the Key Sources using the recommended methodology and evaluating the sources relative to the qualitative criteria provided in the Good Practice Guidelines will help the inventory makers gain insight into the development of the national emissions over time and may also identify errors in the emission estimates of individual sources. Identification of the country specific key sources may be used to assist in prioritising the limited resources available for estimating the GHG emissions.</p> <p>The key sources categories contribute the most to the emission level and the trend. Application of the most accurate methods to these sources will enhance the quality of the inventory.</p> <p>Some source categories will contain several sub-sources (e.g. cows, sheep and goat) where some may contribute very little to the total emissions from the particular source category. The sub-source that contributes very little will not affect the level or trend of the inventory significantly. To further prioritise the use of resources, the inventory maker may apply at least one of the recommended method in accordance with the corresponding decision trees of the IPCC good practice guidance only to the major sub-sources.</p>	<p>New paragraph 7 bis.  <u>Parties should determine their national key source categories for the base year and the latest reported inventory year, using the Tier 1 or Tier 2 level and trend assessment as described in the IPCC good practice guidance.</u></p> <p><u>For sources categories that are key, Parties should make every effort to use at least one of the recommended methods in accordance with the corresponding decision trees of the IPCC good practice guidance.</u></p> <p><u>When a source category contains more than one source, only sub-sources contributing more than 30 % of the total emissions from the source category should be defined as key source.</u></p>

Four qualitative criteria are also recommended by Good practice guidance.	<u>Parties are encouraged to evaluate all source categories using the qualitative criteria described in the IPCC good practice guidance.</u>
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### 13. Paragraph 8

*The IPCC Guidelines offer a default methodology which includes default emission factors and in some cases default activity data. As these default data, factors and assumptions may not always be appropriate for specific national contexts, it is preferable that Parties use their own national emission factors and activity data, where available, provided that they are developed in a manner consistent with any good practices, and considered to be more accurate, and the reporting of the emission and removal estimates and their underlying data is transparent.*

Issue	Suggestion
Good practice guidance provides new or updated default emission factors for some sources.	The IPCC Guidelines offer a default methodology which includes default emission factors and in some cases default activity data. <u>Good practice guidance offer revised default activity data or emission factors for some sources. These shall be used where available, if Parties choose to use default factors or data due to lack of country-specific information.</u>
Good practice guidance provides guidance for choosing and developing emission factors, and choosing and collecting activity data.	As these default data, factors and assumptions may not always be appropriate for specific national contexts, it is preferable that Parties use their own national emission factors and activity data, where available, provided that they are developed in a manner consistent with <del>any good practices</del> , <u>the IPCC good practice guidance</u> , and considered to be more accurate, and the reporting of the emission and removal estimates and their underlying data is transparent.

### Good practices

### 14. Paragraph 9

*When preparing inventories, Parties should apply good practices agreed upon by the COP, in order to improve transparency, consistency, comparability, completeness and accuracy.*



Issue	Suggestion
The Good practice guidance was discussed at the twelfth session of SBSTA who concluded that the IPCC good practice guidance should be used by Annex I Parties for inventories due in 2003 and beyond. If the suggestions for specific reference to Good practice guidance suggested in this working paper are included there is no need for this general paragraph.	Delete heading “good practices” and paragraph 9.

### Recalculations

#### 15. Paragraph 10

*The purpose of all recalculations should be the improvement of accuracy and/or completeness. Recalculations have to ensure consistency of the time-series. The inventories of an entire time-series, including the base year and all subsequent years for which inventories have been reported, should be estimated using the same methodologies, and the underlying activity data and emission factors should be obtained and used in a consistent manner. Where the methodology or manner in which underlying activity data and emission factors are gathered has changed, Parties should recalculate inventories for the base and subsequent years.*

Issue	Suggestion
The IPCC good practice guidance provides several reasons for when recalculations will improve accuracy and/or completeness.	The purpose of all recalculations should be the improvement of accuracy and/or completeness. Recalculations have to ensure consistency of the time-series. The inventories of an entire time-series, including the base year and all subsequent years for which inventories have been reported, should be estimated using the same methodologies, and the underlying activity data and emission factors should be obtained and used in a consistent manner. <u>Parties should evaluate annually the need for recalculations relative to the reasons provided by the IPCC good practice guidance, in particular for key sources.</u> Where the methodology or manner in which underlying activity data and emission factors are gathered has changed, Parties should recalculate inventories for the base and subsequent years.

