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METHODOLOGICAL ISSUES

GUIDELINES ON REPORTING AND REVIEW OF GREENHOUSE GAS INVENTORIES FROM PARTIES INCLUDED IN ANNEX I TO THE CONVENTION (IMPLEMENTING DECISIONS 3/CP.5 AND 6/CP.5)

Report of an expert meeting to assess experience in the use of the UNFCCC reporting and review guidelines

Note by the secretariat

Addendum

PROPOSAL FOR REVISION OF 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

ANNEX: TABLES OF THE COMMON REPORTING FORMAT

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I. INTRODUCTION

A. Mandate

1. By its decision 3/CP.5, the Conference of the Parties (COP) adopted 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 "reporting guidelines").

2. The Conference decided "that revisions to these guidelines, particularly the common reporting format, shall be considered by the Subsidiary Body for Scientific and Technological Advice at its fifteenth session with a view to submitting a decision for adoption by the Conference of the Parties at its seventh session" (FCCC/CP/1999/6/Add.1).

3. By the same decision, the COP requested the secretariat to prepare a report on the use of these guidelines, in particular the common reporting format (CRF), taking into account, *inter alia*, the experiences gained by Parties in using the guidelines and by the secretariat in processing the CRF, for the purpose of considering possible revisions to the reporting guidelines by the Subsidiary Body for Scientific and Technological Advice (SBSTA) at its fifteenth session. The SBSTA, at its twelfth session, requested the secretariat, in the report on the use of the reporting guidelines, to consider whether any modifications to the reporting guidelines were needed to reflect the good practice guidance[1] (FCCC/SBSTA/2000/5, para. 40 (f)).

4. The COP, by its decision 34/CP.7, decided to defer revision of the reporting guidelines until the sixteenth session of the SBSTA with a view to adopting a decision at its eighth session (FCCC/CP/2001/13/Add.4).

5. At its fifteenth session, the SBSTA welcomed the organization by the secretariat of an expert meeting on methodological and operational issues relating, *inter alia*, to the use of the reporting guidelines, which was held in Bonn from 4 to 6 December 2001. In addition, the SBSTA requested the secretariat to prepare a report of the expert meeting for consideration at its sixteenth session (FCCC/SBSTA/2001/8, para. 15 (b)).

6. At the expert meeting, the Chairman of the SBSTA proposed that the secretariat, under his guidance, should prepare draft revised reporting guidelines, taking into account the experience of Parties in using the guidelines and of the secretariat in processing the CRF, as well as the outcome of the expert

[1] Good practice guidance refers to the report of the Intergovernmental Panel on Climate Change (IPCC) entitled *Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories.* It is referred to as the "IPCC good practice guidance" in this document.

meeting (FCCC/SBSTA/2002/2), in order to facilitate consideration of the revised reporting guidelines by the subsidiary bodies at their sixteenth sessions.

B. Scope of this note

7. The present note responds to the mandate mentioned in paragraph 6 above. It contains a proposal for a revised common reporting format, which is an integral part of the reporting guidelines. This note has been developed to facilitate consideration of this issue during the sixteenth session of the SBSTA. It should be read in conjunction with the report of the expert meeting (FCCC/SBSTA/2002/2) and the proposal for revision of the UNFCCC reporting guidelines on annual inventories (FCCC/SBSTA/2002/2/Add.2).

8. The draft revised CRF contained in the annex to this note was based largely on the CRF contained in the reporting guidelines that were adopted by decision 3/CP.5 (FCCC/CP/1999/7). The secretariat took into account the experience of Parties in using the reporting guidelines, including the CRF, and of the secretariat in processing the CRF and coordinating the technical review process as described in documents FCCC/SBSTA/2001/MISC.4, FCCC/SBSTA/2001/MISC.5, FCCC/SBSTA/2001/5 and Add.1, and the recommendations of the participants at the expert meeting (see FCCC/SBSTA/2002/2).

9. The CRF is an integral part of the reporting guidelines. For technical reasons, the draft revised CRF (tables) is presented in this note independently from the reporting guidelines (FCCC/SBSTA/2002/2/Add.2). The CRF constitutes annex II to the draft reporting guidelines.[2]

C. Possible action by the SBSTA

10. The SBSTA may wish to consider the information in this note and to endorse or modify the proposed changes to the CRF. The SBSTA may also wish to forward the revised CRF to the Subsidiary Body for Implementation (SBI) for its consideration and possible recommendation for adoption by the COP at its eighth session.

D. Approach

11. The draft revised reporting guidelines, including the CRF contained in this note, were prepared under the guidance of the Chairman of the SBSTA and with the assistance of the Co-Chairs of the expert meeting (Mr. William Kojo Agyemang-Bonsu (Ghana), Ms. Dina Kruger (United States of America), Mr. Newton Paciornik (Brazil) and Mr. Jim Penman (United Kingdom of Great Britain and Northern Ireland)). In addition, a limited number of experts with substantial inventory review experience, who acted as lead reviewers during the trial period and who participated in the meeting, also accepted the invitation of the Chairman of the SBSTA to assist him in the elaboration of the draft revised guidelines. These experts were: Mr. Ayite-Lo Ajavon (Togo), Mr. Samir Amous (Tunisia), Ms. Katarina Mareckova (Slovakia), Mr. Klaus Radunsky (Austria), Mr. Audun Rosland (Norway) and Mr. Jose Villarin (Philippines).

12. In order to address any possible modification of the sectoral tables of the CRF, three sectoral groups were formed at the expert meeting: one group on energy, one on industrial processes, solvent and other product use and waste, and one on agriculture, with the participation of a limited number of experts with recognized experience in these sectors. The outcome of the discussions of each of these groups is of

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[2] The proposed revised reporting guidelines have two annexes: Annex I, entitled "National inventory report (NIR) – proposed structure" and Annex II, entitled "CRF tables" (see FCCC/SBSTA/2002/2/Add.2, pages 16 and 22, respectively). The text of the revised reporting guidelines and the revised CRF tables will be issued as a single document after the sixteenth sessions of the subsidiary bodies.

a very technical and detailed character. Due to time limitations, the outcome of each discussion was not considered in detail by the working group on reporting guidelines. The Chairman invited experts, as individuals or endorsed by their respective Parties, to provide their views on the outcomes of the sectoral groups. Both these outcomes and the views received can be found on the secretariat web site (http://unfccc.int/sessions/workshop/010412/index.html).

13. In preparing the draft revised CRF tables as described in paragraph 8 above, the secretariat, in addition, took into account the recommendations of the three sectoral groups and the feedback received on the outcome of the meeting. The specific proposed changes to the CRF included in this note are described on a table-by-table basis in section II of this note (see paragraphs 18 to 125 below).

14. With respect to land-use change and forestry (LUCF), the participants at the meeting recommended waiting for the outcome of the ongoing work of the IPCC in developing good practice guidance for the LULUCF sector, before suggesting any alternative formats to CRF sectoral background tables 5.A-D on LUCF.[3]

II. PROPOSED CHANGES TO THE COMMON REPORTING FORMAT

15. No significant changes have been made to the draft revised CRF: the sources, gases and activity data to be reported, including calculation of implied emission factors (IEF), and the content of most tables, remain the same. A number of modifications, which will facilitate reporting by Parties by making the CRF consistent in many areas with the IPCC good practice guidance and also improve the accuracy and consistency of reporting and quality control, are suggested below.

16. The proposed changes to the CRF provide for enhanced links between the information to be provided in the national inventory report (NIR) and the information to be provided in the CRF. The division between the NIR and the CRF is based on the principle that the CRF is designed to provide for reporting quantitative inventory data in a standardized format at an aggregate level to facilitate electronic data processing and comparisons across Parties, while the NIR should contain all the information needed to provide for sufficient transparency and to enable the inventories to be reviewed. Other changes to the CRF are aimed at improving the structure of the tables and their consistency with the IPCC good practice guidance. The proposed changes to the CRF are also designed to be easily incorporated into any reporting software.

17. The sections below describe in more detail the proposed changes made to the CRF as contained in the annex to this note.

A. Common changes to all tables

1. Reporting of "other" categories

18. Following the principle of avoiding duplicative data entries, the specification of activities reported under "other" categories should only be made at the lowest level of data entry, which, for most sectors, is the level of sectoral background tables. Any specified "other" categories would be transferred to the corresponding sectoral report. For this reason, the labels for categories "other – please specify" in the sectoral reports have been changed to "other – as specified in table x.y" referring to the

[3] The SBSTA, at its twelfth session, invited the IPCC to include good practice guidance for that sector in its work plan. At its seventh session, by decision 11/CP.7, the COP invited the IPCC to prepare a report on good practice guidance and uncertainty management relating to the measurement, estimation, assessment of uncertainties, monitoring and reporting of net carbon stock changes and anthropogenic emissions by sources and removals by sinks in the LULUCF sector.

corresponding sectoral background table. An empty row has been kept below each instance of "other" to indicate possible rows for those categories.

2. Additional information boxes

19. The amount of information to be provided in the additional information boxes has been reduced. The reporting requirements for the additional information boxes have been retained in the revised CRF provided the information asked for is used directly in the estimation of emissions using IPCC default methodologies. Other information that is useful for the review of inventories, but not used directly for calculating emissions estimates, is to be provided in the NIR. All reporting requirements which, in the draft revised CRF, have been removed from the additional information boxes, are summarized in an appendix to annex I of the reporting guidelines (see proposed structure of NIR), in order to ensure that these elements continue to be reported as additional information in the NIR for the purposes of the review. Sector-specific changes to the additional information boxes are identified in paragraphs 27 to 125 below.

3. Documentation boxes and footnotes

20. Documentation boxes have been added to all tables (one box per table), including sectoral reports and most summary[4] and other tables. The information to be provided in these boxes is specified in each box.

21. As a general rule, documentation boxes contain a reference to the sectoral section of the NIR (assuming the structure of the NIR is the one proposed in document FCCC/SBSTA/2002/2/Add.2, pages 16–18) where full details of a given sector are to be provided. However, if certain information is needed for the content of a table to be readily understood, Parties have the opportunity of using documentation boxes for including specific references to those sections of the NIR where the full details can be found.

22. Table-specific instructions in footnotes calling for information in the documentation boxes have been transferred to the documentation boxes themselves. If the required information is too comprehensive to be provided in these boxes, it should be provided in the NIR and a reference to the relevant section included in the documentation box.

23. Footnotes and notes relating to the tables are repeated in each sheet of a table, where relevant, in order to facilitate the reading of the tables.

4. Shading

24. To simplify the layout of the tables and clearly indicate the specific reporting requirements for each table, only those cells that require entries by Parties have been left blank. Slight shading in cells indicates that they are expected to be filled in using software provided by the secretariat (e.g. for calculation of IEFs, sub-totals and totals, etc.).[5] However, Parties that choose not to use any software for completing the CRF would have to provide entries in those cells as well.

25. As in the current CRF, dark shading is used in those cells that are not expected to contain any information. This type of shading is mainly used for those source/sink categories for which emissions/removals of a given greenhouse gas would not occur, or for cells in which certain information would not be necessary or useful (for example, IEFs at a very high level of aggregation). Therefore, such

[4] No documentation boxes have been added to tables Summary 1.A, 1.B and 2.

[5] In the electronic versions of the current CRF (CRF V1.01 and CRF V1.2), cells not requiring direct data entry by the user (because they are filled in by the Excel software application) are coloured; thus, only those cells that require manual data input have been left blank. This approach was taken to facilitate data entry into the CRF. These coloured cells correspond to those with slight shading in this document.

cells would not require any data entries by Parties nor would they be filled in by the software provided by the secretariat.

26. Changes relating to dark shading in specific source/sink categories are described in the individual table-by-table description below.

B. Changes to summary and other tables

27. It is recommended that this section be read in conjunction with the draft revised CRF tables in the annex to this note and the tables of the current version of the CRF.

Summary 1.A – Summary report for national greenhouse gas inventories (IPCC table 7A)

28. Consistent with the changes made to sectoral table 5 of the CRF, the shading in the cell for carbon dioxide (CO_2) removals from 5.B Forest and grassland conversion has been removed.

29. The third sentence of footnote (4) has been modified. It now says that the documentation box in table 4.D should be used to provide an explanation of the way in which CO_2 from soils has been accounted for (instead of requesting that explanatory comments should be entered in the corresponding cells of tables Summary 1.A and 1.B).

30. Footnote (5), in sheet 2 of this table, which notes that only the net estimate for LUCF should be provided under either the "Emissions" or "Removals" column and explains the use of the signs (-/+) for this table, has been added to the cells for CO_2 from 4.D Agricultural soils.

31. Footnote (6), in sheet 2 of this table, has been expanded to explain that only emissions from waste incineration without energy recovery are to be reported in the waste sector, while emissions from incineration with energy recovery are to be reported in the energy sector.

32. A new footnote (7) has been added to the sector "7. Other", indicating that information relating to any source category reported under this sector should be provided in the NIR.

33. Footnote (8) (footnote (7) in the current version of the CRF), in sheet 3 of this table, has been expanded to explain the nature of "Memo items".

34. The note at the bottom of sheet 1 of this table, which refers to the numbering of footnotes in the CRF, has been deleted.

Summary 2 – CO_2 equivalent emissions

35. A footnote has been added to the headings of "HFCs", "PFCs", "SF_6"[6] and to the source category "2.F. Consumption of halocarbons and SF_6", specifying that actual emissions are to be included in the national totals. Should there be no actual emissions estimates for the source category 2.F. Consumption of halocarbons and SF_6, potential emissions would have to be included in the national totals.

Summary 3 – Summary report for methods and emission factors used

36. The table retains its current layout. A documentation box has been added to allow methods (tiers) and emission factors for those source categories in which multiple data entries were necessary to be specified, given that Parties use different methods within the IPCC source categories.

37. Consistent with the shadings in table Summary 1.A, the cells for CO_2 emissions and removals from source category "4.G Other" have been shaded.

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[6] Hydrofluorocarbons (HFCs), perfluorocarbons (PCFs), sulphur hexafluoride (SF_6).

Table 7(a) (new table) – Overview for key sources

38. This table has been newly developed taking into consideration the IPCC good practice guidance, in order to allow the reporting of key sources in the CRF. Given that key sources are to be identified by Parties at the level of category disaggregation at which methods for estimating emissions are used, category disaggregation of key sources may differ across Parties. Therefore, this table does not include a defined level of categories, thereby allowing Parties to report according to their own level of disaggregation. The identified key sources should be ranked according to their relative contributions to the national total.

39. The proposed table 7(a) also calls for information to be provided on whether source-specific QA/QC procedures have been implemented.

Table 7(b) (new table) – Uncertainties for key sources

40. The new table 7(b) replaces table 7 (overview table) in the current version of the CRF. The reason for removing the current table 7 from the CRF is that this table was included in the CRF only until such time as the IPCC completed its work on good practice guidance and uncertainty management.

41. Qualitative and quantitative information on uncertainties for all sources is to be provided mainly in the NIR. Quantitative values on uncertainties for key sources are also to be included in table 7(b) of the CRF.

42. Table 7(b) has been provided to help prioritize efforts to improve the accuracy of national inventories in the future and guide decisions on methodological choice. It is not intended to be used for comparing quantitative values of uncertainties reported by different Parties because of the incomparable nature of this information.

43. One new feature of the table, which is in line with table 6.1 of the IPCC good practice guidance, consists in the separate reporting of key source uncertainty estimates for activity data and emission factors, in addition to the combined uncertainty for the source category.

44. As uncertainties have to be determined at a disaggregation level at which different emission factors and sources of activity data are used, the list of source categories (key sources) in table 7(b) should be consistent with the list of key sources provided in table 7(a). Neither table 7(a) nor table 7(b) provides for a defined level of category disaggregation.

Table 8(a) – Recalculations, recalculated data

45. Additional columns have been added under each gas to show, first, the difference between the estimates in gigagrams of CO_2 equivalent,[7] and secondly, the relative impact of any difference between the current year's and previous years' estimates as a result of recalculation on the total national inventory (excluding LUCF). Footnotes have been added accordingly.

Table 8(b) – Recalculations, explanatory information

46. An additional column has been added to allow for the reporting of revisions in data due to changes other than methodological recalculations, e.g. statistical or editorial changes, correction of errors.

[7] In the current version of the CRF this difference is only expressed in per cent.

Table 10, sheets 1–3 – Emissions trends (CO_2, CH_4, N_2O)[8]

47. Some source categories have been shaded, consistent with the shadings in table Summary 1.A.

Table 10, sheet 4 – Emission trends (HFCs, PFCs and SF_6)

48. Consistent with the provision made for reporting aggregate "other HFCs" and "other PFCs" in table 2(II), rows for "other HFCs" and "other PFCs" have been inserted in this table. A footnote explaining the purpose of this provision has been added accordingly.

49. A documentation box has been added to the table in order to allow Parties to specify cases where only potential emissions were reported in this table.

Table 11 – Checklist of reported inventory information

50. Table 11 has been deleted from the CRF, as it does not provide any information that might be used in the review process; it has also been made redundant by the information that is reported in the status reports that are being prepared as part of the review process.

C. Changes to sectoral reports and sectoral background data tables

51. It is recommended that this section be read in conjunction with the draft revised CRF tables in the annex to this note and the tables of the current version of the CRF.

1. Energy

Table 1 – Sectoral report for energy

52. 1.A.5 Other: Activities for "stationary" and "mobile" are to be specified in table 1.A(a), sheet 4. In table 1, sheet 2, only the total emissions per gas (CO_2, CH_4, N_2O) for "stationary" and "mobile" are to be reported. For precursor gases, only total emissions estimates according to "stationary" and "mobile" are to be entered.

53. 1.B.2.a. Oil: In the cell for N_2O the shading has been removed.

54. Footnote (1) of the current CRF version has been deleted: "Include military fuel use under this category". The same footnote is already included in table 1A(a) where it is more relevant, as data entries will be made at the level of sectoral background data tables.

55. Footnote (2) of the current CRF version (footnote (1) of the revised CRF) has been expanded to explain the nature of "Memo items".

Table 1.A(a) – Sectoral background data table for energy: fuel combustion activities – sectoral approach

56. 1.A(a), sheet 1 – CO_2 from biomass: the cell for total CO_2 from biomass fuel combustion has been shaded. The total CO_2 from biomass will be recorded in table 1, sheet 2 under "Memo items". A footnote has been added to explain where this value is being recorded.

57. 1.A(a), sheet 2 – A row has been added below source category "f. Other", in which all activities covered under this source should be listed.

58. 1.A(a), sheet 3 – Transport: the following changes have been made to the list of fuel types:

[8] Methane (CH_4), nitrous oxide (N_2O).

(a) Fuel types for aggregate transport (1.A.3) are now classified as: liquid, solid, gaseous, biomass and other fuels;

(b) Under 1.A.3.b, Road transportation, the fuel categories "LPG" and "Other liquid fuels – please specify" have been added; the fuel category "Natural gas" has been renamed "Gaseous fuels";

(c) Under 1.A.3.c, Railways, the fuel category "Gaseous fuels" has been added;

(d) Under 1.A.3.d, Navigation, the fuel categories "Gasoline", "Other liquid fuels – please specify" and "Gaseous fuels" have been added; the fuel category "Coal" has been renamed "Solid fuels";

(e) Under 1.A.3.e, Other transportation, the fuel categories "Biomass" and "Other fuels" have been added. In addition, a row has been inserted in which all activities covered under 1.A.3.e Other transportation should be listed.

59. 1.A(a), sheet 4 – Other: the activities covered under "1.A.5 Other" under stationary and mobile, respectively, will have to be specified in this table, rather than in table 1 (sheet 2) as required by the current CRF version.

