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SUBSIDIARY BODY FOR SCIENTIFIC AND TECHNOLOGICAL ADVICE

**REPORT OF THE SUBSIDIARY BODY FOR SCIENTIFIC AND  
TECHNOLOGICAL ADVICE ON ITS TENTH SESSION  
BONN, 31 MAY - 11 JUNE 1999**

**Addendum**

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

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\* Annex reproduced in English only.

## INTRODUCTION

1. The Subsidiary Body for Scientific and Technological Advice (SBSTA), at its tenth session, decided to forward to the Subsidiary Body for Implementation (SBI) a draft decision on guidelines for the preparation of national communications by Parties included in Annex I to the Convention, Part I: UNFCCC reporting guidelines on annual inventories, to be recommended for adoption by the Conference of the Parties (COP) at its fifth session. The SBI, at its tenth session, noted the draft conclusion and agreed to recommend it, jointly with the SBSTA, for adoption by the COP at its fifth session. The draft decision is contained in this document. Annex I to the draft decision contains the UNFCCC reporting guidelines on annual inventories. Annex II to the draft decision contains the common reporting format of these guidelines.
2. The SBSTA advised the SBI to set up a two-year trial period, to commence in early 2000, to assess the UNFCCC reporting guidelines on annual inventories, particularly the common reporting format, with a view to revising them at COP 7, taking into consideration, *inter alia*, experience gained by the Parties and the secretariat, and the input from IPCC. The SBI, following the advice of the SBSTA, agreed to set up the two-year trial period.
3. The SBSTA requested Parties to submit electronically to the secretariat any further technical corrections to the common reporting format by 15 July 1999, so that the text of the guidelines could be completed in time for the fifth session of the COP.
4. Finland, on behalf of the European Community and its member States, Sudan, Switzerland and the United States of America provided technical corrections to the common reporting format in accordance with the mandate of the SBSTA mentioned in paragraph 3 above. The corrections made have not changed the essence or content of the tables of the common reporting format, but rather have improved their layout, consistency and clarity.

**Draft decision --/CP.5**

**Communications from Parties included in Annex I to the Convention:  
guidelines and schedule**

*The Conference of the Parties,*

*Recalling* the relevant provisions of the United Nations Framework Convention on Climate Change, in particular, Article 4, Article 10, paragraph 2, and Article 12,

*Recalling* its decisions 3/CP.1 on preparation and submission of national communications from Parties included in Annex I to the Convention, 4/CP.1 on methodological issues, 9/CP.2 on communications from Parties included in Annex I to the Convention: guidelines, schedule and process for consideration, and 11/CP.4 on national communications from Parties included in Annex I to the Convention,

*Recognizing* that anthropogenic emissions by sources and removals by sinks of greenhouse gases not controlled by the Montreal Protocol should be reported in a transparent, consistent, comparable, complete and accurate way,

*Noting* that the revised guidelines for the preparation of national communications by Parties included in Annex I to the Convention, annexed to decision 9/CP.2, need to be updated to improve the transparency, consistency, comparability, completeness and accuracy of the reported national greenhouse gas inventories and other information,

*Noting* the ongoing process of improvement in guidance to Parties on the reporting of GHG inventories, in particular the work of the IPCC related to uncertainties and *good practices*,

1. *Decides* to adopt 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, contained in the annex to this decision;

2. *Decides* that Parties included in Annex I to the Convention should use the UNFCCC guidelines on annual inventories for reporting inventories due by 15 April each year, beginning in the year 2000;

3. *Invites* Parties included in Annex I to the Convention to submit separately, by 1 July 2001, information to the secretariat on experiences with using the guidelines, in particular the common reporting format, in the years 2000-2001;

4. *Requests* the secretariat to prepare a report on the use of the guidelines, in particular the common reporting format, taking into account, *inter alia*, experiences gained by Parties in using the guidelines, and by the secretariat in processing the common reporting format, and input from the IPCC, for consideration by the SBSTA at its fifteenth session in considering possible revisions to the guidelines; and

5. *Decides* that revisions to these guidelines, particularly the common reporting format, shall be considered by the SBSTA at its fifteenth session with a view to submitting a decision for adoption at COP 7.



**Annex I to the draft decision**

**GUIDELINES FOR THE PREPARATION OF NATIONAL COMMUNICATIONS  
BY PARTIES INCLUDED IN ANNEX I TO THE CONVENTION**

**PART I:**

**UNFCCC REPORTING GUIDELINES ON ANNUAL INVENTORIES**

**A. Objectives**

1. The objectives of the UNFCCC reporting guidelines on annual inventories are:
  - (a) To assist Annex I Parties in meeting their commitments under Articles 4 and 12 of the Convention and in preparing to meet possible future commitments under Articles 3, 5 and 7 of the Kyoto Protocol;
  - (b) To facilitate the process of considering annual national inventories and national inventories included in national communications, including the preparation of technical analysis and synthesis documentation; and
  - (c) To facilitate the process of verification and technical assessment and expert review of the inventory information.

**B. Principles and definitions**

2. National greenhouse gas inventories, referred to below only as inventories, should be transparent, consistent, comparable, complete and accurate.
3. Inventories should be prepared using comparable methodologies agreed upon by the Conference of the Parties (COP), as indicated in paragraph 7 below, and any *good practices*<sup>1</sup> agreed upon by the COP at a future session.
4. In the context of these UNFCCC reporting guidelines on annual inventories:

Transparency means that the assumptions and methodologies used for an inventory

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<sup>1</sup> The Intergovernmental Panel on Climate Change (IPCC) is currently developing guidance on *good practices* as part of its work related to uncertainties in inventories. This guidance may be available for consideration by the Subsidiary Body for Scientific and Technological Advice (SBSTA) in 2000. Guidance on *good practices* may include, *inter alia*, advice on the choice of methodology, emission factors, activity data, and uncertainties, and on a series of quality assessment and quality control procedures which may be applied during the preparation of inventories.

should be clearly explained to facilitate replication and assessment of the inventory by users of the reported information. The transparency of inventories is fundamental to the success of the process for the communication and consideration of information;

Consistency means that an inventory should be internally consistent in all its elements with inventories of other years. An inventory is consistent if the same methodologies are used for the base and all subsequent years and if consistent data sets are used to estimate emissions or removals from sources or sinks. Under certain circumstances referred to in paragraphs 10 and 11, an inventory using different methodologies for different years can be considered to be consistent if it has been recalculated in a transparent manner, taking into account any good practices;

Comparability means that estimates of emissions and removals reported by Parties in inventories should be comparable among Parties. For this purpose, Parties should use the methodologies and formats agreed by the COP for estimating and reporting inventories. The allocation of different source/sink categories should follow the split of the Revised 1996 Intergovernmental Panel on Climate Change Guidelines for National Greenhouse Gas Inventories, at the level of its summary and sectoral tables.

Completeness means that an inventory covers all sources and sinks, as well as all gases, included in the Revised 1996 Intergovernmental Panel on Climate Change Guidelines for National Greenhouse Gas Inventories, as well as other existing relevant source/sink categories which are specific to individual Parties, and therefore may not be included in the IPCC Guidelines. Completeness also means full geographic coverage of sources and sinks of a Party.<sup>2</sup>

Accuracy is a relative measure of the exactness of an emission or removal estimate. Estimates should be accurate in the sense that they are systematically neither over or under true emissions or removals, as far as can be judged, and that uncertainties are reduced as far as practicable. Appropriate methodologies conforming to guidance on *good practices* should be used to promote *accuracy* in inventories.

### **C. Scope**

5. These UNFCCC reporting guidelines on annual inventories cover the estimation and reporting of greenhouse gas emissions and removals of both annual inventories and inventories included in national communications, as specified by decision 11/CP.4 and other relevant decisions of the COP.

### **D. Base year**

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<sup>2</sup> According to the instruments of ratification, acceptance, approval or accession of the Convention by a given Party.

6. The year 1990 should be the base year for the estimation and reporting of inventories. According to the provisions of Article 4.6 of the Convention and decisions 9/CP.2 and 11/CP.4, the following Annex I Parties that are undergoing the process of transition to a market economy, are allowed to use a base year or a period of years other than 1990, as follows:

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

### **E. Methods**

#### **Methodology**

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

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

#### **Good practices**

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

### Recalculations

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

11. However, in some cases activity data may be missing for some historical years, including the base year. In this case, emissions or removals for these years may need to be recalculated with alternative methodologies. In these instances, Parties should demonstrate that the time-series is consistent. The alternative methodologies should be documented in a transparent manner, taking into account any *good practices*.

### Uncertainties

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

## **F. Reporting**

### 1. General guidance

#### Estimates of emissions and removals

13. Article 12.1(a) of the Convention requires that each Party shall communicate to the COP, through the secretariat, *inter alia*, a national inventory of anthropogenic emissions by sources and removals by sinks of all greenhouse gases not controlled by the Montreal Protocol. At a minimum, inventories shall contain information on the following six greenhouse gases: carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), nitrous oxide (N<sub>2</sub>O), perfluorocarbons (PFCs), hydrofluorocarbons (HFCs), and sulphur hexafluoride (SF<sub>6</sub>). Parties should report emissions and removals of any other greenhouse gases whose 100-year global warming potential (GWP) values have been identified by the IPCC and adopted by the COP. Parties should also provide information on the following indirect greenhouse gases: carbon monoxide (CO), nitrogen oxides (NO<sub>x</sub>) and non-methane volatile organic compounds (NMVOCs). Parties are encouraged to provide information on sulphur oxides (SO<sub>x</sub>).

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

each relevant chemical in the category on a disaggregated basis except in cases where paragraph 19 applies.

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

16. Consistent with decision 2/CP.3, Parties should report actual emissions of HFCs, PFCs and SF<sub>6</sub>, where data are available, providing disaggregated data by chemical (for example, HFC-134a) and source category in units of mass and in CO<sub>2</sub> equivalents. Parties should make every effort to develop the necessary sources of data for reporting actual emissions. For the source categories where the concept of potential emissions applies, and Parties do not yet have the necessary data to calculate actual emissions, Parties should report disaggregated potential emissions. 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.

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

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

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

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<sup>3</sup> CO<sub>2</sub> equivalent emissions should be provided at a level of disaggregation similar to summary table 7A of the IPCC Guidelines.

