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**Methodological issues under the Convention**

**Revision of the UNFCCC reporting guidelines on annual inventories for**

**Parties included in Annex I to the Convention**

### Draft UNFCCC Annex I reporting guidelines

#### Note by the secretariat

##### *Summary*

This note contains the complete updated “Guidelines for the preparation of national communications by Parties included in Annex I to the Convention, Part I: [Revised] UNFCCC Annex I reporting guidelines on annual [greenhouse gas] inventories”. The secretariat has prepared this document at the request of the Convention of their inventories [in 2015].

Owing to the complexity and the importance of colour coding in the common reporting format tables, they are not included in this document but can be downloaded from the UNFCCC website, at <[http://unfccc.int/documentation/documents/advanced\\_search/items/3594.php?such=j&meeting=%22\(SBSTA\),+thirty-fifth+session%22&sorted=agenda#beg](http://unfccc.int/documentation/documents/advanced_search/items/3594.php?such=j&meeting=%22(SBSTA),+thirty-fifth+session%22&sorted=agenda#beg)>.

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## I. Introduction

### A. Mandate

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

2. The COP, by the same decision, also requested the secretariat to incorporate the LULUCF tables, and related technical modifications, into the “Guidelines for the preparation of national communications by Parties included in Annex I to the Convention, Part I: UNFCCC reporting guidelines on annual [greenhouse gas] inventories” adopted by decision 18/CP.8 (hereinafter referred to as the UNFCCC Annex I reporting guidelines on annual inventories).

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

### B. Scope of the note

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

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

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

### **A. Objectives**

4. The objectives of the UNFCCC Annex I reporting guidelines on annual [greenhouse gas (GHG)] inventories are:

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

(b) To contribute to ensuring the transparency of emission reduction commitments;

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

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

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

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

5. The annual [GHG] inventory should be transparent, consistent, comparable, complete and accurate.

6. The annual [GHG] inventory should be prepared using comparable methodologies agreed upon by the Conference of the Parties (COP), as indicated in paragraph 10 below.

7. In the context of these UNFCCC Annex I reporting guidelines on annual [GHG] inventories:

(a) *Transparency* means that the data sources, assumptions and methodologies used for an inventory should be clearly explained, in order to facilitate the replication and assessment of the inventory by users of the reported information. The transparency of inventories is fundamental to the success of the process for the communication and consideration of the information. The use of the common reporting format (CRF) tables and the preparation of a structured national inventory report (NIR) contribute to the transparency of the information and facilitate national and international reviews;

(b) *Consistency* means that an annual [GHG] inventory should be internally consistent for all reported years in all its elements across sectors, categories and gases. 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 17 to 19 below, an inventory using different methodologies for different years can be considered to be consistent if it has been recalculated in a transparent manner, in accordance with the [2006 IPCC Guidelines

for *National Greenhouse Gas Inventories* (hereinafter referred to as the 2006 IPCC Guidelines];

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

(d) *Completeness* means that an annual [GHG] inventory covers at least all sources and sinks, as well as all gases, for which methodologies are provided in the [2006 IPCC Guidelines] or for which supplementary methodologies have been agreed by the COP. Completeness also means the full geographical coverage of the sources and sinks of an Annex I Party;<sup>1</sup>

(e) *Accuracy* means that emission and removal estimates should be accurate in the sense that they are systematically neither over nor under true emissions or removals, as far as can be judged, and that uncertainties are reduced as far as practicable. Appropriate methodologies should be used, in accordance with the [2006 IPCC Guidelines], to promote accuracy in inventories.

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

### C. Context

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

10. The UNFCCC Annex I reporting guidelines on annual [GHG] inventories also cover the establishment and maintenance of a national inventory system for the purpose of the continued preparation of timely, complete, consistent, comparable, accurate and transparent annual [GHG] inventories.

11. An annual [GHG] inventory submission shall consist of an NIR and the CRF tables, as set out in annexes I and II to this document. The annual submission also comprises information provided by an Annex I Party in addition to its submitted NIR and CRF tables.

### D. Base year

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

Bulgaria: 1988

Croatia: 1990

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<sup>1</sup> According to the instrument of ratification, acceptance, approval or accession to the Convention of each Annex I Party.

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

## E. Methods

### Methodology

13. Annex I Parties shall use the methodologies provided in the [2006 IPCC Guidelines,] unless stated otherwise in the UNFCCC Annex I reporting guidelines on annual [GHG] inventories, and any supplementary methodologies agreed by the COP, and other relevant COP decisions to estimate anthropogenic emissions by sources and removals by sinks of GHGs not controlled by the Montreal Protocol.

14. Annex I Parties may use different methods (tiers) contained in the [2006 IPCC Guidelines], prioritizing these methods in accordance with the [2006 IPCC Guidelines]. Annex I Parties may also use national methodologies which they consider better able to reflect their national situation, provided that these methodologies are compatible with the [2006 IPCC Guidelines] and are well documented and scientifically based.

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

16. The [2006 IPCC Guidelines] provide default methodologies which include default EFs and in some cases default AD for the categories to be reported. As the assumptions implicit in these default data, factors and methods may not be appropriate for specific national circumstances, Annex I Parties should use their own national EFs and AD, where available, provided that they are developed in a manner consistent with the [2006 IPCC Guidelines] and are considered to be more accurate than the defaults. If Annex I Parties lack country-specific information, they could also use EFs or other parameters provided in the IPCC Emission Factor Database, where available, provided that they can demonstrate that those parameters are appropriate in the specific national circumstances and are more accurate than the default data provided in the [2006 IPCC Guidelines]. Annex I Parties shall transparently explain in their annual [GHG] inventory submissions what data and/or parameters have been used.