Table 1.A(b) – Reference approach

60. Under each fuel type, liquid, solid and gaseous fuels, a row for reporting "other – please specify" has been added. A line for gaseous fossil fuel totals has been also been inserted.

Table 1.A(c) – Comparison of CO_2 emissions from fuel combustion

61. The heading currently labelled "National approach" has been renamed "Sectoral approach".

62. The heading under reference approach, currently labelled "Energy consumption" has been renamed "Apparent energy consumption".

63. The column for showing the percentage difference between energy consumption from the reference and sectoral approaches has been deleted.[9]

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

64. Footnote (2), of the current CRF, has been expanded to provide for brief definitions of "feedstocks" and "non-energy use".

65. Two rows have been added underneath the table to show: (1) the total amount of carbon and CO_2 from feedstocks / non-energy use of fuels that is included as emitted CO_2 in the reference approach, and (2) the total amount of carbon and CO_2 from feedstocks and non-energy use of fuels that is not emitted.

66. Footnote (1), of the current CRF, "Where fuels are used in different industries, please enter in different rows" has been deleted from the table.

[9] A comparison of the energy consumption data from the two approaches in a standardized manner for reporting purposes was not found to be useful by some experts. This deletion does not preclude an in-depth analysis of the difference in energy consumption between the two approaches to be undertaken by expert review teams, which take into account all the factors that contribute to the differences between the two approaches. The IPCC Guidelines only require a comparison of CO_2 emissions between the two approaches.

Table 1.B.1 – Solid fuels

67. The "Additional information" box has been deleted. Only the request for reporting the amount of CH_4 drained (recovered) and utilized or flared (Gg) has been kept, and has been incorporated into the main table.

68. Under the heading "Emissions", the column for "CH_4 " has been split into "CH_4 – Recovery/flaring" and "CH_4 net emissions". Footnotes have been added accordingly.

69. The IEFs for CH_4 are calculated on the basis of gross CH_4 emissions (CH_4 final (net) emissions plus CH_4 recovered/flared). IEFs based on gross emissions provide for a more consistent comparison across countries and of default emission factors.[10]

Table 1.B.2 – Oil and natural gas

70. The heading of this table has been amended to "Fugitive Emissions from Oil, Natural Gas and Other Sources".

71. While in the current version of the CRF the activity data could be entered in any unit chosen by the Party, in the revised version, the unit of activity data must be specified from a defined list of units. Footnote (1) has been amended accordingly to show the units Parties may choose to report their activity data.

72. 1.B.2.a. Oil: for Exploration and Refining/storage, the shading has been removed in the cells for N_2O emissions and N_2O IEFs.

73. 1.B.2.b. Natural gas: for the sub-sources of this source a continuous numeration, (i) to (v), has been added.

74. 1.B.2.b.iii. Other leakage (corresponds to 1.B.2.b.v in the revised CRF, following the numeration as indicated in paragraph 73 above): for emissions estimates (CO_2 and CH_4), this line represents the sum of the sub-sources "at industrial plants and power stations" and "in residential and commercial sectors".

75. The "Additional information" box has been deleted.

Table 1.C – Bunkers

76. The order of aviation and marine has been changed in accordance with the order in table 1 under "Memo items" (including in the additional information box).

77. In footnote 1 to the table, the word "implied" before emission factors has been added.

2. Industrial processes

Table 2(I) – Sectoral report for industrial processes

78. 2.B.1. Ammonia production: in the cell for N_2O emissions the shading has been removed (consistent with table 2.A-G).

79. 2.B.4. Carbide production: in the cell for NOx emissions the shading has been removed.

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[10] Owing to the characteristics of this sub-sector, such as large differences in the amounts of a given greenhouse gas recovered in different countries, and year-to-year variations in recovery amounts within one country, IEFs based on "final (net) emissions" would limit the use of comparability as a tool during the review process. This does not preclude an in-depth analysis of the recovery assessment by expert review teams.

80. 2.F. Consumption of halocarbons and SF_6: a new sub-source, consistent with the IPCC good practice guidance, has been added to this source category, labelled "6. Other applications using ODS substitutes". The numeration of the subsequent sub-sources has been changed accordingly. The insertion of this new sub-source should allow for the reporting of "other" activities using ozone-depleting-substances (ODS) substitutes separately from "other" activities to be reported under "F.9. Other – as specified in table 2(II)" (currently F.8. Other – please specify).

Table 2(I).A-G – Sectoral background data table for industrial processes

81. The word "net" has been inserted in the column headings for emissions of CO_2, CH_4 and N_2O.

82. The expression "Adjusted emissions" used in the second sentence of footnote (2) according to the current CRF (footnote (3) in the revised CRF) has been replaced with "Final (net) emissions".

83. The IEFs are calculated on the basis of gross emissions (final (net) emissions plus amounts recovered, oxidized, destroyed or transformed), as they provide for a more consistent comparison across countries and of default emission factors. A footnote has been added accordingly.

Table 2(II) – Sectoral report for HFCs, PFCs and SF_6

84. 2.F(a). Consumption of halocarbons and SF_6: a new sub-source for reporting actual emissions, consistent with the IPCC good practice guidance, has been added under this source category, labelled "6. Other applications using ODS substitutes". The numeration of the subsequent sub-sources has changed accordingly. The insertion of this new sub-source should allow reporting of "other" activities using ODS substitutes separately from "other" activities to be reported under "F.9 Other – please specify" (see also the change in table 2(I)).

85. Two additional columns have been inserted, labelled "Other HFCs" and "Other PFCs", respectively, to allow for the reporting of aggregated HFCs and PFCs, mainly in cases of confidentiality. A footnote describing the purpose of these columns has been added.

86. Footnotes and notes to the table have been modified and re-ordered in line with the general approach taken for documentation boxes and footnotes, and the changes made to the table.

Table 2(II). C, E – Sectoral background data table (metal production; production of halocarbons and SF_6)

87. Several aspects of this table have been restructured:

(a) The table has been split into two semi-independent tables according to the two categories (2.C. PFCs and SF_6 from metal production, and 2.E. Production of halocarbons and SF_6) covered in the table;

(b) In line with the structure of all the other CRF tables, specification of the gases has been moved and placed under the heading of the column labelled "Emissions". This change implies that for 2.E. Production of halocarbons and SF_6, the relevant activities will have to be specified under the main sub-sources (such as by-product and fugitive emissions) of this category, while the corresponding gas and its value will have to be specified in the column labelled "HFCs/PFCs".

Table 2(II). F – Consumption of halocarbons and SF_6

88. A new sub-source for reporting actual emissions has been added to this source category, labelled "6. Other applications using ODS substitutes". The numeration of the subsequent sub-sources has been changed accordingly (the change is also reflected in tables 2(I) and 2(II)).

89. The note to this table has been amended in line with the general approach described under "Documentation boxes and footnotes" above.

3. Solvents and other products use

Table 3 – Sectoral report for solvents and other products use

90. The following amendments have been made:

(a) 3.A. Paint application: the cell for N_2O emissions has been shaded;

(b) 3.C. Chemical Products, manufacture and processing: in the cell for reporting CO_2 emissions, the shading has been removed;

(c) 3.D. Other: all the sub-sources relating to N_2O use have been shaded for CO_2 and NMVOCs; and

(d) 3.D. Other: the sub-sources currently given as examples have been numbered. A sub-source "5. Other" has been added for reporting "other" sources besides those already listed under 3.D. Other.

Table 3 A-D – Sectoral background data for solvents and other products use

91. The following amendments have been made:

(a) 3.A. Paint application: the cell for the IEF for N_2O has been shaded;

(b) 3.C. Chemical products, manufacture and processing: in the cells for activity data and the IEF for CO_2, the shading has been removed;

(c) 3.D. Other: the IEFs for CO_2 have been shaded for all sub-sources relating to N_2O use; and

(d) 3.D. Other: the sub-sources currently given as examples have been numbered. A sub-source "5. Other" has been added for reporting "other" sources besides those already listed under 3.D. Other.

4. Agriculture

Cross-cutting: disaggregation of livestock (cattle)

92. With regard to the disaggregation of cattle livestock, the current split between dairy and non-dairy cattle has been kept (referred to as "option A" in the revised CRF). However, in order to facilitate the reporting of the livestock population in the CRF according to the tier 2 method of the IPCC good practice guidance, Parties may also choose to report cattle according to the following disaggregation split: mature dairy cattle, mature non-dairy cattle and young cattle, which is referred to as "option B" in the revised CRF. Both options are provided in all the CRF tables which require the disaggregated reporting of cattle, taking into consideration that Parties may use either option to collect activity data for this source category.

Table 4 – Sectoral report for agriculture

93. The disaggregation of the cattle population has been modified as explained in paragraph 92 above.

94. For source category 4.B. Manure management, a category labelled "4.B.10. Other livestock – please specify" has been added. Consequently, the numeration of the subsequent source categories (manure management systems) has been changed accordingly (from 4.B.11 to 4.B.13).

95. 4.D.2: this source category has been renamed "Pasture, range and paddock manure" instead of "Animal production".

96. 4.D.2: the cell for CH_4 emissions has been shaded.

97. 4.D.2: a footnote referring to chapter 4.4 of the IPCC good practice guidance has been added in order to clarify which emissions of N_2O from manure should be reported under 4.B and which under 4.D.

Table 4.A – Enteric fermentation

98. The disaggregation of the cattle population has been modified as explained in paragraph 92 above.

99. With regard to activity data and related information, the term "average daily feed intake" has been changed to "average gross energy intake (GE)" in order to improve consistency with the IPCC good practice guidance; the corresponding unit has been changed from "MJ/day" to "MJ/head/day".

100. The term "CH_4 conversion" has been changed to "Average CH_4 conversion rate (Ym)"; the unit "%" has been kept. A footnote has been added accordingly.

101. Additional information: the heading above the "Additional information" box now specifies: "Only for those livestock types for which the tier 2 was used", in order to ensure that the information that is provided in this box is limited to those livestock types for which tier 2 method was used, instead of including all livestock types considered under enteric fermentation.

Table 4.B(a) – CH_4 emissions from manure management

102. The disaggregation of the cattle population has been modified as explained in paragraph 92 above.

103. Consistent with the change in table 4, a category labelled "Other livestock – please specify" has been added.

104. Regarding activity data and related information, the unit for VS daily excretion has been changed from kg dm/head/year to kg dm/head/day. The unit of the IEFs continues to be "per year" as indicated in the column heading for the IEFs.

105. The headings "Typical animal mass", "VS daily excretion" and "Bo" now include the word "average". Footnote 3 has been amended accordingly.

106. Additional information box: the column for "Solid storage and dry lot" has been split into two columns: "Solid storage" and "Dry lot".

107. Additional information box: the possibility of reporting other livestock besides those listed in this box has been added.

Table 4.B(b)– N_2O Emissions from manure management

108. The disaggregation of the cattle population has been modified as explained in paragraph 92 above.

Table 4.C – Rice cultivation

109. The unit for "Harvested area" under Activity data has been changed to 10^9 m^2/yr.

Table 4.D – Agricultural soils

110. *4.D.1 – Direct soil emissions*

(a) A category labelled "4.D.1.6. Other direct emissions – please specify" has been included under this source category.

(b) For source category 4.D.1.1. Synthetic fertilizers, the description text for activity data has been changed to "Nitrogen input from application of synthetic fertilizers".

(c) Source category 4.D.1.2. has been renamed "Animal manure applied to soils" instead of "Animal wastes applied to soils".

(d) For source category 4.D.1.3. N-fixing crops, the unit has been changed from "kg dry biomass/yr" to "kg N/yr"; the description text for the activity data has been changed from "Dry pulses and soybeans produced" to "Nitrogen fixed by N-fixing crops cultivated annually"; the unit for the IEF has been changed accordingly.

(e) For source category 4.D.1.4. Crop residue, the unit has been changed from "kg dry biomass/yr" to "kg N/yr"; the description text for the activity data has been changed from "Dry production of other crops" to "Nitrogen in crop residues returned to soils", the unit for the IEF has been changed accordingly.

(f) As a result of the above changes, all IEFs are now given in the unit kg N_2O-N/kg N, except for the cultivation of histosols. This eliminates the need for specifying the unit for the IEF for each source category individually. The unit is therefore specified in the header for the IEFs, together with a footnote indicating the different unit for the cultivation of histosols (kg N_2O-N/ha).

111. *4.D.2 – Animal production*

112. Consistent with the change in table 4, source category 4.D.2 has been renamed "Pasture, range and paddock manure" instead of "Animal production".

113. *4.D.3 – Indirect emissions*

114. The description for both sub-sources has been changed to "Volatized N from fertilizers, animal manures and other" and "N from fertilizers, animal manures and other that is lost through leaching and run off", respectively.

115. *Additional information box*

116. An option allowing for the reporting of other parameters has been added to this box.

Table 4.F – Field burning of agricultural residues

117. The following terms for activity data and other related information have been modified:

(a) "Dry matter fraction" has been changed to "Dry matter fraction of residue";

(b) A column for "Fraction oxidized" has been inserted;

(c) "Biomass burned" has been changed to "Total biomass burned";

(d) "Nitrogen fraction in biomass of residues" has been changed to "N-C ratio in biomass residues"; and

(e) A column for "C fraction of residue" has been inserted.

118. Footnote (1) according to the current CRF reading "To be used in Table 4.D of this common reporting format" has been deleted.

5. Land-use change and forestry

Table 5 – Sectoral report for LUCF

119. As described in paragraph 14 above, no changes to the LUCF sectoral background data tables 5.A-D were suggested at this point in time. However, with respect to the LUCF sectoral report (table 5 of the CRF), the following changes have been made in order to facilitate reporting in this table: in the cells for reporting CO_2 removals from category 5.B Forest and grassland conversion, the shading has been removed. Accordingly, in the cells for "net" CO_2 emissions/removals for this source/sink category the shading has also been removed. The corresponding footnote (2) of the current CRF has been deleted.

6. Waste

Tables 6.A & C – Sectoral background data for solid waste disposal and waste incineration

120. The following changes have been made to table 6.A. Solid waste disposal:

(a) Activity data and related information: the degradable organic carbon (DOC) degraded is shown as "%";

(b) The column labelled "CH_4 recovery" has been moved to under the heading "Emissions" (for consistency with other tables where recovery is reported, such as fugitive emissions and industrial processes);

(c) The column "CH_4" under "Emissions" has been renamed "CH_4 (net)" to improve clarity;

(d) The IEFs for CH_4 are calculated on the basis of gross CH_4 emissions (CH_4 final (net) emissions plus CH_4 recovered). This is consistent with the approach taken for the other sectors (fugitive emissions and industrial processes, see paragraphs 69 and 83 and footnote 10), in which recovery, flaring or other measures that reduce the final emissions may take place. A footnote explaining how the CH_4 IEF is calculated has been added accordingly;

(e) The sub-sources of category "6.A.2. Unmanaged waste disposal sites", have been numbered "6.A.2.a. Deep" and "6.A.2.b. Shallow", respectively.

121. The following change has been made to table 6.C Waste incineration:

(a) The sub-source "Plastics and other non-biogenic waste", currently indicated as an example, has been renamed "Other (non-biogenic) – please specify". A footnote has been added to explain that all types of non-biogenic waste, such as plastics, etc., should be reported and specified under this sub-source. The row for reporting biogenic waste has been kept separate in order to allow for CO_2 emissions from biogenic waste to be excluded from the total;

(b) An indication for specifying whether the "amount of incinerated waste" relates to wet or dry matter has been added in the documentation box;

(c) A note has been added explaining that only emissions from waste incineration without energy recovery are to be reported in the waste sector, while emissions from incineration with energy recovery should be reported in the energy sector.

122. Additional information box: the amount of information to be reported has been reduced. The following reporting requirements have been removed from the CRF and transferred to the NIR: the fraction of waste incinerated, the fraction of waste recycled, the number of solid waste disposal sites (SWDS) recovering CH_4, and the composition of landfilled waste.

Table 6.B – Sectoral background for waste-water handling

123. The table has been restructured: the columns currently labelled "Waste water" and "Sludge" have been moved and inserted as rows under the sub-categories "Industrial waste water", "Domestic and commercial waste water" and "Other", respectively.

124. The column labelled "CH_4 recovered and/or flared" currently under the heading "Activity data" has been moved and placed under the heading "Emissions" (see also change to table 6.A). The two columns for CH_4 emissions have been labelled "CH_4 (net)" and "CH_4 recovery/flaring", respectively.

125. The IEF for CH_4 has been calculated on the basis of gross CH_4 emissions (CH_4 final (net) emissions plus CH_4 recovered/flared). This is consistent with the approach taken for the other sectors (fugitive emissions and industrial processes, see paragraphs 69 and 83 and footnote 10), in which recovery, flaring or other measures that reduce the final emissions may take place. A footnote explaining how the CH_4 IEF is calculated has been added accordingly.

Annex

COMMON REPORTING FORMAT[11]

(This annex constitutes Annex II of the reporting guidelines which are contained in document FCCC/SBSTA/2002/2/Add.2)

Notes on the common reporting format

1. The common reporting format (CRF) is an integral part of the national inventory report (NIR). It is designed to ensure that Parties report quantitative data in a standardized format, and to facilitate the comparison of inventory data across Parties. Details regarding any information of a non-quantitative character should be provided in the NIR.

2. As stated in document FCCC/CP/1999/7, the CRF consists of summary report and sectoral report tables from the Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories (IPCC Guidelines) plus newly developed sectoral background data tables and other tables that are consistent with the IPCC Guidelines and the IPCC good practice guidance.

3. Some sectoral background tables call for the calculation of IEF. These are top-down ratios between the Party's emissions estimate and aggregate activity data. The IEF are intended solely for purposes of comparison. They will not necessarily be the emission factors actually used in the original emissions estimate, unless of course this was a simple multiplication based on the same aggregate activity data used to calculate the implied emission factor.

4. Consistent with the IPCC Guidelines, memo items, such as emissions estimates from international marine and aviation bunker fuels, CO_2 emissions from biomass and emissions from multilateral operations, should be reported in the appropriate tables, but not included in the national totals.

5. Parties should use the documentation boxes at the foot of the tables to provide specific references to the relevant sections of the NIR where full details for a given sector/source category are to be provided.

6. Parties should fill in all the cells calling for emissions or removals estimates, activity data, or emission factors. Notation keys, as described in paragraph 24 of the reporting guidelines, should be used where data have not been entered.

7. In the sectoral background tables, below the source category "Other", an empty row indicates that country-specific source categories may be added. These source categories will automatically be included in the sectoral report tables.

8. Parties should complete the data in the additional information boxes. Where the information called for is inappropriate because of the methodological tier used by the Party, the corresponding cells should be completed using the indicator "NA".

9. Table 5 (the land-use change and forestry sectoral report) should be completed by Parties. The corresponding sectoral background tables 5.A-D follow the IPCC Guidelines and should be completed by Parties that use IPCC default methods. Parties not using the IPCC default methods are encouraged to provide background data and descriptions for the methodologies used to estimate emissions/removals

[11] For technical reasons, the tables below have not been formally edited.

from the LUCF sector in the NIR in order to enhance transparency. Alternative formats for tables 5.A-D will be considered after the IPCC has developed the good practice guidance for the LULUCF sector.

10. To simplify the layout of the tables and indicate clearly the specific reporting requirements for each table, only those cells that require entries by Parties have been left blank. Slight shading in cells indicates that they are expected to be filled in by software to be provided by the secretariat. However, Parties that choose not to use any software for completing the CRF would have to provide entries in those cells as well.

