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Methodological issues under the Convention

Revision of the UNFCCC reporting guidelines on annual inventories for

Parties included in Annex I to the Convention

Draft annotated revised UNFCCC Annex I reporting guidelines

Note by the secretariat

Summary

This note contains the annotated draft of the revised “Guidelines for the preparation of national communications by Parties included in Annex I to the Convention, Part I: UNFCCC reporting guidelines on annual inventories” (UNFCCC Annex I reporting guidelines), in response to a request made by the Subsidiary Body for Scientific and Technological Advice (SBSTA) at its thirty-second session. The annotated draft of the revised UNFCCC Annex I reporting guidelines is based on Parties’ submissions under the work programme to revise the UNFCCC Annex I reporting guidelines under the SBSTA, and on guidance provided by Parties at the thirty-third session of the SBSTA and by workshop participants during the third workshop under the aforementioned work programme. The secretariat, in response to a request made by the SBSTA at its thirty-second session, prepared an annotated draft of the UNFCCC Annex I reporting guidelines for consideration by the participants in the above-mentioned workshop, held in Bonn, Germany, on 24–25 March 2011. This note has been prepared to facilitate the consideration by the SBSTA, at its thirty-fourth session, of the annotated draft of the revised UNFCCC Annex I reporting guidelines.

Due to the complexity of the CRF tables and the importance of colour coding in the CRF tables, they are not included in this document but can be downloaded from the UNFCCC web site: [http://unfccc.int/documentation/documents/advanced_search/items/3594.php?such=j&meeting=%22\(SBSTA\),+thirty-fourth+session%22&sorted=agenda#beg](http://unfccc.int/documentation/documents/advanced_search/items/3594.php?such=j&meeting=%22(SBSTA),+thirty-fourth+session%22&sorted=agenda#beg).

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I. Introduction

A. Mandate

1. The Subsidiary Body for Scientific and Technological Advice (SBSTA), at its thirtieth session, agreed to launch a work programme (hereinafter referred to as the work programme)¹ to revise 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” (hereinafter referred to as the UNFCCC Annex I reporting guidelines), with a view to recommending the revised UNFCCC Annex I reporting guidelines for adoption by the Conference of the Parties (COP), for regular use by Annex I Parties starting in 2015.

2. The SBSTA, at its thirty-second session, noted the importance of continuity in the reporting of national greenhouse gas (GHG) inventories and agreed that the revision of the UNFCCC Annex I reporting guidelines, including the common reporting format (CRF) tables, should be based on the current UNFCCC Annex I reporting guidelines.² The SBSTA invited Parties to submit to the secretariat, by 15 September 2010, additional views on the revision of the UNFCCC Annex I reporting guidelines, including the CRF tables, and areas in which the secretariat could initiate work on those tables, to be compiled into a miscellaneous document for consideration by the SBSTA at its thirty-third session.³ It requested the secretariat to prepare, taking into account all options included in Parties’ submissions and further guidance provided by the SBSTA at its thirty-third session, an annotated draft of the revised UNFCCC Annex I reporting guidelines.⁴

3. The SBSTA, at its thirty-second session, requested the secretariat to organize, subject to the availability of resources, the third workshop under the work programme mentioned in paragraph 1 above, to be held in early 2011.⁵ It agreed that the workshop participants should address the annotated draft of the revised UNFCCC Annex I reporting guidelines.

B. Scope of the note

4. This note is based on Parties’ submissions under the work programme and on the outcome of the third workshop under that work programme, held in Bonn, Germany, on 24–25 March 2011, at which participants expressed views on the annotated draft of the revised UNFCCC Annex I reporting guidelines prepared by the secretariat prior to the workshop.⁶ Views of Parties on the current revised UNFCCC Annex I reporting guidelines are contained in document FCCC/SBSTA/2010/MISC.1, with the synthesis of that information contained in document FCCC/SBSTA/2010/4. Further submissions from Parties are contained in document FCCC/SBSTA/2010/MISC.7 and Add.1–3.

5. The note contains two chapters providing a summary of views of Parties’ and participants in the third workshop under the work programme and proposed modifications in relation to:

¹ FCCC/SBSTA/2009/3, paragraph 101.

² FCCC/SBSTA/2010/6, paragraph 70.

³ FCCC/SBSTA/2010/6, paragraph 71.

⁴ FCCC/SBSTA/2010/6, paragraph 72.

⁵ FCCC/SBSTA/2010/13, paragraph 76.

⁶ FCCC/SBSTA/2010/6, paragraph 72.

- (a) The main text of the UNFCCC Annex I reporting guidelines;
 - (b) The revision of the CRF tables.
6. Annexes to this note include:
- (a) The annotated draft of the revised UNFCCC Annex I reporting guidelines;
 - (b) Draft revised CRF tables.

C. Possible action by the Subsidiary Body for Scientific and Technological Advice

7. This note has been prepared to facilitate the consideration by the SBSTA, at its thirty-fourth session, of the annotated draft of the revised UNFCCC Annex I reporting guidelines, including the CRF tables, with a view to enabling a substantive discussion on:

- (a) Relevant views of Parties, as contained in document FCCC/SBSTA/2010/ISC.7 and Parties' earlier submissions;
- (b) The annotations of the draft revised UNFCCC Annex I reporting guidelines, including issues raised therein;
- (c) The revised CRF tables, and issues raised therein.

8. The SBSTA may wish to consider the information in this note, with a view to preparing a draft decision on the revised UNFCCC Annex I reporting guidelines, for consideration and adoption by the COP at its seventeenth session.

D. Approach

9. This note contains two main chapters, as specified in paragraph 5 above: chapter II contains views of Parties as expressed in their submissions on the main text of the UNFCCC Annex I reporting guidelines, including some background information and also taking into account the outcome of the three workshops under the work programme; while chapter III contains proposed modifications to the text of the UNFCCC Annex I reporting guidelines and the CRF tables. The section on the CRF tables is subdivided, in order to address groups of tables.

10. The secretariat has made every effort not to alter the views expressed by the Parties, by keeping as close as possible to the Parties' original text. The Party providing the comment is identified. The chapter containing Parties' views also provides some background information and some preliminary considerations of the proposed modifications based on the discussions that took place during the third workshop, mentioned in paragraph 3 above. It is aimed at facilitating the further consideration of the issues.

11. The chapter containing proposed modifications, in the section for the main text of the UNFCCC Annex I reporting guidelines, explains how such changes have been incorporated into the annotated draft of the revised UNFCCC Annex I reporting guidelines, contained in annex I to this document.

12. The chapter containing proposed modifications, in the section for the CRF tables, explains the modifications to the tables,⁷ as included in annex II to this document. Specific

⁷ The list of tables is as for the current CRF tables and is not included in this document. Suggested new tables appear in the relevant places where they need to be included in annex II to this document.

issues and comments related to the CRF tables raised during the third workshop, referred to in paragraph 3 above, are included where relevant. With regard to the CRF tables, a colour code is used to indicate modifications: yellow for changes following Parties' suggestions in their initial relevant submissions; pink for modifications with which there was disagreement expressed in Parties' submissions, which were not particularly discussed by the Parties in their submissions, or on which no agreement was achieved during the third workshop; blue for modifications of which the final version depends on the outputs of other processes under the Convention (i.e. with regard to total GHG emissions, the base year, coverage of fluorinated gases (F-gases), etc.); and green for suggestions for changes to the CRF tables based on the discussions that took place during the third workshop. In cases where new tables have been added or options are suggested, this is marked over the CRF table. Some additional changes to the CRF tables will be needed once their content has been agreed.⁸

II. Synthesis of views expressed by Parties on the main text of the UNFCCC Annex I reporting guidelines

A. Key issues identified by Parties in their submissions

13. Parties identified key items for consideration by participants in the third workshop under the work programme on the revision of the UNFCCC Annex I reporting guidelines, and on which views have been subsequently provided by Parties. These items are broadly categorized as:

- (a) Accounting issues;
- (b) Streamlining existing guidance on specific reporting elements, including guidance on inventory planning, preparation and management;
- (c) Inventory development and reporting.

B. Summary of Parties' views relating to the main text of the UNFCCC Annex I reporting guidelines

1. Accounting issues

14. Parties expressed specific views on the following accounting issues:

- (a) Total GHG emissions, especially in relation to indirect carbon dioxide (CO₂) and nitrous oxide (N₂O) emissions;
- (b) Rules for the accounting of emissions from land use, land-use change and forestry (LULUCF) and related issues (managed land proxy, factoring out of emissions from natural disturbances, and inter-annual variability);
- (c) Global warming potentials (GWPs).

15. As regards total GHG emissions, Parties expressed views on the accounting of indirect CO₂ and N₂O emissions and whether this should be on a voluntary or mandatory basis. Canada expressed the view that the reporting of indirect CO₂ and N₂O emissions

⁸ For example: finalizing category numbering; formatting the tables; fixing the shading of the tables; fixing the number and text of the footnotes and the documentation boxes in line with the new structure of the tables and the national inventory report; ensuring consistency between sectoral and cross-sectoral tables.

should be on a voluntary basis, since for CO₂ and N₂O there are no methodologies for precursors (except for methane (CH₄)) in any of the Intergovernmental Panel on Climate Change (IPCC) guidelines, and for N₂O there is currently much uncertainty surrounding the basis of indirect N₂O emissions from ammonia and nitrogen oxides. Whereas Norway in its submission expressed the view that the UNFCCC Annex I reporting guidelines should provide for the mandatory reporting of indirect CO₂ emissions, with the final accounting requirement to be determined by other processes under the Convention. This links to the view of the European Union (EU) that the process of revising the UNFCCC Annex I reporting guidelines should not pre-empt accounting rules related to emission reduction commitments to be determined by other processes under the Convention, and that, for the interim, indirect emissions can still be considered, but without any attribution as to whether the reporting is mandatory or voluntary.

16. In earlier submissions, Australia, EU, Japan and New Zealand raised a minor accounting issue concerning agriculture, forestry and other land use (AFOLU) and how “total GHG emissions” are to be reported (i.e. with and without LULUCF or AFOLU?). In the first workshop under the work programme, Parties agreed that this accounting issue will be considered by Parties in other processes under the Convention.

17. As regards LULUCF, Australia and Canada have consistently expressed their concerns with regard to the current basis for accounting for emissions and/or removals (i.e. concerning managed land proxy, the factoring out of emissions due to natural disturbances, and inter-annual variability), especially with regard to reported emissions/removals masking the real and additional effects of mitigation actions in managed forests. In the earlier workshops under the work programme, other Parties (Brazil, EU and Japan) highlighted the important issue that that matter is under consideration by Parties in other processes under the Convention.

18. As regards GWPs, some Parties (EU and Norway) directly recommended that GWPs from the IPCC Fourth Assessment Report be used, whereas other Parties (Australia and Japan) referred to this matter as being under consideration by Parties in other processes under the Convention.

19. Accounting issues were not discussed during the third workshop under the work programme, as input is needed from other processes under the Convention before a decision can be taken under this work programme.

20. All accounting-related matters pertaining to the UNFCCC Annex I reporting guidelines are attributed a placeholder in the annotated draft of the revised UNFCCC Annex I reporting guidelines.

2. Streamlining guidance

21. Currently, Parties included in Annex I to the Convention (Annex I Parties) are required to report following the revised UNFCCC Annex I reporting guidelines in their inventory submissions under the Convention. Both Australia and the EU in their submissions flagged the important need to streamline the reporting guidance, noting that the requirements have evolved, especially with regard to other processes under the Convention (e.g. Kyoto Protocol reporting requirements, including the additional information set out in the annex to decision 15/CMP.1). In 2009, the secretariat, with a view to preparing Parties for and guiding them in their annual reporting under the Kyoto Protocol, developed the annotated outline of the national inventory report (NIR). The annotated outline combines the Convention and Kyoto Protocol reporting requirements and identifies overlaps in them. In the second workshop under the work programme, one participant presented the view that there is some overlap of elements between the Convention and Kyoto Protocol reporting requirements and that the UNFCCC Annex I

reporting guidelines should streamline the guidance on national systems and quality assurance/quality control (QA/QC).

22. Noting the above, the key for the SBSTA is to identify and agree on elements of the current reporting guidance that can be consolidated in the revised UNFCCC Annex I reporting guidelines. For example, guidance on national systems in relation to the requirements set out in the annex to decision 19/CMP.1 with that on the institutional arrangements required under the current UNFCCC Annex I reporting guidelines, and also guidance on QA/QC requirements set out in the annex to decision 19/CMP.1 with that on the upper-level requirements included in the current UNFCCC Annex I reporting guidelines.

23. The EU and Norway in their submissions raised an issue related to streamlining the reporting of energy data and statistics. The EU noted that many Parties are producing energy statistics and balances using the standardized industrial branch classifications, but that some domestic, regional and international reporting requirements are not always consistent, thus resulting in a duplication of effort. However, the EU also expressed the view that the *2006 IPCC Guidelines for National Greenhouse Gas Inventories* (hereinafter referred to as the 2006 IPCC Guidelines) present a revised energy classification in line with the International Standard Industrial Classification (ISIC) system that should be implemented in the CRF tables. Norway expressed a similar view, in the context of the United Nations Economic Commission for Europe (UNECE) reporting requirements and the potential to facilitate data comparison and achieve synergies in the compilation of data.

3. Inventory development and reporting

24. Parties expressed views on inventory development and reporting in the context of their experiences with using the current UNFCCC Annex I reporting guidelines and the incorporation of the 2006 IPCC Guidelines into the UNFCCC Annex I reporting guidelines. The following information is presented in the order of the chapters of the current UNFCCC Annex I reporting guidelines. The participants in the third workshop under the work programme were made aware of the previous relevant suggestions made by Parties, and the outcomes of the discussions that took place at that workshop have been integrated in the text contained in annex I to this document.

Chapter II.A: Objectives

25. The EU submitted revised text for the 'objectives' of the UNFCCC Annex I reporting guidelines:

(a) To include a placeholder in paragraph 1(a) of the revised UNFCCC Annex I reporting guidelines for the inclusion of text on the basis of commitments that are to be agreed under the Ad Hoc Working Group on Further Commitments for Annex I Parties under the Kyoto Protocol and the Ad Hoc Working Group on Long-term Cooperative Action under the Convention;

(b) To include a new objective on the need to ensure the 'transparency' of emission reduction commitments. In providing for this new objective, the SBSTA needs to identify and discuss parameters to define the minimum basis on which the UNFCCC Annex I reporting guidelines are to 'ensure transparency'. In the absence of a clear definition or specified parameters, the consideration of a basis for a process to confirm whether this objective has been achieved or not could be problematic, on account of the fact that there may be differing interpretations of what defines 'ensuring transparency';

(c) To include another new objective on the need for the UNFCCC Annex I reporting guidelines to help Parties to improve the quality of their annual inventories. The revised UNFCCC Annex I reporting guidelines must provide for this, and to a large extent

they do, as they are based on the current UNFCCC Annex I reporting guidelines. However, 'improving the quality' of GHG inventories has many dimensions. The SBSTA could identify and discuss the parameters that are central to ensuring that the reporting guidelines do provide a basis (via an expert review) for improving the quality of GHG inventories.

26. Participants in the third workshop under the work programme agreed to make the two additions referred to in paragraph 25(b) and (c) to the UNFCCC Annex I reporting guidelines.

Chapter II.B: Principles and definitions

27. The United States of America, in each of its submissions, underscored the importance of the basic principles of reporting, namely transparency, accuracy, consistency, comparability and completeness. It recognized these principles as an important foundation for inventory reporting. In the earlier workshops under the work programme, other Parties also expressed the importance of these principles.

28. In relation to paragraph 2 of the annotated draft of the revised UNFCCC Annex I reporting guidelines, the secretariat has questioned whether text on transparency, accuracy, consistency, comparability and completeness should be anchored to the annual submission as a whole instead of to the GHG inventory submission alone (hence, this is also a terminology issue). This issue is also of relevance to paragraph 3 of the reporting guidelines. Some workshop participants stated that, as the UNFCCC Annex I reporting guidelines under discussion are the Convention guidelines, the correct terminology should be "national GHG inventory"; however, no decision was taken on the terminology.

29. The EU, in its most recent submission, provided revisions to the descriptions of transparency, consistency and comparability:

(a) Transparency: the revised text clarifies the GHG inventory submission as comprising the CRF tables and the structured NIR, which collectively contribute to the transparency of the inventory submission and facilitate its subsequent national and international review;

(b) Consistency: the revised text clarifies that consistency refers to the use of methodologies and data sets that are consistent across sectors and throughout the time series;

(c) Comparability: the revised text clarifies that the allocation of different sources/sinks should follow the CRF tables, which will improve comparability.

30. In relation to paragraph 4 of the annotated draft of the revised UNFCCC Annex I reporting guidelines, with regard to completeness, the secretariat flagged up that some clarity on country-specific reporting may be needed to remove ambiguity when it comes to expert review. Such clarity could be in the form of guidance as to whether the reporting of categories or country-specific categories for which no estimation methodology exists in the 2006 IPCC Guidelines is a "should" or "shall" with respect to accounting (total GHG emissions) and the inventory time series (years). The issue of "should" or "shall" was not discussed at the third workshop under the work programme. A decision on that issue can be taken later, once the text of the reporting guidelines is close to being finalized.

Chapter II.C: Context

31. The EU proposed a new paragraph (6bis) that provides the basis for the establishment of national inventory systems for the preparation of GHG inventories.

32. The national system has become an important element of inventory compilation, reporting and review under the Kyoto Protocol. However, that is not to suggest that the

concept was introduced by the Kyoto Protocol; instead the current requirements have evolved from institutional arrangements to robust and functional systems that underpin inventory planning, preparation and management. The SBSTA could identify elements of the general and specific functions of national systems (annex to decision 19/CMP.1) that can be considered for inclusion in the revised UNFCCC Annex I reporting guidelines.

33. In relation to paragraph 6bis of the annotated draft of the revised UNFCCC Annex I reporting guidelines introduced by the EU, the secretariat raised the question of what terminology to use when referring to national systems/national inventory systems. In addition, the secretariat provided alternative text to that provided by the EU, by extending the considerations to inventory planning and management, and including “complete” in with “consistent, comparable, accurate and transparent”. The participants in the third workshop under the work programme agreed to merge the two texts, which is reflected in annex I to this document.

34. In relation to paragraph 7 of the annotated draft of the revised UNFCCC Annex I reporting guidelines, the secretariat has provided additional text that would package the ‘annual submission’ to include any information submitted by an Annex I Party in addition to the NIR and the CRF tables.

Chapter II.C: Base year

35. Croatia expressed the view that a reference to decision 7/CP.12 should be added to the text establishing the basis of base years for reporting by Parties. It also expressed the view that Croatia’s base year of 1990 should be added to the list of Parties’ base years.

36. The EU proposed a new paragraph (8bis) clarifying that for the reporting of F-gases Parties may use 1995 as the base year. In addition, the EU, in its submissions, included a placeholder highlighting that text on the coverage of and base year for new F-gases introduced by the 2006 IPCC Guidelines could be included here (therefore removing the need for para. 22).

37. There are two issues under consideration here:

(a) The ‘accounting rules’ with respect to the base years for Parties and for the F-gases;

(b) Whether to merge paragraphs 8 and 22 of the current UNFCCC Annex I reporting guidelines.

38. As the issue referred to in paragraph 37(a) above pertains to accounting, a placeholder will need to be attributed to paragraph 8 of the revised UNFCCC Annex I reporting guidelines. The idea referred to in paragraph 37(b) above has merits, as it would provide a one-stop shop for all things related to the base year.

39. Important background information related to paragraph 22 that is proposed to be merged in paragraph 8 of the reporting guidelines is the issue of the base year for F-gases under the Convention, noting that under the Kyoto Protocol Parties may have elected a different base year.

40. The issue of the base year was not discussed in detail during the third workshop under the work programme.

Chapter II.D: Methods – methodology

41. In relation to paragraph 9 of the annotated draft of the revised UNFCCC Annex I reporting guidelines, the secretariat has included text with a view not to limit ‘methodology’ to the 2006 IPCC Guidelines alone, noting that the COP may adopt

supplementary methodologies (e.g. for LULUCF) for estimating emissions and/or removals.

42. In relation to paragraph 11 of the annotated draft of the revised UNFCCC Annex I reporting guidelines, the secretariat has questioned whether the requirement for the use of higher-tier estimation methods for key categories is a “shall” or a “should”, subject to national circumstances. However, this was not discussed during the third workshop under the work programme.

43. The EU provided revised text for paragraph 12 of the annotated draft of the revised UNFCCC Annex I reporting guidelines, introducing the IPCC Emission Factor Database as a source of default emission factors (EFs) and other parameters. In addition, the EU expressed the view that a future decision of the COP on the UNFCCC Annex I reporting guidelines could “encourage the IPCC to further maintain and develop the IPCC Emission Factor Database”. Also the United States suggested that the IPCC Emission Factor Database needs to be referred to in that paragraph. However, the IPCC Emission Factor Database is not a ‘mandated’ source of default data and Parties may wish to explore this issue further.

44. Participants in the third workshop under the work programme noted the objective and intent of the IPCC Emission Factor Database and welcomed the work of the IPCC to continue to increase its coverage and content.

45. They agreed that including a reference to the IPCC Emission Factor Database is a good idea; however, further consideration is needed as to what guidance should be provided in the reporting guidelines to Parties on using EFs or parameters from the IPCC Emission Factor Database.

46. The SBSTA may wish to explore the views expressed by Australia (indirectly) and the United States (directly) in relation to the appendix to annex I to the current UNFCCC Annex I reporting guidelines, which provides additional reporting guidance. The United States identified this as an opportunity to enhance and build on the current sector-specific additional guidance in the light of the 2006 IPCC Guidelines, and Australia has sought clarification on the methodology to estimate indirect emissions. Such additional guidance to be very useful and a new annex could be attached to the revised UNFCCC Annex I reporting guidelines providing such information. The new annex could introduce guidance on new methodologies introduced by the 2006 IPCC Guidelines, and could also replace some paragraphs contained in the UNFCCC Annex I reporting guidelines in relation to carbon capture and storage, and feedstocks and non-energy use of fuels.

47. Methodological issues concerning LULUCF are accounting issues that Parties are considering in other processes under the Convention.

48. The issues raised in paragraph 46 above were not considered by participants in the third workshop under the work programme.

Chapter II.D: Methods – uncertainties

49. The EU submitted revised text that clarifies that reporting on uncertainties should be provided for at least the base year and the latest reported inventory year.

Chapter II.D: Methods – recalculations

50. The EU submitted revised text for paragraph 15 of the annotated draft of the revised UNFCCC Annex I reporting guidelines, stating that:

(a) Underlying activity data (AD) and EFs should be obtained and used in a consistent manner, “ensuring that changes in emission trends are not introduced due to changes in estimation methods or assumptions”;

(b) Recalculations should ensure consistency of the time series and shall be carried out only to improve accuracy and/or completeness “and to implement higher-tier methods”.

51. Parties’ submissions under the work programme have flagged the problem with applying new methods contained in the 2006 IPCC Guidelines back to the base year when there may not be data and/or EFs available for such an undertaking. There are techniques available in the IPCC *Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories* to resolve this problem. The question is whether these approaches remain relevant and, if so, whether they can be included in the revised UNFCCC Annex I reporting guidelines.

52. The secretariat highlighted the need to demonstrate that the time series is consistent, especially when the methodologies included in the 2006 IPCC Guidelines cannot be used all the way back to the base year and/or recalculations have been performed.

53. Workshop participants agreed to merge the two texts provided by the EU and the secretariat into one text.

Chapter II.D: Methods – quality assurance/quality control

54. The EU submitted revised text for paragraph 17 of the annotated draft of the revised UNFCCC Annex I reporting guidelines. First, it suggested that the sentence “that tier 2 quality control may be more efficiently implemented in conjunction with the evaluation of uncertainties in data sources” be deleted. Further, the EU expressed the view that the paragraph should be streamlined under the new and overarching “national system” heading.

55. The EU provided a series of new paragraphs on the national inventory system (17bis through to 17novies).

56. The suggested national system chapter, including QA/QC, was not discussed during the third workshop under the work programme.

Chapter II.E: Reporting – general guidance

57. Parties expressed views in their submissions and also during the first two workshops under the work programme that the general guidance provided in the current UNFCCC Annex I reporting guidelines needs to be updated in relation to:

(a) Accounting of emissions/removals (Australia, Canada and EU);

(b) Coverage of inventory years in the annual inventory submission (Australia and EU), where the key issues are related to the computational effort of the CRF Reporter, and the value of reporting intermediate years of the inventory time series. Creating a CRF file for one inventory year is not a trivial undertaking; thus generating such a file for 20 plus years is a significant data management exercise for both the Party and the secretariat;

(c) Reference to guidance contained in the 2006 IPCC Guidelines in relation to feedstocks and non-energy use of fuels, and CO₂ capture and storage (United States);

(d) Indirect CO₂ and N₂O emissions (Australia, Canada, EU and Norway);

(e) Reporting of emissions/removals estimated using higher-tier methods and/or models (United States).

58. As regards the guidance contained in the 2006 IPCC Guidelines in relation to feedstocks and non-energy use of fuels, and CO₂ capture and storage, this could be coupled with another proposal of the United States in relation to enhancing the additional reporting guidance that is provided in the appendix to annex I to the current UNFCCC Annex I reporting guidelines. However, this information could be lost in this appendix, hence the SBSTA could consider attaching a new annex to the UNFCCC Annex I reporting guidelines (perhaps before the annotated outline of the NIR) that provides all additional information and methodological clarifications sought by Parties, including taking into consideration the views of Australia and Canada that additional clarification is required on the methodology to estimate indirect emissions.

59. In the first and second workshops under the work programme, participants identified that the revised UNFCCC Annex I reporting guidelines could include guidance on the reporting of higher-tier methods and/or models. The expert review of such methods and models has proven difficult in the absence of a clear definition of what is to be reported, which forms the basis of the expert review of such information. Further, the United States expressed the view in its latest submission that the general guidance chapter should provide specific information on reporting on the verification of higher-tier methods and/or models. A checklist was included in the conclusions of the second workshop under the work programme and the SBSTA may wish to explore incorporating such a checklist into the revised UNFCCC Annex I reporting guidelines (see para. 90 below).

Chapter II.E: Reporting – general guidance – estimates of emissions and removals

60. The EU provided revised text for paragraph 18 of the annotated draft of the revised UNFCCC Annex I reporting guidelines, including:

- (a) The addition of nitrogen trifluoride (NF₃) as an additional F-gas;
- (b) Reference to the GWPs contained in the IPCC Fourth Assessment Report (the EU also provided revised text for paragraph 20 along the same line as this);
- (c) The statement that Annex I Parties “shall report” indirect CO₂ and N₂O emissions;
- (d) A comment that indirect emissions should be reported in a separate CRF table, and that fluorinated ethers should be reported in aggregate form in the CRF tables, whereas the NIR is to be used to provide speciated information.

61. During the third workshop under the work programme, one participant requested that all references to GWPs be bracketed in the text of the annotated draft of the revised UNFCCC Annex I reporting guidelines, pending a decision being taken in another process under the Convention on what GWPs to use. Further, the workshop participant stated that the UNFCCC Annex I reporting guidelines are reporting guidelines and not accounting guidelines, and that Annex I Parties shall report all necessary information in their inventories, and what and how to account is a decision to be taken later.

62. Australia, EU and Japan expressed the view that the requirement (para. 21 of the annotated draft of the UNFCCC Annex I reporting guidelines) to report potential emissions of F-gases should be removed. The EU submitted revised text to reflect this. However, one participant expressed the view, in the second and third workshops under the work programme, that, while acknowledging that potential F-gas emissions are not to be considered in the accounting of total GHG emissions, retaining the approach of reporting potential F-gas emissions has merit in the fact that it provides a basis for verification of the actual F-gas emissions.

63. In cross reference to paragraph 8 of the annotated draft of the UNFCCC Annex I reporting guidelines, the EU expressed the view that paragraph 22 of the annotated draft of

the UNFCCC Annex I reporting guidelines can be deleted. This deletion is coupled with the additional text that the EU proposed for paragraph 8 on base years and F-gases.

64. Canada, in its submission, expressed the view that a new paragraph should be added in the general guidance chapter on the voluntary reporting of indirect CO₂ and N₂O emissions (this is an accounting issue, so it was not discussed during the third workshop under the work programme):

Parties' national totals of GHG emissions shall include only direct CO₂ emissions and not those calculated from atmospheric emissions of carbon monoxide (CO), CH₄ or non-methane volatile organic compounds (NMVOCs). If desired, Parties can voluntarily report estimates of indirect CO₂ emissions from emissions of these other gases. The calculation of estimated indirect CO₂ emissions from CO, CH₄ or NMVOCs can be performed using the method provided in the 2006 IPCC Guidelines (Overview chapter, section 7.2.1.5) and, if reported, these estimates of indirect CO₂ emissions should be included with the estimates of other indirect GHGs.

65. The EU expressed the view that paragraph 26 of the annotated draft of the UNFCCC Annex I reporting guidelines on the effects of CO₂ capture and storage can be deleted on the basis that this category will be explicitly addressed in the CRF tables.

Chapter II.E: Reporting – general guidance – completeness

66. The EU provided revised text for paragraph 29 of the annotated draft of the revised UNFCCC Annex I reporting guidelines that relates to the coverage of reporting on the basis of methodologies contained in the 2006 IPCC Guidelines. The 2006 IPCC Guidelines include methodologies in the appendices, and the text provided by the EU clarifies that reporting on these methodologies would be voluntary. In addition, the revised text of the EU includes an encouragement for Parties “to identify and to provide information in the NIR on additional sources of GHG emissions and to develop methodologies for such sources”.

67. Japan, in its submission, expressed the view that a new notation key “considered insignificant” (“CI”) should be created. Workshop participants agreed to include this notation key in the annotated draft of the revised UNFCCC Annex I reporting guidelines, bracketed, however, and with a placeholder for the definition of “considered insignificant”.

68. Japan and United States expressed the view that additional “descriptive” text should be attributed to each notation key to aid the understanding and “appropriate use” of the notation keys.

69. In the expert review process, especially recently with the reviews under the Kyoto Protocol, much emphasis has been placed on the requirement of ‘completeness’ of the inventory. Some Parties expressed concern about this requirement. The effort and resources required to identify and quantify small, sometimes negligible, sources of emissions is, for some Parties, difficult to weigh up against improving the quality of a key category.

70. In relation to notation keys, expert review teams often flag incorrect use of the notation keys. Often the next expert review team will come to the same conclusion, but not always the same finding. This underscores the issue that some Parties may not understand or know when to use a particular notation key, so some additional descriptive information (such as an example of the use of each notation key) may be helpful.

Chapter II.E: Reporting – general guidance – key category analysis

71. The EU submitted a revised paragraph 30 of the annotated draft of the revised UNFCCC Annex I reporting guidelines (on key category analysis), in order to update the reference to table 4.1 of the 2006 IPCC Guidelines.

Chapter II.E: Reporting – general guidance – uncertainties

72. The EU submitted a revised paragraph 32 of the annotated draft of the revised UNFNCCC Annex I reporting guidelines (on uncertainties), in order to update the reference to table 3.3 of the 2006 IPCC Guidelines and to remove the sentence “if the methods used to estimate the level of uncertainty depart from the IPCC Guidelines, these methods should be described”.

Chapter II.E: Reporting – general guidance – recalculations

73. The EU submitted a revised paragraph 34 of the annotated draft of the revised UNFNCCC Annex I reporting guidelines (on recalculations) and suggested deleting the following sentences:

(a) “Annex I Parties should also provide explanations for those cases in which they have not recalculated an estimate when such a recalculation is called for in the [2006 IPCC Guidelines]”;

(b) “For key categories, Annex I Parties should include [recalculation information] in the NIR, as indicated”.

74. The EU also submitted a revised paragraph 35 of the annotated draft of the revised UNFNCCC Annex I reporting guidelines, suggesting an exception to the rule when reporting recalculations, namely that “small differences, e.g. due to rounding of estimates, should not be considered as recalculations”.

75. With reporting now occurring through the CRF Reporter, this software will identify all changes to the inventory submission compared with the previous submission. However, a change may not be a change; it may be a rounding of data that is entered into the software and immediately picked up as a recalculation. The issue is whether such rounding errors, and related errors, are recalculations or whether they can be considered as exceptions to the rule.

