Discussion paper

(unedited version)

Third Workshop on the Revision of the UNFCCC Annex I Reporting Guidelines for Reporting of Inventories under the Convention
Bonn, Germany 24–25 March 2011

Annotated draft of the Revised UNFCCC Annex I reporting guidelines

I. Introduction

A. Mandate

1. The Subsidiary Body for Scientific and Technological Advice (SBSTA), at its thirtieth session, agreed to launch a work programme 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 starting in 2015.

2. The SBSTA at its thirty-second session noted (FCCC/SBSTA/2010/6) the importance of continuity in the reporting of national GHG inventories and agreed that the revision of the UNFCCC Annex I reporting guidelines, including its common reporting format (CRF), should be based on the current UNFCCC Annex I reporting guidelines. 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 can initiate work on these tables, to be compiled into a miscellaneous document for consideration by the SBSTA at its thirty-third session. 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.

B. Scope of the note

3. This note takes into consideration the outcomes of the first and second workshop (FCCC/SBSTA/2010/INF.5 and FCCC/SBSTA/2010/INF.10) under the work program on which Parties expressed views on issues related to the revision of the UNFCC Annex I reporting guidelines and methodological issues related to reporting using the 2006 IPCC Guidelines. Views of Parties on the current revised UNFCCC reporting guidelines are contained in FCCC/SBSTA/2010/MISC.1, with the synthesis of this information contained in FCCC/SBSTA/2010/4. Further submissions by Parties are contained in FCCC/SBSTA/2010/MISC.7 and its 3 addendums.

4. The note contains two sections providing information on key issues, approach and summary of Parties views in relation to the:

(a) Main text of the UNFCCC Annex I reporting guidelines; and

(b) Revision of the common reporting format (CRF) CRF tables.

5. Annexes to this note include:

(a) An annotated draft of the revised UNFCCC Annex I reporting guidelines;

(b) Part of the Australia's submission; and

(c) Draft revised CRF tables.

6. Information in this note is provided as starting point for a substantive discussion on the key issues concerning the revision of the UNFCCC reporting guidelines, including the CRF tables, at the third workshop under the work programme.

C. Possible actions by the participants in the workshop

7. This note has been prepared for the third workshop under the SBSTA work programme to facilitate the consideration by workshop participants of an annotated draft of the revised UNFCCC Annex I reporting guidelines, including its CRF tables, with a view to enable a substantive discussion on:

(a) Views of Parties as included in FCCC/SBSTA/2010/MISC.7 and earlier submissions;

(b) Annotations of the draft revised UNFCCC Annex I reporting guidelines, including issues raised therein; and

(c) Revised common reporting format tables and issues raised therein.

8. Outcomes of the third workshop in relation to the annotated draft of the revised UNFCCC Annex I reporting guidelines, including its CRF tables, and any changes identified by Parties in this workshop, are to be presented in the workshop report for consideration by the SBSTA at its thirty-fourth session.

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

9. Parties have identified key items of consideration by workshop participants for the revision of the UNFCCC reporting guidelines, and for which views have been subsequently provided by Parties. These item are broadly categorised as:

(a) Accounting issues;

(b) Streamlining existing guidance on specific reporting elements, including guidance on inventory planning, preparation and management; and

(c) Inventory development and reporting.

B. Approach

10. This section of the paper contains views of Parties on the text of the current UNFCCC reporting guidelines. Each sub-section addresses a section of the current UNFCCC reporting guidelines and contains four parts:

(a) Views by Parties: The secretariat has made every effort not to alter the view expressed by the Parties by keeping as closely as possible to the Parties' original text. The Party providing the comment is identified.

(b) Background information: This part provides some specific considerations for the proposed modifications and aims at facilitating consideration of the issues.

(c) Proposed modifications: The part contains an overview of the modifications and/or additions to the current UNFCCC reporting guidelines that is provided in annotated form in the in Annex 1 of this note. to this note. The modifications are based on views expressed by Parties, including text changes. Modifications for which there is no clear convergence in Parties views are bracketed, and, if any, views of the secretariat on these are included in the section on "Issues for further discussion and implementation".

(d) Issues for further discussion during the workshop: This part summarizes issues where there is clear divergence in Parties views. Also, where appropriate the

secretariat has included its views on each on the basis to facilitate its consideration by Parties at the third workshop.

C. Summary of Party views relating to the main text of the UNFCCC reporting guidelines

1. Accounting issues

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

(a) Total greenhouse gas emissions, especially in relation to in-direct CO_2 and N_2O emissions;

(b) Rules for accounting of LULUCF emissions and related issues (managed land proxy, factoring out of emissions from natural disturbances, and inter-annual variability); and

(c) Global warming potentials.

12. As regards total greenhouse gas emissions Parties have expressed views on the accounting of indirect CO_2 and N_2O emissions and whether this is on a voluntary or a mandatory basis. Canada expressed a view that the reporting of indirect CO_2 and N_2O emissions should be on a voluntary basis; for CO_2 and N_2O there are no methodologies for precursors (except methane) in any of the IPCC guidelines, and for N_2O there is currently much uncertainty surrounding the basis of emissions from indirect N_2O emissions from ammonia and nitrogen oxides. Whereas Norway in its submission expressed a view that the UNFCCC Annex I reporting guidelines should provide for mandatory reporting of indirect CO_2 emissions, with the final accounting requirement to be determined by other processes under the Convention. This links to a view of the EC that the process of revising the UNFCCC reporting guidelines should not pre-empt accounting rules related to emission reduction commitments to be determined by other Convention processes, and that for the interim indirect emissions can still be considered, but without any attribution as to whether they are mandatory or voluntary.

13. In earlier submissions New Zealand, Australia, EU and Japan raised the minor accounting issue concerning AFOLU and how 'total greenhouse gas 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.

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

15. As regards global warming potentials, some Parties (EU, Norway) have directly recommend that global warming potentials from the latest IPCC report (fourth assessment report, 2007) should be used, whereas other Parties (Australia, Japan) refer to this matter being a consideration by Parties in other processes under the Convention.

2. Streamlining guidance

16. Both Australia and the EC in their submission flagged the important need to streamline reporting guidance noting that these requirements have evolved, especially in regard to other processes under the Convention (e.g. Kyoto reporting requirements that are captured in the annotated outline of the national inventory report (NIR)). In the second workshop Finland presented a view that there is some overlap on elements

between reporting requirements (i.e. Convention and Kyoto reporting) and that the UNFCCC Annex I reporting guidelines should streamline guidance on national inventory systems and QA/QC.

17. The EC and Norway in their submissions raised an issue related to streamlining of reporting of energy data and statistics. The EC noted that many Parties are producing energy statistics and balances using the standardised industrial branch classifications, but some domestic, regional and international reporting requirements are not always consistent therefore resulting in duplicative effort. However, the EC also expressed a view that the 2006 IPCC Guidelines presents a revised energy classification in line with the ISIC international classification system that should be implemented in the CRF tables. Norway expressed similar view and in the context of UNECE reporting requirements and potential to facilitate comparison and achieve synergy effects in the data compilation.

3. Inventory development and reporting

18. Parties have expressed views on inventory development and reporting in the context of experiences with the current UNFCCC reporting guidelines and the incorporation of the 2006 IPCC Guidelines into the UNFCCC Annex I reporting guidelines. Information in this section is presented in the order of the current UNFCCC reporting guidelines.

Section I.A: Objectives

19. The EC have submitted revised text for the 'objectives' of the UNFCCC Annex I reporting guidelines:

(a) To include a placeholder in paragraph 1(a) for inclusion of text on the basis of commitments that are to be agreed under AWG-KP and AWG-LCA;

(b) To include a new objective on the need to ensure the 'transparency' of emission reductions commitments; and

(c) To include another new objective on the need for the UNFCCC Annex I reporting guidelines to assist Parties improve the quality of their annual inventories.

Section I.B Principles and Definitions

20. The USA in each of its submissions has underscored the importance of the basic principles of reporting, namely transparency, accuracy, consistency, comparability and completeness. In both submissions USA have attributed these principles as an important foundation for inventory reporting. In previous workshops under the work programme other Parties have also expressed the importance of these principles.

21. The EC in its most recent submission has provided revisions to the descriptions for some:

(a) Transparency: revised text clarifies the annual submission as comprising the CRF tables and structured NIR that both collectively contribute to transparency and facilitate its subsequent national and international review;

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

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

Section I.C: Context

22. The EC has proposed a new paragraph (6bis) that provides the basis for the establishment of national inventory systems for the preparation of inventories.

Section I.C: Base Year

23. Croatia expressed a view that decision 7/CP.12 is to be added to the text establishing the basis of base years for reporting by Parties. It also expressed a view that Croatia's base year of 1990 is to be added to the Party list of base years.

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

Section I.E: Methods – methodology

25. The EC has provided revised text for paragraph 12 introducing the IPCC emission factor database (EFDB) as a source of defaults emission factors and other parameters. The EC also expressed a view that a future COP decision on the UNFCCC Annex I reporting guidelines could "encourage IPCC to further maintain and develop the IPCC EFDB".

Section I.E: Methods – uncertainties

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

Section I.E: Methods – recalculations

27. The EC submitted revised text for paragraph 15 covering:

(a) Underlying activity data and emission factors 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"; and

(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".

Section I.E: Methods – quality assurance/quality control

28. The EC submitted revised text for paragraph 17. First it has suggested the sentence "that tier 2 quality control may be more efficiently implemented in conjunction with the evaluation of uncertainties in data sources" is deleted. Further, the EC has expressed a view that this paragraph is streamlined under the new and overarching 'national system' heading.

29. The EC has provided in its submission a series of new paragraphs on the 'national inventory system' (17bis through to 17novies). As this text is taken directly from the Guidelines for national systems under Article 5 of the Kyoto Protocol, this note does not include this text.

Section I.F: Reporting – general guidance

30. Parties have expressed views in their submissions and also in the two workshops under this work programme that the general guidance provided in the current UNFCCC reporting guidelines needs to be updated in relation to:

(a) Accounting of emissions/removals (Australia, Canada, EC). Views of Parties have been raised elsewhere in this section of the report;

(b) Coverage of inventory years in the annual inventory submission (Australia, EC) with views of Parties provided in the CRF paragraphs at the end of this section;

(c) Reference to guidance contained in the 2006 IPCC Guidelines in relation to feedstock and non-energy use of fuels, and CO_2 capture and storage (USA), with its view provided in the CRF paragraphs at the end of this section;

(d) Indirect CO_2 and N_2O emissions (Australia, Canada, EC, Norway) with views of Parties provided in the earlier paragraphs of this section; and

(e) Reporting of emissions/removals derived with use of higher-tier methods and/or models (USA) with its view provided in the CRF paragraphs at the end of this section.

Section I.F: Reporting – general guidance – estimates of emissions and removals

31. The EC has provided revised text for paragraph 18:

(a) Added nitrogen trifluoride (NF_3) as an additional F-gas;

(b) Reference to GWPs contained in the Fourth Assessment Report of the IPCC (EC also provided revised text for paragraph 20 along the same line as this);

(c) Statement that Annex I Parties "shall report" indirect CO_2 and N_2O emissions; and

(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 whereas the NIR is to be used to provide speciated information.

32. Australia, EU and Japan expressed a view that the requirement (paragraph 21) to report potential emissions of F-gases should be removed. The EC submitted revised text to reflect this. However, Brazil expressed a view in the second workshop that whilst acknowledging that potential F-gas emissions are not to be considered in the accounting of total greenhouse gas emissions, retaining this approach has merit by the fact that it provides a basis for verification.

33. In cross-reference to paragraph 9 above, the EC have expressed a view that paragraph 22 can be deleted. This deletion is coupled with the additional text that it has proposed for paragraph 8 on base year and F-gases.

34. Canada in its submission expressed a view that a new paragraph is added in the general guidance section on the voluntary reporting of indirect CO_2 and N_2O emissions (accounting issue):

(a) Parties' national totals of greenhouse gases shall include only direct CO_2 emissions and not those calculated from atmospheric emissions of CO, CH_4 or NMVOCs. If desired, Parties can voluntarily report CO_2 estimates from emissions of these other gases. The calculation of CO_2 from CO, CH_4 or NMVOC can be conducted by the method provided in the 2006 IPCC Guidelines, Overview Chapter, Section 7.2.1.5 and if reported, this carbon dioxide should be included with estimates of other indirect greenhouse gases.

35. The EC has expressed a view that paragraph 26 on the effects of CO_2 capture and storage can be deleted on the basis that this category will be explicitly addressed in the CRF tables.

Section I.F: Reporting – general guidance – completeness

36. The EC has provided revised text for paragraph 29 that relates to the coverage of reporting on the basis of available methodologies in the 2006 IPCC guidelines. The 2006 IPCC Guidelines includes methodologies in its appendices, and the EC text clarifies that these would be voluntary reporting. The revised EC text also 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".

37. Japan in its submission expressed a view that a new notation key "considered negligible" ('CI') is created.

38. Japan and USA also a expressed view that additional "descriptive" text is attributed to each notation key to aid understanding and "appropriate use" of these.

Section I.F: Reporting – general guidance – key category analysis

39. The EC has submitted a revised paragraph 30 on key category analysis to update the reference to table 4.1 of the 2006 IPCC Guidelines.

Section I.F: Reporting – general guidance – uncertainties

40. The EC has submitted a revised paragraph 32 on uncertainties 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".

Section I.F: Reporting – general guidance – recalculations

41. The EC has submitted a revised paragraph 34 on recalculations and has suggested to delete the 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"; and '

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

42. The EC has also submitted a revised paragraph 35 that is suggesting an exception to the rule when reporting recalculations, namely "Small differences, e.g. due to rounding of estimates, should not be considered as recalculations".

Section I.F: Reporting – general guidance – quality assurance / quality control

43. The EC submitted revised text suggesting that paragraph 36 on the reporting on QA/QC should be deleted. This suggestion is based on the condition that it is included in the streamlined guidance in the Annex I of the UNFCCC Annex I reporting guidelines (i.e. 'annotated outline of the NIR') and under the new 'national system' heading.

Section I.F: Reporting – general guidance – adjustments

44. The EC and Australia have both suggested that the terminology for this section is revised. The EC submitted revised text suggesting that the terminology be changed from 'adjustments' to 'corrections'.

Section I.F: Reporting – national inventory report

45. The EC have submitted some minor revisions to paragraphs 38–40. For paragraph 40, the EC expressed a 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.

46. Based on the above, the EC have suggested that paragraph 41 (what the NIR is to include) is deleted, along with paragraph 43.

Section I.F: Reporting – common reporting format tables

47. The EC have submitted a minor editorial revision to text in paragraph 44 and has suggested that paragraph 47 is to be deleted.

48. The EC have submitted revised text for paragraph 48 that deals with the coverage of years for which a CRF submission is to cover. The EC has proposed the following text:

(a) 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) For paragraph 48(b) – delete; and

(c) For paragraph 48(c) – the EC has suggested that the CRF completeness table is provided on for the latest inventory year, but retains the existing (proviso) text that "only if the information applies to all years".

Section I.F: Record keeping

49. The EC has expressed a view that paragraph 51 should be merged with the new overarching 'national system' section.

Section I.F: Language

50. The EC has expressed a view that Parties "should" submit a translation of the NIR in English.

Table 1 – GWPs

51. The EC and USA have expressed views that this table needs to be updated to reflect:

(a) The Fourth Assessment Report of the IPCC (2007) and its GWP values; and

(b) Coverage of F-gases presented in the 2006 IPC Guidelines.

Annex I: Structure of NIR

52. The EC have expressed a view that the Annex I 'structure of the national inventory report' is replaced by the annotated outline of the NIR. During the second workshop the EC also expressed a view that the streamlining of guidance on reporting considers both the annotated outline of the NIR and the 'national system' requirements.

53. The USA submitted a view that the appendix to Annex I of the UNFCCC reporting guidelines that contain additional sector 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 on "national approaches for estimating greenhouse gas emissions and removals".

Higher-tier methods and models

54. The USA expressed a view that guidance should be provided in the 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 workshop 2 under this work programme, other Parties (Australia, EU and individual members of EU member states) also expressed views that such guidance would be helpful for Parties to improve transparency, and that a check list could be created to assist Parties in this regard.

D. Background Information

55. The intent of this section is to provide specific background information to facilitate the consideration by workshop participants of the Party identified issues

mentioned above. This information will be presented following the above format, but background information is not provided for all headings above.

1. **Accounting issues**

56. The key consideration for workshop participants on accounting is to ensure that all accounting-related matters pertaining to the UNFCCC Annex I reporting guidelines are attributed with a placeholder in the annotated draft UNFCCC Annex I reporting guidelines. Accounting rules are under consideration by Parties in other processes under the Convention and therefore it is prudent not to pre-empt the outcomes of these discussions.

57. That said, workshop participants can, in the context of CRF tables, commence a conceptual exercise of deriving the structure, utility and coverage of accounting parameters in these tables. This matter is discussed in the CRF tables section of this note.