17. [In cases where national circumstances indicate that disturbance events, including wildfires, potentially represent a significant source of both emissions and removals, and where these net emissions are largely beyond the control of the Party, Parties may apply the

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<sup>2</sup> The term “categories” refers to both source and sink categories[ as set out in the 2006 IPCC Guidelines]. The term “key categories” refers to ~~both key source categories as addressed in the IPCC Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories and to the key categories as addressed in the [2006 IPCC Guidelines]~~*IPCC Good Practice Guidance for Land Use, Land Use Change and Forestry*.

good practice contained in chapter 3.2.1 of the IPCC *Good Practice Guidance for Land Use, Land-Use Change and Forestry*. Parties shall transparently document the reasons for the use of this approach in the NIR.]

#### Key category identification

18. Annex I Parties shall identify their key categories for the base year and the latest reported inventory year, using approach 1, level and trend assessment, including and excluding LULUCF. Parties using approach 2 can add additional key categories to the result of approach 1.

#### Uncertainties

19. Annex I Parties shall quantitatively estimate the uncertainty of the data used for all source and sink categories using at least approach 1, as provided in the [2006 IPCC Guidelines], and report uncertainties for at least the base year and the latest inventory year and the trend uncertainty between these two years. Annex I Parties are encouraged to use approach 2 or a hybrid of approaches 1 and 2 provided in the [2006 IPCC Guidelines], in order to address technical limitations of approach 1. The uncertainty of the data used for all source and sink categories should also be qualitatively discussed in a transparent manner in the NIR, in particular for categories that were identified as key categories.

#### Recalculations and time-series consistency

20. The inventory for a time series, including the base year and all subsequent years for which the inventory has been reported, should be estimated using the same methodologies, and the underlying AD and EFs should be obtained and used in a consistent manner, ensuring that changes in emission trends are not introduced as a result of changes in estimation methods or assumptions over the time series of estimates.

21. Recalculations should ensure the consistency of the time series and shall be carried out to improve accuracy and/or completeness. Where the methodology or manner in which underlying AD and EFs are gathered has changed, Annex I Parties should recalculate their inventories for the base year and subsequent years of the times series. Annex I Parties should evaluate the need for recalculations relative to the reasons provided in the [2006 IPCC Guidelines], in particular for key categories. Recalculations should be performed in accordance with [2006 IPCC Guidelines] and the general principles set down in these reporting guidelines.

22. In some cases it may not be possible to use the same methods and consistent data sets for all years, owing to a possible lack of AD, EFs or other parameters directly used in the calculation of emission estimates for some historical years, including the base year. In such cases, emissions or removals may need to be recalculated using alternative methods not generally covered by paragraphs 10–[14] above. In these instances, Annex I Parties should use one of the techniques provided in the [2006 IPCC Guidelines] to determine the missing values. Annex I Parties should document and report the methodologies used for the entire time series.

#### Quality assurance/quality control

23. Each Annex I Party shall elaborate an inventory quality assurance/quality control (QA/QC) plan and implement general inventory QC procedures in accordance with its QA/QC plan following the [2006 IPCC Guidelines]. In addition, Annex I Parties should apply category-specific QC procedures for key categories and for those individual categories in which significant methodological changes and/or data revisions have occurred, in accordance with the [2006 IPCC Guidelines]. In addition, Annex I Parties should implement QA procedures by conducting a basic expert peer review [(tier 1 QA)] of their inventories in accordance with the [2006 IPCC Guidelines].

**F. [[National inventory systems]][Inventory institutional arrangements]**

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

25. National inventory systems should be designed and operated:

(a) To ensure the transparency, consistency, comparability, completeness and accuracy of inventories, as defined in paragraphs 2 and 4 above;

(b) To ensure the quality of inventories through the planning, preparation and management of inventory activities. Inventory activities include collecting AD, selecting methods and EFs appropriately, estimating anthropogenic GHG emissions by sources and removals by sinks, implementing uncertainty assessment and QA/QC activities, and carrying out procedures for the verification of the inventory data at the national level, as described in these reporting guidelines.

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

(a) Establish and maintain the institutional, legal and procedural arrangements necessary to perform the functions defined in paragraphs 24 to 28 below, as appropriate, between the government agencies and other entities responsible for the performance of all functions defined in these reporting guidelines;

(b) Ensure sufficient capacity for the timely performance of the functions defined in these reporting guidelines, including data collection for estimating anthropogenic GHG emissions by sources and removals by sinks and arrangements for the technical competence of the staff involved in the inventory development process;

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

(d) Prepare national annual [GHG] inventories in a timely manner in accordance with these reporting guidelines and relevant decisions of the COP, and provide the information necessary to meet the reporting requirements defined in these reporting guidelines and in relevant decisions of the COP;

(e) Undertake specific functions relating to inventory planning, preparation and management.

**Inventory planning**

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

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

(b) Elaborate an inventory QA/QC plan as indicated in paragraph 20 above;



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

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

#### Inventory preparation

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

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

(b) Collect sufficient AD, process information and EFs as are necessary to support the methods selected for estimating anthropogenic GHG emissions by sources and removals by sinks;

(c) Make quantitative estimates of uncertainty for each category and for the inventory as a whole, as indicated in paragraph 16 above;

(d) Ensure that any recalculations are prepared in accordance with paragraphs 17–19 above;

(e) Compile the NIR[ and the CRF tables] in accordance with these reporting guidelines;

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

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

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

(b) Provide for a basic review of the inventory by personnel that have not been involved in the inventory development process, preferably an independent third party, before the submission of the inventory, in accordance with the planned QA procedures referred to in paragraph 24(b) above;

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

(d) On the basis of the reviews described in paragraph 27(b) and (c) above and periodic internal evaluations of the inventory preparation process, re-evaluate the inventory planning process, in order to meet the established quality objectives referred to in paragraph 24(b) above.