#### 16. Paragraph 11

*However, in some cases activity data may be missing for some historical years, including the base year. In this case, emissions or removals for these years may need to be recalculated with alternative methodologies. In these instances, Parties should demonstrate that the time-*

*series is consistent. The alternative methodologies should be documented in a transparent manner, taking into account any good practices.*

Issue	Suggestion
Good practice guidance provides alternative recalculation techniques. Good practice guidance also describes alternative methods for splicing of time series when using the same method is not possible.	However, in some cases activity data may be missing for some historical years, including the base year. In this case, emissions or removals for these years may need to be recalculated with alternative methodologies. <u>In these instances, Parties should make every effort use one of the techniques provided by the IPCC good practice guidance. Parties should demonstrate that the time- series is consistent.</u>
This sentence is related to reporting and thus may be moved to paragraph 20.	Delete last sentence of paragraph 11.

### Uncertainty

#### 17. Paragraph 12

*Parties should estimate the uncertainties of their inventories using the best methodologies available to them, taking account of any good practices.*

Issue	Suggestion
<p>The IPCC good practice guidance describes in detail two different practical methods (Tier 1 and Tier 2) for estimating uncertainty of inventory estimates. IPCC has evaluated available methodologies with the help of a number of experts and developed practical methods for estimating uncertainty in national inventories. These methods are thus the currently best methods available.</p> <p>Uncertainty estimates developed using the same methodology will contribute to comparable national inventories among Annex I Parties.</p>	<p><i>Parties should <u>make a quantitative estimate of the uncertainties of each source category and for their inventory totalies using at least the tier 1 method, and are encouraged to also use the tier 2 method provided in the IPCC good practice guidance</u> <del>best methodologies available to them, taking account of any good practices.</del></i></p>

18. New paragraph

Issue	Suggestion
<p>All inventory makers perform various checks on the emission estimates, but they may vary depending on resources available and knowledge of the source in question. Both random errors and constant errors will still occur. The QA/QC provides a set of routines to help make the process of checking systematic and thus consistent across sources and also more efficient.</p>	<p><u>Quality Assurance (QA) and Quality Control (QC)</u></p> <p>Parties should elaborate an inventory QA/QC plan that describes specific QC procedures to be implemented during the inventory development process, facilitate the overall QA procedures to be conducted and establish quality objectives. It should include consideration of ways to improve the quality of activity data, emission factors, methods and other relevant technical elements of the inventory.</p> <p>Parties should implement the Tier 1 General Inventory Level QC Procedures as outlined in table 8.1 of the IPCC good practice guidance. For key source categories, Parties should also implement the Tier 2 source category specific QC procedures of the good practice guidance. Both the tier 1 and the tier 2 procedures should be in accordance with the provisions of the national QA/QC plan.</p> <p>Parties should make every effort to consider the information obtained from the implementation of the QA/QC plan and other reviews in the development and/or revision of the QA/QC plan and the quality objectives.</p>

## D. Reporting

### 1. General Guidance

#### Estimates of emissions and removals

19. Paragraph 18

*In accordance with the IPCC Guidelines, international aviation and marine bunker fuel emissions, based upon fuel sold to ships or aircraft engaged in international transport, should not be included in national totals, but reported separately. Parties should also report emissions from international aviation and marine bunker fuels as two separate entries in their inventories.*

Issue	Suggestion
Good practice guidance provides further guidance on how to separate between domestic and international emissions from aviation and water borne navigation (marine bunker fuel).	In accordance with the IPCC Guidelines, international aviation and marine bunker fuel emissions, <del>based upon fuel sold to ships or aircraft engaged in international transport,</del> should not be included in national totals, but reported separately. <u>Parties should make every effort to apply and report according to the Good practice guidance method for separation between domestic and international emissions.</u> Parties should also report emissions from international aviation and marine bunker fuels as two separate entries in their inventories.