58. Whilst only a handful of Parties have submitted views it cannot be assumed that these views are the consensus of all Parties. This has been evident in the workshops where views of other Parties have added to the discussion but not always been in convergence. However, conclusions of the workshops have been used as another input into deriving the annotated draft UNFCCC Annex I reporting guidelines.

2. Streamlining guidance

59. Currently Annex I Parties are required to report in line with the revised UNFCCC reporting guidelines when submitting its inventory submission under the Convention. For those Annex I Parties that are also a Party to the Kyoto Protocol, they are required to report additional information contained set out in the annex to decision 15/CMP.1. The secretariat in 2009 with a view to prepare and guide Parties for annual reporting under the Kyoto Protocol, developed the annotated outline of the NIR. This annotated outline combined Convention and Kyoto reporting requirements and identified overlaps in the requirements. Workshop participants in workshop 2 identified that such reporting guidance needs to be streamlined in relation to national inventory systems and QA/QC.

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

3. Inventory development and reporting

Section I.A: Objectives

61. As stated above under ‘accounting issues’, workshop participants will need to be mindful of the ongoing consideration of accounting issues, including emission reduction commitments, in other processes under the Convention. Hence a placeholder is required to attributed to paragraph 1(a).

62. The EC expressed a view on a need for a new objective on “ensuring the transparency” of emission reduction commitments. In providing for this new objective, workshop participants need to identify and discuss parameters to define the minimum basis for which the UNFCCC Annex I reporting guidelines are to “ensure transparency”. In the absence of a clear definition or specified parameters, then the defining considerations of a basis for a process to confirm whether this objective has been achieved or not could be problematic by the fact there may be variant degrees of interpretation on what defines ‘ensuring transparency’.

63. The EC also expressed a view on a need for another new objective for the UNFCCC Annex I reporting guidelines to assist Parties improve the quality of their annual inventories. The UNFCCC Annex I reporting guidelines must provide for this, and to a large extent it does as it is based on the current UNFCCC reporting guidelines. However, "improving the quality" of GHG inventories has many dimensions. Workshop participants could identify and discuss the parameters that are central to ensuring that reporting guidelines do provide a basis (via an expert review) for improving the quality of GHG inventories.

Section I.B Principles and Definitions

64. TACCC are the key basics for reporting and are in most cases the dominant findings of an expert review. In relation to the 2 new objectives proposed by the EC above, what needs to be changed or added to the current TACCC definitions to ensure meeting of these objectives?

Section I.C: Context

65. National inventory system has become an important element of inventory compilation, reporting and review under the Kyoto Protocol. However, it is not to suggest that this concept was introduced by the Kyoto Protocol; instead the requirements we know now have evolved from institutional arrangements to robust and functional systems that underpin inventory planning, preparation and management. Workshop participants should identify elements of the general and specific functions of the national system guidelines (decision 19/CMP.1) that can be considered for the UNFCCC Annex I reporting guidelines under the Convention.

Section I.C: Base Year

66. There are two issues under consideration here:

(a) The 'accounting rules' with respect to base year's for Parties and for the F-gases; and

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

67. As the first item pertains to accounting, a placeholder will need to be attributed to paragraph 8 of the UNFCCC Annex I reporting guidelines. The second item has merits as it would provide a one-stop shop for all things related to the base year.

68. Important background information related to paragraph 22 that is proposed to be merged in paragraph 8 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.

Section I.E: Methods – methodology

69. The IPCC EFDB is a repository containing default emission factors and other parameters that can be used by Parties in the absence of country-specific data. Participants in the most recent workshop noted the objective and intent of the EFDB, and welcomed the IPCC work to continue to increase the coverage and content of the EFDB. In relation to the UNFCCC Annex I reporting guidelines, participants may wish to discuss the role of the EFDB in these guidelines and in particular, identify the basis for its use by Annex I Parties that inversely creates a basis for its expert review under the Convention.

Section I.E: Methods – recalculations

70. Submissions of Parties 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 emission factors for this undertaking. There are

techniques available in the IPCC good practice guidance to resolve this problem. The question is whether these approaches remain relevant and if so, can they be included in the UNFCCC Annex I reporting guidelines.

Section I.F: Reporting – general guidance

71. As stated in earlier paragraphs, issues concerning accounting are to be attributed with a placeholder for discussion by Parties at a latter point in time.

72. As regards the coverage of inventory years for which a CRF submission is to comprise, 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. A CRF file for one inventory year is not trivial; generating this file for twenty plus years is a significant data management exercise for both the Party and the secretariat.

73. As regards guidance contained in the 2006 IPCC Guidelines in relation to feedstock and non-energy use of fuel and CO_2 capture and storage, this could be coupled with another proposal of the USA in relation to enhancing additional reporting guidance that is provided in the appendix of annex I to the current UNFCCC reporting guidelines. However, this information could be lost here hence workshop participants could consider a new annex (perhaps before the annotated outline of the NIR) that provides all additional information and methodological clarifications sought by Parties, including the views of Australia and Canada that additional clarification is required on the methodology to estimate emissions from indirect emissions.

74. In workshop 1 and 2 participants identified that the UNFCCC Annex I reporting guidelines could include reporting guidance for higher-tier methods and/or models. Experiences in 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 this information. Further, the USA expressed a view in its latest submission that the general guidance section should provide specific information on reporting on the verification of higher-tier methods and/or models. A check list was included in the conclusions of the second workshop that participants may explore incorporating into the UNFCCC Annex I reporting guidelines such a check-list.

Section I.F: Reporting – general guidance – estimates of emissions and removals

75. Potential emissions is a default approach used by some Annex I Parties in-lieu of using the tier 2 ‘actual’ emission approach. The 2006 IPCC guidelines removes the default approach. However, the question is whether the potential emission approach is removed totally or whether it can be retained within the CRF as a basis for verifying the ‘actual’ emissions.

Section I.F: Reporting – general guidance – completeness

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

77. Related to notation keys, expert review teams often flag in-correct use of 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) may be helpful.

Section I.F: Reporting – general guidance – recalculations

78. With reporting these days occurring through the CRF Reporter, this software will identify all changes when compared to the previous submission. However, a change

may not be a change; it may be a rounding of data that is entered into the software that is immediately picked-up by the software as a recalculation. The issue is whether such rounding errors, and related, are recalculation or can they be considered as exceptions to the rule.

Section I.F: Reporting – common reporting format tables

79. As raised in earlier paragraphs, the coverage of years in the inventory time series is an important issue on the basis of data management and value. The proposal of the EC is to require reporting CRFs for the base year, 1990, 1995, 2000, 2005 and each subsequent year thereafter.

E. Proposed modifications

80. Views expressed by Parties have either been general comments or specific changes and/or additions to text in the UNFCCC Annex I reporting guidelines mentioned in section II.C above. As such each of the above has been incorporated into the annotated draft UNFCCC Annex I reporting guidelines. The incorporation of these has been either as:

(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 in the two workshops is 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 latter point in time. For example, accounting of emissions and removals is currently under consideration by Parties in other processes under the Convention, hence text on this (i.e. total greenhouse gas emissions, base year, coverage of F-gases, etc) remain open and therefore a placeholder would indicate this.;

(b) **Options** with original text as 'Option (original)', Party(s) view(s) as ' option-B' and, where identified by the secretariat an 'Option-C' that is the view of the secretariat;

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

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

F. Issues for further discussion during the workshop

81. With a view to minimise duplication of information, this section will present key issues at an aggregate level. The provision of this information is intended to be basis for discussion by workshop participants.

1. Accounting issues

82. As stated previously, Parties have expressed views on accounting issues that are to be considered in other processes under the Convention. However, workshop participants may bring to the attention of the secretariat any issue or concern on the placement of a placeholder on an accounting issue.

2. Methodological issues

83. In relation to paragraph 9, the secretariat has included in the annotated draft of the UNFCCC Annex I reporting guidelines alternate text to that proposed by the EC with a view to not to limit 'methodology' to the 2006 IPCC Guidelines alone, noting that the COP may adopt supplementary methodology (e.g. for LULUCF) for estimating

emissions and/or removals. The secretariat, however, does not include in the text any reference to country-specific methodologies as this is addressed in paragraph 10.

84. In relation to paragraph 11 of the annotated draft of the UNFCCC Annex I reporting guidelines, the secretariat has questioned whether the requirement for use of higher-tier methods for key categories is a 'shall' or a 'should', subject to national circumstances. Parties may elect to discuss this further.

85. In relation to paragraph 12, EC and USA have both suggested that the EFDB needs to be referred to in this paragraph. However, the EFDB is not a 'mandated' source of default data and Parties may wish to explore this further.

86. Workshop participants may wish to explore views expressed by Australia (indirectly) and USA (directly) in relation to the appendix to Annex I of the UNFCCC reporting guidelines that provides additional reporting guidance. The USA has identified this as an opportunity to enhance and build on the current sector-specific additional guidance in-light of the 2006 IPCC Guidelines, and Australia has sought clarification on the methodology to estimate indirect emissions. The secretariat considers such additional guidance as very useful and would propose that a new annex could be included in the UNFCCC Annex I reporting guidelines providing this information. This new annex could introduce guidance from new methodologies introduced by the 2006 IPCC Guidelines, and could also replace some paragraphs in the UNFCCC reporting guidelines in relation to carbon capture and storage, and feedstock and non-energy use of fuel.

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

3. Principles and definitions

88. In relation to paragraph 2 of the annotated draft of the UNFCCC Annex I reporting guidelines, the secretariat has flagged whether text on TACCC should be anchored to the annual submission instead of the inventory submission alone (hence also a terminology issue). This issue is also of relevance to paragraphs 3

89. In relation to paragraph 4 ('transparency'), the secretariat has included in the annotated draft of the UNFCCC Annex I reporting guidelines a question of whether the transparency requirement is to be extended beyond 'assumptions' and 'methodologies' to also include, for example, contextual information on general elements (e.g. national system).

90. In relation to paragraph 4 ('completeness'), the secretariat included in the annotated draft of the UNFCCC Annex I reporting guidelines a need for some clarity on country-specific reporting may be needed to remove ambiguity when it comes to expert review. Clarity could be in the form as to whether reporting of categories or country-specific categories for which no methodology exists in the 2006 IPCC Guidelines is a should or shall with respect to accounting ('total GHG emissions') and inventory time series (years).

91. In relation to paragraph 5, the secretariat suggests that this could be revised to reflect terminology used for reporting and review.

92. In relation to paragraph 6bis introduced by the EU, the secretariat flags the question of what terminology to use when referring to national systems/national inventory systems. The secretariat has also provided alternative text to that provided by the EC by extending the considerations to inventory planning and management, and including "complete" with the "consistent, comparable, accurate and transparent".

93. In relation to paragraph 7, 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 CRF submissions.

94. The secretariat proposes an additional statement to be included in paragraph 45 to clarify or define the annual submission. This statement relates to a requirement of Annex I Parties when using the CRF Reporter to submit to the secretariat the XML files in addition to the CRF tables.

4. Higher-tier methods and models

95. The secretariat proposes a new section on the reporting requirement of Annex I Parties when using higher-tier methods and/or models to estimate emissions and/or removals. Text for this section will need to be determined based on 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. Or would it be a check list? In workshop 2 Parties identified a list of considerations that can be used as a basis for reporting guidance:

(a) Information related to models:

(i) The basis and type of 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 key inputs and outputs;

(viii) The details of calibration and model evaluation;

(ix) Uncertainty and sensitivity analysis;

(x) The quality assurance and quality control 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;
- Quality assurance and quality control;
- Confidentiality;

(ii) Category-specific:

- The implied emission factor;
- The uncertainty;
- How completeness and time-series consistency are ensured.

5. Terminology

96. With evolving reporting requirements under the Convention (i.e. from Convention to the Kyoto Protocol) terms used to describe the same ‘activity’ or ‘object’ are not always consistent. The secretariat has identified two terminology issues that workshop participants may discuss and agree now or at some point in the future:

(a) 'UNFCCC Annex I reporting guidelines' or 'Revised UNFCCC Annex I reporting guidelines'

(b) 'National system' versus 'national inventory system';

(c) 'Annual submission' versus 'national greenhouse gas inventory' versus 'annual inventory submission'; and

(d) 'Key category analysis' and 'key category determination'?

6. Issues related to CRF tables

97. The coverage of years in the inventory submission is an important issue. Workshop participants will need to identify and agree the coverage, noting both data management and 'value' consideration if electing a requirement to report all years.

98. Related to the above coverage issue is the question as to whether the cross-cutting tables are to be generated by the CRF Reporter for each inventory year? This is relevant to:

(a) CRF table 7 (key category analysis) – The requirement is to report this table in the NIR and the CRF. Workshop participants will need to identify whether the requirement is only for the NIR or both. Further, the coverage of years for the key category analysis will need to be discussed – will it be only for the base year and the latest inventory year, or for all years?

(b) CRF table 8 recalculations) –

(i) Is the requirement for all years even it is agreed that Annex I Parties are required to report only a subset of inventory years?

(ii) Is a rounding error (and related) a recalculation or not?

(c) CRF table 10 (trends) – if the requirement is not to submit a CRF for each inventory year, is there still a requirement for the CRF Reporter to store data for each inventory year and subsequently in CRF table 10?

III. Synthesis of the views expressed by Parties on the coverage and format of the tables of the CRF for reporting under the revised Annex I reporting guidelines

A. Key issues identified by Parties in their submissions

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

(a) The current CRF template is to be used as the basis for developing new CRF tables and the revision to the CRF tables should be limited to changes of coverage of sectors, categories and gases introduced by the 2006 IPCC Guidelines. New categories (e.g. CO_2 transport and storage) and gases (e.g. F-gas species), and some changes (e.g. reorganizing of category trees) introduced by the 2006 IPCC Guidelines need to be appraised with a view to identifying business logic, mapping and subsequent analysis of the impact on the current CRF tables;

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

(c) Agriculture and Land Use, Land-Use Change and Forestry (LULUCF) are to continue to be reported separately under agriculture, forestry and other land use (AFOLU) (but with a AFOLU summary table) (relevant also for recalculations, summary tables and trend tables).

100. Together with the overall understanding of the needed revisions, there are many general and technical questions that need further discussion and agreement before the outcome could be integrated in the revised CRF tables. Some of these questions are directly linked to the discussion points in the main text of the reporting guidelines (see section II), e.g.:

(a) Accounting issues (e.g. indirect CO_2 and N_2O; AFOLU reporting and accounting; reporting with and without factoring out of natural disturbances and climate variability for the national total; the coverage of gases (F-gases) and GWPs to be used (see sections on accounting issues above);

(b) Base year and coverage of years in a reported inventory time series, including for F-gases;

(c) Recalculations – definitions and what years to report back in case of recalculations;

(d) Definitions of existing notation keys and the possibility of addressing categories with very low emissions/removals in a practical manner (see section "Reporting – general guidance – completeness" above).

101. Other issues related to the revision of the CRF tables are linked to the way the agreed general approach for revising the CRF tables discussed in paragraph 84 should be implemented. Those issues include:

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

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

(c) Defining the elements from the 2006 IPCC Guidelines to be incorporated in the revised CRF and their templates (e.g. defining the final format of the tables for new categories, options to report indirect CO_2 and N_2O emissions in the sectoral and summary tables).

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

102. The answers to the listed questions and issues will have implications on the outline of the revised CRF tables. The issues for further discussion and implementation are further detailed at the level of groups of tables for the particular inventory sector or for the summary and cross-sectoral tables.

B. Approach

103. This paper contains views of Parties on the structure and/or content of different groups of specific tables of the CRF. Each sub-section addresses a set of tables for a particular sector and contains four parts:

(a) Views by Parties: The secretariat has made every effort to summarize all and not to alter the view expressed by the Parties by keeping as closely as possible to the Parties' original text. The Party providing the comment is identified.

(b) Background information: This part provides some specific considerations for the proposed modifications and aims at facilitating consideration of the issues.

(c) Proposed modifications: The part contains a list of the modifications to the tables[1], included in the annex III to this note. The modifications are based on the suggestions by the Parties. Some further changes are proposed to address some of the concerns expressed by the Parties or to ensure the integrity of the CRF tables. The changes following Parties suggestions are included in the modified CRF tables with yellow background. Modifications for which there is disagreement expressed in the Parties' submissions or which are not particularly discussed by the Parties are marked in the CRF tables with pink background. In cases where new tables are added or options are suggested, this is marked over the CRF table. Those types of modifications are further included in the sections on "Issues for further discussion and implementation". Modifications which final version depends on the outputs of other processes under the Convention (i.e. total GHG emissions, base year, coverage of F-gases, etc) are marked in blue for further attention at a latter point in time.

(d) Issues for further discussion and implementation: This part summarizes the issues that need particular attention. Some of those are rather general and their discussion could precede the specific discussion for the sectoral tables. Others are of more technical nature and related to the layout for a suggested new table or a choice between reporting options.