#### Inventory management

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

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

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

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

## G. Reporting

### 1. General guidance

#### Estimates of emissions and removals

32. Article 12, paragraph 1(a), of the Convention requires that each Party shall communicate to the COP, through the secretariat, inter alia, a national inventory of anthropogenic emissions by sources and removals by sinks of all GHGs not controlled by the Montreal Protocol. As a minimum requirement, inventories shall contain information on the following GHGs: carbon dioxide (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>). Annex I Parties should report anthropogenic emissions and removals of any other GHGs whose 100-year global warming potential (GWP) values have been identified by the IPCC and adopted by the COP. Annex I Parties should also provide information on the following indirect GHGs: carbon monoxide (CO), nitrogen oxides (NO<sub>x</sub>) and non-methane volatile organic compounds (NMVOCs), as well as sulphur oxides (SO<sub>x</sub>).

**Option 1 (original):** As above.

**Option 2:** Article 12, paragraph 1(a), of the Convention requires that each Party shall communicate to the COP, through the secretariat, inter alia, a national inventory of anthropogenic emissions by sources and removals by sinks of all GHGs not controlled by the Montreal Protocol. As a minimum requirement, inventories shall contain information on the following GHGs: carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), nitrous oxide (N<sub>2</sub>O), perfluorocarbons (PFCs), hydrofluorocarbons (HFCs), sulphur hexafluoride (SF<sub>6</sub>) [and nitrogen trifluoride (NF<sub>3</sub>)]. Annex I Parties should report anthropogenic emissions and removals of any other GHGs[ whose [100-year global warming potential (GWP) values have been identified by the IPCC [and which are listed in the table below]] and adopted by the COP].

33. **Option 1:** In addition, Annex I Parties should provide information on the following indirect GHGs: carbon monoxide (CO), nitrogen oxides (NO<sub>x</sub>) and non-methane volatile organic compounds (NMVOCs), as well as sulphur oxides (SO<sub>x</sub>). [Annex I Parties [shall][should [as a memo item]] report indirect CO<sub>2</sub> [emissions] from the atmospheric oxidation of CH<sub>4</sub>, CO and NMVOCs. In reporting indirect [emissions][CO<sub>2</sub>], Annex I Parties should avoid double counting and report indirect CO<sub>2</sub> [emissions] only for those categories for which the carbon is not already covered by the assumptions and approximations made in estimating CO<sub>2</sub> emissions. [These estimates should not be included in national totals but be reported separately.]]

**Option 2:** [...]Parties' national totals of GHGs shall include only direct CO<sub>2</sub> emissions and not those calculated from atmospheric emissions of CO, CH<sub>4</sub> or NMVOCs. If desired, Parties can voluntarily report estimates of CO<sub>2</sub> from emissions of those other gases. The estimates of CO<sub>2</sub> from CO, CH<sub>4</sub> or NMVOCs can be calculated using the method provided in the [2006 IPCC Guidelines] (overview chapter, section 7.2.1.5) and, if reported, they should be included with the estimates of other indirect GHGs.

34. GHG 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 area of LULUCF. For HFCs and PFCs, emissions should be reported for each relevant chemical in the category on a disaggregated basis, except in cases where paragraph 37 below applies.

35. [Annex I Parties should report aggregate emissions and removals of GHGs, expressed in CO<sub>2</sub> eq, at summary inventory level,<sup>3</sup> using the GWP values provided by the IPCC in its [Fourth] ~~Second~~ Assessment Report (hereinafter referred to as [2007] ~~1995~~ IPCC GWP values), which are based on the effects of GHGs over a [100-year time horizon]. A list of these values is given in the table below.] [The reference to global warming potentials can be deleted if there is a companion decision on global warming potentials under the Convention.]

36. Annex I Parties shall report actual emissions of HFCs, PFCs and SF<sub>6</sub>, providing disaggregated data by chemical (e.g. HFC-134a) and category in units of mass and in CO<sub>2</sub> eq, except in cases where paragraph 37 below applies. Annex I Parties should report emission estimates or notation keys in line with paragraph 38 below and trends for these gases for 1990 onward, in accordance with the provisions of these reporting guidelines.

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

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

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

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

#### Completeness

41. Where methodological or data gaps in inventories exist, information on these gaps should be presented in a transparent manner. Annex I Parties should clearly indicate the sources and sinks which are not considered in their inventories but which are included in the [2006 IPCC Guidelines], and explain the reasons for such exclusion. Similarly, Annex I Parties should indicate the parts of their geographical area, if any, not covered by their inventory and explain the reasons for their exclusion. In addition, Annex I Parties should use the notation keys presented below to fill in the blanks in all the CRF tables.<sup>4</sup> This approach facilitates the assessment of the completeness of an inventory. The notation keys are as follows:

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<sup>3</sup> Emissions in CO<sub>2</sub> eq should be provided at a level of category disaggregation similar to that specified in CRF table Summary 1.A.

<sup>4</sup> If notation keys are used in the NIR, they should be consistent with those reported in the CRF tables.

(a) “NO” (not occurring) for categories or processes, including recovery, under a particular source or sink category that do not occur within an Annex I Party;

(b) “NE” (not estimated) for AD and[/or] emissions by sources and removals by sinks of GHGs which have not been estimated but for which a corresponding activity may occur within a Party.<sup>5</sup> Where “NE” is used in an inventory to report emissions or removals of CO<sub>2</sub>, N<sub>2</sub>O, CH<sub>4</sub>, HFCs, PFCs, SF<sub>6</sub> [or NF<sub>3</sub>], the Annex I Party should indicate in both the NIR and the CRF completeness table why such emissions or removals have not been estimated;<sup>6</sup>

(c) “NA” (not applicable) for activities under a given source/sink category that do occur within the Party but do not result in emissions or removals of a specific gas. If the cells for categories in the CRF tables 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 GHGs estimated but included elsewhere in the inventory instead of under the expected source/sink category. Where “IE” is used in an inventory, the Annex I Party should indicate, in the CRF completeness table, where in the inventory the emissions or removals for the displaced source/sink category have been included, and the Annex I Party should explain such a deviation from the inclusion under the expected category, especially if it is due to confidentiality;

(e) “C” (confidential) for emissions by sources and removals by sinks of GHGs of which the reporting could lead to the disclosure of confidential information, given the provisions of paragraph 37 above[.];]

(f) [**Option 1:** “CI” (considered insignificant) for emissions by sources and removals by sinks of GHGs which cannot be estimated owing to the lack of AD, and where the estimation of emissions or removals using the default IPCC EFs and conservative AD results in a figure under [0.5 Gg CO<sub>2</sub> eq]. Where “CI” is used in an inventory, the Annex I Party should indicate, in the NIR, why such emissions or removals are considered insignificant and the assumptions made in setting the conservative AD. [The Party should include an assessment of completeness with the use of this notation key.]