11. As in the current CRF, dark shading has been used in those cells that are not expected to contain any information.

LIST OF TABLES

Explanatory note:

In order to avoid changes to the layout of the complex tables of the CRF, the tables have not been translated. Due to technical limitations, the layout of the printed version of the CRF in this document (e.g., size of tables and fonts) cannot be standardized. The list of tables in this document follows the order of tables in the electronic version of the CRF.

The CRF is a standardized format to be used by Annex I Parties for reporting, electronically, estimates of greenhouse gas emissions and removals, and any other relevant information.

TABLE 1 SECTORAL REPORT FOR ENERGY
(Sheet 1 of 2)

Country
Year
Submission

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO_2	CH_4	N_2O	NO_X	CO	NMVOC	SO_2
	(Gg)						
Total Energy							
A. Fuel Combustion Activities (Sectoral Approach)							
1. Energy Industries							
a. Public Electricity and Heat Production							
b. Petroleum Refining							
c. Manufacture of Solid Fuels and Other Energy Industries							
2. Manufacturing Industries and Construction							
a. Iron and Steel							
b. Non-Ferrous Metals							
c. Chemicals							
d. Pulp, Paper and Print							
e. Food Processing, Beverages and Tobacco							
f. Other *(as specified in table 1.A(a)s2)*							
3. Transport							
a. Civil Aviation							
b. Road Transportation							
c. Railways							
d. Navigation							
e. Other Transportation *(as specified in table 1.A(a)s3)*							

TABLE 1 SECTORAL REPORT FOR ENERGY
(Sheet 2 of 2)

Country
Year
Submission

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO_2	CH_4	N_2O	NO_X	CO	NMVOC	SO_2
	(Gg)						
4. Other Sectors							
a. Commercial/Institutional							
b. Residential							
c. Agriculture/Forestry/Fisheries							
5. Other *(as specified in table 1.A(a)s4)* [1]							
a. Stationary							
b. Mobile							
B. Fugitive Emissions from Fuels							
1. Solid Fuels							
a. Coal Mining							
b. Solid Fuel Transformation							
c. Other *(as specified in table 1.B.1)*							
2. Oil and Natural Gas							
a. Oil							
b. Natural Gas							
c. Venting and Flaring							
Venting							
Flaring							
d. Other *(as specified in table 1.B.2)*							
Memo Items: [1]							
International Bunkers							
Aviation							
Marine							
Multilateral Operations							
CO_2 Emissions from Biomass							

[1] Countries are asked to report emissions from international aviation and marine bunkers and multilateral operations, as well as CO_2 emissions from biomass under Memo Items. These emissions should not be included in the national total emissions from the energy sector. Amounts of biomass used as a fuel are included in the total national energy consumption, while CO_2 emissions from the combustion of biomass are accounted for in the land-use change and forestry sector, if the wood has been produced in an unsustainable manner.

Documentation Box:
Detailed explanations on the energy sector can be found in section 5.1 of the NIR. If any additional information is needed to understand the content of this table, use this documentation box to provide references to the relevant section of the NIR where further details can be found.

TABLE 1.A(a) SECTORAL BACKGROUND DATA FOR ENERGY
Fuel Combustion Activities - Sectoral Approach
(Sheet 1 of 4)

Country
Year
Submission

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	AGGREGATE ACTIVITY DATA		IMPLIED EMISSION FACTORS [2]				EMISSIONS		
	Consumption		CO_2	CH_4	N_2O		CO_2	CH_4	N_2O
	(TJ)	[1]	(t/TJ)	(kg/TJ)			(Gg)		
1.A. Fuel Combustion		NCV							
Liquid Fuels									
Solid Fuels									
Gaseous Fuels									
Biomass						[4]			
Other Fuels									
1.A.1. Energy Industries									
Liquid Fuels									
Solid Fuels									
Gaseous Fuels									
Biomass						[3]			
Other Fuels									
a. Public Electricity and Heat Production									
Liquid Fuels									
Solid Fuels									
Gaseous Fuels									
Biomass						[3]			
Other Fuels									
b. Petroleum Refining									
Liquid Fuels									
Solid Fuels									
Gaseous Fuels									
Biomass						[3]			
Other Fuels									
c. Manufacture of Solid Fuels and Other Energy Industries									
Liquid Fuels									
Solid Fuels									
Gaseous Fuels									
Biomass						[3]			
Other Fuels									

[1] Activity data should be calculated using net calorific values (NCV) as specified by the IPCC Guidelines. If gross calorific values (GCV) were used, please indicate this by replacing "NCV" with "GCV" in this column.
[2] Accurate estimation of CH_4 and N_2O emissions depends on combustion conditions, technology, and emission control policy, as well as fuel characteristics. Therefore, caution should be used when comparing the implied emission factors across countries.
[3] Carbon dioxide emissions from biomass are not included in the total CO_2 emissions from fuel combustion.
[4] Carbon dioxide emissions from biomass are not included in the total CO_2 emissions from fuel combustion. The value for total CO_2 from biomass is recorded in Table1s2 under the Memo Items.

Note: For the coverage of fuel categories, refer to the IPCC Guidelines (Volume 1. Reporting Instructions - Common Reporting Framework, section 1.2, p. 1.19). If some derived gases (e.g. gas work gas, coke oven gas, blast gas, oxygen steel furnace gas, etc.) are considered, Parties should provide information on the allocation of these derived gases under the above fuel categories (liquid, soild, gaseous, biomass, other fuels) in the NIR (see also documentation box at the end of sheet 4 of this table).

TABLE 1.A(a) SECTORAL BACKGROUND DATA FOR ENERGY
Fuel Combustion Activities - Sectoral Approach
(Sheet 2 of 4)

Country
Year
Submission

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	AGGREGATE ACTIVITY DATA		IMPLIED EMISSION FACTORS (2)				EMISSIONS		
	Consumption		CO_2	CH_4	N_2O		CO_2	CH_4	N_2O
	(TJ)	(1)	(t/TJ)	(kg/TJ)			(Gg)		
1.A.2 Manufacturing Industries and Construction		NCV							
Liquid Fuels									
Solid Fuels									
Gaseous Fuels									
Biomass						(3)			
Other Fuels									
a. Iron and Steel									
Liquid Fuels									
Solid Fuels									
Gaseous Fuels									
Biomass						(3)			
Other Fuels									
b. Non-Ferrous Metals									
Liquid Fuels									
Solid Fuels									
Gaseous Fuels									
Biomass						(3)			
Other Fuels									
c. Chemicals									
Liquid Fuels									
Solid Fuels									
Gaseous Fuels									
Biomass						(3)			
Other Fuels									
d. Pulp, Paper and Print									
Liquid Fuels									
Solid Fuels									
Gaseous Fuels									
Biomass						(3)			
Other Fuels									
e. Food Processing, Beverages and Tobacco									
Liquid Fuels									
Solid Fuels									
Gaseous Fuels									
Biomass						(3)			
Other Fuels									
f. Other *(please specify)*									
(this cell is to be used to list all activities covered under "f other".									
Liquid Fuels									
Solid Fuels									
Gaseous Fuels									
Biomass						(3)			
Other Fuels									

TABLE 1.A(a) SECTORAL BACKGROUND DATA FOR ENERGY
Fuel Combustion Activities - Sectoral Approach
(Sheet 3 of 4)

Country
Year
Submission

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	AGGREGATE ACTIVITY DATA		IMPLIED EMISSION FACTORS [2]				EMISSIONS		
	Consumption		CO_2	CH_4	N_2O		CO_2	CH_4	N_2O
	(TJ)	[1]	(t/TJ)	(kg/TJ)			(Gg)		
1.A.3 Transport		NCV							
Liquid Fuels									
Solid Fuels									
Gaseous Fuels									
Biomass									
Other Fuels						[3]			
a. Civil Aviation									
Aviation Gasoline									
Jet Kerosene									
b. Road Transportation									
Gasoline									
Diesel Oil									
LPG									
Other Liquid Fuels (please specify)									
Gaseous Fuels									
Biomass						[3]			
Other Fuels *(please specify)*									
c. Railways									
Liquid Fuels									
Solid Fuels									
Gaseous Fuels									
d. Navigation									
Residual Oil (Residual fuel oil)									
Gas/Diesel Oil									
Gasoline									
Other Liquid Fuels *(please specify)*									
Solid Fuels									
Gaseous Fuels									
e. Other Transportation (please specify)									
(this cell is to be used to list all activities covered under "e. other")									
Liquid Fuels									
Solid Fuels									
Gaseous Fuels									
Biomass									
Other Fuels									

TABLE 1.A(a) SECTORAL BACKGROUND DATA FOR ENERGY
Fuel Combustion Activities - Sectoral Approach
(Sheet 4 of 4)

Country
Year
Submission

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	AGGREGATE ACTIVITY DATA		IMPLIED EMISSION FACTORS [2]				EMISSIONS		
	Consumption		CO_2	CH_4	N_2O		CO_2	CH_4	N_2O
	(TJ)	[1]	(t/TJ)	(kg/TJ)			(Gg)		
1.A.4 Other Sectors		NCV							
Liquid Fuels									
Solid Fuels									
Gaseous Fuels									
Biomass						[3]			
Other Fuels									
a. Commercial/Institutional									
Liquid Fuels									
Solid Fuels									
Gaseous Fuels									
Biomass						[3]			
Other Fuels									
b. Residential									
Liquid Fuels									
Solid Fuels									
Gaseous Fuels									
Biomass						[3]			
Other Fuels									
c. Agriculture/Forestry/Fisheries									
Liquid Fuels									
Solid Fuels									
Gaseous Fuels									
Biomass						[3]			
Other Fuels									
1.A.5 Other (Not elsewhere specified)[5]									
a. Stationary *(please specify)*									
this cell is to be used to list activities covered under "other-stationary"									
Liquid Fuels									
Solid Fuels									
Gaseous Fuels									
Biomass						[3]			
Other Fuels									
b. Mobile *(please specify)*									
this cell is to be used to list all activities covered under "other-mobile"									
Liquid Fuels									
Solid Fuels									
Gaseous Fuels									
Biomass						[3]			
Other Fuels									

[5] Include military fuel use under this category.

Documentation Box:

* Detailed explanations on the fuel combustion sub-sector can be found in section 5.1.1 of the NIR. If any additional information is needed to understand the content of this table, use this documentation box to provide references to the relevant sections of the NIR where further details can be found.

* If estimates are based on GCV, use this documentation box to provide reference to the relevant section of the NIR where the necessary information to allow the calculation of the activity data based on NCV can be found.

* If some derived gases (e.g. gas work gas, coke oven gas, blast gas, oxygen steel furnace gas, etc.) are considered, use this documentation box to provide reference to the relevant section of the NIR where information on the allocation of these derived gases under the above fuel categories (liquid, soild, gaseous, biomass, other fuels) can be found.

TABLE 1.A(b) SECTORAL BACKGROUND DATA FOR ENERGY
CO_2 from Fuel Combustion Activities - Reference Approach (IPCC Worksheet 1-1)
(Sheet 1 of 1)

Country
Year
Submission

FUEL TYPES			Unit	Production	Imports	Exports	International bunkers	Stock change	Apparent consumption	Conversion factor [1] (TJ/Unit)	[1]	Apparent consumption (TJ)	Carbon emission factor (t C/TJ)	Carbon content (Gg C)	Carbon stored (Gg C)	Net carbon emissions (Gg C)	Fraction of carbon oxidized	Actual CO_2 emissions (Gg CO_2)
Liquid Fossil	Primary Fuels	Crude Oil									NCV							
		Orimulsion																
		Natural Gas Liquids																
	Secondary Fuels	Gasoline																
		Jet Kerosene																
		Other Kerosene																
		Shale Oil																
		Gas / Diesel Oil																
		Residual Fuel Oil																
		LPG																
		Ethane																
		Naphtha																
		Bitumen																
		Lubricants																
		Petroleum Coke																
		Refinery Feedstocks																
		Other Oil																
Other Liquid Fossil																		
Liquid Fossil Totals																		
Solid Fossil	Primary Fuels	Anthracite [2]																
		Coking Coal																
		Other Bit. Coal																
		Sub-bit. Coal																
		Lignite																
		Oil Shale																
		Peat																
	Secondary Fuels	BKB & Patent Fuel																
		Coke Oven/Gas Coke																
Other Solid Fossil																		
Solid Fuel Totals																		
Gaseous Fossil		Natural Gas (Dry)																
Other Gaseous Fossil																		
Gaseous Fossil Fuel Totals																		
Total																		
Biomass total																		
		Solid Biomass																
		Liquid Biomass																
		Gas Biomass																

[1] To convert quantities expressed in natural units to energy units, use net calorific values (NCV). If gross calorific values (GCV) are used in this table, please indicate this by replacing "NCV" with "GCV" in this column.
[2] If Anthracite is not separately available, include with Other Bituminous Coal.

Documentation Box:
Detailed explanations on the energy sector, including information related to CO_2 from the Reference Approach, can be found in section 5.1.1 of the NIR. If any additional information is needed to understand the content of this table, use this documentation box to provide references to the relevant section of the NIR where further details can be found.

TABLE 1.A(c) COMPARISON OF CO_2 EMISSIONS FROM FUEL COMBUSTION
(Sheet 1 of 1)

Country
Year
Submission

FUEL TYPES	Reference approach		Sectoral approach [1]		Difference [2]
	Apparent energy consumption	CO_2 emissions	Energy consumption	CO_2 emissions	CO_2 emissions
	(PJ)	(Gg)	(PJ)	(Gg)	(%)
Liquid Fuels (excluding international bunkers)					
Solid Fuels (excluding international bunkers)					
Gaseous Fuels					
Other [3]					
Total [3]					

[1] "Sectoral approach" is used to indicate the approach (if different from the Reference approach) used by the Party to estimate CO_2 emissions from fuel combustion as reported in table 1.A(a), s1-s4.

[2] Difference of CO_2 emissions from the Reference approach over the Sectoral approach (i.e. difference = 100% x ((RA-SA)/SA), where SA = Sectoral approach and RA = Reference approach).

[3] Emissions from biomass are not included.

Note: The Reporting Instructions of the Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories ask that estimates of CO_2 emissions from fuel combustion, derived using a detailed sectoral approach, be compared to those from the Reference Approach (Worksheet 1-1 of the IPCC Guidelines, Volume 2, Workbook). This comparison is to assist in verifying the sectoral data.

Documentation Box:

* Detailed explanations on the energy sector, including information related to the comparison of CO_2 emissions calculated using the sectoral approach to the Reference Approach can be found in section 5.1.1 of the NIR. If any additional information is needed to understand the content of this table, use this documentation box to provide references to the relevant section of the NIR where further details can be found.
* If the CO_2 emission estimates from the two approaches differ by more than 2 percent, Parties should briefly explain the cause of this difference in this documentation box and provide a reference to the relevant section of the NIR where this difference is explained in more detail.

TABLE 1.A(d) SECTORAL BACKGROUND DATA FOR ENERGY
Feedstocks and Non-Energy Use of Fuels
(Sheet 1 of 1)

Country
Year
Submission

FUEL TYPE	ACTIVITY DATA AND RELATED INFORMATION		IMPLIED EMISSION FACTOR	ESTIMATE	Additional information (a)	
	Fuel quantity (TJ)	Fraction of carbon stored	Carbon emission factor (t C/TJ)	of carbon stored in non-energy use of fuels (Gg C)	CO_2 not emitted ($Gg\ CO_2$)	Subtracted from energy sector *(specify source category)*
Naphtha [1]						
Lubricants						
Bitumen						
Coal Oils and Tars (from Coking Coal)						
Natural Gas[1]						
Gas/Diesel Oil [1]						
LPG [1]						
Ethane [1]						
Other *(please specify)*						
Total						
Total amount of C/CO_2 from feedstocks and non-energy use of fuels that is included as emitted CO_2 in the Reference approach						

[1] Enter data for those fuels that are used as feedstocks (fuel used as raw materials for manufacture of products such as plastics, fertilizers) or for other non-energy use (fuels not used as fuel or transformed into another fuel (e.g. bitumen for road construction, lubricants)).

[a] The fuel lines continue from the table to the left.

Documentation box: A fraction of energy carriers is stored in such products as plastics or asphalt. The non-stored fraction of the carbon in the energy carrier or product is oxidized, resulting in carbon dioxide emissions, either during the use of the energy carriers in the industrial production (e.g. fertilizer production), or during the use of the products (e.g. solvents, lubricants), or in both (e.g. monomers). To report associated emissions use the above table, filling an extra "Additional information" table, as shown below.

Associated CO_2 emissions (Gg)	Allocated under *(Specify source category)* [a]

[a] e.g. Industrial Processes, Waste Incineration, etc.

* Detailed explanations on the energy sector, including information related to feedstocks can be found in section 5.1.1 of the NIR. If any additional information is needed to understand the content of this table, use this documentation box to provide references to the relevant section of the NIR where further details can be found.

* The above table is consistent with the IPCC Guidelines. Parties that take into account the emissions associated with the use and disposal of these feedstocks could continue to use their methodology, but indicate this in this documentation box and provide a reference to the relevant section of the NIR where further explanation can be found.

TABLE 1.B.1 SECTORAL BACKGROUND DATA FOR ENERGY
Fugitive Emissions from Solid Fuels
(Sheet 1 of 1)

Country
Year
Submission

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA	IMPLIED EMISSION FACTOR		EMISSIONS		
	Amount of fuel produced	CH_4 [3]	CO_2	CH_4		CO_2
				Recovery/ Flaring [4]	Net emissions [5]	
	(Mt)	(kg/t)		(Gg)		
1. B. 1. a. Coal Mining and Handling						
i. Underground Mines[1]						
Mining Activities						
Post-Mining Activities						
ii. Surface Mines[1]						
Mining Activities						
Post-Mining Activities						
1. B. 1. b. Solid Fuel Transformation						
1. B. 1. c. Other *(please specify)* [2]						

[1] In accordance with the IPCC Guidelines, emissions from Mining Activities and Post-Mining Activities are calculated using the activity data of the amount of fuel produced for Underground Mines and Surface Mines, respectively.

[2] This category is to be used for reporting any other solid fuel related activities resulting in fugitive emissions, such as emissions from abandoned mines and waste piles.

[3] The CH_4 IEFs are estimated on the basis of gross emissions as follows: (net CH_4 emissions + amounts of CH_4 flared/recovered) / activity data.

[4] Amount of CH_4 drained (recovered) and utilized or flared (Gg).

[5] Final CH_4 emissions after subtracting the amounts of CH_4 utilized or recovered.

Note: There are no clear references to the coverage of 1.B.1.b. and 1.B.1.c. in the IPCC Guidelines. Make sure that the emissions entered here are not reported elsewhere. If they are reported under another source category, indicate this by using notation key IE and making the necessary reference in Table 9 (completeness).

Documentation box:

* Detailed explanations on the fugitive emissions from solid fuels can be found in section 5.1.2 of the NIR. If any additional information is needed to understand the content of this table, use this documentation box to provide references to the relevant section of the NIR where further details can be found.
* Regarding data on the amount of fuel produced entered in the above table, specify in this documentation box whether the fuel amount is based on the run-of-mine (ROM) production or on the saleable production.
* If entries are made for "Recovery/Flaring", indicate in this documentation box, whether CH_4 is flared or recovered and provide a reference to the relevant section in the NIR where further details on recovery/flaring can be found.
* If estimates are reported under 1.B.1.b. and 1.B.1.c., use this documentation box to provide information regarding activities covered under these categories.