### Recalculations

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

### Completeness

21. Where methodological or data gaps in inventories exist, information on these gaps should be presented in a transparent manner. Parties should clearly indicate the sources and sinks not considered in their inventories but included in the IPCC Guidelines, and explain the reason for the exclusion. In addition, Parties should use the standard indicators presented below to fill the blanks in all the tables of an inventory. This approach facilitates assessment of the completeness of an inventory. The standard indicators are as follows:

(a) "NO" (not occurring) for emissions by sources and removals by sinks of greenhouse gases that do not occur for a particular gas or source/sink category within a country;

(b) "NE" (not estimated) for existing emissions by sources and removals by sinks of greenhouse gases which have not been estimated. Where "NE" is used in an inventory for emissions or removals of CO<sub>2</sub>, N<sub>2</sub>O, CH<sub>4</sub>, HFCs, PFCs, or SF<sub>6</sub>, the Party should indicate, using the completeness table of the common reporting format, why emissions could not be estimated;

(c) "NA" (not applicable) for activities in a given source/sink category that do not result in emissions or removals of a specific gas. If categories in the common reporting format for which "NA" is applicable are shaded, they do not need to be filled in;

(d) "IE" (included elsewhere) for emissions by sources and removals by sinks of greenhouse gases estimated but included elsewhere in the inventory instead of the expected source/sink category. Where "IE" is used in an inventory, the Party should indicate, using the completeness table of the common reporting format, where in the inventory the emissions or removals from the displaced source/sink category have been included and the Party should give the reasons for this inclusion deviating from the expected category;

(e) "C" (confidential) for emissions by sources and removals by sinks of greenhouse

gases which could lead to the disclosure of confidential information, given the provisions of paragraph 19 above; and

(f) "0" for emissions by sources and removals by sinks of greenhouse gases which are estimated to be less than one half the unit being used to record the inventory table, and which therefore appear as zero after rounding. The amount should still be included in the national totals and any relevant subtotals.<sup>4,5</sup> In the sectoral background tables of the common reporting format Parties should provide data as detailed as methods allow.

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

#### Verification<sup>6</sup>

23. In accordance with the IPCC Guidelines, and for verification purposes, Parties should compare their national estimates of carbon dioxide emissions from *fuel combustion* with those estimates obtained using the IPCC reference approach, and report on them in annual inventories. Parties are also encouraged to report on any peer review of their inventory conducted nationally.

#### Uncertainties<sup>7</sup>

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

#### Adjustments

25. Inventories are to be reported without adjustments related, for example, to climate

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<sup>4</sup> The level of detail appropriate to very small source/sink categories is under consideration by the IPCC in its work on *good practices* and Parties should use any guidance which is subsequently agreed by the COP.

<sup>5</sup> With this procedure it is possible that sums of all sectoral tables will differ slightly from sums of summary tables because of rounding effects.

<sup>6</sup> The SBSTA may wish to consider this issue when more data are available or on completion of the development of guidance on *good practices* by the IPCC and, as appropriate, expand this section in any subsequent revisions to these guidelines.

<sup>7</sup> More rigorous requirements for reporting uncertainties may be adopted by the COP once the ongoing work of the IPCC on this matter is completed.

variations or trade patterns of electricity. If Parties, in addition, carry out such adjustments to inventory data, they should be reported separately and in a transparent manner, with clear indications of the method followed.

26. Adjustments are regarded as important information in relation to the monitoring of emission and removal trends and the performance of national policies and measures. Individual Parties may choose whether adjustments are applied, in addition to reporting unadjusted inventory data, and if so, indicate which methods are chosen. Parties are further encouraged to share with others their experience with the application of adjustments.

## 2. Common reporting format

27. Parties shall submit annually to the Conference of the Parties, through the secretariat, the information required under the common reporting format as contained in the annex to these guidelines. This information shall be submitted on an annual basis for the last but one year prior to the year of submission, in accordance with paragraph 5. It should be formally submitted in both electronic form and hard copy. The common reporting format is part of the national inventory report referred to in section 3 below.

28. The common reporting format is a standardized format for reporting estimates of greenhouse gas emissions and removals and other relevant information. It will be provided to Parties by the secretariat and will also be available on the UNFCCC Web site. The common reporting format allows for the improved handling of electronic submissions and facilitates the processing of inventory information and the preparation of useful technical analysis and synthesis documentation.

29. The common reporting format consists of:

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



30. The common reporting format follows the source/sink category split of the IPCC sectoral tables. It provides a minimum set of information on methods, aggregate emission factors, and activity data, as well as relevant assumptions that underlie the estimates given in the sectoral tables.

31. The information provided by the common reporting format is aimed at enhancing the comparability and transparency of inventories by facilitating, *inter alia*, activity data and aggregate emission factor cross-comparisons among Parties, and easy identification of possible mistakes, misunderstandings and omissions in the inventories.

### 3. National inventory report

32. Parties shall submit to the Conference of the Parties, through the secretariat, a national inventory report containing detailed and complete information on their inventories for all years from the base year to the year of the current annual inventory submission, in order to ensure the transparency of the inventory.

33. The national inventory report shall be submitted annually in its entirety to the Conference of the Parties, through the secretariat, in accordance with relevant decisions of the COP, either as a printed document or electronically and should be updated annually to reflect changes. It should include:

(a) The annual inventory information, submitted in accordance with paragraph 27, for all years from the base year<sup>8</sup> to the year of the current annual inventory submission;

(b) Calculation sheets<sup>9</sup> or equivalent database information on detailed inventory calculations in each sector, for all years from the base year to the year of the current annual inventory submission, containing, *inter alia*, disaggregated national emission factors and activity data underlying the estimates;

(c) A description of the specific methodologies and assumptions used in each sector, including an indication of the level of complexity (IPCC tiers) applied and a description of any national methodology used by the Party, as well as information on anticipated future improvements in methodologies;

(d) References or sources of information related to methodologies, emission factors

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<sup>8</sup> According to the provisions of Article 4.6 of the Convention and decisions 9/CP.2 and 11/CP.4, some Parties with economies in transition are allowed to use base years other than 1990, as mentioned in paragraph 7 above.

<sup>9</sup> Calculation sheets or equivalent database information according to the IPCC Guidelines, CORINAIR or national methods.

and activity data, as well as the rationale for their selection;

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

(f) Specific information on feedstocks and bunkers:

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

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

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

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

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

(j) A separate section clearly identifying changes with respect to the previous years, including the changes in methodologies, sources of information and assumptions, as well as changes in response to the review process;

34. Parties shall publish their national inventory report. Parties may fulfil that obligation by keeping the national inventory report in its entirety on their national Web sites.

#### **G. Record keeping**

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

issues. Parties are encouraged to collect and gather the information in a single national inventory facility or to, at least, keep the number of facilities to a minimum.

#### **H. Systematic updating of the guidelines**

36. Relevant future decisions, once taken by the COP, regarding the reporting of inventories under the Convention should be applied *mutatis mutandis* to these UNFCCC reporting guidelines on inventories, which will be updated accordingly.

#### **I. Language**

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

**Table 1: 1995 IPCC global warming potential (GWP) values<sup>10</sup> based on the effects of greenhouse gases over a 100-year time horizon**

Greenhouse gas	Chemical formula	1995 IPCC GWP
Carbon dioxide	CO <sub>2</sub>	1
Methane	CH <sub>4</sub>	21
Nitrous oxide	N <sub>2</sub> O	310
Hydrofluorocarbons (HFCs)		
HFC-23	CHF <sub>3</sub>	11700
HFC-32	CH <sub>2</sub> F <sub>2</sub>	650
HFC-41	CH <sub>3</sub> F	150
HFC-43-10mee	C <sub>5</sub> H <sub>2</sub> F <sub>10</sub>	1300
HFC-125	C <sub>2</sub> HF <sub>5</sub>	2800
HFC-134	C <sub>2</sub> H <sub>2</sub> F <sub>4</sub> (CHF <sub>2</sub> CHF <sub>2</sub> )	1000
HFC-134a	C <sub>2</sub> H <sub>2</sub> F <sub>4</sub> (CH <sub>2</sub> FCF <sub>3</sub> )	1300
HFC-152a	C <sub>2</sub> H <sub>4</sub> F <sub>2</sub> (CH <sub>3</sub> CHF <sub>2</sub> )	140
HFC-143	C <sub>2</sub> H <sub>3</sub> F <sub>3</sub> (CHF <sub>2</sub> CH <sub>2</sub> F)	300
HFC-143a	C <sub>2</sub> H <sub>3</sub> F <sub>3</sub> (CF <sub>3</sub> CH <sub>3</sub> )	3800
HFC-227ea	C <sub>3</sub> HF <sub>7</sub>	2900
HFC-236fa	C <sub>3</sub> H <sub>2</sub> F <sub>6</sub>	6300
HFC-245ca	C <sub>3</sub> H <sub>3</sub> F <sub>5</sub>	560
Perfluorocarbons		
Perfluoromethane	CF <sub>4</sub>	6500
Perfluoroethane	C <sub>2</sub> F <sub>6</sub>	9200
Perfluoropropane	C <sub>3</sub> F <sub>8</sub>	7000
Perfluorobutane	C <sub>4</sub> F <sub>10</sub>	7000
Perfluorocyclobutane	c-C <sub>4</sub> F <sub>8</sub>	8700
Perfluoropentane	C <sub>5</sub> F <sub>12</sub>	7500
Perfluorohexane	C <sub>6</sub> F <sub>14</sub>	7400
Sulphur hexafluoride	SF <sub>6</sub>	23900

<sup>10</sup> As provided by the IPCC in its Second Assessment Report.

**Annex II to the draft decision**

**COMMON REPORTING FORMAT**  
**(Annex to the UNFCCC reporting guidelines on annual inventories)**

**Notes on the common reporting format**

1. This common reporting format consists of summary, reporting and overview tables from the Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories (IPCC Guidelines), plus newly developed sectoral background tables. Users of IPCC software and of the software for converting from CORINAIR to IPCC formats should be aware that a few small additions have been made to the tables taken from the IPCC Guidelines.
2. Some sectoral background tables call for the calculation of *implied emission factors*. These are top-down ratios between the Party's emissions estimate and aggregate activity data. The implied emission factors 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.
3. Consistent with the IPCC Guidelines, memo items, such as emissions estimates from international marine and aviation bunker fuels, should be reported in the appropriate tables, but not included in national totals.
4. Parties should use the documentation boxes provided at the foot of the sectoral background tables to improve clarity.
5. Parties should complete all cells calling for emissions or removals estimates, activity data or emission factors. The following standard indicators should be used where data are not entered.
  - (a) "NO" (not occurring) for emissions by sources and removals by sinks of greenhouse gases that do not occur for a particular gas or source/sink category within a country;
  - (b) "NE" (not estimated) for existing emissions by sources and removal by sinks of greenhouse gases which have not been estimated. Where "NE" is used in an inventory for emissions or removals of CO<sub>2</sub>, N<sub>2</sub>O, CH<sub>4</sub>, HFCs, PFCs, or SF<sub>6</sub>, the Party should indicate, using the completeness table 9, why emissions could not be estimated;
  - (c) "NA" (not applicable) for activities in a given source/sink category that do not result in emissions or removals of a specific gas. If categories in the common reporting format for which "NA" is applicable are shaded, they do not need to be filled in;

(d) "IE" (included elsewhere) for emissions by sources and removals by sinks of greenhouse gases estimated but included elsewhere in the inventory instead of the expected source/sink category. Where "IE" is used in an inventory, the Party should indicate using the completeness table 9, where in the inventory the emissions or removals from the displaced source/sink category have been included and the Party should give the reasons for this inclusion deviating from the expected category;

(e) "C" (confidential) for emissions by sources and removals by sinks of greenhouse gases which could lead to the disclosure of confidential information, given the provisions of paragraph 19 of the UNFCCC reporting guidelines on annual inventories;

(f) "0" for emissions by sources and removals by sinks of greenhouse gases which are estimated to be less than one half the unit being used to record the inventory table, and which would therefore appear as zero after rounding. The amount should still be included in the relevant subtotals. In the sectoral background tables, Parties should provide data as detailed as methods allow.

