

## Annex I

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

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

#### Note by the secretariat

##### *Summary*

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

## Contents

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

## I. Introduction

### A. Mandate

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

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

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

### B. Scope of the note

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

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

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

### A. Objectives

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

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

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

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

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

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

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

## A. Principles and definitions

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

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

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

*Transparency* means

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

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

*Consistency* means

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

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

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

*Comparability means*

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

*Completeness means*

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

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

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

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

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

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

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

## B. Context

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

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

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

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

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

## C. Base year

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

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

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

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

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

Romania: 1989

Slovenia: 1986

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

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

## D. Methods

### Methodology

9. Annex I Parties shall use the IPCC Guidelines to estimate and report on anthropogenic emissions by sources and removals by sinks of greenhouse gases not controlled by the Montreal Protocol. In preparing national inventories of these gases, Annex I Parties shall also use the IPCC good practice guidance in order to improve transparency, consistency, comparability, completeness and accuracy.

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

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

10. In accordance with the IPCC Guidelines, Annex I Parties may use different methods (tiers) included in those guidelines, giving priority to those methods which, according to the decision trees in the IPCC good practice guidance, produce more accurate estimates. In accordance with the IPCC Guidelines, Annex I Parties may also use national methodologies which they consider better able to reflect their national situation, provided that these methodologies are compatible with the IPCC Guidelines and IPCC good practice guidance and are well documented and scientifically based.

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

**Option 2:** 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 consistent with the [2006 IPCC Guidelines] and are well documented and scientifically based. ~~[The latter is especially important for those estimates of emissions and/or removals that are derived using higher-tier methods and/or models.]~~ (secretariat)

11. For categories<sup>3</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

<sup>3</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.*

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

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

**Option 2:** For categories<sup>4</sup> that are determined to be key categories, in accordance with the [2006 IPCC Guidelines], and are estimated in accordance with the provisions in paragraph 13 below, Annex I Parties [should][shall] make every effort to use a recommended method, in accordance with the corresponding decision trees in the [2006 IPCC Guidelines]. Annex I Parties [should][shall] also make every effort to develop and/or select emission factors (EFs), and collect and select activity data (AD), in accordance with the IPCC good practice guidance. [Where national circumstances prohibit the use of a recommended method, then the Annex I Party shall explain in its annual submission the reason(s) as to why its national system was unable to implement a recommended method in accordance with the decision trees in the 2006 IPCC Guidelines.] (secretariat)

12. **Option 2:** ~~For most categories~~ The [2006] IPCC Guidelines provide default methodologies which include default emission factors and in some cases default activity data for the categories to be reported. As the assumptions implicit in these default data, factors and methods may not be appropriate for specific national circumstances, it is preferable for Annex I Parties to use their own national emission factors and activity data, where available, provided that they are developed in a manner consistent with the 2006 IPCC Guidelines, are considered to be more accurate than the defaults and are reported transparently. If Annex I Parties lack country-specific information, they could also use emission factors or other parameters provided in the IPCC Emission Factor Database (EFDB), where available, provided that [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 inventory submissions what **data and/or parameters** have been used.

[Key category determination][Key category analysis]

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

#### Uncertainties

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

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

**Option 2:** Annex I Parties shall quantitatively estimate the uncertainty of the data used for all source and sink categories using at least the tier 1 method, as provided in the [2006 IPCC Guidelines], and report uncertainties for at least the base year and the latest inventory

<sup>4</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.

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

[Recalculations][Recalculations and time-series consistency]

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

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

**Option 2:** The inventory for a ~~an entire~~ time series, including the base year and all subsequent years for which inventories have been reported, should be estimated using the same methodologies, and the underlying activity data and emission factors should be obtained and used in a consistent manner [, ensuring that changes in emission trends are not introduced as a result of changes in estimation methods or assumptions]. Recalculations should ensure the consistency of the time series and shall be carried out only to improve accuracy and/or completeness [and to implement higher-tier methods in accordance with 2006 IPCC Guidelines]. Where the methodology or manner in which underlying activity data and emission factors are gathered has changed, Annex I Parties should recalculate inventories for the base and subsequent years of the times series. Annex I Parties should evaluate the need for recalculations relative to the reasons provided in the 2006 IPCC Guidelines, in particular for key categories. Recalculations should be performed in accordance with 2006 IPCC Guidelines and the general principles set down in these UNFCCC guidelines.] (EU)