### Recalculations

#### 20. Paragraph 20

*Recalculations of previously submitted estimates of emissions and removals as a result of changes in methodologies, changes in the manner in which emission factors and activity data are obtained and used or the inclusion of new sources or sinks, which have existed since the base year but were not previously reported, should be reported for the base year and all subsequent years, up to the year in which the recalculations are made. Recalculations should result in an improvement in the accuracy and completeness of the inventory and ensure the consistency of the time-series. In this regard, Parties should report justifications for these changes. The information on the procedures used for performing the recalculations, changes in the calculation methods, emission factors and activity data used, and inclusion of sources or sinks, should be documented in a transparent manner, indicating the relevant changes in each source or sink category where these changes have taken place.*

Issue	Suggestion
	Recalculations of previously submitted estimates of emissions and removals as a result of changes in methodologies, changes in the manner in which emission factors and activity data are obtained and used or the inclusion of new sources or sinks, which have existed since the base year but were not previously reported, should be reported for the base year and all subsequent years, up to the year in which the recalculations are made. Recalculations should result in an improvement in the accuracy and completeness of the inventory and ensure the consistency of the time-series. In this regard, Parties should report justifications for these

<p>This suggestion is a result of the suggestion in paragraph 10 “<i>Parties should evaluate annually the need for recalculations relative to the reasons provided by the IPCC good practice guidance, in particular key sources.</i>”</p>	<p>changes. <u>If a time series of a key source is not recalculated, although any of the reasons provided by the IPCC good practice guidance are relevant, Parties should report justification for this.</u> The information on the procedures used for performing the recalculations, changes in the calculation methods, emission factors and activity data used, and inclusion of sources or sinks, should be <del>documented in a transparent manner</del> <u>reported</u>, indicating the relevant changes in each source or sink category where these changes have taken place. <u>If other methods than those described in the IPCC good practice guidance are used, Parties should report justification for, and full description of the methodology used.</u></p>
<p>Changes in level of emission as a result of recalculations are currently reported in the CRF. Recalculation may however also affect the trend in emissions, even if the effect on the level is small.</p>	<p><u>For key sources, Parties should report in the NIR the effect of recalculation on both the level and trend.</u><sup>2</sup></p>

## Uncertainties

### 21. Paragraph 24

*When reporting greenhouse gas emission and removal inventory data, the level of uncertainty associated with these data and their underlying assumptions should be indicated. The methodologies used for estimating uncertainties should be reported in a transparent manner. Parties are encouraged to report quantitative information on uncertainties where this is available.*

Footnote to heading “Uncertainties”

*More rigorous requirements for reporting uncertainties may be adopted by the COP once the ongoing work of the IPCC on this matter is completed.*

Issue	Suggestion
<p>If the suggestion in paragraph 12 is adopted, then the method for estimating uncertainty is given. A new table for reporting uncertainties is also suggested for the CRF.</p>	<p>Delete paragraph 24 and footnote on “uncertainties”.</p>

<sup>2</sup> Relevant information on recalculations would be provided in the annual synthesis and assessment report by the secretariat.

22. New paragraph

Issue	Suggestion
The method for identifying the key Source categories applies a threshold for the accumulated contribution to the emission trend as defined in paragraph 7. The result of the evaluation, sorted according to the cumulative contribution to the emission level may be reported to assure transparency in the identification of Key Sources. If suggested paragraph is agreed upon, a new table would have to be added to the CRF for this purpose.	<u>Parties should report the percentage contribution of key source categories to their national total, to the cumulative <del>accumulated</del> emission level and to the emission trend, all of them expressed in terms of CO<sub>2</sub> equivalent, using table X (current proposed table 12) of the CRF. The sources should be sorted according to decreasing contribution to the emission level.</u>