6. 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".

7. 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. The species and ecosystem types given in the background tables are examples and may be changed by Parties to better describe national circumstances. Parties which do not use the sectoral background tables 5 A-D should complete alternative formats, when they are available.

8. Neither the order nor the notation of columns, rows or cells should be changed in the tables because this will complicate data compilation. Any additions to the existing disaggregation of source and sink categories should be made using the spare rows and columns provided. Additional changes that are made should be clearly indicated both by using a red font and by underlining the information contained in changed cells.

9. Where recalculations of previously submitted data are necessary for the reasons set out in paragraphs 10 and 11 of the UNFCCC reporting guidelines on annual inventories, Parties should complete recalculation table 8a for every year from the base year, and table 8b. Parties should also complete the other tables of the common reporting format for the base year which have changed due to the recalculations.

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**Explanatory note:**

In order to avoid changes to the layout of the complex tables of the common reporting format, the tables have not been translated. The common reporting format 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.

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

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO <sub>2</sub> emissions	CO <sub>2</sub> removals	CH <sub>4</sub>	N <sub>2</sub> O	HFCs <sup>(1)</sup>			PFCs <sup>(1)</sup>			SF <sub>6</sub> <sup>(1)</sup>		NO <sub>x</sub>	CO	NMVOC	SO <sub>2</sub>		
					CO <sub>2</sub> equivalent (Gg)						(Gg)						(Gg)	
					P	A	P	A	P	A	P	A					P	A
<b>Total National Emissions and Removals</b>																		
<b>1. Energy</b>																		
A. Fuel Combustion																		
Reference Approach <sup>(2)</sup>																		
Sectoral Approach <sup>(2)</sup>																		
1. Energy Industries																		
2. Manufacturing Industries and																		
3. Transport																		
4. Other Sectors																		
5. Other																		
B. Fugitive Emissions from Fuels																		
1. Solid Fuels																		
2. Oil and Natural Gas																		
<b>2. Industrial Processes</b>																		
A. Mineral Products																		
B. Chemical Industry																		
C. Metal Production																		
D. Other Production <sup>(3)</sup>																		
E. Production of Halocarbons and SF <sub>6</sub>																		
F. Consumption of Halocarbons and SF <sub>6</sub>																		
G. Other																		

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

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

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

<sup>(2)</sup> 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. Where possible, the calculations using the Sectoral approach should be used for estimating national totals. Do not include the results of both the Reference approach and the Sectoral approach in national totals.

<sup>(3)</sup> Other Production includes Pulp and Paper and Food and Drink Production.

**Note:** The numbering of footnotes to all tables containing more than one sheet continue to the next sheet. Common footnotes are given only once at the first point of reference.

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

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO <sub>2</sub> emissions	CO <sub>2</sub> removals	CH <sub>4</sub>	N <sub>2</sub> O	HFCs <sup>(1)</sup>		PFCs <sup>(1)</sup>		SF <sub>6</sub>		NO <sub>x</sub>	CO	NMVOC	SO <sub>2</sub>
					P	A	P	A	P	A				
					CO <sub>2</sub> equivalent (Gg)									
<b>3. Solvent and Other Product Use</b>														
<b>4. Agriculture</b>														
A. Enteric Fermentation														
B. Manure Management														
C. Rice Cultivation														
D. Agricultural Soils	(6)	(6)												
E. Prescribed Burning of Savannas														
F. Field Burning of Agricultural Residues														
G. Other														
<b>5. Land-Use Change and Forestry</b>	(5)	(5)												
A. Changes in Forest and Other Woody Biomass Stocks	(5)	(5)												
B. Forest and Grassland Conversion														
C. Abandonment of Managed Lands	(5)	(5)												
D. CO <sub>2</sub> Emissions and Removals from Soil	(5)	(5)												
E. Other														
<b>6. Waste</b>														
A. Solid Waste Disposal on Land	(6)													
B. Wastewater Handling														
C. Waste Incineration	(6)													
D. Other														
<b>7. Other (please specify)</b>														

<sup>(1)</sup> According to the IPCC Guidelines (Volume 3. Reference Manual, pp. 4.2, 4.87), CO<sub>2</sub> 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<sub>2</sub> 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 inserting explanatory footnotes in the corresponding cells of Summary 1.A and Summary 1.B. Double-counting of these emissions or removals should be avoided. Parties should include these emissions or removals consistently in Table 8(a) (Recalculation - Recalculated data) and Table 10 (Emission trends).

<sup>(5)</sup> Please do not provide an estimate of both CO<sub>2</sub> emissions and CO<sub>2</sub> removals. "Net" emissions (emissions - removals) of CO<sub>2</sub> should be estimated and a single number placed in either the CO<sub>2</sub> emissions or CO<sub>2</sub> removals column, as appropriate. Please note that for the purposes of reporting, the signs for uptake are always (-) and for emissions (+).

<sup>(6)</sup> Note that CO<sub>2</sub> from Waste Disposal and Incineration source categories should only be included if it stems from non-biogenic or inorganic waste streams.

Year :

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

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO <sub>2</sub> emissions	CO <sub>2</sub> removals	CH <sub>4</sub>	N <sub>2</sub> O	HFCs		PFCs		SF <sub>6</sub>		NO <sub>x</sub>	CO	NMVOC	SO <sub>2</sub>	
					P	A	P	A	P	A					
(Gg)															
CO <sub>2</sub> equivalent (Gg)															
<b>Memo Items: <sup>(7)</sup></b>															
<b>International Bunkers</b>															
Aviation															
Marine															
<b>Multilateral Operations</b>															
<b>CO<sub>2</sub> Emissions from Biomass</b>															

<sup>(7)</sup> Memo Items are not included in the national totals.

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

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO <sub>2</sub> emissions	CO <sub>2</sub> removals	CH <sub>4</sub>	N <sub>2</sub> O	HFCs <sup>(1)</sup>		PFCs <sup>(1)</sup>		SF <sub>6</sub>		NO <sub>x</sub>	CO	NMVOC	SO <sub>2</sub>
					P	A	P	A	P	A				
					CO <sub>2</sub> equivalent (Gg)									
<b>Total National Emissions and Removals</b>														
<b>1. Energy</b>														
A. Fuel Combustion														
Reference Approach <sup>(2)</sup>														
Sectoral Approach <sup>(2)</sup>														
B. Fugitive Emissions from Fuels														
<b>2. Industrial Processes</b>														
<b>3. Solvent and Other Product Use</b>														
<b>4. Agriculture<sup>(3)</sup></b>														
<b>5. Land-Use Change and Forestry<sup>(4)</sup></b>														
<b>6. Waste</b>														
<b>7. Other</b>														
<b>Memo Items:</b>														
<b>International Bunkers</b>														
Aviation														
Marine														
<b>Multilateral Operations</b>														
<b>CO<sub>2</sub> Emissions from Biomass</b>														

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

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

<sup>(1)</sup> The emissions of HFCs and PFCs are to be expressed as CO<sub>2</sub> equivalent emissions. Data on disaggregated emissions of HFCs and PFCs are to be provided in Table 2(H) of this common reporting format.

<sup>(2)</sup> 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. Where possible, the calculations using the Sectoral approach should be used for estimating national totals. Do not include the results of both the Reference approach and the Sectoral approach in national totals.

<sup>(3)</sup> See footnote 4 to Summary 1.A.

<sup>(4)</sup> Please do not provide an estimate of both CO<sub>2</sub> emissions and CO<sub>2</sub> removals. "Net" emissions (emissions - removals) of CO<sub>2</sub> should be estimated and a single number placed in either the CO<sub>2</sub> emissions or CO<sub>2</sub> 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<sub>2</sub> EQUIVALENT EMISSIONS

(Sheet 1 of 1)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO <sub>2</sub> <sup>(1)</sup>	CH <sub>4</sub>	N <sub>2</sub> O	HFCs	PFCs	SF <sub>6</sub>	Total
	CO <sub>2</sub> equivalent (Gg)						
<b>Total (Net Emissions)<sup>(1)</sup></b>							
<b>1. Energy</b>							
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							
<b>2. Industrial Processes</b>							
A. Mineral Products							
B. Chemical Industry							
C. Metal Production							
D. Other Production							
E. Production of Halocarbons and SF <sub>6</sub>							
F. Consumption of Halocarbons and SF <sub>6</sub>							
G. Other							
<b>3. Solvent and Other Product Use</b>							
<b>4. Agriculture</b>							
A. Enteric Fermentation							
B. Manure Management							
C. Rice Cultivation							
D. Agricultural Soils <sup>(2)</sup>							
E. Prescribed Burning of Savannas							
F. Field Burning of Agricultural Residues							
G. Other							
<b>5. Land-Use Change and Forestry<sup>(1)</sup></b>							
<b>6. Waste</b>							
A. Solid Waste Disposal on Land							
B. Wastewater Handling							
C. Waste Incineration							
D. Other							
<b>7. Other (please specify)</b>							
<b>Memo Items:</b>							
<b>International Bunkers</b>							
Aviation							
Marine							
<b>Multilateral Operations</b>							
<b>CO<sub>2</sub> Emissions from Biomass</b>							

<sup>(1)</sup> For CO<sub>2</sub> emissions from Land-Use Change and Forestry the net emissions are to be reported. Please note that for the purposes of reporting, the signs for uptake are always (-) and for emissions (+).

<sup>(2)</sup> See footnote 4 to Summary 1.A of this common reporting format.

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO <sub>2</sub> emissions	CO <sub>2</sub> removals	Net CO <sub>2</sub> emissions / removals	CH <sub>4</sub>	N <sub>2</sub> O	Total emissions
	CO <sub>2</sub> equivalent (Gg)					
<b>Land-Use Change and Forestry</b>						
A. Changes in Forest and Other Woody Biomass Stocks						
B. Forest and Grassland Conversion						
C. Abandonment of Managed Lands						
D. CO <sub>2</sub> Emissions and Removals from Soil						
E. Other						
<b>Total CO<sub>2</sub> Equivalent Emissions from Land-Use Change and Forestry</b>						
<b>Total CO<sub>2</sub> Equivalent Emissions without Land-Use Change and Forestry<sup>(a)</sup></b>						
<b>Total CO<sub>2</sub> Equivalent Emissions with Land-Use Change and Forestry<sup>(a)</sup></b>						

<sup>(a)</sup> 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.