Chapter II.E: Reporting – general guidance – quality assurance/quality control

76. The EU submitted revised text suggesting that paragraph 36 of the annotated draft of the revised UNFNCCC Annex I reporting guidelines (on the reporting on the QA/QC plan and QA/QC procedures) should be deleted. This suggestion is based on the condition that the information be included in the streamlined guidance in annex I to the revised UNFNCCC Annex I reporting guidelines (i.e. the annotated outline of the NIR) and under the new “national system” heading.

Chapter II.E: Reporting – general guidance – adjustments

77. Australia and EU both suggested that the terminology in this chapter be revised. The EU submitted revised text suggesting that the terminology be changed from “adjustments” to “corrections”.

Chapter II.E: Reporting – national inventory report

78. The EU submitted some minor revisions to paragraphs 38–40 of the annotated draft of the revised UNFNCCC Annex I reporting guidelines. For paragraph 40, the EU expressed the view that the NIR “should be reported in accordance with the annotated outline of the NIR in annex I”. This view was also expressed by Australia, with both Parties providing revised text for the annotated outline of the NIR. Workshop participants agreed that a placeholder for the definition of what years need to be reported should be included under paragraph 38.

79. On the basis of the above, the EU suggested that paragraph 41 (what the NIR is to include) be deleted, along with paragraph 43. Some workshop participants did not agree to the deletion of those paragraphs, so they remain in the text contained in annex I to this document.

Chapter II.E: Reporting – common reporting format tables

80. The EU submitted a minor editorial revision to the text in paragraph 44 of the annotated draft of the revised UNFCCC Annex I reporting guidelines and suggested that paragraph 47 be deleted. The workshop participants did not conclude their consideration of the deletion of paragraph 47 and, therefore, it remains in the text contained in annex I to this document.

81. The secretariat proposed an additional statement to be included in paragraph 45 to clarify or define what constitutes the annual submission. The statement relates to the requirement that Annex I Parties, when using the CRF Reporter, submit to the secretariat the XML files in addition to the CRF tables.

82. The EU submitted revised text for paragraph 48 that deals with the coverage of years in the CRF tables. The EU proposed the following:

(a) Text for paragraph 48(a): “Provide the full CRF for the base year, 1990, 1995, 2000, 2005 and subsequently for all years up to the latest inventory year. Annex I Parties should ensure that a full and time-series consistent set of CRF tables is annually available for the years mentioned above”;

(b) Delete paragraph 48(b);

(c) For paragraph 48(c), that the CRF completeness table be provided only for the latest inventory year, but with the paragraph retaining the existing (proviso) text that this is “only if the information applies to all years”.

Chapter II.F: Record-keeping

83. The EU expressed the view that paragraph 51 of the revised UNFCCC Annex I reporting guidelines should be merged within the new overarching “national system” chapter.

Chapter II.H: Language

84. The EU expressed the view that Parties “should” submit a translation of their NIR in English.

Table 1 – Global warming potentials

85. EU and United States expressed views that the table needs to be updated to reflect:

(a) The IPCC Fourth Assessment Report and the GWP values contained therein;

(b) The coverage of F-gases presented in the 2006 IPCC Guidelines.

86. One participant in the third workshop under the work programme requested that all references to GWP values in the annotated draft of the revised UNFCCC Annex I reporting guidelines be bracketed.

Annex I: Structure of the national inventory report

87. The EU expressed the view that the structure of the NIR contained in annex I to the UNFCCC Annex I reporting guidelines should be replaced by the annotated outline of the NIR. During the second workshop under the work programme, the EU also expressed the

view that the streamlining of guidance on reporting should consider both the annotated outline of the NIR and the requirements of national systems.

88. The United States submitted the view that the appendix to annex I to the current UNFCCC Annex I reporting guidelines, which contains additional sectoral reporting information, could be updated. Further, it expressed the view that the operative basis of this remains the same in that the use of this additional guidance is dependent upon “national approaches for estimating GHG emissions and removals”.

Higher-tier methods and models

89. The United States expressed the view that guidance should be provided in the revised UNFCCC Annex I reporting guidelines on what is to be reported by Parties that use higher-tier methods and/or models to prepare emission estimates. In the second workshop under the work programme, other Parties (Australia, EU and individual EU member States) also expressed views that such guidance would be helpful for Parties to improve transparency and that a checklist could be created to assist Parties in this regard.

90. The secretariat proposed the addition of a new chapter on the reporting requirements of Annex I Parties that use higher-tier methods and/or models to estimate emissions/removals. The reporting guidance, which could be in a form of a checklist, in such a chapter will need to be determined on the basis of views of Parties on the report of the IPCC on the expert meeting on the use of models and measurements in GHG inventories. Participants in the third workshop under the work programme considered the list of considerations that could be used as a basis for that reporting guidance, as identified by participants in the second workshop under the work programme:⁹

- (a) Information related to models:
 - (i) The basis and type of the model;
 - (ii) The application and adaptation of the model;
 - (iii) The main equations and processes;
 - (iv) The key assumptions;
 - (v) The domain of the application;
 - (vi) How the model parameters were estimated;
 - (vii) A description of the key inputs and outputs;
 - (viii) Details of the calibration and model evaluation;
 - (ix) Uncertainty and sensitivity analysis;
 - (x) The QA/QC procedures adopted;
 - (xi) References to peer-reviewed literature;
- (b) Information related to facility-level data:
 - (i) The institutional arrangements:
 - The legal basis;
 - The elements covered;
 - The criteria for data selection;
 - QA/QC;

⁹ FCCC/SBSTA/2010/INF.10, paragraph 32.

- Confidentiality;
- (ii) Category-specific information:
 - The implied emission factor (IEF);
 - The uncertainty;
 - How completeness and time-series consistency are ensured.

91. One participant in the third workshop under the work programme disagreed with the inclusion of the text included in paragraph 90 above relating to facility-level data. The workshop participants agreed to include a placeholder in the annotated draft of the revised UNFCCC Annex I reporting guidelines, with a view to later developing guidance on what should be reported by Annex I Parties that are using higher-tier methods and/or facility-level data.

C. Proposed modifications

92. The views expressed by Parties have been either general comments or specific changes and/or additions to the text of the UNFCCC Annex I reporting guidelines, mentioned in chapter II.B above. As such, each of the above-mentioned changes/additions has been incorporated into the annotated draft of the revised UNFCCC Annex I reporting guidelines, contained in annex I to this document. Their incorporation has been as one of the following:

(a) A **placeholder** with text describing the nature of the issue. A key point of note regarding the views of Parties expressed in their submissions and also during the three workshops under the work programme is the view that placeholders will need to be used in the annotated draft of the revised UNFCCC Annex I reporting guidelines. These placeholders are required to flag an issue that needs further attention at a later point in time. For example, the accounting of emissions and removals is currently under consideration by Parties in other processes under the Convention; hence, text on that issue (i.e. concerning total GHG emissions, base years, coverage of F-gases, etc.) remains open and a placeholder is used to indicate this;

(b) **Options**, with original text marked as “Option 1 (original)”, Parties’ views marked as “Option 2” and, where identified by the secretariat, “Option 3” being the view of the secretariat;

(c) **Strikethroughs** and square brackets to identify changes, additions or text that will definitely be changed (e.g. references to decisions);

(d) When first mentioned, terminology issues (e.g. annual submission versus annual inventory submission, and national system versus national inventory system);

(e) Additions to the text by the secretariat are highlighted in yellow in the UNFCCC Annex I reporting guidelines in annex I of this document;

(f) Additions to the annotated outline of the NIR suggested by Parties in their submissions are highlighted in green.

III. Synthesis of views expressed by Parties on the coverage and format of the common reporting format tables for reporting in line with the revised UNFCCC Annex I reporting guidelines

A. Key issues identified by Parties in their submissions

93. The overall consensus regarding the CRF tables expressed during the three workshops under the work programme for the revision of the UNFCCC Annex I reporting guidelines and in the submissions from Parties in the context of the work programme can be summarized as follows:

(a) The current tables are to be used as the basis for developing new CRF tables and the revision of the CRF tables should be limited to changes to the coverage of sectors, categories and gases introduced by the 2006 IPCC Guidelines. New categories (e.g. CO₂ transport and storage) and gases (e.g. species of F-gases), and some changes (e.g. the reorganizing of category trees) introduced by the 2006 IPCC Guidelines, need to be appraised, with a view to identifying business logic, mapping and subsequently analysing the impact on the current CRF tables;

(b) The current CRF tables are to be reviewed, with a view to improving their elements and the intended utility of the tables (e.g. checking the utility of the additional information tables, of IEFs for some categories and/or of the aggregation of categories; and specifying the inventory years for which a CRF table needs to be reported);

(c) The agriculture and LULUCF sectors are to continue to be reported separately instead of combining them in the AFOLU sector as in the 2006 IPCC Guidelines (but an AFOLU summary table is to be provided) (this is relevant also to recalculations, summary tables and trend tables). However, there is a need to ‘map’ the categories under the AFOLU sector to the current agriculture and LULUCF sectors.

94. Together with the overall understanding of the needed revisions, there are many general and technical questions that require further discussion and agreement before the outcome can be integrated in the revised CRF tables. Some of these questions are directly linked to the discussion points in relation to the main text of the UNFCCC Annex I reporting guidelines (see chapter II above), for example:

(a) Accounting issues (e.g. indirect CO₂ and N₂O emissions; reporting on and accounting for AFOLU; reporting with and without the factoring out of natural disturbances and climate variability for the national total; the coverage of gases (F-gases) and the GWPs to be used;

(b) Base years and the coverage of years in a reported inventory time series, including for F-gases. If the decision is taken not to submit CRF tables for each inventory year, it must be decided whether there is still a requirement for the CRF Reporter to store data for each inventory year and subsequently for CRF table 10 to include all years of the time series;

(c) In relation to recalculations, definitions (are rounding errors, and related errors, recalculations or not) and what years to report back to in the case of recalculations (whether all years are to be reported even if it is agreed that Annex I Parties have to report only a subset of inventory years);

(d) Definitions of the existing notation keys and the possibility of addressing categories with very low emissions/removals in a practical manner.

95. Other issues related to the revision of the CRF tables are linked to the way in which the agreed general approach to revising the CRF tables, discussed in paragraph 93 above, should be implemented. Those issues include:

(a) Ways to implement the revisions to the coverage and organization of the sectors while ensuring time-series consistency and transparency of reporting (e.g. reorganization of the categories under the industrial processes and product use (IPPU) sector, moving the reporting of feedstocks and non-energy use of fuels to the IPPU sector; and splitting of the categories under the AFOLU sector between the agriculture and LULUCF sectors) and the setting of an optimal CRF category tree with clear guidance on the allocation of emissions within and across sectors;

(b) Ways to improve the format of some CRF tables on the basis of experience gained in reporting and review (e.g. in relation to the further refinement of the comparison of the reference and sectoral approaches; addressing additional information boxes; the duplication of information in the CRF tables; assessing the usefulness and need for simplification of the cross-sectoral tables; assessing the IEFs in each CRF table and defining where they may be removed; assessing the limitation in the flexibility allowed for AD; the incorporation of uncertainty data in sectoral background data tables (SBDTs));

(c) Defining the elements of the 2006 IPCC Guidelines to be incorporated in the revised CRF tables (e.g. defining the final format of the CRF tables for new categories and options for reporting indirect CO₂ and N₂O emissions in the sectoral and summary tables);

(d) Defining the elements of the 2006 IPCC Guidelines that could be used to enhance the transparency of the CRF tables and options for their integration in the CRF tables (e.g. adding more information items in the CRF tables and developing a separate section for cross-sectoral verification tables).

96. The answers/solutions to the questions and issues listed in paragraph 95 above will have implications for the outline of the revised CRF tables. The issues for further discussion and implementation are discussed in more detail at the level of the groups of tables for the particular inventory sector or for the summary and cross-sectoral tables in chapter III.B below.

B. Summary of views expressed by Parties relating to the structure and/or content of the common reporting format tables, and proposed modifications to the tables

1. Energy

Summary of views expressed by Parties and background information

97. The views expressed by Parties relating to the structure and content of the CRF tables for the energy sector include:

(a) General comments on the classification and nomenclature of the categories in the sector (e.g. to set up and order the categories in the CRF tables to match those in the 2006 IPCC Guidelines to the extent possible (Japan); the classification used to be in line with the ISIC/Classification of Economic Activities in the European Community (NACE) standardized industrial branch classifications (EU);

(b) Concerns about the allocation of emissions between the energy and IPPU sectors (feedstocks and non-energy use of fuels) and the energy and waste sectors (reporting on energy recovery) and possible double counting;

(c) Specific suggestions on the treatment of particular changes made to the CRF tables in the 2006 IPCC Guidelines compared with the current CRF tables (e.g. including a separate table for CO₂ transport and storage and keeping unchanged the way domestic and international aviation is reported).

98. Box 1 reproduces the specific views relating to the CRF tables for the energy sector as expressed by Parties in their submissions.

Box 1: Energy

Energy – combustion

- Additional disaggregation of 1A1a Electricity and Heat Production to 1A1ai Electricity Generation, 1A1aii Combined Heat and power Generation and 1A1aiii Heat Plants: OK to be implemented in Table 1 sectoral report for energy and Table 1.A(a) Sectoral background data for energy
- Additional disaggregation of 1A1c Manufacture of Solid Fuels and Other Energy Industries: EU needs to further consider this.
- Additional disaggregation of 1A2f to m: OK to be implemented in Table 1 sectoral report for energy and Table 1.A(a) Sectoral background data for energy.
- Further disaggregation of 1A3a Civil aviation into international and domestic aviation in 2006 IPCC Guidelines. This split is not in line with the reporting of international emissions from aviation as memo items in the CRF and should therefore not be implemented. It maybe logic to rename civil aviation into domestic aviation in the CRF, but the EU suggests no further disaggregation.
- Further disaggregation of 1A3b Road Transportation into many subcategories proposed in 2006 IPCC Guidelines. The subcategories used for the estimation of transport emissions depend on country-specific methodologies and aggregations. Therefore the suggested split may not be appropriate for all Parties. This level of detail should be provided in the NIR, but not in the CRF as it is anyway not comparable across countries. The EU therefore suggests not implementing this additional disaggregation for 1A3b suggested in 2006 IPCC Guidelines.
- Further disaggregation of 1A3d (water-borne) Navigation into international and domestic in 2006 IPCC Guidelines. This split is not in line with the reporting of international emissions from aviation as memo items in the CRF and should therefore not be implemented.
- Further disaggregation of 1A3e Other Transportation into pipelines transport and off-road transport in 2006 IPCC Guidelines. The EU suggests to implement a disaggregation into 1A3ei Pipeline Transport and 1A3eii Other (please specify) in the CRF Table 1.A(a) Sectoral report for energy.
- In all subcategories of the transport sector the fuel category “biomass” should be included as separate fuel in order to facilitate the transparent reporting of biofuels.
- Further disaggregation of 1A4c Agriculture/Forestry/Fishing/Fish Farms into Stationary, off-road vehicles and fishing. The suggested split to subcategories is ok and should be implemented in the CRF.
- Further disaggregation of 1A5b Other/mobile into aviation, water-borne and other. The EU suggests not implementing this additional split in the CRF.

- 2006 IPCC Guidelines propose six fuel groups liquid, solid, gas, other fossil fuels, peat and biomass instead of former five fuel groups (liquid, solid, gaseous, biomass and other). The former fuel types “municipal solid waste” and “industrial waste” are split into Municipal Waste (non-biomass fraction), Industrial waste, Waste oils and Municipal Waste (biomass fraction). The EU supports the implementation of the six fuel groups in the sectoral background tables for energy, but need further considerations related to the waste fuel types.
- 2006 IPCC Guidelines propose to report CO₂ capture in a separate column in the energy background tables. The EU supports this way of implementation of reporting on CO₂ capture.

The EU needs further consideration of the implications of the re-allocation of the non-energy use of fuels under the IPPU sector, e.g. in relation to the reference approach and the

- 2006 IPCC Guidelines propose six fuel groups liquid, solid, gas, other fossil fuels, peat and biomass instead of former five fuel groups (liquid, solid, gaseous, biomass and other). The former fuel types “municipal solid waste” and “industrial waste” are split into Municipal Waste (non-biomass fraction), Industrial waste, Waste oils and Municipal Waste (biomass fraction). The EU supports the implementation of the six fuel groups in the sectoral background tables for energy, but need further considerations related to the waste fuel types.
- 2006 IPCC Guidelines propose to report CO₂ capture in a separate column in the energy background tables. The EU supports this way of implementation of reporting on CO₂ capture.

The EU needs further consideration of the implications of the re-allocation of the non-energy use of fuels under the IPPU sector, e.g. in relation to the reference approach and the current checks or related to the additional fuel types proposed for waste fuels in the energy sector of the 2006 IPCC Guidelines. Changes in these areas should not yet be implemented by the UNFCCC secretariat.

Energy – fugitive emissions

- Further disaggregation of 1B1ai Underground Mines to abandoned underground mines. The EU supports this new subcategory but the new category 1B1ai4 Flaring of drained Methane or Conversion of Methane to CO₂ should not be implemented because there would be a high risk of double counting with other categories and because source categories should not be designed for conversion of CH₄ to CO₂. This can be implemented in Table 1.B.1 and Table 1.
- New category 1B1b uncontrolled combustion and burning of coal dumps: does not seem extremely relevant for the EU but ok to be implemented in the CRF background and sectoral tables.
- New disaggregation of 1B2 Oil and natural gas: The EU supports the rearrangement of subcategories. This can be implemented in Table 1.B.2 and Table 1

CO₂ transport and storage: The reporting of CO₂ transport and storage as proposed in the energy sectoral table of Annex 8A.2 of the 2006 IPCC Guidelines should be included in the CRF in Table 1 Sectoral report for energy. A new background table needs to be developed for this purpose. The EU considers Table 1.4b Energy Background Table CO₂ Transport, Injection and Storage – Overview in Annex 8A.2 of the 2006 IPCC Guidelines as a good basis that could be implemented in the CRF.

(EU)

Energy

- The reporting of CO₂ transport and storage should be included in the CRF tables. For transparency, it should be easy to identify CO₂ transport and storage. This

- could be a separate row in the fugitive emissions or in a separate background table.
- The CRF tables do not include any specified placement for combustion emissions related to oil and gas extraction. Norway suggests that 1 A 1 c ii is disaggregated to include one or two separate categories, equivalent to 1 B 2 a and b for fugitive emissions in order to pinpoint emissions from these sources.
 - In the 2006 IPCC Guidelines, fugitive emissions from venting and flaring are separate subcategories under the oil and natural gas subcategories. Norway wishes to continue to have the option of reporting combined flaring from oil and gas. There are fields that produce both oil and gas and it will be impossible to identify the fugitive emissions from venting and flaring into the separate subcategories under the oil and natural gas.
 - The energy balance and reference approach shows the consumption of the anodes and anodes paste in the country in which the anodes and anode paste are produced, while the sectoral approach shows emissions in the country in which the anodes are used for metal production. This does not have any effect on calculated emissions, but influences the consistency and verification towards other data sources. Norway suggests that the reference and sectoral approach are coordinated in a way that facilitates consistency and verification.
 - Norway does not believe that the emissions from combustion of feedstock fuel use should be reported under industrial processes and product use instead of under the energy sector.
 - The level of disaggregation of emissions from Manufacturing industries and construction proposed in the 2006 IPCC Guidelines is too detailed.
 - Norway prefers the current way of separate reporting of emissions from domestic and international aviation.

(Norway)

- According to the 2006 IPCC Guidelines, the rationale behind reporting the emissions from waste that had been used as energy and waste combustion associated with energy recovery in the energy sector is quoted as being “to prevent double counting and errors in the counting sector”, but the Japanese have experienced that even if the said emissions were not reported in the energy sector, it is possible to avoid “double counting and errors in the counting sector”. With respect to whether the emissions from waste associated with energy use and recovery should be counted in the energy sector or in the waste sector, it may be necessary to continue to make further consideration carefully at IPCC and COP. For example, for those countries that can adequately take into account double counting or reporting errors, a rule may be considered allowing such countries to count either the emissions in the energy sector or the waste sector.
- Reporting tables that follow the categories of the Revised 1996 IPCC Guidelines and the Good Practice Guidance (2000) should be deleted.
- Set up and order of the categories in the CRF tables should match those of the 2006 IPCC Guidelines to the extent possible.
- In the submission of February 2010, Japan presented the comment “With respect to whether the emissions from waste associated with energy use and recovery should be counted in the energy sector or in the waste sector, it may be necessary to continue to make further consideration carefully at IPCC and COP.” If greenhouse gas emissions from waste that are used as energy and waste combustion associated with energy recovery is allocated in the energy sector as in the past, a new column should be created so that these emissions can be reported as a reference in both the energy sector and the waste sector.

(Japan)

To start, the current CRF tables for energy are broadly acceptable for reporting emissions from the energy sector using the 2006 IPCC Guidelines. The additional subcategories that have been introduced could lead to an expansion in the formats of the CRF tables for certain categories. However, it should be noted that the “other” subcategories offer an appropriate place to provide such disaggregated subcategory information. Additionally, in using the CRF Reporter to compile CRF tables, that software has the ability to allow comparability of these subcategories in the energy sector. In the energy sector, the expansion of subcategories and introduction of overly specific disaggregation can limit the opportunities to report emissions given national approaches. In these regards, the use of existing tools, such as the CRF Reporter, may limit the need for specific revisions to the CRF tables. Beyond any limited edits to the categorization of fuel combustion activities and fugitive emissions from fuels, an additional category for carbon dioxide transport and storage will need to be added to the CRF tables. In addition, the data tables for non-energy products from fuels should be transferred to the industrial process CRF tables. However, the addition and movement of these categories remains the only large change needed in the current CRF tables in the current UNFCCC Annex I reporting guidelines for the energy sector, which, on the whole, are appropriate for reporting when using the 2006 IPCC Guidelines.

(USA)

99. The proposed modifications to the CRF tables for the energy sector follow the specific suggestions made by Parties in their submissions. However, the submissions were contradictory in relation to some points or were not specific enough to provide suggestions for changes to the CRF tables.

100. The required modifications to the reporting on fuel combustion activities are the most straightforward and limited mainly to the revision of the category and fuel list. However, the review process and Parties’ submissions show that some further consideration should be given to the cross-sectoral checks across the IPPU and waste sectors (see the submissions from the EU Japan) and how to report on biofuels. A simplified option (the addition of an information item to CRF table 1.A(a)) has been suggested as a starting point for discussion. Also, the aforementioned cross-sectoral checks could be included as a separate set of verification tables. In general workshop participants found the idea of cross-sectoral checks good, but they concluded that further consideration of their implementation is needed.

101. The CRF tables linked to the reporting of the reference approach, namely the current CRF table 1.A(c) – Comparison of CO₂ emissions from fuel combustion and CRF table 1.A(d) – Feedstocks and non-energy use of fuels, were initially developed and further revised on the basis of feedback from Parties and the International Energy Agency. However, experience gained in the reviews shows that these tables provide information that is not sufficiently transparent. Specific proposals for modifying the tables and for additional relevant instructions to be included in the CRF tables will be needed. Modifications to the tables have been provided as a starting point for discussion. Thus, the revised CRF table 1.A(d) is meant as a continuation of the table for the reporting of the reference approach. The last columns of the table represent a verification tool helpful in comparing the reference and sectoral approaches and for cross-sectoral comparison. However, the final tables will also depend on the decision to be taken on the reporting of non-energy use of fuels (included under the IPPU sector in the 2006 IPCC Guidelines). Workshop participants did not discuss in detail where to report non-energy use of fuels, and further consideration of this issue is needed.

102. An issue linked to the reporting on the energy sector is the usefulness of the IEFs for fugitive emissions from oil and natural gas. The ranges of the default EFs in the sector are quite large and, combined with the flexibility given to Parties in selecting AD, the IEFs are

not providing easily comparable information. In most cases, even if not directly used for the calculation of estimates, the AD needed for the tier 1 method are part of the reporting requirements for the category. Therefore, reporting of the AD in one fixed unit could be considered, which will facilitate comparison of the inventory data. In general workshop participants agreed that it would be good to have all Parties reporting using the same type of AD in the same unit. However, at the same time, they concluded that this might not be possible in all cases. Workshop participants suggested that, in cases where it is not possible to report AD using the same unit, Parties should be requested to provide information, by including an additional footnote to the table, on the unit used in the NIR. Workshop participants also suggested that information on the type of AD and the unit should be included in the CRF tables, for all sectors, following the 2006 IPCC Guidelines.

103. Another issue to be further considered by the SBSTA, raised by participants in the third workshop under the work programme, concerns having the categories in the CRF tables in such a way that Parties can directly fill in data from their energy balances in the CRF tables as a way to facilitate both the reporting and review of the energy sector.

Proposed modifications¹⁰

Table 1 Sectoral report for energy

(a) The category list has been reorganized following the structure of the 2006 IPCC Guidelines and suggestions made by Parties, namely:

(i) Category 1.A.1.a Public electricity and heat production has been disaggregated into subcategories 1.A.1.a.i Electricity generation, 1.A.1.a.ii Combined heat and power generation and 1.A.1.a.iii Heat plants (usually this level of subcategories is not included in the sectoral reports). No decision on this disaggregation was taken during the third workshop under the work programme;

(ii) Following the discussion that took place during the third workshop under the work programme, the majority of the workshop participants agreed that there is no need for the suggested disaggregation of category 1.A.2 Manufacturing industries and construction included in the 2006 IPCC Guidelines and they suggested that subcategories 1.A.2.f to 1.A.2.m be included under the subcategory other (please specify). Following the suggestion of the workshop participants, the subcategories 1.A.2.f to 1.A.2.m have been added through the inclusion of a subcategory other (please specify), where the subcategories included in the 2006 IPCC Guidelines will be available via a drop-down list. The exception is the subcategory machinery, which has been included as a new subcategory;

(iii) The category civil aviation has been renamed domestic aviation. Workshop participants agreed to this change;

(iv) The workshop participants agreed that there is no need to include the new subcategory 1.B.1.b Uncontrolled combustion and burning coal dumps under category 1.B.1 Solid fuels, as there are no methodologies to estimate emissions for this subcategory provided in the 2006 IPCC Guidelines;

(v) Subcategory 1.B.2.c Venting and flaring has been deleted; however, this deletion was not supported by all Parties in their submissions;

(vi) Category 1.C.3 Other emissions from energy production has been added;

¹⁰ As included in the set of modified CRF tables contained in annex II to this document, which include modifications resulting from the third workshop under the work programme.

(vii) Category 1.C Transport and storage has been added, disaggregated into subcategories 1.C.1 Transport of CO₂, 1.C.2 Injection and storage and 1.C.3 Other. Participants in the third workshop under the work programme welcomed the inclusion of the category;

(viii) The category CO₂ captured has been added as a memo item disaggregated into the subcategories for domestic storage and for storage in other countries.

Sectoral background data for energy

Table 1.A(a) Fuel combustion activities – sectoral approach

(a) The category list has been reorganized following the structure of the 2006 IPCC Guidelines and suggestions made by Parties and workshop participants, namely:

(i) Category 1.A.1.a Public electricity and heat production has been disaggregated into subcategories 1.A.1.a.i Electricity generation, 1.A.1.a.ii Combined heat and power generation and 1.A.1.a.iii Heat plants. Workshop participants agreed to this disaggregation;

(ii) Category 1.A.1.c Manufacture of solid fuels and other energy industries has been further disaggregated into subcategories 1.A.1.c.i Manufacture of solid fuels and 1.A.1.c.ii Other energy industries, the latter with a subdivision for combustion emissions related to oil and gas extraction. The EU requested, in its submission, time to consider the disaggregation of category 1.A.1.c into subcategories. Norway suggested the inclusion of a subdivision for reporting combustion emissions related to oil and gas extraction under the subcategory other energy industries. No decisions on these issues were taken by the participants in the third workshop under the work programme.

(iii) The initial suggestion for the inclusion of all subcategories included under the category manufacturing industries and construction as included in the 2006 IPCC Guidelines was modified during the third workshop under the work programme, as workshop participants raised concerns about the further disaggregation of that category. They suggested that the new subcategories (1.A.2.f to 1.A.2.m) be added through the inclusion of a subcategory other (please specify), where the subcategories contained in the 2006 IPCC Guidelines will be available in a drop-down list. The exception is the subcategory machinery, which has been included as a new subcategory;

(iv) Workshop participants agreed that peat should not be included in any of the (sub)categories under transport (1.A.3). Workshop participants suggested that lubricants should be included under transport;

(v) The category civil aviation has been renamed domestic aviation, which was agreed to by workshop participants;

(vi) The workshop participants agreed that it would be useful to further disaggregate category 1.A.3.b Road transportation, following the 2006 IPCC Guidelines, with regard to different vehicle types, and that there is a need to include a subcategory other (please specify);

(vii) Category 1.A.3.e Other transportation has been disaggregated into subcategories 1.A.3.e.i Pipeline transport and 1.A.3.e.ii Other (please specify). One workshop participant raised the question as to why this split has not been implemented as the addition of two separate subcategories instead of a disaggregation of the category other transportation. However, the workshop participants did not come to a conclusion on this matter;

- (viii) Some workshop participants considered that categories 1.A.4.a Commercial/institutional and 1.A.4.b Residential should be split into stationary and mobile. Peat as a fuel should not be included in the mobile subcategories. Other workshop participants disagreed with a further split of those categories;
- (ix) Category 1.A.4.c Agriculture/forestry/fishing/fish farms has been disaggregated into subcategories 1.A.4.c.i Stationary, 1.A.4.c.ii Off-road vehicles and other machinery and 1.A.4.c.iii Fishing.
- (b) Fuel types have been revised to account for the updated split contained in the 2006 IPCC Guidelines, namely:
- (i) The headings for solid, liquid and gaseous fuels, and biomass have been kept;
- (ii) Peat has been added, with the following footnote: “Although peat is not, strictly speaking, a fossil fuel, the CO₂ emissions from combustion of peat are included in the national emissions as for fossil fuels. See the 2006 IPCC Guidelines, Chapter 1 of Energy Volume, page 1.15”. Workshop participants concluded that, under category 1.A.3 Transport, there is no need to include peat as a fuel;
- (iii) Other fuels has been replaced by other fossil fuels;
- (c) The fuel category biomass has been added to all subcategories under transport;
- (d) A separate column has been added to allow for the reporting of CO₂ captured and two footnotes have been added, linked to that new column. The first footnote has been added to the CO₂ emissions column: “Net CO₂ emissions after subtracting the amounts of CO₂ captured”. The second footnote has been added to the CO₂ IEF column: “The IEFs for CO₂ are estimated on the basis of gross emissions, i.e. CO₂ emissions + amount captured”. Participants in the third workshop under the work programme suggested moving the new column for CO₂ captured to be the last column in the table;
- (e) An information item section has been added, with two checks integrated: (i) waste incineration with energy recovery included under the energy sector and reported under biomass and other fossil fuels; and (ii) biofuels included as biomass and liquid fuels. A footnote has been linked to the information item section: “Information item data are included to allow cross-sectoral and cross-fuel checks for AD and emissions. Details on the actual amounts reported for the subcategories and fuels should be included in the NIR”. This matter was not discussed in detail by workshop participants; however, some workshop participants considered the inclusion of this information item section to be confusing.

Table 1.A(b) CO₂ from fuel combustion activities – reference approach

- (a) Peat has been included as a separate fuel group, to account for the change in the sectoral approach. A footnote has been added: “Although peat is not, strictly speaking, a fossil fuel, the CO₂ emissions from combustion of peat are included in the national emissions as for fossil fuels. See the 2006 IPCC Guidelines, Chapter 1 of Energy Volume, page 1.15”;
- (b) Based on a suggestion made during the third workshop under the work programme, peat briquettes have been included under peat instead of under solid fuels;
- (c) Coal tar has been added as a secondary solid fuel;
- (d) The fuel type other fossil fuels has been added for consistency with the sectoral approach, with three subdivisions: municipal waste (non-biomass fraction), industrial waste and waste oils. One workshop participant questioned the inclusion of waste oils under other fossil fuels and suggested that it should be a fuel category of its own. No decision was taken on this issue during the third workshop under the work programme;

(e) Further fuels and subdivisions could be considered, including a possible reallocation of the derived gases reported under solid fuels to under other fossil fuels, in order to enhance the comparability of the IEFs for solid fuels, and the expansion of the list of fuels in the reference approach. This matter was not discussed during the third workshop under the work programme;

(f) Norway suggested in its submission that the reference and sectoral approaches should be coordinated in such a way as to facilitate consistency and verification. Specific suggestions in this regard were not provided by the Party. No further suggestions were made during the third workshop under the work programme.