104. The part also lists some follow-up changes to the tables that are not implemented at this phase of the revision of the CRF tables. Those of them that are general and apply to all tables are not repeated in each section and can be summarized as follows:

(a) Changing the category numbering;

(b) Formatting the tables;

(c) Fixing the shading of the tables;

(d) Fixing the number and text of the footnotes and the documentation boxes in line with the new structure of the tables and the NIR;

(e) Ensuring consistency between sectoral and cross-sectoral tables.

C. Summary of views of Parties relating to the structure and/or content of the CRF tables

1. ENERGY

Summary of the views by Parties:

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

[1] The table list is as in the current CRF. Suggested new tables appear in the relevant places they need to be included.

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

(b) Concerns for the allocations of emissions between the energy and IPPU sectors (feedstock and non-energy use of products) and the energy and waste sectors (energy recovery reporting) and possible double counting;

(c) Specific suggestions on the treatment of particular changes in the 2006 IPCC Guidelines compared to the current CRF tables (e.g. including a separate table for CO_2 transport and storage, keeping unchanged the way the domestic and international aviation is reported).

106. Box 1 reproduces the specific views relating to the Energy sector as expressed by Parties.

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 CO_2 capture in a separate column in the energy background tables. The EU supports this way of implementation of reporting on CO_2 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 CO_2 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 CH_4 to CO_2. 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

CO_2 transport and storage: The reporting of CO_2 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 CO_2 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 CO_2 transport and storage should be included in the CRF tables. For transparency, it should be easy to identify CO_2 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 andoes 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)

Background:

107. The proposed modifications to the tables in the energy sector follow the specific suggestions made by Parties in their submissions. However, the submissions are contradictory in some points, namely in the way of reporting feedstocks and non-energy use of fuels, the level of disaggregation under manufacturing industry and construction and for reporting venting and flaring. In other cases the suggestion is not specific enough and is included under the items for further discussion. The modifications are applied in a way to keep the overall consistency in the CRF approach.

108. The modifications needed to the reporting of fuel combustion are the most straight forward and limited mainly to revision of the category and fuel list. However, the review process and the submissions of the Parties show that some further consideration should be given to the cross-sectoral checks with the IPPU and waste sectors and how to report biofuels. The transparency in reporting could be improved and a simplified option to allow tracking of emissions between sectors is suggested as a starting point for discussion. These cross-sectoral checks could also be included as a separate set of verification tables.

109. The tables linked to the reporting of the reference approach, namely table 1.A(c) Comparison of CO_2 emissions from Fuel Combustion and table 1.A(d) Feedstocks and Non-Energy Use of Fuels of the current CRF were initially developed and further revised based on the feedback from Parties and the International Energy Agency. However, the experience with the reviews shows that the tables provide information that is not sufficiently transparent. Specific proposals for modifying the tables and for additional instructions to them to be included in the CRF tables will be needed. Modifications to tables are provided as a starting point for discussion. Thus revised table 1.A(d) is meant as a continuation of the reference approach table. 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 templates of the tables will also depend on the decision to be taken for the reporting of non-energy use of fuels (included under the IPPU sector in the 2006 IPCC Guidelines) (see Issues for further discussion and implementation).

110. An issue linked to the reporting in the sector is the usefulness of the IEFs for fugitive emissions – oil and natural gas. The ranges for the default EFs in the sector are quite large and combined with the flexibility for Parties to select AD, the IEFs are not providing easily comparable information. In most of the cases, even if not directly used for the calculation, the AD needed for the tier 1 method are part of the reporting requirements for the category. Therefore unification of the AD could be considered that will facilitate comparison of inventory data.

Proposed modifications[2]:

Table 1 Sectoral Report for Energy

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

(i) Category 1.A.1.a Electricity and Heat Production is disaggregated to 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 sub-categories is not included in the sectoral reports);

(ii) Category 1.A.2 Manufacturing industries and Construction is further disaggregated to accommodate additional sub-categories 1.A.2.f to 1.A.2.m (to be discussed since not supported in all submissions);

(iii) Category "Civil aviation" is renamed to "Domestic aviation";

(iv) A new sub-category 1.B.1.b Uncontrolled Combustion and Burning Coal Dumps is added under category 1.B.1. Solid fuels;

(v) Subcategory 1.B.2.c. Venting and Flaring is deleted (to be discussed);

(vi) Category 1.C.3. Other Emissions from Energy Production is added;

(vii) Category 1.C Transport and Storage is added disaggregated into 1.C.1 Transport of CO_2, 1.C. 2 Injection and Storage and 1.C.3 Other ;

(viii) Category "CO_2 captured" is added as a memo item disaggregated to "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 is reorganized following the structure of the 2006 IPCC Guidelines and the suggestions by the Parties, namely:

(i) Category 1.A.1.a Electricity and Heat Production is disaggregated to 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;

(ii) Category 1.A.2 Manufacturing industries and Construction is further disaggregated to accommodate additional sub-categories 1.A.2.f to 1.A.2.m (to be discussed).

(iii) Category 1.A.1.c Manufacture of Solid Fuels and Other Energy Industries is further disaggregated to 1.A.1.c.i Manufacture of Solid Fuels and 1.A.1.c.ii. Other Energy Industries with sub-division "combustion emissions related to oil and gas extraction" (to be discussed).

(iv) Category "Civil aviation" is renamed to "Domestic aviation".

(v) Category 1.A.3.e Other transportation is disaggregated to 1.A.3.e.i Pipeline Transport and 1.A.3.e.ii Other (please specify).

(vi) Category 1.A.4.c Agriculture/Forestry/Fish Farms is disaggregated to 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 are revised to account for the updated split in the 2006 IPCC Guidelines, namely:

(i) Headings for Solid, Liquid and Gaseous Fuels, Biomass are kept.

[2] As included in the set of modified CRF tables in Annex III to this note.

(ii) Peat is added with the following footnote: "Although peat is not, strictly speaking, a fossil fuel, the CO_2 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.";

(iii) "Other fuels" is replaced by "Other Fossil Fuels".

(c) Fuel category "Biomass" is added for all subcategories under transport.

(d) A separate column is added to allow reporting of "CO_2 captured" and two footnotes are added linked to the new column. The first footnote is added to the CO_2 emissions column: "Net CO_2 emissions after subtracting the amounts of CO_2 captured." The second footnote is added to the CO_2 IEF column: "The IEFs for CO_2 are estimated on the basis of gross emissions, i.e. CO_2 emissions + amount captured".

(e) A section "Information item" is added with two checks integrated: 1) waste incineration with energy recovery included in the energy sector and reported under biomass and other fossil fuels; 3) biofuels included as biomass and liquid fuels. A footnote is linked to the "Information item: "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 sub-categories and fuels should be included in the NIR."

Table 1.A(b) CO_2 from Fuel Combustion Activities – Reference Approach

(a) Peat is included as a separate fuel group to account for the change in the sectoral approach. A footnote is added: "Although peat is not, strictly speaking, a fossil fuel, the CO_2 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) Coal Tar is added as a secondary solid fuel

(c) Fuel type "Other fossil fuels" is added for consistency with sectoral approach with 3 subdivisions: municipal wastes (non-biomass fraction), industrial wastes and waste oils.

(d) Further fuels and subdivisions could be considered (to be discussed).

Table 1.A(c) Comparison of CO_2 Emissions from Fuel Combustion

(e) Fuel categories are made consistent with the 2006 IPCC Guidelines and the changes made in tables 1.A(a) and 1.A(b), namely fuel type "Other" replaced by "Peat" and "Other Fossil Fuels".

(f) Activity data for comparison is changed to include reductants, namely: "Apparent energy consumption (excluding non-energy use, reductants and feedstocks)"

(g) A footnote is added to reflect the inclusion of the column CO_2 captured in the SBDTs for fuel combustion: "For the sectoral approach gross emissions (without accounting for CO_2 captured) are included in the comparison".

(h) A footnote is added to make a reference to the section on explanation of the comparison between the approaches in the 2006 IPCC Guidelines: "In 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."

Note: Further instructions to the use of the table may need to be included (see section Issues for further discussion and implementation).

Table 1.A(d) Feedstocks and Non-Energy Use of Fuels

(a) Table name is changed to "Feedstocks, Reductants and other Non-Energy Use of Fuels".

(b) Option 1: No change implemented to the structure of the table pending further decision on the reporting between the energy and IPPU sectors (see section Issues for further discussion and implementation).

(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 by the 2006 IPCC Guidelines;

(ii) Provide information on the C and CO_2 emissions from the fuels not included in the Reference approach.

(iii) Provide information on the CO_2 emissions associated with the fuels that are included in the inventory total, specifying the quantities and the categories under which the emissions are reported.

(iv) Provide estimation of carbon fraction stored in NEU products.

Fugitive Emissions

Table 1.B.1 Fugitive Emissions from Solid Fuels

(a) The category list is reorganized following the structure of the 2006 IPCC Guidelines as supported in the Parties' submissions, namely:

(i) A new sub-division "Abandoned Underground Mines" is added under 1.B.1.a.i Underground mines;

(ii) A new sub-category 1.B.1.b Uncontrolled Combustion and Burning Coal Dumps is added under category 1.B.1. Solid fuels.

(b) A separate column is added to allow reporting of "CO_2 captured" with the relevant footnotes (see table 1.A(a)).

(c) Footnote is added to Solid fuel transformation: "Include emissions from coal and charcoal production under this category."

Table 1.B.2 Fugitive Emissions from Oil, Natural Gas and Other Sources

(a) Table name is changed to "Fugitive Emissions from Oil, Natural Gas and Other Emissions from Energy Production".

(b) The category list is reorganized following the structure of the 2006 IPCC Guidelines as supported in the Parties' submissions, namely:

(i) Categories 1.B.2.a Oil and 1.B.2.a Natural gas are disaggregated to sub-categories i. Venting, ii. Flaring and iii. Other;

(ii) The sub-categories in the current CRF table are included under the new category iii. Other;

(iii) The sub-category "Production/Processing" in current CRF is divided into two separate sub-categories "Production" and "Processing";

(iv) Sub-category 1.B.2.a.v Other leakage under 1.B.2.a Natural gas in the current CRF is removed;

(v) The old category 1.B.2.c Venting and Flaring which allowed reporting of all oil and gas production is removed (to be discussed).

(c) A new category 1.B.3 Other Emissions from Energy Production is added with sub-divisions "Geothermal Energy Production" and "Other".

(d) A separate column is added to allow reporting of "CO_2 captured" with the relevant footnotes (see table 1A(a))

New Table (CO_2 transportation and storage)

(a) A first draft for a new table 1.C CO_2 Transport and Storage is added. The table accounts for CO_2 emissions from the activity 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 from volume 1, 2006 IPCC Guidelines.

Table 1.C International Bunkers and Multilateral Operations

(b) Table number is changed to 1.D;

(c) No changes are introduced to the structure of the table;

(d) Rows for reporting "Biofuels" and "Lubricants" are added.

Issues for further discussion and implementation:

111. The major issues that need further discussion before the CRF tables for the sector can be finalized can be summarized as follows:

Fuel combustion:

(a) Reporting of feedstock and non-energy use of fuels and reflecting the decision in the relevant tables: The 2006 IPCC Guidelines move reporting of feedstocks and non-energy use of fuels to the IPPU sector, which is not supported in all submissions. The participants in the workshop could advice keeping the existing reporting, moving the non-energy use of fuels to the IPPU sector or allowing flexibility to Parties in reporting those emissions under energy or IPPU. In any case inclusion of further cross-sectoral checks allowing tracking the reporting of fuels and resulting emissions across the inventory in the CRF tables could enhance the transparency of reporting. Options for including such checks in the CRF could be adding information items under existing CRF tables (see proposed modifications in option 2 for table 1.A(d)), or the inclusion of table 2.12 *IPPU Background Table: Allocation of CO_2 emissions from Non-Energy Use of fossil fuels: IPPU and other sectors in the CRF or similar formats.*

(b) Finalization of the category tree: Contradictory opinions are expressed by Parties in some cases, particularly on the level of disaggregation for the category manufacturing industries and construction, or no detailed views are expressed. The EU requested time to consider the split of the category 1.A.1.c Manufacture of Solid Fuels and Other Energy Industries to 1.A.1.c.i Manufacture of Solid Fuels and 1.A.1.c.ii. Other Energy Industries. Norway suggested to include a sub-category for reporting combustion emissions related to oil and gas extraction under Other Energy Industries. Category 1.B.1.c. Solid Fuel Transformation could be disaggregated to Coke Production and Charcoal production. The categories that need further discussion are marked with pink background in the revised set of CRF tables.

(c) Finalization of the list of fuels and fuel groups: Consider reporting of biofuels under transportation and removing peat from some categories. Consideration could also be given to a possible moving of the derived gases reported under solid fuels to the other fossil fuels to enhance the comparability of the solid fuel IEFs and to the expansion of the list of fuels in the reference approach.

(d) Reporting waste fuel (cross-sectoral issue + biomass and fossil fraction): Issues mentioned in the EU and Japan submissions. A simplified option (information item to table 1(A) is suggested as a starting point for discussion. A need for cross-sectoral table for verification purposes could be another option and the main text of the reporting guidelines could include a paragraph for the reporting requirements for the NIR in this respect.

(e) Refinement of the comparison between the sectoral and reference approaches: Norway suggests that the reference and sectoral approaches are coordinated in a way that facilitates consistency and verification. Specific suggestions in this respect are not provided by the Party.

Fugitive emissions:

(f) Finalization of the category tree: Deletion of category 1.B.2.c Venting and Flaring is not supported in all submissions.

(g) Usefulness of IEFs: considering the usefulness of the IEFs in the table for Fugitive Emissions from Oil, Natural Gas and Other Sources and the possibility to report the AD in only one unit to facilitate comparability of inventory data across Parties.

(h) Joining fugitive emissions in a single table

CO_2 transportation and storage:

(a) New table: Considering the template of first draft of the table for reporting CO_2 transportation and storage.

2. Industrial Processes and Product Use

Summary of the views by Parties:

112. The views of Parties relating the revisions needed to the IPPU sector include:

(a) Support for merging the current sectors Industrial processes and Solvents and other product use into a single sector "Industrial processes and Product use" as suggested by the 2006 IPCC Guidelines and for including new fluorinated gases in the CRF tables;

(b) General comments on the need of comparability among the CRF categories and other international reporting schemes (such as UNECE) and ensuring time-series consistency in reporting;

(c) Concerns for emission allocation between the energy and IPPU sectors (feedstock and non-energy use of products) and expressed with possible double counting.

(d) Specific suggestions on the treatment of particular changes in the 2006 IPCC guidelines compared to the current CRF tables (e.g. including new sub-categories or reorganizing existing categories).

113. Box 2. reproduces the specific suggestions related to the IPPU sector as expressed by Parties.

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 an 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 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 CO_2 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 CO_2 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, SF_6 emissions are reported as Gg SF_6 units but HFCs and PFCs are reported as Gg-CO_2 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)

Background:

114. The proposed modifications to the tables in the sector follow the changes as in the 2006 IPCC Guidelines and the specific suggestions made by Parties in their submissions. For CO_2, CH_4 and N_2O emissions from the sector, the changes are mainly linked to the organization of the category tree. In some cases the modifications of the CRF tables propose a higher disaggregation of categories than included in the Parties' submissions or in the background tables of the 2006 IPCC Guidelines. Such an approach aims at improving comparability of the inventory data and allowing data to be reported at the level at which methodology and default EF is available in the Guidelines.

115. The SBDT for CO_2, CH_4 and N_2O emissions allows flexibility linked to the different input requirements of the different tiers applied by the Parties. However, the flexibility of reporting AD, here and in general in the CRF tables, reduces the comparability of the resulting IEFs. In most of the cases, even if not directly used for the calculation, the AD needed for the tier 1 method are part of the reporting requirements for the category. Therefore unification of the AD could be considered that will facilitate comparison of inventory data.

116. The main reporting issue for the sector is reporting of the F-gases. The experience with reporting and reviewing of the information provided by Parties shows that the level of disaggregation in the CRF SBDTs is in many cases higher than the reporting possibilities of the Parties. The list of gases is rather long when reporting by species and new gases are added by the 2006 IPCC Guidelines. Some of the species are currently reported by 1–2 Parties. Since not all gases are produced or consumed in a country, filling the tables creates a burden to Parties for ensuring completeness of reporting. In many cases the reporting by species is limited by the confidentiality of information and the information is reported at the level of unspecified or total PFCs or HFCs. A more flexible approach in predefining gas/category for reporting is a preferable option, however, limited by the current functionality of the CRF Reporter software. Having said this, the level of disaggregation for reporting gases and AD in the CRF should be reconsidered by the participants in the workshop and clear guidance to be provided for further modification of the tables. A simplified reporting table summarizing all F-gases and allowing its customization depending on the existing category/gas combinations relevant for the reporting Party is suggested as a starting point for discussion.