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

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO <sub>2</sub>		CH <sub>4</sub>		N <sub>2</sub> O		HFCs		PFCs		SF <sub>6</sub>	
	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)
<b>1. Energy</b>												
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												
<b>2. Industrial Processes</b>												
A. Mineral Products												
B. Chemical Industry												
C. Metal Production												
D. Other Production												
E. Production of Halocarbons and SF <sub>6</sub>												
F. Consumption of Halocarbons and SF <sub>6</sub>												
G. Other												

(1) Use the following notation keys to specify the method applied: D (IPCC default), RA (Reference Approach), T1 (IPCC Tier 1), T1a, T1b, T1c (IPCC Tier 1a, Tier 1b and Tier 1c, respectively), T2 (IPCC Tier 2), T3 (IPCC Tier 3), C (CORINAIR), CS (Country Specific), M (Model). If using more than one method, enumerate the relevant methods. Explanations of any modifications to the default IPCC methods, as well as information on the proper use of methods per source category where more than one method is indicated, and explanations on the country specific methods, should be provided in the documentation box of the relevant Sectoral background data table.

(2) Use the following notation keys to specify the emission factor used: D (IPCC default), C (CORINAIR), CS (Country Specific), PS (Plant Specific), M (Model). Where a mix of emission factors has been used, use different notations in one and the same cells with further explanation in the documentation box of the relevant Sectoral background data table.



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

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO <sub>2</sub>		CH <sub>4</sub>		N <sub>2</sub> O		HFCs		PFCs		SF <sub>6</sub>	
	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)
<b>3. Solvent and Other Product Use</b>												
<b>4. Agriculture</b>												
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												
<b>5. Land-Use Change and Forestry</b>												
A. Changes in Forest and Other Woody Biomass Stocks												
B. Forest and Grassland Conversion												
C. Abandonment of Managed Lands												
D. CO <sub>2</sub> Emissions and Removals from Soil												
E. Other												
<b>6. Waste</b>												
A. Solid Waste Disposal on Land												
B. Wastewater Handling												
C. Waste Incineration												
D. Other												
<b>7. Other (please specify)</b>												

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

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO <sub>2</sub>	CH <sub>4</sub>	N <sub>2</sub> O	NO <sub>x</sub>	CO	NMVOC	SO <sub>2</sub>
	(Gg)						
<b>Total Energy</b>							
<b>A. Fuel Combustion Activities (Sectoral Approach)</b>							
<b>1. Energy Industries</b>							
a. Public Electricity and Heat Production							
b. Petroleum Refining							
c. Manufacture of Solid Fuels and Other Energy Industries							
<b>2. Manufacturing Industries and Construction</b>							
a. Iron and Steel							
b. Non-Ferrous Metals							
c. Chemicals							
d. Pulp, Paper and Print							
e. Food Processing, Beverages and Tobacco							
f. Other <i>(please specify)</i>							
<b>3. Transport</b>							
a. Civil Aviation							
b. Road Transportation							
c. Railways							
d. Navigation							
e. Other <i>(please specify)</i>							





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

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	AGGREGATE ACTIVITY DATA		IMPLIED EMISSION FACTORS <sup>(2)</sup>			EMISSIONS		
	Consumption (TJ)	<sup>(1)</sup>	CO <sub>2</sub> (t/TJ)	CH <sub>4</sub> (kg/TJ)	N <sub>2</sub> O (kg/TJ)	CO <sub>2</sub> (Gg)	CH <sub>4</sub> (Gg)	N <sub>2</sub> O (Gg)
<b>I.A. FUEL COMBUSTION</b>								
Liquid Fuels								
Solid Fuels								
Gaseous Fuels								
Biomass								
Other Fuels								
<b>I.A.1. Energy Industries</b>								
Liquid Fuels								
Solid Fuels								
Gaseous Fuels								
Biomass								
Other Fuels								
<b>a. Public Electricity and Heat Production</b>								
Liquid Fuels								
Solid Fuels								
Gaseous Fuels								
Biomass								
Other Fuels								
<b>b. Petroleum Refining</b>								
Liquid Fuels								
Solid Fuels								
Gaseous Fuels								
Biomass								
Other Fuels								
<b>c. Manufacture of Solid Fuels and Other Energy Industries</b>								
Liquid Fuels								
Solid Fuels								
Gaseous Fuels								
Biomass								
Other Fuels								

<sup>(1)</sup> 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 placing a "G" in this column.

<sup>(2)</sup> Accurate estimation of CH<sub>4</sub> and N<sub>2</sub>O 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.

<sup>(3)</sup> Carbon dioxide emissions from biomass are reported under Memo Items. The content of the cells is not included in the totals.

**Note:** For the coverage of fuel categories, please 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, solid, gaseous, biomass, other fuels) in the documentation box or using a footnote.

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

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	AGGREGATE ACTIVITY DATA		IMPLIED EMISSION FACTORS <sup>(2)</sup>				EMISSIONS		
	Consumption (TJ)	Consumption (TJ) <sup>(1)</sup>	CO <sub>2</sub> (t/TJ)	CH <sub>4</sub> (kg/TJ)	N <sub>2</sub> O (kg/TJ)	CO <sub>2</sub> (Gg)	CH <sub>4</sub> (Gg)	N <sub>2</sub> O (Gg)	
									CO <sub>2</sub> (Gg)
<b>1.A.2 Manufacturing Industries and Construction</b>									
Liquid Fuels									
Solid Fuels									
Gaseous Fuels									
Biomass									
Other Fuels									
<b>a. Iron and Steel</b>									
Liquid Fuels									
Solid Fuels									
Gaseous Fuels									
Biomass									
Other Fuels									
<b>b. Non-Ferrous Metals</b>									
Liquid Fuels									
Solid Fuels									
Gaseous Fuels									
Biomass									
Other Fuels									
<b>c. Chemicals</b>									
Liquid Fuels									
Solid Fuels									
Gaseous Fuels									
Biomass									
Other Fuels									
<b>d. Pulp, Paper and Print</b>									
Liquid Fuels									
Solid Fuels									
Gaseous Fuels									
Biomass									
Other Fuels									
<b>e. Food Processing, Beverages and Tobacco</b>									
Liquid Fuels									
Solid Fuels									
Gaseous Fuels									
Biomass									
Other Fuels									
<b>f. Other (please specify)</b>									
Liquid Fuels									
Solid Fuels									
Gaseous Fuels									
Biomass									
Other Fuels									

Year :

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

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	AGGREGATE ACTIVITY DATA		IMPLIED EMISSION FACTORS <sup>(2)</sup>			EMISSIONS		
	Consumption (TJ)	(1)	CO <sub>2</sub> (t/TJ)	CH <sub>4</sub> (kg/TJ)	N <sub>2</sub> O (kg/TJ)	CO <sub>2</sub> (Gg)	CH <sub>4</sub> (Gg)	N <sub>2</sub> O (Gg)
<b>1.A.3 Transport</b>								
Gasoline								
Diesel								
Natural Gas								
Solid Fuels								
Biomass								
Other Fuels <i>(please specify)</i>								
<b>a. Civil Aviation</b>								
Aviation Gasoline								
Jet Kerosene								
<b>b. Road Transportation</b>								
Gasoline								
Diesel Oil								
Natural Gas								
Biomass								
Other Fuels <i>(please specify)</i>								
<b>c. Railways</b>								
Solid Fuels								
Liquid Fuels								
<b>d. Navigation</b>								
Coal								
Residual Oil								
Gas/Diesel Oil								
Other Fuels <i>(please specify)</i>								
<b>e. Other Transportation</b>								
Liquid Fuels								
Solid Fuels								
Gaseous Fuels								

Year :

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

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	AGGREGATE ACTIVITY DATA		IMPLIED EMISSION FACTORS <sup>(2)</sup>				EMISSIONS		
	Consumption (TJ)	<sup>(1)</sup>	CO <sub>2</sub> (t/TJ)	CH <sub>4</sub> (kg/TJ)	N <sub>2</sub> O (kg/TJ)	CO <sub>2</sub> (Gg)	CH <sub>4</sub> (Gg)	N <sub>2</sub> O (Gg)	
<b>I.A.4 Other Sectors</b>									
Liquid Fuels									
Solid Fuels									
Gaseous Fuels									
Biomass									
Other Fuels									
<b>a. Commercial/Institutional</b>									
Liquid Fuels									
Solid Fuels									
Gaseous Fuels									
Biomass									
Other Fuels									
<b>b. Residential</b>									
Liquid Fuels									
Solid Fuels									
Gaseous Fuels									
Biomass									
Other Fuels									
<b>c. Agriculture/Forestry/Fisheries</b>									
Liquid Fuels									
Solid Fuels									
Gaseous Fuels									
Biomass									
Other Fuels									
<b>I.A.5 Other (Not elsewhere specified) <sup>(4)</sup></b>									
Liquid Fuels									
Solid Fuels									
Gaseous Fuels									
Biomass									
Other Fuels									

<sup>(4)</sup> Include military fuel use under this category.

Documentation box:



**TABLE 1.A(c) COMPARISON OF CO<sub>2</sub> EMISSIONS FROM FUEL COMBUSTION**  
(Sheet 1 of 1)

FUEL TYPES	Reference approach		National approach <sup>(1)</sup>		Difference <sup>(2)</sup>	
	Energy consumption (PJ)	CO <sub>2</sub> emissions (Gg)	Energy consumption (PJ)	CO <sub>2</sub> emissions (Gg)	Energy consumption (%)	CO <sub>2</sub> emissions (%)
Liquid Fuels (excluding international bunkers)						
Solid Fuels (excluding international bunkers)						
Gaseous Fuels						
Other <sup>(3)</sup>						
<b>Total <sup>(3)</sup></b>						

<sup>(1)</sup> "National approach" is used to indicate the approach (if different from the Reference approach) followed by the Party to estimate its CO<sub>2</sub> emissions from fuel combustion reported in the national GHG inventory.

<sup>(2)</sup> Difference of the Reference approach over the National approach (i.e. difference = 100% x ((RA-NA)/NA), where NA = National approach and RA = Reference approach).

<sup>(3)</sup> Emissions from biomass are not included.

**Note:** In addition to estimating CO<sub>2</sub> emissions from fuel combustion by sector, Parties should also estimate these emissions using the IPCC Reference approach, as found in the IPCC Guidelines, Worksheet 1-1 (Volume 2, Workbook). The Reference approach is to assist in verifying the sectoral data. Parties should also complete the above tables to compare the alternative estimates, and if the emission estimates lie more than 2 percent apart, should explain the source of this difference in the documentation box provided.