TABLE 1.B.2 SECTORAL BACKGROUND DATA FOR ENERGY
Fugitive Emissions from Oil, Natural Gas and Other Sources
(Sheet 1 of 1)

Country
Year
Submission

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA (1)			IMPLIED EMISSION FACTORS			EMISSIONS		
	Description [1]	Unit [1]	Value	CO_2	CH_4	N_2O	CO_2	CH_4	N_2O
				(kg/unit) [2]			(Gg)		
1. B. 2. a. Oil [3]									
i. Exploration	*(e.g. number of wells drilled)*	PJ							
ii. Production [4]	*(e.g. PJ of oil produced)*	PJ							
iii. Transport	*(e.g. PJ oil loaded in tankers)*	PJ							
iv. Refining / Storage	*(e.g. PJ oil refined)*	PJ							
v. Distribution of oil products	*(e.g. PJ oil refined)*	PJ							
vi. Other		PJ							
1. B. 2. b. Natural Gas									
i. Exploration		PJ							
ii. Production [4] / Processing	*(e.g. PJ gas produced)*	PJ							
iii. Transmission	*(e.g. PJ gas consumed)*	PJ							
iv. Distribution	*(e.g. PJ gas consumed)*	PJ							
v. Other Leakage	*(e.g. PJ gas consumed)*	PJ							
at industrial plants and power stations		PJ							
in residential and commercial sectors		PJ							
1. B. 2. c. Venting [5]									
i. Oil	*(e.g. PJ oil produced)*	PJ							
ii. Gas	*(e.g. PJ gas produced)*	PJ							
iii. Combined		PJ							
Flaring									
i. Oil	*(e.g. PJ gas consumption)*	PJ							
ii. Gas	*(e.g. PJ gas consumption)*	PJ							
iii. Combined		PJ							
1.B.2.d. Other *(please specify)* [6]									

[1] Specify the activity data used by filling in the activity data description column, as given in the examples in parentheses.
Specify the unit of the activity data in the unit column using one of the following units: PJ, Tg, 10^6 m^3, 10^6 bbl/yr , bill_ft^3_yr , km, number of sources (e.g. wells).
[2] The unit of the implied emission factor will depend on the unit of the activity data used, and is therefore not specified in this column.
[3] Use the category also to cover emissions from combined oil and gas production fields. Natural gas processing and distribution from these fields should be included under 1.B.2.b.ii and 1.B.2.b.iii, respectively.
[4] If using default emission factors these categories will include emissions from production other than venting and flaring.
[5] If using default emission factors, emissions from Venting and Flaring from all oil and gas production should be accounted for under Venting.
[6] For example, fugitive CO_2 emissions from production of geothermal power could be reported here.

Documentation box:
* Detailed explanations on the fugitive fuel emissions sub-sector can be found in section 5.1.2 of the NIR. If any additional information is needed to understand the content of this table, use this documentation box to provide references to the relevant section of the NIR where further details can be found.
* Regarding data on the fuel amount produced entered in the above table, specify in this documentation box whether the fuel amount is based on the raw material production or on the saleable production. Note cases where more than one type of activity data is used to estimate emissions.
* Venting and flaring: Parties using the IPCC software could report venting and flaring emissions together, indicating this in this documentation box.

TABLE 1.C SECTORAL BACKGROUND DATA FOR ENERGY
International Bunkers and Multilateral Operations
(Sheet 1 of 1)

Country
Year
Submission

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA	IMPLIED EMISSION FACTORS			EMISSIONS		
	Consumption (TJ)	CO_2	CH_4	N_2O	CO_2	CH_4	N_2O
		(t/TJ)			(Gg)		
Aviation Bunkers							
Jet Kerosene							
Gasoline							
Marine Navigation							
Gasoline							
Gas/Diesel Oil							
Residual Fuel Oil							
Lubricants							
Coal							
Other *(please specify)*							
Multilateral Operations [1]							

Additional information

Fuel consumption	Allocation [a] (percent)	
	Domestic	International
Aviation		
Marine		

[a] For calculating the allocation of fuel consumption, the sums of fuel consumption for domestic navigation and aviation (Table 1.A(a)) and for international bunkers (Table 1.C) are used.

[1] Parties may choose to report or not report the activity data and implied emission factors for multilateral operation consistent with the principle of confidentiality stated in the UNFCCC reporting guidelines. In any case, Parties should report the emissions from multilateral operations, where available, under the Memo Items section of the Summary tables and in the Sectoral report table for energy.

Note: In accordance with the IPCC Guidelines, international aviation and marine bunker fuel emissions from fuel sold to ships or aircraft engaged in international transport should be excluded from national totals and reported separately for informational purposes only.

Documentation box:

* Detailed explanations on the fuel combustion sub-sector, including international bunker fuels, can be found in section 5.1.1 of the NIR. If any additional information is needed to understand the content of this table, use this documentation box to provide references to the relevant section of the NIR where further details can be found.
* Provide in this documentation box a brief explanation on how the consumption of international marine and aviation bunker fuels was estimated and separated from domestic consumption and include a reference to the relevant section of the NIR where the explanation is provided in more detail.

TABLE 2(I) SECTORAL REPORT FOR INDUSTRIAL PROCESSES
(Sheet 1 of 2)

Country
Year
Submission

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO_2	CH_4	N_2O	$HFCs^{(1)}$		$PFCs^{(1)}$		SF_6		NO_x	CO	NMVOC	SO_2
				P	A	P	A	P	A				
	(Gg)			CO_2 equivalent (Gg)				(Gg)					
Total Industrial Processes													
A. Mineral Products													
1. Cement Production													
2. Lime Production													
3. Limestone and Dolomite Use													
4. Soda Ash Production and Use													
5. Asphalt Roofing													
6. Road Paving with Asphalt													
7. Other *(as specified in table 2(I)A-G)*													
B. Chemical Industry													
1. Ammonia Production													
2. Nitric Acid Production													
3. Adipic Acid Production													
4. Carbide Production													
5. Other *(as specified in table 2(I)A-G)*													
C. Metal Production													
1. Iron and Steel Production													
2. Ferroalloys Production													
3. Aluminium Production													
4. SF_6 Used in Aluminium and Magnesium Foundries													
5. Other *(as specified in table 2(I)A-G)*													

P = Potential emissions based on Tier 1 approach of the IPCC Guidelines. A = Actual emissions based on Tier 2 approach of the IPCC Guidelines. This only applies for source categories where methods exist for both tiers.

(1) The emissions of HFCs and PFCs are to be expressed as CO_2 equivalent emissions. Data on disaggregated emissions of HFCs and PFCs are to be provided in Table 2(II) of this common reporting format.

TABLE 2(I) SECTORAL REPORT FOR INDUSTRIAL PROCESSES
(Sheet 2 of 2)

Country
Year
Submission

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO_2	CH_4	N_2O	HFCs[1]		PFCs[1]		SF_6		NO_x	CO	NMVOC	SO_2
				P	A	P	A	P	A				
	(Gg)			CO_2 equivalent (Gg)						(Gg)			
D. Other Production													
1. Pulp and Paper													
2. Food and Drink[2]													
E. Production of Halocarbons and SF_6													
1. By-product Emissions													
Production of HCFC-22													
Other													
2. Fugitive Emissions													
3. Other *(as specified in table 2(II)*													
F. Consumption of Halocarbons and SF_6													
1. Refrigeration and Air Conditioning Equipment													
2. Foam Blowing													
3. Fire Extinguishers													
4. Aerosols/ Metered Dose Inhalers													
5. Solvents													
6. Other applications using ODS substitutes													
7. Semiconductor Manufacture													
8. Electrical Equipment													
9. Other *(as specified in table 2(II)*													
G. Other *(please specify)*													

P = Potential emissions based on Tier 1 approach of the IPCC Guidelines. A = Actual emissions based on Tier 2 approach of the IPCC Guidelines. This only applies for source categories where methods exist for both tiers.

[1] The emissions of HFCs and PFCs are to be expressed as CO_2 equivalent emissions. Data on disaggregated emissions of HFCs and PFCs are to be provided in Table 2(II) of this common reporting format.

[2] CO_2 from Food and Drink Production (e.g. gasification of water) can be of biogenic or non-biogenic origin. Only information on CO_2 emissions of non-biogenic origin should be reported.

Documentation box:

Detailed explanations on the industrial processes sector can be found in section 5.2 of the NIR. If any additional information is needed to understand the content of this table, use this documentation box to provide references to the relevant section of the NIR where further details can be found.

TABLE 2(I).A-G SECTORAL BACKGROUND DATA FOR INDUSTRIAL PROCESSES

Country

Emissions of CO_2, CH_4 and N_2O

Year

(Sheet 1 of 2)

Submission

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA		IMPLIED EMISSION FACTORS [2]			EMISSIONS					
	Production/Consumption quantity		CO_2	CH_4	N_2O	CO_2		CH_4		N_2O	
						(net)[3]	[4]	(net)[3]	[4]	(net)[3]	[4]
	Description [1]	(kt)	(t/t)			(Gg)					
A. Mineral Products											
1. Cement Production	*(e.g. cement or clinker production)*										
2. Lime Production											
3. Limestone and Dolomite Use											
4. Soda Ash											
Soda Ash Production											
Soda Ash Use											
5. Asphalt Roofing											
6. Road Paving with Asphalt											
7. Other *(please specify)*											
Glass Production											
B. Chemical Industry											
1. Ammonia Production [5]											
2. Nitric Acid Production											
3. Adipic Acid Production											
4. Carbide Production											
Silicon Carbide											
Calcium Carbide											
5. Other *(please specify)*											
Carbon Black											
Ethylene											
Dichloroethylene											
Styrene											
Methanol											

[1] Where the IPCC Guidelines provide options for activity data, e.g. cement production or clinker production for estimating the emissions from Cement Production, specify the activity data used (as shown in the example in parentheses) in order to make the choice of emission factor more transparent and to facilitate comparisons of implied emission factors.

[2] The IEFs are estimated on the basis of gross emissions as follows: IEF = (net emissions + amounts recovered, oxidized, destroyed or transformed) / activity data.

[3] Final (net) emissions are to be reported (after subtracting the amounts of emission recovery, oxidation, destruction or transformation).

[4] Enter amounts of emission recovery, oxidation, destruction or transformation.

[5] To avoid double counting make offsetting deductions from fuel consumption (e.g. natural gas) in Ammonia Production, first for feedstock use of the fuel, and then to a sequestering use of the feedstock.

TABLE 2(I).A-G SECTORAL BACKGROUND DATA FOR INDUSTRIAL PROCESSES

Emissions of CO_2, CH_4 and N_2O

(Sheet 2 of 2)

Country

Year

Submission

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA		IMPLIED EMISSION FACTORS [2]			EMISSIONS					
	Production/Consumption quantity		CO_2	CH_4	N_2O	CO_2		CH_4		N_2O	
						(net)[3]	[4]	(net)[3]	[4]	(net)[3]	[4]
	Description [1]	(kt)	(t/t)			(Gg)					
C. Metal Production											
1. Iron and Steel Production											
Steel											
Pig Iron											
Sinter											
Coke											
Other *(please specify)*											
2. Ferroalloys Production											
3. Aluminium Production											
4. SF_6 Used in Aluminium and Magnesium Foundries											
5. Other *(please specify)*											
D. Other Production											
1. Pulp and Paper											
2. Food and Drink											
G. Other *(please specify)*											

[1] Where the IPCC Guidelines provide options for activity data, e.g. cement production or clinker production for estimating the emissions from Cement Production, specify the activity data used (as shown in the example in parenthesis) in order to make the choice of emission factor more transparent and to facilitate comparisons of implied emission factors.

[2] The IEFs are estimated on the basis of gross emissions as follows: IEF = (net emissions + amounts recovered, oxidized, destroyed or transformed) / activity data.

[3] Final (net) emissions are to be reported (after subtracting the amounts of emission recovery, oxidation, destruction or transformation).

[4] Enter amounts of emission recovery, oxidation, destruction or transformation.

Documentation box:

* Detailed explanations on the industrial processes sector can be found in section 5.2 of the NIR. If any additional information is needed to understand the content of this table, use this documentation box to provide references to the relevant section of the NIR where further details can be found.

* In relation to metal production, more specific information (e.g. data on virgin and recycled steel production) could be provided in this documentation box, or in the NIR together with a reference to the relevant section.

* Confidentiality: In case of confidentiality of the activity data information, a note indicating whether activity data have been aggregated should be included in this documentation box .

TABLE 2(II) SECTORAL REPORT FOR INDUSTRIAL PROCESSES - EMISSIONS OF HFCs, PFCs AND SF_6
(Sheet 1 of 2)

Country
Year
Submission

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	HFC-23	HFC-32	HFC-41	HFC-43-10mee	HFC-125	HFC-134	HFC-134a	HFC-152a	HFC-143	HFC-143a	HFC-227ea	HFC-236fa	HFC-245ca	Other HFCs[1]	Total HFCs[2]	CF_4	C_2F_6	C_3F_8	C_4F_{10}	$c\text{-}C_4F_8$	C_5F_{12}	C_6F_{14}	Other PFCs[1]	Total PFCs[1][2]	SF_6
	(t)[3]													CO_2 equivalent (Gg)		(t)[3]								CO_2 equivalent (Gg)		(t)[3]
Total Actual Emissions of Halocarbons (by chemical) and SF_6																										
C. Metal Production																										
Aluminium Production																										
SF_6 Used in Aluminium Foundries																										
SF_6 Used in Magnesium Foundries																										
E. Production of Halocarbons and SF_6																										
1. By-product Emissions																										
Production of HCFC-22																										
Other																										
2. Fugitive Emissions																										
3. Other *(as specified in table 2(II)E)*																										
F(a). Consumption of Halocarbons and SF_6 (actual emissions - Tier 2)																										
1. Refrigeration and Air Conditioning Equipment																										
2. Foam Blowing																										
3. Fire Extinguishers																										
4. Aerosols/Metered Dose Inhalers																										
5. Solvents																										
6. Other applications using ODS substitutes																										
7. Semiconductor Manufacture																										
8. Electrical Equipment																										
9. Other *(as specified in table 2(II)F)*																										
G. Other *(please specify)*																										

[1] In accordance with the UNFCCC reporting guidelines, HFC and PFC emissions should be reported for each relevant chemical. However, if it is not possible to report values for each chemical (i.e. mixtures, confidential data, lack of disaggregation), this column could be used for reporting aggregate figures for HFCs and PFCs, respectively. Note that the unit used for these columns is Gg of CO_2 equivalent. See also reporting instruction in the documentation box to this table.

[2] The columns for total HFCs and total PFCs in sheet 1 are kept for consistency with sheet 2 of the table.

[3] Note that the units used in this table differ from those used in the rest of the Sectoral report tables, i.e. t instead of Gg.

Note: Gases with GWP values not yet agreed upon by the COP should be reported in Table 9 (Completeness), sheet 2.

TABLE 2(II) SECTORAL REPORT FOR INDUSTRIAL PROCESSES - EMISSIONS OF HFCs, PFCs AND SF_6
(Sheet 2 of 2)

Country
Year
Submission

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	HFC-23	HFC-32	HFC-41	HFC-43-10mee	HFC-125	HFC-134	HFC-134a	HFC-152a	HFC-143	HFC-143a	HFC-227ea	HFC-236fa	HFC-245ca	Other HFCs[1]	Total HFCs	CF_4	C_2F_6	C_3F_8	C_4F_{10}	$c\text{-}C_4F_8$	C_5F_{12}	C_6F_{14}	Other PFCs[1]	Total PFCs	SF_6
	(t)[3]													CO_2 equivalent (Gg)		(t)[3]							CO_2 equivalent (Gg)		(t)[3]
F(p). Total Potential Emissions of Halocarbons (by chemical) and SF_6 [4]																									
Production[5]																									
Import:																									
In bulk																									
In products[6]																									
Export:																									
In bulk																									
In products[6]																									
Destroyed amount																									
GWP values used	**11700**	**650**	**150**	**1300**	**2800**	**1000**	**1300**	**140**	**300**	**3800**	**2900**	**6300**	**560**			**6500**	**9200**	**7000**	**7000**	**8700**	**7500**	**7400**			**23900**
Total Actual Emissions [7] (CO_2 equivalent (Gg))																									
C. Metal Production																									
E. Production of Halocarbons and SF_6																									
F(a). Consumption of Halocarbons and SF_6																									
G. Other																									
Ratio of Potential/Actual Emissions from Consumption of Halocarbons and SF_6																									
Actual emissions - F(a) (Gg CO_2 eq.)																									
Potential emissions - F(p)[8] (Gg CO_2 eq.)																									
Potential/Actual emissions ratio																									

[4] Potential emissions of each chemical of halocarbons and SF_6 estimated using Tier 1a or Tier 1b of the IPCC Guidelines (Volume 3. Reference Manual, pp. 2.47-2.50). Where potential emission estimates are available in a disaggregated manner for the source categories F.1 to F.9, these should be reported in the NIR and a reference be provided in the documentation box. Use Summary 3 of this common reporting format to indicate whether Tier 1a or Tier 1b was used.

[5] Production refers to production of new chemicals. Recycled substances could be included here, but it should be ensured that double counting of emissions is avoided. Relevant explanations should be provided as a comment to the corresponding cell.

[6] Relevant only for Tier 1b

[7] Total actual emissions equal the sum of the actual emissions of each chemical of halocarbons and SF_6 from the source categories given in sheet 1 of the table multiplied by the corresponding GWP values.

[8] Potential emissions of each chemical of halocarbons and SF_6 taken from row F(p) multiplied by the corresponding GWP values.

Note: As stated in the UNFCCC reporting guidelines, Parties should report actual emissions of HFCs, PFCs and SF_6 where data are available, providing disaggregated data by chemical and source category in units of mass and in CO_2 equivalent. 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.

Documentation box:

* Detailed explanations on the industrial processes sector can be found in section 5.2 of the NIR. If any additional information is needed to understand the content of this table, use this documentation box to provide references to the relevant section of the NIR where further details can be found.
* Where only aggregate figures are provided, e.g. due to reasons of confidentiality (see footnote 1 to this table), a note indicating this should be provided in this documentation box.

TABLE 2(II). C, E SECTORAL BACKGROUND DATA FOR INDUSTRIAL PROCESSES
Metal Production; Production of Halocarbons and SF_6
(Sheet 1 of 1)

Country
Year
Submission

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA		IMPLIED EMISSION FACTORS[2]			EMISSIONS					
			CF_4	C_2F_6	SF_6	CF_4		C_2F_6		SF_6	
						(net)[3]	[4]	(net)[3]	[4]	(net)[3]	[4]
	Description[1]	(t)	(kg/t)			(t)					
C. PFCs and SF_6 from Metal Production											
PFCs from Aluminium Production											
SF_6 used in Aluminium and Magnesium Foundries											
Aluminium Foundries	*(SF_6 consumption)*										
Magnesium Foundries	*(SF_6 consumption)*										

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA		IMPLIED EMISSION FACTORS[2]			EMISSIONS						
			HFC-23	SF_6	HFCs/PFCs (as specified)	HFC-23		SF_6		HFCs/PFCs		
						(net)[3]	[4]	(net)[3]	[4]	(specify chemical)	(net)[3]	[4]
	Description[1]	(t)	(kg/t)			(t)						
E. Production of Halocarbons and SF_6												
1. By-product Emissions												
Production of HCFC-22												
Other *(specify activity)*												
2. Fugitive Emissions *(please specify activity)*												
3. Other *(please specify activity)*												

[1] Specify the activity data used as shown in the examples within parentheses.
[2] The IEFs are estimated on the basis of gross emissions as follows: IEF = (net emissions + amounts recovered, oxidized, destroyed or transformed) / activity data.
[3] Final (net) emissions are to be reported (after subtracting the amounts of emission recovery, oxidation, destruction or transformation).
[4] Enter amounts of emission recovery, oxidation, destruction or transformation.