2. Common reporting format

23. Paragraph 29

*The common reporting format consists of:*

- (a) *Summary and sectoral tables;*
- (b) *Sectoral background data tables for reporting of aggregate emission factors and activity data;*
- (c) *The IPCC worksheet 1-1 containing estimates of CO<sub>2</sub> emissions from fuel combustion using the IPCC reference approach and a table for comparing estimates under this reference approach with national estimates, as well as providing explanations of any significant differences;*
- (d) *Tables for reporting, inter alia, aggregate CO<sub>2</sub> equivalent emissions and removals, recalculations, completeness of the inventory, uncertainty, feedstocks and non-energy use of fuels, international bunkers and multilateral operations, emission trends, and a check-list of the main inventory information requested by these UNFCCC reporting guidelines on annual inventories.*

Issue	Suggestion
A new table is needed for reporting key sources. A proposal for such table is included in Section III of this paper.  [A new table is needed in the CRF for reporting information on QA/QC.]	Sub-paragraph (d) Tables for reporting, <i>inter alia</i> , aggregate CO <sub>2</sub> equivalent emissions and removals, recalculations, completeness of the inventory, uncertainty, <u>key sources, [QA/QC]</u> , feedstocks and non-energy use of fuels, international bunkers and multilateral operations, emission trends, and a check-list of the main inventory information requested by these UNFCCC reporting guidelines on annual inventories.

### Options for reporting on QA/QC

Option 1: Report detailed information on QA/QC in the NIR and provide only summary information on QA/QC as part of new suggested table Summary 3.

Option 2: Include a separate table in the CRF to report on QA/QC (see FCCC/SBSTA/2001/MISC. 4, page 37)

### 3. National Inventory Report

#### 24. Paragraph 33 (d) to (i)

(a) *References or sources of information related to methodologies, emission factors and activity data, as well as the rationale for their selection*

(b) *Information on assumptions and conventions underlying the emission and removal estimates, as well as the rationale for their selection;*

(c) *Specific information on feedstocks and bunkers:*

(i) *With regard to possible double counting or non-counting of emissions, Parties should indicate whether feedstocks have been accounted for in the inventory, and if so, how they have been accounted for;*

(ii) *(ii) Regarding the reporting of emissions from bunker fuels, Parties should explain how they distinguish between domestic marine and aviation emissions, which are to be included in national totals, and international bunker emissions;*

(d) *Information on any recalculations related to previously submitted inventory data, as requested in paragraph 20 above;*

(e) *Information on uncertainties, as requested in paragraph 24 above;*

(f) *Information on quality assurance/quality control (QA/QC) procedures implemented.*

Issue	Suggestion
In some cases, some of the information requested to be provided in the NIR is repeated in detail in the CRF.	Add as second sentence of paragraph 33: <u>If any of the information required under subparagraphs (a) to (k) below is in detailed provided in the CRF, Parties should indicate where in the CRF this information is provided.</u>
The minimum Tier recommended for key source categories in the IPCC good practice guidance are shown in the decision trees. In paragraph 7 it is suggested that every effort should be made to use this minimum Tier. If the minimum Tier recommended for key source categories are not used justification	Sub-paragraph (d): References or sources of information related to methodologies, emission factors and activity data, <del>as well as the rationale for their selection.</del> For key sources, justification should be provided if the sectoral good practice guidance regarding choice of method,