Table 1.A(c) Comparison of CO₂ emissions from fuel combustion

(a) The fuel categories have been made consistent with those in the 2006 IPCC Guidelines and the changes made to CRF tables 1.A(a) and 1.A(b), namely the fuel type other being replaced by peat and other fossil fuels;

(b) AD for comparison have been changed to include reductants, namely: “Apparent energy consumption (excluding non-energy use, reductants and feedstocks)”;

(c) A footnote has been added to reflect the inclusion of the column CO₂ captured in the SBDTs for fuel combustion: “For the sectoral approach, gross emissions (without accounting for CO₂ captured) are included in the comparison”;

(d) A footnote has been added to make reference to the section explaining the comparison between the reference and sectoral approaches in the 2006 IPCC Guidelines: “In the case of discrepancies between the approaches (more than 2 per cent), investigate and document the reasons in the documentation box below, consulting section 6.8, Chapter 6, Volume 2, of the 2006 IPCC Guidelines”;

(e) Norway suggested in its submission that the reference and sectoral approaches should be coordinated in such a way as to facilitate consistency and verification. Specific suggestions in this regard were not provided by the Party. No further suggestions were made during the third workshop under the work programme.

Note: Further instructions on the use of CRF table 1.A(c) may need to be included.

Table 1.A(d) Feedstocks and non-energy use of fuels

(a) The table name has been changed to “Feedstocks, reductants and other non-energy use of fuels”;

(b) Option 1: No change made to the structure of the table, pending further decision on the reporting between the energy and IPPU sectors;

(c) Option 2 (starting point for discussion): The table is modified to:

(i) Include all fuels in line with the list of feedstock, reductant and non-energy products suggested in the 2006 IPCC Guidelines;

(ii) Provide information on the carbon (C) and CO₂ emissions from the fuels not included in the reference approach;

(iii) Provide information on the CO₂ emissions associated with the fuels that are included in the inventory total, specifying the quantities of fuel used and the categories under which the emissions are reported;

(iv) Provide an estimation of the carbon fraction stored in non-energy use products.

104. From the discussions that took place during the third workshop under the work programme, the workshop participants preferred option 2. However, no one clearly

indicated that option 1 could be deleted. Workshop participants considered that table 2.12 of the 2006 IPCC Guidelines¹¹ provides good background information on feedstocks and non-energy use of fuels, which would facilitate the review of inventories, and should be considered for inclusion in the revised UNFCCC Annex I reporting guidelines, to be included either in the NIR or in the CRF tables.

Fugitive emissions

Table 1.B.1 Fugitive emissions from solid fuels

(a) The category list has been reorganized following the structure of the 2006 IPCC Guidelines, as supported by Parties in their submissions. Following the discussions that took place during the third workshop under the work programme, the new subcategory 1.B.1.b Uncontrolled combustion and burning coal dumps will not be added under category 1.B.1 Solid fuels;

(b) A separate column has been added to allow for the reporting of CO₂ captured, with the relevant footnotes (see CRF table 1.A(a));

(c) A footnote has been added for solid fuel transformation: “Include emissions from coal and charcoal production under this category”;

(d) Category 1.B.1.b Solid fuel transformation could be disaggregated into subcategories coke production and charcoal production; however, this matter was not discussed during the third workshop under the work programme.

Table 1.B.2 Fugitive emissions from oil, natural gas and other sources

(a) The table name has been changed to “Fugitive emissions from oil, natural gas and other emissions from energy production”.

(b) The category list has been reorganized following the structure of the 2006 IPCC Guidelines, as supported by Parties in their submissions, namely:

(i) Categories 1.B.2.a Oil and 1.B.2.a Natural gas have been disaggregated into subcategories i. Venting, ii. Flaring and iii. Other;

(ii) The subcategories in the current CRF table (exploration, production, transport/transmission, refining/storage, distribution, other) have been included under the new subcategory iii. Other;

(iii) The subcategory production/processing in the current CRF table has been divided into two separate subcategories of production and processing;

(iv) Subcategory 1.B.2.a.v Other leakage under 1.B.2.a Natural gas in the current CRF table has been removed;

(v) The old category 1.B.2.c Venting and flaring, which allowed for the reporting of all oil and gas production, has been removed. The deletion of category 1.B.2.c Venting and flaring was not supported in all Parties’ submissions;

(c) A new category 1.B.3 Other emissions from energy Production has been added, with subdivisions for geothermal energy production and other.

(d) A separate column has been added to allow for the reporting of CO₂ captured, with the relevant footnotes (see CRF table 1.A(a));

(e) Apart from the discussion on including the type of AD to be provided and the unit to be used (see para. 102 above) and the possible deletion of the old category 1.B.2.c

¹¹ Volume 1, Annex 8A.2, page T.37.

Venting and flaring, no other issues were raised during the third workshop under the work programme.

New table 1.C CO₂ transport and storage

A first draft for a new table 1.C CO₂ transport and storage has been added. The table accounts for CO₂ emissions from CO₂ transport and storage and has a section for verification purposes. The suggested draft table combines table 1.4a (for the main part of the table) and table 1.4b (for the part of the table containing the information item) from annex 8A.2 to volume 1 of the 2006 IPCC Guidelines. This table was welcomed by the workshop participants. No suggestions were made for changes to the presented draft table.

Table 1.C International bunkers and multilateral operations

- (a) Table number has been changed to table 1.D;
- (b) No changes have been introduced to the structure of the table;
- (c) Rows for reporting on biofuels and lubricants have been added;
- (d) Workshop participants suggested that the same fuels as those included under the category transport in CRF table 1.A(a) should be included in this table.

2. Industrial processes and product use

Summary of views expressed by Parties and background information

105. The views expressed by Parties relating the required revisions to the CRF tables for the IPPU sector include:

- (a) Support for merging the current industrial processes and solvent and other product use sectors into a single industrial processes and product use sector, as suggested in the 2006 IPCC Guidelines, and for including reporting on new F-gases in the CRF tables;
- (b) General comments on the need for comparability between the CRF categories and other international reporting schemes (such as UNECE) and ensuring time-series consistency in reporting;
- (c) Concerns about the allocation of emissions between the energy and IPPU sectors (feedstocks and non-energy use of products) and possible omissions or double counting of emissions;
- (d) Specific suggestions on the treatment of particular changes made to the CRF tables in the 2006 IPCC Guidelines compared with the current CRF tables (e.g. including new subcategories or reorganizing existing categories).

106. Box 2 reproduces the specific suggestions related to the CRF tables for IPPU sector as expressed by Parties in their submissions.

Box 2: IPPU**Industrial processes**

- The merging of sectors “industrial processes” and “solvents and other product use” to the sector “Industrial processes and Product use” should be reflected in the CRF tables.
- The process on harmonisation of reporting formats and requirement of other international processes such as the UNECE should be taken into consideration in revising the CRF tables. Comparability among the different reporting schemes is important also from the point of view of efficient use of resources.
- It has to be discussed how new source categories under industrial processes and product use will be addressed in the reporting tables.
- Some source categories under industrial processes were reorganized and this should also be considered in relation to time-series consistency.
- Entry cells and categories for new fluorinated gases should be included in the CRF structure.
- In the 2006 IPCC Guidelines emissions from combustion of feedstock fuel use were moved from energy to industrial processes and product use in specific cases. This change has to be further considered in the revision of the UNFCCC Annex I reporting guidelines in relation to time-series consistency and the inventory review and whether the change allows for a consistent tracking of all fuel uses reported in the inventory and in energy balances as part of the UNFCCC review.

Industrial processes and product use

- 2006 IPCC guidelines suggest new source categories 2A3 Glass Production and 2A4 Other Process Uses of Carbonates and further disaggregates 2A4 into 3 subcategories. The EU suggests to implement 2A3 and 2A4 in to CRF, but potentially not the further disaggregation of 2A4.
- 2006 IPCC guidelines suggest new source categories 2B4 Caprolactam etc., 2B6 Titanium Dioxide Production, 2B7 Soda Ash Production, 2B8 Petrochemical and Carbon Black Production and subdivides 2B8 into a to f. The EU supports these changes and they could be implemented in the CRF.
- 2006 IPCC guidelines suggest a separate category for 2B9 Fluorochemical Production with two subcategories. The EU supports these changes and they could be implemented in the CRF.
- 2006 IPCC guidelines suggest new categories 2C5 Lead Production and 2C6 Zinc Production: The EU needs further consideration of these changes and would not like to implement them at this point in time in the CRF.
- The EU needs further time to consider split of non-energy products between energy and IPPU sector, this includes the reporting in the new category 2D Non-energy products from fuels and solvent use.
- 2006 IPCC guidelines suggest new source category 2E Electronic industry with 5 subcategories. The EU supports these changes and they could be implemented in the CRF.
- 2006 IPCC guidelines suggest renamed source category 2G Other Product Manufacture and Use with 4 subcategories. The EU supports these changes and the 4 subcategories and they could be implemented in the CRF. However, the categories 2G1 and 2G2 and 2G3 should not be further subdivided in the CRF.

- The EU also needs further consideration of the allocation of CO₂ removal from the atmosphere during urea manufacturing in the industrial processes sector and the new reporting of the related emissions in category 3C3 Urea fertilization in the agriculture sector. At present these emissions seem to be part of the industrial processes sector and are not treated as carbon stored in products.

(EU)

Industrial processes

- Norway believes that the merging of the sectors “industrial processes” and “solvents and other product use” to the sector “Industrial processes and Product use” should be reflected in the CRF tables.
- Time series consistency must be considered when disaggregated source categories are included in the reporting requirements.
- The introduction of a separate source category for glass production in the CRF tables will be welcomed by Norway.
- Norway would welcome a separate source category for anode production.
- Norway believes that the CO₂ emissions from limestone and dolomite consumption in ferroalloy production should be reported under the category ferroalloys production (2C2), and not under the category 2A3. This allocation of emissions is the one set out in the 2006 IPCC Guidelines, which encourage all emissions from carbonate consumption to be reported under the category in which they are consumed. Reporting these emissions under 2A3 will make the reporting more complicated without improving the accuracy of the inventory.

The 2006 IPCC Guidelines has replaced the estimation of potential F-gas emissions by new Tier 1 approaches resulting in actual emissions. There should therefore no longer be a requirement to report potential F-gas emissions.

(Norway)

- Reporting tables that follow the categories of the Revised 1996 IPCC Guidelines and the Good Practice Guidance (2000) should be deleted.
- Set up and order of the categories in the CRF tables should match those of the 2006 IPCC Guidelines to the extent possible.
- In the current CRF, SF₆ emissions are reported as Gg SF₆ units but HFCs and PFCs are reported as Gg-CO₂ eq. The new CRF should use the same units here to avoid confusion.

(Japan)

For the sectoral reporting in the CRF tables for industrial processes and agriculture, forestry, and other land use further considerations will need to be made. The CRF tables themselves are structured in a manner that will still allow for mostly complete reporting. However, the approaches and coverage in the methodological guidance in the 2006 IPCC Guidelines do offer some changes that should be reflected in any revised CRF tables. Ideally, the organization of the revised CRF tables themselves would stay similar to the current tabular alignment, but with the necessary, but not disruptive, alterations in the structures. In the case of these remaining sectors, the approach should be to open the CRF tables up to consider the revisions without advancing to full revisions until certain considerations are addressed.

In the industrial processes sector, as noted previously, the CRF tables for “solvent and other product use” (i.e., Table 3 and Table 3.A-D) should be moved in to and condensed within an appropriate section of the industrial processes tables.

With the new guidance for industrial process source categories in the 2006 IPCC

Guidelines, an expansion of the tables will be necessary, with some of these newly expanded tables consolidating or contracting tables formally included in the energy sector CRF tables. Also, the expansion in the coverage of greenhouse gases, consistent with information provided in the IPCC Fourth Assessment Report, will necessitate an expansion of the CRF tables. The current CRF tables have expansive information on particular species of some categories of these industrial gases. It is unclear if expansive disaggregation improves transparency in reporting of these individual species of gases, as these industrial gases can only be reported as confidential in applications of particular equipment. For example, the CRF tables currently provides an entry for an “unspecified mix of listed HFCs” and, separately, an “unspecified mix of listed PFCs.” Confidentiality concerns may require reporting of combined HFCs and PFCs emissions in to a single “unspecified mix” grouping. It would be helpful in this example, and provide additional transparency and clarity, if a single “unspecified mix of listed HFCs and PFCs” were added to the CRF tables to reflect such circumstances. Given these lessons learned in reporting using the existing CRF tables, further consideration can be made on how to alter the CRF tables to include new gases while still transparently allowing reporting of these industrial gases.

(USA)

107. The proposed modifications to the CRF tables for the IPPU sector follow the changes as in the 2006 IPCC Guidelines, the specific suggestions made by Parties in their submissions and the outcome of the third workshop under the work programme. For CO₂, CH₄ and N₂O emissions from the sector, the changes are linked mainly to the organization of the category tree. In some cases the modification of the CRF tables entails a higher disaggregation of categories than suggested in Parties’ submissions or in the background tables of the 2006 IPCC Guidelines. Such an approach aims at improving the comparability of the inventory data and allowing data to be reported at the level at which methodologies and default EFs are available in the 2006 IPCC Guidelines.

108. The SBDT for CO₂, CH₄ and N₂O emissions allows flexibility linked to the different input requirements of the different tiers applied by Parties. However, the flexibility allowed in the reporting of AD, here and in general in the CRF tables, reduces the comparability of the resulting IEFs. In most cases, even if not directly used for the calculation of estimates, the AD needed for the tier 1 method are part of the reporting requirements for the category. Therefore, reporting of the AD in one fixed unit could be considered, of the AD could be considered, which will facilitate comparison of the inventory data. As for the fugitive emissions from the energy sector, participants in the third workshop under the work programme considered that it would be helpful to have all Parties reporting the same AD in the same unit; however, they noted that this would not be possible for all (sub)categories. Where this is not possible, Parties should be requested to provide additional information in their NIR on the AD and unit used.

109. The main reporting issue for the IPPU sector is the reporting of the F-gases. Experience with the reporting and review of the information provided by Parties shows that, in many cases, it is not possible for Parties to report data at the level of disaggregation required in the CRF SBDTs. The list of gases is rather long when reporting by species and new gases have been added following the 2006 IPCC Guidelines. Some of the species are currently reported by just one or two Parties. Since not all of the gases are produced or consumed in a country, filling in the tables in order to ensure completeness of reporting creates a burden on Parties. In many cases the reporting by species is limited by the confidentiality of the information and the information is reported at the level of unspecified or total perfluorocarbons (PFCs) or hydrofluorocarbons (HFCs). A more flexible approach to predefining gases/categories for reporting is a preferable option, but this would be limited by the current functionality of the CRF Reporter software. Having said that, the level of disaggregation for reporting gases and AD in the CRF tables should be

reconsidered by the SBSTA and clear guidance should be provided on the further modification of the CRF tables. A simplified reporting table summarizing all F-gases and allowing its customization depending on the existing category/gas combinations relevant to the reporting Party was suggested as a starting point for discussion. In general, the simplified reporting table was welcomed by the workshop participants; however, they noted that the disaggregation of (sub)categories requires further consideration.

110. Estimates of potential emissions of F-gases are to be reported in the current CRF tables by Parties that do not yet have the necessary data to calculate estimates of actual emissions. In the early years of such reporting, only a few Parties were in a position to provide estimates of actual emissions. Further, the UNFCCC Annex I reporting guidelines¹² indicate that Annex I Parties reporting estimates of actual emissions should also report estimates of potential emissions for the (sub)categories where the concept of potential emissions applies, for reasons of transparency and comparability. The 2006 IPCC Guidelines suggest the use of potential emissions only for verification purposes, and the relevant methodology is included in annex 2 to Volume 3 of the 2006 IPCC Guidelines. As indicated in paragraph 21 of the UNFCCC Annex I reporting guidelines, there are different views as to whether the requirement to report estimates of potential emissions of F-gases should remain or not. The workshop participants did not reach an agreement on this issue.

111. Two issues identified in Parties' submissions were not discussed during the third workshop under the work programme, namely the inclusion of a new category for anode production and the consideration of reporting on urea manufacture and fertilization.

112. Workshop participants raised the issue of reporting on feedstocks and non-energy use of fuels in their discussions in relation to the IPPU sector, as in the 2006 IPCC Guidelines emissions from feedstocks and non-energy use of fuels are included under the IPPU sector. Workshop participants did not state a preference for keeping the reporting under the energy sector as recommended in the current UNFCCC Annex I reporting guidelines or for moving it to under the IPPU sector. They agreed that the allocation of emissions between the energy and IPPU sectors requires further consideration in order to ensure that all emissions are covered in the inventory.

Proposed modifications

Table 2(I) Sectoral report for industrial processes

(a) The category list has been reorganized following the structure of the 2006 IPCC Guidelines and suggestions made by Parties, namely:

(i) Categories 2.A Mineral products and 2.C Metal production have been renamed 2.A Mineral industry and 2.C Metal industry;

(ii) Category 2.A Mineral industry includes two new subcategories: 2.A.3 Glass production and 2.A.4 Other process uses of carbonates. The current CRF subcategories of limestone and dolomite use, soda ash production and use, asphalt roofing, and road paving with asphalt have been removed;

(iii) Category 2.B Chemical industry includes five new subcategories: 2.B.4 Caprolactam, glyoxal and glyoxylic acid production, 2.B.6 Titanium dioxide production, 2.B.7 Soda ash production, 2.B.8 Petrochemical and carbon black production and 2.B.9 Fluorochemical production;

¹² FCCC/SBSTA/2006/9.

- (iv) The current subcategory 2.C.4 sulphur hexafluoride (SF₆) used in aluminium and magnesium foundries under category 2.C Metal industry has been replaced by subcategory 2.C.4 Magnesium production;
- (v) The subcategories of lead production and zinc production have been added under category 2.C Metal industry;
- (vi) The current category 2.D Other production has been removed and its subcategories included under the new category 2.H Other;
- (vii) A new category 2.D Non-energy products from fuels and solvent use has been added, with four subcategories (lubricant use, paraffin wax use, solvent use, and other);
- (viii) The current category 2.E Production of halocarbons and SF₆ has been removed as a separate category and merged with the new subcategory 2.B.9 Fluorochemical production;
- (ix) A new category 2.E Electronics industry, with five subcategories (integrated circuit or semiconductor, thin-film transistor (TFT) flat panel display, photovoltaics, heat transfer fluid, and other), has been added;
- (x) The current category 2.F Consumption of halocarbons and SF₆ has been renamed and reorganized. The new category 2.F Product uses as substitutes for ozone-depleting substances (ODS) keeps six of the previous subcategories of category 2.F (refrigeration and air conditioning, foam blowing agents, fire protection, aerosols, solvents, and other applications), with some changes made to the names of the subcategories. The current subcategories of semiconductor manufacture and electrical equipment have been removed;
- (xi) A new category 2.G Other product manufacture and use, with four subcategories (electrical equipment, SF₆ and PFCs from other product use, N₂O from product uses, and other), has been added;
- (b) New columns have been added to accommodate the reporting of NF₃ and other halogenated gases;
- (c) Columns for reporting estimates of potential emissions of F-gases have been removed.

113. In general, workshop participants were happy with the suggested changes. However, one issue that may need further consideration was identified during the third workshop under the work programme and is related to the consistency between the categories to be reported under the energy sector, especially the category manufacturing industries and construction and its subcategories, and the IPPU sector, which is whether to have the same categories under the energy and IPPU sectors, which is not entirely the case now in the 2006 IPCC Guidelines.

114. Following a recommendation made during the third workshop under the work programme, footnote 1 in the table and the note about the reporting of potential and actual emissions of F-gases have been deleted.

Sectoral background data for industrial processes

Table 2(I).A–H Emissions of CO₂, CH₄ and N₂O

(a) The category list has been reorganized following the structure of the 2006 IPCC Guidelines as listed above for CRF table 2(I) and including only categories for which CO₂, CH₄ and N₂O emissions are expected, namely (with comments included only for issues that were raised during the third workshop under the work programme):

-
- (i) Categories 2.A Mineral products and 2.C Metal production have been renamed 2.A Mineral industry and 2.C Metal industry;
- (ii) Category 2.A Mineral industry includes two new subcategories: 2.A.3 Glass production and 2.A.4 Other process uses of carbonates. The current CRF subcategories of limestone and dolomite use, soda ash production and use, asphalt roofing, and road paving with asphalt have been removed;
- (iii) Category 2.B Chemical industry includes five new subcategories: 2.B.4 Caprolactam, glyoxal and glyoxylic acid production, 2.B.6 Titanium dioxide production, 2.B.7 Soda ash production, 2.B.8 Petrochemical and carbon black production and 2.B.9 Fluorochemical production;
- (iv) The current subcategory 2.C.4 SF₆ used in aluminium and magnesium foundries under category 2.C Metal industry has been replaced by 2.C.4 Magnesium production;
- (v) The subcategories of lead production and zinc production have been added under category 2.C Metal industry;
- (vi) The current category 2.D Other production has been removed and its subcategories included under the new category 2.H Other;
- (vii) A new category 2.D Non-energy products from fuels and solvent use has been added, with four subcategories (lubricant use, paraffin wax use, solvent use, and other). Workshop participants agreed that clear guidance is needed on what should be reported under the energy and IPPU sectors for lubricant use in order to avoid double counting or omissions of emissions. Also, participants suggested that solvents be removed from the list, as there are no CO₂ emissions from them. That suggestion has not yet been implemented in the CRF table;
- (viii) A new category 2.G Other product manufacture and use has been added, with the subcategories electrical equipment, SF₆ and PFCs from other product use, N₂O from product uses, and other;
- (b) Some further disaggregation of categories has been suggested, to the level at which methodologies and EFs are included in the 2006 IPCC Guidelines. Predefining categories facilitates transparent reporting and the comparability of data during the review. Added subdivisions include (with comments included only for issues that were raised during the third workshop under the work programme):
- (i) Ceramics, other uses of soda ash, non-metallurgical magnesium production, and other (please specify) under other process uses of carbonates;
- (ii) Caprolactam, glyoxal and glyoxylic acid under subcategory caprolactam, glyoxal and glyoxylic acid production (to allow for separate reporting of AD, IEFs and emissions);
- (iii) Methanol, ethylene, ethylene dichloride and vinyl chloride monomer, ethylene oxide, acrylonitrile, carbon black, and other (predefined production – styrene) under subcategory 2.B.8 Petrochemical and carbon black production (some of those subcategories come from the old category other (please specify) under chemical industry). Workshop participants noted that there is no methodology to estimate emissions from styrene available in the 2006 IPCC Guidelines and therefore considered that styrene should be deleted from the list;
- (iv) Direct reduced iron and pellet under category 2.C.1 Metal industry; coke has been removed, since it has to be reported under the energy sector according to the 2006 IPCC Guidelines;

- (v) Prebake technology and Soderberg technology under category 2.C.3 Aluminium production. Workshop participants questioned the use of this split, but no decision was taken by them;
- (vi) Medical applications, propellant for pressure and aerosol products, and other under subcategory 2.G.3 N₂O from product uses;
- (vii) Pulp and paper, and food and beverages industry under subcategory 2.H Other.

Table 2(II) Sectoral report for industrial processes – emissions of HFCs, PFCs and SF₆

(a) The category list has been reorganized following the structure of the 2006 IPCC Guidelines as listed above for CRF table 2(I) and including only categories for which F-gas emissions are expected, namely (with comments included only for issues that were raised during the third workshop under the work programme):

- (i) Category 2.B Chemical industry has been added, with two subcategories: 2.B.9 Fluorochemical production and 2.B.10 Other. Fluorochemical production is further disaggregated to by-product and fugitive emissions (from the previous category 2.E Production of halocarbons and SF₆);
- (ii) The current subcategory SF₆ used in aluminium and magnesium foundries under category 2.C Metal industry has been replaced by 2.C.4 Magnesium production;
- (iii) The current category 2.E Production of halocarbons and SF₆ has been removed;
- (iv) A new category 2.E Electronics industry, with five subcategories (integrated circuit or semiconductor, TFT flat panel display, photovoltaics, heat transfer fluid, and other), has been added;
- (v) The current category 2.F Consumption of halocarbons and SF₆ has been renamed and reorganized. The new category 2.F Product uses as substitutes for ODS keeps six of the previous subcategories of the old category 2.F (refrigeration and air conditioning, foam blowing agents, fire protection, aerosols, solvents, and other applications), with some changes made to the names of the subcategories. The current subcategories of semiconductor manufacture and electrical equipment have been removed;
- (vi) A new category 2.G Other product manufacture and use, with the subcategories of electrical equipment, SF₆ and PFCs from other product use, and other, has been added;

(b) New columns have been added to allow for the reporting of new gases. Workshop participants noted that there is a need to include a column to report an unspecified mix of HFCs and PFCs together, owing to data confidentiality. The inclusion of new gases was not discussed during the third workshop under the work programme, as such discussion is taking place in other processes under the Convention;

(c) Following a recommendation made by the workshop participants, footnote 2 on sheet 1 of the table has been deleted;

(d) Sheet 2 of the table, containing information on the emissions in CO₂ eq for each gas by category, has been updated to reflect the category list as on sheet 1 of the same table (the GWPs will be updated upon finalization of the list of gases to be used in the table);

(e) The section on potential emissions and the comparison between actual and potential emissions of halocarbons and SF₆ has been deleted. Workshop participants noted that a decision still needs to be taken as to whether estimates of potential emissions of F-gases shall be reported.

Table 2(II).C, E Metal production; production of halocarbons and SF₆

Table 2(II).F Consumption of halocarbons and SF₆

The tables have been merged into a new background data table for F-gases.

New table 2(II)A–H Emissions of F-gases

(a) A simplified background data table 2(II)A–H Emissions of F-gases has been suggested. The table uses the category list as in the modified CRF table 2(II) and allows Parties to specify gases from a standard list as relevant. Workshop participants welcomed the suggested new table; however, they questioned the suggested disaggregation of (sub)categories. Following a recommendation made by the workshop participants, an “e.g.” will be included in the column “Gas (please specify)”, where examples of gas species are included;

(b) The table has two sheets with different structures to take into account the different methodological approaches to estimating emissions for various categories. Since the methodological approaches used for estimating prompt emissions and emissions from banked F-gases and across categories differ, further guidance on using the table is provided in the note, namely: “In the case of prompt emissions (such as from aerosols, open cells and some of the solvents), the consumption in the same year should be reported as consumption in new manufactured products and the consumption in the previous year as in operational stock. Use column for emissions from manufacturing to report also installation emissions. Use the column for emissions from stock to report emissions from use, leakage, servicing and maintenance. Disposal emissions could also include emissions from recycling and destruction”. Workshop participants considered that for the category fluorinated substitutes for ODS the suggested further split of the subcategories might be too detailed and requires further consideration by the SBSTA.

Solvent and other product use

Table 3 Sectoral report for solvent and other product use

Table 3.A–D Sectoral background data for solvent and other product use

These tables have been deleted, to reflect the merging of the sector with the current industrial processes sector. Emissions previously reported under this sector have been included in the modified CRF tables 2(I) and 2(I)A–H. Workshop participants agreed to the suggested changes.

3. Agriculture, forestry and other land use

Summary of views expressed by Parties and background information

115. The views expressed by Parties relating to the structure and content of the CRF tables for the new AFOLU sector in the 2006 IPCC Guidelines, which combines the current agriculture and LULUCF sectors, include:

(a) Support for keeping the reporting of the agriculture and LULUCF sectors separate as in the current CRF tables (with the provision of a summary table for the new

AFOLU sector) and indication of the need for further consideration by Parties of the allocation of some of the revised AFOLU categories to the LULUCF and agriculture sectors;

(b) Specific suggestions on the treatment of particular changes made to the CRF tables in the 2006 IPCC Guidelines compared with the current CRF tables (e.g. including new subcategories or reorganizing existing categories) and comments on the usefulness of the IEFs in the existing CRF tables;

(c) The suggestion of a possible mapping of the AFOLU categories contained in the 2006 IPCC Guidelines to the agriculture and LULUCF sectors and of possible modifications to a subset of the CRF tables for the agriculture sector.

116. Box 3 reproduces the specific suggestions related to the CRF tables for the AFOLU sector as expressed by Parties in their submissions.

Box 3: AFOLU

- The format of the background table and sectoral table should be such that reporting data on the current agriculture sector and LULUCF sector can be reported separately. In doing so, the separation of emissions from biomass burning into agriculture sector and LULUCF sector should also be considered, since emissions from biomass burning in each sector are reported separately in the current CRF whereas they are integrated in the 2006 IPCC Guidelines. The separation of direct N₂O emissions from managed soils should be considered as well.
- In the present CRF Reporter, the cattle population for enteric fermentation of livestock is reported just as the cattle population for manure management. These should be entered separately as these could be different.
- Regarding the livestock manure management, categories for reporting N₂O emissions from manure management in the current CRF are different from categories of manure management in the Revised 1996 IPCC Guidelines or those in the Good Practice Guidance (2000), and there are fewer categories of manure management in CRF. The categories of manure management in the new CRF should match to those in the 2006 IPCC Guidelines. Also, CH₄ emissions are reported by livestock species; however, they should be able to be reported by category of manure management as well as N₂O emissions.
- Regarding livestock manure management, CH₄ emission factor is shown by temperature range in the 2006 IPCC Guideline. It is favorable that additional information for CRF is entered by climate regions as the present manner due to the difficulty of obtaining information by temperatures.
- The way of reporting HWP needs to be considered: whether it should be reported in G. OTHER of SECTORAL REPORTING TABLE as the present manner, or it should be reported as the 6th carbon pool in BACKGROUND sheet of each land-use.
- Countries which use the stock-change method should be able to enter a numerical value directly into the cell “Net Change” of carbon stock change in living biomass in SECTORAL BACKGROUND sheets.

- For converted land in Land (LULUCF), “Gains” in living biomass corresponds to biomass growth for 20 years, which is a default time span, after the conversion, and “Net carbon stock change” in DOM and soils corresponds to removals/emissions for 20 years after the conversion, whereas “Losses” in living biomass basically corresponds to emissions only in the year of the conversion. Since “Activity Data (Area)” is cumulative area of converted land for past 20 years, the numerical values shown in IEF for “Losses” in living biomass to be meaningless in many cases, and deletion of IEF in LAND sector on CRF should be considered so as to avoid confusions.
- In the new CRF corresponding to the 2006 IPCC Guidelines, it may be unnecessary to set “Controlled Burning” and “Wildfires” into subcategories in LULUCF sector as defaults.
- Note in Formulating a CRF Reporting Table
 - Related to the comments made in the general section, the AFOLU sector worksheet contained in the Annex to the 2006 IPCC Guidelines, consists only of the sheet that deals with the gain – loss method, but a CRF reporting table that is also applicable for the stock change method, of which usage is authorized under the IPCC Guidelines, needs to be formulated.
 - Furthermore, in the calculations for the AFOLU sector, there are possible cases where amount of emissions happen to coincide with amount of removals or where stock volumes at two points in time become the same. In such cases, the results of estimation of net emissions and removals would become “0”. These cases in any way do not indicate that emissions and removals do not exist or that estimation is not being performed, so the significance of the figure is distinct from the figure “0” classified in NA, NO, NE in the emission sources sector. This distinction needs to be taken into account in the CRF reporting table and reporting software.

(Japan)

Merging of “agriculture” and “land use, land use change and forestry”

The 2006 IPCC Guidelines has merged the sectors “agriculture” and “land use, land use change and forestry (LULUCF)” into one sector “AFOLU”. In principle, Norway believes that the reporting should follow the AFOLU delineation. However, accounting rules for land-use, land-use change and forestry are presently not clarified.

Until the accounting rules are clear, Norway believes that the agriculture and LULUCF sectors should be kept separate when it comes to reporting.

AFOLU/LULUCF – Agriculture

- The CRF structure should keep the background tables and the sectoral tables for agriculture and LULUCF separate.
- New source categories for agriculture and for land based emissions and removals (e.g. CO₂ emissions from urea fertilization or CO₂ emissions from peatlands) should be considered and addressed.
- Additional tables may be needed to deal with the reporting on harvested wood products.