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

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

**Option 2:** In some cases it may not be possible to use the same methods and consistent data sets for all years, owing to a possible lack of activity data, emission factors or other parameters directly used in the calculation of emission estimates for some historical years, including the base year. In such cases, emissions or removals may need to be recalculated using alternative methods not generally covered by paragraphs 9–12 above. In these instances, Annex I Parties should use one of the techniques provided in the [2006] IPCC Guidelines (e.g. overlap, surrogate, interpolation or extrapolation) [or other equivalent methods] to determine the missing values. [Annex I Parties should document and report the

~~methodologies used for the entire time series.] is consistent, wherever such techniques are used.]]~~ [This is particularly important if Parties are not able to apply new methods from the 2006 IPCC Guidelines back to the base year]. Annex I Parties should [demonstrate time-series consistency in the NIR, especially if a recalculation was undertaken and also if the recalculation involved the use of one of the above-mentioned techniques.] (EU/secretariat)

#### Quality assurance/quality control (QA/QC)

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

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

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

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

## E. [National inventory systems

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

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

- to ensure the transparency, consistency, comparability, completeness and accuracy of inventories as defined in paragraph x above {TACCC definitions paragraphs};
- to ensure the quality of inventories through the planning, preparation and management of inventory activities. Inventory activities include collecting activity data, selecting methods and emission factors appropriately, estimating anthropogenic GHG emissions by sources and removals by sinks, implementing uncertainty assessment and QA/QC activities, and carrying out procedures for the

<sup>5</sup> As outlined in table [6.1, Volume 1]-8-4 of the [2006 IPCC Guidelines].

verification of the inventory data at the national level, as described in these UNFCCC guidelines

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

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

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

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

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

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

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

#### Inventory planning

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

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

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

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

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

#### Inventory preparation

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

- (a) Prepare estimates in accordance with the requirements defined in these reporting guidelines;
- (b) [Prepare estimates in accordance with the methods described in the 2006 IPCC Guidelines and any supplementary methodologies agreed by the COP, and ensure that appropriate methods are used to estimate emissions for key categories];
- (c) Collect sufficient activity data, process information and emission factors as are necessary to support the methods selected for estimating anthropogenic GHG emissions by sources and removals by sinks;
- (d) [Make quantitative estimates of uncertainty for each category and for the inventory as a whole, following the 2006 IPCC Guidelines];
- (e) [Ensure that any recalculations of previously submitted estimates of anthropogenic GHG emissions by sources and removals by sinks are prepared in accordance with the 2006 IPCC Guidelines and relevant decisions of the COP];
- (f) Compile the NIR in accordance with these reporting guidelines;
- (g) Implement general inventory QC procedures (tier 1) in accordance with its QA/QC plan, following the 2006 IPCC Guidelines.

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

- (a) Apply category-specific QC procedures (tier 2) for key categories and for those individual categories in which significant methodological and/or data revisions have occurred, in accordance with the 2006 IPCC Guidelines;
- (b) Provide for a basic review of the inventory by personnel that have not been involved in the inventory development process, preferably an independent third party, before the submission of the inventory, in accordance with the planned QA procedures referred to in paragraph 17quatuorquies(b) above;
- (c) Provide for a more extensive review of the inventory for key categories, as well as for categories where significant changes to methods or data have been made, in accordance with the 2006 IPCC Guidelines;
- (d) On the basis of the reviews described in paragraph 17octies(b) and (c) above and periodic internal evaluations of the inventory preparation process, re-evaluate the inventory planning process, in order to meet the established quality objectives referred to in paragraph 17quinquies(b) above.

#### Inventory management

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

- (a) Archive all relevant inventory information for the reported time series, including all disaggregated emission factors and activity data, and documentation about how these factors and data have been generated and aggregated for the preparation of the inventory, internal documentation on QA/QC procedures, external and internal reviews, and documentation on annual key categories and key category identification and planned inventory improvements;
- (b) Provide review teams with access to all archived information used by the Party to prepare the inventory through the single national entity, in accordance with relevant decisions of the COP;