117. Estimates for potential emissions of F-gases were to be reported in the current CRF tables by Parties that do not yet have the necessary data to calculate actual emissions as in the early years of reporting only a few Parties were in position to provide actual emission estimates. The reporting guidelines (FCCC/SBSTA/2006/9) further indicate that 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. The 2006 IPCC Guidelines suggest use of

potential emissions only for verification purposes, and relevant methodology is included in Annex 2 of Volume 3 of the 2006 IPCC Guidelines.

Proposed modifications:

Table 2(I) Sectoral Report for Industrial Processes

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

(i) Categories 2.A Mineral Products and 2.C Metal Production are renamed to 2.A Mineral Industry and 2.C Metal Industry.

(ii) Category 2.A Mineral Industry includes two new sub-categories: 2.A.3 Glass production and 2.A.4 Other Process Uses of Carbonates. The current CRF sub-categories Limestone and Dolomite Use, Soda Ash Production and Use, Asphalt Roofing, Road Paving with Asphalt are removed.

(iii) Category 2.B Chemical Industry includes 5 new sub-categories 2.B.4 Caprolactam, Glyoxal and Clyoxylic Acid Production, 2.B.6 Titanium Dioxide Production, 2.B.7 Soda Ash Production, 2.B.8 Petrochnical and 2.B.9 Carbon Black Production, Fluorochemical Production.

(iv) Current CRF sub-category SF_6 Used in Aluminium and Magnesium Foundries under category 2.C Metal Industry is replaced by 2.C.4. Magnesium Production.

(v) Sub-categories Lead Production and Zink Production are added under 2.C Metal Industry (to be discussed).

(vi) Current CRF category 2.D Other Production is removed and its sub-categories are included under the new category 2.H Other.

(vii) New category 2.D. Non-Energy Products from Fuels and Solvent Use is added with 4 sub-categories (Lubricant use, Paraffin Wax use, Solvent use and other) (to be discussed).

(viii) Current CRF category 2.E. Production of Halocarbons and SF_6 is removed as a separate category and moved to the new sub-category 2.B.9 Fluorochemical Production.

(ix) New category 2.E Electronics Industry with 5 sub-categories (Integrated Circuit or Semiconductor, TFT Flat Panel Display, Photovoltaics, Heat Transfer Fluid and Other) is added.

(x) Current CRF category 2.F Consumption of Halocarbons and SF_6 is renamed and reorganized. The new category 2.F Product Uses as Substitutes for ODS keeps 6 of the previous sub-categories (Refrigeration and Air Conditioning, Foam Blowing Agents, Fire Protection, Aerosols, Solvents, Other applications) of 2.F with some changes in the naming. Current sub-categories Semiconductors and Electrical Equipment are removed from the category.

(xi) New category 2.G. Other Product Manufacture and Use with 4 sub-categories (Electrical Equipment, SF_6 and PFCs from Other Product Use, N_2O from Product Uses and Other) is added.

(b) New columns are added to accommodate the reporting of NF3 and Other halogenated gases (to be discussed).

(c) Columns for reporting Potential emissions of F-gases are removed.

Sectoral Background Data for Industrial Processes

Table 2(I).A-G Emissions of CO_2, CH_4 and N_2O

(a) The category list is reorganized following the structure of the 2006 IPCC Guidelines as listed for table 2(I) and including only categories where CO_2, CH_4 and N_2O are expected, namely:

(i) Categories 2.A Mineral Products and 2.C Metal Production are renamed to 2.A Mineral Industry and 2.C Metal Industry.

(ii) Category 2.A Mineral Industry includes two new sub-categories: 2.A.3 Glass production and 2.A.4 Other Process Uses of Carbonates. The current CRF sub-categories Limestone and Dolomite Use, Soda Ash Production and Use, Asphalt Roofing, Road Paving with Asphalt are removed.

(iii) Category 2.B Chemical Industry includes 5 new sub-categories 2.B.4 Caprolactam, Glyoxal and Clyoxylic Acid Production, 2.B.6 Titanium Dioxide Production, 2.B.7 Soda Ash Production, 2.B.8 Petrochnical and 2.B.9 Carbon Black Production, Fluorochemical Production.

(iv) Current CRF sub-category SF_6 Used in Aluminium and Magnesium Foundries under category 2.C Metal Industry is replaced by 2.C.4. Magnesium Production.

(v) Sub-categories Lead Production and Zink Production are added under 2.C Metal Industry (to be discussed).

(vi) Current CRF category 2.D Other Production is removed and its sub-categories are included under the new category 2.H Other.

(vii) New category 2.D. Non-Energy Products from Fuels and Solvent Use is added with 4 sub-categories (Lubricant use, Paraffin Wax use, Solvent use and other) (to be discussed).

(viii) New category 2.G. Other Product Manufacture and Use is added with sub-categories N_2O from Product Uses and Other.

(b) Some further disaggregation of categories is suggested at the level at which there are methodologies and EFs in the 2006 IPCC Guidelines. Predefining categories facilitates transparent reporting and comparability of data during the review. Added sub-divisions include (to be discussed):

(i) Ceramics, Other uses of soda ash, Non-metallurgical Mg production, Other uses of carbonates - under Other (2.A Mineral Industry);

(ii) Caprolactam, Glyoxal and Clyoxylic Acid – under sub-category Caprolactam, Glyoxal and Clyoxylic Acid Production (to allow separate reporting of AD, IEFs and emissions);

(iii) Methanol, Ethylene, Ethylene Dichloride and Vinyl Chloride Monomer, Ethylene Oxide, Acrylonitrile, Carbon Black, Other (predefined production – Styrene) – under sub-category 2.B.8 Petrochemical and Carbon Black Production. (Some of the subcategories are coming from the old category Other under Chemical Industry.)

(iv) Direct reduced iron and pellet - under 2.C.1 Metal Industry; Coke is removed since it has to be reported under energy sector according to the 2006 IPCC Guidelines.

(v) Prebake technology and Soderberg technology - under 2.C.3 Aluminium Production;

(vi) Medical applications, Propellant for Pressure and Aerosol Products and Other – under sub-category 2.G.3 N_2O from Product Uses;

(vii) Pulp and Paper and Food and Beverages Industry – under sub-category 2.H Other.

Table 2(II) Sectoral Report for Industrial Processes – Emissions of HFCs, PFCs and SF_6

(a) The category list is reorganized following the structure of the 2006 IPCC Guidelines as listed for table 2(I) and including only categories where emissions from F-gases are expected, namely:

(i) Category 2.B. Chemical Industry is added with two sub-categories: 2.B.9 Flurochemical Production and 2.B.10 Other. Flurochemical Production is further disaggregated to By-product and Fugitive emissions (from the previous category 2.E. Production of Halocarbons and SF_6).

(ii) Current CRF sub-category SF_6 Used in Aluminium and Magnesium Foundries under Metal Industry is replaced by 2.C.4. Magnesium Production.

(iii) Current CRF category 2.E. Production of Halocarbons and SF_6 is removed.

(iv) A new category 2.E Electronics Industry with 5 sub-categories (Integrated Circuit or Semiconductor, TFT Flat Panel Display, Photovoltaics, Heat Transfer Fluid and Other) is added.

(v) Current CRF category 2.F Consumption of Halocarbons and SF_6 is renamed and reorganized. The new category 2.F Product Uses as Substitutes for ODS keeps 6 of the previous sub-categories (Refrigeration and Air Conditioning, Foam Blowing Agents, Fire Protection, Aerosols, Solvents, Other applications) of the old 2.F category with some changes in the naming. Current CRF sub-categories Semiconductors and Electrical Equipment are removed from the category.

(vi) New category 2.G. Other Product Manufacture and Use with sub-categories Electrical Equipment, SF_6 and PFCs from Other Product Use and Other) is added.

(b) New columns are added to allow reporting of new gases (to be discussed).

(c) The sheet 2 of the table containing information on the category emissions in CO_2 equivalent for each gas is updated to reflect the category list as in the sheet 1 of the same table.(The GWPs will be updated upon finalization of the list of gases to be used in the table.)

(d) The section on Potential emission and the comparison between A/P emissions are deleted (to be discussed).

Table 2(II).C, E Metal Production; Production of Halocarbons and SF_6

Table 2(II).F Consumption of Halocarbons and SF_6

(a) Tables are merged in a new background data table for F-gases.

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

(a) A simplified background data table 2(II)A-H Emissions of F-gases is suggested. The table uses the category list as in the modified table 2(II) and allows specifying gases from a standard list as relevant for the Parties.

(b) The table has 2 sheets with different structure to take into account different methodological approaches for estimating emissions from various categories. Since the methodological approaches for prompt emission and emissions from banked F-gases and across categories differ, further explanations for using the table are provided in the NOTE, namely: “In case of prompt emissions (such as from aerosols, open cells, some of the solvents), the consumption in the same year should be reported as consumption in new manufactured products and 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."

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

(a) Tables are deleted to reflect merging of the sector with the current industrial processes sector. Emissions, previously reported under this sector, are included in the modified tables 2(I) and 2(I)A-H.

Issues for further discussion and implementation:

118. The major issues that need further discussion before the CRF tables for the sector can be finalized are as follows:

CO_2, CH_4 and N_2O:

(a) Reporting of feedstock and non-energy use of fuels and reflecting the decision in the relevant tables: Considering inclusion of category 2.D. Non-Energy Products from Fuels and Solvent Use under the IPPU sector.

(b) Finalization of the category tree, considering:

(i) The level of disaggregation in the SBDTs;

(ii) Adding a category for anode production (as suggested by Norway);

(iii) Including sub-categories for Lead and Zink production;

(iv) Considering reporting of urea manufacturing and fertilization (as noted by the EU).

(c) Usefulness of IEFs: considering the comparability of the IEFs given the flexibility to report different AD.

F-gases:

(a) Nomenclature: Reviewing the existing list of F-gases and considering the new gases or groups of gases to be included in the sectoral report and in the background data table (the final list of gases is part of the accounting issues);

(b) Aggregation: pre-defining level of aggregation (grouping) in reporting of F-gases (e.g. as suggested by the USA);

(c) Update the GWPs: to be implemented upon finalization of the list of gases and the table of the GWP in the reporting guidelines;

(d) New table: Considering the layout of a simplified template for the SBDT for reporting F-gases; considering the usefulness of reporting F-gases disaggregated to individual species given that many data are confidential; considering the comparability of the IEF in case of aggregated reporting.

(e) Potential emissions: considering keeping the information for verification purposes (could be included as an information item or as a part of a set of verification tables (e.g. together with some cross-sectoral checks)).

3. AFOLU

Summary of the views by Parties:

119. The views of Parties relating to the structure and content of the CRF tables for the new AFOLU sector Agriculture in the 2006 IPCC Guidelines that combines the current agriculture and LULUCF sectors include:

(a) Support for keeping the reporting of agriculture and LULUCF sector separate as in the current CRF tables (with a summary at the level of the new AFOLU sector) and indicating the need for further consideration among Parties of the allocation of some of the revised AFOLU categories to the LULUCF and agriculture sector.

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

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

120. Box 3. reproduces the specific suggestions related to the AFOLU sector as expressed by Parties.

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 N_2O 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 N_2O 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, CH_4 emissions are reported by livestock species; however, they should be able to be reported by category of manure management as well as N_2O emissions.
- Regarding livestock manure management, CH_4 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. CO_2 emissions from urea fertilization or CO_2 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 N_2O 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-CO_2 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-CO_2 Emission Sources on Land (3C1 of 2006 IPCC Guidelines); Other (3D of 2006 IPCC Guidelines)
(USA)

Background:

121. The changes in the sector are the most demanding given the new structure for reporting in the 2006 IPCC Guidelines. The proposed modifications below reflect the general agreement of the Parties that the sectoral reports and SBDTs should be such that reporting of the current agriculture and LULUCF sectors can continue to be reported separately, while also allowing an overview of the new AFOLU sector as suggested by the 2006 IPCC Guidelines. To allow this, a new table 3 Sectoral Report for AFOLU is added and the current sectoral reports for 4. Agriculture and 5. LULUCF are kept for the two sectors. The layout of the tables is kept as closely to the current CRF tables as possible and the current CRF categories are mapped to the revised category. Table 1 shows the category lists as per current CRF and the 2006 IPCC Guidelines. The last column shows where current CRF categories are allocated in the new structure and the split of the new category 3.C Aggregate sources and non-CO_2 emissions sources on land between agriculture and LULUCF. Suggested list is largely based on Australia's submission (see FCCC/SBSTA/2010/MISC.7/Add.2 and Annex II of this note) and differs from the mapping suggested by the USA, where only biomass burning is the 3.C category that should be accounted for under LULUCF. The proposed category split represent a possible option and is meant as a starting point for discussion.

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-CO_2 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_2O Emissions from managed soils (part of old CRF 4.D)
6. Other Land	B. Cropland	5. Indirect N_2O Emissions from managed soils (part of old CRF 4.D)
C. Aggregate sources and non-CO_2 emissions sources on land	C. Grassland	6. Indirect N_2O 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_2O Emissions from managed soils (3)		3. Grassland (CRF 5.C)
5. Indirect N_2O Emissions from managed soils		4. Wetlands (CRF 5.D)
6. Indirect N_2O Emissions from manure management		5. Settlements (CRF 5.E)
7. Rice cultivations		6. Other Land (CRF 5.F)
8. Other (please specify)		**C. Aggregate sources and non-CO_2 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_2O Emissions from managed soils (excluding the part reported under Agriculture, CRF table 5(I), 5(II) and 5(III))
		5. Indirect N_2O 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)

122. There are only few specific comments or suggestions by Parties 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 tables for reporting carbon stock change is kept unchanged. Parties raised the issue with the usability of the IEF in the sector and recommended it deletion in the tables for carbon stock change. The reporting of the new 3.C category (Aggregate sources and non-CO_2 emissions sources on land) should be given further consideration and the part reported under agriculture should be excluded from the LULUCF sector. The emissions from 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 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.

Proposed modifications:

123. Two options are proposed for the overall structure organization of the AFOLU related tables.

Option 1: Structured around the 2006 IPCC category tree while keeping the sectors agriculture and LULUCF separate. Separate tables for the 3.C categories are allocated under each sector.

Option 2: Artificially creating a sector 3 from the 3.C category from the 2006 IPCC Guidelines, however keeping the split of the categories to be accounted under agriculture and LULUCF. Keeping the livestock and land related tables as in the current CRF.

124. The table sets for each of the options are as follows:

Option 1	Option 2
Table 3 AFOLU (new)	**Table 3 AFOLU (new)**
	Table 3.C.1 Emissions from biomass burning (CRF tables 4.E, 4.F and 5(V))
	Table 3.C.2-8 Aggregate sources and non-CO_2 emissions sources on land (combined CRF tables 4.C, 4.D, 5(I)-(IV) + new elements)
Table 3(I) Agriculture (old table 4)	**Table 4 Agriculture**
Table 3(I)A.1 Enteric Fermentation (CRF 4.A)	Table 4.A Enteric Fermentation
Table 3(I)A.2a+b Manure Management (CRF 4.Ba+b)	Table 4.Ba+b Manure Management
Table 3(I)C.1.a Prescribed Burning of Savannas (CRF 4.E)	
Table 3(I)C.1.b Field Burning of Agricultural Residues (CRF 4.F)	
Table 3(I)C.4-6 Direct and indirect N_2O emissions from Agricultural Soils and Manure Management (part of old CRF 4.D)	
Table 3(I)C.7. Rice cultivations (CRF 4.C)	
Table 3(II) LULUCF	**Table 5 LULUCF**
Table 3(II)B Land transition matrix	Table 5.1 Land transition matrix
Table 3(II)B.1 Forest land (CRF 5.A)	Table 5.A Forest land
Table 3(II)B.2 Cropland (CRF 5.B)	Table 5.B Cropland
Table 3(II)B.3 Grassland (CRF 5.C)	Table 5.C Grassland
Table 3(II)B.4 Wetlands (CRF 5.D)	Table 5.D Wetlands
Table 3(II)B.5 Settlements (CRF 5.E)	Table 5.E Settlements
Table 3(II)B.6 Other Land (CRF 5.F)	Table 5.F Other Land
Table 3(II)C.1 Emissions from biomass burning (CRF table 5(V)	
Table 3(II)C.2-8 Aggregate sources and non-CO_2 emissions sources on land (new)	
Table 3(II)D Harvested wood products	Table 5.? Harvested wood products

OPTION 1:

New table (Table 3 Sectoral Report for AFOLU)

(a) Table 3 Sectoral Report for AFOLU is added following the new category tree suggested by the 2006 IPCC Guidelines (to be discussed). The table is based upon table 3, Annex 8A.2, volume I of the 2006 IPCC Guidelines, however is more aggregated leaving further disaggregation for Livestock and Land for the sectoral reports for Agriculture and LULUCF.

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

Agriculture

Table 4 Sectoral Report for Agriculture

(a) Table number is changed to 3(I).

(b) The table is restructured to add two new sub-headings to distinguish between categories 3.A Livestock and 3.C Aggregated sources and non-CO_2 emissions on land, consistent with the structure of the new table 3. The categories of the current CRF are reorganized under the two new headings.