<p>may be requested. Further, the Good practice guidance indicates a preferred choice of emission factors and activity data for each of the emission sources included in the sectoral chapter.</p> <p>Good practice guidance is provides further guidance for separation between domestic and international emissions from bunker fuels and aviation. Sub paragraph (f) (ii) may not be needed if the suggestion for paragraph 18 of the current guidelines is agreed upon.</p> <p><del>The information on uncertainty will be completely covered by the reporting table in the CRF.</del></p> <p>What type of information on uncertainties will be needed in the NIR will depend on the amendments to paragraphs 12 and 24 of the current guidelines.</p> <p>It may be useful to include the QA/QC plan in the national inventory report.</p> <p>If Parties use, in addition to the good practice key source determination, another approach for identifying key sources, information on how such key source determination has been performed might be included in the NIR.</p> <p>Recalculations may have an effect on the level and the trend of source categories. For key sources, such changes due to recalculations might be reported in the NIR</p>	<p>choice of emission factor, choice of activity data and completeness are not followed.</p> <p><u>subparagraph (f) (ii)</u> delete</p> <p><u>Information on uncertainties, as requested in paragraph 24 above. If in addition to the methods described in the IPCC good practice guidance Parties used other methods to estimate uncertainties, a description of those methods should be provided in the NIR;</u></p> <p><u>Sub-paragraph (i)</u> <u>The quality assurance/quality control (QA/QC) plan and information on QA/QC procedures implemented. The latter should be a summary describing the activities for source categories, mainly key sources, and on the entire inventory performed internally in accordance with the IPCC good practice guidance, and what external reviews were conducted, if any. Key findings, and how they were addressed, regarding quality of input data, methods, processing and archiving should be described. Findings that will be addressed in the future should be reflected in the QA/QC plan.</u></p> <p>New subparagraph (k) <u>If in addition to the methods described in the IPCC good practice guidance Parties used other methods, assumptions or category disaggregation levels for determining key sources, these should be described in the NIR.</u></p> <p>New subparagraph (l) <u>Information on how recalculations have affected the level and trend of key sources.</u></p>
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## **E. Record keeping**

### **25. Paragraph 35**

*Parties should gather and archive all relevant inventory information for each year, including all disaggregated emission factors, activity data and documentation about how these factors and data have been generated and aggregated for the reporting of the inventory. This information should allow the reconstruction of the inventory, inter alia, by the expert review teams. Inventory information should be archived from the base year, including the corresponding data on recalculations applied. The paper trail should enable estimates of emissions and removals to be traced back to the original disaggregated emission factors and activity data. This information should also facilitate the timely process of clarifying inventory data when the secretariat prepares annual compilations of inventories or assesses methodological issues. Parties are encouraged to collect and gather the information in a single national inventory facility or to, at least, keep the number of facilities to a minimum.*

Issue	Suggestion
Expert judgement is quite often necessary in order to estimate the emissions from a source. While the judgement made is often good, given the availability of data. It may however be more difficult to review and evaluate the expert judgement without explicit documentation.	Parties should gather and archive all relevant inventory information for each year, including all disaggregated emission factors, activity data and documentation about how these factors and data have been generated and aggregated for the reporting of the inventory. This information should allow the reconstruction of the inventory, inter alia, by the expert review teams. <u>Where information on methodologies, emission factors, activity data and/or any other assumption relevant for the emissions/removals estimates are based on expert judgement, this information should be documented and archived in accordance with the good practice guidance.</u>

## **III. COMMON REPORTING FORMAT**

### **26. Suggested replacement for table SUMMARY 3**

Issue	Suggestion
The Tier used is already reported in the CRF in table "SUMMARY 3". This table is however on a very aggregated level and does not provide sufficient detail to report methodological choice which is done on a source-by-source basis. One effect is that the level of aggregation may cause many Tiers to be indicated for one source category.	Replace table SUMMARY 3  Include a flag (yes or no) to show the key sources categories and reporting of criteria for identification of the source as key.
Even though the evaluation of the Key Source	Include column for indicating sub-sources

<p>categories should be done at an aggregated level when using Tier 1, attention may be focused on the sub-sources that are key.</p> <p>The Good practice guidance for choosing the most appropriate method for each individual source is in the form of a decision tree. Following the tree, taking into account national circumstances, will lead to an output box in the figure. All the output boxes are numbered and may easy be identified. The output boxes correspond most often to a specific Tier and knowing the output box will thus enable very fast overview of the method used and the corresponding activity data and emission factor.</p> <p>Paragraph 13 includes recommendation for source specific QA/QC for key sources.</p>	<p>that are key when source category includes more than one sub-source.</p> <p>Include column for output<sup>3</sup> box</p> <p>Include column for flag (yes or no) to indicate if source specific QA/QC have been implemented.</p>
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<sup>3</sup> Output box refers to the boxes at the end of the decision trees in the IPCC good practice guidance.