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

## F. Reporting

### 1. General guidance

#### Estimates of emissions and removals

18. Article 12.1(a) of the Convention requires that each Party shall communicate to the COP, through the secretariat, inter alia, a national inventory of anthropogenic emissions by sources and removals by sinks of all greenhouse gases not controlled by the Montreal Protocol. As a minimum requirement, inventories shall contain information on the following greenhouse gases: carbon dioxide (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 greenhouse gases whose 100-year global warming potential (GWP) values have been identified by the IPCC and adopted by the COP. Annex I Parties should also provide information on the following indirect greenhouse gases: carbon monoxide (CO), nitrogen oxides (NO<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 table 1] ~~and adopted by the COP.~~

In addition, Annex I Parties should provide information on the following indirect GHGs: carbon monoxide (CO), nitrogen oxides (NO<sub>x</sub>) and non-methane volatile organic compounds (NMVOCs), as well as sulphur oxides (SO<sub>x</sub>). [Annex I Parties shall report indirect CO<sub>2</sub> emissions from the atmospheric oxidation of CH<sub>4</sub>, CO<sub>2</sub> and NMVOCs and indirect N<sub>2</sub>O emissions resulting from the nitrogen deposition of all anthropogenic sources of NO<sub>x</sub> and NH<sub>3</sub>. In reporting indirect emissions, Annex I Parties should avoid double counting and report indirect CO<sub>2</sub> emissions only for those source categories for which the carbon is not already covered by the assumptions and approximations made in estimating CO<sub>2</sub> emissions.] (EU)

**Option 3:** [...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.] (Canada)

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

should be reported for each relevant chemical in the category on a disaggregated basis, except in cases where paragraph 27 below applies.

20. In addition, consistent with decision 2/CP.3, Annex I Parties should report aggregate emissions and removals of greenhouse gases, expressed in CO<sub>2</sub> equivalent terms at summary inventory level,<sup>6</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 these guidelines. Table 1 on page 15 will be amended to include any additional greenhouse gases and their 100-year GWP values, once the GWP values have been adopted by the COP.

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

**Option 2:** In addition, consistent with decision 2/CP.3, Annex I Parties should report aggregate emissions and removals of GHGs, expressed in CO<sub>2</sub> eq, at summary inventory level,<sup>6</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 table 1 at the end of these guidelines. ~~Table 1 on page 15 will be amended to include any additional greenhouse gases and their 100-year GWP values, once the GWP values have been adopted by the COP (EU)~~

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

21. Consistent with decision 2/CP.3, Annex I Parties should report actual emissions of HFCs, PFCs and 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. Annex I Parties should make every effort to develop the necessary sources of data for reporting actual emissions. For the source categories where the concept of potential emissions applies, and Annex I Parties do not yet have the necessary data to calculate actual emissions, Annex I Parties should report disaggregated potential emissions. Annex I Parties reporting actual emissions should also report potential emissions for the sources where the concept of potential emissions applies, for reasons of transparency and comparability.

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

**Option 2:** Consistent with decision 2/CP.3, Annex I Parties [shall]should report actual emissions of HFCs, PFCs and SF<sub>6</sub>, where data are available, providing disaggregated data by chemical (e.g. HFC-134a) and source category in units of mass and in CO<sub>2</sub> eq. (EU)

22. Any Annex I Party that is a Party to the Kyoto Protocol and that in accordance with Article 3, paragraph 8 of the Kyoto Protocol chooses to use 1995 as its base year for HFCs, PFCs and SF<sub>6</sub> for the purposes of calculating assigned amounts pursuant to Article 3, paragraphs 7 and 8 of the Kyoto Protocol, should indicate this in its NIR and in the documentation boxes of the relevant tables of the CRF. Irrespective of the base year chosen for these gases for the purpose of the Kyoto Protocol, such Annex I Parties should report, to the extent that data are available, emission estimates and trends for these gases from 1990 onward, in accordance with the provisions of these guidelines.

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

<sup>6</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>6</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.

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

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

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

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

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

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

26. If Annex I Parties account for effects of CO<sub>2</sub> capture from flue gases and subsequent CO<sub>2</sub> storage in their inventory, they should indicate in which source categories such effects are included, and provide transparent documentation of the methodologies used and the resulting effects.