(c) The column for N_2O emissions from manure management per animal is unshaded to allow reporting of the emissions per animal type rather than by management system and sub-categories 11. Anaerobic Lagoons, 12. Liquid Systems, 13. Solid Storage and Dry Lot and 14. Other is deleted (see option 1 for table 3(I)A.1 (old 4.A) - to be discussed).

(d) Two options are suggested for the part of the table for reporting category 3.C Aggregated sources and non-CO_2 emissions on land (to be discussed):

(i) Option 1: Keeping the structure of the table, however including references to the categories as in table 3 and in the 2006 IPCC Guidelines, i.e. C. Rice cultivation (new category 3.C.7); Category D Agricultural soils (new categories 3.C.4-6), E. Prescribed burning of savanna and F. Field burning of agricultural residues (new category 3.C.1). In addition category Agricultural soils is subdivided to follow the 2006 IPCC category split to Direct N_2O Emissions from Managed Soils, Indirect N_2O emissions from Managed Soils and Indirect N_2O Emissions from Manure Management.

(ii) Option 2: Reorganizes the categories to match the 2006 IPCC Guidelines, e.g. adding category 1.C.1 Biomass burning further disaggregated to Savanna burning and Prescribed Burning of Agricultural Residues (current CRF categories), adding categories 4. Direct N_2O Emissions from Managed Soils, 5. Indirect N_2O emissions from Managed Soils and 6. Indirect N_2O Emissions from Manure Management (replacing current category Agricultural soils) and changing the number of category rice cultivation.

Sectoral Background Data for Agriculture

Table 4.A Enteric Fermentation

(a) Table number is changed to 3(I) A.1.

(b) No changes are introduced to the structure of the table.

(c) New animals (deer, reindeer, rabbit) could be included under Other (please specify) since the 2006 IPCC Guidelines provide default EFs for them.

Table 4.B(a) CH_4 Emissions from Manure Management

(a) Table number is changed to 3(II)A.2(a).

(b) No changes are introduced to the structure of the table.

(c) New animals (deer, reindeer, rabbit, fur-bearing animals, ostrich) could be included under Other (please specify) since the 2006 IPCC Guidelines provide default EFs for them.

Table 4.B(b) N_2O Emissions from Manure Management

(a) Table number is changed to 3(II)A.2(b).

(b) New animals (mink and polecat, rabbit, fox and racoon) could be included under Other (please specify) since EFs are provided.

(c) Two options for the structure of the table are provided to reflect the views by the Parties:

(i) Option 1: reporting per animal. The main structure of the table is kept, however the IEFs are changed to IEF per animal and new manure management

systems (MMS) are added. Given the layout of the table only three new columns for MMS (composting, digesters, burned for fuel or as waste) are added, while the rest of the MMS are to be included under Other (to be discussed).

(ii) Option 2: reporting per MMS. The structure of the table is transposed and the MMS and animal types shift places. A row for excretion per animal is included followed by rows for the different MMS. The table lists the MMS as in the 2006 IPCC Guidelines, namely: Pasture, range and paddock, Daily spread, Solid storage, Dry lot, Liquid/slurry, Anaerobic lagoon, Pit storage, Digester, Burned for fuel or as waste, Deep bedding, Composting, Poultry manure with and without litter, Composting, Aerobic treatment.

Note: If option 2 is selected, the change should be also reflected in table 3(I).

Table 4.C Rice Cultivation

(a) Table number is changed to 3(I)C.7.

(b) No changes in the structure of the table (to be discussed).

Table 4.D Agricultural Soils

(a) Table number is changed to 3(I)C.4-6 and table name is changed to "Direct and indirect N_2O emissions from Agricultural Soils and Manure Management".

(b) The table is revised to reflect the organization and naming in the 2006 IPCC guidelines and the submissions of Parties, namely:

(i) Sub-category Direct Soil Emissions is renamed to Direct N_2O Emissions from Managed Soils;

(ii) Direct N_2O Emissions from Managed Soils are disaggregated to Inorganic N fertilizers, Organic N fertilizers (animal manure, sewage sludge, other), Urine and dung deposited by Grazing Animals, Crop residues, Cultivation of organic soils (i.e. Histosols);

(iii) Sub-category Pasture, Range and Paddock Manure is removed;

(iv) Sub-category Indirect emissions is subdivided into two: Indirect N_2O Emissions from Managed Soils and Indirect N_2O Emissions from Manure Management.

(c) The additional information box is deleted.

(d) Footnotes are added to clarify the content of the table, namely: 1) footnote to the atmospheric deposition (managed soils): "Only atmospheric deposition of N volatilized from agricultural inputs of N are to be reported here (include NO_X associated with burning of savannas and crop residues)" and 2) footnote to the inorganic and organic fertilizers: "Include application of fertilizers on cropland and grassland. If application to other land categories cannot be identified separately, they should be included here".

Table 4.E Prescribed Burning of Savannas

(a) Table number is changed to 3(I)C.1(a).

(b) Sub-categories "Forest land" and "Grassland" are included in the table.

(c) Footnote is 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".

Table 4.F Field Burning of Agricultural Residues

(a) Table number is changed to 3(I)C.1(b).

(b) No changes in the structure of the table are introduced. However, the usefulness of columns: "Dry matter (dm) fraction of residue", "Fraction burned in fields", "Fraction oxidized", "C fraction of residue", "N-C ratio in biomass residues" needs to be reconsidered.

Land Use, Land-Use Change and Forestry

Table 5 Sectoral Report for Land Use, Land-Use Change and Forestry

(a) Table number is changed to 3(II)The structure of the table is kept unchanged.

(b) Additional rows are added to allow reporting of 3.C categories (Aggregate sources and non-CO_2 emissions sources on land), namely: 1. Biomass burning, 2. Liming, 3. Urea application, 4. Direct N_2O emissions from managed soils, 5. Indirect N_2O emissions from managed soils and 8. Other. These categories could be estimated either at national level or for land categories. However, for the purposes of the sectoral report they are aggregated at the national level and not included in the estimates for the land categories (difference from the current CRF tables).

New table: Land transition matrix

(a) New table for land transition matrix is added to allow 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 KP-LULUCF and on the matrices in tables 3.5 – 3.6 of chapter 3, volume 4 of the 2006 IPCC Guidelines.

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) Table numbers are changed to 3(II)B.1-6.

(b) The columns with "IMPLIED CARBON-STOCK-CHANGE FACTORS" are highlighted for further consideration and/or deletion (to be discussed).

Table 5.D Wetlands

(a) Table number is changed to 3(II)B.4.

(b) The table is revised to reflect the new developments in the 2006 IPCC Guidelines. It is based on table 3.3 of Annex 8A.2 but disaggregating the categories using the standard land conversions categories and adding footnotes for places where the 2006 IPCC Guidelines do not provide default methodology (to be discussed).

Table 5(I) Direct N_2O emissions from N fertilization of Forest Land and Other

(a) The table is deleted and merged into suggested table 3(II)C.

Table 5(II) Non-CO_2 emissions from drainage of soils and wetlands

(a) The table is deleted and merged into the suggested table 3(II)C and table 3(II)B.4 Wetlands.

Table 5(III) N_2O emissions from disturbance associated with land-use conversion to cropland

(a) The table is deleted and merged into the suggested table 3(II)C.

Table 5(IV) CO_2 emissions from agricultural lime application

(a) The table is deleted and merged into the suggested table 3(II)C.

New Table 3(II)C

(a) A new background data table 3(II)C is added for reporting activities under category 3.C Aggregate sources and non-CO_2 emissions sources on land (LULUCF sector).

(b) The table allows the Party to select between two options: reporting at national level or reporting at land category level.

(c)

Table 5(V) Biomass burning

(a) The table number is changed to 3(II)1.

(b) The structure of the table is kept unchanged, however the deletion of the sub-divisions controlled burning and wildfires is suggested by a Party. The table differs a bit from the 2006 IPCC Guidelines in terms of aggregation.

New table: Harvested wood products

(a) A new table is added to allow reporting AD for harvested wood products (HWP). The table is based on table 3.10 AFOLU Background table: HWP (3D1) – Annual carbon HWP contribution to total AFOLU CO_2 removals and emissions and background information, Annex 8A.2, Volume 1 of the 2006 IPCC Guidelines.

OPTION 2:

New table (Table 3 Sectoral Report for AFOLU)

(a) Table 3 Sectoral Report for AFOLU is added as in Option 1. However the following the new category tree suggested by the 2006 IPCC Guidelines (to be discussed). The table is based upon table 3, Annex 8A.2, volume I of the 2006 IPCC Guidelines).

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

New table (Biomass burning)

(a) Table 3.C.1 is added based on the existing CRF table 5(V), but including separate rows for the biomass burning from agriculture (current categories 4.E and 4.F).

New table (Aggregate sources and non-CO_2 emissions sources on land)

(a) Table 3.C2-8 is added summarizing all other categories under the new 3.C category. The table has 2 separate sheets – one for activities to be accounted under agriculture and one for activities to be accounted under LULUCF.

Agriculture

Table 4 Sectoral Report for Agriculture

(a) The table number is unchanged. Modifications in the table as in Option 1.

Sectoral Background Data for Agriculture

Table 4.A Enteric Fermentation, Table 4.B(a) CH_4 Emissions from Manure Management, Table 4.B(b) N_2O Emissions from Manure Management

(a) Table numbers are unchanged. Changes in the tables are as in Option 1.

Table 4.C Rice Cultivation, Table 4.D Agricultural Soils, Table 4.E Prescribed Burning of Savannas,

Table 4.F Field Burning of Agricultural Residues

(a) Tables are deleted and content merged in new tables for sector 3.

Land Use, Land-Use Change and Forestry

Table 5 Sectoral Report for Land Use, Land-Use Change and Forestry

(a) Table number is unchanged. Changes in the table as in Option 1.

New table: Land transition matrix

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.D Wetlands, Table 5.F Other land, Table 5.E Settlements

(a) Table numbers are unchanged. Changes in the tables are as in Option 1.

Table 5(I) Direct N_2O emissions from N fertilization of Forest Land and Other; Table 5(II) Non-CO_2 emissions from drainage of soils and wetlands; Table 5(III) N_2O emissions from disturbance associated with land-use conversion to cropland ; Table 5(IV) CO_2 emissions from agricultural lime application

(a) The tables are deleted and merged into the suggested table 3.C.2-7.

Table 5(V) Biomass burning

(a) The table is modified and moved to sector 3.

New table: Harvested wood products

(a) As in option 1.

Issues for further discussion and implementation:

125. The major issues that need further discussion before the CRF tables for the sector can be finalized could be summarized as follows:

General

(a) New table: consider the outline of Table 3 Sectoral report for AFOLU;

(b) Mapping: decision on the mapping of the new AFOLU sector between agriculture and LULUCF and how it would be reflected in the sectoral reports for the LULUCF and agriculture sectors Clear split of category 3.C Aggregate sources and non-CO_2 emissions sources on land reporting between agriculture and LULUCF and reflecting of the split in the sectoral reports, SBDTs and in the aggregation rules.

(c) Mandatory/non-mandatory reporting: Decision how to treat the categories for which methodologies exist only in the annexes of the 2006 IPCC Guidelines (e.g. footnotes included in the table for wetlands).

(d) Pending changes: renaming and cleaning the category list and table numbering; adding footnotes to reflect the split of categories between the agriculture and LULUCF sectors.

Agriculture

(a) Revised tables (assess and suggest modifications to the layout):

(i) table 3(II) Sectoral report for Agriculture (current table 4);

(ii) table 3(I)C.4-6 N_2O from agricultural soils (current table 4.D);

(iii) table 3(I)A.2(b) N_2O emissions from manure management (current table 4.B(b) - selecting between the options: per animal or per manure management system)

(iv) table 3(I)C.7 Rice cultivation (current table 4.C) (are changes in the table needed. There are minor revisions in the table in the 2006 IPCC guidelines, e.g. upland rice is not for information but allows reporting of emissions)

(b) Nomenclature:

(i) List of the MMS to be included in the CRF tables: which MMS to be included separately and which under Other;

(ii) Livestock: specifying the default list for animals in the relevant tables .

(c) Additional information tables: Which of them to be kept and what to be modified

(d) Usefulness of AD: reconsider the need for reporting of Dry matter (dm) fraction of residue, Fraction burned in fields, Fraction oxidized, C fraction of residue, N-C ratio in biomass residues included in current table 4.E.

LULUCF

(a) New and revised tables: (assess and suggest modifications to the layout of the tables)

(i) Revised table 3(II) Sectoral report for LULUCF (current table 5);

(ii) Land and land use change matrix;

(iii) Table 3(II).C – new background data table for non-CO_2 emissions;

(iv) New table for reporting HWP;

(v) Revised table 3(II)B.4 Wetlands (current table 5.D). ;

(vi) Current 5(V) Biomass burning (considering if modifications are needed for the level of disaggregation in the table – both to categories and to wildfires/controlled burning sub-categories).

(b) Reporting at national/land category level: For 3.C categories both reporting at national level or at different land use categories is possible. Consideration to be given for the best way to aggregate emissions from these categories (Currently CRF aggregates emissions at land category level. Suggested modification follows the new 2006 IPCC Guidelines structure).

(c) Usefulness of IEFs: for the IEFs in the carbon stock changes tables and for IEFs for biomass burning where choice of AD is possible (AD to be fixed to area to allow better comparison).

4. WASTE

Summary of the views by Parties:

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

(a) General comments for the need of minimal changes in the sector to reflect the inclusion of new categories and the need for considering additional information boxes.

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

127. Box 4. reproduces the specific view related to the waste sector as expressed by Parties:

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, 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)

Background:

128. The sector is 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 column "Recovery" to "Flaring" and "Energy recovery" in the tables is applied to allow better tracking of emissions that go to the energy sector. Emissions reported in the column "Energy recovery" are included only for information and are not included in the total emissions for the waste sector. Reported emissions for

the sector are net emissions. Another deviation from the 2006 IPCC guidelines tables is keeping the split between biogenic and non-biogenic carbon in the table for incineration. The split allows to distinguish between CO_2 emissions that go in the total for the energy sector or go to the memo item "CO_2 Emissions from Biomass".

129. The revised table for wastewater treatment and discharge suggests including sludge not as a sub-category but as AD – sludge removal. 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, so it allows better tracking of the emissions associated with it across sectors.

Proposed modifications:

Table 6 Sectoral Report for Waste

(a) Table number is changed to 4.

(b) Renaming of the categories to reflect the category names in the 2006 IPCC Guidelines, namely:

(i) Category name "Solid Waste Disposal on Land" is changed to "Solid Waste Disposal";

(ii) Sub-category name "Managed waste disposal on land" is changed to "Managed Waste Disposal Sites";

(iii) Category name "Waste Water Handling" is changed to "Waste Water Treatment and Discharge";

(iv) Category name "Waste Incineration" is changed to "Incineration and Open Burning of Waste".

(c) Restructuring of the category tree to reflect the changes in the 2006 IPCC Guidelines, namely:

(i) Category "Biological Treatment of Solid Waste" is added;

(ii) Sub-category "Uncategorised Waste Disposal Sites" is added under category A. Solid Waste Disposal.

(d) Shading of N_2O emissions from solid waste disposal sites is removed, since insignificant emissions could occur.

(e) A memo item for long term storage of C in waste disposal sites is added disaggregated to "Annual change in total long-term C storage" and "Annual change in total long-term C storage in HWP waste".

Sectoral Background Data for Waste

Table 6.A Solid Waste Disposal

(a) Table number is changed to 4.A and table name is changed to "Solid Waste Disposal".

(b) Renaming of the categories to reflect the category names in the 2006 IPCC Guidelines, namely:

(i) Category name "Solid Waste Disposal on Land" is changed to "Solid Waste Disposal";

(ii) Sub-category name "Managed waste disposal on land" is changed to "Managed Waste Disposal Sites".

(c) Sub-category "Uncategorised Waste Disposal Sites" is added.

(d) AD name is changed from municipal solid waste ("MSW") to "waste" since industrial waste and sludge can also be included and from DOC degraded to DOCf (Fraction of degradable organic carbon that decomposes);

(e) Column "Recovery" is divided into two columns "Flaring" and "Energy recovery" with a footnote added "When CH_4 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 are added: anaerobic and semi-aerobic (to be discussed).

(g) The additional information box is highlighted for consideration and deletion.

(h) A footnote is 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])".

(i) Text is added to the Documentation box: "Parties should specify the category in the energy sector under which the emissions from energy recovery are reported."

New Table: Biological Treatment of Solid Waste

(a) A new table 4.B is added for the new category in the 2006 IPCC Guidelines. The table is based on the relevant worksheet for the category, pages A1.3-A1.4 Annex 1, Volume 5 of the 2006 IPCC Guidelines.

Table 6.C Waste Incineration

(a) Table number is changed to 4.C and table name is changed to "Incineration and Open Burning of Waste".