(Norway)

- The CRF should keep the LULUCF and agriculture sector separate in CRF summary tables, trend tables, sectoral and background tables. Further considerations among Parties are necessary how to allocate some of the revised source categories from the AFOLU chapter to the LULUCF and agriculture sector to achieve an allocation which should be close to the existing allocation of source categories under LULUCF and AFOLU.
- Due to the outstanding work related to methodological issues in the LULUCF and

agriculture sector, the EU needs further time to consider the related implications on the CRF and does not yet provide specific views on these tables in this submission. Changes in these areas should not yet be implemented by the UNFCCC secretariat.

(EU)

SUGGESTION FOR MAPPING AFOLU CATEGORIES TO THE AGRICULTURAL AND LULUCF SECTORS

In previous submissions on the revision of the UNFCCC Annex I reporting guidelines there appeared to be support among Parties for the idea of retaining the current Agriculture and LULUCF sectors for the purposes of reporting so as to maintain continuity with previous reports. To do this further consideration needs to be given to how the categories from the 2006 IPCC Guidelines, AFOLU chapter are to be allocated to be consistent with the existing Agriculture and Land Use, Land Use Change and Forestry sectors.

To aid in these considerations Attachment 2 outlines a possible mapping of the 2006 IPCC Guidelines AFOLU categories to Agriculture and LULUCF. The mapping for this approach attempts to match categories and gases as far as possible to the current coverage of these sectors.

It is Australia's view that in developing new CRF tables to accommodate the 2006 IPCC Guidelines the current CRF tables should be the starting point. Attachment 3 provides a suggestion of possible modifications to a subset of the agriculture CRF tables.

Note: Attachments 2 and 3 of Australia's submission are included as Annex II of this document.

(Australia)

Within the CRF tables for agriculture, forestry, and other land use, there are opportunities to keep the tabular structures generally consistent with the existing CRF tables, while providing additional information in line with the guidance in the 2006 IPCC Guidelines. For example, the area of managed and unmanaged forest land could be listed out for reporting such activity data in the CRF tables. As a further example, additional tables could provide space for possible reporting of land use transitions, in coordination with NIR information on how much land was transferred into and out of categories following each of the transition types. Including such information in the CRF tables to report this activity data would allow for greater transparency in understanding the reporting of emissions and removals from land use categories.

Furthermore, at least organizationally, there could be a consolidation for the N₂O emissions listings, which are now scattered in various CRF Tables. While keeping any such changes in line with the 2006 IPCC Guidelines, the tables could provide the ability to allow reporting on either a country basis or a land use basis to better match country-specific methods. Such changes in the CRF tables would need to be made with an eye to promote transparency in the reporting of such approaches.

Finally, for the CRF tables for agriculture, forestry, and other land use, an expansion of the CRF tables would allow for more complete reporting of HWPs. For example, adding a separate area for imports and exports in the CRF tables would improve transparency in the reporting for this category.

3i. Agriculture, Forestry, and Other Land Use – Livestock (3A3C8 of 2006 IPCC Guidelines); Aggregate Sources and Non-CO₂ Emission Sources on Land (3C2, 3C3, 3C4, 3C5, 3C6, 3C7, 3C8 of 2006 IPCC Guidelines) 3ii. Agriculture, Forestry, and Other Land Use – Land (3B of 2006 IPCC Guidelines); Aggregate Sources and Non-CO₂ Emission Sources on Land (3C1 of 2006 IPCC Guidelines); Other (3D of 2006 IPCC Guidelines)

(USA)

117. The changes to the CRF tables for the AFOLU sector are the most demanding, given the new structure for reporting provided in the 2006 IPCC Guidelines. The proposed modifications reflect the general agreement of the Parties that the sectoral reports and SBDTs should be such that the current agriculture and LULUCF sectors can continue to be

reported separately, while also allowing an overview of the new AFOLU sector as suggested in the 2006 IPCC Guidelines. To allow this, a new table 3 Sectoral report for AFOLU has been added and the current tables 4 Sectoral report for agriculture and 5 Sectoral report for LULUCF have been kept, with the layout of the tables kept as close as possible to the current CRF tables. The table below shows the category lists as per current the CRF categories and the 2006 IPCC Guidelines. The last column shows a possible allocation of the current CRF categories in line with the new structure and the split of the new category 3.C Aggregate sources and non-CO₂ emission sources on land between the agriculture and LULUCF sectors. The suggested category list was based largely on Australia's submission (see FCCC/SBSTA/2010/MISC.7/Add.2 and annex II to this document) and differs from the mapping suggested by the United States, where biomass burning is the only subcategory under category 3.C that should be reported under the LULUCF sector. The table was used as a starting point for discussion during the third workshop under the work programme.

Table 1: Listing of categories

2006 IPCC categories	CRF categories	Suggested mapping (Revised CRF categories to current CRF)
3. AFOLU	4. Agriculture	3. AFOLU
A. Livestock	A. Enteric Fermentation	3.i Agriculture
1. Enteric Fermentation	B. Manure Management	A. Livestock
2. Manure Management ⁽¹⁾	C. Rice Cultivation	1. Enteric Fermentation (CRF 4.A)
B. Land	D. Agricultural Soils ⁽³⁾	2. Manure Management (CRF 4.B)
1. Forest land	E. Prescribed Burning of Savannas	C. Aggregate sources and non-CO₂ emissions sources on land
2. Cropland	F. Field Burning of Agricultural Residues	1. Emissions from biomass burning
3. Grassland	G. Other	a. Prescribed Burning of Savannas (CRF 4.E)
4. Wetlands	5. Land Use, Land-Use Change and Forestry	b. Field Burning of Agricultural Residues (CRF 4.F)
5. Settlements	A. Forest Land	4. Direct N ₂ O Emissions from managed soils (part of old CRF 4.D)
6. Other Land	B. Cropland	5. Indirect N ₂ O Emissions from managed soils (part of old CRF 4.D)
C. Aggregate sources and non-CO₂ emissions sources on land	C. Grassland	6. Indirect N ₂ O Emissions from manure management (part of old CRF 4.D)
1. Emissions from biomass burning	D. Wetlands	7. Rice cultivations (CRF 4.C)
a. Biomass burning in forest lands	E. Settlements	D. Other
b. Biomass burning in croplands	F. Other Land	
c. Biomass burning in grasslands	G. Other	3ii LULUCF
d. Biomass burning in all other land	HWP	B. Land
2. Liming		1. Forest land (CRF 5.A)
3. Urea application		2. Cropland (CRF 5.B)
4. Direct N ₂ O Emissions from managed soils (3)		3. Grassland (CRF 5.C)

5. Indirect N ₂ O Emissions from managed soils		4. Wetlands (CRF 5.D)
6. Indirect N ₂ O Emissions from manure management		5. Settlements (CRF 5.E)
7. ice cultivations		6. Other Land (CRF 5.F)
8. other (please specify)		C. Aggregate sources and non-CO₂ emissions sources on land
D. Other		1. Emissions from biomass burning (CRF table 5(V), without what is already in Agriculture)
1. Harvested Wood Products		2. Liming (CRF table 5(IV))
2. Other (please specify)		3. Urea application (NEW))
		4. Direct N ₂ O Emissions from managed soils (excluding the part reported under Agriculture, CRF table 5(I), 5(II) and 5(III))
		5. Indirect N ₂ O Emissions from managed soils (excluding the part reported under Agriculture)
		D. Other
		1. Harvested Wood Products (CRF 5.G)
		2. Other (please specify) (CRF 4.G and 5.G)

118. Workshop participants expressed the need for further reorganization of the categories, namely:

(a) There was general support for reporting indirect N₂O emissions from manure management (part of the current CRF table 4.D) together with direct emissions from manure management under livestock;

(b) Emissions from liming and urea application were suggested to be included under the agriculture sector. For urea application, there was a suggestion that it continue to be reported under the IPPU sector. Liming was suggested to be optionally reported under the LULUCF or agriculture sectors. The SBSTA should take a final decision on the reporting of these categories. If reported under the agriculture sector, the time-series consistency with the current CRF tables will be affected, since no CO₂ emissions were reported by default under the agriculture sector in the current CRF tables. The decision on the mapping of categories will affect the organization of the tables and the content of the sectoral report tables.

119. There were only a few specific comments or suggestions expressed by Parties in their submissions regarding the LULUCF sector, which was the last sector to be revised and included in the current set of CRF tables and in the CRF Reporter software. The structure of the CRF tables for reporting carbon stock change has been kept unchanged. Parties raised the issue of the usability of implied carbon stock change factors in the sector and recommended that they be deleted from the CRF tables for reporting carbon stock change. The reporting of the new category 3.C Aggregate sources and non-CO₂ emission sources on land should be given further consideration by the SBSTA and the part reported under the agriculture sector should be excluded from the LULUCF sector. The emissions for this category could be reported at national level or at land-category level. The current CRF tables aggregate these emissions at category level. Given the experience gained with reporting, the flexibility allowed by the 2006 IPCC Guidelines and the views expressed by Parties, a more flexible reporting approach could be considered for the revised CRF tables. The participants in the third workshop under the work programme considered the above-mentioned issues and some additional questions. A general agreement to include in the CRF tables land definitions to match those in the 2006 IPCC Guidelines was reached, and

specific suggestions for improving the CRF tables for the AFOLU sector were made as detailed below.

Proposed modifications

120. Initially, two options were proposed for the overall structure of the AFOLU-related CRF tables: (a) keeping as close as possible to the current CRF tables, adding a table with relevant 3.C categories for each sector; or (b) combining all reporting on 3.C categories in cross-sectoral tables with clear links to the relevant sector (agriculture or LULUCF) under which the emissions for each category are reported. The participants in the third workshop under the work programme were in favor of the first option, as presented below. The second option is still kept in the set of revised CRF tables, since there were participants who saw benefit in keeping the reporting on 3.C categories together. However, that option is not described in this document.

New table 3 Sectoral report for agriculture, forestry and other land use

Table 3 Sectoral report for AFOLU has been added following the new category tree suggested in the 2006 IPCC Guidelines (to be discussed). The table is based on table 3, annex 8A.2, Volume 1, of the 2006 IPCC Guidelines; however, it is more aggregated leaving further disaggregation (e.g. per animal or land category) for the sectoral reports for agriculture and LULUCF. The usefulness of the table was questioned by some of the workshop participants.

Note: Further information on the mapping of the categories should be included in the table, if kept.

Agriculture

Table 4 Sectoral report for agriculture

- (a) The table number has been changed to 3(I);
- (b) The table has been restructured to add two new subheadings to distinguish between categories 3.A Livestock and 3.C Aggregated sources and non-CO₂ emissions on land, consistent with the structure of the new table 3. The current CRF categories have been reorganized under the two new subheadings;
- (c) The column for reporting N₂O emissions from manure management per animal has been unshaded to allow for the reporting of the emissions per animal type rather than by animal waste management system, and the relevant subcategories of anaerobic lagoons, liquid systems, solid storage and dry lot, and other have been deleted. A footnote has been added specifying that both direct and indirect N₂O emissions should be reported under manure management, as suggested by the participants in the third workshop under the work programme;
- (d) The structure of the table has been kept, with the inclusion of references to the corresponding categories in the 2006 IPCC Guidelines (i.e. C Rice cultivation (IPCC¹³ category 3.C.7); D Agricultural soils (IPCC categories 3.C.4–6); and E Prescribed burning of savannas and F Field burning of agricultural residues (IPCC category 3.C.1)). In addition, the category agricultural soils has been subdivided following the category split in

¹³ The IPCC category code corresponds to the code in the 2006 IPCC Guidelines.

the 2006 IPCC Guidelines into direct N₂O emissions from managed soils, indirect N₂O emissions from managed soils and indirect N₂O emissions from manure management;

(e) The categories liming and urea application have been added to the table, following the discussion that took place during the third workshop under the work programme and pending a final decision by the SBSTA on their reporting (under the IPPU, agriculture or LULUCF sector);

(f) There were concerns expressed by the workshop participants about the level of aggregation in the current CRF table 4 (e.g. the disaggregation of cattle into option A and B, and the subdivisions under rice cultivation and field burning of agricultural residues). The points of concern are highlighted in green in the revised CRF table (see annex II to this document) for further consideration.

Sectoral background data for agriculture

Table 4.A Enteric fermentation

(a) The table number has been changed to 3(I)A.1;

(b) A column for emissions has been added to the table, as requested by the participants in the third workshop under the work programme;

(c) The 2006 IPCC Guidelines provide default EFs for some additional animals (deer, reindeer and rabbits). Workshop participants suggested that those animals be included in a drop-down list under the category other (please specify);

(d) The additional information box has been highlighted for further consideration, since the participants in the third workshop under the work programme considered that the information contained in it allows for cross-country comparison when included in the CRF tables. Keeping such data only in the NIR, as initially suggested, will hinder easy cross-country comparisons.

Table 4.B(a) CH₄ emissions from manure management

(a) The table number has been changed to 3(II)A.2(a);

(b) A column for reporting CH₄ emissions has been added, as requested by the participants in the third workshop under the work programme;

(c) The 2006 IPCC Guidelines provide default EFs for animals not included in current CRF table (deer, reindeer, rabbits, fur-bearing animals and ostrich). Workshop participants suggested that those animals be included in a drop-down list under other (please specify);

(d) The additional information box has been highlighted for further consideration, since the workshop participants considered that the information contained in it allows for cross-country comparison when included in the CRF tables. If the data are included only in the NIR, this will hinder easy cross-country comparisons.

Table 4.B(b) N₂O emissions from manure management

(a) The table number has been changed to 3(II)A.2(b);

(b) Since the 2006 IPCC Guidelines provide EFs for additional animals (mink and polecats, rabbits, foxes and racoons), those animals will be included under other (please specify) in a drop-down list;

(c) The structure of the table has been revised to reflect the views expressed during the third workshop under the work programme on the need to provide information per animal and per manure management system (MMS) and also to combine the reporting of direct and indirect N₂O emissions from MMS. New columns and rows for AD, IEFs and N₂O emissions have been added to allow such reporting;

(d) Three new columns for MMS (composting, digesters, and burned for fuel or as waste) have been added, while the other MMS are to be included under other (please specify) in a drop-down list.

Table 4.C Rice cultivation

(a) The table number has been changed to 3(I)C.7;

(b) No changes to the structure of the table were suggested or proposed by the workshop participants.

Table 4.D Agricultural soils

(a) The table number has been changed to 3(I)C.4–6 and the table name has been changed to “Direct and indirect N₂O emissions from agricultural soils”;

(b) The table has been revised to reflect the organization and naming of subcategories in the 2006 IPCC Guidelines and the views expressed in Parties’ submissions, namely:

(i) The subcategory direct soil emissions has been renamed “direct N₂O emissions from managed soils”;

(ii) Direct N₂O emissions from managed soils are disaggregated into inorganic nitrogen (N) fertilizers, organic N fertilizers (animal manure, sewage sludge and other), urine and dung deposited by grazing animals, crop residues, and cultivation of organic soils (i.e. histosols);

(iii) The subcategory pasture, range and paddock manure has been removed;

(iv) The subcategory indirect emissions has been changed to indirect N₂O emissions from managed soils;

(c) The additional information box has been deleted;

(d) Footnotes have been added to clarify the content of the table, namely: (i) Footnote to atmospheric deposition (managed soils): “Only atmospheric deposition of N volatilized from agricultural inputs of N is to be reported here (include NO_x associated with burning of savannas and crop residues)”;

and (ii) Footnote to inorganic and organic fertilizers: “Include application of fertilizers to cropland and grassland. If application to other land categories cannot be identified separately, it should be included here”.

Table 4.E Prescribed burning of savannas

(a) The table number has been changed to 3(I)C.1(a);

(b) The subcategories of forest land and grassland have been included in the table;

(c) A footnote has been added: “If possible, fires on forest land and grassland defined as savanna should be separately identified and reported here. If it is not possible to separate those fires from other forest and grassland fires reported under category 3(II)C.1

Biomass burning, this should be clearly documented in the documentation box and in the NIR”;

(d) A footnote specifying which ecological zones are to be specified needs to be included, following a suggestion made during the third workshop under the work programme.

Table 4.F Field burning of agricultural residues

(a) The table number has been changed to 3(I)C.1(b);

(b) Following a suggestion made during the third workshop under the work programme, the disaggregation of crops in the table has been limited and only the main crop categories have been kept in the table;

(c) The columns “Dry matter (dm) fraction of residue”, “Fraction burned in fields”, “Fraction oxidized”, “C fraction of residue” and “N–C ratio in biomass residues” have been highlighted for further discussion. During the third workshop under the work programme, there were suggestions made to keep them (as useful data for N₂O emissions from soils), to delete them (since they are not included in the 2006 IPCC Guidelines) or to keep them for optional reporting.

New table Liming and urea application

A new table has been added, pending a decision on the reporting of these categories (under the IPPU, agriculture or LULUCF sector).

Land use, land-use change and forestry

Table 5 Sectoral report for land use, land-use change and forestry

(a) The table number has been changed to 3(II);

(b) Additional rows have been added to allow for the reporting of 3.C categories (Aggregate sources and non-CO₂ emission sources on land), namely: biomass burning, direct N₂O emissions from managed soils, indirect N₂O emissions from managed soils, and other. Liming and urea application have been kept in the table, pending a final decision on which sector they should be reported under, and also to allow for an overview of the emissions from them at the national level;

(c) Note: IPCC 3.C categories could be estimated either at the national level or for land categories. Participants in the third workshop under the work programme agreed that the accounting should follow the current CRF tables and the emissions for these categories should be included under the relevant land categories. Such an approach should specify in advance under which land category values should be included when calculating the national total.

New table Land-transition matrix

(a) A new table for a land-transition matrix has been added, to allow the tracking of areas and changes in areas between the previous and the current inventory year. The table is based on the land matrix used for the reporting of activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol, and on the matrices in tables 3.5–3.6 of chapter 3, volume 4, of the 2006 IPCC Guidelines. Participants in the third workshop under the work programme discussed the usefulness of including this table in the CRF tables rather than in the NIR and the possibility of preparing such a table on an annual basis. Following

the recommendation made during the workshop, the table has been amended to allow the reporting of managed and unmanaged cropland, grassland and wetlands and a footnote has been added to specify how the table may be used by the Parties applying approach 1 for land representation;

(b) Definitions of the land-use categories as per the 2006 IPCC Guidelines have been included as footnotes (from 2 to 7) to the table, in line with the discussion that took place during the third workshop under the work programme.

Sectoral background data for land use, land-use change and forestry

Table 5.A Forest land

Table 5.B Cropland

Table 5.C Grassland

Table 5.F Other land

Table 5.E Settlements

(a) The table numbers have been changed to 3(II)B.1–6;

(b) The columns with “implied carbon stock change factors” have been highlighted in pink in the revised set of CRF tables, for further consideration and/or deletion. Participants in the third workshop under the work programme indicated that the information provided in such columns is useful for the categories of land remaining in the same land-use category and, as such, the columns have been kept for further discussion;

(c) The name of the “Area” column was changed to “Total area”, following a suggestion made during the third workshop under the work programme that a more explicit indication should be given that the total area should be reported in the column;

(d) There was a proposal made by the workshop participants to distinguish between litter and deadwood under the dead organic matter pool. The revision has been made only to the table for forest land and could be propagated to the other tables for reporting carbon stock changes, if supported by Parties.

Table 5.D Wetlands

(a) The table number has been changed to 3(II)B.4;

(b) The table has been revised to reflect the new developments in the 2006 IPCC Guidelines. It is based on table 3.3 of annex 8A.2 of the 2006 IPCC Guidelines, Volume 1, but with the categories disaggregated using the standard land-conversion categories and the addition of footnotes for categories for which the 2006 IPCC Guidelines do not provide a default methodology. Participants in the third workshop under the work programme suggested merging the current CRF table 5.D with the suggested new table.

Table 5(I) Direct N₂O emissions from N fertilization of forest land and other

Table 5(II) Non-CO₂ emissions from drainage of soils and wetlands

Table 5(III) N₂O emissions from disturbance associated with land-use conversion to cropland

Table 5(IV) CO₂ emissions from agricultural lime application

These tables have been deleted and merged into the suggested new table 3(II)C.

New table 3(II)C

(a) A new background data table 3(II)C has been added for reporting activities under category 3.C Aggregate sources and non-CO₂ emission sources on land (LULUCF sector);

(b) The table allows the Party to select between two options: reporting at the national level or reporting at the land-category level. A drop-down list with the land categories will allow for the reporting and aggregation of data at the land-category level;

(c) Liming and urea application have been kept in the table, pending the final decision on the allocation of the emissions from these sources being taken.

Table 5(V) Biomass burning

(a) The table number has been changed to 3(II)1;

(b) The deletion of the subdivisions of controlled burning and wildfires was suggested by a Party in its submission. During the third workshop under the work programme, the participants expressed the opinion that the split between controlled burning and wildfires is useful to keep;

(c) During the workshop, there was a suggestion to remove the forest land conversion subcategories from the table. Relevant sections of the table are marked in green. If this suggestion is implemented, consideration should be given to the information item under the sectoral report for LULUCF;

(d) The AD and IEF columns have been highlighted in pink for further consideration, the option for selecting AD (in ha or kg dm) is to be reconsidered and possibly removed in order to allow cross-country comparison of the data.

New table Harvested wood products

A new table has been added to allow the reporting of AD for harvested wood products (HWP). The table is based on table 3.10 AFOLU Background table: HWP (3.D.1) – Annual carbon HWP contribution to total AFOLU CO₂ removals and emissions and background information, annex 8A.2, Volume 1, of the 2006 IPCC Guidelines. The discussion relating to the table was more generic, regarding the mandatory or not mandatory nature of the reporting of this category. There was a concern expressed whether such a table will allow for reporting independent of the calculation method applied by a Party.

4. Waste

Summary of views expressed by Parties and background information

121. The views expressed by Parties relating to the structure and content of the CRF tables for the waste sector include:

(a) General comments on the need for minimal changes to the CRF tables for the sector to reflect the inclusion of new categories and the need for the consideration of additional information boxes;

(b) Concerns about the reporting of emissions from waste associated with energy use and recovery.

122. Box 4 reproduces the specific views related to the CRF tables for the waste sector as expressed by Parties in their submissions.

Box 4: Waste

2006 IPCC guidelines suggest a new category biological treatment of solid waste and rename the existing categories. The EU supports both changes and the subcategories and the changes could be implemented in the CRF. In CRF Table 6.A the additional information box should be deleted as this information is not related to the estimation methods for this category.

(EU)

The Revised 1996 IPCC Guidelines, GPG 2000, and 2006 IPCC Guidelines call for the allocation of greenhouse gas emissions from waste that are used as energy and waste combustion associated with energy recovery in the energy sector. According to the 2006 IPCC Guidelines, the rationale behind reporting the emissions from waste that had been used as energy and waste combustion associated with energy recovery in the energy sector is quoted as “to prevent double counting and errors in the counting sector”, but Japan has experienced that even if the said emissions were not reported in the energy sector, it is possible to avoid “double counting and errors in the counting sector”. With respect to whether the emissions from waste associated with energy use and recovery should be counted in the energy sector or in the waste sector, it may be necessary to continue to make further consideration carefully at IPCC and COP.

2.1 Matters Relating to Energy Recovery

Counting of Emissions in the Energy Sector from Wastes Associated with Energy Use and Recovery

- The Revised 1996 IPCC Guidelines, GPG2000 and 2006 IPCC Guidelines call for the counting of greenhouse gas emissions from wastes that are used as energy and waste combustion associated with energy recovery in the energy sector.

According to the 2006 IPCC Guidelines, the rationale behind reporting the emissions from waste that had been used as energy and waste combustion associated with energy recovery in the energy sector is quoted as being .to prevent double counting and errors in the counting sector, but the Japanese have experienced that even if the said emissions were not reported in the energy sector, experienced that even if the said emissions were not reported in the energy sector, it is possible to avoid .double counting and errors in the counting sector. With respect to whether the emissions from waste associated with energy use and recovery should be counted in the energy sector or in the waste sector, it may be necessary to continue to make further consideration carefully at IPCC and COP. For example, for those countries that can adequately take into account double counting or reporting errors, a rule may be considered allowing such countries to count either the emissions in the energy sector or the waste sector.

In the submission of February 2010, Japan presented the comment “With respect to whether the emissions from waste associated with energy use and recovery should be counted in the energy sector or in the waste sector, it may be necessary to continue to make further consideration carefully at IPCC and COP.” If greenhouse gas emissions from waste that are used as energy and waste combustion associated with energy recovery is allocated in the energy sector as in the past, a new column should be created so that these emissions can be reported as a reference in both the energy sector and the waste sector.

Though the current CRF is quite influenced by default estimation methods, unused data in the estimation is requested to be entered in many cases for countries uses higher tier or country-specific methods. As we mentioned in General above, the additional information reported in the CRF should be organized and simple as possible. For example, only the information relevant to actual activity data and emissions are reported in CRF, and concomitant relative parameter and additional information are reported in NIR.

- Reporting tables that follow the categories of the Revised 1996 IPCC Guidelines and the Good Practice Guidance (2000) should be deleted.
- Set up and order of the categories in the CRF tables should match those of the 2006 IPCC Guidelines to the extent possible.

(Japan)

The coverage in the waste sector in the 2006 IPCC Guidelines is fundamentally similar to prior guidance, so, with the exception of the inclusion of biological treatment of solid waste, or composting, the CRF tables as currently constructed in the existing UNFCCC Annex I reporting guidelines are sufficient to allow future reporting in a similar manner. Minimal revisions are necessary in this case.

(USA)

123. The CRF tables for the waste sector were not drastically revised in the 2006 IPCC Guidelines. However, some changes are needed to accommodate new categories and allow for transparent cross-sectoral reporting of emissions with energy recovery. Therefore, a general approach of splitting the current column “Recovery” into “Flaring” and “Energy recovery” in the tables has been applied, to allow a better tracking of emissions that are reported under the energy sector. Emissions reported in the column “Energy recovery” are included only for information and are not included in the estimate of total emissions from the waste sector. Reported emissions from the sector are net emissions. Another deviation from the tables in the 2006 IPCC Guidelines is keeping the split between biogenic and non-biogenic carbon in the table for reporting on waste incineration. The split allows CO₂ emissions that are included in the national total to be distinguished from those included in the memo item “CO₂ emissions from biomass”.

124. The revised CRF table for reporting on wastewater treatment and discharge suggests including sludge not as a subcategory but as AD on sludge removal. If sludge removal is reported in the wastewater inventory, it should be consistent with the estimates reported for sludge applied to agricultural soils, sludge incinerated and sludge deposited in solid waste disposal sites (SWDS), to allow for better tracking of the emissions associated with sludge removal across sectors.

Proposed modifications

Table 6 Sectoral report for waste

- (a) The table number has been changed to 4;
- (b) Categories have been renamed to reflect the category names in the 2006 IPCC Guidelines, namely (with comments included only for issues that were raised during the third workshop under the work programme):
 - (i) The category “Solid waste disposal on land” has been changed to “Solid waste disposal”;
 - (ii) The subcategory “Managed waste disposal on land” has been changed to “Managed waste disposal sites”;

- (iii) The category “Wastewater handling” has been changed to “Wastewater treatment and discharge”;
- (iv) The category “Waste incineration” has been changed to “Incineration and open burning of waste”;
- (c) The category tree has been restructured to reflect the changes implemented in the 2006 IPCC Guidelines, namely:
 - (i) The category biological treatment of solid waste has been added;
 - (ii) The subcategory uncategorized waste disposal sites has been added under category 4.A Solid waste disposal;
 - (d) The shading of the column for N₂O emissions from solid waste disposal sites has been removed, since insignificant emissions could occur;
 - (e) A memo item for long-term storage of carbon in waste disposal sites has been added, disaggregated into “Annual change in total long-term C storage” and “Annual change in total long-term C storage in HWP waste”. Participants in the third workshop under the work programme noted that this memo item needs further consideration and also needs to take into account the outcome of the consideration of the reporting of HWP under the LULUCF sector;
 - (f) Workshop participants welcomed the suggested changes to the sectoral table, while noting that long-term storage will need to be further considered.

Sectoral background data for waste

Table 6.A Solid waste disposal

- (a) The table number has been changed to 4.A and the table name changed to “Solid waste disposal”.
- (b) Categories have been renamed to reflect the category names in the 2006 IPCC Guidelines, namely (with comments included only for issues that were raised during the third workshop under the work programme):
 - (i) The category “Solid waste disposal on land” has been changed to “Solid waste disposal”;
 - (ii) The subcategory “Managed waste disposal on land” has been changed to “Managed waste disposal sites”;
 - (c) The subcategory “Uncategorized waste disposal sites” has been added;
 - (d) The names for the AD have been changed from “municipal solid waste” (MSW) to “waste”, since industrial waste and sludge can also be included, and from “degradable organic carbon degraded” to “fraction of degradable organic carbon that decomposes”;
 - (e) The column “Recovery” has been divided into two columns, “Flaring” and “Energy recovery”, with the following footnote added: “When CH₄ emissions recovered are used for energy production, the emissions from the combustion should be reported under the energy sector (1.A Fuel combustion) and are provided here for information only”;
 - (f) For managed waste disposal sites, two subcategories have been added: anaerobic and semi-aerobic;
 - (g) The additional information box has been highlighted for consideration and/or deletion. The workshop participants noted that the information to be provided in the current

additional information box is not very useful and that other parameters might be more useful for comparison across Parties;

(h) A footnote has been added to “Annual change in long-term storage of C in HWP waste”: “Carbon stored in wood, paper, cardboard, garden and park waste (equal to annual change in stocks of HWP in SWDS from consumption [second AD in the table for HWP])”. As already included in the comments on the sectoral table for waste, workshop participants noted that the memo item for long-term storage needs further consideration and also needs to take into account the outcome of the consideration of the reporting of HWP under the LULUCF sector;

(i) Text has been added in the documentation box: “Parties should specify the category in the energy sector under which the emissions from energy recovery are reported”.

New table 4.B Biological treatment of solid waste

A new table 4.B has been added for the new category biological treatment of solid waste contained in the 2006 IPCC Guidelines. The table is based on the relevant worksheet for the category, pages A1.3 and A1.4, annex 1, Volume 5, of the 2006 IPCC Guidelines. Workshop participants noted that the table contains many subcategories and that these need to be further considered by the SBSTA. Following a recommendation made by the participants, the subcategories of industrial waste and sludge have been deleted from the table.

Table 6.C Waste incineration

(a) The table number has been changed to 4.C and the table name changed to “Incineration and open burning of waste”;

(b) The division between the biogenic and non-biogenic fraction has been kept and the subcategories of waste incineration and open burning have been added. Waste has been subdivided depending on its origin: MSW, industrial solid waste, clinical waste, sewage sludge and other. For open burning, the emissions from fossil liquid waste (lubricants, solvents and waste oil) have been included. The subdivisions have been included in the table to allow for the comparison of the reported IEFs. The workshop participants considered that there are too many subcategories included in the table and suggested that some of them could be included under other (please specify) in the form of a drop-down list;

(c) The name of the AD has been changed from “Amount of incinerated waste” to “Amount of waste (incinerated/open burned)”;

(d) Workshop participants agreed that the column “Energy recovery” is not needed in this table. Following that agreement, the column “Energy recovery” has been deleted from the table;

(e) A separate documentation box has been added to the table.

Table 6.B Wastewater handling

(a) The table number has been changed to 4.D and the category name updated to “Wastewater treatment and discharge”;

(b) The category tree has been restructured to reflect the changes implemented in the 2006 IPCC Guidelines, namely deleting wastewater and sludge as subcategories;

(c) Sludge recovered has been added to the AD, to allow for cross-checks with the sludge reported under other waste categories and the agriculture sector, and a footnote has been added: “If sludge removal is reported in the wastewater inventory, it should be

consistent with the estimates for sludge applied to agricultural soils, sludge incinerated and sludge deposited in SWDS”;

(d) The current additional information box has been marked for consideration and/or deletion. Workshop participants noted the need for revision of the parameters included in the additional information box. However, no specific suggestions were made;

(e) Workshop participants suggested adding an additional column for AD, in order to include N₂O in effluent. They also suggested changing the unit of the reporting from Gg to kt. This was not supported by all workshop participants, as a tonne is different depending on which measuring system is used;

(f) Workshop participants noted that the table does not include commercial wastewater handling.

5. Other (cross-sectoral tables)

Summary of views expressed by Parties and background information

125. Parties expressed different views regarding the usefulness, structure and possible modification of the summary and cross-sectoral tables, which include:

- (a) General comments on the need to optimize the reporting in those tables;
- (b) Concerns about the reporting of total emissions;
- (c) Suggestions for reporting information on methods, EFs and uncertainties at the level of background data tables;
- (d) Specific comments on particular tables.