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

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

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

#### Completeness

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

The notation keys are as follows:

- “NO” (not occurring) for activities or processes in a particular source or sink category that do not occur within a country;
- “NE” (not estimated) for existing emissions by sources and removals by sinks of greenhouse gases which have not been estimated. Where “NE” is used in an inventory for emissions or removals of CO<sub>2</sub>, N<sub>2</sub>O, CH<sub>4</sub>, HFCs, PFCs or SF<sub>6</sub> the

Annex I Party should indicate in both the NIR and the CRF completeness table why emissions or removals have not been estimated;<sup>8</sup>

- “NA” (not applicable) for activities in a given source/sink category that do not result emissions or removals of a specific gas. If categories in the CRF for which “NA” is applicable are shaded, they do not need to be filled in;
- “IE” (included elsewhere) for emissions by sources and removals by sinks of greenhouse gases estimated but included elsewhere in the inventory instead of the expected source/sink category. Where “IE” is used in an inventory, the Annex I Party should indicate, using the CRF completeness table, where in the inventory the emissions or removals from the displaced source/sink category have been included and the Annex I Party should explain such a deviation from the expected category;
- “C” (confidential) for emissions by sources and removals by sinks of greenhouse gases which could lead to the disclosure of confidential information, given the provisions of paragraph 27 above.

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

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

- “NO” (not occurring) for activities or processes [including recovery] under a particular source or sink category that do not occur within a country; (secretariat)
- “NE” (not estimated) for [~~existing~~]activity data and/or emissions by sources and removals by sinks of GHGs which have not been estimated [but corresponding activity does occur within a country]. Where “NE” is used in an inventory to report emissions or removals of 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>7</sup> (secretariat)
- “NA” (not applicable) for activities under a given source/sink category that do [occur within the country] but do not result in emissions or removals of a specific gas[, or when the 2006 IPCC Guidelines do not provide methodologies to estimate the emissions/removals]. If the cells for categories in the CRF tables for which “NA” is applicable are shaded, they do not need to be filled in; (secretariat/USA)
- “IE” (included elsewhere) for emissions by sources and removals by sinks of GHGs estimated but included elsewhere in the inventory instead of under the expected source/sink category. Where “IE” is used in an inventory, the Annex I Party should indicate, using the CRF completeness table, where in the inventory the emissions or removals for the displaced source/sink category have been included and the Annex I Party should explain such a deviation from the inclusion under the expected category[, especially if it is due to confidentiality]; (secretariat)
- “C” (confidential) for emissions by sources and removals by sinks of GHGs which could lead to the disclosure of confidential information, given the provisions of paragraph 27 above.[:]
- [“CI” (considered insignificant) for emissions by sources and removals by sinks of GHGs which cannot be estimated due to the lack of activity data, and where emissions or removals estimated using the default IPCC emission factors and a conservative activity data results in a figure under [0.5 Gg CO<sub>2</sub> equivalent]. Where “CI” is used in an inventory, the Annex I Party should indicate, in the NIR, why

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

such emissions or removals are considered insignificant and the assumptions made in setting the conservative activity data.](Japan).

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

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

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

#### Key categories

30. Annex I Parties shall estimate and report the individual and cumulative percentage contributions from key categories to their national total, with respect to both level and trend. The emissions should be expressed in terms of CO<sub>2</sub> equivalents using the methods provided in the [2006 IPCC Guidelines]. As indicated in paragraphs 41 and 47 below, this information should be included in table 7 of the CRF as well as the NIR using tables [4.1] of the [2006 IPCC Guidelines] adapted to the level of category disaggregation that the Annex I Party used for determining its key categories.<sup>8</sup>

#### Verification

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

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

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

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

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

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

#### Uncertainties

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

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

**Option 2:** [Annex I Parties shall report, in the NIR, uncertainties estimated, as indicated in paragraph 14 above, as well as methods used and underlying assumptions, with the purpose of helping to prioritize efforts to improve the accuracy of their national inventories in the future and to guide decisions on methodological choice. This information should be presented using table [3.3] of the [2006 IPCC Guidelines]. In these tables, the term “national total” refers to the absolute value of emissions by sources minus the magnitude of removals by sinks. In addition, Annex I Parties should indicate in that table those categories that have been identified as key categories in their inventory. If the methods used to estimate the level of uncertainty depart from the IPCC good practice guidance, these methods should be described.] (EU)

#### Recalculations

33. Recalculations of previously submitted estimates of emissions and removals as a result of changes in methodologies, changes in the manner in which emission factors and activity data are obtained and used, or the inclusion of new sources or sinks which have existed since the base year but were not previously reported, should be reported for the base year and all subsequent years up to the year in which the recalculations are made.