Documentation box:
* Detailed explanations on the industrial processes sector can be found in section 5.2 of the NIR. If any additional information is needed to understand the content of this table, use this documentation box to provide references to the relevant section of the NIR where further details can be found.
* Where only aggregate figures for activity data are provided, e.g. due to reasons of confidentiality (see footnote 1 to table 2(II)), a note indicating this should be provided in this documentation box.
* Where applying Tier 1b (for source category 2.C), Tier 2 (for source category 2.E) and country specific methods, specify any other relevant activity data used in this documentation box including a reference to the relevant section of the NIR where more detailed information can be found.
* Use this documentation box for providing clarification on emission recovery, oxidation, destruction and/or transformation, and provide a reference to the relevant section of the NIR where more detailed information can be found

TABLE 2(II).F SECTORAL BACKGROUND DATA FOR INDUSTRIAL PROCESSES

Consumption of Halocarbons and SF_6

(Sheet 1 of 2)

Country

Year

Submission

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA *Amount of fluid*			IMPLIED EMISSION FACTORS			EMISSIONS		
	Filled in new manufactured products	In operating systems (average annual stocks)	Remained in products at decommissioning	Product manufacturing factor	Product life factor	Disposal loss factor	From manufacturing	From stocks	From disposal
	(t)			(% per annum)			(t)		
1 Refrigeration									
Air Conditioning Equipment									
Domestic Refrigeration *(Specify chemical)* [1]									
Commercial Refrigeration									
Transport Refrigeration									
Industrial Refrigeration									
Stationary Air-Conditioning									
Mobile Air-Conditioning									
2 Foam Blowing									
Hard Foam									
Soft Foam									

[1] Specify the chemical consumed, by using one row per chemical.

Note: 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 Parties may prefer to estimate actual emissions following the alternative "top-down approach" (based on annual sales of equipment and/or gas). These Parties should provide the activity data used in the current format and any other relevant information needed to understand the content of the table in the documentation box at the end of Table2(II)Fs2, including a reference to the relevant section of the NIR where further details can be found. These Parties should provide in the NIR the following data:

(1) the amount of fluid used to fill new products,
(2) the amount of fluid used to service existing products,
(3) the amount of fluid originally used to fill retiring products (the total nameplate capacity of retiring products),
(4) the product lifetime, and
(5) the growth rate of product sales, if this has been used to calculate the amount of fluid originally used to fill retiring products.

In the NIR, Parties may provide alternative formats for reporting equivalent information with a similar level of detail.

TABLE 2(II).F SECTORAL BACKGROUND DATA FOR INDUSTRIAL PROCESSES

Consumption of Halocarbons and SF_6

(Sheet 2 of 2)

Country

Year

Submission

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA *Amount of fluid*			IMPLIED EMISSION FACTORS			EMISSIONS		
	Filled in new manufactured products	In operating systems (average annual stocks)	Remained in products at decommissioning (1)	Product manufacturing factor	Product life factor	Disposal loss factor	From manufacturing	From stocks	From disposal
	(t)			(% per annum)			(t)		
3 Fire Extinguishers									
4 Aerosols									
Metered Dose Inhalers									
Other									
5 Solvents									
6 Other applications using ODS substitutes									
7 Semiconductors									
8 Electric Equipment									
9 Other *(please specify)*									

Documentation box:

* Detailed explanations on the industrial processes sector can be found in section 5.2 of the NIR. If any additional information is needed to understand the content of this table, use this documentation box to provide references to the relevant section of the NIR where further details can be found.
* Where only aggregate figures for activity data are provided, e.g. due to reasons of confidentiality (see footnote 1 to table 2(II)), a note indicating this should be provided in this documentation box.
* With regard to data on the amounts of fluid that remained in retired products at decommissioning, use this documentation box to provide a reference to the relevant section of the NIR where information on the amount of the chemical recovered (recovery efficiency) and other relevant information used in the emission estimation can be found.
* Parties that estimate their actual emissions following the alternative top-down approach might not be able to report emissions using this table. In these cases, Parties should, in the NIR, provide alternative formats for reporting equivalent information with a similar level of detail. References to the relevant section of the NIR should be provided in this documentation box.

TABLE 3 SECTORAL REPORT FOR SOLVENT AND OTHER PRODUCT USE
(Sheet 1 of 1)

Country
Year
Submission

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO_2	N_2O	NMVOC
	(Gg)		
Total Solvent and Other Product Use			
A. Paint Application			
B. Degreasing and Dry Cleaning			
C. Chemical Products, Manufacture and Processing			
D. Other			
1. Use of N_2O for Anaesthesia			
2. N_2O from Fire Extinguishers			
3. N_2O from Aerosol Cans			
4. Other Use of N_2O			
5. Other *(as specified in table 3.A-D)*			

The quantity of carbon released in the form of NMVOCs should be accounted for in both the NMVOC and the CO_2 columns.

Documentation box:

* Detailed explanations on the solvent use sector can be found in section 5.3 of the NIR. If any additional information is needed to understand the content of this table, use this documentation box to provide references to the relevant section of the NIR where further details can be found.

* 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, Parties should provide additional information (activity data and emission factors) used to derive these estimates in the NIR, and provide in this documentation box a reference to the relevant section of the NIR where this information can be found.

TABLE 3.A-D SECTORAL BACKGROUND DATA FOR SOLVENT AND OTHER PRODUCT USE
(Sheet 1 of 1)

Country
Year
Submission

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA		IMPLIED EMISSION FACTORS [2]	
	Description	(kt)	CO_2 (t/t)	N_2O (t/t)
A. Paint Application				
B. Degreasing and Dry Cleaning				
C. Chemical Products, Manufacture and Processing				
D. Other *(please specify)*				
1. Use of N_2O for Anaesthesia				
2. N_2O from Fire Extinguishers				
3. N_2O from Aerosol Cans				
4. Other Use of N_2O				
5. Other *(please specify)* [1]				

[1] Some probable sources to be reported under "other" are listed in this table. Complement the list with other relevant sources, as appropriate. The order of categories in this table and table 3 must be the same.
[2] The implied emission factors will not be calculated until the corresponding emission estimates are entered directly into Table 3.

Documentation box:
Detailed explanations on the solvent use sector are can be found in section 5.3 of the NIR. If any additional information is needed to understand the content of this table, use this documentation box to provide references to the relevant section of the NIR where further details can be found.

TABLE 4 SECTORAL REPORT FOR AGRICULTURE
(Sheet 1 of 2)

Country
Year
Submission

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 4.A)*					
B. Manure Management					
1. Cattle					
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 4.B(a))*					

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

TABLE 4 SECTORAL REPORT FOR AGRICULTURE
(Sheet 2 of 2)

Country
Year
Submission

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CH_4	N_2O	NO_x	CO	NMVOC
	(Gg)				
B. Manure Management (continued)					
11. Anaerobic Lagoons					
12. Liquid Systems					
13. Solid Storage and Dry Lot					
14. Other *(please specify)*					
C. Rice Cultivation					
1. Irrigated					
2. Rainfed					
3. Deep Water					
4. Other *(as specified in table 4.C)*					
D. Agricultural Soils [(1)]					
1. Direct Soil Emissions					
2. Pasture, range and paddock manure [(2)]					
3. Indirect Emissions					
4. Other *(as specified in table 4.D)*					
E. Prescribed Burning of Savannas					
F. Field Burning of Agricultural Residues					
1 . Cereals					
2. Pulse					
3 . Tuber and Root					
4 . Sugar Cane					
5 . Other *(as specified in table 4.F)*					
G. Other *(please specify)*					

[(1)] See footnote 4 to Summary 1.A of this common reporting format. Parties which choose to report CO_2 emissions and removals from agricultural soils under 4.D. Agricultural Soils of the sector Agriculture should report the amount (in Gg) of these emissions or removals in table Summary 1.A of the CRF. References to additional information (activity data, emissions factors) reported in the NIR should be provided in the documentation box to table 4.D. In line with the corresponding table in the IPCC Guidelines (i.e. IPCC Sectoral Report for Agriculture), this table does not include provisions for reporting CO_2 estimates.

[(2)] Direct N_2O emissions from pasture, range and paddock manure are to be reported in the "4.D Agricultural Soils" category. All other N_2O emissions from animal manure are to be reported in the "4.B Manure Management" category. See also chapter 4.4 of the IPCC good practice guidance report.

Note: The IPCC Guidelines do not provide methodologies for the calculation of CH_4 emissions and CH_4 and N_2O removals from agricultural soils, CO_2 emissions from prescribed burning of savannas and field burning of agricultural residues. Parties that have estimated such emissions should provide, in the NIR, additional information (activity data and emission factors) used to derive these estimates and include a reference to the relevant section of the NIR in the documentation box of the corresponding Sectoral background data tables.

Documentation box:

* Detailed explanations on the agricultural sector can be found in section 5.4 of the NIR. If any additional information is needed to understand the content of this table, use this documentation box to provide references to the relevant section of the NIR where further details can be found.

* Provide reference to the relevant section in the NIR, in particular with regard to:
  (a) background information on precursor gas estimates reported in this table;
  (b) background information on any estimates reported under 4.G Other.

TABLE 4.A SECTORAL BACKGROUND DATA FOR AGRICULTURE
Enteric Fermentation
(Sheet 1 of 1)

Country
Year
Submission

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA[1] AND OTHER RELATED INFORMATION			IMPLIED EMISSION FACTORS [4]
	Population size [2] (1000 head)	Average gross energy intake (GE) (MJ/head/day)	Average CH_4 conversion rate (Y_m) [5] (%)	CH_4 (kg CH_4/head/yr)
1. Cattle				
Option A:				
Dairy Cattle [3]				
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 *(please specify)*				

Additional information (only for those livestock types for which the tier 2 was used) [a]

Disaggregated list of animals [b] / Indicators:		Dairy Cattle	Non-Dairy Cattle	Other *(specify)*	
Weight	(kg)				
Feeding situation [c]					
Milk yield	(kg/day)				
Work	(hrs/day)				
Pregnant	(%)				
Digestibility of feed	(%)				

[a] See also Tables A-1 and A-2 of the IPCC Guidelines (Volume 3. Reference Manual, pp. 4.31-4.34). These data are relevant if Parties do not have data on average feed intake.
[b] Disaggregate to the split actually used. Add columns to the table if necessary.
[c] Specify feeding situation as pasture, stall fed, confined, open range, etc.

[1] In the documentation boxes to all Sectoral background data tables for Agriculture, Parties should provide information on whether the activity data are one year estimates or a three year average.
[2] Parties are encouraged to provide detailed livestock population data by animal type and region, if available, in the NIR and provide reference to the relevant section in the documentation box below. Parties should use the same animal population statistics to estimate CH_4 emissions from enteric fermentation, CH_4 and N_2O from manure management, N_2O direct emissions from soil and N_2O emissions associated with manure production, as well as emissions from the use of manure as fuel, and sewage-related emissions reported in the waste sector.
[3] Including data on dairy heifers, if available.
[4] The implied emission factors will not be calculated until the corresponding emission estimates are entered directly into Table 4.
[5] Y_m refers to the fraction of gross energy in feed converted to methane and should be given in per cent in this table.

Documentation box:
* Detailed explanations on the agricultural sector can be found in section 5.4 of the NIR. If any additional information is needed to understand the content of this table, use this documentation box to provide references to the relevant section of the NIR where further details can be found.
* Provide reference to the relevant section in the NIR, in particular with regard to:
(a) disaggregation of livestock population (e.g. according to the classification recommended in the IPCC good practice guidance);
(b) parameters relevant to the application of IPCC good practice guidance;
(c) information on whether the activity data are one year estimates or a three year average.

TABLE 4.B(a) SECTORAL BACKGROUND DATA FOR AGRICULTURE
CH_4 Emissions from Manure Management
(Sheet 1 of 1)

Country
Year
Submission

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA AND OTHER RELATED INFORMATION							IMPLIED EMISSION FACTORS
	Population size [1]	Allocation by climate region [2]			Typical animal mass (average)	VS[3] daily excretion (average)	CH_4 producing potential (Bo)[3] (average)	CH_4 [5]
		Cool	Temperate	Warm				
	(1000 head)	(%)			(kg)	(kg dm/head/day)		(kg CH_4/head/yr)
1. Cattle								
Option A:								
Dairy Cattle [4]								
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 (please specify)								

[1] See footnote 1 to Table 4.A of this common reporting format.

[2] Climate regions are defined in terms of annual average temperature as follows: Cool=less than 15°C; Temperate=15°C to 25° inclusive; and Warm=greater than 25°C (see Table 4.2 of the IPCC Guidelines (Volume 3, Reference Manual, p. 4.8)).

[3] VS=Volatile Solids; Bo=maximum methane producing capacity for manure IIPCC Guidelines (Volume 3, Reference Manual, p.4.23 and p.4.15) Provide average values, where original calculations were made at a more disagregated level of these livestock categories.

[4] Including data on dairy heifers, if available.

[5] The implied emission factors will not be calculated until the corresponding emission estimates are entered directly into Table 4.

Additional information (for tier 2)[a]

Animal category	Indicator	Climate region	Animal waste management system						
			Anaerobic lagoon	Liquid system	Daily spread	Solid storage	Dry lot	Pasture range paddock	Other
Dairy Cattle	Allocatio	Cool							
		Temperate							
		Warm							
	MCF[b]	Cool							
		Temperate							
		Warm							
Non-Dairy Cattle	Allocatio	Cool							
		Temperate							
		Warm							
	MCF[b]	Cool							
		Temperate							
		Warm							
Swine	Allocatio	Cool							
		Temperate							
		Warm							
	MCF[b]	Cool							
		Temperate							
		Warm							
other livestock (please specify)	Allocatio	Cool							
		Temperate							
		Warm							
	MCF[b]	Cool							
		Temperate							
		Warm							

[a] The information required in this table may not be directly applicable to country-specific methods developed for MCF calculations. In such cases, information on MCF derivation should be described in the NIR and references to the relevant sections of the NIR should be provided in the documentation box.

[b] MCF = Methane Conversion Factor (IPCC Guidelines, (Volume 3. Reference Manual, p. 4.9)). In the case of using another climate region categorization, replace the entries in the cells with the climate regions for which the MCFs are specified.

Documentation Box:

* Detailed explanations on the agricultural sector can be found in section 5.4 of the NIR. If any additional information is needed to understand the content of this table, use this documentation box to provide references to the relevant section of the NIR where further details can be found.

* Provide reference to the relevant section in the NIR, in particular with regard to:
(a) disaggregation of livestock population (e.g. according to the classification recommended in the IPCC good practice guidance);
(b) parameters relevant to the application of IPCC good practice guidance;
(c) information on whether the activity data are one year estimates or a three year average;
(d) information on how the MCF are derived, if relevant data could not be provided in the additional information box.

TABLE 4.B(b) SECTORAL BACKGROUND DATA FOR AGRICULTURE

N_2O Emissions from Manure Management

(Sheet 1 of 1)

Country

Year

Submission

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA AND OTHER RELATED INFORMATION								IMPLIED EMISSION FACTORS [3]	
	Population size [1]	Nitrogen excretion	Nitrogen excretion per animal waste management system (kg N/yr)						Emission factor per animal waste management system	
	(1000s)	(kg N/head/yr)	Anaerobic lagoon	Liquid system	Daily spread	Solid storage and dry lot	Pasture range and paddock	Other	(kg N_2O-N/kg N)	
Cattle									Anaerobic lagoon	
Option A:									Liquid system	
Dairy Cattle									Solid storage and dry lot	
Non-Dairy Cattle									Other AWMS	
Option B:										
Mature Dairy Cattle										
Mature Non-Dairy Cattle										
Young Cattle										
Sheep										
Swine										
Poultry										
Other livestock *(please specify)*										
Total per AWMS[2]										

[1] See footnote 1 to Table 4.A of this common reporting format.

[2] AWMS - Animal Waste Management System.

[3] The implied emission factor will not be calculated until the emissions are entered directly into Table 4.

Documentation box:

* Detailed explanations on the agricultural sector can be found in section 5.4 of the NIR. If any additional information is needed to understand the content of this table, use this documentation box to provide references to the relevant section of the NIR where further details can be found.

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

(a) disaggregation of livestock population (e.g. according to the classification recommended in the IPCC good practice guidance);

(b) information on whether the activity data are one year estimates or a three year average;

(c) information on other AWMS, if reported.

TABLE 4.C SECTORAL BACKGROUND DATA FOR AGRICULTURE

Country

Rice Cultivation

Year

(Sheet 1 of 1)

Submission

GREENHOUSE GAS SOURCE AND SINK CATEGORIES		ACTIVITY DATA AND OTHER RELATED INFORMATION			IMPLIED EMISSION FACTOR [1]	EMISSIONS
		Harvested area [2] (10^9 m^2/yr)	Organic amendments added[3]: type	(t/ha)	CH_4 (g/m^2)	CH_4 (Gg)
1. Irrigated						
Continuously Flooded						
Intermittently Flooded	Single Aeration					
	Multiple Aeration					
2. Rainfed						
Flood Prone						
Drought Prone						
3. Deep Water						
Water Depth 50-100 cm						
Water Depth > 100 cm						
4. Other *(please specify)*						
Upland Rice[4]						
Total[4]						

[1] The implied emission factor implicitly takes account of all relevant corrections for continuously flooded fields without organic amendment, the correction for the organic amendments and the effect of different soil characteristics, if considered in the calculation of methane emissions.

[2] Harvested area is the cultivated area multiplied by the number of cropping seasons per year.

[3] Specify dry weight or wet weight for organic amendments.

[4] These rows are included to allow comparison with international statistics. Upland rice emissions are assumed to be zero.

Documentation box:

* Detailed explanations on the agricultural sector can be found in section 5.4 of the NIR. If any additional information is needed to understand the content of this table, use this documentation box to provide references to the relevant section of the NIR where further details can be found.

* When dissagregating by more than one region within a country, and/or by growing season, provide additional information on disaggregation and related data in the NIR and provide reference to the relevant section in the NIR.

* Where available, provide activity data and scaling factors by soil type and rice cultivar in the NIR.

TABLE 4.D SECTORAL BACKGROUND DATA FOR AGRICULTURE

Agricultural Soils[1]

(Sheet 1 of 1)

Country

Year

Submission

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 [2]	(Gg N_2O)
1. Direct Soil Emissions	**N input to soils**			
1. Synthetic Fertilizers	Nitrogen input from application of synthetic fertilizers			
2. Animal Manure Applied to Soils	Nitrogen input from manure applied to soils			
3. N-fixing Crops	Nitrogen fixed by N-fixing crops cultivated annually			
4. Crop Residue	Nitrogen in crop residues returned to soils			
5. Cultivation of Histosols [2]	Area of cultivated organic soils (ha/yr)			
6. Other direct emissions *(please specify)*				
2. Pasture, Range and Paddock Manure	**N excretion on pasture range and paddock**			
3. Indirect Emissions				
1. Atmospheric Deposition	Volatized N from fertilizers, animal manures and other			
2. Nitrogen Leaching and Run-off	N from fertilizers, animal manures and other that is lost through leaching and run off			
4. Other *(please specify)*				

Additional information

Fraction [a]	Description	Value
$Frac_{BURN}$	Fraction of crop residue burned	
$Frac_{FUEL}$	Fraction of livestock N excretion in excrements burned for fuel	
$Frac_{GASF}$	Fraction of synthetic fertilizer N applied to soils that volatilizes as NH_3 and NOx	
$Frac_{GASM}$	Fraction of livestock N excretion that volatilizes as NH_3 and NOx	
$Frac_{GRAZ}$	Fraction of livestock N excreted and deposited onto soil during grazing	
$Frac_{LEACH}$	Fraction of N input to soils that is lost through leaching and runoff	
$Frac_{NCRBF}$	Fraction of total aboveground biomass of N-fixing crop that is N	
$Frac_{NCRO}$	Fraction of residue dry biomass that is N	
$Frac_{R}$	Fraction of total aboveground crop biomass that is removed from the field as crop product	
Other (please specify)		

[a] Use the fractions as specified in the IPCC Guidelines (Volume 3. Reference Manual, pp. 4.92 - 4.113) as elaborated by the IPCC good practice guidance (pp. 4.54 - 4.74).