Documentation box:





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

Year :

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA Amount of fuel produced <sup>(1)</sup> (Mt)	IMPLIED EMISSION FACTOR		EMISSIONS	
		CH <sub>4</sub> (kg/t)	CO <sub>2</sub> (kg/t)	CH <sub>4</sub> (Gg)	CO <sub>2</sub> (Gg)
<b>1. B. 1. a. Coal Mining and Handling</b>					
i. Underground Mines <sup>(2)</sup>					
Mining Activities					
Post-Mining Activities					
ii. Surface Mines <sup>(2)</sup>					
Mining Activities					
Post-Mining Activities					
<b>1. B. 1. b. Solid Fuel Transformation</b>					
<b>1. B. 1. c. Other (please specify)<sup>(3)</sup></b>					

**Additional information<sup>(4)</sup>**

Description	Value
Amount of CH <sub>4</sub> drained (recovered) and utilized or flared (Gg)	
Number of active underground mines	
Number of mines with drainage (recovery) systems	

<sup>(4)</sup> For underground mines.

<sup>(1)</sup> Use the documentation box to specify whether the fuel amount is based on the run-of-mine (ROM) production or on the saleable production.

<sup>(2)</sup> Emissions both for Mining Activities and Post-Mining Activities are calculated with the activity data in lines Underground Mines and Surface Mines respectively.

<sup>(3)</sup> Use the "Other" rows to enter any other solid fuel related activities resulting in fugitive emissions, such as emissions from abandoned mines and waste piles.

**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 (IE) and make a reference in Table 9 (completeness) and/or in the documentation box.

Documentation box:

Year :

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

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

<sup>(a)</sup> In the context of oil and gas production, throughput is a measure of the total production, such as barrels per day of oil, or cubic meters of gas per year. Specify the units of the reported value. Take into account that these values should be consistent with the activity data reported under the production rows of the main table.

<sup>(1)</sup> Specify the activity data used and fill in the activity data description column, as given in the examples in brackets. Use the document box to specify whether the fuel amount is based on the raw material production or on the saleable production. Note cases where more than one variable is used as activity data.

<sup>(2)</sup> The unit of the implied emission factor depends on the units of the activity data used. The most common unit is given as an example (kg/PJ) but for each case the real unit of the emission factor should be specified.

<sup>(3)</sup> 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.

<sup>(4)</sup> If using default emission factors these categories will include emissions from production other than venting and flaring.

<sup>(5)</sup> If using default emission factors, emissions from Venting and Flaring from all oil and gas production should be accounted for here. Parties using the IPCC software could report these emissions together, indicating so in the documentation box.

<sup>(6)</sup> For example, fugitive CO<sub>2</sub> emissions from production of geothermal power could be reported here.

Documentation box:

Year :

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

**Additional information**

Fuel consumption	Allocation <sup>(a)</sup> (percent)	
	Domestic	International
Marine		
Aviation		

<sup>(a)</sup> For calculating the allocation of fuel consumption, use the sums of fuel consumption by domestic navigation and aviation (Table 1.A(a)) and by international bunkers (Table 1.C).

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA	IMPLIED EMISSION FACTORS			EMISSIONS			
		Consumption (TJ)	CO <sub>2</sub> (t/TJ)	CH <sub>4</sub> (kg/TJ)	N <sub>2</sub> O (kg/TJ)	CO <sub>2</sub> (Gg)	CH <sub>4</sub> (Gg)	N <sub>2</sub> O (Gg)
<b>Marine Bunkers</b>								
Gasoline								
Gas/Diesel Oil								
Residual Fuel Oil								
Lubricants								
Coal								
Other (please specify)								
<b>Aviation Bunkers</b>								
Jet Kerosene								
Gasoline								
<b>Multilateral Operations <sup>(1)</sup></b>								

<sup>(1)</sup> Parties may choose to report or not report the activity data and emission factors for multilateral operation consistent with the principle of confidentiality stated in the UNFCCC reporting guidelines on inventories. 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:** Please explain how the consumption of international marine and aviation bunkers fuels was estimated and separated from the domestic consumption.

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

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO <sub>2</sub>	CH <sub>4</sub>	N <sub>2</sub> O	HFCs <sup>(1)</sup>		PFCs <sup>(1)</sup>		SF <sub>6</sub>		NO <sub>x</sub>	CO	NMVOC	SO <sub>2</sub>								
	(Gg)																				
Total Industrial Processes	CO <sub>2</sub>		CH <sub>4</sub>		N <sub>2</sub> O		HFCs <sup>(1)</sup>		PFCs <sup>(1)</sup>		SF <sub>6</sub>		NO <sub>x</sub>		CO		NMVOC		SO <sub>2</sub>		
A. Mineral Products	CO <sub>2</sub>		CH <sub>4</sub>		N <sub>2</sub> O		HFCs <sup>(1)</sup>		PFCs <sup>(1)</sup>		SF <sub>6</sub>		NO <sub>x</sub>		CO		NMVOC		SO <sub>2</sub>		
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 (please specify)																					
<b>B. Chemical Industry</b>																					
1. Ammonia Production																					
2. Nitric Acid Production																					
3. Adipic Acid Production																					
4. Carbide Production																					
5. Other (please specify)																					
<b>C. Metal Production</b>																					
1. Iron and Steel Production																					
2. Ferroalloys Production																					
3. Aluminium Production																					
4. SF <sub>6</sub> Used in Aluminium and Magnesium Foundries																					
5. 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 in sectors where methods exist for both tiers.

<sup>(1)</sup> The emissions of HFCs and PFCs are to be expressed as CO<sub>2</sub> 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)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO <sub>2</sub>	CH <sub>4</sub>	N <sub>2</sub> O	HFCs <sup>(1)</sup>		PFCs <sup>(1)</sup>		SF <sub>6</sub>		NO <sub>x</sub>	CO	NMVOC	SO <sub>2</sub>
				P	A	P	A	P	A				
(Gg)													
D. Other Production													
1. Pulp and Paper													
2. Food and Drink <sup>(2)</sup>													
E. Production of Halocarbons and SF <sub>6</sub>													
1. By-product Emissions													
Production of HCFC-22													
Other													
2. Fugitive Emissions													
3. Other (please specify)													
F. Consumption of Halocarbons and SF <sub>6</sub>													
1. Refrigeration and Air Conditioning Equipment													
2. Foam Blowing													
3. Fire Extinguishers													
4. Aerosols/ Metered Dose Inhalers													
5. Solvents													
6. Semiconductor Manufacture													
7. Electrical Equipment													
8. Other (please specify)													
G. Other (please specify)													

<sup>(2)</sup> CO<sub>2</sub> from Food and Drink Production (e.g. gasification of water) can be of biogenic or non-biogenic origin. Only information on CO<sub>2</sub> emissions of non-biogenic origin should be reported.







Year :

**TABLE 2(II) SECTORAL REPORT FOR INDUSTRIAL PROCESSES - EMISSIONS OF HFCs, PFCs AND SF<sub>6</sub>**

(Sheet 1 of 2)

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	Total HFCs <sup>(1)</sup>	CF <sub>4</sub>	C <sub>2</sub> F <sub>6</sub>	C <sub>3</sub> F <sub>8</sub>	C <sub>4</sub> F <sub>10</sub>	C-C <sub>4</sub> F <sub>8</sub>	C <sub>5</sub> F <sub>12</sub>	C <sub>6</sub> F <sub>14</sub>	Total PFCs <sup>(1)</sup>	SF <sub>6</sub>		
	(2)																								
<b>Total Actual Emissions of Halocarbons (by chemical) and SF<sub>6</sub></b>																									
<b>C. Metal Production</b>																									
Aluminium Production																									
SF <sub>6</sub> Used in Aluminium Foundries																									
SF <sub>6</sub> Used in Magnesium Foundries																									
<b>E. Production of Halocarbons and SF<sub>6</sub></b>																									
1. By-product Emissions																									
Production of HCFC-22																									
Other																									
2. Fugitive Emissions																									
3. Other (please specify)																									
<b>F(a). Consumption of Halocarbons and SF<sub>6</sub> (actual emissions - Tier 2)</b>																									
1. Refrigeration and Air Conditioning Equipment																									
2. Foam Blowing																									
3. Fire Extinguishers																									
4. Aerosols/Metered Dose Inhalers																									
5. Solvents																									
6. Semiconductor Manufacture																									
7. Electrical Equipment																									
8. Other (please specify)																									
<b>G. Other (please specify)</b>																									

<sup>(1)</sup> Although shaded, the columns with HFCs and PFCs totals on sheet 1 are kept for consistency with sheet 2 of the table.

<sup>(2)</sup> 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:** Where information is confidential the entries should provide aggregate figures but there should be a note indicating this in the relevant documentation boxes of the Sectoral background data tables or as a footnote to this table. Gases with GWP not yet agreed upon by the COP, should be reported in Table 9 (Completeness), sheet 2.







**TABLE 2(II).F SECTORAL BACKGROUND DATA FOR INDUSTRIAL PROCESSES**  
**Consumption of Halocarbons and SF<sub>6</sub>**  
**(Sheet 1 of 2)**

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA			IMPLIED EMISSION FACTORS			EMISSIONS		
	Filled in new manufactured products	Amount of fluid in operating systems (average annual stocks) (t)	Remained in products at decommissioning (1)	Product manufacturing factor	Product life factor (% per annum)	Disposal loss factor	From manufacturing	From stocks	From disposal
<b>1 Refrigeration</b>									
Air Conditioning Equipment									
Domestic Refrigeration									
<i>(specify chemical)<sup>(2)</sup></i>									
<i>(e.g. HFC-32)</i>									
<i>(e.g. HFC-125)</i>									
<i>(e.g. HFC-134a)</i>									
<i>(e.g. HFC-152a)</i>									
<i>(e.g. HFC-143a)</i>									
Commercial Refrigeration									
Transport Refrigeration									
Industrial Refrigeration									
Stationary Air-Conditioning									
Mobile Air-Conditioning									
<b>2 Foam Blowing</b>									
Hard Foam									
Soft Foam									

(1) Parties should use the documentation box to provide information on the amount of the chemical recovered (recovery efficiency) and other relevant information used in the emission estimation.

(2) Use the rows left empty to specify the chemical consumed, as given in the example. If needed, new rows could be added for reporting the disaggregated chemicals from a source.

**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<sub>6</sub> 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 their 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 in the documentation box. Data these Parties should provide includes (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. Alternatively, Parties may provide alternative formats with equivalent information. These formats may be considered for future versions of the common reporting format after the trial period.

Year :

**TABLE 2(II).F SECTORAL BACKGROUND DATA FOR INDUSTRIAL PROCESSES**  
**Consumption of Halocarbons and SF<sub>6</sub>**  
**(Sheet 2 of 2)**

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

Note: Where the activity data are confidential, the entries should provide aggregate figures, but there should be a note indicating this and explanations in the documentation box.