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

**Option 2:** Recalculations of previously submitted estimates of emissions and removals, as a result of changes in methodologies, changes in the manner in which emission factors and activity data are obtained and used, or the inclusion of new sources or sinks which have existed since the base year but were not previously reported, should be reported for the base year and all subsequent years of the time series up to the year for which the recalculations are made. [Further, a discussion on the impact of the recalculations on the trend in emissions is to be provided in the NIR at the category, sector and national total level.] (secretariat)

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

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

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

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

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

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

#### Quality assurance/quality control (QA/QC)

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

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

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

#### [Higher-tier methods and models]

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

*IPCC in relation to the expert meeting on the use of models and measurements in GHG inventories.*<sup>9</sup>

[Adjustments][Corrections]<sup>10</sup> (EU)

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

## 2. National inventory report

38. Annex I Parties shall submit to the COP, through the secretariat, an NIR containing detailed and complete information on their inventories. The NIR should ensure transparency and contain sufficiently detailed information to enable the inventory to be reviewed. This information should cover the entire time series, from the base year<sup>11</sup> to the latest inventory year, and any changes to previously submitted inventories.

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

**Option 2:** Annex I Parties shall submit to the COP, through the secretariat, an NIR containing detailed and complete information on their inventories. The NIR should ensure transparency and contain sufficiently detailed information to enable the inventory to be reviewed. This information should cover the [entire] time series, from the base year<sup>11</sup> to the latest inventory year, and any changes to previously submitted inventories. (EU)

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

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

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

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

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

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

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

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

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

**Option 2:** The NIR [should be reported in accordance with the annotated outline contained in annex I to these guidelines.]~~shall include annual inventory information, submitted in accordance with paragraph 28 above~~ (EU)

41. The NIR should include:

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

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

- (i) Reference to the key category tables in the CRF;
- (ii) Information on the level of category disaggregation used and its rationale;
- (iii) Additional information relating to the methodology used for identifying key categories;

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

- (i) Whether feedstocks and non-energy use of fuels have been accounted for in the inventory, and if so, where they have been accounted for in the energy or industrial processes sector;
- (ii) Whether CO<sub>2</sub> from biomass burning has been estimated and where it has been accounted for in the sectoral background data tables of the CRF (tables 5.A-5.F, and table 5(V));
- (iii) Whether emissions of CO<sub>2</sub> corresponding to atmospheric oxidation of CO, NMVOCs and CH<sub>4</sub> emissions from non-combustion and from non-biogenic processes, such as solvent use, coal mining and handling, venting and leakages of fossil fuels, have been accounted for in the inventory;
- (iv) Information on source or sink categories excluded or potentially excluded, including efforts to develop estimates for future submissions;

(d) Information on how the effects of CO<sub>2</sub> capture from flue gases and subsequent CO<sub>2</sub> storage are accounted for in the inventory;

(e) Information on uncertainties, as requested in paragraph 32 above;

(f) Information on any recalculations relating to previously submitted inventory data, as requested in paragraphs 33 to 35 above, including changes in methodologies, sources of information and assumptions, as well as recalculations in response to the review process;

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

(g) Information on changes from previous years, not related to recalculations, including the changes in methodologies, sources of information and assumptions, as well as changes in response to the review process;

(h) Information on QA/QC as requested in paragraph 36 above, describing the QA/QC plan, and the QA/QC activities implemented for the entire inventory as well as for individual categories, in particular key categories, and the entire inventory performed internally, as well as on the external reviews conducted, if any. Key findings on the quality of the input data, methods, processing and archiving and how they have been addressed, should be described;

(i) A description of the institutional arrangements for inventory preparation.

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

**Option 2 (EU):**

(a) Descriptions, references and sources of information of the specific methodologies, assumptions, emission factors and activity data, as well as the rationale for their selection. It also should include an indication of the level of complexity (IPCC tiers) applied and a description of any national methodology used by the Annex I Party, ~~as well as information on anticipated future improvements.~~ For key categories, an explanation should be provided if the recommended methods from the appropriate decision tree in the 2006 IPCC Guidelines ~~good practice guidance~~ are not used. ~~In addition, activity data, emission factors and related information should be documented in accordance with the IPCC good practice guidance.~~

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

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

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

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

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

(d) ~~[Information on how and where] Whether feedstocks and non-energy use of fuels have been accounted for reported in the inventory, and if so, where they have been accounted for in the energy or industrial processes sector;~~