(b) The division between biogenic and non-biogenic fraction is kept and the sub-categories Waste incineration and Open burning are added. Wastes are sub-divided depending on their origin: MSW, Industrial Solid Waste, Clinical Waste, Sewage Sludge and Other. For Open burning the emissions from fossil liquid wastes (lubricants, solvents, waste oil) are included. The sub-divisions are included in the standard template to allow comparability of reported IEFs data).

(c) AD name changed from "Amount of incinerated wastes" to " Amount of wastes (incinerated/open burned)".

(d) Columns "energy recovery" are added for CO_2 and CH_4

(e) Separate documentation box is added to the table.

Table 6.B Waste-water Handling

(a) Table number is changed to 4.D and the category name is updated to "Waste Water Treatment and Discharge".

(b) Restructuring of the category tree to reflect the changes in the 2006 IPCC Guidelines, namely deleting wastewater and sludge as sub-categories.

(c) Sludge recovered is added to the AD to allow for cross-checks with sludge reported in other waste categories and the agriculture sector and a footnote is 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 is marked for consideration and deletion. If it stays, it should be revised.

Issues for further discussion and implementation:

(a) New and revised tables:

(i) New table 4.B Biological Treatment of Solid Waste

(ii) Revision of table 4.A Solid Waste Disposal (current table 6.A) (Considering the inclusion of the section "Memo item" for C storage in waste disposal sites. Discussion on the table template and the need to disaggregate managed sites to anaerobic/ semi-aerobic and unmanaged waste disposal sites to shallow and deep (relevant for MCF)).

(iii) Revised table 4.D Incineration and Open Burning of Waste (current table 6.C).

(b) Energy recovery: discussion of the suggested approach with including of separate columns for those emissions in the waste sector for cross-checking with the energy sector or changing the approach including a separate table to compare reporting between the waste and energy sectors.

(c) Additional information boxes: to be considered and removed, as appropriate. Some elements could still be useful since they will be easily comparable and easy to check if kept in the CRF – e.g. population number, waste generation rate, fraction of MSW disposed to SWDS, average DOC, starting year for the FOD model, fraction of CH_4 in generated landfill gas.

(d) Units: the units for the IEF to be defined – e.g. dry or wet weight to be used.

5. OTHER (CROSS-SECTORAL TABLES)

Summary of the views by Parties:

130. The Parties have expressed different views regarding the usefulness, the structure and possible modifications of the summary and cross-sectoral tables that include:

(a) General comments for the need of optimizing the reporting;

(b) Concerns with the reporting of total emissions;

(c) Suggestions for reporting information on methods, EF and uncertainties at the level of background data tables;

(d) Specific comments on particular tables.

131. Box 5. reproduces the specific suggestions related to those tables as expressed by Parties:

Box 5. Summary and cross-sectoral tables

Therefore the EU proposes a clarification of the reporting of indirect CO_2 emissions and indirect N_2O 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 CO_2 equivalent emissions without LULUCF
• Total direct and indirect CO_2 equivalent emissions without LULUCF
• Total direct CO_2 equivalent emissions with LULUCF
• Total direct and indirect CO_2 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 CO_2 and N_2O 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-CO_2 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-
CO_2 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 CO_2 Equivalent Emissions without Land Use, Land-Use Change and Forestry" and "Total CO_2 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)

Background:

132. 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, recalculations performed) and allow an overview of the Parties' inventories (e.g. summary 1, summary 2, trend table). Since the tables are complementing the sectoral data, their outline will depend on the final decision on the coverage of the sectors and

gases in the inventory. Tables Summary 1, 2, 3, tables 8 and 10 have identical category structure. Therefore when the changes are agreed at the sectoral level and the coverage of the total emissions is agreed and reflected in one of these tables, those will be propagated for the remaining tables.

133. The concern for optimizing the tables is addressed with suggestion for deletion of tables Summary 1.B and table 9(b). With regard to suggested deletion of table 7 (key category analysis), the decision is postponed and a general approach could be undertaken towards the key category analysis and uncertainty analysis. Both tables are part of the mandatory reporting requirements and are include in the NIR in a different format depending on the tier and level of disaggregation of the categories used by the Parties. An option to facilitate Parties using the tier 1 approach could be that standard tables based on tier 1 approaches and a standard category split (as used for comparison in the synthesis and assessment reports part I and II) could be integrated in the CRF Reporter software, given that uncertainty entries are included as a mandatory requirement at sectoral background data level. The output of the analyses could be in the form of the IPCC tables 7(A) Uncertainties (see Annex 8A.2, volume I of the 2006 IPCC Guidelines) and a key category table similar to the tables included in the synthesis and assessment reports part I and II. Such an approach will help comparability while the Parties could also prepare their own analyses and include them in the NIR.

134. The views of Parties related to the tables providing information to complement the sectoral data are in the direction of including the relevant information at the sectoral level, within the tables (e.g. uncertainties) or in the documentation boxes of the tables (e.g. information on methods/EF 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 that the information is entered at the level of the separate categories. Then, the information could generate two outputs: 1) summary tables as in the current version of the CRF tables and 2) detailed tables that could be part of the sectoral sections of the NIR (e.g. a table on the methods that could list category/gas/method/EF used/explanatory comments).

135. There was a suggestion by Parties for simplification of table Summary 3 (information on methods used and EFs) during the previous workshops. Specific suggestions will be needed, particularly to the level of disaggregation of the input and output information and on the used notations.

136. The tables summary 1 and 2, recalculation table, and key category table are always year specific. However, inclusion of the key category table (if kept in the set) should not be requested for all years but only for particular years. The cross-sectoral tables like summary on methods, and completeness could be identical for all years. Those should be included in each of the reported years only if there are differences between years (the verification to be integrated in the software) otherwise they should only be included for the last inventory year. The trend table is the same across reporting years and it should appear only once – for the last inventory year. It may include data for all the years in the time series or for a preset number of years.

Proposed modifications:

New Table (Indirect N_2O and CO_2 emissions)

(a) Inclusion of a table for reporting indirect N_2O and CO_2 emissions. The table is based on table 5.A Cross-sectoral table: indirect emissions of N_2O in Annex 8A.2 of Volume I of the 2006 IPCC Guidelines.

Summary 1.A Summary Report for National Greenhouse Gas Inventories

(a) Table name is changed to Summary 1.

(b) Changes in the category tree structure will be made consistent with the changes applied in the sectoral tables.

(c) Columns are added for the newly added gases (to be further discuss - shown only on the first sheet).

(d) The columns for potential emissions are deleted (shown only on the first sheet).

(e) Two new items are added under memo items: CO_2 captured and Long-term storage of carbon in waste disposal sites.

(f) Indirect CO_2 and N_2O emissions are shown in 2 places: under "Other" and as "Memo item" until a decision is taken for their reporting.

Summary 1.B Short Summary Report for National Greenhouse Gas Inventories

(a) Deletion of the table since it does not add any new information.

Summary 2 Summary Report for CO_2 Equivalent Emissions

(a) The structure of the table will follow the modifications as applied in table Summary 1

(b) The section on total emissions is amended with two new rows for inclusion of indirect CO_2 and N_2O emissions until a decision is taken on the reporting of indirect CO_2 and N_2O emissions.

Summary 3 Summary Report for Methods and Emission Factors Used

(a) The structure of the table will follow the modifications as applied in table Summary 1.

Note: Update of the level of disaggregation and used notations could be needed (to be discussed).

Table 7 Summary Overview for Key Categories

(a) Deletion of the table is suggested by a Party (to be discussed).

Table 8(a, b) Recalculation – Recalculated Data

(a) The structure of the table will follow the modifications as applied in Summary 1 and 2.

Table 9(a) Completeness – Information on Notation Keys

(a) The structure of the table is not changed (the suggestion that the information be included in the documentation boxes to be discussed).

(b) New gases to be added.

Table 9(b) Completeness – Information on Additional Greenhouse Gases

(a) Table is deleted.

(b) *Table 10 Emissions Trends* - The structure of the table will follow the modifications as applied in Summary 1 and 2. An additional sheet with the disaggregated trend of GHG emissions by categories in CO_2 eq. could be added to the table. The table to appear only in the CRF set for the last inventory year.

Issues for further discussion and implementation:

General issues:

(a) Reporting indirect CO_2 and N_2O emissions:

(i) Considering the options for reporting and accounting: 1) under other and included in the national total or 2) under memo items and not included in total emissions (accounting issue).

(ii) Assessing and modifying the layout of the suggested new table.

(b) GHG total: depends on the decision on the indirect CO_2 emissions and the split between the agriculture and LULUCF sectors (accounting issue).

(c) Finalization of the category tree for the summary tables: propagating the change in all relevant summary tables.

(d) List of gases: defining the list of gases to be included in the summary tables and propagating the change in the relevant tables.

(e) Inclusion of new tables in the CRF (considering the need for adding such tables in the CRF):

(i) Uncertainty table: To consider the following options:

- Option 1: Keep uncertainty analysis for the NIR;
- Option 2: Enter and view uncertainty values at the SBDTs level (e.g. as in the IPCC 2006 software);
- Option 3: Include uncertainty table template (at the level of table 3.3. of the 2006 IPCC Guidelines) to be filled in by the Parties allowing flexibility of category aggregation;
- Option 4: Generate a standard uncertainty table based on the entries requested at the data entry level.

(ii) Verification tables: Participants in the workshop may consider the need for inclusion of tables to track the reporting of:

- Feedstock and non-energy use of fuels within the inventory;
- Emissions from waste with energy recovery;
- Emissions from sludge;
- Comparing actual versus potential emissions;
- Other checks…

Table specific issues:

Table Summary 3: 1) looking for specific suggestions for its layout and if it needs revising; 2) reconsider the list of notations used and update them as needed; 3) consider the format of the input/output information: level of disaggregation for entering the information for method/EF used; level of aggregation for presenting the information in the CRF tables – in a summary table, detailed tables (in CRF or NIR) or in the background data tables documentation boxes.

Table 7: Considering options for the key category analysis:

(i) Option 1: remove the table from the CRF tables and keep it only as part of the NIR;

(ii) Option 2: keep the table and mandatory reporting only for the base year and the latest inventory year;

(iii) Option 3: Replace the table in the CRF tables with a standard table generated by the CRF Reporter software, that could be used for the synthesis and assessment reports: part 1 and 2;

(iv) Other options:…

Table 8: Considering the suggestion by Parties for implementation of a threshold for the recalculations precluding from explanations any “small differences” that are defined as e.g. a percentage of the category estimate, and require explanations for any difference resulting from a change in method, AD or EF.

Table 9: Considering the suggestion by Parties for inclusion of the information in the documentation boxes to the SBDTs.

Table 10: Considering the year coverage of the table and possible inclusion of an additional sheet with the disaggregated trend of GHG emissions by categories in CO_2 eq.

Annex I

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

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

Secretariat revision: [Guidelines for 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 COP to facilitate reporting of inventories from Annex I Parties [in 2015].

CONTENTS

Placeholder from the secretariat: the TOC will be revised once the text and annexes have been finalised.

I. Introduction

A. Mandate

2. 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.

3. 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 reporting guidelines on annual inventories).

Placeholder: *The secretariat has the view that the paragraph under the '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

4. This document contains the complete updated UNFCCC reporting guidelines on annual inventories for all inventory sectors. The UNFCCC 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 the '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

Objectives

The objectives of the UNFCCC reporting guidelines on annual inventories are:

- 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 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 AWG-KP and AWG-LCA*]. (EU)]

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

[(b) To contribute to ensure the transparency of emission reduction commitments;] (EU)

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

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

[(d) To assist Annex I Parties to ensure and/or improve the quality of their annual inventory submissions.] (EU)

A. Principles and definitions

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

6. [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.

7. In the context of these UNFCCC 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, 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. [The use of the common reporting format and the preparation of a structured NIR contribute to transparency of the information and facilitate national and international reviews;] (EU)

Option 3: [the coverage and detail of information that is reported in the annual submission is in line with the requirements of these reporting guidelines, including] the assumptions and methodologies used [to compile estimates of emissions and removals]for an inventory should be clearly explained to facilitate replication and assessment of the inventory by users of the reported information[, especially if methodologies used by an Annex I Party is country-specific and not included in the 2006 IPCC Guidelines and/or any supplementary methodologies agreed by the COP]. The transparency of inventories is fundamental to the success of the process for the

communication and consideration of information. [The use by Annex I Parties of the common reporting format tables and a structured national inventory report contribute to the transparency of reported information and its subsequent national and international review;] (secretariat including EU change)

Consistency means

Option 1 (original): that an inventory should be internally consistent in all its elements with inventories of 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, 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]~~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]

Option 2: that an inventory should be internally consistent in all its elements [across sectors and categories and]with inventories of 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 [across sectors and throughout the whole time series]. Under certain circumstances referred to in paragraphs 15 and 16, 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)

Option 3: that an [annual]inventory [submission]should be internally consistent [for all years]in all [of]its elements[, including across sectors, categories and gases]. An inventory [submission]is consistent if the same methodologies are used for the base and 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 whole inventory time series]. Under certain circumstances referred to in paragraphs 15 and 16, an inventory[submission that is based on]different methodologies for different years can be considered to be consistent if it has been recalculated [and reported]in a transparent manner, in accordance with the [2006 IPCC Guidelines]. (secretariat)

Comparability means

Option 1 (original): that estimates of emissions and removals reported by Annex I Parties in inventories should be comparable among Annex I Parties. For this purpose, Annex I Parties should use the methodologies and formats agreed by the COP for estimating and reporting inventories. The allocation of different source/sink categories should follow the split of the [2006 IPCC Guidelines], at the level of its summary and sectoral tables;

Option 2: that estimates of emissions and removals reported by Annex I Parties in inventories should be comparable among Annex I Parties. For this purpose, Annex I Parties should use the methodologies and formats agreed by the COP for estimating and reporting inventories. The allocation of different source/sink categories should follow the [common reporting format tables provided in Annex II of this document], at the level of its summary and sectoral tables;] (EU)

Option 3: that estimates of emissions and removals reported by Annex I Parties in annual inventory submissions should be comparable among Annex I Parties. ~~For this purpose, Annex I Parties should use the methodologies and formats agreed by the COP for estimating and reporting inventories~~[Annex I Parties shall use the methodologies set out in the 2006 IPCC Guidelines to estimate emissions and removals, including any supplementary methodologies agreed by the COP, and use the common reporting format tables provided in Annex II to report these emissions and removals;] (secretariat)

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

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;[3]

Option 2: that an inventory covers all sources and sinks, as well as all gases, [for which methodologies are provided in the 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 full geographic coverage of 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 in supplementary methodologies agreed by the COP, and should include a complete time series of any country-specific methodology used for which a methodology is not provided by the 2006 IPCC guidelines]. Completeness also means full geographic coverage of 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.

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

B. Context

9. These UNFCCC reporting guidelines on annual inventories cover the estimation and reporting of greenhouse gas 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 Option 1: [These UNFCCC reporting guidelines on annual inventories also cover the establishment of a national inventory system for the purpose of a continued preparation of timely, consistent, comparable, accurate and transparent inventories.] (EU)

6bis Option 2: [The] UNFCCC Annex I reporting guidelines on annual inventories also cover the [national system of an Annex I Party that ensures] a continued preparation of timely, [complete,]consistent, comparable, accurate and transparent [annual inventory submissions and its planning and subsequent management].]

10. 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.] (EU)

Option 3: An annual inventory submission shall consist of a national inventory report (NIR) and the common reporting format (CRF) tables, [as set out in Annex I and II]. [The annual submission

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

can also comprise information provided by an Annex I Party in addition to its NIR and CRF submission.] (secretariat)

C. Base year

11. 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: 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, [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, as follows:

Bulgaria:	1988
Hungary:	the average of the years 1985 to 1987
Poland:	1988
Romania:	1989
Slovenia:	1986
[Croatia:	1990*] (Croatia)

8bis: [For the 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

12. 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] IPCC Guidelines to estimate 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.~~] (EU)

Option 3: Annex I Parties shall use the methodologies provided in the [2006 IPCC Guidelines, and any supplementary methodologies agreed by the COP,] to estimate 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~~. [Methodologies used by Annex I Parties to estimate emissions and/or removals shall be transparently reported in the annual submission.] (secretariat)

13. 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] 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 from higher-tier methods and/or models.] (secretariat)

14. For categories[4] that are determined to be key categories, in accordance with the [2006 IPCC Guidelines], and estimated in accordance with the provisions in paragraph 13 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 categories[4] that are determined to be key categories, in accordance with the [2006 IPCC Guidelines], and 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 of the [2006 IPCC Guidelines]. Annex I Parties [should][shall] also make every effort to develop and/or select emission factors, and collect and select activity data, 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)

15. 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.

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

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

Option 1 (original): as above.