[1] See footnote 4 to Summary 1.A. of this common reporting format. Parties which choose to report CO_2 emissions and removals from agricultural soils under 4.D. Agricultural Soils category should indicate the amount (in Gg) of these emissions or removals and relevant additional information (activity data, implied emissions factors) in the documentation box.

[2] To convert from N_2O-N to N_2O emissions, multiply by 44/28. Note that for cultivation of histosols the unit of the IEF is kg N_2O-N/ha.

Documentation box:

* Detailed explanations on the agricultural sector can be found in section 5.4 of the NIR. If any additional information is needed to understand the content of this table, use this documentation box to provide references to the relevant section of the NIR where further details can be found.

* Provide reference to the relevant section in the NIR, in particular with regard to:
  (a) Background information on CO_2 emissions and removals estimates from agricultural soils, if accounted for under the agriculture sector;
  (b) Background information on CH_4 emissions from agricultural soils, if accounted for under the agriculture sector;
  (c) Disaggregated values for $Frac_{GRAZ}$ according to animal type, and for $Frac_{BURN}$ according to crop types;
  (d) Full list of assumptions and fractions used.

TABLE 4.E SECTORAL BACKGROUND DATA FOR AGRICULTURE

Country

Prescribed Burning of Savannas

Year

(Sheet 1 of 1)

Submission

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

Additional information

	Living	Dead
Fraction of aboveground biomass		
Fraction oxidized		
Carbon fraction		

Documentation box:

Detailed explanations on the agricultural sector can be found in section 5.4 of the NIR. If any additional information is needed to understand the content of this table, use this documentation box to provide references to the relevant section of the NIR where further details can be found.

TABLE 4.F SECTORAL BACKGROUND DATA FOR AGRICULTURE
Field Burning of Agricultural Residues
(Sheet 1 of 1)

Country
Year
Submission

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA AND OTHER RELATED INFORMATION								IMPLIED EMISSION FACTORS		EMISSIONS	
	Crop production (t)	Residue/ Crop ratio	Dry matter 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	N_2O	CH_4	N_2O
									(kg/t dm)		(Gg)	
1. Cereals												
Wheat												
Barley												
Maize												
Oats												
Rye												
Rice												
Other *(please specify)*												
2. Pulse												
Dry bean												
Peas												
Soybeans												
Other *(please specify)*												
3 Tuber and Root												
Potatoes												
Other *(please specify)*												
4 Sugar Cane												
5 Other *(please specify)*												

Documentation Box:
Detailed explanations on the agricultural sector can be found in section 5.4 of the NIR. If any additional information is needed to understand the content of this table, use this documentation box to provide references to the relevant section of the NIR where further details can be found.

TABLE 5 SECTORAL REPORT FOR LAND-USE CHANGE AND FORESTRY
(Sheet 1 of 1)

Country
Year
Submission

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO_2 emissions	CO_2 removals	Net CO_2 emissions/ removals	CH_4	N_2O	NO_x	CO
	(Gg)						
Total Land-Use Change and Forestry							
A. Changes in Forest and Other Woody Biomass Stocks							
1. Tropical Forests							
2. Temperate Forests							
3. Boreal Forests							
4. Grasslands/Tundra							
5. Other *(please specify)*							
Harvested Wood [(1)]							
B. Forest and Grassland Conversion							
1. Tropical Forests							
2. Temperate Forests							
3. Boreal Forests							
4. Grasslands/Tundra							
5. Other *(please specify)*							
C. Abandonment of Managed Lands							
1. Tropical Forests							
2. Temperate Forests							
3. Boreal Forests							
4. Grasslands/Tundra							
5. Other *(please specify)*							
D. CO_2 Emissions and Removals from Soil							
Cultivation of Mineral Soils							
Cultivation of Organic Soils							
Liming of Agricultural Soils							
Forest Soils							
Other *(please specify)* [(2)]							
E. Other *(please specify)*							

[(1)] Following the IPCC Guidelines, the harvested wood should be reported under Changes in Forest and Other Woody Biomass Stocks (Volume 3. Reference Manual, p.5.17).
[(2)] Include emissions from soils not reported under sections A, B and C.

Note: See footnote 4 to Summary 1.A of this common reporting format.

Documentation box:
Detailed explanations on the LUCF sector can be found in section 5.5 of the NIR. If any additional information is needed to understand the content of this table, use this documentation box to provide references to the relevant section of the NIR where further details can be found.

TABLE 5.A SECTORAL BACKGROUND DATA FOR LAND-USE CHANGE AND FORESTRY

Country

Changes in Forest and Other Woody Biomass Stocks

Year

(Sheet 1 of 1)

Submission

GREENHOUSE GAS SOURCE AND SINK CATEGORIES			ACTIVITY DATA		IMPLIED EMISSION FACTORS	ESTIMATES
			Area of forest/biomass stocks (kha)	Average annual growth rate (t dm/ha)	Implied carbon uptake factor (t C/ha)	Carbon uptake increment (Gg C)
Tropical	Plantations	*Acacia spp.*				
		Eucalyptus spp.				
		Tectona grandis				
		Pinus spp				
		Pinus caribaea				
		Mixed Hardwoods				
		Mixed Fast-Growing Hardwoods				
		Mixed Softwoods				
	Other Forests	Moist				
		Seasonal				
		Dry				
	Other *(specify)*					
Temperate	Plantations					
	Commercial	Evergreen				
		Deciduous				
	Other *(specify)*					
Boreal						
			Number of trees (1000s of trees)	Annual growth rate (kt dm/1000 trees)	Carbon uptake factor (t C/tree)	Carbon uptake increment (Gg C)
Non-Forest Trees *(specify type)*						
					Total annual growth increment (Gg C)	
					Gg CO_2	

	Amount of biomass removed (kt dm)	Carbon emission factor (t C/t dm)	Carbon release (Gg C)
Total biomass removed in Commercial Harvest			
Traditional Fuelwood Consumed			
Total Other Wood Use			
		Total Biomass Consumption from Stocks [(1)] (Gg C)	
		Other Changes in Carbon Stocks [(2)] (Gg C)	
		Gg CO_2	

Net annual carbon uptake (+) or release (-) (Gg C)	
Net CO_2 emissions (-) or removals (+) (Gg CO_2)	

[(1)] Make sure that the quantity of biomass burned off-site is subtracted from this total.

[(2)] The net annual carbon uptake/release is determined by comparing the annual biomass growth versus annual harvest, including the decay of forest products and slash left during harvest. The IPCC Guidelines recommend default assumption that all carbon removed in wood and other biomass from forests is oxidized in the year of removal. The emissions from decay could be included under Other Changes in Carbon Stocks.

Note: Sectoral background data tables on Land-Use Change and Forestry should be filled in only by Parties using the IPCC default methodology. Parties that use country specific methods and models should report information on them in a transparent manner in the NIR.

Documentation box:
Detailed explanations on the LUCF sector can be found in section 5.5 of the NIR. If any additional information is needed to understand the content of this table, use this documentation box to provide references to the relevant section of the NIR where further details can be found.

TABLE 5.B SECTORAL BACKGROUND DATA FOR LAND-USE CHANGE AND FORESTRY

Forest and Grassland Conversion

(Sheet 1 of 1)

Country

Year

Submission

GREENHOUSE GAS SOURCE AND SINK CATEGORIES		ACTIVITY DATA AND OTHER RELATED INFORMATION							IMPLIED EMISSION FACTORS					EMISSIONS					
		On and off site burning				Decay of above-ground biomass[1]			Burning				Decay	Burning				Decay	
									On site			Off site		On site			Off site		
		Area converted annually	Annual net loss of biomass	Quantity of biomass burned		Average area converted	Average annual net loss of biomass	Average quantity of biomass left to decay	CO_2	CH_4	N_2O	CO_2	CO_2	CO_2	CH_4	N_2O	CO_2	CO_2
				On site	Off site														
Vegetation types		(kha)	(kt dm)	(kt dm)	(kt dm)	(kha)	(t dm/ha)	(kt dm)	(t/ha)					(Gg)					
Tropical	Wet/Very Moist																		
	Moist, short dry season																		
	Moist, long dry season																		
	Dry																		
	Montane Moist																		
	Montane Dry																		
Tropical Savanna/Grasslands																			
Temperate	Coniferous																		
	Broadleaf																		
	Mixed Broadleaf/ Coniferous																		
Grasslands																			
Boreal	Mixed Broadleaf/ Coniferous																		
	Coniferous																		
	Forest-tundra																		
Grasslands/Tundra																			
Other *(please specify)*																			
Total																			

[1] Activity data are by default 10-year averages. Specify the average decay time which is appropriate for the local conditions, if other than 10 years.

Emissions/Removals	On site	Off site
Immediate carbon release from burning		
Total On site and Off site (Gg C)		
Delayed emissions from decay (Gg C)		
Total annual carbon release (Gg C)		
Total annual CO_2 emissions (Gg CO_2)		

Additional information

Fractions	On site	Off site
Fraction of biomass burned (average)		
Fraction which oxidizes during burning (average)		
Carbon fraction of aboveground biomass (average)		
Fraction left to decay (average)		
Nitrogen-carbon ratio		

Note: Sectoral background data tables on Land-Use Change and Forestry should be filled in only by Parties using the IPCC default methodology. Parties that use country specific methods and models should report information on them in a transparent manner in the NIR.

Documentation box:

Detailed explanations on the LUCF sector can be found in section 5.5 of the NIR. If any additional information is needed to understand the content of this table, use this documentation box to provide references to the relevant section of the NIR where further details can be found.

TABLE 5.C SECTORAL BACKGROUND DATA FOR LAND-USE CHANGE AND FORESTRY

Country

Abandonment of Managed Lands

Year

(Sheet 1 of 1)

Submission

GREENHOUSE GAS SOURCE AND SINK CATEGORIES		ACTIVITY DATA AND OTHER RELATED INFORMATION						IMPLIED EMISSION FACTORS		ESTIMATES	
		Total area abandoned and regrowing [1]		Annual rate of aboveground biomass growth		Carbon fraction of aboveground biomass		Rate of aboveground biomass carbon uptake		Annual carbon uptake in aboveground biomass	
Original natural ecosystems		first 20 years (kha)	>20 years (kha)	first 20 years (t dm/ha)	>20 years (t dm/ha)	first 20 years	>20 years	first 20 years (t C/ha/yr)	>20 years (t C/ha/yr)	first 20 years (Gg C/yr)	>20 years (Gg C/yr)
Tropical	Wet/Very Moist										
	Moist, short dry season										
	Moist, long dry season										
	Dry										
	Montane Moist										
	Montane Dry										
Tropical Savanna/Grasslands											
Temperate	Mixed Broadleaf/Coniferous										
	Coniferous										
	Broadleaf										
Grasslands											
Boreal	Mixed Broadleaf/Coniferous										
	Coniferous										
	Forest-tundra										
Grasslands/Tundra											
Other *(please specify)*											

Total annual carbon uptake (Gg C)	
Total annual CO_2 removal (Gg CO_2)	

[1] If lands are regenerating to grassland, then the default assumption is that no significant changes in above-ground biomass occur.

Note: Sectoral background data tables on Land-use Change and Forestry should be filled in only by Parties using the IPCC default methodology. Parties that use country specific methods and models should report information on them in a transparent manner in the NIR.

Documentation box:
Detailed explanations on the LUCF sector can be found in section 5.5 of the NIR. If any additional information is needed to understand the content of this table, use this documentation box to provide references to the relevant section of the NIR where further details can be found.

TABLE 5.D SECTORAL BACKGROUND DATA FOR LAND-USE CHANGE AND FORESTRY

CO_2 Emissions and Removals from Soil

(Sheet 1 of 1)

Country

Year

Submission

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA	IMPLIED EMISSION FACTORS	ESTIMATES
	Land area (Mha)	Average annual rate of soil carbon uptake/removal (Mg C/ha/yr)	Net change in soil carbon in mineral soils (Tg C over 20 yr)
Cultivation of Mineral Soils [1]			
High Activity Soils			
Low Activity Soils			
Sandy			
Volcanic			
Wetland (Aquic)			
Other *(please specify)*			
	Land area (ha)	**Annual loss rate (Mg C/ha/yr)**	**Carbon emissions from organic soils (Mg C/yr)**
Cultivation of Organic Soils			
Cool Temperate			
Upland Crops			
Pasture/Forest			
Warm Temperate			
Upland Crops			
Pasture/Forest			
Tropical			
Upland Crops			
Pasture/Forest			
	Total annual amount of lime (Mg)	**Carbon conversion factor**	**Carbon emissions from liming (Mg C)**
Liming of Agricultural Soils			
Limestone $Ca(CO_3)$			
Dolomite $CaMg(CO_3)_2$			

Total annual net carbon emissions from agriculturally impacted soils (Gg C)	
Total annual net CO_2 emissions from agriculturally impacted soils (Gg CO_2)	

Additional information

	Year	Climate [a]	land-use/ management system [a]	Soil type					
				High activity soils	Low activity soils	Sandy	Volcanic	Wetland (Aquic)	Organic soil
				percent distribution (%)					
20 years prior		*(e.g. tropical, dry)*	*(e.g. savanna)*						
			(e.g. irrigated cropping)						
inventory year									

[a] These should represent the major types of land management systems per climate regions present in the country as well as ecosystem types which were either converted to agriculture (e.g., forest, savanna, grassland) or have been derived from previous agricultural land-use (e.g., abandoned lands, reforested lands). Systems should also reflect differences in soil carbon stocks that can be related to differences in management (IPCC Guidelines (Volume 2. Workbook, Table 5-9, p. 5.26, and Appendix (pp. 5-31 - 5.38)).

[1] The information to be reported under Cultivation of Mineral Soils aggregates data per soil type over all land-use/management systems. This refers to land area data and to the emission estimates and implied emissions factors accordingly.

Note: Sectoral background data tables on Land-Use Change and Forestry should be filled in only by Parties using the IPCC default methodology. Parties that use country specific methods and models should report information on them in a transparent manner in the NIR.

Documentation Box:
Detailed explanations on the LUCF sector can be found in section 5.5 of the NIR. If any additional information is needed to understand the content of this table, use this documentation box to provide references to the relevant section of the NIR where further details can be found.

TABLE 6 SECTORAL REPORT FOR WASTE
(Sheet 1 of 1)

Country
Year
Submission

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO_2 [1]	CH_4	N_2O	NO_x	CO	NMVOC	SO_2
	(Gg)						
Total Waste							
A. Solid Waste Disposal on Land							
1. Managed Waste Disposal on Land							
2. Unmanaged Waste Disposal Sites							
3. Other *(as specified in table 6.A)*							
B. Wastewater Handling							
1. Industrial Wastewater							
2. Domestic and Commercial Wastewater							
3. Other *(as specified in table 6.B)*							
C. Waste Incineration							
D. Other *(please specify)*							

[1] Note that CO_2 emissions from Waste Disposal and Incineration source categories should only be included if they derive from non-biological or inorganic waste sources.

Documentation box:
Detailed explanations on the waste sector can be found in section 5.6 of the NIR. If any additional information is needed to understand the content of this table, use this documentation box to provide references to the relevant section of the NIR where further details can be found.

TABLE 6.A SECTORAL BACKGROUND DATA FOR WASTE
Solid Waste Disposal
(Sheet 1 of 1)

Country
Year
Submission

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA AND OTHER RELATED INFORMATION			IMPLIED EMISSION FACTOR		EMISSIONS		
	Annual MSW at the SWDS (Gg)	MCF	DOC degraded %	CH_4 [1] (t /t MSW)	CO_2 (t /t MSW)	CH_4 (net) [2] (Gg)	CH_4 recovery [3] (Gg)	CO_2 [4] (Gg)
1 Managed Waste Disposal on Land								
2 Unmanaged Waste Disposal Sites								
a. Deep (>5 m)								
b. Shallow (<5 m)								
3 Other *(please specify)*								

Additional information

Description	Value
Total population (1000s) [a]	
Urban population (1000s) [a]	
Waste generation rate (kg/capita/day)	
Fraction of MSW disposed to SWDS	
Fraction of DOC in MSW	
CH_4 oxidation factor [b]	
CH_4 fraction in landfill gas	
CH_4 generation rate constant (k) [c]	
Time lag considered (yr) [c]	

MSW - Municipal Solid Waste, SWDS - Solid Waste Disposal Site, MCF - Methane Correction Factor, DOC - Degradable Organic Carbon (IPCC Guidelines (Volume 3. Reference Manual, section 6.2.4)). MSW includes household waste, yard/garden waste, commercial/market waste and organic industrial solid waste. MSW should not include inorganic industrial waste such as construction or demolition materials.

[1] The CH_4 IEF is calculated on the basis of gross CH_4 emissions, as follows: IEF = (net CH_4 emissions + CH_4 recovered) / annual MSW at the SWDS.

[2] Actual emissions (after recovery).

[3] CH_4 recovered and flared or utilized.

[4] Under Waste Disposal, CO_2 emissions should be reported only when the disposed waste is combusted at the disposal site as a management practice. CO_2 emissions from non-biogenic wastes are included in the total emissions, while the CO_2 emissions from biogenic wastes are not included in the total emissions.

[a] Specify whether total or urban population is used and the rationale for doing so.

[b] See IPCC Guidelines (Volume 3. Reference Manual, p. 6.9).

[c] Only for Parties using Tier 2 methods.

TABLE 6.C SECTORAL BACKGROUND DATA FOR WASTE
Waste Incineration
(Sheet 1 of 1)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA	IMPLIED EMISSION FACTOR			EMISSIONS		
	Amount of incinerated wastes (Gg)	CO_2 (kg/t waste)	CH_4 (kg/t waste)	N_2O (kg/t waste)	CO_2 [1] (Gg)	CH_4 (Gg)	N_2O (Gg)
Waste Incineration *(please specify)*							
a. Biogenic [1]							
b. Other (non-biogenic - please specify) [1], [2]							

[1] Under Waste Disposal, CO_2 emissions should be reported only when the disposed waste is combusted at the disposal site as a management practice. CO_2 emissions from non-biogenic wastes are included in the total emissions, while the CO_2 emissions from biogenic wastes are not included in the total emissions.

[2] Enter under this source category all types of non-biogenic wastes, such as plastics.

Note: Only emissions from waste incineration without energy recovery are to be reported in the waste sector. Emissions from incineration with energy recovery are to be reported in the energy sector, as other fuels (see IPCC good practice guidance, page 5.23).

Documentation box:

* Detailed explanations on the waste sector can be found in section 5.6 of the NIR. If any additional information is needed to understand the content of this table, use this documentation box to provide references to the relevant section of the NIR where further details can be found.