Documentation box:

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

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO <sub>2</sub>	N <sub>2</sub> O	NMVOC
	(Gg)		
Total Solvent and Other Product Use			
A. Paint Application			
B. Degreasing and Dry Cleaning			
C. Chemical Products, Manufacture and Processing			
D. Other (please specify)			
<i>(Use of N<sub>2</sub>O for Anaesthesia)</i>			
<i>(N<sub>2</sub>O from Fire Extinguishers)</i>			
<i>(N<sub>2</sub>O from Aerosol Cans)</i>			
<i>(Other Use of N<sub>2</sub>O)</i>			

Please account for the quantity of carbon released in the form of NMVOC in both the NMVOC and the CO<sub>2</sub> columns.

**Note:** The IPCC Guidelines do not provide methodologies for the calculation of emissions of N<sub>2</sub>O from Solvent and Other Product Use. If reporting such data, Parties should provide additional information (activity data and emission factors) used to make these estimates in the documentation box to Table 3.A-D.

**TABLE 3.A-D SECTORAL BACKGROUND DATA FOR SOLVENT AND OTHER PRODUCT USE**

(Sheet 1 of 1)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA		IMPLIED EMISSION FACTORS	
	Description	(kt)	CO <sub>2</sub> (t/t)	N <sub>2</sub> O (t/t)
A. Paint Application				
B. Degreasing and Dry Cleaning				
C. Chemical Products, Manufacture and Processing				
D. Other <i>(please specify)</i> <sup>(1)</sup>				
<i>(Use of N<sub>2</sub>O for Anaesthesia)</i>				
<i>(N<sub>2</sub>O from Fire Extinguishers)</i>				
<i>(N<sub>2</sub>O from Aerosol Cans)</i>				
<i>(Other Use of N<sub>2</sub>O)</i>				

<sup>(1)</sup> Some probable sources are provided in brackets. Complement the list with other relevant sources. Make sure that the order is the same as in Table 3.

**Note:** The table follows the format of the IPCC Sectoral Report for Solvent and Other Product Use, although some of the source categories are not relevant to the direct GHG emissions.

**Documentation box:**

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

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CH <sub>4</sub>	N <sub>2</sub> O	NO <sub>x</sub> (Gg)	CO	NMVOC
<b>Total Agriculture</b>					
<b>A. Enteric Fermentation</b>					
1. Cattle					
Dairy Cattle					
Non-Dairy 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)					
<b>B. Manure Management</b>					
1. Cattle					
Dairy Cattle					
Non-Dairy Cattle					
2. Buffalo					
3. Sheep					
4. Goats					
5. Camels and Llamas					
6. Horses					
7. Mules and Asses					
8. Swine					
9. Poultry					

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

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CH <sub>4</sub>	N <sub>2</sub> O	NO <sub>x</sub> (Gg)	CO	NMVOc
<b>B. Manure Management (continued)</b>					
10. Anaerobic Lagoons					
11. Liquid Systems					
12. Solid Storage and Dry Lot					
13. Other (please specify)					
<b>C. Rice Cultivation</b>					
1. Irrigated					
2. Rainfed					
3. Deep Water					
4. Other (please specify)					
<b>D. Agricultural Soils <sup>(1)</sup></b>					
1. Direct Soil Emissions					
2. Animal Production					
3. Indirect Emissions					
4. Other (please specify)					
<b>E. Prescribed Burning of Savannas</b>					
<b>F. Field Burning of Agricultural Residues</b>					
1. Cereals					
2. Pulse					
3. Tuber and Root					
4. Sugar Cane					
5. Other (please specify)					
<b>G. Other (please specify)</b>					

<sup>(1)</sup> See footnote 4 to Summary 1.A of this common reporting format. Parties which choose to report CO<sub>2</sub> emissions and removals from agricultural soils under 4.D. Agricultural Soils category of the sector. Agriculture should indicate the amount [Gg] of these emissions or removals in the documentation box to Table 4.D. Additional information (activity data, implied emissions factors) should also be provided using the relevant documentation box to Table 4.D. This table is not modified for reporting the CO<sub>2</sub> emissions and removals for the sake of consistency with the IPCC tables (i.e. IPCC Sectoral Report for Agriculture).

**Note:** The IPCC Guidelines do not provide methodologies for the calculation of CH<sub>4</sub> emissions, CH<sub>4</sub> and N<sub>2</sub>O removals from agricultural soils, or CO<sub>2</sub> emissions from savanna burning or agricultural residues burning. If you have reported such data, you should provide additional information (activity data and emission factors) used to make these estimates using the relevant documentation boxes.



Year :

**TABLE 4.A SECTORAL BACKGROUND DATA FOR AGRICULTURE**

**Enteric Fermentation**

(Sheet 1 of 1)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA <sup>(1)</sup> AND OTHER RELATED INFORMATION		IMPLIED EMISSION FACTORS	
	Population size <sup>(2)</sup> (1000 head)	Average daily feed intake (MJ/day)	CH <sub>4</sub> conversion (%)	CH <sub>4</sub> (kg CH <sub>4</sub> /head/yr)
1. Cattle				
Dairy Cattle <sup>(3)</sup>				
Non-Dairy 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)				

<sup>(1)</sup> In the documentation boxes to all Sectoral background data tables for Agriculture, Parties should provide information on whether the activity data is one year or a 3-year average.

<sup>(2)</sup> Parties are encouraged to provide detailed livestock population data by animal type and region in a separate table. This consistent set of animal population statistics should be used to estimate CH<sub>4</sub> emissions from enteric fermentation, CH<sub>4</sub> and N<sub>2</sub>O from manure management, N<sub>2</sub>O direct emissions from soil and N<sub>2</sub>O 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.

<sup>(3)</sup> Including data on dairy heifers, if available.

**Documentation box:**

**Additional information (for Tier 2) <sup>(a)</sup>**

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

<sup>(a)</sup> Compare to 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.

<sup>(b)</sup> Disaggregate to the split actually used. Add columns to the table if necessary.

<sup>(c)</sup> Specify feeding situation as pasture, stall fed, confined, open range, etc.







Year :

**TABLE 4.D SECTORAL BACKGROUND DATA FOR AGRICULTURE**

**Agricultural Soils<sup>(1)</sup>**  
(Sheet 1 of 1)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA AND OTHER RELATED INFORMATION		IMPLIED EMISSION FACTORS (kg N <sub>2</sub> O-N/kg N) <sup>(2)</sup>	EMISSIONS (Gg N <sub>2</sub> O)
	Description	Value		
<b>Direct Soil Emissions</b>				
Synthetic Fertilizers	N input to soils (kg N/yr)			
Animal Wastes Applied to Soils	Use of synthetic fertilizers (kg N/yr)			
N-fixing Crops	Nitrogen input from manure applied to soils (kg N/yr)			
Crop Residue	Dry pulses and soybeans produced (kg dry biomass/yr)			
Cultivation of Histosols	Dry production of other crops (kg dry biomass/yr)			
<b>Animal Production</b>	Area of cultivated organic soils (ha)			
<b>Indirect Emissions</b>	N excretion on pasture range and paddock (kg N/yr)			
Atmospheric Deposition	Volatilized N (NH <sub>3</sub> and NO <sub>x</sub> ) from fertilizers and animal wastes (kg N/yr)			
Nitrogen Leaching and Run-off	N from fertilizers and animal wastes that is lost through leaching and run off (kg N/yr)			
<b>Other (please specify)</b>				

**Additional information**

Fraction <sup>(a)</sup>	Description	Value
FracBURN	Fraction of crop residue burned	
FracFUEL	Fraction of livestock N excretion in excrements burned for fuel	
FracGASF	Fraction of synthetic fertilizer N applied to soils that volatilizes as NH <sub>3</sub> and NO <sub>x</sub>	
FracGASM	Fraction of livestock N excretion that volatilizes as NH <sub>3</sub> and NO <sub>x</sub>	
FracGRAZ	Fraction of livestock N excreted and deposited onto soil during grazing	
FracLEACH	Fraction of N input to soils that is lost through leaching and runoff	
FracNCRBF	Fraction of N in non-N-fixing crop	
FracNCRO	Fraction of N in N-fixing crop	
FracR	Fraction of crop residue removed from the field as crop	

<sup>(a)</sup> Use the fractions as specified in the IPCC Guidelines (Volume 3, Reference Manual, pp. 4.92 - 4.113).

<sup>(1)</sup> See footnote 4 to Summary I.A. of this common reporting format. Parties which choose to report CO<sub>2</sub> emissions and removals from agricultural soils under 4.D. Agricultural Soils category should indicate the amount [Gg] of these emissions or removals and relevant additional information (activity data, implied emissions factors) in the documentation box.

<sup>(2)</sup> To convert from N<sub>2</sub>O-N to N<sub>2</sub>O emissions, multiply by 44/28.

**Documentation box:**

Year :

**TABLE 4.E SECTORAL BACKGROUND DATA FOR AGRICULTURE**  
**Prescribed Burning of Savannas**  
**(Sheet 1 of 1)**

GREENHOUSE GAS SOURCE AND SINK CATEGORIES <i>(specify ecological zone)</i>	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 <sub>4</sub>	N <sub>2</sub> O	CH <sub>4</sub>	N <sub>2</sub> O

**Additional information**

	Living	Dead
Fraction of aboveground biomass		
Fraction oxidized		
Carbon fraction		

**Documentation box:**

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

Year :

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	Fraction of savanna burned	Biomass burned (Gg dm)	Nitrogen fraction in biomass of residues	CH <sub>4</sub> (kg/t dm)	N <sub>2</sub> O (kg/t dm)	CH <sub>4</sub> (Gg)	N <sub>2</sub> O (Gg)	
<b>1. Cereals</b>											
Wheat											
Barley											
Maize											
Oats											
Rye											
Rice											
Other (please specify)											
<b>2. Pulse (1)</b>											
Dry bean											
Peas											
Soybeans											
Other (please specify)											
<b>3. Tuber and Root</b>											
Potatoes											
Other (please specify)											
<b>4 Sugar Cane</b>											
<b>5 Other (please specify)</b>											

(1) To be used in Table 4.D of this common reporting format.

Documentation box:





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

Year:

**Changes in Forest and Other Woody Biomass Stocks**  
(Sheet 1 of 1)

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						
Non-Forest Trees (specify type)			Number of trees (1000s of trees)	Annual growth rate (kt dm/1000 trees)	Carbon uptake factor (t C/tree)	Carbon uptake increment (Gg C)
			Total annual growth increment (Gg C)			
			Gg CO <sub>2</sub>			
			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 <sup>(1)</sup> (Gg C)			
			Other Changes in Carbon Stocks <sup>(2)</sup> (Gg C)			
			Gg CO <sub>2</sub>			
			Net annual carbon uptake (+) or release (-) (Gg C)			
			Net CO <sub>2</sub> emissions (+) or removals (-) (Gg CO <sub>2</sub> )			

<sup>(1)</sup> Make sure that the quantity of biomass burned off-site is subtracted from this total.

<sup>(2)</sup> 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, also providing suggestions for a possible sectoral background data table suitable for their calculation method.