Option 2: ~~For most categories,~~ the IPCC Guidelines provide a default methodology which includes default emission factors and in some cases default activity data references [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 IPCC Guidelines, are considered to be more accurate, and 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, where available, provided that these 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 IPCC guidelines.] (EU)

Option 3: The [2006 IPCC Guidelines] provide a default methodology which includes default emission factors and in some cases default activity data references. ~~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, and reported transparently. The default activity data or emission factors provided in the 2006 IPCC Guidelines should be used if Annex I Parties choose to use default factors or data due to a lack of country-specific information. [Furthermore, most of the default data from the 2006 IPCC Guidelines are in the IPCC emission factor database (EFDB) and are available to use, provided that the use of these is considered to be appropriate in the specific national context. Further, the EFDB also includes other data and parameters that can be used by an Annex I Party provided that the use of these is 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 its annual inventory submission what has been used and the reasons as to why it meets the aforementioned conditions.] (secretariat)

[Key category determination][Key category analysis]

16. 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 the tier 1 or tier 2 level and trend assessment.

Uncertainties

17. 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 uncertainties in the data used for all source and sink categories using at least the tier 1 method, as provided in the IPCC Guidelines[, and report uncertainties at least for the base year and the latest reported inventory year]. Alternatively, Annex I Parties may use the tier 2 method in the 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.] (EU)

Option 3: 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, and report uncertainties for at least the base year and the latest inventory year]. 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. (secretariat)

[Recalculations][Recalculations and time-series consistency]

18. 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 ~~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 [ensuring that changes in emission trends are not introduced due to changes in estimation methods or assumptions]. 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 in accordance with 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. Annex I Parties should evaluate the need for recalculations relative to the reasons provided by the IPCC Guidelines, in particular for key categories. Recalculations should be performed in accordance with IPCC Guidelines and the general principles set down in these UNFCCC guidelines.] (EU)

19. 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 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 Guidelines (e.g., overlap, surrogate, interpolation, and 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~~.] (EU)

Option-C from the secretariat: 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 [2006 IPCC Guidelines] (e.g., overlap, surrogate, interpolation, and extrapolation) [or other equivalent methods]to determine the missing values. [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 its NIR, especially if a recalculation was undertaken and also if the recalculation involved the use of one of the abovementioned techniques]. (secretariat)

Quality assurance/quality control (QA/QC)

20. 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 IPCC Guidelines. 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 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 IPCC Guidelines. (EU)

Placeholder: new section proposed by the EC on national systems that the secretariat supports. The text for this new section is provided below. Text in yellow highlight are 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 greenhouse gas emissions by sources and removals by sinks. A 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 greenhouse gases 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 the inventory through 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 quality assurance/quality control (QA/QC) activities, and carrying out procedures for the verification of the inventory data at the national level, as described in these reporting guidelines.

[5] As outlined in table [xx]~~8.1~~ of the [2006 IPCC Guidelines]

- to enable Parties included in Annex I to consistently estimate anthropogenic emissions by all sources and removals by all sinks of all GHGs, as covered by the 2006 IPCC Guidelines.

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

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;

Ensure sufficient capacity for 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 technical competence of the staff involved in the inventory development process;

Designate a single national entity with overall responsibility for the national inventory;

Prepare national annual inventories and in a timely manner in accordance with these reporting guidelines and relevant decisions of the COP and provide information necessary to meet the reporting requirements defined in these reporting guidelines and in accordance with the relevant decisions of the COP.

In addition each Party included in Annex I shall undertake specific functions relating to inventory planning, preparation and management.

Inventory planning

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

(a) Define and allocate specific responsibilities in the inventory development process, including those relating to choice of methods, data collection, particularly activity data and emission factors from statistical services and other entities, processing and archiving, and QC and QA. This 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 to respond to any issues raised by the inventory review process.

17sexies. As part of its inventory planning, each Party included in Annex I should consider ways to improve the quality of activity data, emission factors, methods and other relevant technical elements of inventories. 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 Party included in Annex I shall:

(a) prepare annual inventory 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 from 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 a quantitative estimate of the uncertainty in the inventory for each category and for the inventory in total, 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 national inventory report 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 Party included in Annex I 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, preferably an independent third party, before the submission of the inventory, in accordance with the planned QA procedures referred to in paragraph 17quanquies (b) above;

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

(d) Based on the reviews described in subparagraphs (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 17quinquies (b).

Inventory management

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

(a) Archive all relevant inventory information for the reported time series and this information shall include all disaggregated emission factors, activity data, and documentation about how these factors and data have been generated and aggregated for the preparation of the inventory. This information shall also include internal documentation on QA/QC procedures, external and internal reviews, 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 to requests for clarifying inventory information resulting from the different stages of the review process of the inventory information, and information on the national system, in a timely manner.

E. Reporting

1. General guidance

Estimates of emissions and removals

21. 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 (CO_2), methane (CH_4), nitrous oxide (N_2O), perfluorocarbons (PFCs), hydrofluorocarbons (HFCs) and sulphur hexafluoride (SF_6). 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 (SOx).

Option 1 (original): As above.

Option 2: 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 (CO_2), methane (CH_4), nitrous oxide (N_2O), perfluorocarbons (PFCs), hydrofluorocarbons (HFCs), sulphur hexafluoride (SF_6) [and nitrogen trifluoride (NF_3)]. 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 which are listed in table 1]~~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 (SOx). [Annex I Parties shall report indirect CO_2 emissions from the atmospheric oxidation of CH_4, CO_2 and NMVOCs and indirect N_2O emissions resulting from nitrogen deposition of all anthropogenic sources of NOx and NH_3 In reporting indirect emissions Annex I Parties should avoid double counting and report indirect CO_2 emissions only for those source categories which the carbon is not already covered by the assumptions and approximations made in estimating CO_2 emissions.] (EU)

Option 3: […]Parties' national totals of greenhouse gases shall include only direct CO2 emissions and not those calculated from atmospheric emissions of CO, CH4 or NMVOCs. If desired, Parties can *voluntarily* report CO2 estimates from emissions of these other gases. The calculation of CO_2 from CO, CH4 or NMVOC can be conducted by the method provided in the 2006 IPCC Guidelines, Overview Chapter, Section 7.2.1.5 and if reported, this carbon dioxide should be included with estimates of other indirect greenhouse gases.] (Canada, even though di nbot specify exactly to which paragraph it is attributed to)

22. 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.

23. In addition, consistent with decision 2/CP.3, Annex I Parties should report aggregate emissions and removals of greenhouse gases, expressed in CO_2 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

[6] CO_2 equivalent emissions should be provided at a level of category disaggregation similar to that specified in table Summary 1.A of the common reporting format.

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 greenhouse gases, expressed in CO_2 equivalent terms at summary inventory level,[6] using GWP values provided by the IPCC in its [Fourth]~~Second~~ Assessment Report, referred to below as [2007]~~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~~. (EU)

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

24. Consistent with decision 2/CP.3, Annex I Parties should report actual emissions of HFCs, PFCs and SF_6, where data are available, providing disaggregated data by chemical (for example, HFC-134a) and source category in units of mass and in CO_2 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 SF_6, where data are available, providing disaggregated data by chemical (for example, HFC-134a) and source category in units of mass and in CO_2 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~~. (EU)

25. 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 SF_6 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)

26. 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 greenhouse gases for which 100-year GWP values are available, [from the IPCC]~~but~~

[6] CO_2 equivalent emissions should be provided at a level of category disaggregation similar to that specified in table Summary 1.A of the common reporting format.

~~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. (EU)

27. 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.

28. 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].

29. If Annex I Parties account for effects of CO_2 capture from flue gases and subsequent CO_2 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 will be in the CRF tables. (EU)

30. 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

31. 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 CO_2, N_2O, CH_4, HFCs, PFCs or SF_6 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;

[7] If notation keys are used in the NIR they should be consistent with those reported in the CRF.

[8] Even if emissions are considered to negligible, Parties should either report the emission estimate if calculated or use the notation key "NE".

- "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] in 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 greenhouse gases which have not been estimated, [but whose activity does occur within a country]. Where "NE" is used in an inventory for emissions or removals of CO_2, N_2O, CH_4, HFCs, PFCs, SF_6 [or NF_3], the Annex I Party should indicate in both the NIR and the CRF completeness table why emissions or removals have not been estimated;[8] (secretariat)

- "NA" (not applicable) for activities in a given source/sink category that do [occur within the country], but do not result in 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; (secretariat)

- "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[, especially if it is due to confidentiality]; (secretariat)

- "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 3: to include a new notation key "considered insignificant" ('CI') for activities that give rise to negligible emissions. (Japan)

32. 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 from source or sink categories for which estimation methods in the IPCC Guidelines are in appendices, but it is not mandatory to estimate these 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 methodologies for such sources.] 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 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 [and report these emissions and removals under "other" CRF categories. However, it is not mandatory to estimate GHG emissions from sources for which no methodologies are provided by IPCC Guidelines.] (EU)

[8] Even if emissions are considered to negligible, Parties should either report the emission estimate if calculated or use the notation key "NE".

Key categories

33. 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 CO_2 equivalents using the methods provided in the [2006 IPCC Guidelines]. As indicated in paragraphs 41 and 47 below, this 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.[9]

> **Placeholder:** Are Parties required to report on each of the 2 steps of deriving key categories (with and with-out LULUCF)?. If not, do Parties agree that the requirement for reporting is to be the with LULUCF alone, and if so, then guidance will be required on the reporting format: (Australia)

Verification

34. 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 purposes of verification, Annex I Parties should continue to compare their national estimates of carbon dioxide emissions from fuel combustion with those estimates obtained using the IPCC reference approach, as contained in 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 compare these against actual fluorinated gas emissions.] (secretariat)
>
> **31bis**: [Annex I Parties that prepare its estimate of emissions and/or removals with use of higher-tier (tier 3) methods and/or models [should][shall] provide in the NIR verification information that demonstrate and justify how tier 3 methods and models better reflect national circumstances and that the use of these methods and models provide more accurate estimates, when compared with estimates from the use of lower-tier methods.] (secretariat)
>
> **31ter**: [Annex I Parties are also encouraged to report on any peer review of their inventory conducted nationally.] (secretariat)

Uncertainties

35. 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 national inventories in the future and guide decisions on methodological choice. This information should be 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

[9] 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 key category analysis but do not need to be reported in the NIR.

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~~.] (EU)

Recalculations

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

37. 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, 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~~] (EU)

38. 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 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. [Small differences, e.g. due to rounding of estimates, should not be considered as recalculations.] (EU)

Quality assurance/quality control (QA/QC)

39. 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 section on national system. (EU)

[Higher-tier methods and models]

Placeholder from the secretariat: it is proposed that a new section is established here to provide general guidance on the reporting requirement on Annex I Parties when using higher-tier methods and/or models to estimate emissions and/.or removals. Text for this section will need to be determined based on 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.

[~~Adjustments~~][Corrections][10] (EU)

40. 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

41. 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 year[11] 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 year[11] to the latest inventory year, and any changes to previously submitted inventories. (EU)

42. 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)

43. 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.]~~shall include annual inventory information, submitted in accordance with paragraph 38 above~~. (EU)

44. The NIR should include:

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

[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.

[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.

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.

A description of the national key categories as indicated in paragraph 30,[12] including:

Reference to the key category tables in the CRF;

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

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

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

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;

Whether CO_2 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));

Whether emissions of CO_2 corresponding to atmospheric oxidation of CO, NMVOCs and CH_4 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;

Information on source or sink categories excluded or potentially excluded, including efforts to develop estimates for future submissions;

Information on how the effects of CO_2 capture from flue gases and subsequent CO_2 storage are accounted for in the inventory;

Information on uncertainties, as requested in paragraph 32 above;

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;

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;

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;

A description of the institutional arrangements for inventory preparation.

Option 1 (original): As above.

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

45. 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.

[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.

Option 1 (original): As above.

Option 2: If any of the information required [in Annex I]~~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. (EU)

46. 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

47. 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 section of the NIR.

Option 1 (original): As above.

Option 2: 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 section of the NIR. (EU)

48. 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 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 are to submit their CRF tables generated by the CRF Reporter software, including its XML files, through the UNFCCC submission portal with a view to facilitate processing of inventory information by the secretariat.]

49. 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.

50. The CRF consists of:

Summary, sectoral and trend tables for all greenhouse gas emissions and removals;

Sectoral background data tables for reporting implied emission factors[13] and activity data, including:

IPCC worksheet 1-1 containing estimates of CO_2 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]

Tables for reporting fossil fuel consumption for non-energy feedstocks, international bunkers and multilateral operations;

[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.

Tables for reporting, inter alia, key categories, recalculations and completeness of the inventory.

Option 1 (original): As above.

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

51. 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 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: (EU)

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 the full CRF for the [base year, 1990, 1995, 2000, 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 the ~~entire~~ [years mentioned above]~~time series from the base year onwards~~ (EU)

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)

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 year] ~~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;] (EU)

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.

52. 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 section in the NIR where equivalent information can be found.

53. 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

Option 1 (original): As above.

Option 2: to delete this section and ensure that record keeping requirements are included under the new section national system. (secretariat)

54. 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, 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.~~ (EU)

G. Systematic updating of the guidelines

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

H. Language

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

Option 3: The national inventory report shall be submitted in one of the official languages of the United Nations. Annex I Parties [should]~~are also encouraged to~~ submit, ~~where relevant~~, a translation of the national inventory report into English[to facilitate its use by expert review teams.]

Table 1. [2007][1995] IPCC global warming potential (GWP) values[a] based on the effects of greenhouse gases over a 100-year time horizon

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

Greenhouse gas	Chemical formula	[2007][1995] IPCC GWP
Carbon dioxide	CO_2	1
Methane	CH_4	21
Nitrous oxide	N_2O	310
Hydrofluorocarbons (HFCs)		
HFC-23	CHF_3	11 700
HFC-32	CH_2F_2	650
HFC-41	CH_3F	150
HFC-43-10mee	$C_5H_2F_{10}$	1 300
HFC-125	C_2HF_5	2 800
HFC-134	$C_2H_2F_4$ (CHF_2CHF_2)	1 000
HFC-134a	$C_2H_2F_4$ (CH_2FCF_3)	1 300
HFC-152a	$C_2H_4F_2$ (CH_3CHF_2)	140
HFC-143	$C_2H_3F_3$ (CHF_2CH_2F)	300
HFC-143a	$C_2H_3F_3$ (CF_3CH_3)	3 800
HFC-227ea	C_3HF_7	2 900
HFC-236fa	$C_3H_2F_6$	6 300
HFC-254ca	$C_3H_3F_5$	560
Perfluorocarbons		
Perfluoromethane	CF_4	6 500
Perfluoroethane	C_2F_6	9 200
Perfluoropropane	C_3F_8	7 000
Perfluorobutane	C_4F_{10}	7 000
Perfluorocyclobutane	c-C_4F_8	8 700
Perfluourpentane	C_5F_{12}	7 500
Perfluorohexane	C_6F_{14}	7 400
Sulphur hexafluoride		
Sulphur hexafluoride	SF_6	23 900

[a] As provided by the IPCC 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 section 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 81.

~~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~~

~~1.1. 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 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.*~~

~~2.1. 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 and SO_2~~

~~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.~~

~~3.1. Overview of sector (e.g., quantitative overview and description)~~
~~3.2. *Source category* (CRF source 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
- CO_2 capture from flue gases and subsequent CO_2 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)

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 guidance[1]

Annex 2: Detailed discussion of methodology and data for estimating CO_2 emissions from fossil fuel combustion

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

Annex 4: CO_2 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 guidance[2]

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

[1] This item has been added for consistency with the provisions in paragraph 30 of these guidelines.
[2] This item has been added for consistency with the provisions in paragraphs 32 and 41 (f) of these guidelines.

Annotated outline of the National Inventory Report

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 reporting guidelines on annual inventories following incorporation of the provisions of decision 14/CP.11* (hereinafter referred to as the UNFCCC reporting guidelines),[3] [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].

[3] FCCC/SBSTA/2006/9

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, NOx, NMVOC) and SO_2

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 CO_2 capture from flue gases and subsequent CO_2 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)
5.1. 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 6)

6.1. 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 7) (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 CO_2 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 section 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 section 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 section 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 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 section 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 section 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 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 section 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, NOX and NMVOCs) and SO_2

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 CO_2 capture from flue gases and subsequent CO_2 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 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 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 section 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 section 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 section 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 sections of the NIR. However, perhaps this information could be included in the NIR section above with a view to have a one-stop shop for guidance on the NIR.

One Party has identified the value of this section (and noted that the current reporting guidelines stipulate that the section 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 section 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 section on cross-sectoral issues*

Additional guidance on sectoral reporting to be included in the corresponding section 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 throughput[1]
- Oil throughput[1]

[1] 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.

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 SF_6
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 SF_6 from metal production / Production of halocarbons and SF_6
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 SF_6) and country-specific methods, any other relevant activity data used should be specified.

Consumption of HFCs, PFCs and SF_6
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 SF_6 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.

Solvents and other product use

The IPCC Guidelines do not provide methodologies for the calculation of emissions of N_2O 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.