* Parties that use country specific models should provide a reference in the documentation box to the relevant section in the NIR where these models are described, and fill in only the relevant cells of tables 6.A and 6.C.
* Provide reference to the relevant section in the NIR, in particular with regard to:
  (a) population size (total or urban population) used in the calculations and the rationale for doing so;
  (b) the composition of landfilled waste;
  (c) In relation to the amount of incinerated wastes, specify whether the reported data relate to wet or dry matter.

TABLE 6.B SECTORAL BACKGROUND DATA FOR WASTE
Wastewater Handling
(Sheet 1 of 1)

Country
Year
Submission

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA AND RELATED INFORMATION[1]	IMPLIED EMISSION FACTOR		EMISSIONS		
				CH_4		N_2O [3]
	Total organic product	CH_4 [2]	N_2O [3]	CH_4 (net) [4]	CH_4 recovered and/or flared [5]	
	(Gg DC[1]/yr)	(kg/kg DC)		(Gg)		
1. Industrial Wastewater						
a. Wastewater						
b. Sludge						
2. Domestic and Commercial Wastewater						
a. Wastewater						
b. Sludge						
3. Other *(please specify)*						
a. Wastewater *(please specify)*						
b. Sludge *(please specify)*						

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA AND OTHER RELATED INFORMATION			IMPLIED EMISSION FACTOR	EMISSIONS
	Population (1000s)	Protein consumption (protein in kg/person/yr)	N fraction (kg N/kg protein)	N_2O (kg N_2O-N/kg sewage N produced)	N_2O (Gg)
N_2O from human sewage [3]					

[1] DC - degradable organic component. DC indicators are COD (Chemical Oxygen Demand) for industrial wastewater and BOD (Biochemical Oxygen Demand) for Domestic/Commercial wastewater/sludge (IPCC Guidelines (Volume 3. Reference Manual, pp. 6.14, 6.18)).
[2] The CH_4 IEF is calculated on the basis of gross CH_4 emissions, as follows: IEF = (net CH_4 emissions + CH_4 recovered or flared) / total organic product.
[3] Parties using methods other than those from the IPCC for estimating N_2O emissions from human sewage or wastewater treatment should provide aggregate data in table 6.B.
[4] Actual emissions (after recovery).
[5] CH_4 recovered and flared or utilized.

Additional information

	Domestic	Industrial
Total wastewater (m^3):		
Treated wastewater (%):		

Wastewater streams:	Wastewater output (m^3)	DC ($kgCOD/m^3$)
Industrial wastewater		
Non-ferrous		
Fertilizers		
Food and beverage		
Paper and pulp		
Organic chemicals		
Other *(specify)*		
DC (kg BOD/1000 person/yr)		
Domestic and Commercial		
Other		

Handling systems:	Industrial wastewater treated (%)	Ind. sludge treated (%)	Domestic wastewater treated (%)	Domestic sludge treated (%)
Aerobic				
Anaerobic				
Other *(specify)*				

Documentation box:
* Detailed explanations on the waste sector can be found in section 5.6 of the NIR. If any additional information is needed to understand the content of this table, use this documentation box to provide references to the relevant section of the NIR where further details can be found.
* Regarding the estimates for N_2O from human sewage, specify whether total or urban population is used in the calculations and the rationale for doing so. Provide explanation in the documentation box.
* Parties using methods other than those from the IPCC for estimating N_2O emissions from human sewage or wastewater treatment should provide, in the NIR, corresponding information on methods, activity data and emission factors used, and should provide a reference to the relevant section of the NIR in this documentation box.

SUMMARY 1.A SUMMARY REPORT FOR NATIONAL GREENHOUSE GAS INVENTORIES (IPCC TABLE 7A)
(Sheet 1 of 3)

Country
Year
Submission

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO_2 emissions	CO_2 removals	CH_4	N_2O	HFCs[1]		PFCs[1]		SF_6		NO_x	CO	NMVOC	SO_2
					P	A	P	A	P	A				
	(Gg)				CO_2 equivalent (Gg)				(Gg)					
Total National Emissions and Removals														
1. Energy														
A. Fuel Combustion — Reference Approach[2]														
A. Fuel Combustion — Sectoral Approach[2]														
1. Energy Industries														
2. Manufacturing Industries and Construction														
3. Transport														
4. Other Sectors														
5. Other														
B. Fugitive Emissions from Fuels														
1. Solid Fuels														
2. Oil and Natural Gas														
2. Industrial Processes														
A. Mineral Products														
B. Chemical Industry														
C. Metal Production														
D. Other Production[3]														
E. Production of Halocarbons and SF_6														
F. Consumption of Halocarbons and SF_6														
G. Other														

A = Actual emissions based on Tier 2 approach of the IPCC Guidelines.
P = Potential emissions based on Tier 1 approach of the IPCC Guidelines.

[1] The emissions of HFCs and PFCs are to be expressed as CO_2 equivalent emissions. Data on disaggregated emissions of HFCs and PFCs are to be provided in Table 2(II) of this common reporting format.

[2] For verification purposes, countries are asked to report the results of their calculations using the Reference approach and to explain any differences with the Sectoral approach in the documentation box to Table 1.A.(c). For estimating national total emissions, the results from the Sectoral approach should be used, where possible.

[3] Other Production includes Pulp and Paper and Food and Drink Production.

SUMMARY 1.A SUMMARY REPORT FOR NATIONAL GREENHOUSE GAS INVENTORIES (IPCC TABLE 7A)
(Sheet 2 of 3)

Country
Year
Submission

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO_2 emissions		CO_2 removals		CH_4	N_2O	HFCs [1]		PFCs[1]		SF_6		NO_x	CO	NMVOC	SO_2
							P	A	P	A	P	A				
	(Gg)						CO_2 equivalent (Gg)						(Gg)			
3. Solvent and Other Product Use																
4. Agriculture																
A. Enteric Fermentation																
B. Manure Management																
C. Rice Cultivation																
D. Agricultural Soils	(4), (5)		(4), (5)													
E. Prescribed Burning of Savannas																
F. Field Burning of Agricultural Residues																
G. Other																
5. Land-Use Change and Forestry	(5)		(5)													
A. Changes in Forest and Other Woody Biomass Stoc	(5)		(5)													
B. Forest and Grassland Conversion	(5)		(5)													
C. Abandonment of Managed Lands	(5)		(5)													
D. CO_2 Emissions and Removals from Soil	(5)		(5)													
E. Other	(5)		(5)													
6. Waste																
A. Solid Waste Disposal on Land	(6)															
B. Wastewater Handling																
C. Waste Incineration	(6)															
D. Other																
7. Other *(please specify)* [7]																

[4] According to the IPCC Guidelines (Volume 3. Reference Manual, pp. 4.2, 4.87), CO_2 emissions from agricultural soils are to be included under Land-Use Change and Forestry (LUCF). At the same time, the Summary Report 7A (Volume 1. Reporting Instructions, Tables.27) allows for reporting CO_2 emissions or removals from agricultural soils, either in the Agriculture sector, under D. Agricultural Soils or in the Land-Use Change and Forestry sector under D. Emissions and Removals from Soil. Parties may choose either way to report emissions or removals from this source in the common reporting format, but the way they have chosen to report should be clearly indicated, by providing a brief explanation in the documentation boxes to table 4D of the agriculture sector. Double-counting of these emissions or removals should be avoided. Parties should include these emissions or removals consistently in Table8(a) (Recalculation - Recalculated data) and Table10 (Emission trends).

[5] Please do not provide an estimate of both CO_2 emissions and CO_2 removals. "Net" emissions (emissions - removals) of CO_2 should be estimated and a single number placed in either the CO_2 emissions or CO_2 removals column, as appropriate. Please note that for the purposes of reporting, the signs for uptake are always (-) and for emissions (+).

[6] Note that CO_2 from Waste Disposal and Incineration source categories should only be included if it stems from non-biogenic or inorganic waste streams. Note that only emissions from waste incineration without energy recovery are to be reported in the waste sector, while emissions from incineration with energy recovery are to be reported in the energy sector.

[7] If reporting any country-specific source category under sector "7. Other", detailed explanations are to be provided in section 5 of the NIR.

SUMMARY 1.A SUMMARY REPORT FOR NATIONAL GREENHOUSE GAS INVENTORIES (IPCC TABLE 7A)
(Sheet 3 of 3)

Country
Year
Submission

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO_2 emissions	CO_2 removals	CH_4	N_2O	HFCs		PFCs		SF_6		NO_x	CO	NMVOC	SO_2
					P	A	P	A	P	A				
	(Gg)				CO_2 equivalent (Gg)				(Gg)					
Memo Items: [8]														
International Bunkers														
Aviation														
Marine														
Multilateral Operations														
CO_2 Emissions from Biomass														

[8] Countries are asked to report emissions from international aviation and marine bunkers and multilateral operations, as well as CO_2 emissions from biomass under Memo Items. These emissions should not be included in the national total emissions from the energy sector. Amounts of biomass used as a fuel are included in the total national energy consumption, while CO_2 emissions from the combustion of biomass are accounted for in the land-use change and forestry sector, if the wood has been produced in an unsustainable manner.

SUMMARY 1.B SHORT SUMMARY REPORT FOR NATIONAL GREENHOUSE GAS INVENTORIES (IPCC TABLE 7B)
(Sheet 1 of 1)

Country
Year
Submission

GREENHOUSE GAS SOURCE AND SINK CATEGORIES		CO_2 emissions		CO_2 removals		CH_4	N_2O	$HFCs^{(1)}$		$PFCs^{(1)}$		SF_6		NO_x	CO	NMVOC	SO_2
								P	A	P	A	P	A				
		(Gg)						CO_2 equivalent (Gg)						(Gg)			
Total National Emissions and Removals																	
1. Energy																	
A. Fuel Combustion	Reference Approach[2]																
	Sectoral Approach[2]																
B. Fugitive Emissions from Fuels																	
2. Industrial Processes																	
3. Solvent and Other Product Use																	
4. Agriculture [3]																	
5. Land-Use Change and Forestry		[4]		[4]													
6. Waste																	
7. Other																	
Memo Items:																	
International Bunkers																	
Aviation																	
Marine																	
Multilateral Operations																	
CO_2 Emissions from Biomass																	

A = Actual emissions based on Tier 2 approach of the IPCC Guidelines.
P = Potential emissions based on Tier 1 approach of the IPCC Guidelines.

[1] The emissions of HFCs and PFCs are to be expressed as CO_2 equivalent emissions. Data on disaggregated emissions of HFCs and PFCs are to be provided in Table 2(II) of this common reporting format.
[2] For verification purposes, countries are asked to report the results of their calculations using the Reference approach and to explain any differences with the Sectoral approach in the documentation box to Table 1.A.(c). For estimating national total emissions, the result from the Sectoral approach should be used, where possible.
[3] See footnote 4 to Summary 1.A.
[4] Please do not provide an estimate of both CO_2 emissions and CO_2 removals. "Net" emissions (emissions - removals) of CO_2 should be estimated and a single number placed in either the CO_2 emissions or CO_2 removals column, as appropriate. Please note that for the purposes of reporting, the signs for uptake are always (-) and for emissions (+).

SUMMARY 2 SUMMARY REPORT FOR CO_2 EQUIVALENT EMISSIONS
(Sheet 1 of 1)

Country
Year
Submission

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO_2 [1]	CH_4	N_2O	HFCs [2]	PFCs [2]	SF_6 [2]	Total
	CO_2 equivalent (Gg)						
Total (Net Emissions) [1]							
1. Energy							
A. Fuel Combustion (Sectoral Approach)							
1. Energy Industries							
2. Manufacturing Industries and Construction							
3. Transport							
4. Other Sectors							
5. Other							
B. Fugitive Emissions from Fuels							
1. Solid Fuels							
2. Oil and Natural Gas							
2. Industrial Processes							
A. Mineral Products							
B. Chemical Industry							
C. Metal Production							
D. Other Production							
E. Production of Halocarbons and SF_6							
F. Consumption of Halocarbons and SF_6 [2]							
G. Other							
3. Solvent and Other Product Use							
4. Agriculture							
A. Enteric Fermentation							
B. Manure Management							
C. Rice Cultivation							
D. Agricultural Soils [3]							
E. Prescribed Burning of Savannas							
F. Field Burning of Agricultural Residues							
G. Other							
5. Land-Use Change and Forestry [1]							
6. Waste							
A. Solid Waste Disposal on Land							
B. Wastewater Handling							
C. Waste Incineration							
D. Other							
7. Other ***(as specified in Summary 1.A)***							

Memo Items:							
International Bunkers							
Aviation							
Marine							
Multilateral Operations							
CO_2 Emissions from Biomass							

[1] For CO_2 emissions from Land-Use Change and Forestry the net emissions are to be reported. Note that for the purposes of reporting, the signs for uptake are always (-) and for emissions (+).
[2] Actual emissions should be included in the national totals. In the case that for category 2.F Consumption of halocarbons and SF_6 no actual emissions were reported, potential emissions should be included.
[3] See footnote 4 to Summary 1.A of this common reporting format.

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO_2 emissions	CO_2 removals	Net CO_2 emissions / removals	CH_4	N_2O	Total emissions
Land-Use Change and Forestry	CO_2 equivalent (Gg)					
A. Changes in Forest and Other Woody Biomass Stocks						
B. Forest and Grassland Conversion						
C. Abandonment of Managed Lands						
D. CO_2 Emissions and Removals from Soil						
E. Other						
Total CO_2 Equivalent Emissions from Land-Use Change and Forestry						

Total CO_2 Equivalent Emissions without Land-Use Change and Forestry [a]	
Total CO_2 Equivalent Emissions with Land-Use Change and Forestry [a]	

[a] The information in these rows is requested to facilitate comparison of data, since Parties differ in the way they report emissions and removals from Land-Use Change and Forestry. Note that these totals will differ from the totals reported in Table 10s5 if Parties report non-CO_2 emissions from LUCF.

SUMMARY 3 SUMMARY REPORT FOR METHODS AND EMISSION FACTORS USED
(Sheet 1 of 2)

Country
Year
Submission

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO_2		CH_4		N_2O		HFCs		PFCs		SF_6	
	Method applied [1]	Emission factor [2]	Method applied [1]	Emission factor [2]	Method applied [1]	Emission factor [2]	Method applied [1]	Emission factor [2]	Method applied [1]	Emission factor [2]	Method applied [1]	Emission factor [2]
1. Energy												
A. Fuel Combustion												
1. Energy Industries												
2. Manufacturing Industries and Construction												
3. Transport												
4. Other Sectors												
5. Other												
B. Fugitive Emissions from Fuels												
1. Solid Fuels												
2. Oil and Natural Gas												
2. Industrial Processes												
A. Mineral Products												
B. Chemical Industry												
C. Metal Production												
D. Other Production												
E. Production of Halocarbons and SF_6												
F. Consumption of Halocarbons and SF_6												
G. Other												

[1] Use the following notation keys to specify the method applied:

D (IPCC default), **T1a, T1b, T1c** (IPCC Tier 1a, Tier 1b and Tier 1c, respectively), **C** (CORINAIR),
RA (Reference Approach), **T2** (IPCC Tier 2), **CS** (Country Specific).
T1 (IPCC Tier 1), **T3** (IPCC Tier 3),

If using more than one method within one source category, enumerate the relevant methods. Explanations regarding country-specific methods or any modifications to the default IPCC methods, as well as information regarding the use of different methods per source category where more than one method is indicated, should be provided in the documentation box.

[2] Use the following notation keys to specify the emission factor used:

D (IPCC default), **CS** (Country Specific),
C (CORINAIR), **PS** (Plant Specific).

Where a mix of emission factors has been used, use different notations in one and the same cells with further explanations in the documentation box.

SUMMARY 3 SUMMARY REPORT FOR METHODS AND EMISSION FACTORS USED
(Sheet 2 of 2)

Country
Year
Submission

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO_2		CH_4		N_2O		HFCs		PFCs		SF_6	
	Method applied [1]	Emission factor [2]	Method applied [1]	Emission factor [2]	Method applied [1]	Emission factor [2]	Method applied [1]	Emission factor [2]	Method applied [1]	Emission factor [2]	Method applied [1]	Emission factor [2]
3. Solvent and Other Product Use												
4. Agriculture												
A. Enteric Fermentation												
B. Manure Management												
C. Rice Cultivation												
D. Agricultural Soils												
E. Prescribed Burning of Savannas												
F. Field Burning of Agricultural Residues												
G. Other												
5. Land-Use Change and Forestry												
A. Changes in Forest and Other Woody Biomass Stocks												
B. Forest and Grassland Conversion												
C. Abandonment of Managed Lands												
D. CO_2 Emissions and Removals from Soil												
E. Other												
6. Waste												
A. Solid Waste Disposal on Land												
B. Wastewater Handling												
C. Waste Incineration												
D. Other												
7. Other (as specified in Summary 1.A)												

[1] Use the following notation keys to specify the method applied:

D (IPCC default), **T1a, T1b, T1c** (IPCC Tier 1a, Tier 1b and Tier 1c, respectively), **C** (CORINAIR),
RA (Reference Approach), **T2** (IPCC Tier 2), **CS** (Country Specific).
T1 (IPCC Tier 1), **T3** (IPCC Tier 3),

If using more than one method within one source category, enumerate the relevant methods. Explanations regarding country-specific methods or any modifications to the default IPCC methods, as well as information regarding the use of different methods per source category where more than one method is indicated, should be provided in the documentation box.

[2] Use the following notation keys to specify the emission factor used:

D (IPCC default), **CS** (Country Specific),
C (CORINAIR), **PS** (Plant Specific).

Where a mix of emission factors has been used, use different notations in one and the same cells with further explanations in the documentation box.

Documentation box:

* The full information on methodological issues, such as methods and emission factors used, can be found in the relevant sector sections of chapter 5 of the NIR. If any additional information is needed to understand the content of this table, use this documentation box to provide references to the relevant section of the NIR where further details can be found.
* Where a mix of methods/ emission factors has been used within one source category, use this documentation box to specify those methods/emission factors for the various sub-sources where they have been applied (see also footnotes 1 and 2 to this table).

TABLE 7(a) SUMMARY OVERVIEW FOR KEY SOURCES
(Sheet 1 of 1)

Country
Year
Submission

Year: latest reported inventory year

GREENHOUSE GAS SOURCE AND SINK CATEGORIES: KEY SOURCES	GAS	Criteria used for key source identification (e.g. tier) [1]	Level assessment (%) [2]	Cumulative total of level assessment (%)[3]	Contribution to trend (%) [4]	Method applied to estimate emissions [5]	Output box [6]	Type of emission factor [7]	Is source specific QA/QC implemented (Yes/No) [8]	Comments
Specify key sources according to the national level of disaggregation used: ***For example:***										
Stationary - coal	CO_2									
Stationary - oil	CO_2									
Mobile: Road vehicles	CO_2									
Mobile: Road vehicles	N_2O									

[1] **L1**= Level using Tier 1 method, **L2**= Level using Tier 2 method , **T1** = Trend using Tier 1 method, **T2** = Trend using Tier 2 method.
Q1 = mitigation techniques and technology applied to the source,
Q2 = High expected emission growth,
Q3 = High uncertainty,
Q4 = Unexpectedly high or low emission

[2] Level assessment refers to the emission level of a given source category calculated as described in the IPCC good practice guidance (table 7.2).

[3] Rank identified key sources according to their relative contribution to the national total emissions

[4] As calculated following the IPCC good practice guidance (table 7.3)

[5] Use the following notation keys to specify the method applied

D (IPCC default), **T1a, T1b, T1c** (IPCC Tier 1a, Tier 1b and Tier 1c, respectively), **C** (CORINAIR),
RA (Reference Approach), **T2** (IPCC Tier 2), **CS** (Country Specific).
T1 (IPCC Tier 1), **T3** (IPCC Tier 3),

If using more than one method within one source category, enumerate the relevant methods. Explanations regarding country-specific methods or any modifications to the default IPCC methods, as well as information regarding the use of different methods per source category where more than one method is indicated, should be provided in the documentation box.