(f) [**Option 2:** “CI” (considered insignificant) for emissions that would result in an estimate below 0.1 per cent of the national total GHG emissions,<sup>7</sup> for emissions which cannot be estimated owing to the lack of AD and for emissions for which data collection would be very resource intensive and jeopardize the resources available for the improvement of the data and methods used for key categories. If this notation key is used for a source category, Parties should use approximated AD and default IPCC EFs to derive an approximated emission estimate for the respective source category. If the result of the approximated emission estimate is below 0.1 per cent of the national total GHG emissions, the Party can report the notation key “CI” for this category and shall transparently document the approximated emission estimation in the NIR, as well as the reasons for the approximated estimate related to data availability and resource needs. The notation key “CI” shall not replace an inventory estimate for a source category below the aforementioned threshold which was reported in previous inventory submissions.]

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<sup>5</sup> The notation key “NE” should also be used when an activity occurs in the Party but the [2006 IPCC Guidelines] do not provide methodologies to estimate the emissions/removals.

<sup>6</sup> Even if emissions are considered to be negligible, Parties should either report the emission estimate, if calculated, or use the notation key “NE”.

<sup>7</sup> “National total GHG emissions” refers to the total GHG emissions without LULUCF for the latest reported inventory year.

42. Annex I Parties are encouraged to estimate and report emissions and removals for source or sink categories for which estimation methods are [not included in the [2006 IPCC Guidelines]. If Annex I Parties estimate and report emissions and removals for country-specific sources or sinks or of gases which are not included in the [2006 IPCC Guidelines], they should explicitly describe what source/sink categories or gases these are, as well as what methodologies, EFs and AD have been used for their estimation, and provide references for these data.

#### Key categories

43. Annex I Parties shall estimate and report the individual and cumulative percentage contributions from key categories to their national total, with respect to both level and trend. The emissions should be expressed in terms of CO<sub>2</sub> eq using the methods provided in the [2006 IPCC Guidelines]. As indicated in paragraphs 52 and 57 below, this information should be included in the NIR using tables [4.2 and 4.3] of the [2006 IPCC Guidelines], adapted to the level of category disaggregation that the Annex I Party used for determining its key categories.<sup>8</sup>

#### Verification

44. For the purposes of verification, Annex I Parties should compare their national estimates of CO<sub>2</sub> emissions from fuel combustion with those estimates obtained using the IPCC reference approach, as contained in the [2006 IPCC Guidelines], and report the results of this comparison in the NIR.

45. Annex I Parties that prepare their estimates of emissions and/or removals using higher-tier (tier 3) methods and/or models [should][shall] provide in the NIR verification information consistent with the [2006 IPCC Guidelines.]

#### Uncertainties

46. Annex I Parties shall report, in the NIR, uncertainties estimated as indicated in paragraph 16 above, as well as methods used and underlying assumptions, for the purpose of helping to prioritize efforts to improve the accuracy of national inventories in the future and to guide decisions on methodological choice. This information should be presented using table [3.3] of the [2006 IPCC Guidelines]. In addition, Annex I Parties should indicate in that table those categories that have been identified as key categories in their inventory.

#### Recalculations

47. Recalculations of previously submitted estimates of emissions and removals as a result of changes in methodologies, changes in the manner in which EFs and AD are obtained and used, or the inclusion of new sources or sinks which have existed since the base year but were not previously reported, shall be reported for the base year and all subsequent years of the time series up to the year for which the recalculations are made. Further, a discussion on the impact of the recalculations on the trend in emissions should be provided in the NIR at the category, sector and national total level, as appropriate.

48. Recalculations shall be reported in the NIR, with explanatory information and justifications for recalculations, [and in the relevant CRF tables]. Information on the procedures used for performing the recalculations, changes in the calculation methods, EFs and AD used, and the inclusion of sources or sinks not previously covered should be reported with an indication of the relevant changes in each source or sink category where these changes have taken place.

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<sup>8</sup> Table 4.1 of the 2006 IPCC Guidelines should be used as the basis for preparing the key category analysis but does not need to be reported in the NIR.

49. Annex I Parties [should][shall] report any other changes in estimates of emissions and removals, and clearly indicate the reason for the changes compared with previously submitted inventories (e.g. error correction, statistical reason or reallocation of categories), [using the corresponding CRF table,][in the NIR] as indicated in paragraph 57 below and outlined in annex II to this document. Small differences (e.g. due to the rounding of estimates) should not be considered as recalculations.

#### Quality assurance/quality control

50. Annex I Parties shall report in the NIR on their QA/QC plan and give information on QA/QC procedures already implemented or to be implemented in the future. In addition, Annex I Parties are encouraged to report on any peer review of their inventory, apart from the UNFCCC review.

#### Corrections

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

52. [Annex I Parties may report domestic tier 3 LULUCF estimates, which differ substantially from those reported under the default IPCC approach, in the corresponding optional CRF table. Countries reporting such LULUCF estimates should abide by the documentation requirements for tier 3 methods.]