126. Box 5 reproduces the specific suggestions related to those tables as expressed by Parties in their submissions

Box 5: Summary and cross-sectoral tables

Therefore the EU proposes a clarification of the reporting of indirect CO₂ emissions and indirect N₂O emissions. These indirect emissions could be reported in a separate table for indirect emissions. Consequently indirect emissions would not be part of the sectoral tables and sectoral background tables as related information would be reported in the tables on indirect emissions. Summary tables could either

1. present only direct emissions.
2. present indirect emissions in separate rows

The presentation of national total emissions (e.g. in summary table 2) could be done using the following aggregates:

- Total direct CO₂ equivalent emissions without LULUCF
- Total direct and indirect CO₂ equivalent emissions without LULUCF
- Total direct CO₂ equivalent emissions with LULUCF
- Total direct and indirect CO₂ equivalent emissions with LULUCF1

Such separation of indirect emissions in the reporting format would be more neutral with regard to any more specific decisions related to the accounting of indirect emissions as decided in the future under AWG-LCA or AWG-KP.

- The CRF should keep the LULUCF and agriculture sector separate in CRF summary tables, trend tables, sectoral and background tables.
- A separate table for indirect CO₂ and N₂O emissions should be included (see previous comments in section I)
- Delete key category table from CRF. This is currently reported in both the NIR and the CRF and the EU would like to avoid double reporting and prefers the reporting in the NIR.
- The usefulness and necessity of the additional information boxes in the CRF should be reassessed and potentially streamlined and clearer linked to the respective tier for which the information is valid.
- The CRF should keep information about uncertainties of reported estimates. At this moment Parties have to estimate uncertainties in separate environment and report in suggested layout. This makes uncertainty analysis complicated due to use of at least three files (one file with CRF data, second one with detailed estimates, third one for reporting)

(EU)

- It is easier to understand if the explanation of “IE” and “NE” is shown in the Background Data Tables where “IE” and “NE” is actually used, instead of showing in a summary of Table 9(a) or in a cell comment.
- It is also easier to understand if the tiers used for the emission estimation are shown in the Background Data Tables instead of the Summary 3 table.
- The treatment of “With LULUCF and Without LULUCF” cells should be considered, taking into account future SBSTA discussions on this issue.
- Categories of emissions and removals that have no explanation on the methodologies such as estimation method of emissions or default emission factors in the 2006 IPCC Guidelines should be shaded to differentiate from categories with explanation.

(Japan)

Finally, for revising the CRF tables, consideration will also need to be made for the summary tables. In general, the summary tables have served well in this role in the current UNFCCC Annex I reporting guidelines, and minimal changes are necessitated for revised reporting guidance. Some structural changes will be necessitated by the issues raised

previously regarding the sector tables themselves. There will also need to be alignment with the structure and references in the NIR with the summary reports for methods and emission factors, recalculations, and notation key information. Yet, these should not represent major changes in how the tables look or function. Further consideration can be made on table “Summary 2” in organizing the sectors to represent input values to mimic the current UNFCCC Annex I reporting guidelines quantification of “with” or “without” land-use, land-use change and forestry. In this area, in a manner like the explanations provided throughout this submission, the revisions should aim to keep the fundamental approach of the current CRF tables consistent for the revised reporting guidelines. This could, in this example, be accomplished by structuring table “Summary 2” as:

1. Energy
2. Industrial Processes and Product Use
- 3i. Agriculture, Forestry, and Other Land Use – Livestock (3A3C8 of 2006 IPCC Guidelines); Aggregate Sources and Non-CO₂ Emission Sources on Land (3C2, 3C3, 3C4, 3C5, 3C6, 3C7, 3C8 of 2006 IPCC Guidelines)
- 3ii. Agriculture, Forestry, and Other Land Use – Land (3B of 2006 IPCC Guidelines); Aggregate Sources and Non-CO₂ Emission Sources on Land (3C1 of 2006 IPCC Guidelines); Other (3D of 2006 IPCC Guidelines)
4. Waste
5. Other

The organization of the CRF tables in the current UNFCCC Annex I reporting guidelines allows a clear summation of the categories in the “Summary 2” table to present “Total CO₂ Equivalent Emissions without Land Use, Land-Use Change and Forestry” and “Total CO₂ Equivalent Emissions with Land Use, Land-Use Change and Forestry.” Using the categorization presented here, this clear summation can be replicated in the “Summary 2” table of the revised inventory reporting guidelines by including the 1., 2., 3i., 4., and 5 sector categories in the former total, and all the sector categories (i.e., 1., 2., 3i., 3ii., 4, and 5) in the latter total. Such discussion could continue on this issue to further elaborate how a revised CRF table “Summary 2” could best reflect these categorizations and the summation of them.

(USA)

127. The summary and cross-sectoral tables complement the background data tables with further information concerning the estimates provided in the sectoral tables (e.g. method used and recalculations performed) and allow for an overview of the Parties’ inventories (e.g. Summary 1, Summary 2 and trend table). Since the tables complement the sectoral data, their outline will depend on the final decision on the coverage of sectors and gases in the inventory. Tables Summary 1, 2 and 3 and CRF tables 8 and 10 have an identical category structure. Therefore, when the changes have been agreed at the sectoral level and the coverage of the total emissions has been agreed and reflected in one of these tables, those changes will be propagated to the remaining tables.

128. The concern that the tables be optimized has been addressed by the suggestion that table Summary 1.B and CRF table 9(b) be deleted, which was supported by the participants in the third workshop under the work programme. With regard to the suggested deletion of CRF table 7 (key category analysis), the decision on this was postponed and a general approach to the key category analysis and uncertainty analysis was sought. Both the key category and uncertainty tables are part of the mandatory reporting requirements and are included in the NIR. If included in the CRF tables, this will be at a simplified level and aimed at enabling cross-country comparison. In such a case, the table would be

automatically generated by the CRF Reporter software, given that uncertainty entries are included as a mandatory requirement at category level. The output of the analyses could be in the form of the IPCC tables 7(A) Uncertainties (see annex 8A.2, Volume 1, of the 2006 IPCC Guidelines) and a key category table similar to the tables included in the synthesis and assessment report, parts I and II.

129. The preferences of Parties related to the CRF tables providing information to complement the sectoral data are in the direction of including the relevant information at the sectoral level, either within the tables (e.g. uncertainties) or in the documentation boxes of the tables (e.g. information on methods/EFs and notation keys). Such an approach could be considered at the stage of completing the CRF tables (e.g. including such functionalities in the CRF Reporter software); however, the presentation of the information in the sectoral background data tables will further complicate their layout or will make the documentation boxes very long and difficult to handle. A possible approach could be to enter the information at the level of the separate categories. Then, the information could generate two outputs: (a) summary tables as in the current version of the CRF tables; and (b) detailed tables that could be part of the sectoral sections of the NIR (e.g. a table on methods, which could list category/gas/method/EF used/explanatory comments).

130. There was a suggestion made by participants in the first two workshops under the work programme for the simplification of table Summary 3 (information on methods used and EFs). Participants in the third workshop suggested limiting the information to key categories, grouping it by gas, and providing information at the lower category level and in the sectoral tables.

131. The tables Summary 1 and 2, the recalculation table and the key category analysis table are always year specific. If CRF table 7 (overview for key categories) is kept in the CRF tables, it should be decided for which years (for the base year and the latest inventory year, or for all years) it needs to be reported. The cross-sectoral tables, like the summary on methods and completeness, could be identical for all years. Those tables should be included for each of the reported years only if there are differences between years (verification of which to be integrated in the software); otherwise they should only be included for the last inventory year. The trend table is the same across the reporting years and should appear only once, for the last inventory year. It may include data for all the years in the time series or for a pre-set number of years. The SBSTA should decide, if a decision is taken not to submit CRF tables for each inventory year, whether there is still a need for the CRF Reporter to store data for each inventory year and subsequently for CRF table 10 to include all years of the time series.

Proposed modifications

New table Indirect N₂O and CO₂ emissions

A new table for reporting indirect N₂O and CO₂ emissions has been included. The table is based on table 5.A Cross-sectoral table: indirect emissions of N₂O, annex 8A.2, Volume 1, of the 2006 IPCC Guidelines. Workshop participants concluded that it is premature to take any decision on this table now. However, it was discussed that separate tables could possibly be needed for reporting indirect CO₂ and N₂O emissions.

Summary 1.A Summary report for national greenhouse gas inventories

- (a) The table name has been changed to Summary 1;
- (b) Changes to the category tree structure will be made, consistent with the changes applied to the sectoral tables;

- (c) Columns with placeholders for newly added gases are included, pending final decisions being taken on these;
- (d) The columns for potential emissions have been deleted;
- (e) Two new items have been added as memo items: CO₂ captured and long-term storage of carbon in waste disposal sites;
- (f) Indirect CO₂ and N₂O emissions are included in two places: under other and as a memo item, pending a final decision on their reporting and accounting;
- (g) Workshop participants discussed the shading of the cells in the table and the need for a more flexible approach with regard to shaded cells.

Summary 1.B Short summary report for national greenhouse gas inventories

The deletion of this table was supported by the workshop participants.

Summary 2 Summary report for CO₂ equivalent emissions

- (a) The structure of the table will be changed following the modifications as applied to table Summary 1;
- (b) The section on total emissions has been amended with two new rows for the inclusion of indirect CO₂ and N₂O emissions, pending a decision being taken on the reporting of indirect CO₂ and N₂O emissions.

Summary 3 Summary report for methods and emission factors used

- (a) The structure of the table will be changed following the modifications as applied to table Summary 1;
- (b) Workshop participants discussed the options for including the table only in the NIR, providing it only for the key categories, limiting it to specifying methods or modifying it to allow further disaggregation by categories and be per gas. Suggestions were made to include the information in the SBDTs.

Note: An update of the level of disaggregation and used notation keys could be needed, if the table is kept.

Table 7 Summary overview for key categories

The deletion of this table was supported by most of the workshop participants. If kept, the table should be automatically generated.

Table 8(a) and (b) Recalculation – recalculated data

The structure of the table will be changed following the modifications as applied to tables Summary 1 and 2.

Table 9(a) Completeness – information on notation keys

- (a) The structure of the table has not been changed (the suggestion that the information be included in the documentation boxes is to be discussed);
- (b) New gases are to be added.

Table 9(b) Completeness – information on additional greenhouse gases

The deletion of this table was supported by the workshop participants.

Table 10 Emission trends

The structure of the table will be changed following the modifications as applied to tables Summary 1 and 2. The suggestion of adding a first sheet with the disaggregated trend

in GHG emissions by category in CO₂ eq was supported by the participants in the third workshop under the work programme. The table is to be included in the CRF tables only for the last inventory year.

Annex I

Updated UNFCCC Annex I reporting guidelines on annual inventories, following incorporation of the provisions of decision 14/CP.11

Secretariat revision: ["Guidelines for the preparation of national communications by Parties included in Annex I to the Convention, Part I: [Revised]UNFCCC Annex I reporting guidelines on annual inventories"]

Note by the secretariat

Summary

This document contains the complete updated "Guidelines for the preparation of national communications by Parties included in Annex I to the Convention, Part I: [Revised] UNFCCC Annex I reporting guidelines on annual inventories". ~~including the revisions to the land use, land use change and forestry sector adopted by the Conference of the Parties (COP) at its eleventh session.~~ The secretariat has prepared this document at the request of the Conference of the Parties, to facilitate the reporting by Parties included in Annex I to the Convention of their inventories [in 2015].

Contents

Placeholder from the secretariat: the table of contents will be revised and included once the text and annexes have been finalized.

I. Introduction

A. Mandate

1. The Conference of Parties (COP), by its decision 14/CP.11, adopted the tables of the common reporting format and their notes for reporting on the land use, land-use change and forestry (LULUCF) sector. It decided that each Party included in Annex I to the Convention (Annex I Party) shall use these tables for the purpose of submission of the annual inventory due in and after 2007.

2. The COP, by the same decision, also requested the secretariat to incorporate the LULUCF tables, and related technical modifications, into 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” adopted by decision 18/CP.8 (hereinafter referred to as the UNFCCC Annex I reporting guidelines on annual inventories).

Placeholder: *The secretariat has the view that the paragraph under mandate can be revised upon completion of the process, to ensure that it reflects accurately the mandate that underpins the UNFCCC Annex I reporting guidelines.*

B. Scope of the note

3. This document contains the complete updated UNFCCC Annex I reporting guidelines on annual inventories for all inventory sectors. The UNFCCC Annex I reporting guidelines on annual inventories have been updated to reflect the LULUCF-related revisions agreed by the COP, by its decision 14/CP.11, and as well to correct formatting and other errors identified since their earlier publication (FCCC/SBSTA/2004/8).

Placeholder: *The secretariat has the view that the paragraph under scope of the note can be revised upon completion of the process, to ensure that it reflects accurately the mandate that underpins the UNFCCC Annex I reporting guidelines.*

II. Guidelines for the preparation of national communications by Parties included in Annex I to the Convention, Part I: [Revised]UNFCCC [Annex I]reporting guidelines on annual inventories

A. Objectives

1. The objectives of the UNFCCC Annex I reporting guidelines on annual inventories are:

(a) To assist Parties included in Annex I to the Convention (Annex I Parties) in meeting their commitments under Articles 4 and 12 of the Convention and to assist Annex I Parties[to the Kyoto Protocol in preparing to meet their commitments under Articles 3, 5 and 7 of the Kyoto Protocol]; [comment: text to be inserted later as to the basis of commitments that are to be agreed under the AWG-KP and AWG-LCA]. (EU)]

Placeholder: Will need to be inserted once agreed by Parties in other processes under the Convention.

[(a bis) To contribute to ensuring the transparency of emission reduction commitments:]
(EU)

[(b)]To facilitate the process of considering annual national inventories, including the preparation of technical analysis and synthesis documentation;

[(c)]To facilitate the process of verification, technical assessment and expert review of the inventory information[; and][.]

[(d) To assist Annex I Parties in ensuring and/or improving the quality of their annual inventory submissions.] (EU)

A. Principles and definitions

2. [National greenhouse gas inventories][~~The annual submission~~]~~referred to below only as inventories~~ should be transparent, consistent, comparable, complete and accurate.

3. [Inventories][Annual inventory submissions] should be prepared using comparable methodologies agreed upon by the Conference of the Parties (COP), as indicated in paragraph 9 below.

4. In the context of these UNFCCC Annex I reporting guidelines on [annual inventories][annual submissions][annual inventory submissions]:

Transparency means

Option 1 (original): That the assumptions and methodologies used for an inventory should be clearly explained to facilitate replication and assessment of the inventory by users of the reported information. The transparency of inventories is fundamental to the success of the process for the communication and consideration of information;

Option 2: [That the data sources, assumptions and methodologies used for an inventory should be clearly explained, in order to facilitate the replication and assessment of the inventory by users of the reported information. The transparency of inventories is fundamental to the success of the process for the communication and consideration of the information. The use of the common reporting format and the preparation of a structured national inventory report contribute to the transparency of the information and facilitate national and international reviews;] (EU)

Consistency means

Option 1 (original): That an inventory should be internally consistent in all its elements with the inventories for other years. An inventory is consistent if the same methodologies are used for the base and all subsequent years and if consistent data sets are used to estimate emissions or removals from sources or sinks. Under certain circumstances referred to in paragraphs 15 and 16 below, an inventory using different methodologies for different years can be considered to be consistent if it has been recalculated in a transparent manner, in accordance with the [2006 IPCC Guidelines for National Greenhouse Gas Inventories (hereinafter referred to as the 2006 IPCC Guidelines)]; ~~Intergovernmental Panel on Climate Change (IPCC) Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories and Good Practice Guidance for Land Use, Land-Use Change and Forestry;~~¹

¹ In this document, the term IPCC good practice guidance is used to refer collectively to the IPCC

Option 2: That an inventory [submission] should be internally consistent [for all years]in all [of]its elements [across sectors and categories and with the inventories for other years][, including across sectors, categories and gases]. An inventory is consistent if the same methodologies are used for the base and all subsequent [inventory]years and if consistent data sets are used to estimate emissions or removals from sources or sinks [across sectors[, categories and gases] and throughout the entire time series]. Under certain circumstances referred to in paragraphs 15 and 16 above, an inventory using different methodologies for different years can be considered to be consistent if it has been recalculated in a transparent manner, in accordance with the [2006 IPCC Guidelines]; (EU/secretariat)

Comparability means

Option 1: That estimates of emissions and removals reported by Annex I Parties in their inventories should be comparable among Annex I Parties. For that purpose, Annex I Parties should use the methodologies and formats agreed by the COP for making estimations and reporting their inventories. The allocation of different source/sink categories should follow the [CRF tables provided in annex II to this document], at the level of the summary and sectoral tables;] (EU)

Completeness means

Option 1 (original): that an inventory covers all sources and sinks, as well as all gases, included in the [2006 IPCC Guidelines] as well as other existing relevant source/sink categories which are specific to individual Annex I Parties and, therefore, may not be included in the [2006 IPCC Guidelines]. Completeness also means full geographic coverage of sources and sinks of an Annex I Party;²

Option 2: That an inventory covers all sources and sinks, as well as all gases, [for which methodologies are provided in the 2006 IPCC Guidelines] ~~as well as other existing relevant source/sink categories which are specific to individual Annex I Parties and, therefore, may not be included in the IPCC Guidelines~~. Completeness also means the full geographical coverage of the sources and sinks of an Annex I Party;] (EU)

Option 3: That an [annual inventory submission] covers all sources and sinks, as well as all gases, [for which methodologies are provided in the 2006 IPCC Guidelines or supplementary methodologies have been agreed by the COP, and includes a complete time series of estimates for any country-specific methodology used for which a methodology is not provided in the 2006 IPCC Guidelines]. Completeness also means the full geographical coverage of the sources and sinks of an Annex I Party;] (secretariat)

Accuracy is a relative measure of the exactness of an emission or removal estimate. Estimates should be accurate in the sense that they are systematically neither over nor under true emissions or removals, as far as can be judged, and that uncertainties are reduced as far as practicable. Appropriate methodologies should be used, in accordance with the [2006 IPCC Guidelines], to promote accuracy in inventories.

5. In the context of these guidelines, definitions of common terms used in greenhouse gas (GHG) inventory preparation are those provided in the [2006 IPCC Guidelines].

~~Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories and Good Practice Guidance for Land Use, Land Use Change and Forestry. Where only the latter is intended, the term good practice guidance for LULUCF is used~~

² According to the instrument of ratification, acceptance, approval or accession to the Convention of each Annex I Party.

B. Context

6. These UNFCCC Annex I reporting guidelines on annual inventories cover the estimation and reporting of anthropogenic GHG emissions and removals in both annual inventories and inventories included in national communications, as specified by decision [11/CP.4] and other relevant decisions of the COP.

6bis: [[These][The] UNFCCC Annex I reporting guidelines on annual inventories also cover [the establishment of a national inventory system for the purpose of][the national system of an Annex I Party that ensures]a continued preparation of timely, [complete,]consistent, comparable, accurate and transparent [inventories][annual inventory submissions and their planning and subsequent management].] (EU/secretariat)

7. An annual inventory submission shall consist of a national inventory report (NIR) and the common reporting format (CRF) tables, as described in described in paragraphs 38 through 43 and 44 through 50, respectively.

Option 1 (original): as above.

Option 2: An annual inventory submission shall consist of a national inventory report (NIR) and the common reporting format (CRF) tables, [as included in annex II to these guidelines][as set out in annex I and II to these guidelines]. [The annual submission can also comprise information provided by an Annex I Party in addition to its submitted NIR and CRF tables.] (EU/secretariat)

C. Base year

8. The year 1990 should be the base year for the estimation and reporting of inventories. According to the provisions of Article 4, paragraph 6, of the Convention and decisions 9/CP.2 and 11/CP.4, the following Annex I Parties that are undergoing the process of transition to a market economy are allowed to use a base year or a period of years other than 1990, as follows:

Bulgaria:	1988
Hungary:	the average of the years 1985 to 1987
Poland:	1988
Romania:	1989
Slovenia:	1986

Option 1 (original): as above.

Option 2: 1990 should be the base year for the estimation and reporting of inventories. According to the provisions of Article 4, paragraph 6, of the Convention and decisions 9/CP.2 and 11/CP.4, [and decision 7/CP.12*,] the following Annex I Parties that are undergoing the process of transition to a market economy are allowed to use a base year or a period of years other than 1990 [or a level of emissions as established by a decision of the COP], as follows:

Bulgaria:	1988
<u>[Croatia: _____ 1990*]</u>	(Croatia)
Hungary:	the average of the years 1985 to 1987
Poland:	1988

Romania: 1989

Slovenia: 1986

8bis: [For the reporting of fluorinated gases, Annex I Parties may use 1995 as the base year.] (EU)

Placeholder: *If paragraph 22 is deleted, then some its text will need to be carried to here.*

D. Methods

Methodology

9. Annex I Parties shall use 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 preparing national inventories of these gases, Annex I Parties shall also use the IPCC good practice guidance in order to improve transparency, consistency, comparability, completeness and accuracy.

Option 1(original): As above.

Option 2: Annex I Parties shall use the methodologies provided in the [2006 IPCC Guidelines, and any supplementary methodologies agreed by the COP, and other relevant COP decisions] to estimate anthropogenic emissions by sources and removals by sinks of GHGs not controlled by the Montreal Protocol. ~~In preparing national inventories of these gases, Annex I Parties shall also use the IPCC good practice guidance in order to improve transparency, consistency, comparability, completeness and accuracy.~~ [Methodologies used by Annex I Parties to estimate emissions and/or removals shall be transparently, consistently, comparably, completely and accurately reported in the [annual][inventory] submission.] (secretariat)

10. In accordance with the IPCC Guidelines, Annex I Parties may use different methods (tiers) included in those guidelines, giving priority to those methods which, according to the decision trees in the IPCC good practice guidance, produce more accurate estimates. In accordance with the IPCC Guidelines, Annex I Parties may 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 IPCC good practice guidance and are well documented and scientifically based.

Option 1 (original): As above.

Option 2: In accordance with the [2006 IPCC Guidelines], Annex I Parties may use different methods (tiers) [contained therein], giving priority to those methods which, according to the decision trees in the [2006 IPCC Guidelines], produce more accurate estimates. In accordance with the [2006 IPCC Guidelines], Annex I Parties may also use national methodologies which they consider better able to reflect their national situation, provided that these methodologies are [comparable][consistent] with the [2006 IPCC Guidelines] and are well documented and scientifically based. [The latter is especially important for those estimates of emissions and/or removals that are derived using higher-tier methods and/or models.] (secretariat)

11. For categories³ that are determined to be key categories, in accordance with the [2006 IPCC Guidelines], and estimated in accordance with the provisions in paragraph 13

³ The term “categories” refers to both source and sink categories[as set out in the 2006 IPCC Guidelines]. The term “key categories” refers to ~~both key source categories as addressed in the IPCC Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories and~~

below, Annex I Parties should make every effort to use a recommended method, in accordance with the corresponding decision trees of the [2006 IPCC Guidelines]. Annex I Parties should also make every effort to develop and/or select emission factors, and collect and select activity data, in accordance with the [2006 IPCC Guidelines].

Option 1 (original): As above.

Option 2: For categories⁴ that are determined to be key categories, in accordance with the [2006 IPCC Guidelines], and are estimated in accordance with the provisions in paragraph 13 below, Annex I Parties [should][shall] make every effort to use a recommended method, in accordance with the corresponding decision trees in the [2006 IPCC Guidelines]. Annex I Parties [should][shall] also make every effort to develop and/or select emission factors (EFs), and collect and select activity data (AD), in accordance with the IPCC good practice guidance. [Where national circumstances prohibit the use of a recommended method, then the Annex I Party shall explain in its annual submission the reason(s) as to why its national system was unable to implement a recommended method in accordance with the decision trees in the 2006 IPCC Guidelines.] (secretariat)

12. For most categories, the [2006 IPCC Guidelines] provide a default methodology which includes default emission factors and in some cases default activity data references. Furthermore, the [2006 IPCC Guidelines] provides updated default emission factors and default activity data for some categories and gases. As the assumptions implicit in these default data, factors and methods may not be appropriate for specific national contexts, it is preferable for Annex I Parties to use their own national emission factors and activity data, where available, provided that they are developed in a manner consistent with the [2006 IPCC Guidelines], are considered to be more accurate, and reported transparently. The updated default activity data or emission factors provided in the [2006 IPCC Guidelines] should be used, where available, if Annex I Parties choose to use default factors or data due to lack of country-specific information.

Option 1 (original): as above.

Option 2: ~~For most categories~~ The [2006] IPCC Guidelines provide default methodologies which include default emission factors and in some cases default activity data ~~[for the categories to be reported]. Furthermore, the IPCC Guidelines provides updated default emission factors and default activity data for some categories and gases~~. As the assumptions implicit in these default data, factors and methods may not be appropriate for specific national contexts, it is preferable for Annex I Parties to use their own national emission factors and activity data, where available, provided that they are developed in a manner consistent with the 2006 IPCC Guidelines, are considered to be more accurate than the defaults and are reported transparently. ~~The updated default activity data or emission factors provided in the IPCC good practice guidance should be used, where available, if Annex I Parties choose to use default factors or data due to lack of country specific information.~~ [If Annex I Parties lack country-specific information, they could also use emission factors or other parameters provided in the IPCC Emission Factor Database (EFDB), where available, provided that those parameters are considered to be appropriate in the specific national context and are considered to be more accurate than the default data provided in the 2006 IPCC Guidelines.] [The default activity data or emission factors provided in the 2006 IPCC

~~to~~ the key categories as addressed in the [2006 IPCC Guidelines] ~~IPCC Good Practice Guidance for Land Use, Land-Use Change and Forestry.~~

⁴The term “categories” refers to both source and sink categories[as set out in the 2006 IPCC Guidelines]. The term “key categories” refers to both key source categories as addressed in the IPCC Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories and to the key categories as addressed in the [2006 IPCC Guidelines]IPCC Good Practice Guidance for Land Use, Land-Use Change and Forestry.

Guidelines should be used if Annex I Parties choose to use default factors or data owing to a lack of country-specific information. Furthermore, all of the default data from the 2006 IPCC Guidelines are in the IPCC Emission Factor Database (EFDB) and are available to use, provided that their use is considered to be appropriate in the specific national context. In addition, the EFDB includes [other data][EFs] and parameters that can be used by Annex I Parties, provided that they are considered to be more accurate than the default data provided in the 2006 IPCC Guidelines. Regardless of the source of the data and/or parameters, Annex I Parties shall transparently explain in their annual inventory submissions what have been used and the reasons as to why they meet the aforementioned conditions.] (EU/secretariat)

[Key category determination][Key category analysis]

13. Annex I Parties shall identify their national key categories for the base year and the latest reported inventory year, as described in the [2006 IPCC Guidelines], using approach 1 or 2, level and trend assessment.

Uncertainties

14. Annex I Parties shall quantitatively estimate the uncertainties in the data used for all source and sink categories using at least the tier 1 method, as provided in the [2006 IPCC Guidelines]. Alternatively, Annex I Parties may use the tier 2 method in the [2006 IPCC Guidelines] to address technical limitations in the tier 1 method. Uncertainty in the data used for all source and sink categories should also be qualitatively discussed in a transparent manner in the NIR, in particular for categories that were identified as key categories.

Option 1 (original): As above.

Option 2: Annex I Parties shall quantitatively estimate the uncertainty of the data used for all source and sink categories using at least the tier 1 method, as provided in the [2006 IPCC Guidelines, and report uncertainties for at least the base year and the latest inventory year]. Alternatively, Annex I Parties may use the tier 2 method provided in the [2006 IPCC Guidelines], in order to address technical limitations in the tier 1 method. The uncertainty of the data used for all source and sink categories should also be qualitatively discussed in a transparent manner in the NIR, in particular for categories that were identified as key categories. (secretariat)

[Recalculations][Recalculations and time-series consistency]

15. 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. Recalculations should ensure consistency of the time series and shall be carried out only to improve accuracy and/or completeness. Where the methodology or manner in which underlying activity data and emission factors are gathered has changed, Annex I Parties should recalculate inventories for the base and subsequent years. Annex I Parties should evaluate the need for recalculations relative to the reasons provided by the IPCC good practice guidance, in particular for key categories. Recalculations should be performed in accordance with the IPCC good practice guidance and the general principles set down in these UNFCCC guidelines.

Option 1 (original): as above.

Option 2: The inventory for a ~~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 [, ensuring that changes in emission trends are not

introduced as a result of changes in estimation methods or assumptions]. Recalculations should ensure the consistency of the time series and shall be carried out only to improve accuracy and/or completeness [and to implement higher-tier methods in accordance with 2006 IPCC Guidelines]. Where the methodology or manner in which underlying activity data and emission factors are gathered has changed, Annex I Parties should recalculate inventories for the base and subsequent years of the times series. Annex I Parties should evaluate the need for recalculations relative to the reasons provided in the 2006 IPCC Guidelines, in particular for key categories. Recalculations should be performed in accordance with 2006 IPCC Guidelines and the general principles set down in these UNFCCC guidelines.] (EU)

16. In some cases it may not be possible to use the same methods and consistent data sets for all years due to a possible lack of activity data, emission factors or other parameters directly used in the calculation of emission estimates for some historical years, including the base year. In such cases, emissions or removals may need to be recalculated using alternative methods not generally covered by paragraphs 9 through 12. In these instances, Annex I Parties should use one of the techniques provided by the IPCC good practice guidance (e.g., overlap, surrogate, interpolation, and extrapolation) to determine the missing values. Annex I Parties should document and demonstrate in the NIR that the time series is consistent, wherever such techniques are used.

Option 1 (original): As above.

Option 2: In some cases it may not be possible to use the same methods and consistent data sets for all years, owing to a possible lack of activity data, emission factors or other parameters directly used in the calculation of emission estimates for some historical years, including the base year. In such cases, emissions or removals may need to be recalculated using alternative methods not generally covered by paragraphs 9–12 above. In these instances, Annex I Parties should use one of the techniques provided in the [2006] IPCC Guidelines (e.g. overlap, surrogate, interpolation or extrapolation) [or other equivalent methods] to determine the missing values. [Annex I Parties should document and report the methodologies used for the entire time series.] ~~is consistent, wherever such techniques are used.~~ [This is particularly important if Parties are not able to apply new methods from the 2006 IPCC Guidelines back to the base year]. Annex I Parties should [demonstrate time-series consistency in the NIR, especially if a recalculation was undertaken and also if the recalculation involved the use of one of the above-mentioned techniques.] (EU/secretariat)

Quality assurance/quality control (QA/QC)

17. Each Annex I Party shall elaborate an inventory QA/QC plan and implement general inventory QC procedures (tier 1)⁵ in accordance with its QA/QC plan following the IPCC good practice guidance. In addition, Annex I Parties should apply category-specific QC procedures (tier 2) for key categories and for those individual categories in which significant methodological changes and/or data revisions have occurred, in accordance with [2006 IPCC Guidelines]. The implementation of tier 2 QC may be more efficiently implemented in conjunction with the evaluation of uncertainties in data sources. In addition, Annex I Parties should implement QA procedures by conducting a basic expert peer review (tier 1 QA) of their inventories in accordance with the [2006 IPCC Guidelines].

Option 1 (original): As above.

Option 2: Each Annex I Party shall elaborate an inventory QA/QC plan and implement general inventory QC procedures (tier 1) in accordance with its QA/QC plan following the 2006 IPCC Guidelines. In addition, Annex I Parties should apply category-specific QC

⁵ As outlined in table [6.1, Volume 1]-~~8.1~~ of the [2006 IPCC Guidelines].

procedures (tier 2) for key categories and for those individual categories in which significant methodological changes and/or data revisions have occurred, in accordance with the 2006 IPCC Guidelines. ~~The implementation of tier 2 QC may be more efficiently implemented in conjunction with the evaluation of uncertainties in data sources.~~ In addition, Annex I Parties should implement QA procedures by conducting a basic expert peer review (tier 1 QA) of their inventories in accordance with the 2006 IPCC Guidelines. (EU)

Placeholder: *New section proposed by the EU on national systems that the secretariat supports. The text for this new chapter is provided below. Text in yellow highlight is inclusions or alternate text identified by the secretariat.*

National inventory systems

17bis. Each Annex I Party shall implement and maintain a national system for the estimation of anthropogenic GHG emissions by sources and removals by sinks. The national system includes all institutional, legal and procedural arrangements made within an Annex I Party for estimating anthropogenic emissions by sources and removals by sinks of all GHGs not controlled by the Montreal Protocol, and for reporting and archiving inventory information.