[6] Reference is made to figure (decision tree) and output box in IPCC good practice guidance in the format x.y-z; for example: output box 3 in figure 2.1 will be noted 2.1-3

[7] Use the following notation keys to specify the emission factor used

D (IPCC default), **CS** (Country Specific),
C (CORINAIR), **PS** (Plant Specific).

Where a mix of emission factors has been used, use different notations in one and the same cells with further explanations in the documentation box.

[8] As specified in sectoral good practice guidance

Documentation box:
* The full information on methodological issues, such as methods and emission factors used, can be found in the relevant sector sections of chapter 5 of the NIR. If any additional information is needed to understand the content of this table, use this documentation box to provide references to the relevant section of the NIR where further details can be found.
* Where a mix of methods/ emission factors has been used within one source category, use this documentation box to specify those methods/emission factors for the various sub-sources where they have been applied (see also footnotes 5 and 7 to this table).

TABLE 7(b) UNCERTAINTIES FOR KEY SOURCES [1]
(Sheet 1 of 1)

Country
Year
Submission

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	Gas	Activity data uncertainty [2] %	Emission factor uncertainty [2] %	Source category uncertainty %	Specific reference to NIR [3]	Comment
Specify key sources according to the national level of disaggregation used [4] :						
For example:						
Stationary - coal	CO_2					
Stationary - oil	CO_2					
Mobile: Road vehicles	CO_2					
Mobile: Road vehicles	N_2O					

[1] For non-key sources, information on uncertainties can be found in the NIR.
[2] If the uncertainty value is based on analysis of direct measurement of the emissions, the notation "M" should be filled in in the relevant cells for activity data and emission factor uncertainty, respectively.
[3] Provide specific reference to the NIR, where for the respective source category further details on how the uncertainty estimates were derived, including methods used and underlying assumptions or any departures from the IPCC good practice guidance, can be found.
[4] The level of category disaggregation should follow the national source categorization (e.g. when using tier 2 or other methodologies in addition to IPCC tier 1) and should be the same as reported in Table 7(a).

Documentation box:
* The full information on uncertainties for key sources and non-key sources can be found in the relevant sector sections of chapter 5 of the NIR. If any additional information is needed to understand the content of this table, use this documentation box to provide references to the relevant section of the NIR where further details can be found.
* References to the NIR as indicated in footnote 3 to this table, should also be provided in this documentation box, as appropriate.

TABLE 8(a) RECALCULATION - RECALCULATED DATA
(Sheet 1 of 2) **Recalculated year:**

Country
Year
Submission

GREENHOUSE GAS SOURCE AND SINK CATEGORIES		CO_2					CH_4					N_2O				
		Previous submission	Latest submission	Difference	Difference[1]	Impact of recalculation on total emissions [4][5]	Previous submission	Latest submission	Difference	Difference[1]	Impact of recalculation on total emissions [4][5]	Previous submission	Latest submission	Difference	Difference[1]	Impact of recalculation on total emissions [4][5]
		CO_2 equivalent (Gg)			(%)	(%)	CO_2 equivalent (Gg)			(%)	(%)	CO_2 equivalent (Gg)			(%)	(%)
Total National Emissions and Removals																
1. Energy																
1.A.	Fuel Combustion Activities															
1.A.1.	Energy Industries															
1.A.2.	Manufacturing Industries and Construction															
1.A.3.	Transport															
1.A.4.	Other Sectors															
1.A.5.	Other															
1.B.	Fugitive Emissions from Fuels															
1.B.1.	Solid fuel															
1.B.2.	Oil and Natural Gas															
2. Industrial Processes																
2.A.	Mineral Products															
2.B.	Chemical Industry															
2.C.	Metal Production															
2.D.	Other Production															
2.G.	Other															
3. Solvent and Other Product Use																
4. Agriculture																
4.A.	Enteric Fermentation															
4.B.	Manure Management															
4.C.	Rice Cultivation															
4.D.	Agricultural Soils [2]															
4.E.	Prescribed Burning of Savannas															
4.F.	Field Burning of Agricultural Residues															
4.G.	Other															
5. Land-Use Change and Forestry (net) [3]																
5.A.	Changes in Forest and Other Woody Biomass Stocks															
5.B.	Forest and Grassland Conversion															
5.C.	Abandonment of Managed Lands															
5.D.	CO_2 Emissions and Removals from Soil															
5.E.	Other															

[1] Estimate the percentage change due to recalculation with respect to the previous submission (Percentage change = 100% x [(LS-PS)/PS], where LS = Latest submission and PS = Previous submission.
All cases of recalculation of the estimate of the source/sink category, should be addressed and explained in Table 8(b) of this common reporting format.
[2] See footnote 4 to Summary 1.A of this common reporting format.
[3] Net CO_2 emissions/removals to be reported.
[4] Total emissions refer to total aggregate GHG emissions expressed in terms of CO_2 equivalent, excluding GHGs from the LUCF sector. The impact of the recalculation on the total emissions is calculated as follows: impact of recalculation (%) = 100% x [(source (LS) - source (PS))/total emissions (LS)], where LS = Latest submission, PS = Previous submission.
[5] The relative impact of recalculations of the LUCF sector is not considered in this table, until the IPCC completes its work on good practices for this sector and methods for estimating key sources from this sector are available.

TABLE 8(a) RECALCULATION - RECALCULATED DATA
(Sheet 2 of 2) **Recalculated year:**

Country
Year
Submission

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO_2					CH_4					N_2O				
	Previous submission	Latest submission	Difference	Difference[1]	Impact of recalculation on total emissions [4]	Previous submission	Latest submission	Difference	Difference[1]	Impact of recalculation on total emissions [4]	Previous submission	Latest submission	Difference	Difference[1]	Impact of recalculation on total emissions [4]
	CO_2 equivalent (Gg)			(%)	(%)	CO_2 equivalent (Gg)			(%)	(%)	CO_2 equivalent (Gg)			(%)	(%)
6. Waste															
6.A. Solid Waste Disposal on Land															
6.B. Wastewater Handling															
6.C. Waste Incineration															
6.D. Other															
7. Other ***(as specified in Summary 1.A)***															
Memo Items:															
International Bunkers															
Multilateral Operations															
CO_2 Emissions from Biomass															

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	HFCs					PFCs					SF_6				
	Previous submission	Latest submission	Difference	Difference[1]	Impact of recalculation on total emissions [4]	Previous submission	Latest submission	Difference	Difference[1]	Impact of recalculation on total emissions [4]	Previous submission	Latest submission	Difference	Difference[1]	Impact of recalculation on total emissions [4]
	CO_2 equivalent (Gg)			(%)	(%)	CO_2 equivalent (Gg)			(%)	(%)	CO_2 equivalent (Gg)			(%)	(%)
Total Actual Emissions															
2.C.3. Aluminium Production															
2.E. Production of Halocarbons and SF_6															
2.F. Consumption of Halocarbons and SF_6															
2.G. Other															
Potential Emissions from Consumption of HFCs/PFCs and SF_6															

	Previous submission	Latest submission	Difference	Difference[1]
	CO_2 equivalent (Gg)			(%)
Total CO_2 Equivalent Emissions with Land-Use Change and Forestry[6]				
Total CO_2 Equivalent Emissions without Land-Use Change and Forestry[6]				

[6] The information in these rows is requested to facilitate comparison of data, since Parties differ in the way they report emissions and removals from Land-Use Change and Forestry.

Documentation box:
Detailed information on recalculations can be found in section 4 of the NIR. If any additional information is needed to understand the content of this table, use this documentation box to provide references to the relevant section of the NIR where further details can be found.

TABLE 8(b) RECALCULATION - EXPLANATORY INFORMATION
(Sheet 1 of 1)

Country
Year
Submission

Specify the sector and source/sink category[1] where changes in estimates have occurred:		GHG	RECALCULATION DUE TO				
			CHANGES IN:			Addition/removal/ replacement of source/sink categories	Other changes in data (e.g. statistical or editorial changes, correction of errors)
			Methods [2]	Emission factors [2]	Activity data [2]		

[1] Enter the identification code of the source/sink category (e.g. 1.B.1) in the first column and the name of the category (e.g. Fugitive Emissions from Solid Fuels) in the second column of the table. Entries in columns A and B should match those used in Table 8(a).

[2] Explain changes in methods, emission factors and activity data that have resulted in recalculation of the estimate of the source/sink as indicated in Table 8(a). Include relevant changes in the assumptions and coefficients under the "Methods" column.

Documentation box:

The full information on recalculations can be found in the relevant sector sections of chapter 5 of the NIR. If any additional information is needed to understand the content of this table, use this documentation box to provide references to the relevant section of the NIR where further details can be found. References should particularly point to the relevant sections of the NIR in which justifications of the changes as to improvements in the accuracy, completeness and consistency of the inventory are reported.

TABLE 9 COMPLETENESS - INFORMATION ON NOTATION KEYS
(Sheet 1 of 2)

Country
Year
Submission

Sources and sinks not reported (NE)[1]			
GHG	**Sector[2]**	**Source/sink category [2]**	**Explanation**
CO_2			
CH_4			
N_2O			
HFCs			
PFCs			
SF_6			

Sources and sinks reported elsewhere (IE)[3]				
GHG	**Source/sink category**	**Allocation as per IPCC Guidelines**	**Allocation used by the Party**	**Explanation**
CO_2				
CH_4				
N_2O				
HFCs				
PFCs				
SF_6				

[1] Clearly indicate sources and sinks which are considered in the IPCC Guidelines but are not considered in the submitted inventory. Explain the reason for excluding these sources and sinks, in order to avoid arbitrary interpretations. An entry should be made for each source/sink category for which the indicator "NE" is entered in the sectoral tables.

[2] Indicate omitted source/sink following the IPCC source/sink category structure (e.g. sector: Waste, source category: Wastewater Handling)

[3] Clearly indicate sources and sinks in the submitted inventory that are allocated to a sector other than that indicated by the IPCC Guidelines. Show the sector indicated in the IPCC Guidelines and the sector to which the source or sink is allocated in the submitted inventory. Explain the reason for reporting these sources and sinks in a different sector. An entry should be made for each source/sink for which the indicator "IE" is used in the sectoral tables.

TABLE 9 COMPLETENESS
(Sheet 2 of 2)

Country
Year
Submission

Additional GHG emissions reported[4]						
GHG	**Source category**	**Emissions (Gg)**	**Estimated GWP value (100-year horizon)**	**Emissions CO_2 equivalent (Gg)**	**Reference to the source of GWP value**	**Explanation**

[4] Parties are encouraged to provide information on emissions of greenhouse gases whose GWP values have not yet been agreed upon by the COP. Please include such gases in this table if they are considered in the submitted inventory. Provide additional information on the estimation methods used.

Documentation box:
Detailed information regarding completeness of the inventory should be provided the NIR. If any additional information is needed to understand the content of this table, use this documentation box to provide references to the relevant sections of the NIR where further details can be found.

TABLE 10 EMISSIONS TRENDS (CO_2)
(Sheet 1 of 5)

Country
Year
Submission

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	Base year[1]	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
	(Gg)											
1. Energy												
A. Fuel Combustion (Sectoral Approach)												
1. Energy Industries												
2. Manufacturing Industries and Construction												
3. Transport												
4. Other Sectors												
5. Other												
B. Fugitive Emissions from Fuels												
1. Solid Fuels												
2. Oil and Natural Gas												
2. Industrial Processes												
A. Mineral Products												
B. Chemical Industry												
C. Metal Production												
D. Other Production												
E. Production of Halocarbons and SF_6												
F. Consumption of Halocarbons and SF_6												
G. Other												
3. Solvent and Other Product Use												
4. Agriculture												
A. Enteric Fermentation												
B. Manure Management												
C. Rice Cultivation												
D. Agricultural Soils[2]												
E. Prescribed Burning of Savannas												
F. Field Burning of Agricultural Residues												
G. Other												
5. Land-Use Change and Forestry[3]												
A. Changes in Forest and Other Woody Biomass Stocks												
B. Forest and Grassland Conversion												
C. Abandonment of Managed Lands												
D. CO_2 Emissions and Removals from Soil												
E. Other												
6. Waste												
A. Solid Waste Disposal on Land												
B. Waste-water Handling												
C. Waste Incineration												
D. Other												
7. Other ***(as specified in Summary 1.A)***												
Total Emissions/Removals with LUCF[4]												
Total Emissions without LUCF[4]												
Memo Items:												
International Bunkers												
Aviation												
Marine												
Multilateral Operations												
CO_2 Emissions from Biomass												

[1] This column should be filled in only by those Parties with economies in transition that use a base year different from 1990 in accordance with the relevant decisions of the COP.

[2] See footnote 4 to Summary 1.A of this common reporting format.

[3] Fill in net emissions as reported in Summary 1.A of this common reporting format. Please note that for the purposes of reporting, the signs for uptake are always (-) and for emissions (+).

[4] The information in these rows is requested to facilitate comparison of data, since Parties differ in the way they report CO_2 emissions and removals from Land-Use Change and Forestry.

TABLE 10 EMISSIONS TRENDS (CH_4)
(Sheet 2 of 5)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	Base year[1]	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
	(Gg)											
Total Emissions												
1. Energy												
A. Fuel Combustion (Sectoral Approach)												
1. Energy Industries												
2. Manufacturing Industries and Construction												
3. Transport												
4. Other Sectors												
5. Other												
B. Fugitive Emissions from Fuels												
1. Solid Fuels												
2. Oil and Natural Gas												
2. Industrial Processes												
A. Mineral Products												
B. Chemical Industry												
C. Metal Production												
D. Other Production												
E. Production of Halocarbons and SF_6												
F. Consumption of Halocarbons and SF_6												
G. Other												
3. Solvent and Other Product Use												
4. Agriculture												
A. Enteric Fermentation												
B. Manure Management												
C. Rice Cultivation												
D. Agricultural Soils												
E. Prescribed Burning of Savannas												
F. Field Burning of Agricultural Residues												
G. Other												
5. Land-Use Change and Forestry												
A. Changes in Forest and Other Woody Biomass Stocks												
B. Forest and Grassland Conversion												
C. Abandonment of Managed Lands												
D. CO_2 Emissions and Removals from Soil												
E. Other												
6. Waste												
A. Solid Waste Disposal on Land												
B. Waste-water Handling												
C. Waste Incineration												
D. Other												
7. Other ***(as specified in Summary 1.A)***												
Memo Items:												
International Bunkers												
Aviation												
Marine												
Multilateral Operations												
CO_2 Emissions from Biomass												

TABLE 10 EMISSIONS TRENDS (N_2O)
(Sheet 3 of 5)

Country
Year
Submission

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	Base year[1]	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
	(Gg)											
Total Emissions												
1. Energy												
A. Fuel Combustion (Sectoral Approach)												
1. Energy Industries												
2. Manufacturing Industries and Construction												
3. Transport												
4. Other Sectors												
5. Other												
B. Fugitive Emissions from Fuels												
1. Solid Fuels												
2. Oil and Natural Gas												
2. Industrial Processes												
A. Mineral Products												
B. Chemical Industry												
C. Metal Production												
D. Other Production												
E. Production of Halocarbons and SF_6												
F. Consumption of Halocarbons and SF_6												
G. Other												
3. Solvent and Other Product Use												
4. Agriculture												
A. Enteric Fermentation												
B. Manure Management												
C. Rice Cultivation												
D. Agricultural Soils												
E. Prescribed Burning of Savannas												
F. Field Burning of Agricultural Residues												
G. Other												
5. Land-Use Change and Forestry												
A. Changes in Forest and Other Woody Biomass Stocks												
B. Forest and Grassland Conversion												
C. Abandonment of Managed Lands												
D. CO_2 Emissions and Removals from Soil												
E. Other												
6. Waste												
A. Solid Waste Disposal on Land												
B. Waste-water Handling												
C. Waste Incineration												
D. Other												
7. Other ***(as specified in Summary 1.A)***												
Memo Items:												
International Bunkers												
Aviation												
Marine												
Multilateral Operations												
CO_2 Emissions from Biomass												

TABLE 10 EMISSION TRENDS (HFCs, PFCs and SF_6)
(Sheet 4 of 5)

Country
Year
Submission

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	Base year[1]	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
	(Gg)											
Emissions of HFCs[5] - Gg CO_2 equivalent												
HFC-23												
HFC-32												
HFC-41												
HFC-43-10mee												
HFC-125												
HFC-134												
HFC-134a												
HFC-152a												
HFC-143												
HFC-143a												
HFC-227ea												
HFC-236fa												
HFC-245ca												
Other HFCs [6] - Gg CO_2 equivalent												
Emissions of PFCs[5] - Gg CO_2 equivalent												
CF_4												
C_2F_6												
C_3F_8												
C_4F_{10}												
c-C_4F_8												
C_5F_{12}												
C_6F_{14}												
Other PFCs [6] - Gg CO_2 equivalent												
Emissions of SF_6[5] - Gg CO_2 equivalent												
SF_6												

Chemical	GWP
HFCs	
HFC-23	11700
HFC-32	650
HFC-41	150
HFC-43-10mee	1300
HFC-125	2800
HFC-134	1000
HFC-134a	1300
HFC-152a	140
HFC-143	300
HFC-143a	3800
HFC-227ea	2900
HFC-236fa	6300
HFC-245ca	560
PFCs	
CF_4	6500
C_2F_6	9200
C_3F_8	7000
C_4F_{10}	7000
c-C_4F_8	8700
C_5F_{12}	7500
C_6F_{14}	7400
SF_6	23900

[5] Enter actual emissions estimates. If only potential emissions estimates are available, these should be reported in this table and an indication for this be provided in the documentation box. Note that only in these rows the emissions are expressed as CO_2 equivalent emissions.

[6] In accordance with the UNFCCC reporting guidelines, HFC and PFC emissions should be reported for each relevant chemical. However, if it is not possible to report values for each chemical (i.e. mixtures, confidential data, lack of disaggregation), this row could be used for reporting aggregate figures for HFCs and PFCs, respectively. Note that the unit used for this row is Gg of CO_2 equivalent and that appropriate notation keys should be entered in the cells for the individual chemicals.

Documentation box:

* Detailed explanations on emissions trends can be found in section 2 of the NIR. If any additional information is needed to understand the content of this table, use this documentation box to provide references to the relevant section of the NIR where further details can be found.
* Use the documentation box to provide explanations, if potential emissions are reported.

TABLE 10 EMISSION TRENDS (SUMMARY)
(Sheet 5 of 5)

Country
Year
Submission

GREENHOUSE GAS EMISSIONS	Base year[1]	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
	CO_2 equivalent (Gg)											
Net CO_2 emissions/removals												
CO_2 emissions (without LUCF)[7]												
CH_4												
N_2O												
HFCs												
PFCs												
SF_6												
Total (with net CO_2 emissions/removals)												
Total (without CO_2 from LUCF)[7]												

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	Base year[1]	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
	CO_2 equivalent (Gg)											
1. Energy												
2. Industrial Processes												
3. Solvent and Other Product Use												
4. Agriculture												
5. Land-Use Change and Forestry[8]												
6. Waste												
7. Other												

[7] The information in these rows is requested to facilitate comparison of data, since Parties differ in the way they report CO_2 emissions and removals from Land-Use Change and Forestry. Note that these totals will differ from the totals reported in Table Summary 2 if Parties report non-CO_2 emissions from LUCF.

[8] Net (CO_2) emissions.