## **2. National inventory report**

53. Annex I Parties shall submit to the COP, through the secretariat, an NIR containing detailed and complete information on their inventories. The NIR should ensure transparency and contain sufficiently detailed information to enable the inventory to be reviewed. This information should cover the [base year, 1990, 1995, 2000 and 2005][entire time series, from the base year<sup>9</sup> to the latest inventory year,] and any changes to previously submitted inventories.

54. Each year, an updated NIR shall be electronically submitted in its entirety to the COP, through the secretariat, in accordance with the relevant decisions of the COP.

55. The NIR shall include:

(a) Descriptions, references and sources of information for the specific methodologies, including higher-tier methods and models, assumptions, EFs and AD, as well as the rationale for their selection. It should also include an indication of the level of complexity (IPCC tier) applied and a description of any national methodology used by the Annex I Party[, as well as information on anticipated future improvements]. For key categories, an explanation should be provided if the recommended methods from the appropriate decision tree in the [2006 IPCC Guidelines] are not used;

(b) A description of the national key categories, as indicated in paragraph 40 above, including:

(i) [Reference to the CRF key category tables][A summary table with the key categories identified for the latest reporting year (by level and trend);]

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<sup>9</sup> According to the provisions of Article 4, paragraph 6, of the Convention and decisions 9/CP.2, 11/CP.4 and 7/CP.12, some Parties with economies in transition are allowed to use base years other than 1990, as mentioned in paragraph 9 above.

- (ii) Information on the level of category disaggregation used and the rationale for its use;
- (iii) Additional information relating to the methodology used for identifying key categories;
- (c) Information on how and where feedstocks and non-energy use of fuels have been reported in the inventory;
- (d) [Information on whether CO<sub>2</sub> from biomass burning has been estimated and where it has been accounted for in the sectoral background data CRF tables (CRF tables 3(II)B.1–3(II)B.5 and 3(II)C.1 (in the current CRF tables 5.A–5.F and 5(V), respectively));]
- (e) [Information on source or sink categories excluded or potentially excluded, including efforts to develop estimates for future submissions;]
- (f) Information on uncertainties, as requested in paragraph 43 above;
- (g) Information on any recalculations relating to previously submitted inventory data, as requested in paragraphs 44 to 46 above, including changes in methodologies, sources of information and assumptions, in particular in relation to recalculations made in response to the review process;
- (h) Information on changes in response to the review process;
- (i) Information on the [national system] and changes to the [national system], including a description of the institutional arrangements for inventory preparation, as well as information on QA/QC[verification] as requested in paragraphs 41 and 42 above.

56. The NIR should follow the outline and general structure contained in annex I to this document.

### 3. Common reporting format tables

57. The CRF tables are designed to ensure that Annex I Parties report quantitative data in a standardized format and to facilitate comparison of inventory data and trends. Explanation of information of a qualitative character should mainly be provided in the NIR rather than in the CRF tables. Such explanatory information should be cross-referenced to the specific chapter of the NIR.

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

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

60. The CRF tables consist of:

- (a) Summary, sectoral and trend tables for all GHG emissions and removals;

(b) Sectoral background data tables for reporting implied EFs<sup>10</sup> and AD, including:

- (i) IPCC worksheet [1-1][for the reference approach] containing estimates of CO<sub>2</sub> emissions from fuel combustion calculated using the IPCC reference approach and a table for comparing estimates calculated using this reference approach with estimates calculated using the sectoral approach, as well as providing explanations for any significant differences;<sup>11</sup>
- (ii) Tables for reporting fossil fuel consumption for non-energy feedstocks, international bunkers and multilateral operations.

61. The CRF tables shall be reported in accordance with the tables included in annex II to this document and as specified in these reporting guidelines. In completing the CRF tables, Annex I Parties should:

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

**Option 1 (original):** As above.

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

**Option 3:** Provide a full set of CRF tables for the last 10 years and for the previous years since the base year for years ending with 0 or 5 (1990, 1995, 2000, etc.);

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

**Option 1 (original):** As above.

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

(c) Provide completeness tables for the latest inventory year only, if the information applies to all years of the time series. If the information in those tables differs for each reported year, then either the tables or information on the specific changes must be provided for each year in the CRF tables;

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

<sup>10</sup> The sectoral background tables were designed to allow the calculation of implied EFs. These are top-down ratios of an Annex I Party's emission estimates to its AD at the level of aggregation given by the tables. The implied EFs are intended solely for the purposes of data comparison. They will not necessarily be the EFs actually used in the original emission estimation, unless this was a simple multiplication based on the same aggregate AD used to calculate the implied EF.

<sup>11</sup> Detailed explanations should be included in the NIR.



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

63. Annex I Parties should use the notation keys, as specified in paragraph 38 above, in all the CRF tables to fill in the cells where no quantitative data are directly entered. Using the notation keys in this way facilitates the assessment of the completeness of an inventory. Specific guidance is provided on how notation keys should be used in each CRF table where qualitative information is required.

## H. Record keeping

64. **Option 1:** Annex I Parties should gather and archive all relevant inventory information for each year of the reported time series, including all disaggregated EFs and AD, and documentation on how those factors and data were generated, including expert judgement where appropriate, and how they have been aggregated for their reporting in the inventory. This information should allow for the reconstruction of the inventory by the expert review teams. Inventory information should be archived from the base year and should include corresponding data on the recalculations applied. The ‘paper trail’, which can include spreadsheets or databases used to compile inventory data, should enable estimates of emissions and removals to be traced back to the original disaggregated EFs and AD. Also, relevant supporting documentation related to QA/QC implementation, uncertainty evaluation or key category analyses should be kept on file. This information should facilitate the process of clarifying inventory data in a timely manner when the secretariat prepares annual compilations of inventories or assesses methodological issues. [Annex I Parties are encouraged to collect and gather the information in a single national inventory facility or, at least, to keep the number of facilities to a minimum].

**Option 2:** To delete this chapter and ensure that record keeping requirements are included under the new chapter on national systems.[The placement of this paragraph and the fate of the last sentence will be determined upon solution of the [national system][national inventory arrangements] section.]