17ter. National inventory systems should be designed and operated:

- to ensure the transparency, consistency, comparability, completeness and accuracy of inventories as defined in paragraph x above{TACCC definitions paragraphs};
- to ensure the quality of inventories through the planning, preparation and management of inventory activities. Inventory activities include collecting activity data, selecting methods and emission factors appropriately, estimating anthropogenic GHG emissions by sources and removals by sinks, implementing uncertainty assessment and QA/QC activities, and carrying out procedures for the verification of the inventory data at the national level, as described in these UNFCCC guidelines
- to enable Annex I Parties to consistently estimate anthropogenic emissions by all sources and removals by all sinks of all GHGs, as covered in the 2006 IPCC Guidelines.

17quater. In the implementation of its national inventory system, each Annex I Party shall perform the following general functions:

- (a) Establish and maintain the institutional, legal and procedural arrangements necessary to perform the functions defined in paragraphs xx to xx below{inventory planning, preparation and management paragraphs}, as appropriate, between the government agencies and other entities responsible for the performance of all functions defined in these reporting guidelines;
- (b) Ensure sufficient capacity for the timely performance of the functions defined in these reporting guidelines, including data collection for estimating anthropogenic GHG emissions by sources and removals by sinks and arrangements for the technical competence of the staff involved in the inventory development process;
- (c) Designate a single national entity with overall responsibility for the national inventory;
- (d) Prepare national annual inventories in a timely manner in accordance with these reporting guidelines and relevant decisions of the COP, and provide the information

necessary to meet the reporting requirements defined in these reporting guidelines and in relevant decisions of the COP.

(e) In addition, each Annex I Party shall undertake specific functions relating to inventory planning, preparation and management.

Inventory planning

17quinquies. As part of its inventory planning, each Annex I Party shall:

(a) Define and allocate specific responsibilities in the inventory development process, including those relating to choosing methods, data collection, particularly activity data and emission factors from statistical services and other entities, processing and archiving, and QA/QC. Such definition shall specify the roles of, and cooperation between, government agencies and other entities involved in the preparation of the inventory, as well as the institutional, legal and procedural arrangements made to prepare the inventory;

(b) Elaborate an inventory QA/QC plan which describes specific QC procedures to be implemented during the inventory development process, facilitate the overall QA procedures to be conducted, to the extent possible, on the entire inventory, and establish quality objectives;

(c) Establish processes for the official consideration and approval of the inventory, including any recalculations, prior to its submission, and for responding to any issues raised in the inventory review process.

17sexies. As part of its inventory planning, each Annex I Party should consider ways to improve the quality of activity data, emission factors, methods and other relevant technical elements of the inventory. Information obtained from the implementation of the QA/QC programme, the inventory review process and other verification activities should be considered in the development and/or revision of the QA/QC plan and the quality objectives.

Inventory preparation

17septies. As part of its inventory preparation, each Annex I Party shall:

(a) Prepare estimates in accordance with the requirements defined in these reporting guidelines;

(b) [Prepare estimates in accordance with the methods described in the 2006 IPCC Guidelines and any supplementary methodologies agreed by the COP, and ensure that appropriate methods are used to estimate emissions for key categories];

(c) Collect sufficient activity data, process information and emission factors as are necessary to support the methods selected for estimating anthropogenic GHG emissions by sources and removals by sinks;

(d) [Make quantitative estimates of uncertainty for each category and for the inventory as a whole, following the 2006 IPCC Guidelines];

(e) [Ensure that any recalculations of previously submitted estimates of anthropogenic GHG emissions by sources and removals by sinks are prepared in accordance with the 2006 IPCC Guidelines and relevant decisions of the COP];

(f) Compile the NIR in accordance with these reporting guidelines;

(g) Implement general inventory QC procedures (tier 1) in accordance with its QA/QC plan, following the 2006 IPCC Guidelines.

17octies. As part of its inventory preparation, each Annex I Party should:

(a) Apply category-specific QC procedures (tier 2) for key categories and for those individual categories in which significant methodological and/or data revisions have occurred, in accordance with the 2006 IPCC Guidelines;

(b) Provide for a basic review of the inventory by personnel that have not been involved in the inventory development process, preferably an independent third party, before the submission of the inventory, in accordance with the planned QA procedures referred to in paragraph 17quatuorquies(b) above;

(c) Provide for a more extensive review of the inventory for key categories, as well as for categories where significant changes to methods or data have been made, in accordance with the 2006 IPCC Guidelines;

(d) On the basis of the reviews described in paragraph 17quatuorquies(b) and (c) above and periodic internal evaluations of the inventory preparation process, re-evaluate the inventory planning process, in order to meet the established quality objectives referred to in paragraph 17quatuorquies(b) above.

Inventory management

17novies. As part of its inventory management, each Annex I Party shall:

(a) Archive all relevant inventory information for the reported time series, including all disaggregated emission factors and activity data, and documentation about how these factors and data have been generated and aggregated for the preparation of the inventory, internal documentation on QA/QC procedures, external and internal reviews, and documentation on annual key categories and key category identification and planned inventory improvements;

(b) Provide review teams with access to all archived information used by the Party to prepare the inventory through the single national entity, in accordance with relevant decisions of the COP;

(c) Respond, in a timely manner, to requests for clarifying inventory information resulting from the different stages of the process of review of the inventory information and information on the national system.

E. Reporting

1. General guidance

Estimates of emissions and removals

18. Article 12.1(a) of the Convention requires that each Party shall communicate to the COP, through the secretariat, inter alia, a national inventory of anthropogenic emissions by sources and removals by sinks of all greenhouse gases not controlled by the Montreal Protocol. As a minimum requirement, inventories shall contain information on the following greenhouse gases: carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), perfluorocarbons (PFCs), hydrofluorocarbons (HFCs) and sulphur hexafluoride (SF₆). Annex I Parties should report anthropogenic emissions and removals of any other greenhouse gases whose 100-year global warming potential (GWP) values have been identified by the IPCC and adopted by the COP. Annex I Parties should also provide information on the following indirect greenhouse gases: carbon monoxide (CO), nitrogen oxides (NO_x) and non-methane volatile organic compounds (NMVOCs), as well as sulphur oxides (SO_x).

Option 1 (original): As above.

Option 2: Article 12, paragraph 1(a), of the Convention requires that each Party shall communicate to the COP, through the secretariat, inter alia, a national inventory of anthropogenic emissions by sources and removals by sinks of all GHGs not controlled by the Montreal Protocol. As a minimum requirement, inventories shall contain information on the following GHGs: carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), perfluorocarbons (PFCs), hydrofluorocarbons (HFCs), sulphur hexafluoride (SF₆) and nitrogen trifluoride (NF₃). Annex I Parties should report anthropogenic emissions and removals of any other GHGs whose [100-year global warming potential (GWP) values have been identified by the IPCC] and which are listed in table 1 ~~and adopted by the COP.~~

In addition, Annex I Parties should provide information on the following indirect GHGs: carbon monoxide (CO), nitrogen oxides (NO_x) and non-methane volatile organic compounds (NMVOCs), as well as sulphur oxides (SO_x). [Annex I Parties shall report indirect CO₂ emissions from the atmospheric oxidation of CH₄, CO₂ and NMVOCs and indirect N₂O emissions resulting from the nitrogen deposition of all anthropogenic sources of NO_x and NH₃. In reporting indirect emissions, Annex I Parties should avoid double counting and report indirect CO₂ emissions only for those source categories for which the carbon is not already covered by the assumptions and approximations made in estimating CO₂ emissions.] (EU)

Option 3: [...]Parties' national totals of GHGs shall include only direct CO₂ emissions and not those calculated from atmospheric emissions of CO, CH₄ or NMVOCs. If desired, Parties can voluntarily report estimates of CO₂ from emissions of those other gases. The estimates of CO₂ from CO, CH₄ or NMVOCs can be calculated using the method provided in the 2006 IPCC Guidelines, Overview Chapter, Section 7.2.1.5 and, if reported, they should be included with the estimates of other indirect GHGs.] (Canada)

19. Greenhouse gas emissions and removals should be presented on a gas-by-gas basis in units of mass with emissions by sources listed separately from removals by sinks, except in cases where it may be technically impossible to separate information on sources and sinks in the areas of land use, land-use change and forestry. For HFCs and PFCs, emissions should be reported for each relevant chemical in the category on a disaggregated basis, except in cases where paragraph 27 below applies.

20. In addition, consistent with decision 2/CP.3, Annex I Parties should report aggregate emissions and removals of greenhouse gases, expressed in CO₂ equivalent terms at summary inventory level,⁶ using GWP values provided by the IPCC in its Second Assessment Report, referred to below as 1995 IPCC GWP values, based on the effects of greenhouse gases over a [100-year time horizon]. A list of these values is given in table 1 at the end of these guidelines. Table 1 on page 15 will be amended to include any additional greenhouse gases and their 100-year GWP values, once the GWP values have been adopted by the COP.

Option 1 (original): As above.

Option 2: In addition, consistent with decision 2/CP.3, Annex I Parties should report aggregate emissions and removals of GHGs, expressed in CO₂ eq, at summary inventory level,⁶ using the GWP values provided by the IPCC in its [Fourth] ~~Second~~ Assessment Report (hereinafter referred to as [2007] ~~1995~~ IPCC GWP values), which are based on the effects of GHGs over a [100-year time horizon]. A list of these values is given in table 1 at the end of these guidelines. ~~Table 1 on page 15 will be amended to include any additional~~

⁶ Emissions in CO₂ eq should be provided at a level of category disaggregation similar to that specified in CRF table Summary 1.A.

⁶ Emissions in CO₂ eq should be provided at a level of category disaggregation similar to that specified in CRF table Summary 1.A.

~~greenhouse gases and their 100-year GWP values, once the GWP values have been adopted by the COP (EU)~~

Placeholder: *This issue relates to accounting, which is under consideration by Parties in other processes under the Convention. (secretariat)*

21. Consistent with decision 2/CP.3, Annex I Parties should report actual emissions of HFCs, PFCs and SF₆, where data are available, providing disaggregated data by chemical (for example, HFC-134a) and source category in units of mass and in CO₂ equivalents. Annex I Parties should make every effort to develop the necessary sources of data for reporting actual emissions. For the source categories where the concept of potential emissions applies, and Annex I Parties do not yet have the necessary data to calculate actual emissions, Annex I Parties should report disaggregated potential emissions. Annex I Parties reporting actual emissions should also report potential emissions for the sources where the concept of potential emissions applies, for reasons of transparency and comparability.

Option 1 (original): As above.

Option 2: Consistent with decision 2/CP.3, Annex I Parties [shall]should report actual emissions of HFCs, PFCs and SF₆, where data are available, providing disaggregated data by chemical (e.g. HFC-134a) and source category in units of mass and in CO₂ eq. Annex I Parties reporting actual emissions should also report potential emissions for the sources where the concept of potential emissions applies, for reasons of transparency and comparability. (EU)

22. Any Annex I Party that is a Party to the Kyoto Protocol and that in accordance with Article 3, paragraph 8 of the Kyoto Protocol chooses to use 1995 as its base year for HFCs, PFCs and SF₆ for the purposes of calculating assigned amounts pursuant to Article 3, paragraphs 7 and 8 of the Kyoto Protocol, should indicate this in its NIR and in the documentation boxes of the relevant tables of the CRF. Irrespective of the base year chosen for these gases for the purpose of the Kyoto Protocol, such Annex I Parties should report, to the extent that data are available, emission estimates and trends for these gases from 1990 onward, in accordance with the provisions of these guidelines.

Option 1 (original): As above.

Option 2: To delete this paragraph on the proviso that paragraph 8 (base year) includes text on the base year for F-gases. (EU)

23. Annex I Parties are strongly encouraged to also report emissions and removals of additional greenhouse gases for which 100-year GWP values are available, but not yet adopted by the COP. These emissions and removals should be reported separately from national totals. The GWP value and reference should be indicated.

Option 1 (original): As above.

Option 2: Annex I Parties are strongly encouraged to also report emissions and removals of additional GHGs for which 100-year GWP values are available [,from the IPCC,]but have not yet been adopted by the COP. These emissions and removals should be reported separately from national totals. The GWP value and reference should be indicated. (EU)

24. In accordance with the [2006 IPCC Guidelines], international aviation and marine bunker fuel emissions should not be included in national totals but should be reported separately. Annex I Parties should make every effort to both apply and report according to the [2006 IPCC Guidelines] method for separation between domestic and international emissions. Annex I Parties should also report emissions from international aviation and marine bunker fuels as two separate entries in their inventories.

25. Annex I Parties should clearly indicate how feedstocks and non-energy use of fuels have been accounted for in the inventory, in the energy or industrial processes sector, in accordance with the [2006 IPCC Guidelines].

26. If Annex I Parties account for effects of CO₂ capture from flue gases and subsequent CO₂ storage in their inventory, they should indicate in which source categories such effects are included, and provide transparent documentation of the methodologies used and the resulting effects.

Option 1 (original): As above.

Option 2: To delete this paragraph on the basis of it being a category in the 2006 IPCC Guidelines and that it will be in the CRF tables. (EU)

27. Emissions and removals should be reported at the most disaggregated level of each source/sink category, taking into account that a minimum level of aggregation may be required to protect confidential business and military information.

Completeness

28. Where methodological or data gaps in inventories exist, information on these gaps should be presented in a transparent manner. Annex I Parties should clearly indicate the sources and sinks not considered in their inventories but which are included in the [2006 IPCC Guidelines], and explain the reasons for such exclusion. Similarly, Annex I Parties should indicate the parts of their geographical area, if any, not covered by their inventory and explain the reasons for their exclusion. In addition, Annex I Parties should use the notation keys presented below to fill in the blanks in all the tables in the CRF.⁷ This approach facilitates assessment of the completeness of an inventory.

The notation keys are as follows:

- “NO” (not occurring) for activities or processes in a particular source or sink category that do not occur within a country;
- “NE” (not estimated) for existing emissions by sources and removals by sinks of greenhouse gases which have not been estimated. Where “NE” is used in an inventory for emissions or removals of CO₂, N₂O, CH₄, HFCs, PFCs or SF₆ the Annex I Party should indicate in both the NIR and the CRF completeness table why emissions or removals have not been estimated;⁸
- “NA” (not applicable) for activities in a given source/sink category that do not result emissions or removals of a specific gas. If categories in the CRF for which “NA” is applicable are shaded, they do not need to be filled in;
- “IE” (included elsewhere) for emissions by sources and removals by sinks of greenhouse gases estimated but included elsewhere in the inventory instead of the expected source/sink category. Where “IE” is used in an inventory, the Annex I Party should indicate, using the CRF completeness table, where in the inventory the emissions or removals from the displaced source/sink category have been included and the Annex I Party should explain such a deviation from the expected category;
- “C” (confidential) for emissions by sources and removals by sinks of greenhouse gases which could lead to the disclosure of confidential information, given the provisions of paragraph 27 above.

Option 1 (original): As above.

Option 2: The notation keys are as follows: (secretariat)

- “NO” (not occurring) for activities or processes [including recovery,] under a particular source or sink category that do not occur within a country; (secretariat)

- “NE” (not estimated) for ~~existing~~ activity data and/or emissions by sources and removals by sinks of GHGs which have not been estimated [but corresponding activity does occur within a country]. Where “NE” is used in an inventory to report emissions or removals of CO₂, N₂O, CH₄, HFCs, PFCs, SF₆ [or NF₃], the Annex I Party should indicate in both the NIR and the CRF completeness table why such emissions or removals have not been estimated;⁷ (secretariat)
- “NA” (not applicable) for activities under a given source/sink category that do not occur within the country but do not result in emissions or removals of a specific gas[, or when the 2006 IPCC Guidelines do not provide methodologies to estimate the emissions/removals]. If the cells for categories in the CRF tables for which “NA” is applicable are shaded, they do not need to be filled in; (secretariat/USA)
- “IE” (included elsewhere) for emissions by sources and removals by sinks of GHGs estimated but included elsewhere in the inventory instead of under the expected source/sink category. Where “IE” is used in an inventory, the Annex I Party should indicate, using the CRF completeness table, where in the inventory the emissions or removals for the displaced source/sink category have been included and the Annex I Party should explain such a deviation from the inclusion under the expected category[, especially if it is due to confidentiality]; (secretariat)
- “C” (confidential) for emissions by sources and removals by sinks of GHGs which could lead to the disclosure of confidential information, given the provisions of paragraph 27 above.[:]
- [“CI” (considered insignificant) – **placeholder** for definition of considered insignificant].

29. If Annex I Parties estimate and report emissions and removals from country-specific sources or sinks or of gases which are not part of the 2006 IPCC Guidelines, they should explicitly describe what source/sink categories or gases these are, as well as what methodologies, emission factors and activity data have been used for their estimation and provide the references for these data.

Option 1 (original): As above.

Option 2: Annex I Parties are encouraged to report emissions and removals for source or sink categories for which estimation methods are available in the 2006 IPCC Guidelines in the appendices, but for which it is not mandatory to estimate emissions and removals. Annex I Parties are encouraged to identify and to provide information in the NIR on additional sources of GHG emissions and to develop estimation methodologies for such sources. If Annex I Parties estimate and report emissions and removals for country-specific sources or sinks or of gases which are not part of the 2006 IPCC Guidelines, they should explicitly describe what source/sink categories or gases these are, as well as what methodologies, emission factors and activity data have been used for their estimation, provide references for these data and report the emissions and removals under the CRF categories other. However, it is not mandatory to estimate GHG emissions from sources for which no methodologies are provided in the 2006 IPCC Guidelines. (EU)

Key categories

30. Annex I Parties shall estimate and report the individual and cumulative percentage contributions from key categories to their national total, with respect to both level and trend. The emissions should be expressed in terms of CO₂ equivalents using the methods provided in the 2006 IPCC Guidelines. As indicated in paragraphs 41 and 47 below, this

⁷ Even if emissions are considered to negligible, Parties should either report the emission estimate, if calculated, or use the notation key “NE”.

information should be included in table 7 of the CRF as well as the NIR using tables [4.1] of the [2006 IPCC Guidelines] adapted to the level of category disaggregation that the Annex I Party used for determining its key categories.⁸

Verification

31. In accordance with the IPCC Guidelines, as well as for verification purposes, Annex I Parties should compare their national estimates of carbon dioxide emissions from fuel combustion with those estimates obtained using the IPCC reference approach, and report the results of this comparison in the CRF and NIR. Annex I Parties are also encouraged to report on any peer review of their inventory conducted nationally.

Option 1 (original): As above.

Option 2: [For the purposes of verification, Annex I Parties should continue to compare their national estimates of CO₂ emissions from fuel combustion with those estimates obtained using the IPCC reference approach, as contained in the Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories (hereinafter referred to as the Revised 1996 IPCC Guidelines), and to report the results of this comparison in the NIR. [Further, Annex I Parties are encouraged to continue reporting potential emissions of fluorinated gases, with a view to comparing them with actual fluorinated gas emissions.]] (secretariat)

31bis: [Annex I Parties that prepare their estimates of emissions and/or removals using higher-tier (tier 3) methods and/or models [should][shall] provide in the NIR verification information that demonstrates and justifies how tier 3 methods and models better reflect the national circumstances and that the use of those methods and models provides more accurate estimates when compared with estimates obtained using lower-tier methods.] (secretariat)

31ter: [In addition, Annex I Parties are encouraged to report on any peer review of their inventory conducted nationally.] (secretariat)

Uncertainties

32. Annex I Parties shall report, in the NIR, uncertainties estimated as indicated in paragraph 14 above, as well as methods used and underlying assumptions, with the purpose of helping to prioritize efforts to improve the accuracy of national inventories in the future and guide decisions on methodological choice. This information should be presented using tables 6.1 and 6.2 of the IPCC *Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories* adding the lines for the relevant LULUCF categories as indicated in section 5.2.5 of the *Good Practice Guidance for Land Use, Land-Use Change and Forestry*. In these tables, the term “national total” refers to the absolute value of emissions by sources minus the magnitude of removals by sinks. In addition, Annex I Parties should indicate in these tables those categories that have been identified as key categories in their inventory. If the methods used to estimate the level of uncertainty depart from the IPCC good practice guidance, these methods should be described.

Option 1 (original): As above.

Option 2: [Annex I Parties shall report, in the NIR, uncertainties estimated, as indicated in paragraph 14 above, as well as methods used and underlying assumptions, with the purpose of helping to prioritize efforts to improve the accuracy of their national inventories in the future and to guide decisions on methodological choice. This information should be

⁸ Table 4.1 of the 2006 IPCC Guidelines ~~7.1 of the IPCC *Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories* and table 5.4.1 of the *Good Practice Guidance for Land Use, Land-Use Change and Forestry*~~ should be used as the basis for preparing the key category analysis but does not need to be reported in the NIR.

presented using table [3.3] of the [2006 IPCC Guidelines]. ~~In these tables, the term “national total” refers to the absolute value of emissions by sources minus the magnitude of removals by sinks. In addition, Annex I Parties should indicate in that table those categories that have been identified as key categories in their inventory. If the methods used to estimate the level of uncertainty depart from the IPCC good practice guidance, these methods should be described.~~ (EU)

Recalculations

33. 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.

Option 1 (original): As above.

Option 2: 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 of the time series up to the year for which the recalculations are made. [Further, a discussion on the impact of the recalculations on the trend in emissions is to be provided in the NIR at the category, sector and national total level.] (secretariat)

34. Recalculations should be reported in the NIR, with explanatory information including justification for recalculations, and in the relevant CRF tables. Annex I Parties should also provide explanations for those cases in which they have not recalculated an estimate when such a recalculation is called for in the IPCC good practice guidance. Information on the procedures used for performing the recalculations, changes in the calculation methods, emission factors and activity data used, and the inclusion of sources or sinks not previously covered, should be reported with an indication of the relevant changes in each source or sink category where these changes have taken place. For key categories, Annex I Parties should include this information in the NIR, as indicated in paragraph 41 below.

Option 1 (original): As above.

Option 2: Recalculations should be reported in the NIR, including explanatory information and justification for the recalculations, and in the relevant CRF tables. ~~Annex I Parties should also provide explanations for those cases in which they have not recalculated an estimate when such a recalculation is called for in the IPCC good practice guidance. Information on the procedures used for performing the recalculations, on changes in the calculation methods, emission factors and activity data used, and on the inclusion of sources or sinks not previously covered should be reported, with an indication of the relevant changes in each source or sink category where these changes have taken place. For key categories, Annex I Parties should include this information in the NIR, as indicated in paragraph 41 below.]~~ (EU)

35. Annex I Parties should report any other changes in estimates of emissions and removals, regardless of magnitude, and clearly indicate the reason for the changes compared with previously submitted inventories, e.g., error correction, statistical or editorial changes or reallocation of categories, using the corresponding CRF table, as indicated in paragraph 47 below and outlined in the annex II to these guidelines.

Option 1 (original): As above.

Option 2: Annex I Parties should report any other changes to estimates of emissions and removals, ~~regardless of magnitude~~ and clearly indicate the reason for the changes compared with previously submitted inventories (e.g. error correction, statistical or editorial changes or reallocation of categories), using the corresponding CRF table, as indicated in paragraph 47 below and outlined in the annex II to these guidelines. [Small differences (e.g. due to rounding of estimates) should not be considered as recalculations.] (EU)

Quality assurance/quality control (QA/QC)

36. Annex I Parties shall report in the NIR on their QA/QC plan and give information on QA/QC procedures already implemented or to be implemented in the future.

Option 1 (original): As above.

Option 2: To delete this paragraph and streamline this with the new chapter on national systems. (EU)

[Higher-tier methods and models]

Placeholder from the secretariat: *It is proposed that a new chapter is established here to provide general guidance on the reporting requirements of Annex I Parties when using higher-tier methods and/or models to estimate emissions and/or removals. Text for this chapter will need to be determined on the basis of views of Parties on the report of the IPCC in relation to the expert meeting on the use of models and measurements in GHG inventories.*⁹

[Adjustments][Corrections]¹⁰ (EU)

37. Inventories are to be reported without ~~[adjustments]~~[corrections] relating, for example, to climate variations or trade patterns of electricity. If Annex I Parties, in addition, carry out such ~~[adjustments]~~[corrections] to inventory data, they should be reported separately and in a transparent manner, with clear indications of the method followed.

2. National inventory report

38. Annex I Parties shall submit to the COP, through the secretariat, an NIR containing detailed and complete information on their inventories. The NIR should ensure transparency and contain sufficiently detailed information to enable the inventory to be reviewed. This information should cover the entire time series, from the base year¹¹ to the latest inventory year, and any changes to previously submitted inventories.

Option 1 (original): As above.

Option 2: Annex I Parties shall submit to the COP, through the secretariat, an NIR containing detailed and complete information on their inventories. The NIR should ensure transparency and contain sufficiently detailed information to enable the inventory to be reviewed. This information should cover the [entire] time series, from the base year¹¹ to the latest inventory year, and any changes to previously submitted inventories. (EU)

⁹ In the report of the second workshop under the SBSTA work programme there is a list of items which could serve as a starting point when discussing the reporting requirements of Annex I Parties when using higher-tier methods and/or models (FCCC/SBSTA/2010/INF.10, para. 32)

¹⁰ The ~~adjustments~~ [corrections] referred to here relate, for example, to climate variations or trade patterns of electricity. They do not refer to ~~adjustments~~ [corrections] under Article 5, paragraph 2, of the Kyoto Protocol.

¹¹ According to the provisions of Article 4, paragraph 6, of the Convention and decisions 9/CP.2 and 11/CP.4, some Parties with economies in transition are allowed to use base years other than 1990, as mentioned in paragraph 8 above.

Placeholder: *Parties will have to decide if all years of the time series, from the base year to the latest inventory year, shall be reported, of if a subset of years is enough. If a subset of years is reported, do Parties still have to prepare the inventory for all years of the time series?*

39. Each year, an updated NIR shall be electronically submitted in its entirety to the COP, through the secretariat, in accordance with the relevant decisions of the COP; in instances where Annex I Parties have produced published hard copy versions of their NIR, they are also encouraged to submit copies to the secretariat.

Option 1 (original): As above.

Option 2: Each year, an updated NIR shall be electronically submitted in its entirety to the COP, through the secretariat, in accordance with the relevant decisions of the COP; ~~in instances where Annex I Parties have produced published hard copy versions of their NIR, they are also encouraged to submit copies to the secretariat.~~ (EU)

40. The NIR shall include annual inventory information, submitted in accordance with paragraph 38 above.

Option 1 (original): As above.

Option 2: The NIR [should be reported in accordance with the annotated outline contained in annex I to these guidelines.] ~~shall include annual inventory information, submitted in accordance with paragraph 38 above~~ (EU)

41. The NIR should include:

(a) Descriptions, references and sources of information of the specific methodologies, assumptions, emission factors and activity data, as well as the rationale for their selection. It also should include an indication of the level of complexity (IPCC tiers) applied and a description of any national methodology used by the Annex I Party, as well as information on anticipated future improvements. For key categories, an explanation should be provided if the recommended methods from the appropriate decision tree in the IPCC good practice guidance are not used. In addition, activity data, emission factors and related information should be documented in accordance with the IPCC good practice guidance.

(b) A description of the national key categories as indicated in paragraph 30,¹² including:

(i) Reference to the key category tables in the CRF;

(ii) Information on the level of category disaggregation used and its rationale;

(iii) Additional information relating to the methodology used for identifying key categories;

(c) With regard to possible double counting or non-counting of emissions, an indication in the corresponding sectoral part of the NIR:

(i) Whether feedstocks and non-energy use of fuels have been accounted for in the inventory, and if so, where they have been accounted for in the energy or industrial processes sector;

¹² The secretariat will also perform a standardized key source determination for all Parties, based on table 7.1 of the IPCC good practice guidance. Parties may also use this approach if it is consistent with the way they prepare their inventories.

- (ii) Whether CO₂ from biomass burning has been estimated and where it has been accounted for in the sectoral background data tables of the CRF (tables 5.A-5.F, and table 5(V));
- (iii) Whether emissions of CO₂ corresponding to atmospheric oxidation of CO, NMVOCs and CH₄ emissions from non-combustion and from non-biogenic processes, such as solvent use, coal mining and handling, venting and leakages of fossil fuels, have been accounted for in the inventory;
- (iv) Information on source or sink categories excluded or potentially excluded, including efforts to develop estimates for future submissions;
- (d) Information on how the effects of CO₂ capture from flue gases and subsequent CO₂ storage are accounted for in the inventory;
- (e) Information on uncertainties, as requested in paragraph 32 above;
- (f) Information on any recalculations relating to previously submitted inventory data, as requested in paragraphs 33 to 35 above, including changes in methodologies, sources of information and assumptions, as well as recalculations in response to the review process;
- (g) Information on changes from previous years, not related to recalculations, including the changes in methodologies, sources of information and assumptions, as well as changes in response to the review process;
- (h) Information on QA/QC as requested in paragraph 36 above, describing the QA/QC plan, and the QA/QC activities implemented for the entire inventory as well as for individual categories, in particular key categories, and the entire inventory performed internally, as well as on the external reviews conducted, if any. Key findings on the quality of the input data, methods, processing and archiving and how they have been addressed, should be described;
- (i) A description of the institutional arrangements for inventory preparation.

Option 1 (original): As above.

Option 2: To delete all of paragraph 41. (EU)

42. If any of the information required under paragraph 41 (a) to (h) above is provided in detail in the CRF, Annex I Parties should indicate in the NIR where in the CRF this information is provided.

Option 1 (original): As above.

Option 2: If any of the information required [in annex I to these guidelines]~~under paragraph 41 (a) to (h) above~~ is provided in detail in the CRF tables, Annex I Parties should indicate in the NIR where in the CRF tables this information is provided. (EU)

43. The NIR should be reported in accordance with the outline contained in the annex I to these guidelines, ensuring that all information requested in paragraph 41 above is included.

Option 1 (original): As above.

Option 2: To delete all of paragraph 43. (EU)

3. Common reporting format

44. The common reporting format (CRF) is designed to ensure that Annex I Parties report quantitative data in a standardized format and to facilitate comparison of inventory data and trends among Annex I Parties. Explanation of information of a qualitative

character should mainly be provided in the NIR rather than in the CRF tables. Such explanatory information should be cross-referenced to the specific chapter of the NIR.

Option 1 (original): As above.

Option 2: The common reporting format (CRF) tables is designed to ensure that Annex I Parties report quantitative data in a standardized format and to facilitate the comparison of inventory data and trends ~~among Annex I Parties~~. Explanation of information of a qualitative character should mainly be provided in the NIR rather than in the CRF tables. Such explanatory information should be cross-referenced to the specific chapter of the NIR. (EU)

45. Annex I Parties shall submit annually to the COP, through the secretariat, the information required in the CRF as contained in annex II to these guidelines. This information shall be electronically submitted on an annual basis in its entirety to the COP, through the secretariat, in accordance with the relevant decisions of the COP.

Option 1 (original): As above.

Option 2: Annex I Parties shall submit annually to the COP, through the secretariat, the information required in the CRF tables, as contained in annex II to these guidelines. This information shall be electronically submitted on an annual basis in its entirety to the COP, through the secretariat, in accordance with the relevant decisions of the COP. [Parties [shall][should] submit their CRF tables, generated by the CRF Reporter software, including its XML files, via the UNFCCC submission portal, with a view to facilitating the processing of the inventory information by the secretariat.]

46. The CRF is a standardized format for reporting estimates of greenhouse gas emissions and removals and other relevant information. The CRF allows for the improved handling of electronic submissions and facilitates the processing of inventory information and the preparation of useful technical analysis and synthesis documentation.

47. The CRF consists of:

- (a) Summary, sectoral and trend tables for all greenhouse gas emissions and removals;
- (b) Sectoral background data tables for reporting implied emission factors¹³ and activity data, including:
 - (i) IPCC worksheet 1-1 containing estimates of CO₂ emissions from fuel combustion using the IPCC reference approach and a table for comparing estimates under this reference approach with estimates under the sectoral approach, as well as providing explanations of any significant differences;¹⁴
 - (ii) Tables for reporting fossil fuel consumption for non-energy feedstocks, international bunkers and multilateral operations;
- (c) Tables for reporting, inter alia, key categories, recalculations and completeness of the inventory.