Documentation box:

Year :

**TABLE 5.B SECTORAL BACKGROUND DATA FOR LAND-USE CHANGE AND FORESTRY**  
**Forest and Grassland Conversion**  
**(Sheet 1 of 1)**

Vegetation types	ACTIVITY DATA AND OTHER RELATED INFORMATION						IMPLIED EMISSION FACTORS						EMISSIONS					
	On and off site burning		Decay of above-ground biomass <sup>(1)</sup>		Decay		Burning		Decay		Burning		Decay					
	Area converted annually (kha)	Annual net loss of biomass (kt dm)	Quantity of biomass burned	Average area converted (kha)	Average annual net loss of biomass (t dm/ha)	Average quantity of biomass left to decay (kt dm)	On site (kt dm)	Off site (kt dm)	On site (t/ha)	Off site (t/ha)	On site (Gg)	Off site (Gg)	On site (Gg)	Off site (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																		

<sup>(1)</sup> Activity data are for default 10-year average. Specify the average decay time which is appropriate for the local conditions, if other than 10 years.

**Additional information**

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 <sub>2</sub> emissions (Gg CO <sub>2</sub> )			

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, also providing suggestions for a possible sectoral background data table suitable for their calculation method.

Documentation box:





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

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO <sub>2</sub> <sup>(1)</sup>	CH <sub>4</sub>	N <sub>2</sub> O	NO <sub>x</sub> (Gg)	CO	NMVOC	SO <sub>2</sub>
<b>Total Waste</b>							
<b>A. Solid Waste Disposal on Land</b>							
1. Managed Waste Disposal on Land							
2. Unmanaged Waste Disposal Sites							
3. Other (please specify)							
<b>B. Wastewater Handling</b>							
1. Industrial Wastewater							
2. Domestic and Commercial Wastewater							
3. Other (please specify)							
<b>C. Waste Incineration</b>							
<b>D. Other (please specify)</b>							

<sup>(1)</sup> Note that CO<sub>2</sub> from Waste Disposal and Incineration source categories should only be included if it stems from non-biological or inorganic waste sources.

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

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA AND OTHER RELATED INFORMATION			IMPLIED EMISSION FACTOR		EMISSIONS <sup>(1)</sup>	
	Annual MSW at the SWDS (Gg)	MCF degraded (Gg)	CH <sub>4</sub> recovery <sup>(2)</sup> (Gg)	CH <sub>4</sub> (t/t MSW)	CO <sub>2</sub> (t/t MSW)	CH <sub>4</sub> (Gg)	CO <sub>2</sub> <sup>(3)</sup> (Gg)
1. Managed Waste Disposal on Land							
2. Unmanaged Waste Disposal Sites							
- deep (>5 m)							
- shallow (<5 m)							
3. Other (please specify)							

**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 <sub>2</sub> (kg/t waste)	CH <sub>4</sub> (kg/t waste)	N <sub>2</sub> O (kg/t waste)	CO <sub>2</sub> <sup>(2)</sup> (Gg)	CH <sub>4</sub> (Gg)	N <sub>2</sub> O (Gg)	
Waste Incineration (please specify)									
(biogenic) <sup>(2)</sup>									
(plastics) <sup>(3)</sup>									

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.

<sup>(1)</sup> Actual emissions (after recovery).  
<sup>(2)</sup> CH<sub>4</sub> recovered and flared or utilized.

<sup>(3)</sup> Under Waste Disposal, CO<sub>2</sub> emissions should be reported only when the disposed wastes are combusted at the disposal site which might constitute a management practice. CO<sub>2</sub> emissions from non-biogenic wastes are included in the totals, while the CO<sub>2</sub> emissions from biogenic wastes are not included in the totals.

**Documentation box:** All relevant information used in calculation should be provided in the additional information box and in the documentation box. Parties that use country specific models should note this with a brief rationale in the documentation box and fill the relevant cells only.

**Additional information**

Description	Value
Total population (1000s) <sup>(a)</sup>	
Urban population (1000s) <sup>(a)</sup>	
Waste generation rate (kg/capita/day)	
Fraction of MSW disposed to SWDS	
Fraction of DOC in MSW	
Fraction of wastes incinerated	
Fraction of wastes recycled	
CH <sub>4</sub> oxidation factor <sup>(b)</sup>	
CH <sub>4</sub> fraction in landfill gas	
Number of SWDS recovering CH <sub>4</sub>	
CH <sub>4</sub> generation rate constant (k) <sup>(c)</sup>	
Time lag considered (yr) <sup>(c)</sup>	
Composition of landfilled waste (%)	
Paper and paperboard	
Food and garden waste	
Plastics	
Glass	
Textiles	
Other (specify)	
other - inert	
other - organic	

<sup>(a)</sup> Specify whether total or urban population is used and the rationale for doing so.

<sup>(b)</sup> See IPCC Guidelines (Volume 3. Reference Manual, p. 6.9).

<sup>(c)</sup> For Parties using Tier 2 methods.



Year :

**TABLE 7 OVERVIEW TABLE<sup>(1)</sup> FOR NATIONAL GREENHOUSE GAS INVENTORIES (IPCC TABLE 8A)**  
(Sheet 1 of 3)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO <sub>2</sub>		CH <sub>4</sub>		N <sub>2</sub> O		HFCs		PFCs		SF <sub>6</sub>		NO <sub>x</sub>		CO		NMVOC		SO <sub>2</sub>		
	Estimate	Quality	Estimate	Quality	Estimate	Quality	Estimate	Quality	Estimate	Quality	Estimate	Quality	Estimate	Quality	Estimate	Quality	Estimate	Quality	Estimate	Quality	
<b>Total National Emissions and Removals</b>																					
<b>1 Energy</b>																					
A. Fuel Combustion Activities																					
Reference Approach																					
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																					
<b>2 Industrial Processes</b>																					
A. Mineral Products																					
B. Chemical Industry																					
C. Metal Production																					
D. Other Production																					
E. Production of Halocarbons and SF <sub>6</sub>																					

<sup>(1)</sup> This table is intended to be used by Parties to summarize their own assessment of completeness (e.g. partial, full estimate, not estimated) and quality (high, medium, low) of major source/sink inventory estimates. The latter could be understood as a quality assessment of the uncertainty of the estimates. This table might change once the IPCC completes its work on managing uncertainties of GHG inventories. Title of the table was kept for consistency with the current table in the IPCC Guidelines.

**Note:** To fill in the table use the notation key as given in the IPCC Guidelines (Volume 1. Reporting Instructions, Tables. 37).



**TABLE 7 OVERVIEW TABLE FOR NATIONAL GREENHOUSE GAS INVENTORIES (IPCC TABLE 8A)**  
(Sheet 2 of 3)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO <sub>2</sub>		CH <sub>4</sub>		N <sub>2</sub> O		HFCs		PFCs		SF <sub>6</sub>		NO <sub>x</sub>		CO		NMVOC		SO <sub>2</sub>		
	Estimate	Quality	Estimate	Quality	Estimate	Quality	Estimate	Quality	Estimate	Quality	Estimate	Quality	Estimate	Quality	Estimate	Quality	Estimate	Quality	Estimate	Quality	
<b>2 Industrial Processes (continued)</b>																					
F. Consumption of Halocarbons and SF <sub>6</sub>																					
Potential <sup>(2)</sup>																					
Actual <sup>(3)</sup>																					
G. Other																					
<b>3 Solvent and Other Product Use</b>																					
<b>4 Agriculture</b>																					
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																					
<b>5 Land-Use Change and Forestry</b>																					
A. Changes in Forest and Other Woody Biomass Stocks																					
B. Forest and Grassland Conversion																					

<sup>(2)</sup> Potential emissions based on Tier 1 approach of the IPCC Guidelines.

<sup>(3)</sup> Actual emissions based on Tier 2 approach of the IPCC Guidelines.

**TABLE 7 OVERVIEW TABLE FOR NATIONAL GREENHOUSE GAS INVENTORIES (IPCC TABLE 8A)**

(Sheet 3 of 3)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO <sub>2</sub>		CH <sub>4</sub>		N <sub>2</sub> O		HFCs		PFCs		SF <sub>6</sub>		NO <sub>x</sub>		CO		NMVOC		SO <sub>2</sub>		
	Estimate	Quality	Estimate	Quality	Estimate	Quality	Estimate	Quality	Estimate	Quality	Estimate	Quality	Estimate	Quality	Estimate	Quality	Estimate	Quality	Estimate	Quality	
<b>5 Land-Use Change and Forestry (continued)</b>																					
C. Abandonment of Managed Lands																					
D. CO <sub>2</sub> Emissions and Removals from Soil																					
E. Other																					
<b>6 Waste</b>																					
A. Solid Waste Disposal on Land																					
B. Wastewater Handling																					
C. Waste Incineration																					
D. Other																					
<b>7 Other (please specify)</b>																					
<b>Memo Items:</b>																					
<b>International Bunkers</b>																					
Aviation																					
Marine																					
<b>Multilateral Operations</b>																					
<b>CO<sub>2</sub> Emissions from Biomass</b>																					

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

	CO <sub>2</sub>			CH <sub>4</sub>			N <sub>2</sub> O		
	Previous submission	Latest submission	Difference <sup>(1)</sup>	Previous submission	Latest submission	Difference <sup>(1)</sup>	Previous submission	Latest submission	Difference <sup>(1)</sup>
	CO <sub>2</sub> equivalent (Gg)	CO <sub>2</sub> equivalent (Gg)	(%)	CO <sub>2</sub> equivalent (Gg)	CO <sub>2</sub> equivalent (Gg)	(%)	CO <sub>2</sub> equivalent (Gg)	CO <sub>2</sub> equivalent (Gg)	(%)
<b>Total National Emissions and Removals</b>									
<b>1. Energy</b>									
I.A. Fuel Combustion Activities									
I.A.1. Energy Industries									
I.A.2. Manufacturing Industries and Construction									
I.A.3. Transport									
I.A.4. Other Sectors									
I.A.5. Other									
I.B. Fugitive Emissions from Fuels									
I.B.1. Solid fuel									
I.B.2. Oil and Natural Gas									
<b>2. Industrial Processes</b>									
2.A. Mineral Products									
2.B. Chemical Industry									
2.C. Metal Production									
2.D. Other Production									
2.G. Other									
<b>3. Solvent and Other Product Use</b>									
<b>4. Agriculture</b>									
4.A. Enteric Fermentation									
4.B. Manure Management									
4.C. Rice Cultivation									
4.D. Agricultural Soils <sup>(2)</sup>									
4.E. Prescribed Burning of Savannas									
4.F. Field Burning of Agricultural Residues									
4.G. Other									
<b>5. Land-Use Change and Forestry (net)</b>									
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 <sub>2</sub> Emissions and Removals from Soil									
5.E. Other									

<sup>(1)</sup> Estimate the percentage change due to recalculation with respect to the previous submission (Percentage change =  $100\% \times [(L-S-PS)/PS]$ , 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.