### SUMMARY 3 SUMMARY REPORT FOR METHODS AND EMISSION FACTORS USED

IPCC source category <sup>4</sup>	Gas	Key Source flag (Yes/No)	If yes, sub-source(s) that are key	If key, criteria for identification <sup>5</sup>	Method applied (Tier)	Type of emission factor	Output box <sup>6</sup>	If source category is key, is source specific QA/QC Implemented (Yes/No)	
ENERGY									
Stationary Fuel combustion – coal	CO <sub>2</sub>								
Stationary Fuel combustion – oil	CO <sub>2</sub>								
Stationary Fuel combustion – gas	CO <sub>2</sub>								
Stationary Fuel combustion	CH <sub>4</sub>								
Stationary Fuel combustion	N <sub>2</sub> O								
Mobile combust. – road and other	CO <sub>2</sub>								
Mobile combust. – road and other	CH <sub>4</sub>								
Mobile combust. – road and other	N <sub>2</sub> O								
Mobile combust. – Aviation	CO <sub>2</sub>								
Mobile combust. – Aviation	N <sub>2</sub> O								
Mobile combust. – Marine	CO <sub>2</sub>								
Mobile combust. – Marine	N <sub>2</sub> O								
Fugitive emission coal mining, hand.	CH <sub>4</sub>								
Fugitive emission oil and gas operations	CH <sub>4</sub>								

IPCC source category <sup>4</sup>	Gas	Key Source flag (Yes/No)	If yes, sub-source(s) that are key	If yes, criteria for identification <sup>5</sup>	Method applied (Tier)	Type of emission factor	Output box <sup>6</sup>	If source category is key, is source specific QA/QC Implemented (Yes/No)
INDUSTRIAL SECTOR								
Cement production	CO <sub>2</sub>							
Lime production	CO <sub>2</sub>							
Other industrial	CO <sub>2</sub>							
Other industrial	CH <sub>4</sub>							
Adipic acid	N <sub>2</sub> O							
Nitric acid	N <sub>2</sub> O							
Aluminium production	PFC							
Magnesium production	SF <sub>6</sub>							
Electrical equipment	SF <sub>6</sub>							
Semiconductor manufacturing	SF <sub>6</sub>							
Substitutes for ozone depleting substances								
HCFC-22 manufacture	HFC							

IPCC Source category <sup>4</sup>	Gas	Key Source flag (Yes/No)	If yes, sub-source(s) that are key	If yes, criteria for identification <sup>5</sup>	Method applied (Tier)	Type of emission factor	Output box <sup>6</sup>	If source category is key, is source specific QA/QC Implemented (Yes/No)
AGRICULTURE								
Enteric fermentation	CH <sub>4</sub>							
Manure management	CH <sub>4</sub>							
Manure management	N <sub>2</sub> O							
Agricultural soils: direct emissions	N <sub>2</sub> O							
Agricultural soils: indirect emissions	N <sub>2</sub> O							
Agricultural soils	CO <sub>2</sub>							
Rice cultivation	CH <sub>4</sub>							
Field burning of agricultural residues	CH <sub>4</sub>							
Field burning of agricultural residues	N <sub>2</sub> O							
WASTE								
Solid waste disposal sites	CH <sub>4</sub>							
Wastewater handling	CH <sub>4</sub>							
Wastewater handling	N <sub>2</sub> O							
Waste incineration	N <sub>2</sub> O							

<sup>4</sup> The level of category disaggregation might need to be modified, but should be standardized in the CRF, even if minor sources might not be covered by this table.

<sup>5</sup> L= Level, T = Trend, Q1 = mitigation techniques and technology applied to the source, Q2 = High expected emission growth, Q3 = High uncertainty, Q4 = Unexpectedly high or low emission

<sup>6</sup> Reference is made to figure and output box in Good practice guidance in the format x.y-z Example: output box 3 in figure 2.1 will be noted 2.1-3

22. Suggested changes to reporting table for Uncertainty

Issue	Suggestion
Good practice guidance have suggested a new reporting format that is consistent with the methodology recommended.	Replace table 7 with new table as shown below.