Agriculture

Cross-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 CH_4 emissions from enteric fermentation, CH_4 and N_2O emissions from manure management, N_2O emissions from soils, and N_2O 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 CH_4 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 $Frac_{GRAZ}$ according to animal type, and for $Frac_{BURN}$ 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 CO_2 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 CO_2 emissions from biomass burning, including wildfires and controlled burning
- For those Parties choosing to report harvested wood products, detailed information on CO_2 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.

Waste

Solid 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 CH_4.

Waste-water handling

More specific information than is required in CRF table 6.B could be provided. For example, with regard to data on N_2O from waste-water handling to be reported in CRF table 6.B, Annex I Parties using other methods for estimation of N_2O 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**.

Reporting requirements from paragraphs 10 to 17 of the annex to decision 19/CMP.1 (guidelines for national systems)		CHECKLIST FOR REPORTING ON THE NATIONAL SYSTEM AND ON CHANGES TO THE NATIONAL SYSTEM		Provided	Changes[2]
	General functions of the national system:[1]				
	10(a)	Information the institutional, legal and procedural arrangements and maintenance thereof	*shall*		
	10(b)	Information on the capacity for timely performance of the general and specific functions of the NS	*shall*		
	10(b)	Information on the technical competence of staff	*shall*		
	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	*shall*		
	12(b)	Contact details of the single national entity	*shall*		
	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	*shall*		
	12(d)	Elaborated QA/QC plan[4]	*shall*		
	12(e)	Information on the official consideration and approval of the inventory, including for recalculations	*shall*		
	13	Information on the process of inventory improvement[5]	*should*		
		Inventory Preparation			
	14(a)	Information on the identification of key categories	*shall*		
	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)	*shall*		
	14(b)	Information on choice of method for key category(s)	*shall*		
	14(c)	Information on the collection of activity data, process information and emission factors to support selected methods	*shall*		
	14(d)	Information on uncertainty analysis (for each category and the total inventory)	*shall*		
	14(e)	Information on recalculations	*shall*		
	14(g)	Information on (and evidence of) general inventory QC (tier 1) procedures[4]	*shall*		
	15(a)	Information on (and evidence of) category-specific QC (tier 2) procedures[4]	*should*		
	15(b)	Information on (and evidence of) QA procedures[3]	*should*		
	15(c)	Information on implemented or planned more extensive review of key categories or categories where significant change has occurred (method and/or data)	*should*		
	15(d)	Information on how 15(b) and 15(c) relate to evaluation of inventory planning process in order to meet quality objectives	*should*		
		Inventory Management			
	16(a)	Information on how this information is archived.	*shall*		
	16(b)	Information on what information is archived.	*should*		

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

A. ATTACHMENT 2: POSSIBLE MAPPING OF AFOLU CATEGORIES TO THE AGRICULTURAL AND LULUCF SECTORS

Table 1: Possible mapping of the AFOLU categories to the existing Agriculture categories

Reporting Category	New CRF numbering	Gases covered	2006 IPCC reporting category	IPCC numbering	Sub-components
Enteric fermentation	CRF 3.A	CH_4	Enteric fermentation	3.A	All
Manure management	CRF 3.B	CH_4, N_2O	Manure management	3.B	All (a)
Rice cultivation	CRF 3.C	CH_4	Rice cultivation	3.C.7	All
Agricultural Soils	CRF 3.D	N_2O			
Direct N2O emissions from managed soils	CRF 3.D1	N_2O	Direct N_2O emissions from managed soils	3C4 (partial)	Includes all components related to cropland and grassland with the exception of N mineralization/immobilisation associated with loss/gain of SOM resulting from change of land use or management of mineral soils (i.e. soil disturbance) – see LULUCF 4.B4 NOTE: As per current CRFs application of fertilisers to Forest land, Settlements and Other land to be reported in LULUCF if the amounts applied can be separately identified, otherwise total to be reported in Agriculture
Indirect N_2O from managed soils	CRF 3.D2	N_2O	Indirect N_2O from managed soils	3C5 (partial)	Includes all components related to cropland and grassland with the exception of atmospheric deposition or leaching/runoff associated with N volatilization/ mineralization/immobilisation due to loss/gain of SOM resulting from change of land use or management of mineral soils (i.e. soil disturbance) – see LULUCF 4.B5 NOTE: The 2006 Guidelines reporting tables do not

					specify inclusion of atmospheric deposition of N volatilized through the burning of savannas or crop residues. To be consistent with current reporting this would also need to be included under agriculture.
Indirect N_2O emissions from manure management	CRF 3.D3	N_2O	Indirect N_2O emissions form manure managements	3C6	All
Prescribed Burning of Savannas	CRF 3.E	CH_4, N_2O	Biomass burning - Forest land and grassland	3C1a, 3C1c (partial)	Only includes components relating to forest land and grasslands which are savannas
Field burning of agricultural residues	CRF 3.F	CH_4, N_2O	Biomass burning - Cropland	3C1b	All (b)

NOTES RELATING TO CRF TABLE ISSUES:

(a) Sectoral background table for N2O emissions from manure management (table 4.B(b)) is currently based on reporting by manure management system. The 2006 guidelines report these emissions by animal types. Consideration needs to be given to how this table can be restructured to provide useful data for review.

(b) The previous IPCC methods for Field Burning of Agricultural Residues were based on total crop production, the ratio of residue to crop and the fraction of the residue burnt in order to estimate the dry matter burnt. The 2006 IPCC default method is based on area burnt and dry matter per ha. Careful consideration needs to be given to the presentation of the CRF tables for this category as not all parties will have data on the area burnt. In addition the information contained in the old CRF table 4.F was extremely useful for reviewing both the emissions from Field Burning of Agricultural Residues and the N retained in crop residues for Agricultural soils

Table 2: Possible mapping of the AFOLU categories to the existing LULUCF categories

Reporting Category	New CRF numbering	Gases covered	2006 IPCC reporting category	IPCC numbering	Sub-components
Land	CRF 4.A	CO_2	Land	3B	All
Forest land	CRF 4.A1	CO_2	Forest land	3B1	All
Cropland	CRF 4.A2	CO_2	Cropland	3B2	All
Grassland	CRF 4.A3	CO_2	Grassland	3B3	All
Wetland	CRF 4.A4	CO_2	Wetland	3B4	All
Settlements	CRF 4.A5	CO_2	Settlements	3B5	All
Other Land	CRF 4.A6	CO_2	Other Land	3B6	All
Aggregate sources and non-CO2 emission sources	CRF 4.B		Aggregate sources and non-CO2 emission sources	3.C	
Biomass burning	CRF 4.B1	CO_2, CH_4 and N_2O	Biomass burning	3.C1(partial)	Excludes non-co2 emissions from savanna fires.
Liming	CRF 4.B2	CO_2	Liming	3.C2	All
Urea application	CRF 4.B3	CO_2	Urea application	3.C3	All
Direct N2O emissions from managed soils :	CRF 4.B4	N_2O	Direct N2O emissions from managed soils	3C4 (partial)	Includes direct emissions from: – drainage/management of organic soils (excluding cropland and grassland)

					– N mineralization associated with loss of soil organic matter resulting form change of land use or management of mineral soils (all land categories) – inorganic and organic N fertiliser application (excluding cropland and grassland applications)
Indirect N2O emissions from managed soils	CRF 4.B5	N_2O	Indirect N2O emissions from managed soils	3.C5 (partial)	Includes indirect emissions from: – atmospheric deposition of N volatilised (excluding cropland and grassland) – leaching/runoff associated with N mineralization/immobilisation due to loss/gain of SOM resulting from change of land use or management of mineral soils (all land categories)
Other	CRF 4.B6		Other	3.C8	
Other	CRF 4.C		Other	3.D	
Harvested wood products	CRF 4.C1	CO_2	*Harvested wood products*	3.D1	All
Other	CRF 4.C2		*Other*	3.D2	

B ATTACHMENT 3: POSSIBLE MODIFICATIONS TO THE AGRICULTURE CRF TABLES

TABLE 3 SECTORAL REPORT FOR AGRICULTURE
(Sheet 1 of 2)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CH_4	N_2O	NO_x	CO	NMVOC
	(Gg)				
Total Agriculture					
A. Enteric Fermentation					
1. Cattle [(1)]					
Option A:					
Dairy Cattle					
Non-Dairy Cattle					
Option B:					
Mature Dairy Cattle					
Mature Non-Dairy Cattle					
Young Cattle					
2. Buffalo					
3. Sheep					
4. Goats					
5. Camels and Llamas					
6. Horses					
7. Mules and Asses					
8. Swine					
9. Poultry					
10. Other *(as specified in table 3.A)*					
B. Manure Management					
1. Cattle [(1)]					
Option A:					
Dairy Cattle					

Non-Dairy Cattle					
Option B:					
Mature Dairy Cattle					
Mature Non-Dairy Cattle					
Young Cattle					
2. Buffalo					
3. Sheep					
4. Goats					
5. Camels and Llamas					
6. Horses					
7. Mules and Asses					
8. Swine					
9. Poultry					
10. Other livestock *(as specified in table 3.B(a))*					

Note: All footnotes for this table are given at the end of the table on sheet 2.

TABLE 3 SECTORAL REPORT FOR AGRICULTURE
(Sheet 2 of 2)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CH_4	N_2O	NO_x	CO	NMVOC
	(Gg)				
C. Rice Cultivation					
1. Irrigated					
2. Rainfed					
3. Deep Water					
4. Other *(as specified in table 3.C)*					
D. Agricultural Soils					
1. Direct N2O Emissions from Managed Soils[2]					
2. Indirect N2O Emissions from Managed Soils					
3. Indirect N2O Emissions from Manure Management					
4. Other *(as specified in table 3.D)*					
E. Prescribed Burning of Savannas					
F. Field Burning of Agricultural Residues					
1 . Cereals					
2. Pulses					
3 . Tubers and Roots					
4 . Sugar Cane					
5 . Other *(as specified in table 3.F)*					
G. Other *(please specify)*					

[1] The sum for cattle would be calculated on the basis of entries made under either option A (dairy and non-dairy cattle) or option B (mature dairy cattle, mature non-dairy cattle and young cattle).

[2] Direct N_2O emissions from pasture, range and paddock manure are to be reported in the "3.D Agricultural Soils" category. All other direct N_2O emissions from animal manure are to be reported in the "3.B Manure Management" category.

Documentation box:

• Parties should provide detailed explanations on the agriculture sector in Chapter 5: Agriculture (CRF sector 3) of the NIR. Use this documentation box to provide references to relevant sections of the NIR if any additional information and/or further details are needed to understand the content of this table.

• If estimates are reported under "3.G Other", use this documentation box to provide information regarding activities covered under this category and to provide reference to the section in the NIR where background information can be found.

TABLE 3.D SECTORAL BACKGROUND DATA FOR AGRICULTURE
Agricultural Soils
(Sheet 1 of 2)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA AND OTHER RELATED INFORMATION		IMPLIED EMISSION FACTORS	EMISSIONS
	Description	Value kg N/yr	kg N_2O-N/kg N [(1)(2)]	N_2O (Gg)
1. Direct N2O Emissions From Managed Soils	**N input to soils**			
1. Inorganic N Fertilizers[(4)]	Nitrogen input from application of synthetic fertilizers			
2. Organic N Fertilizers[(4)]	Total Nitrogen input from organic N fertilizers			
a. Animal Manure Applied to Soils	Nitrogen input from manure applied to soils			
b. Sewerage Sludge Applied to Soils	Nitrogen input from sewerage sludge applied to soils			
c. Other Organic Fertilzer Applied to Soils	Nitrogen input from application of organic fertilizers			
4. Urine and Dung Deposited by Grazing Animals	Nitrogen excretion on pasture, range and paddock			
5. Crop Residue	Nitrogen in crop residues returned to soils			
6. Cultivation of organic soils (i.e. Histosols) [(2)]	Area of cultivated organic soils (ha/yr)			

To improve tranparency it is suggested that these organic fertiliser categories be reported seperatelly

The green highlighted cells in Table 3.F are very helpful information

2. Indirect N2O Emissions From Managed Soils				
1. Atmospheric Deposition [3]	Volatized N from agricultural inputs of N including			
2. Nitrogen Leaching and Run-off	N from fertilizers, animal manures and other that is lost through leaching and run-off			
3. Indirect N2O Emissions From Manure Management				
1. Atmospheric Deposition	Volatized N from manure management systems			
2. Nitrogen Leaching and Run-off	N from manure management systems that is lost through leaching and run-off			
4. Other *(please specify)*				NA

for review of Crop residue N. Need to consider whether these are included as an additional background table

[1] To convert from N_2O-N to N_2O emissions, multiply by 44/28.

[2] Note that for cultivation of organic soils the unit of the IEF is kg N2O-N/ha.

[3] Only atmospheric deposition of N volatilized from agricultural input of N are to be reported here (include NOx associated with burning of savannas and crop residues).

[4] Include in 4.D.1 applications of fertilizers on cropland and grassland. If applications to other land categories cannot be seperately identified they to should be included here.

Documentation box:

• Parties should provide detailed explanations on the Agriculture sector in Chapter 5: Agriculture (CRF sector 3) of the NIR. Use this documentation box to provide references to relevant sections of the NIR if any additional information and/or further details are needed to understand the content of this table.

• Provide a reference to the relevant section in the NIR, in particular with regard to:

(a) Background information on CH_4 emissions from agricultural soils, if accounted for under the Agriculture sector;

(b) Disaggregated values for $Frac_{GRAZ}$ according to animal type, and for $Frac_{BURN}$ according to crop types;

(c) Full list of assumptions and fractions used.

TABLE 3.E SECTORAL BACKGROUND DATA FOR AGRICULTURE
Prescribed Burning of Savannas
(Sheet 1 of 1)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA AND OTHER RELATED INFORMATION					IMPLIED EMISSION FACTORS		EMISSIONS	
	Area of savanna burned (k ha/yr)	Average above-ground biomass density (t dm/ha)	Fraction of savanna burned	Biomass burned (Gg dm)	Nitrogen fraction in biomass	CH_4 (kg/t dm)	N_2O (kg/t dm)	CH_4 (Gg)	N_2O (Gg)
Forest land (specify ecological zone)(1)									
Grassland (specify ecological zone)(1)									

(1) If possible fires on forest land and grassland defined as savanna should be seperately identified and reported here. If it is not possible to seperate these fires from other forest land and grassland fires reported under 4.B1 Biomass Burning this should be clearly documented

Additional information

	Living Biomass	Dead Biomass
Fraction of above-ground biomass	0.00	0.00
Fraction oxidized	0.00	0.00
Carbon fraction	0.00	0.46

Documentation box:

Parties should provide detailed explanations on the Agriculture sector in Chapter 5: Agriculture (CRF sector 3) of the NIR. Use this documentation box to provide references to relevant sections of the NIR if any additional information and/or further details are needed to understand the content of this table.

TABLE 4.F SECTORAL BACKGROUND DATA FOR AGRICULTURE

Field Burning of Agricultural Residues

(Sheet 1 of 1)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA AND OTHER RELATED INFORMATION										IMPLIED EMISSION FACTORS		EMISSIONS	
	Area Burnt (ha/year)	Biomass burnt (Gg dm)	Crop production (t)	Residue/ Crop ratio	Dry matter (dm) fraction of residue	Fraction burned in fields	Fraction oxidized	Total biomass burned (Gg dm)	C fraction of residue	N-C ratio in biomass residues	CH_4 (kg/t dm)	N_2O (kg/t dm)	CH_4 (Gg)	N_2O (Gg)
1. Cereals														
Wheat														
Barley														
Maize														
Oats														
Rye														
Rice														
Other *(please specify)*														
2. Pulses														
Dry bean														
Peas														
Soybeans														
Other *(please specify)*														

3 Tubers and Roots														
Potatoes														
Other *(please specify)*														
4 Sugar Cane														
5 Other *(please specify)*														

Documentation box:
Parties should provide detailed explanations on the Agriculture sector in Chapter 5: Agriculture (CRF sector 3) of the NIR. Use this documentation box to provide references to relevant sections of the NIR if any additional information and/or further details are needed to understand the content of this table.

The 2006 IPCC default emissions factors are based on g/kg dm burnt - as such these highlights columns are not required if parties use the default EF. However retaining info on crop production, residue to crop ratio , dry matter fraction, N-C ratio remains useful for the estimation and review of the amout of N in crop residues reported in the Table 3.D. This data is also likely to reflect the methods parties continue to use for estimating the biomass burnt (particuarly where area data is not available). May need to consider keep this info in a background table.

Annex III

A. CRF Tables

The CRF tables are included in the following three files:

1. set 1 E,IP, W_final.pdf
   - contains CRF tables for the energy, industrial processes and waste sector
2. set 2 AFOLU_final.xlsx
   - contains CRF tables for the agriculture and land use, land-use change and forestry sectors
3. set 3 cross-sectoral_final.xlsx
   - contains cross-sectoral tables