<sup>(2)</sup> See footnote 4 to Summary 1.A of this common reporting format.





**TABLE 9 COMPLETENESS**  
(Sheet 1 of 2)

Sources and sinks not reported (NE) <sup>(1)</sup>			
GHG	Sector <sup>(2)</sup>	Source/sink category <sup>(2)</sup>	Explanation
CO <sub>2</sub>			
CH <sub>4</sub>			
N <sub>2</sub> O			
HFCs			
PFCs			
SF <sub>6</sub>			
Sources and sinks reported elsewhere (IE) <sup>(3)</sup>			
GHG	Source/sink category	Allocation as per IPCC Guidelines	Allocation used by the Party
			Explanation

<sup>(1)</sup> Please, 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.

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

<sup>(3)</sup> Please 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 10 EMISSIONS TRENDS (CO<sub>2</sub>)**  
(Sheet 1 of 5)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	Base year <sup>(1)</sup>	1990	1991	1992	1993	1994	1995	1996	1997	1998
	(Gg)									
<b>I. Energy</b>										
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										
<b>2. Industrial Processes</b>										
A. Mineral Products										
B. Chemical Industry										
C. Metal Production										
D. Other Production										
E. Production of Halocarbons and SF <sub>6</sub>										
F. Consumption of Halocarbons and SF <sub>6</sub>										
G. Other										
<b>3. Solvent and Other Product Use</b>										
<b>4. Agriculture</b>										
A. Enteric Fermentation										
B. Manure Management										
C. Rice Cultivation										
D. Agricultural Soils <sup>(2)</sup>										
E. Prescribed Burning of Savannas										
F. Field Burning of Agricultural Residues										
G. Other										
<b>5. Land-Use Change and Forestry<sup>(3)</sup></b>										
A. Changes in Forest and Other Woody Biomass Stocks										
B. Forest and Grassland Conversion										
C. Abandonment of Managed Lands										
D. CO <sub>2</sub> Emissions and Removals from Soil										
E. Other										
<b>6. Waste</b>										
A. Solid Waste Disposal on Land										
B. Waste-water Handling										
C. Waste Incineration										
D. Other										
<b>7. Other (please specify)</b>										
<b>Total Emissions/Removals with LUCF<sup>(4)</sup></b>										
<b>Total Emissions without LUCF<sup>(4)</sup></b>										
<b>Memo Items:</b>										
<b>International Bunkers</b>										
Aviation										
Marine										
<b>Multilateral Operations</b>										
<b>CO<sub>2</sub> Emissions from Biomass</b>										

<sup>(1)</sup> Fill in the base year adopted by the Party under the Convention, if different from 1990.

<sup>(2)</sup> See footnote 4 to Summary 1.A of this common reporting format.

<sup>(3)</sup> Take the 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 (+).

<sup>(4)</sup> The information in these rows is requested to facilitate comparison of data, since Parties differ in the way they report CO<sub>2</sub> emissions and removals from Land-Use Change and Forestry.



**TABLE 10 EMISSIONS TRENDS (CH<sub>4</sub>)**

Year:

(Sheet 2 of 5)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	Base year <sup>(1)</sup>	1990	1991	1992	1993	1994	1995	1996	1997	1998
	(Gg)									
<b>Total Emissions</b>										
<b>1. Energy</b>										
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										
<b>2. Industrial Processes</b>										
A. Mineral Products										
B. Chemical Industry										
C. Metal Production										
D. Other Production										
E. Production of Halocarbons and SF <sub>6</sub>										
F. Consumption of Halocarbons and SF <sub>6</sub>										
G. Other										
<b>3. Solvent and Other Product Use</b>										
<b>4. Agriculture</b>										
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										
<b>5. Land-Use Change and Forestry</b>										
A. Changes in Forest and Other Woody Biomass Stocks										
B. Forest and Grassland Conversion										
C. Abandonment of Managed Lands										
D. CO <sub>2</sub> Emissions and Removals from Soil										
E. Other										
<b>6. Waste</b>										
A. Solid Waste Disposal on Land										
B. Waste-water Handling										
C. Waste Incineration										
D. Other										
<b>7. Other (please specify)</b>										
<b>Memo Items:</b>										
<b>International Bunkers</b>										
Aviation										
Marine										
<b>Multilateral Operations</b>										
<b>CO<sub>2</sub> Emissions from Biomass</b>										

**TABLE 10 EMISSIONS TRENDS (N<sub>2</sub>O)**

Year:

(Sheet 3 of 5)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	Base year <sup>(1)</sup>	1990	1991	1992	1993	1994	1995	1996	1997	1998
	(Gg)									
<b>Total Emissions</b>										
<b>1. Energy</b>										
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										
<b>2. Industrial Processes</b>										
A. Mineral Products										
B. Chemical Industry										
C. Metal Production										
D. Other Production										
E. Production of Halocarbons and SF <sub>6</sub>										
F. Consumption of Halocarbons and SF <sub>6</sub>										
G. Other										
<b>3. Solvent and Other Product Use</b>										
<b>4. Agriculture</b>										
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										
<b>5. Land-Use Change and Forestry</b>										
A. Changes in Forest and Other Woody Biomass Stocks										
B. Forest and Grassland Conversion										
C. Abandonment of Managed Lands										
D. CO <sub>2</sub> Emissions and Removals from Soil										
E. Other										
<b>6. Waste</b>										
A. Solid Waste Disposal on Land										
B. Waste-water Handling										
C. Waste Incineration										
D. Other										
<b>7. Other (please specify)</b>										
<b>Memo Items:</b>										
<b>International Bunkers</b>										
Aviation										
Marine										
<b>Multilateral Operations</b>										
<b>CO<sub>2</sub> Emissions from Biomass</b>										

**TABLE 10 EMISSION TRENDS ( HFCs, PFCs and SF<sub>6</sub> )**

Year:

(Sheet 4 of 5)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	Base year <sup>(1)</sup>	1990	1991	1992	1993	1994	1995	1996	1997	1998
	(Gg)									
<b>Emissions of HFCs<sup>(5)</sup> - CO<sub>2</sub> equivalent (Gg)</b>										
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										
<b>Emissions of PFCs<sup>(5)</sup> - CO<sub>2</sub> equivalent (Gg)</b>										
CF <sub>4</sub>										
C <sub>2</sub> F <sub>6</sub>										
C <sub>3</sub> F <sub>8</sub>										
C <sub>4</sub> F <sub>10</sub>										
c-C <sub>4</sub> F <sub>8</sub>										
C <sub>3</sub> F <sub>12</sub>										
C <sub>6</sub> F <sub>14</sub>										
<b>Emissions of SF<sub>6</sub><sup>(5)</sup> - CO<sub>2</sub> equivalent (Gg)</b>										
SF <sub>6</sub>										

<sup>(5)</sup> Enter information on the actual emissions. Where estimates are only available for the potential emissions, specify this in a footnote. Only in this row the emissions are expressed as CO<sub>2</sub> equivalent emissions in order to facilitate data flow among spreadsheets.

**TABLE 10 EMISSION TRENDS (SUMMARY)**

Year:

(Sheet 5 of 5)

GREENHOUSE GAS EMISSIONS	Base year <sup>(1)</sup>	1990	1991	1992	1993	1994	1995	1996	1997	1998
	CO <sub>2</sub> equivalent (Gg)									
Net CO <sub>2</sub> emissions/removals										
CO <sub>2</sub> emissions (without LUCF) <sup>(6)</sup>										
CH <sub>4</sub>										
N <sub>2</sub> O										
HFCs										
PFCs										
SF <sub>6</sub>										
Total (with net CO <sub>2</sub> emissions/removals)										
Total (without CO <sub>2</sub> from LUCF) <sup>(6)</sup>										

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	Base year <sup>(1)</sup>	1990	1991	1992	1993	1994	1995	1996	1997	1998
	CO <sub>2</sub> equivalent (Gg)									
1. Energy										
2. Industrial Processes										
3. Solvent and Other Product Use										
4. Agriculture										
5. Land-Use Change and Forestry <sup>(7)</sup>										
6. Waste										
7. Other										

<sup>(6)</sup> The information in these rows is requested to facilitate comparison of data, since Parties differ in the way they report CO<sub>2</sub> emissions and removals from Land-Use Change and Forestry.

<sup>(7)</sup> Net emissions.

**TABLE 11 CHECK LIST of REPORTED INVENTORY INFORMATION<sup>(1)</sup>**

**Party:** \_\_\_\_\_ **Year:** \_\_\_\_\_

Contact info:	Focal point for national GHG inventories:					
	Address:					
	Telephone:	Fax:	E-mail:			
	Main institution preparing the inventory:					

General info:	Date of submission:					
	Base years:	PFCs, HFCs, SF <sub>6</sub> :				
	Year(s) covered in the submission:					
	Gases covered:					
	Omissions in geographic coverage:					

Tables:		Energy	Ind. Processes	Solvent Use	LUCF	Agriculture	Waste
	Sectoral report tables:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Sectoral background data tables:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Summary 1 (IPCC Summary tables):	IPCC Table 7A:		<input type="checkbox"/>	IPCC Table 7B:		<input type="checkbox"/>
	Summary 2 (CO <sub>2</sub> equivalent emissions):	<input type="checkbox"/>					
	Summary 3 (Methods/Emission factors):	<input type="checkbox"/>					
	Uncertainty:	IPCC Table 8A:		<input type="checkbox"/>	National information:		<input type="checkbox"/>
	Recalculation tables:	<input type="checkbox"/>					
Completeness table:	<input type="checkbox"/>						
Trend table:	<input type="checkbox"/>						

CO <sub>2</sub>	Comparison of	Worksheet 1-1	Percentage of difference	Explanation of differences
	CO <sub>2</sub> from fuel combustion:	<input type="checkbox"/>	0.0000	<input type="checkbox"/>

Recalculation:		Energy	Ind. Processes	Solvent Use	LUCF	Agriculture	Waste
	CO <sub>2</sub>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	CH <sub>4</sub>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	N <sub>2</sub> O	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	HFCs, PFCs, SF <sub>6</sub>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Explanations:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Recalculation tables for all recalculated years:	<input type="checkbox"/>					
Full CRF for the recalculated base year:	<input type="checkbox"/>						

HFCs, PFCs, SF <sub>6</sub>		HFCs		PFCs		SF <sub>6</sub>	
	Disaggregation by species:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Production of Halocarbons/SF <sub>6</sub> :	<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>	
	Consumption of Halocarbons/SF <sub>6</sub> :	Actual	Potential	Actual	Potential	Actual	Potential
Potential/Actual emission ratio:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Reference to National Inventory Report and/or national inventory web site: \_\_\_\_\_

CRF - Common Reporting Format.

LUCF - Land-Use Change and Forestry.

<sup>(1)</sup> For each omission, give an explanation for the reasons on a separate page attached to the check list.