Table CRF – 7 Reporting table for Uncertainty

IPCC Source category <sup>7</sup>	Gas	Emission	Activity data uncertainty	Emission factor uncertainty	Combined uncertainty	Expert judgement reference number
ENERGY						
Stationary Fuel combustion – coal	CO <sub>2</sub>					
Stationary Fuel combustion – oil	CO <sub>2</sub>					
Stationary Fuel combustion – gas	CO <sub>2</sub>					
Stationary Fuel combustion	CH <sub>4</sub>					
Stationary Fuel combustion	N <sub>2</sub> O					
Mobile combust. – road and other	CO <sub>2</sub>					
Mobile combust. – road and other	CH <sub>4</sub>					
Mobile combust. – road and other	N <sub>2</sub> O					
Mobile combust. – Aviation	CO <sub>2</sub>					
Mobile combust. – Aviation	N <sub>2</sub> O					
Mobile combust. – Marine	CO <sub>2</sub>					
Mobile combust. – Marine	N <sub>2</sub> O					
Fugitive emission coal mining, hand.	CH <sub>4</sub>					
Fugitive emission oil and gas oper.	CH <sub>4</sub>					
INDUSTRIAL PROCESSES						
Cement production	CO <sub>2</sub>					
Lime production	CO <sub>2</sub>					
Other industrial	CO <sub>2</sub>					
Other industrial	CH <sub>4</sub>					
Adipic acid	N <sub>2</sub> O					
Nitric acid	N <sub>2</sub> O					
Aluminium production	PFC					
Magnesium production	SF <sub>6</sub>					
Electrical equipment	SF <sub>6</sub>					
Semiconductor manufacturing	SF <sub>6</sub>					
Sub. for ozone depleting substances						
HCFC-22 manufacture	HFC					
Enteric fermentation	CH <sub>4</sub>					
Manure management	CH <sub>4</sub>					

<sup>7</sup> The level of category disaggregation might need to be modified, but should be standardized in the CRF, even if minor sources might not be covered by this table.

Manure management	N <sub>2</sub> O					
Agricultural soils	N <sub>2</sub> O					
Nitrogen use	N <sub>2</sub> O					
Rice production	CH <sub>4</sub>					
Residue burning	CH <sub>4</sub>					
Residue burning	N <sub>2</sub> O					
WASTE						
Solid waste disposal sites	CH <sub>4</sub>					
Wastewater handling	CH <sub>4</sub>					
Wastewater handling	N <sub>2</sub> O					
Waste incineration	N <sub>2</sub> O					

23. Suggested changes to Table 8 Recalculation – recalculated data

Issue	Suggestion
Recalculation of a Key Source may have more effect on the inventory and may receive more attention during review.	Introduce additional column in table CRF – 8, indicating if the source is Key <sup>8</sup> .
Consistency in the time series is a particular challenge if the new method used to recalculate cannot be used for all years of the time series.	Introduce additional column in table CRF – 8, indicating if the new method have been used for the entire time series.

24. Suggested table for reporting Key Sources

Issue	Suggestion
Good practice guidance have suggested a reporting format that is consistent with the methodology recommended.	Include new table CRF 12 as shown below.

CRF – 12 Table for reporting Key Sources determined by quantitative method

Quantitative method used: Tier 1		Tier 2		
IPCC Source category <sup>9</sup>	Direct greenhouse gas	Level assessment (per cent)	Cumulative contribution to emission level (per cent)	Trend assessment (per cent)
<b>Example:</b> <i>Stationary combustion - coal</i>	<i>CO<sub>2</sub></i>	<i>38.1</i>	<i>38.1</i>	<i>27.7</i>
<i>Mobile combustion – Road vehicles</i>	<i>CO<sub>2</sub></i>	<i>12.9</i>	<i>51</i>	<i>2.1</i>

<sup>8</sup> This may not be possible in all cases, as the level of category disaggregation used for key source determination may differ from the category disaggregation used in current table 8 (a) of the CRF for the reporting of key sources.

<sup>9</sup> The secretariat proposes that Parties may report different levels of category disaggregation in accordance with their own level of disaggregation used to determine key sources. At the same time, the secretariat would perform a standardized key source determination for all Parties, based on Table 7.1 of the IPCC good practice guidance, as has been done for inventories submitted in 2000 and 2001.

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