Option 1 (original): As above.

¹³ The sectoral background tables were designed to allow calculation of implied emission factors. These are top-down ratios between an Annex I Party's emission estimates and activity data at the level of aggregation given by the tables. The implied emission factors are intended solely for purposes of data comparison. They will not necessarily be the emission factors actually used in the original emission estimate, unless this was a simple multiplication based on the same aggregate activity data used to calculate the implied emission factor.

¹⁴ Detailed explanations should be included in the NIR.

Option 2: It is proposed that this entire paragraph be deleted. (EU)

48. [The CRF should be reported in accordance with the tables included in annex II to these guidelines, ensuring that all information requested in paragraph 47 above is included. In completing these tables Annex I Parties should:

Option 1 (original): As above.

Option 2: The submitted CRF tables should be reported in accordance with the tables included in annex II to these guidelines ~~ensuring that all information requested in paragraph 47 above is included~~. In completing the CRF tables, Annex I Parties should: (EU)

(a) Provide the full CRF for the latest inventory year and for those years for which any change in any sector has been made. For years where no changes are made, resubmission of full CRF tables is not necessary, but a reference should be made to the inventory submission in which the unchanged data were reported originally. Annex I Parties should ensure that a full and time-series consistent set of CRF tables is annually available for the entire time series from the base year onwards;

Option 1 (original): As above.

Option 2: Provide a full set of CRF tables for the [base year, 1990, 1995, 2000 and 2005] ~~the latest inventory year~~ and [subsequently] for [all years up to the latest inventory year] ~~those years for which any change in any sector has been made. For years where no changes are made, resubmission of full CRF tables is not necessary, but a reference should be made to the inventory submission in which the unchanged data were reported originally.~~ Annex I Parties should ensure that a full and time-series consistent set of CRF tables is annually available for [all the years mentioned above;] ~~time series from the base year onwards~~ (EU)

(b) Provide the CRF trend tables covering inventory years for the entire time series in one submission only, that is, in the CRF for the last inventory year;

Option 1 (original): As above.

Option 2: To delete item (b). (EU)

(c) Provide completeness tables in one submission only if the information applies to all years. If the information in these tables differs for each reported year, then either the tables or information on the specific changes must be provided for each year in the CRF;

Option 1 (original): As above.

Option 2: Provide completeness tables [for the latest inventory year] ~~in one submission~~ only, if the information applies to all years of the time series. If the information in those tables differs for each reported year, then either the tables or information on the specific changes must be provided for each year in the CRF tables;] (EU)

(d) Use the documentation boxes provided at the foot of the sectoral report and background data tables to provide cross-references to detailed explanations in the NIR, or any other information, as specified in those boxes.]

49. Annex I Parties should provide the information requested in the additional information boxes. Where the information called for is inappropriate because of the methodological tier used by the Annex I Party, the corresponding cells should be completed using the notation key "NA". In such cases, the Annex I Parties should cross-reference in the documentation box the relevant chapter in the NIR where equivalent information can be found.

50. Annex I Parties should use the notation keys, as specified in paragraph 28 above, in all tables of the CRF, to fill in the cells where no quantitative data are directly entered. Using the notation keys in this way facilitates the assessment of the completeness of an inventory. Specific guidance is provided on how notation keys should be used in each CRF table where qualitative information is required.

F. Record keeping

51. Annex I Parties should gather and archive all relevant inventory information for each year, including all disaggregated emission factors, activity data and documentation on how these factors and data were generated, including expert judgement where appropriate, and how they have been aggregated for reporting in the inventory. This information should allow reconstruction of the inventory by the expert review teams, inter alia. Inventory information should be archived from the base year and should include corresponding data on the recalculations applied. The “paper trail”, which can include spreadsheets or databases used to compile inventory data, should enable estimates of emissions and removals to be traced back to the original disaggregated emission factors and activity data. Also, relevant supporting documentation related to QA/QC implementation, uncertainty evaluation, or key category analyses should be kept on file. This information should also facilitate the process of clarifying inventory data in a timely manner when the secretariat prepares annual compilations of inventories or assesses methodological issues. Annex I Parties are encouraged to collect and gather the information in a single national inventory facility or, at least, to keep the number of facilities to a minimum.

Option 1 (original): As above.

Option 2: Annex I Parties should gather and archive all relevant inventory information for each year [of the reported time series], including all disaggregated emission factors and activity data, and documentation on how those factors and data were generated, including expert judgement where appropriate, and how they have been aggregated for their reporting in the inventory. This information should allow for the reconstruction of the inventory by the expert review teams. Inventory information should be archived from the base year and should include corresponding data on the recalculations applied. The ‘paper trail’, which can include spreadsheets or databases used to compile inventory data, should enable estimates of emissions and removals to be traced back to the original disaggregated emission factors and activity data. Also, relevant supporting documentation related to QA/QC implementation, uncertainty evaluation, or key category analyses should be kept on file. This information should facilitate the process of clarifying inventory data in a timely manner when the secretariat prepares annual compilations of inventories or assesses methodological issues. ~~Annex I Parties are encouraged to collect and gather the information in a single national inventory facility or, at least, to keep the number of facilities to a minimum.~~ (EU)

Option 3: To delete this chapter and ensure that record keeping requirements are included under the new chapter on national systems. (secretariat)

G. Systematic updating of the guidelines

52. These UNFCCC Annex I reporting guidelines on annual inventories shall be reviewed and revised, as appropriate, in accordance with decisions of the COP on this matter.

H. Language

53. The national inventory report shall be submitted in one of the official languages of the United Nations. Annex I Parties are also encouraged to submit, where relevant, a translation of the national inventory report into English.

Option 1: As above.

Option 2: The NIR shall be submitted in one of the official languages of the United Nations. Annex I Parties ~~[should be also encouraged~~ submit[, where relevant,] an English translation of the NIR[to facilitate its use by the expert review teams].

Table 1 [2007][1995]

Intergovernmental Panel on Climate Change global warming potential values^a based on the effects of greenhouse gases over a 100-year time horizon

Placeholder: The table below is to be completed once accounting issues concerning GWPs and F-gas species are agreed by Parties in other processes under the Convention.

<i>Greenhouse gas</i>	<i>Chemical formula</i>	<i>[2007][1995] IPCC global warming potentials</i>
Carbon dioxide	CO ₂	1
Methane	CH ₄	21
Nitrous oxide	N ₂ O	310
Hydrofluorocarbons (HFCs)		
HFC-23	CHF ₃	11 700
HFC-32	CH ₂ F ₂	650
HFC-41	CH ₃ F	150
HFC-43-10mee	C ₅ H ₂ F ₁₀	1 300
HFC-125	C ₂ HF ₅	2 800
HFC-134	C ₂ H ₂ F ₄ (CHF ₂ CHF ₂)	1 000
HFC-134a	C ₂ H ₂ F ₄ (CH ₂ FCF ₃)	1 300
HFC-152a	C ₂ H ₄ F ₂ (CH ₃ CHF ₂)	140
HFC-143	C ₂ H ₃ F ₃ (CHF ₂ CH ₂ F)	300
HFC-143a	C ₂ H ₃ F ₃ (CF ₃ CH ₃)	3 800
HFC-227ea	C ₃ HF ₇	2 900
HFC-236fa	C ₃ H ₂ F ₆	6 300
HFC-245ca	C ₃ H ₃ F ₅	560
Perfluorocarbons		
Perfluoromethane	CF ₄	6 500
Perfluoroethane	C ₂ F ₆	9 200
Perfluoropropane	C ₃ F ₈	7 000
Perfluorobutane	C ₄ F ₁₀	7 000
Perfluorocyclobutane	c-C ₄ F ₈	8 700
Perfluoropentane	C ₅ F ₁₂	7 500
Perfluorohexane	C ₆ F ₁₄	7 400
Sulphur hexafluoride (SF₆)		

<i>Greenhouse gas</i>	<i>Chemical formula</i>	<i>[2007][1995] IPCC global warming potentials</i>
Sulphur hexafluoride	SF ₆	23 900

^a As provided by the Intergovernmental Panel on Climate Change in its [\[Fourth\]](#)[Second] Assessment Report.

Annex I

III. ~~Structure of the national inventory report~~ [Annotated outline of the national inventory report]

Option 1: Leave this entire Annex I as is.

Option 2: to replace this chapter with the annotated outline of the NIR. (EU, secretariat)

Note from the secretariat: the annotated outline has been revised for the purposes of this SBSTA work programme. It is included on page 90.

EXECUTIVE SUMMARY

ES.1. Background information on greenhouse gas inventories and climate change (e.g., as it pertains to the national context, to provide information to the general public)

ES.2. Summary of national emission and removal related trends

ES.3. Overview of source and sink category emission estimates and trends

ES.4. Other information (e.g., indirect greenhouse gases)

Chapter 1: INTRODUCTION

1. Background information on greenhouse gas inventories and climate change (e.g., as it pertains to the national context, to provide information to the general public)

1.2. A description of the institutional arrangement for inventory preparation

1.3. Brief description of the process of inventory preparation (e.g., data collection, data processing, data storage)

1.4. Brief general description of methodologies and data sources used

1.5. Brief description of key source categories

1.6. Information on the QA/QC plan including verification and treatment of confidentiality issues where relevant

1.7. General uncertainty evaluation, including data on the overall uncertainty for the inventory totals

1.8. General assessment of the completeness (with reference to annex 5 of the structure of the national inventory report (NIR))

Chapter 2: TRENDS IN GREENHOUSE GAS EMISSIONS

Information should be provided in this chapter that provides an overview of emission trends, but it is not necessary to repeat information that is provided in the sector chapters and in the common reporting format (CRF) trend tables.

2. Description and interpretation of emission trends for aggregated greenhouse gas emissions

2.2. Description and interpretation of emission trends by gas

- 2.3. Description and interpretation of emission trends by source category
- 2.4. Description and interpretation of emission trends for indirect greenhouse gases and SO₂

Chapters 3–9: e.g. *SECTOR NAME (CRF sector number)*

The structure outlined below should be followed in each of the following sectoral chapters. The information should be reported following the IPCC sectors.

3. Overview of sector (e.g., quantitative overview and description)
- 3.2. Source category (CRF category number)

For each IPCC source category (i.e., at the level of the table Summary 1.A of the CRF, or the level at which IPCC methods are described, or at the level that the Annex I Party estimates its greenhouse gas emissions) the following information should be provided:

- 3.2.1. Source category description (e.g., characteristics of sources)
- 3.2.2. Methodological issues (e.g., choice of methods/activity data/emission factors, assumptions, parameters and conventions underlying the emission and removal estimates – the rationale for their selection, any specific methodological issues (e.g. description of national methods))
- 3.2.3. Uncertainties and time-series consistency
- 3.2.4. Source-specific QA/QC and verification, if applicable
- 3.2.5. Source-specific recalculations, if applicable, including changes made in response to the review process
- 3.2.6. Source-specific planned improvements, if applicable (e.g., methodologies, activity data, emission factors, etc.), including those in response to the review process

Annex I Parties may report some of the information requested above in an aggregate form for some/several source categories if the same methodology, activity data and/or emission factors are used, in order to avoid repetition of information. For key categories, the information should be detailed in order to enable a thorough review of the inventory.

Chapter 3: ENERGY (CRF sector 1)

In addition, the energy information should include the following:

Fuel combustion (CRF 1.A), including detailed information on:

- Comparison of the sectoral approach with the reference approach
- International bunker fuels
- Feedstocks and non-energy use of fuels
- CO₂ capture from flue gases and subsequent CO₂ storage
- Country-specific issues

Fugitive emissions from solid fuels and oil and natural gas (CRF 1.B)

Chapter 4: INDUSTRIAL PROCESSES (CRF sector 2)

Chapter 5: SOLVENT AND OTHER PRODUCT USE (CRF sector 3)

Chapter 6: AGRICULTURE (CRF sector 4)

Chapter 7: LULUCF (CRF sector 5)

4. *In addition, the LULUCF information should include the following:*

- *Information on approaches used for representing land areas and on land-use databases used for the inventory preparation;*
- *Land-use definitions and the classification systems used and their correspondence to the LULUCF categories.*

Chapter 8: WASTE (CRF sector 6)

Chapter 9: OTHER (CRF sector 7) (if applicable)

In addition, information previously included in the additional information and the documentation boxes of the CRF version for the trial period (FCCC/CP/1999/7) should be included and expanded in the NIR, where relevant, as specified in the appendix to this proposed structure.

Chapter 10: RECALCULATIONS AND IMPROVEMENTS

Information should be provided in this chapter that provides an overview of recalculations and improvements made to the inventory, but it is not necessary to repeat information that is provided in the sector chapters, specifically the category-specific information to be provided, and in particular, Annex I Parties should cross-reference information provided in the sector chapters.

- 10.1. Explanations and justifications for recalculations
- 10.2. Implications for emission levels
- 10.3. Implications for emission trends, including time series consistency
- 10.4. Recalculations, including in response to the review process, and planned improvements to the inventory (e.g., institutional arrangements, inventory preparation)

REFERENCES

ANNEXES TO THE NATIONAL INVENTORY REPORT

Annex 1: Key categories

- Description of methodology used for identifying key categories
- Reference to the key category tables in the CRF

- Information on the level of disaggregation
- Tables 7.A1–7.A3 of the IPCC good practice guidance¹⁵

Annex 2: Detailed discussion of methodology and data for estimating CO₂ emissions from fossil fuel combustion

Annex 3: Other detailed methodological descriptions for individual source or sink categories (where relevant)

Annex 4: CO₂ reference approach and comparison with sectoral approach, and relevant information on the national energy balance

Annex 5: Assessment of completeness and (potential) sources and sinks of greenhouse gas emissions and removals excluded

Annex 6: Additional information to be considered as part of the NIR submission (where relevant) or other useful reference information

Annex 7: Tables 6.1 and 6.2 of the IPCC good practice guidance¹⁶

Annex 8: Other annexes - (Any other relevant information – optional).

Annotated outline of the National Inventory Report

Introduction

The national inventory report (NIR), as established by decision 18/CP.8, is one element of the [annual submission] that is required to be submitted to the UNFCCC by Annex I Parties to the Convention on 15 April of each year. The other elements of this submission include the reporting of greenhouse gas emissions by sources and removals by sinks in the common reporting format (CRF) tables, and any other additional information in support of this submission.

The outline of the NIR, as set out in the *updated UNFCCC Annex I reporting guidelines on annual inventories following incorporation of the provisions of decision 14/CP.11* (hereinafter referred to as the UNFCCC Annex I reporting guidelines), [is the basis of this annotated outline]. [The SBSTA work programme on the revision of the UNFCCC Annex I reporting guidelines requested the secretariat to revise the annotated outline of the NIR to streamline guidance on reporting under the Convention.]

This NIR outline and its annotations are provided herewith as the annotated outline of the national inventory report. Annotations are provided on the NIR outline that encompass guidance inscribed in the NIR outline set out in the [UNFCCC Annex I reporting guidelines].

¹⁵ This item has been added for consistency with the provisions in paragraph 30 of these guidelines.

¹⁶ This item has been added for consistency with the provisions in paragraphs 32 and 41 (f) of these guidelines.

An Outline and General Structure of the NIR

EXECUTIVE SUMMARY

ES.1. Background information on greenhouse gas inventories and climate change (e.g., as it pertains to the national context, to provide information to the general public)

ES.1.1 Background information on climate change (e.g. as it pertains to national context)

ES.1.2 Background information on greenhouse gas inventories

ES.2 Summary of national emission and removal related trends

ES.2.1 GHG inventory

ES.3. Overview of source and sink category emission estimates and trends

ES.3.1 GHG inventory

ES.4. Other information (e.g., indirect greenhouse gases)

Chapter 1: Introduction

1.1. Background information on greenhouse gas inventories and climate change (e.g., as it pertains to the national context, to provide information to the general public)

1.1.1. Background information on climate change (e.g. as it pertains to national context)

1.1.2. Background information on greenhouse gas inventories

1.2. A description of the [national system][national inventory system]

1.2.1. Institutional, legal and procedural arrangements [for planning, preparing and managing] an [annual submission][annual inventory submission]

1.2.2. Overview of inventory planning, preparation and management

1.2.3. Quality assurance, quality control and verification plan

1.2.4. Changes in the national system since previous [annual submission][annual inventory submission]

1.3. Inventory preparation

1.3.1. GHG inventory

1.3.2. Data collection, processing and storage

1.3.3. Quality assurance/quality control (QA/QC) procedures, verification and extensive review of GHG inventory

1.4. Brief general description of methodologies and data sources used

1.4.1. GHG inventory

1.4.2. Overview of used higher-tier methods and/or models

1.5. Brief description of key categories

1.5.1. GHG inventory (including and excluding LULUCF)

- 1.6. Information on QA/QC and verification activities undertaken, including the treatment of confidentiality issues where relevant
 - 1.6.1. QA/QC procedures (i.e. applied in this submission and results)
 - 1.6.2. Verification activities (i.e. undertaken in this submission)
 - 1.6.3. Treatment of confidentiality issues
- 1.7. General uncertainty evaluation, including data on the overall uncertainty for the inventory totals
 - 1.7.1. GHG inventory (e.g. assumptions, expert judgement, data)
- 1.8. General assessment of the completeness
 - 1.8.1. GHG inventory [in terms of activities (categories), gases, years and territory]

Chapter 2: Trends in greenhouse gas emissions

- 2.1. Description and interpretation of emission trends for aggregated greenhouse gas emissions
- 2.2. Description and interpretation of emission trends by gas
- 2.3. Description and interpretation of emission trends by category
- 2.4. Description and interpretation of emission trends for indirect greenhouse gases (CO, NO_x, NMVOC) and SO₂

Chapters 3–6: (e.g. SECTOR NAME (CRF sector number))

- X.1. Overview of sector (e.g., description and quantitative overview, including analysis of emission trends)
- X.2. Category (CRF category number)
 - X.2.1. Category description (e.g., characteristics of sources)
 - X.2.2. Methodological issues (e.g., choice of methods/activity data/emission factors **such as the use of emissions trading data, higher-tier methods** and/models, assumptions, parameters and conventions underlying the emission and removal estimates – the rationale for their selection, use of higher-tier methods and/or models, any specific methodological issues (e.g. description of national methods))
 - X.2.3. Uncertainties and time-series consistency
 - X.2.4. Category-specific QA/QC and verification, if applicable
 - X.2.5. Category-specific recalculations, if applicable, including changes made in response to the review process **[and impact on emission trend]**
 - X.2.6. Category-specific planned improvements, if applicable (e.g., methodologies, activity data, emission factors, etc.), including **[tracking of those identified in the review process]**

Chapter 3: Energy (CRF sector 1)

- 3.1. Overview of sector (e.g., quantitative overview and description)
- 3.2. Fuel combustion (CRF 1.A), including detailed information on

~~3.2.1 Comparison of the sectoral approach with the reference approach~~

3.2.2 International bunker fuels

3.2.3 Feedstocks and non-energy use of fuels

~~3.2.4 CO₂ capture from flue gases and subsequent CO₂ storage, if applicable~~

3.2.5 Country-specific issues

3.2.6 Category (CRF category number)

3.2.6.1 Category description (e.g., characteristics of sources)

3.2.6.2 Methodological issues (e.g., choice of methods/activity data/emission factors such as the use of emissions trading data, higher-tier methods and/models, assumptions, parameters and conventions underlying the emission and removal estimates – the rationale for their selection, any specific methodological issues (e.g. description of national methods))

3.2.6.3 Uncertainties and time-series consistency

3.2.6.4 Category-specific QA/QC and verification, if applicable

3.2.6.5 Category-specific recalculations, if applicable, including changes made in response to the review process and impact on emission trend

3.2.6.6 Category-specific planned improvements, if applicable (e.g., methodologies, activity data, emission factors, etc.), including tracking of those identified in the review process

3.3. Fugitive emissions from solid fuels and oil and natural gas (CRF 1.B)

3.3.1. Category (CRF category number)

3.3.1.1. Category description (e.g., characteristics of sources)

3.3.1.2. Methodological issues (e.g., choice of methods/activity data/emission factors such as the use of emissions trading data, higher-tier methods and/models, assumptions, parameters and conventions underlying the emission and removal estimates – the rationale for their selection, any specific methodological issues (e.g. description of national methods))

3.3.1.3. Uncertainties and time-series consistency

3.3.1.4. Category-specific QA/QC and verification, if applicable

3.3.1.5. Category-specific recalculations, if applicable, including changes made in response to the review process and impact on emission trend

3.3.1.6. Category-specific planned improvements, if applicable (e.g., methodologies, activity data, emission factors, etc.), including tracking of those identified in the review process

3.4. CO₂ transport and storage (CRF 1.C)

3.4.1. Category (CRF category number)

3.4.1.1. Category description (e.g., characteristics of sources)

3.4.1.2. Methodological issues (e.g., choice of methods/activity data/emission factors such as the use of emissions trading data, higher-tier methods and/models, assumptions, parameters and conventions underlying the emission and removal estimates – the rationale for their selection, any specific methodological issues (e.g. description of national methods))

- 3.4.1.3. Uncertainties and time-series consistency
- 3.4.1.4. Category-specific QA/QC and verification, if applicable
- 3.4.1.5. Category-specific recalculations, if applicable, including changes made in response to the review process and impact on emission trend
- 3.4.1.6. Category-specific planned improvements, if applicable (e.g., methodologies, activity data, emission factors, etc.), including tracking of those identified in the review process

Chapter 4: Industrial processes and product use (CRF sector 2)

- 4.1. Overview of sector (e.g., quantitative overview and description)
- 4.2. Category (CRF category number)
 - 4.2.1. Category description (e.g., characteristics of sources)
 - 4.2.2. Methodological issues (e.g., choice of methods/activity data/emission factors such as the use of emissions trading data, higher-tier methods and/models, assumptions, parameters and conventions underlying the emission and removal estimates – the rationale for their selection, any specific methodological issues (e.g. description of national methods))
 - 4.2.3. Uncertainties and time-series consistency
 - 4.2.4. Category-specific QA/QC and verification, if applicable
 - 4.2.5. Category-specific recalculations, if applicable, including changes made in response to the review process and impact on emission trend
 - 4.2.6. Category-specific planned improvements, if applicable (e.g., methodologies, activity data, emission factors, etc.), including tracking of those identified in the review process

Placeholder: *Depending on outcome of accounting rules from LULUCF the annotated outline of the NIR with respect to AFOLU may need to be revised to provide for specific information required to be reported.*

Chapter 5: Agriculture, forestry and other land use (CRF sector 3)

- 5. Overview of sector (e.g., quantitative overview and description)
 - 5.2. Category (Agriculture) (CRF category number)
 - 5.2.1. Category description (e.g., characteristics of sources)
 - 5.2.2. Information on use of higher-tier methods and/or models
 - 5.2.3. Methodological issues (e.g., choice of methods/activity data/emission factors, assumptions, parameters and conventions underlying the emission and removal estimates – the rationale for their selection, any specific methodological issues (e.g. description of national methods))
 - 5.2.4. Uncertainties and time-series consistency
 - 5.2.5. Category-specific QA/QC and verification, if applicable

5.2.6. Category-specific recalculations, if applicable, including changes made in response to the review process and impact on emission trend

5.2.7. Category-specific planned improvements, if applicable (e.g., methodologies, activity data, emission factors, etc.), including tracking of those identified in the review process

5.3. **Category (Forestry and other land use) (CRF category number)**

5.3.1. Description (e.g., characteristics of category)

5.3.2. **Information on use of higher-tier methods and/or models**

5.3.3. Information on approaches used for representing land areas and on land-use databases used for the inventory preparation

5.3.4. Land-use definitions and the classification systems used and their correspondence to the LULUCF categories (e.g. land use and land-use change matrix)

5.3.5. Methodological issues (e.g., choice of methods/activity data/emission factors, assumptions, parameters and conventions underlying the emission and removal estimates – the rationale for their selection, any specific methodological issues (e.g. description of national methods))

5.3.6. Uncertainties and time-series consistency

5.3.7. Category-specific QA/QC and verification, if applicable

5.3.8. Category-specific recalculations, if applicable, including changes made in response to the review process and impact on emission trend

5.3.9. Category-specific planned improvements, if applicable (e.g., methodologies, activity data, emission factors, etc.), including those in response to the review process

Chapter 6: Waste (CRF sector 4)

6. Overview of sector (e.g., quantitative overview and description)

6.2. Category (CRF category number)

6.2.1. Category description (e.g., characteristics of sources)

6.2.2. **Methodological issues (e.g., choice of methods/activity data/emission factors such as the use of emissions trading data, higher-tier methods and/models,** assumptions, parameters and conventions underlying the emission and removal estimates – the rationale for their selection, any specific methodological issues (e.g. description of national methods))

6.2.3. Uncertainties and time-series consistency

6.2.4. Category-specific QA/QC and verification, if applicable

6.2.5. Category-specific recalculations, if applicable, including changes made in response to the review process

6.2.6. Category-specific planned improvements, if applicable (e.g., methodologies, activity data, emission factors, etc.), including those in response to the review process

Chapter 7: Other (CRF sector 5) (if applicable)

Chapter 8: Indirect CO₂ and N₂O emissions

- 8.1 Description of sources of indirect emissions in GHG inventory
- 8.2 Methodological issues (e.g., choice of methods/activity data/emission factors, assumptions, parameters and conventions underlying the emission and removal estimates – the rationale for their selection, any specific methodological issues (e.g. description of national methods))
- 8.3 Uncertainties and time-series consistency
- 8.4 Category-specific QA/QC and verification, if applicable
- 8.5 Category-specific recalculations, if applicable, including changes made in response to the review process and impact on emission trend
- 8.6 Category-specific planned improvements, if applicable (e.g., methodologies, activity data, emission factors, etc.), including tracking of those identified in the review process

Chapter 9: Recalculations and improvements

- 9.1 Explanations and justifications for recalculations
 - 9.1.1 GHG inventory
- 9.2 Implications for emission levels
 - 9.2.1 GHG inventory
- 9.3 Implications for emission trends, including time series consistency
 - 9.3.1 GHG inventory
- 9.4 Recalculations, including in response to the review process
 - 9.4.1 GHG inventory
- 9.5 Planned improvements, including in response to review process

REFERENCES

ANNEXES TO THE NATIONAL INVENTORY REPORT

Annex 1: Key categories

- Description of methodology used for identifying key categories.
- Reference to the key category tables in the CRF.
- Information on the level of disaggregation
- Table [4.1] of the [2006 IPCC guidelines]

Annex 2: Assessment of uncertainty

- Description of methodology used for identifying uncertainties.
- Table 3.3 of the 2006 IPCC Guidelines

Annex 3: Assessment of completeness and (potential) sources and sinks of greenhouse gas emissions and removals excluded for the [annual submission][annual inventory submission]

Annex 4: Detailed discussion of methodology and data for estimating CO₂ emissions from fossil fuel combustion

Annex 5: Other detailed methodological descriptions for individual source or sink categories, [including those used in higher-tier methods and/or models]

A.3.X (sector or category name)

Annex 6: Relevant information on the national energy balance

Annex 7: [Other annexes] (Any additional information to be considered as part of the [annual submission][annual inventory submission] or other useful reference information)

Annotated Outline of the NIR**EXECUTIVE SUMMARY**

ES.1. Background information on greenhouse gas inventories and climate change (e.g., as it pertains to the national context, to provide information to the general public)

ES.1.1 Background information on climate change (e.g. as it pertains to national context)

ES.1.2 Background information on greenhouse gas inventories

ES.2. Summary of national emission and removal related trends

ES.2.1 GHG inventory

ES.3. Overview of source and sink category emission estimates and trends

ES.3.1 GHG inventory

ES.4. Other information (e.g., indirect greenhouse gases)

Chapter 1: INTRODUCTION

The reporting requirements that underpin the [annual submission][annual inventory submission] due under the Convention with respect to [national systems][national inventory systems] concern the general and specific functions of this system as regards inventory planning, preparation and management

Parties shall report information as set out in paragraphs [17bis – 17novies] of the UNFCCC Annex I reporting guidelines.

Additional information on the [national system][national inventory system] can be provided in annex 7 of the NIR (e.g. QA/QC plan, output from the implementation of QA/QC procedures (e.g. QC checklists), diagrams, etc).

Parties may wish to report information on any change in its [national system][national inventory system] in chapter 1.2.4 of this NIR outline. Again, additional information on the change to a national system can be provided in annex 7 of the NIR (e.g. diagrams).

In addition, the secretariat provides in annex-A of the annotated NIR a checklist, and supplementary guidance, for Parties to use in order to prepare information for this chapter of the NIR.

1.1. Background information on greenhouse gas inventories and climate change (e.g., as it pertains to the national context, to provide information to the general public)

1.1.1. Background information on climate change (e.g. as it pertains to national context)

1.1.2. Background information on greenhouse gas inventories

1.2. A description of the [national system][national inventory system]

1.2.1. Institutional, legal and procedural arrangements [for planning, preparing and managing] an [annual submission][annual inventory submission]

Placeholder: *the annotation below will need to be revised once a decision has been established to set out requirements for [national systems][national inventory system], even though the annotated draft does suggest text in this regard.*

Paragraph [XX] of the [decision XX/CP.X] requires an Annex I Party to establish and maintain institutional, legal and procedural arrangements necessary to perform the functions for national systems. Annex I Parties are therefore required to report information on the arrangements between government agencies and other entities responsible for the performance of all functions of the national system. Further, paragraph 10(b) of the annex to decision 19/CMP.1 requires that the national system comprises staff with technical competence for inventory development, paragraph 10(c) of the annex to decision 19/CMP.1 requires a Party to designate a single national entity with overall responsibility for the national inventory, and paragraph 10(e) of the annex to decision 19/CMP.1 requires that the national system is able to provide information necessary to meet reporting requirements defined in the guidelines under Article 7.

Parties may wish to provide in this chapter information that adequately describes the institutional, legal and procedural arrangements that are to be reported, along with diagrams and tables that depict these arrangements.

Parties may wish to report information on any change to this aspect of the institutional arrangements / national system, in accordance with the Kyoto reporting guidelines (decision 15/CMP.1), in chapter 13 of this NIR outline. Again, additional information on the change to institutional arrangements / national system can be provided in annex 6 of the NIR (e.g. diagrams).

1.2.2. Overview of inventory planning, preparation and management

Placeholder: *the annotation below will need to be revised once a decision has been established to set out requirements for [national systems][national inventory system], even though the annotated draft does suggest text in this regard.*

Paragraph 10(d) of the annex to decision 19/CMP.1 requests that a national system is able to prepare national inventories and supplementary information in a timely manner in accordance with Article 5 and Article 7, paragraphs 1 and 2. Further, **paragraph 10(b) of the annex to decision 19/CMP.1** requests that a Party ensures sufficient capacity for timely performance of the functions of the national system, including data collection and arrangements for technical competence of staff. With respect to inventory planning, specific requirements of Annex I Parties are to provide contact details of the single national entity with overall responsible for the national inventory (**paragraph 12(a) of the annex to decision 19/CMP.1**); define and allocate specific responsibilities in the inventory development process, including specifying roles of, and cooperation between, government agencies and other entities involved in the preparation of the inventory (**paragraph 12(c) of the annex to decision 19/CMP.1**); elaborate a QA/QC plan that describes specific QC procedures, facilitate the overall QA procedures, and establish quality objectives (**paragraph 12(d) of the annex to decision 19/CMP.1**); and establish a process for consideration and approval of the inventory (**paragraph 12(e) of the annex to decision 19/CMP.1**). Further, Annex I Parties are required, in the context of inventory planning, to consider ways to improve the quality of the inventory using outputs from QA/QC procedures, Article 8 expert review and other reviews (**paragraph 13 of the annex to decision 19/CMP.1**).

Parties may wish to explore providing not only qualitative information on these specific functional requirements of the guidelines for national regarding inventory planning, but to complement this information with: diagrams and/or flow charts that depict the arrangements, roles and responsibilities and interactions between actors on this specific function of the national system; summary information on the correspondence of the QA/QC plan, key category analysis and the uncertainty analysis to the inventory improvement plan and subsequent planning activities. Some of these diagrams or more detailed qualitative information could be included in annex 6 of the NIR.