## I. Systematic updating of the guidelines

65. The UNFCCC Annex I reporting guidelines on annual [GHG] inventories shall be reviewed and revised, as appropriate, in accordance with decisions of the COP on this matter.

## J. Language

66. The NIR shall be submitted in one of the official languages of the United Nations. Annex I Parties are encouraged to submit an English translation of the NIR to facilitate its use by the expert review teams.

**[2007][1995] Intergovernmental Panel on Climate Change global warming potential values<sup>a</sup> based on the effects of greenhouse gases over a 100-year time horizon**

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

To be replaced with the full list

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

<sup>a</sup> As provided by the Intergovernmental Panel on Climate Change in its [Fourth][Second] Assessment Report.

## Annex I

### An outline and general structure of the national inventory report

#### EXECUTIVE SUMMARY

- ES.1. Background information on greenhouse gas (GHG) inventories and climate change (e.g. as it pertains to the national context)
- ES.2. Summary of national emission and removal related trends
- ES.3. Overview of source and sink category emission estimates and trends
- ES.4. Other information (e.g. indirect GHGs)

#### Chapter 1: Introduction

- 1.1. Background information on GHG inventories and climate change (e.g. as it pertains to the national context, to provide information to the general public)
- 1.2. A description of the [national system]~~[national inventory system]~~
  - 1.2.1. Institutional, legal and procedural arrangements
  - 1.2.2. Overview of inventory planning, preparation and management
  - 1.2.3. Quality assurance, quality control and verification plan
 

*Indicate:*

    - *Quality assurance/quality control (QA/QC) procedures applied*
    - *QA/QC plan*
    - *Verification activities*
    - *Treatment of confidentiality issues*
  - 1.2.4. Changes in the national system since previous annual [GHG] inventory submission
- 1.3. Inventory preparation, and data collection, processing and storage
- 1.4. Brief general description of methodologies (including tiers used) and data sources used
- 1.5. Brief description of key categories
 

*Provide a summary table with the key categories identified for the latest reporting year (by level and trend) on the basis of table 4.4 of the 2006 IPCC Guidelines for National Greenhouse Gas Inventories (hereinafter referred to as the 2006 IPCC Guidelines) and provide more detailed information in annex 1. Indicate whether the key category analysis differs from the one included in the common reporting format (CRF) table and, if so, give a short description of the differences.*
- 1.6. General uncertainty evaluation, including data on the overall uncertainty for the inventory totals
- 1.7. General assessment of completeness

*Provide, inter alia, information and explanations in relation to categories not estimated or included elsewhere, and information related to the geographical scope. [Note: “use of calendar years/fiscal years for the reporting” to be placed under time-series consistency assessment.]*

## **Chapter 2: Trends in greenhouse gas emissions**

- 2.1. Description and interpretation of emission trends for aggregated GHG emissions
- 2.2. Description and interpretation of emission trends by sector

*Explain, inter alia, significant changes compared with 1990 and the previous year.*

## **Chapter 3: Energy (CRF sector 1)**

- 3.1. Overview of sector (e.g. quantitative overview and description, including trends and methodological tiers by category)
- 3.2. Fuel combustion (CRF 1.A), including detailed information on: [indent following sub-lines]
  - 3.2.1. Comparison of the sectoral approach with the reference approach
  - 3.2.2. International bunker fuels
  - 3.2.3. Feedstocks and non-energy use of fuels
  - 3.2.4. Category (CRF category number)
    - 3.2.4.1. Category description (e.g. characteristics of sources)
    - 3.2.4.2. Methodological issues (e.g. choice of methods/activity data/emission factors, assumptions, parameters and conventions underlying the emission estimates and the rationale for their selection, information on carbon dioxide (CO<sub>2</sub>) capture, any specific methodological issues (e.g. description of national methods and models))
    - 3.2.4.3. Uncertainties and time-series consistency
    - 3.2.4.4. Category-specific QA/QC and verification, if applicable
    - 3.2.4.5. Category-specific recalculations, if applicable, including changes made in response to the review process and impact on emission trend
    - 3.2.4.6. Category-specific planned improvements, if applicable (e.g. methodologies, activity data, emission factors, etc.), including tracking of those identified in the review process
- 3.3. Fugitive emissions from solid fuels and oil and natural gas (CRF 1.B)
  - 3.3.1. Category (CRF category number)
    - 3.3.1.1. Category description (e.g. characteristics of sources)
    - 3.3.1.2. Methodological issues (e.g. choice of methods/activity data/emission factors, assumptions, parameters and conventions underlying the emission estimates and the rationale for their selection, any specific methodological issues (e.g. description of national methods and models))
    - 3.3.1.3. Uncertainties and time-series consistency
    - 3.3.1.4. Category-specific QA/QC and verification, if applicable

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

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

3.4. CO<sub>2</sub> transport and storage (CRF 1.C)

3.4.1. Category (CRF category number)

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

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

3.4.1.3. Uncertainties and time-series consistency

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

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

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

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

4.1. Overview of sector (e.g. quantitative overview and description, including trends and methodological tiers by category)

4.2. Category (CRF category number)

4.2.1. Category description (e.g. characteristics of sources)

4.2.2. Methodological issues (e.g. choice of methods/activity data/emission factors, assumptions, parameters and conventions underlying the emission estimates and the rationale for their selection, information on CO<sub>2</sub> capture, any specific methodological issues (e.g. description of national methods and models))

4.2.3. Uncertainties and time-series consistency

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

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

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

#### **Chapter 5: Agriculture (CRF sector 3.I)**

5.1. Overview of sector (e.g. quantitative overview and description, including trends and methodological tiers by category)

5.2. Category (CRF category number)

5.2.1. Category description (e.g. characteristics of sources)

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

5.2.3. Uncertainties and time-series consistency

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

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

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

### **Chapter 6: Land use, land-use change and forestry (CRF sector 3.II)**

6.1. Overview of sector (e.g. quantitative overview and description, including trends and methodological tiers by category, and coverage of pools)

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

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

6.4. Category (CRF category number)

6.4.1. Description (e.g. characteristics of category)

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

6.4.3. Uncertainties and time-series consistency

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

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

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

### **Chapter 7: Waste (CRF sector 4)**

7.1. Overview of sector (e.g. quantitative overview and description, including trends and methodological tiers by category)

7.2. Category (CRF category number)

7.2.1. Category description (e.g. characteristics of sources)

7.2.2. Methodological issues (e.g. choice of methods/activity data/emission factors, assumptions, parameters and conventions underlying the emission estimates and the

rationale for their selection, any specific methodological issues (e.g. description of national methods and models))

7.2.3. Uncertainties and time-series consistency

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

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

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

## **Chapter 8: Other (CRF sector 5) (if applicable)**

## **Chapter 9: Indirect CO<sub>2</sub> and nitrous oxide emissions**

9.1 Description of sources of indirect emissions in GHG inventory

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

9.3 Uncertainties and time-series consistency

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

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

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

## **Chapter 10: Recalculations and improvements**

10.1 Explanations and justifications for recalculations, including in response to the review process

10.2 Implications for emission levels

10.3 Implications for emission trends, including time-series consistency

10.4 Planned improvements, including in response to the review process

## **Annexes to the national inventory report**

### **Annex 1: Key categories**

- Description of methodology used for identifying key categories, if different from the Intergovernmental Panel on Climate Change (IPCC) tier 1 approach
- Information on the level of disaggregation
- Tables [4.2 and 4.3] of the [2006 IPCC Guidelines], including and excluding land use, land-use change and forestry

### **Annex 2: Assessment of uncertainty**

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

**Annex 3:** Detailed methodological descriptions for individual source or sink categories

A.3.X (sector or category name)

**Annex 4:** The national energy balance for the most recent inventory year

**Annex 5:** Any additional information, as applicable [Supplementary information on the minimization of adverse impacts]

## **References**

All references used in the national inventory report must be listed in the references.



## Appendix

*Proposed modification: (USA and implicitly Australia: to enhance and update this chapter to reflect methodological issues concerning the use of the 2006 IPCC Guidelines as presented in these UNFCCC Annex I reporting guidelines.*

### Background:

The Appendix could contain some very useful and specific advice and/or guidance on what to include in the specific chapters of the NIR. However, perhaps this information could be included in the NIR chapter above with a view to have a one-stop shop for guidance on the NIR.

One Party has identified the value of this chapter (and noted that the current reporting guidelines stipulate that the chapter is not exhaustive). This is a very important point that adds to the argument mentioned above that it could be nested under the annotated outline of the NIR or whatever the NIR structure will comprise.

### Issues for further discussion:

- If the chapter is found useful the following issues should be solved:
- - *Placement of the information (e.g. within the NIR structure)*
  - *Updating it based on the 2006 reporting requirements*
  - *Need for special attention and advice on the new AFOLU sector and the mapping between the agriculture and LULUCF*
  - *Setting a chapter on cross-sectoral issues*

### **Additional guidance on sectoral reporting to be included in the corresponding chapter of the NIR**

*This appendix provides guidance on additional information that Annex I Parties could include in their NIR in order to facilitate the review of the inventory. This list is not exhaustive. Additional information may be included in the NIR, depending on the Annex I Party's national approach for estimating greenhouse gas emissions and removals.*

#### **Energy**

##### Fuel combustion

More specific information than that required in CRF table 1.A(a) could be provided, e.g.,

- Autoproduction of electricity
- Urban heating (in manufacturing industries, commercial and residential sectors).

##### Fugitive fuel emissions

###### Coal mining:

More specific information than that required in CRF table 1.B.1 could be provided, e.g.

- Number of active underground mines
- Number of mines with drainage (recovery) systems.

Oil and natural gas

- More specific information than that required in CRF table 1.B.2 could be provided, e.g.
- Pipeline length
- Number of oil wells
- Number of gas wells
- Gas throughput<sup>1</sup>
- Oil throughput<sup>1</sup>

**Industrial processes**Metal production

More specific information than is required in CRF table 2(I).A-G could be provided, e.g., data on virgin and recycled steel production.

Potential emissions of halocarbons and SF<sub>6</sub>

In CRF table 2(II)s2, reporting of “production” refers to production of new chemicals. Recycled substances could be included in that table, but it should be ensured that double counting of emissions is avoided. Relevant explanations should be provided in the NIR.

PFCs and SF<sub>6</sub> from metal production / Production of halocarbons and SF<sub>6</sub>

The type of activity data used is to be specified in CRF tables 2(II).C-E (under column “description”). Where applying tier 1b (for 2.C Metal production), tier 2 (for 2.E Production of halocarbons and SF<sub>6</sub>) and country-specific methods, any other relevant activity data used should be specified.

Consumption of HFCs, PFCs and SF<sub>6</sub>

With regard to activity data reported in CRF table 2(II).F (“Amount of fluid remaining in products at decommissioning”), Annex I Parties should provide in the NIR information on the amount of the chemical recovered (recovery efficiency) and other relevant information used in the emission estimation.

CRF table 2(II).F provides for reporting of the activity data and emission factors used to calculate actual emissions from consumption of halocarbons and SF<sub>6</sub> using the “bottom-up approach” (based on the total stock of equipment and estimated emission rates from this equipment). Some Annex I Parties may prefer to estimate their actual emissions following the alternative “top-down approach” (based on annual sales of equipment and/or gas). Those Annex I Parties should provide the activity data used in that CRF table and provide any other relevant information in the NIR. Data these Annex I Parties should provide include:

- The amount of fluid used to fill new products
- The amount of fluid used to service existing products
- The amount of fluid originally used to fill retiring products (the total nameplate capacity of retiring products)

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<sup>1</sup> In the context of gas and oil production, throughput is a measure of the total production, such as barrels per day of oil, or cubic metres of gas per year. Specify the units of the reported values. Take into account that these values should be consistent with the activity data reported under production in table 1.B.2 of the CRF.