*Parties may wish to report information on any change to this aspect of the national system, in accordance with the Kyoto reporting guidelines (**decision 15/CMP.1**), in chapter 13 of this NIR outline. Again, additional information on the change to a national system can be provided in annex 6 of the NIR (e.g. diagrams).*

As to the requirements of the guidelines on national systems (**decision 19/CMP.1**) in relation to inventory preparation, **paragraph 14 of the annex to decision 19/CMP.1** lists specific requirements of Annex I Parties on: identify key categories following the IPCC good practice guidance methods (superseded by the method prescribed by the IPCC good practice guidance for LULUCF); preparation of estimates using methods described in the Revised 1996 IPCC guidelines, as elaborated by the IPCC good practice guidance, and ensure that appropriate methods are used to estimate emissions from key categories; collect sufficient activity data, process information and emission factors for carriage of selected methods; preparation of quantitative estimates of uncertainty for each category and for the inventory in total,

following the IPCC good practice guidance; perform recalculations in accordance with the IPCC good practice guidance; compile a national inventory in accordance with Article 7, paragraph 1, of the Kyoto Protocol; and implement general QC procedures in accordance with its QA/QC plan following the IPCC good practice guidance.

Further, **paragraph 15 of the annex to decision 19/CMP.1** requests that Parties consider: applying category-specific QC procedures for key categories and for categories in which significant methodological and/or data revisions have occurred, in accordance with the IPCC good practice guidance; implementing QA (i.e. a basic review by staff not directly involved) of the inventory before it is submitted; implementing a more extensive review of the inventory for key categories and categories for which significant methodological and/or data revisions have occurred; and re-evaluate the inventory planning process based on the outcome of the abovementioned 2 reviews and a period internal review of the inventory preparation process.

As to the requirements of the guidelines on national systems (**decision 19/CMP.1**) in relation to inventory management, **paragraph 16 (a) of the annex to decision 19/CMP.1** requires Annex I Parties to: archive inventory information, including disaggregated emission factors, activity data and documentation on the on these; internal documentation on QA/QC procedures, external and internal reviews; documentation on key categories and key category analysis; and planned inventory improvements. Further, **paragraph 17 of the annex to decision 19/CMP.1** states that Annex I Parties should archive all of the above in a central location.

Parties may wish to explore providing not only qualitative information on these specific functional requirements of national systems regarding inventory preparation and management, but to complement this information with: diagrams and/or flow charts that depict the arrangements and interactions between actors within the national system; and process and procedures for preparing and managing a GHG inventory and the supplementary information required under Article 7, paragraph 1 (i.e. KP-LULUCF, including ensuring that areas of land and land-use change are identifiable). Some of these diagrams or more detailed qualitative information could be included in the annex 6 of the NIR.

*Parties may wish to report information on any change to this aspect of the national system, in accordance with the Kyoto reporting guidelines (**decision 15/CMP.1**), in chapter 13 of this NIR outline. Again, additional information on the change to a national system can be provided in annex 6 of the NIR (e.g. diagrams)*

1.2.3. *Quality assurance, quality control and verification plan*

Placeholder: *the annotation below will need to be filled once a decision has been established to set out requirements for [national systems][national inventory system] as regards QA/QC, even though the annotated draft does suggest text in this regard.*

{to be completed}

1.2.4. **Changes in the national system since previous [annual submission][annual inventory submission]**

Placeholder: *the annotation below will need to be revised once a decision has been established to set out requirements for [national systems][national inventory system], even though the annotated draft does suggest text in this regard.*

Paragraph 21 of the annex to decision 15/CMP.1 requires Parties to report on any changes to its national system when compared to the previous submission.

Parties may wish to explore providing the required information as a list and complemented with a description and explanation on the change(s) to the national system when compared to the previous submission. Further, Parties, where appropriate, may wish to explore complementing the description of the change with a diagram or flow chart. Parties may consider providing more detailed information of diagrams in annex 6 of the NIR.

Parties may wish to provide more detailed information in this chapter on data collection, processing and storage; rationale of choice of methodology; uncertainty analysis; and QA/QC. Annex I Parties may also consider to report here on activities associated with the review of availability of data to improve the completeness of the GHG and the KP-LULUCF inventories.

Parties may wish to report information on any change to this aspect of the national system, in accordance with the Kyoto reporting guidelines (decision 15/CMP.1), in chapter 13 of this NIR outline. Again, additional information on the change to a national system can be provided in annex 6 of the NIR (e.g. diagrams)

-
- 1.3. Inventory preparation
 - 1.3.1. GHG inventory
 - 1.3.2. Data collection, processing and storage
 - 1.3.3. Quality assurance/quality control (QA/QC) procedures, verification and extensive review of GHG inventory
 - 1.4. Brief general description of methodologies and data sources used
 - 1.4.1. GHG inventory
 - 1.4.2. Overview of used higher-tier methods and/or models

Annex I Parties should provide specific information on its use of higher-tier methods and/or models in the inventory. **Placeholder:** *[Annex I Parties should also use the checklist in I of this annotated outline of the NIR as a basis for reporting..*

-
- 1.5. Brief description of key categories
 - 1.5.1. GHG inventory (including and excluding LULUCF)

The UNFCCC Annex I reporting guidelines require Annex I Parties to identify key categories, in line with the methodology of the 2006 IPCC Guidelines. **Placeholder:** *[Further, the UNFCCC Annex I reporting guidelines require*

information on the key categories to be reported in the NIR and also CRF table 7.]]

Parties may wish to include in this chapter a discussion on the outcomes of the key category analysis and how this analysis is used to prioritise improvement of the GHG inventory.

1.6. Information on QA/QC and verification activities undertaken, including the treatment of confidentiality issues where relevant

Placeholder: *the annotation below will need to be revised once a decision has been established to set out requirements for [national systems][national inventory system], even though the annotated draft does suggest text in this regard.*

The guidelines for national systems (decision 19/CMP.1) establishes a number of requirements for Annex I Parties with respect to QA/QC. The annex to decision 19/CMP.1 sets out the following requirements of Annex I Parties:

- define roles and responsibilities in relation to QA and QC (**paragraph 12(c)**);
- elaborate a QA/QC plan (**paragraph 12(d)**);
- implement general inventory QC procedures (tier 1) in accordance with its QA/QC plan (**paragraph 12(g)**);
- archive internal documentation on QA/QC procedures (**paragraph 16(a)**).

Also these guidelines provide requirements that an Annex I Party should consider:

- use of the outcomes of QA/QC activities in the improvement of the inventory (**paragraph 13**);
- apply category-specific QC procedures (tier 2) for key categories and for those categories in which significant methodological and/or data revisions have occurred (**paragraph 15(a)**);
- provide for a basic review of the inventory by personnel not directly involved in the development of the inventory, in accordance with its planned QA procedures (**paragraph 15(b)**).

The IPCC good practice guidance for LULUCF also sets out processes and procedures for QA/QC and verification that a Party should consider in its inventory planning, preparation and management.

Parties may wish to report information on each of the items above in this chapter of the NIR and how these relate to the KP-LULUCF inventory. Parties also may wish to provide information on any verification activities that were undertaken, and whether output from any of the requirements are archived.

Parties may wish to consider including in the annex 6 to the NIR its elaborated QA/QC plan, along with checklists etc. used to record outcomes of the implementation of tier 1 or tier 2 QC procedures, and further information on any verification activities undertaken.

*Parties may wish to report information on any change to this aspect of the national system, in accordance with the Kyoto reporting guidelines (**decision 15/CMP.1**), in chapter 13 of this NIR outline. Again, additional information on the change to a national system can be provided in annex 6 of the NIR (e.g. diagrams).*

1.6.1. QA/QC procedures (i.e. applied in this submission and results)

1.6.2. Verification activities (i.e. undertaken in this submission)

1.6.3. Treatment of confidentiality issues

1.7. General uncertainty evaluation, including data on the overall uncertainty for the inventory totals

1.7.1. GHG inventory (e.g. assumptions, expert judgement, data)

The UNFCCC Annex I reporting guidelines require Annex I Parties to quantitatively estimate the certainty of data used to estimate emissions using at least a tier 1 method, as provided in the 2006 IPCC Guidelines, for categories and the total inventory. [Placeholder: [Further, the UNFCCC Annex I reporting guidelines require qualitative information on the uncertainty analysis to be included in the NIR.]]

Annex I Parties are required to report qualitative and quantitative information on the uncertainty estimates that are provided by category and for the inventory in total. Uncertainties should be provided for activity data, emission factors, other parameters and for the emission estimate, with documentation on assumptions, expert judgement, references, underlying data and models used also provided. The IPCC good practice guidance for land use, land-use change and forestry sets out the procedures for uncertainty estimation, including an option to report uncertainties using table 3.3 of the 2006 IPCC Guidelines.

Parties may wish to report information on: uncertainties for activity data, emission factors, other parameters and for the emission estimate; documentation on assumptions, expert judgement, references; and documentation of underlying data and models used. Parties may wish to provide information on how the uncertainty analysis is used to improve the quality of the inventory.

Parties may explore reporting here or in annex 2 the 2006 IPCC guidelines table 3.3 for uncertainties.

1.8. General assessment of the completeness (with reference to annex 3 of the structure of the national inventory report (NIR))

1.8.1. GHG inventory

The UNFCCC Annex I reporting guidelines require Parties to explain ‘gaps’ in its inventory, in line with the 2006 IPCC Guidelines. With respect to the AFOLU sector, Parties should provide information on why any carbon pool is not estimated together with verifiable information that demonstrates that the unaccounted pool(s) were not a net source of emissions.

Parties may wish to include in this chapter a discussion on the completeness of the LULUCF inventory stating clearly the reasons why a particular activity and/or carbon pool is not estimated and, if possible, identify how the coverage of the LULUCF inventory can be improved. Further, the Party may also wish to explore providing the required verifiable information for an unaccounted carbon pool.

Chapter 2: TRENDS IN GREENHOUSE GAS EMISSIONS

Information should be provided in this chapter that provides an overview of emission trends, but it is not necessary to repeat information that is provided in the sector chapters and in the common reporting format (CRF) trend tables.

2.1. Description and interpretation of emission trends for aggregated greenhouse gas emissions

2.2. Description and interpretation of emission trends by gas

2.3. Description and interpretation of emission trends by category

2.4. Description and interpretation of emission trends for indirect greenhouse gases (CO, NO_x and NMVOCs) and SO₂

Chapters 3–6: (e.g. *SECTOR NAME (CRF sector number)*)

The following guidance is provided: "the structure outlined below should be followed in each of the following sectoral chapters. The information should be reported following the IPCC sectors"; "for each IPCC category (i.e., at the level at which IPCC methods are described, or at the level that the Annex I Party estimates its greenhouse gas emissions) the following information should be provided" (which are included in the sectoral outline; and "Annex I Parties may report some of the information requested in an aggregate form for some/several categories if the same methodology, activity data and/or emission factors are used, in order to avoid repetition of information. For key categories, the information should be detailed in order to enable a thorough review of the inventory".

The UNFCCC Annex I reporting guidelines also provides more detailed guidance on a sector-by-sector basis on what should be included in the NIR. Parties may consider reading this additional guidance in preparing its NIR submission.

X.1. Overview of sector (e.g., description and quantitative overview, including analysis of emission trends)

X.2. Category (CRF category number)

X.2.1. Category description (e.g., characteristics of sources)

X.2.2. Methodological issues (e.g., choice of methods/activity data/emission factors such as the use of emissions trading data, higher-tier methods and/models, assumptions, parameters and conventions underlying the emission and removal estimates – the rationale for their selection, use of higher-tier methods and/or models, any specific methodological issues (e.g. description of national methods))

X.2.3. Uncertainties and time-series consistency

X.2.4. Category-specific QA/QC and verification, if applicable

X.2.5. Category-specific recalculations, if applicable, including changes made in response to the review process [and impact on emission trend]

X.2.6. Category-specific planned improvements, if applicable (e.g., methodologies, activity data, emission factors, etc.), including [tracking of those identified in the review process]

Chapter 3: ENERGY (CRF sector 1)

Parties may wish to explore implementing the outline provided below.

3.1. Overview of sector (e.g., quantitative overview and description)

3.2. Fuel combustion (CRF 1.A), including detailed information on

~~3.2.1 Comparison of the sectoral approach with the reference approach~~

3.2.2 International bunker fuels

3.2.3 Feedstocks and non-energy use of fuels

~~3.2.4 CO₂ capture from flue gases and subsequent CO₂ storage, if applicable~~

3.2.5 Country-specific issues

3.2.6 Source category (CRF source category number)

3.2.6.1 Category description (e.g., characteristics of sources)

3.2.6.2 Methodological issues (e.g., choice of methods/activity data/emission factors such as the use of emissions trading data, higher-tier methods and/models, assumptions, parameters and conventions underlying the emission and removal estimates – the rationale for their selection, use of higher-tier methods and/or models, any specific methodological issues (e.g. description of national methods))

3.2.6.3 Uncertainties and time-series consistency

3.2.6.4 Category-specific QA/QC and verification, if applicable

3.2.6.5 Category-specific recalculations, if applicable, including changes made in response to the review process [and impact on emission trend]

3.2.6.6 Category-specific planned improvements, if applicable (e.g., methodologies, activity data, emission factors, etc.), including [tracking of those identified in the review process]

3.3. Fugitive emissions from solid fuels and oil and natural gas (CRF 1.B)

3.3.1. Source category (CRF source category number)

3.3.1.1. Source category description (e.g., characteristics of sources)

3.3.1.2. Methodological issues (e.g., choice of methods/activity data/emission factors such as the use of emissions trading data, higher-tier methods and/models, assumptions, parameters and conventions underlying the emission and removal estimates – the rationale for their selection, any specific methodological issues (e.g. description of national methods))

3.3.1.3. Uncertainties and time-series consistency

3.3.1.4. Category-specific QA/QC and verification, if applicable

3.3.1.5. Category-specific recalculations, if applicable, including changes made in response to the review process [and impact on emission trend]

3.3.1.6. Category-specific planned improvements, if applicable (e.g., methodologies, activity data, emission factors, etc.), including [tracking of those identified in the review process]

Chapter 4: INDUSTRIAL PROCESSES AND PRODUCT USE (CRF sector 2)

4.1. Overview of sector (e.g., quantitative overview and description)

4.2. Category (CRF category number)

4.2.1. Category description (e.g., characteristics of sources)

4.2.2. Methodological issues (e.g., choice of methods/activity data/emission factors such as the use of emissions trading data, higher-tier methods and/models, assumptions, parameters and conventions underlying the emission and removal estimates – the rationale for their selection, any specific methodological issues (e.g. description of national methods))

4.2.3. Uncertainties and time-series consistency

4.2.4. Category-specific QA/QC and verification, if applicable

4.2.5. Category-specific recalculations, if applicable, including changes made in response to the review process and impact on emission trend

4.2.6. Category-specific planned improvements, if applicable (e.g., methodologies, activity data, emission factors, etc.), including tracking of those identified in the review process

Placeholder: *Depending on outcome of accounting rules from LULUCF the annotated outline of the NIR with respect to AFOLU may need to be revised to provide for specific information required to be reported.*

Chapter 5: Agriculture, forestry and other land use (CRF sector 3)

5.1. Overview of sector (e.g., quantitative overview and description)

5.2. Category (Agriculture) (CRF category number)

5.2.1. Category description (e.g., characteristics of sources)

5.2.2. Information on use of higher-tier methods and/or models

5.2.3. Methodological issues (e.g., choice of methods/activity data/emission factors, assumptions, parameters and conventions underlying the emission and removal estimates – the rationale for their selection, any specific methodological issues (e.g. description of national methods))

5.2.4. Uncertainties and time-series consistency

5.2.5. Category-specific QA/QC and verification, if applicable

5.2.6. Category-specific recalculations, if applicable, including changes made in response to the review process and impact on emission trend

5.2.7. Category-specific planned improvements, if applicable (e.g., methodologies, activity data, emission factors, etc.), including tracking of those identified in the review process

5.3. Category (Forestry and other land use) (CRF category number)

5.3.1. Description (e.g., characteristics of category)

5.3.2. Information on use of higher-tier methods and/or models

5.3.3. Information on approaches used for representing land areas and on land-use databases used for the inventory preparation

5.3.4. Land-use definitions and the classification systems used and their correspondence to the LULUCF categories (e.g. land use and land-use change matrix)

5.3.5. Methodological issues (e.g., choice of methods/activity data/emission factors, assumptions, parameters and conventions underlying the emission and removal

estimates – the rationale for their selection, any specific methodological issues (e.g. description of national methods))

5.3.6. Uncertainties and time-series consistency

5.3.7. Category-specific QA/QC and verification, if applicable

5.3.8. Category-specific recalculations, if applicable, including changes made in response to the review process and impact on emission trend

5.3.9. Category-specific planned improvements, if applicable (e.g., methodologies, activity data, emission factors, etc.), including those in response to the review process

Chapter 6: WASTE (CRF sector 4)

8.1. Overview of sector (e.g., quantitative overview and description)

8.2. Category (CRF source category number)

8.2.1. Category description (e.g., characteristics of sources)

8.2.2. Methodological issues (e.g., choice of methods/activity data/emission factors such as the use of emissions trading data, higher-tier methods and/models, assumptions, parameters and conventions underlying the emission and removal estimates – the rationale for their selection, any specific methodological issues (e.g. description of national methods))

8.2.3. Uncertainties and time-series consistency

8.2.4. Category-specific QA/QC and verification, if applicable

8.2.5. Category-specific recalculations, if applicable, including changes made in response to the review process and impact on emission trend

8.2.6. Category-specific planned improvements, if applicable (e.g., methodologies, activity data, emission factors, etc.), including tracking of those identified in the review process

Chapter 7: OTHER (CRF sector 7) (if applicable)

The UNFCCC Annex I reporting guidelines states that “in addition, information previously included in the additional information and the documentation boxes of the CRF should be included and expanded in the NIR, where relevant, as specified in the appendix to this proposed structure.”

Parties may wish to explore providing such information in its NIR submission.

Chapter 8: Indirect CO₂ and N₂O emissions

8.1 Description of sources of indirect emissions in GHG inventory

8.2 Methodological issues (e.g., choice of methods/activity data/emission factors, assumptions, parameters and conventions underlying the emission and removal estimates – the rationale for their selection, any specific methodological issues (e.g. description of national methods))

- 8.3 Uncertainties and time-series consistency
- 8.4 Category-specific QA/QC and verification, if applicable
- 8.5 Category-specific recalculations, if applicable, including changes made in response to the review process and impact on emission trend
- 8.6 Category-specific planned improvements, if applicable (e.g., methodologies, activity data, emission factors, etc.), including tracking of those identified in the review process
- Xx Cross-sectoral issues

Chapter 9: RECALCULATIONS AND IMPROVEMENTS

The UNFCCC Annex I reporting guidelines states that “information should be provided in this chapter that provides an overview of recalculations and improvements made to the inventory, but it is not necessary to repeat information that is provided in the sector chapters, specifically the category-specific information to be provided, and in particular, Annex I Parties should cross-reference information provided in the sector chapters”.

Parties may wish to consider this guidance when preparing information for this chapter of the NIR, particularly information pertaining to the KP-LULUCF inventory for which recalculation information by category, activity and aggregate could be described by the Party

- 10.1. Explanations and justifications for recalculations
 - 10.1.1 GHG inventory
 - 10.2. Implications for emission levels
 - 10.2.1 GHG inventory
 - 10.3. Implications for emission trends, including time series consistency
 - 10.3.1 GHG inventory
 - 10.4. Recalculations, including in response to the review process
 - 10.4.1 GHG inventory
 - 10.5. Planned improvements, including in response to review process
-

The UNFCCC Annex I reporting guidelines require Annex I Parties to report on any recalculations that were undertaken, in line with the 2006 IPCC Guidelines. Annex I Parties are required to report this information in both the CRF tables and also in the sector and this chapter of the NIR.

Parties may wish to explore the reporting of both quantitative and qualitative information on recalculations undertaken on the inventory, namely to provide: an explanation and justification for each recalculation, and its implication on the emission level; implication of the recalculation on the emission trend, including on time series consistency; and whether the recalculation is a result of an inventory improvement or a recommendation of the expert review team.

Parties may wish to explore the reporting of planned improvements to the inventory by listing (in a table) and describing any improvement activities.

References and Annexes

All references used in the NIR must be listed in the References.

Appendix

Proposed modification: (USA and implicitly Australia: to enhance and update this chapter to reflect methodological issues concerning the use of the 2006 IPCC Guidelines as presented in these UNFCCC Annex I reporting guidelines.

Background:

The Appendix could contain some very useful and specific advice and/or guidance on what to include in the specific chapters of the NIR. However, perhaps this information could be included in the NIR chapter above with a view to have a one-stop shop for guidance on the NIR.

One Party has identified the value of this chapter (and noted that the current reporting guidelines stipulate that the chapter is not exhaustive). This is a very important point that adds to the argument mentioned above that it could be nested under the annotated outline of the NIR or whatever the NIR structure will comprise.

Issues for further discussion :

- If the chapter is found useful the following issues should be solved:
- - *Placement of the information (e.g. within the NIR structure)*
 - *Updating it based on the 2006 reporting requirements*
 - *Need for special attention and advice on the new AFOLU sector and the mapping between the agriculture and LULUCF*
 - *Setting a chapter on cross-sectoral issues*

Additional guidance on sectoral reporting to be included in the corresponding chapter of the NIR

This appendix provides guidance on additional information that Annex I Parties could include in their NIR in order to facilitate the review of the inventory. This list is not exhaustive. Additional information may be included in the NIR, depending on the Annex I Party's national approach for estimating greenhouse gas emissions and removals.

Energy

Fuel combustion

More specific information than that required in CRF table 1.A(a) could be provided, e.g.,

- Autoproduction of electricity
- Urban heating (in manufacturing industries, commercial and residential sectors).

Fugitive fuel emissions

Coal mining:

More specific information than that required in CRF table 1.B.1 could be provided, e.g.

- Number of active underground mines
- Number of mines with drainage (recovery) systems.

Oil and natural gas

- More specific information than that required in CRF table 1.B.2 could be provided, e.g.
- Pipeline length

- Number of oil wells
- Number of gas wells
- Gas throughput¹
- Oil throughput¹⁷

Industrial processes

Metal production

More specific information than is required in CRF table 2(I).A-G could be provided, e.g., data on virgin and recycled steel production.

Potential emissions of halocarbons and SF₆

In CRF table 2(II)s2, reporting of “production” refers to production of new chemicals. Recycled substances could be included in that table, but it should be ensured that double counting of emissions is avoided. Relevant explanations should be provided in the NIR.

PFCs and SF₆ from metal production / Production of halocarbons and SF₆

The type of activity data used is to be specified in CRF tables 2(II).C-E (under column “description”). Where applying tier 1b (for 2.C Metal production), tier 2 (for 2.E Production of halocarbons and SF₆) and country-specific methods, any other relevant activity data used should be specified.

Consumption of HFCs, PFCs and SF₆

With regard to activity data reported in CRF table 2(II).F (“Amount of fluid remaining in products at decommissioning”), Annex I Parties should provide in the NIR information on the amount of the chemical recovered (recovery efficiency) and other relevant information used in the emission estimation.

CRF table 2(II).F provides for reporting of the activity data and emission factors used to calculate actual emissions from consumption of halocarbons and SF₆ using the “bottom-up approach” (based on the total stock of equipment and estimated emission rates from this equipment). Some Annex I Parties may prefer to estimate their actual emissions following the alternative “top-down approach” (based on annual sales of equipment and/or gas). Those Annex I Parties should provide the activity data used in that CRF table and provide any other relevant information in the NIR. Data these Annex I Parties should provide include:

- The amount of fluid used to fill new products
- The amount of fluid used to service existing products
- The amount of fluid originally used to fill retiring products (the total nameplate capacity of retiring products)
- The product lifetime
- The growth rate of product sales, if this has been used to calculate the amount of fluid originally used to fill retiring products.

Alternatively, Annex I Parties may provide alternative formats with equivalent information.

¹⁷ In the context of gas and oil production, throughput is a measure of the total production, such as barrels per day of oil, or cubic metres of gas per year. Specify the units of the reported values. Take into account that these values should be consistent with the activity data reported under production in table 1.B.2 of the CRF.

Solvents and other product use

The IPCC Guidelines do not provide methodologies for the calculation of emissions of N₂O from solvent and other product use. If reporting such data in the CRF, Annex I Parties should provide additional information (activity data and emission factors) used to make these estimates in the NIR.

AgricultureCross-cutting

Annex I Parties should provide livestock population data in CRF table 4.A. Any further disaggregation of these data, e.g. for regions, for type (according to the classification recommended in the IPCC good practice guidance), could be provided in the NIR, where relevant. Consistent livestock population data should be used in the relevant CRF tables to estimate CH₄ emissions from enteric fermentation, CH₄ and N₂O emissions from manure management, N₂O emissions from soils, and N₂O emissions associated with manure production and use, as well as emissions from the use of manure as fuel and sewage-related emissions reported in the waste sector.

Enteric fermentation

More specific information than is required in CRF table 4.A could be provided, e.g., parameters relevant to the application of good practice guidance.

Manure management

More specific information than is required in CRF tables 4.B(a) and 4.B(b) could be provided, e.g., parameters relevant to the application of the IPCC good practice guidance. Information required in the additional information table may not be directly applicable to country-specific methods developed for methane conversion factor (MCF) calculations. If relevant data cannot be provided in the additional information box, information on how the MCF is derived should be described in the NIR.

Rice cultivation

More specific information than is required in CRF table 4.C could be provided. For example, when disaggregating by more than one region within a country and/or by growing season, provide additional information on disaggregation and related data in the NIR. Where available, provide activity data and scaling factors by soil type and rice cultivar in the NIR.

Agricultural soils

More specific information than is required in CRF table 4.D could be provided. For example,

- The IPCC Guidelines do not provide methodologies for the calculation of CH₄ emissions or removals by agricultural soils. If reporting such data, Annex I Parties should provide in the NIR additional information (activity data and emission factors) used to make these estimates;
- In addition to the data required in the additional information box of table 4.D, disaggregated values for FracGRAZ according to animal type, and for FracBURN according to crop types, should be provided in the NIR.

Prescribed burning of savannas and field burning of agricultural residues

More specific information than is required in CRF tables 4.E and 4.F could be provided. For example, the IPCC Guidelines do not provide methodologies for the calculation of CO₂ emissions from savanna burning or agricultural residues burning. If reporting such data, Annex I Parties should provide in the NIR additional information (activity data and emission factors) used to make these estimates.

Land-use, land-use change and forestry

More specific information than is required in the CRF for each land-use category and for subcategories could be provided, for example:

- When providing estimates by subdivisions, additional information on disaggregation and related data in the NIR
- Separate reporting of CO₂ emissions from biomass burning, including wildfires and controlled burning
- For those Parties choosing to report harvested wood products, detailed information on CO₂ emissions and removals from harvested wood products, including information by product type and disposal
- Information on how double counting and omissions between the agriculture and LULUCF sectors have been avoided.

WasteSolid waste disposal and waste incineration

More specific information than is required in CRF tables 6.A and 6.C could be provided, e.g.,

- All relevant information used in the calculation should be provided in the NIR, if it is not already included in the additional information box of the CRF
- Composition of landfilled waste (%), according to paper and paperboard, food and garden waste, plastics, glass, textiles, other (specify according to inert or organic waste, respectively)
- Fraction of wastes recycled
- Fraction of wastes incinerated
- Number of solid waste disposal sites recovering CH₄.

Waste-water handling

More specific information than is required in CRF table 6.B could be provided. For example, with regard to data on N₂O from waste-water handling to be reported in CRF table 6.B, Annex I Parties using other methods for estimation of N₂O emissions from human sewage or waste-water treatment should provide in the NIR corresponding information on methods, activity data and emission factors used.

Annex-A: Checklist for reporting on the [national system][national inventory system] (and a change to the national system)

Placeholder: *the annotation below will need to be revised once a decision has been established to set out requirements for [national systems][national inventory system], even though the annotated draft does suggest text in this regard.*

The checklist below is consistent with the provisions of **paragraphs 10 to 17 of the annex to decision 19/CMP.1** (Guidelines for national systems under Article 5,

paragraph 1, of the Kyoto Protocol, regarding the specific requirements on the national system for a Party.

Parties are encouraged to use this check-list for self-verification in order to ensure that its annual submission contains the required information on its national system, and a change to its national system (as required by **paragraph 22 of the annex to decision 15/CMP.1**).

CHECKLIST FOR REPORTING ON THE NATIONAL SYSTEM AND ON CHANGES TO THE NATIONAL SYSTEM			Provided	Changes ²
Reporting requirements from paragraphs 10 to 17 of the annex to decision 19/CMP.1 (guidelines for national systems)	General functions of the national system:¹			
	10(a)	Information on the institutional, legal and procedural arrangements and maintenance thereof	<i>shall</i>	
	10(b)	Information on the capacity for timely performance of the general and specific functions of the NS	<i>shall</i>	
	10(b)	Information on the technical competence of staff	<i>shall</i>	
	Specific functions of the national system:¹			
	Inventory Planning			
	12(a)	Information on the designated single national entity with overall responsibility for the national inventory	<i>shall</i>	
	12(b)	Contact details of the single national entity	<i>shall</i>	
	12(c)	Information on the actors ³ , institutional, legal and procedural arrangements and how these relate to the roles and responsibilities, and cooperation between, in the inventory development process	<i>shall</i>	
	12(d)	Elaborated QA/QC plan ⁴	<i>shall</i>	
	12(e)	Information on the official consideration and approval of the inventory, including for recalculations	<i>shall</i>	
	13	Information on the process of inventory improvement ⁵	<i>should</i>	
	Inventory Preparation			
	14(a)	Information on the identification of key categories	<i>shall</i>	
	14(b)	Information on the estimates of emissions and removals and how they are prepared in accordance with the Revised 1996 IPCC guidelines and IPCC good practice guidance (and IPCC good practice guidance for LULUCF)	<i>shall</i>	
	14(b)	Information on choice of method for key category(s)	<i>shall</i>	
	14(c)	Information on the collection of activity data, process information and emission factors to support selected methods	<i>shall</i>	
	14(d)	Information on uncertainty analysis (for each category and the total inventory)	<i>shall</i>	
	14(e)	Information on recalculations	<i>shall</i>	
	14(g)	Information on (and evidence of) general inventory QC (tier 1) procedures ⁴	<i>shall</i>	
	15(a)	Information on (and evidence of) category-specific QC (tier 2) procedures ⁴	<i>should</i>	
	15(b)	Information on (and evidence of) QA procedures ³	<i>should</i>	
	15(c)	Information on implemented or planned more extensive review of key categories or categories where significant change has occurred (method and/or data)	<i>should</i>	
	15(d)	Information on how 15(b) and 15(c) relate to evaluation of inventory planning process in order to meet quality objectives	<i>should</i>	
Inventory Management				
16(a)	Information on how this information is archived.	<i>shall</i>		
16(b)	Information on what information is archived.	<i>should</i>		

1 Not all provisions of 15/CMP.1 are provided.

2 Changes to a national system are required to be reported in accordance with paragraph 22 of the annex to decision 15/CMP.1

3 Description of the actors, as outlined in 10(a), including statistical services and other entities involved in data collection, and staff/entities involved in choice of methods, processing and archiving, and QA and QC.

4 Description (and evidence) of specific QC and overall QA procedures, and quality objectives.

5 Description of how information from the implementation of the QA/QC program and Article 8 expert review link to an overarching inventory improvement plan, and on how this plan considers ways to review the QA/QC plan and its quality objectives and to improve the quality of AD, EFs and other technical elements of the inventory.

Annex-B: Checklist for reporting on higher-tier methods and/or models

Placeholder: *the checklist for this annex has not been developed by the secretariat. Once completed it will be inserted here.*

Annex II

Common reporting format (CRF) tables

Due to the complexity of the CRF tables and the importance of colour coding in the CRF tables, they are not included in this document but can be downloaded from the UNFCCC web site:

[http://unfccc.int/documentation/documents/advanced_search/items/3594.php?such=j&meeting=%22\(SBSTA\),+thirty-fourth+session%22&sorted=agenda#beg](http://unfccc.int/documentation/documents/advanced_search/items/3594.php?such=j&meeting=%22(SBSTA),+thirty-fourth+session%22&sorted=agenda#beg).

The common reporting format (CRF) tables are included in the following three files:

- set 1 E,IP, W_final.xls contains the CRF tables for the energy, industrial processes and waste sectors;
 - set 2 AFOLU_final.xls contains the CRF tables for the agriculture and land use, land-use change and forestry sectors;
 - set 3 cross-sectoral_final.xls contains the cross-sectoral tables.
-