- The product lifetime
- The growth rate of product sales, if this has been used to calculate the amount of fluid originally used to fill retiring products.

Alternatively, Annex I Parties may provide alternative formats with equivalent information.

### **Solvents and other product use**

The IPCC Guidelines do not provide methodologies for the calculation of emissions of N<sub>2</sub>O from solvent and other product use. If reporting such data in the CRF, Annex I Parties should provide additional information (activity data and emission factors) used to make these estimates in the NIR.

### **Agriculture**

#### Cross-cutting

Annex I Parties should provide livestock population data in CRF table 4.A. Any further disaggregation of these data, e.g. for regions, for type (according to the classification recommended in the IPCC good practice guidance), could be provided in the NIR, where relevant. Consistent livestock population data should be used in the relevant CRF tables to estimate CH<sub>4</sub> emissions from enteric fermentation, CH<sub>4</sub> and N<sub>2</sub>O emissions from manure management, N<sub>2</sub>O emissions from soils, and N<sub>2</sub>O emissions associated with manure production and use, as well as emissions from the use of manure as fuel and sewage-related emissions reported in the waste sector.

#### Enteric fermentation

More specific information than is required in CRF table 4.A could be provided, e.g., parameters relevant to the application of good practice guidance.

#### Manure management

More specific information than is required in CRF tables 4.B(a) and 4.B(b) could be provided, e.g., parameters relevant to the application of the IPCC good practice guidance. Information required in the additional information table may not be directly applicable to country-specific methods developed for methane conversion factor (MCF) calculations. If relevant data cannot be provided in the additional information box, information on how the MCF is derived should be described in the NIR.

#### Rice cultivation

More specific information than is required in CRF table 4.C could be provided. For example, when disaggregating by more than one region within a country and/or by growing season, provide additional information on disaggregation and related data in the NIR. Where available, provide activity data and scaling factors by soil type and rice cultivar in the NIR.

#### Agricultural soils

More specific information than is required in CRF table 4.D could be provided. For example,

- The IPCC Guidelines do not provide methodologies for the calculation of CH<sub>4</sub> emissions or removals by agricultural soils. If reporting such data, Annex I Parties should provide in the NIR additional information (activity data and emission factors) used to make these estimates;

- In addition to the data required in the additional information box of table 4.D, disaggregated values for FracGRAZ according to animal type, and for FracBURN according to crop types, should be provided in the NIR.

Prescribed burning of savannas and field burning of agricultural residues

More specific information than is required in CRF tables 4.E and 4.F could be provided. For example, the IPCC Guidelines do not provide methodologies for the calculation of CO<sub>2</sub> emissions from savanna burning or agricultural residues burning. If reporting such data, Annex I Parties should provide in the NIR additional information (activity data and emission factors) used to make these estimates.

**Land-use, land-use change and forestry**

*More specific information than is required in the CRF for each land-use category and for subcategories could be provided, for example:*

- When providing estimates by subdivisions, additional information on disaggregation and related data in the NIR
- Separate reporting of CO<sub>2</sub> emissions from biomass burning, including wildfires and controlled burning
- For those Parties choosing to report harvested wood products, detailed information on CO<sub>2</sub> emissions and removals from harvested wood products, including information by product type and disposal
- Information on how double counting and omissions between the agriculture and LULUCF sectors have been avoided.

**Waste**

Solid waste disposal and waste incineration

More specific information than is required in CRF tables 6.A and 6.C could be provided, e.g.,

- All relevant information used in the calculation should be provided in the NIR, if it is not already included in the additional information box of the CRF
- Composition of landfilled waste (%), according to paper and paperboard, food and garden waste, plastics, glass, textiles, other (specify according to inert or organic waste, respectively)
- Fraction of wastes recycled
- Fraction of wastes incinerated
- Number of solid waste disposal sites recovering CH<sub>4</sub>.

Waste-water handling

More specific information than is required in CRF table 6.B could be provided. For example, with regard to data on N<sub>2</sub>O from waste-water handling to be reported in CRF table 6.B, Annex I Parties using other methods for estimation of N<sub>2</sub>O emissions from human sewage or waste-water treatment should provide in the NIR corresponding information on methods, activity data and emission factors used.

**Annex-A: Checklist for reporting on the [national system][national inventory system] (and a change to the national system)**

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

The checklist below is consistent with the provisions of **paragraphs 10 to 17 of the annex to decision 19/CMP.1** (Guidelines for national systems under Article 5, paragraph 1, of the Kyoto Protocol, regarding the specific requirements on the national system for a Party.

Parties are encouraged to use this check-list for self-verification in order to ensure that its annual submission contains the required information on its national system, and a change to its national system (as required by **paragraph 22 of the annex to decision 15/CMP.1**.

## Annex II

### Common reporting format tables

Owing to the complexity of and the importance of colour coding in the common reporting format (CRF) tables, they are not included in this document but can be downloaded from the UNFCCC website, both as an Excel file and in pdf format, at [http://unfccc.int/documentation/documents/advanced\\_search/items/3594.php?such=j&meeting=%22\(SBSTA\),+thirty-fifth+session%22&sorted=agenda#beg](http://unfccc.int/documentation/documents/advanced_search/items/3594.php?such=j&meeting=%22(SBSTA),+thirty-fifth+session%22&sorted=agenda#beg).

The CRF tables are included in the following three files:

- Set 1 – Energy, industrial processes and waste.pdf contains the CRF tables for the energy, industrial processes and waste sectors;
  - Set 2 – AFOLU.pdf contains the CRF tables for the agriculture and land use, land-use change and forestry sectors;
  - Set 3 – cross-sectoral.pdf contains the cross-sectoral tables.
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