~~— (ii) Whether CO<sub>2</sub> from biomass burning has been estimated and where it has been accounted for in the sectoral background data tables of the CRF (tables 5.A-5.F, and table 5(V));~~

~~— (iii) Whether emissions of CO<sub>2</sub> corresponding to atmospheric oxidation of CO, NMVOCs and CH<sub>4</sub> emissions from non combustion and from non biogenic processes, such as solvent use, coal mining and handling, venting and leakages of fossil fuels, have been accounted for in the inventory;~~

~~— (iv) Information on source or sink categories excluded or potentially excluded, including efforts to develop estimates for future submissions;~~

(d) Information on how the effects of CO<sub>2</sub> capture from flue gases and subsequent CO<sub>2</sub> storage are accounted for in the inventory;

(e) Information on uncertainties, as requested in paragraph 32 above;

(f) Information on any recalculations relating to previously submitted inventory data, as requested in paragraphs 33 to 35 above, including changes in methodologies, sources of information and assumptions, as well as in particular recalculations in response to the review process;

~~(g) Information on changes from previous years, not related to recalculations, including the changes in methodologies, sources of information and assumptions, as well as changes in response to the review process;~~

~~(h) Information on QA/QC as requested in paragraph 36 above, describing the QA/QC plan, and the QA/QC activities implemented for the entire inventory as well as for individual categories, in particular key categories, and the entire inventory performed internally, as well as on the external reviews conducted, if any. Key findings on the quality of the input data, methods, processing and archiving and how they have been addressed, should be described. 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 as requested in paragraph 36 above;(EU)~~

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

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

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

**Option 2: delete (EU)**

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

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

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

**41bis.** The NIR should be reported in accordance with the outline and general structure contained in annex I to these guidelines.(EU)

### 3. Common reporting format

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

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

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

45. Annex I Parties shall submit annually to the COP, through the secretariat, the information required in the CRF as contained in annex II to these guidelines. This

information shall be electronically submitted on an annual basis in its entirety to the COP, through the secretariat, in accordance with the relevant decisions of the COP.

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

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

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

47. The CRF consists of:

- (a) Summary, sectoral and trend tables for all greenhouse gas emissions and removals;
- (b) Sectoral background data tables for reporting implied emission factors<sup>13</sup> and activity data, including:
  - (i) 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 estimates under the sectoral approach, as well as providing explanations of any significant differences;<sup>14</sup>
  - (ii) Tables for reporting fossil fuel consumption for non-energy feedstocks, international bunkers and multilateral operations;
- (c) Tables for reporting, inter alia, key categories, recalculations and completeness of the inventory.

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

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

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

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

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

- (a) Provide the full CRF for the latest inventory year and for those years for which any change in any sector has been made. For years where no changes are made,

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

<sup>14</sup> Detailed explanations should be included in the NIR.

resubmission of full CRF tables is not necessary, but a reference should be made to the inventory submission in which the unchanged data were reported originally. Annex I Parties should ensure that a full and time-series consistent set of CRF tables is annually available for the entire time series from the base year onwards;

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

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

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

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

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

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

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

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

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

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

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

## G. Record keeping

51. Annex I Parties should gather and archive all relevant inventory information for each year, including all disaggregated emission factors, activity data and documentation on how these factors and data were generated, including expert judgement where appropriate, and how they have been aggregated for reporting in the inventory. This information should

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

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

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

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

## H. Systematic updating of the guidelines

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

## I. Language

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

**Option 1:** As above.

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

Table 1 [2007][1995]

**Intergovernmental Panel on Climate Change global warming potential values<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] IPCC 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>3</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

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

**Option 1:** Leave this entire Annex I as is.

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

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

#### EXECUTIVE SUMMARY

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

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

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

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

#### Chapter 1: INTRODUCTION

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

1.2. A description of the institutional arrangement for inventory preparation

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

1.4. Brief general description of methodologies and data sources used

1.5. Brief description of key source categories

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

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

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

#### Chapter 2: TRENDS IN GREENHOUSE GAS EMISSIONS

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

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

2.2. Description and interpretation of emission trends by gas

- 2.3. Description and interpretation of emission trends by source category
- 2.4. Description and interpretation of emission trends for indirect greenhouse gases and SO<sub>2</sub>

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

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

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

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

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

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

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

In addition, the energy information should include the following:

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

- Comparison of the sectoral approach with the reference approach
- International bunker fuels
- Feedstocks and non-energy use of fuels
- CO<sub>2</sub> capture from flue gases and subsequent CO<sub>2</sub> storage
- Country-specific issues

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

**Chapter 4: INDUSTRIAL PROCESSES (CRF sector 2)****Chapter 5: SOLVENT AND OTHER PRODUCT USE (CRF sector 3)****Chapter 6: AGRICULTURE (CRF sector 4)****Chapter 7: LULUCF (CRF sector 5)**

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

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

**Chapter 8: WASTE (CRF sector 6)****Chapter 9: OTHER (CRF sector 7) (if applicable)**

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

**Chapter 10: RECALCULATIONS AND IMPROVEMENTS**

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

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

**REFERENCES****ANNEXES TO THE NATIONAL INVENTORY REPORT**

Annex 1: Key categories

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

- Information on the level of disaggregation
- Tables 7.A1–7.A3 of the IPCC good practice guidance<sup>15</sup>

Annex 2: Detailed discussion of methodology and data for estimating CO<sub>2</sub> emissions from fossil fuel combustion

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

Annex 4: CO<sub>2</sub> reference approach and comparison with sectoral approach, and relevant information on the national energy balance

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

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

Annex 7: Tables 6.1 and 6.2 of the IPCC good practice guidance<sup>16</sup>

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

#### Annotated outline of the National Inventory Report

##### Introduction

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

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

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

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

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

**An Outline and General Structure of the NIR**

**EXECUTIVE SUMMARY**

- ES.1. Background information on greenhouse gas inventories and climate change (e.g., as it pertains to the national context, to provide information to the general public)
  - ES.1.1 Background information on climate change (e.g. as it pertains to national context)
  - ES.1.2 Background information on greenhouse gas inventories
- ES.2. Summary of national emission and removal related trends
  - ES.2.1 GHG inventory
- ES.3. Overview of source and sink category emission estimates and trends
  - ES.3.1 GHG inventory
- ES.4. Other information (e.g., indirect greenhouse gases)

**Chapter 1: Introduction**

- 1.1. Background information on greenhouse gas inventories and climate change (e.g., as it pertains to the national context, to provide information to the general public)
  - 1.1.1. Background information on climate change (e.g. as it pertains to national context)
  - 1.1.2. Background information on greenhouse gas inventories
- 1.2. A description of the [national system][national inventory system]
  - 1.2.1. Institutional, legal and procedural arrangements [for planning, preparing and managing] an [annual submission][annual inventory submission]
  - 1.2.2. Overview of inventory planning, preparation and management
  - 1.2.3. Quality assurance, quality control and verification plan
  - 1.2.4. Changes in the national system since previous [annual submission][annual inventory submission]
- 1.3. Inventory preparation
  - 1.3.1. GHG inventory
  - 1.3.2. Data collection, processing and storage
  - 1.3.3. Quality assurance/quality control (QA/QC) procedures, verification and extensive review of GHG inventory
- 1.4. Brief general description of methodologies and data sources used
  - 1.4.1. GHG inventory
  - 1.4.2. Overview of used higher-tier methods and/or models
- 1.5. Brief description of key categories
  - 1.5.1. GHG inventory (including and excluding LULUCF)

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

## Chapter 2: Trends in greenhouse gas emissions

- 2.1. Description and interpretation of emission trends for aggregated greenhouse gas emissions
- 2.2. Description and interpretation of emission trends by gas
- 2.3. Description and interpretation of emission trends by category
- 2.4. Description and interpretation of emission trends for indirect greenhouse gases (CO<sub>2</sub>, NO<sub>x</sub>, NMVOC) and SO<sub>2</sub>

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

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

## Chapter 3: Energy (CRF sector 1)

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

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

3.2.2 International bunker fuels

3.2.3 Feedstocks and non-energy use of fuels

~~3.2.4 CO<sub>2</sub> capture from flue gases and subsequent CO<sub>2</sub> storage, if applicable~~

3.2.5 Country-specific issues

3.2.6 Category (CRF category number)

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

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

3.2.6.3 Uncertainties and time-series consistency

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

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

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

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

3.3.1. Category (CRF category number)

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

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

3.3.1.3. Uncertainties and time-series consistency

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

5.3.6. Uncertainties and time-series consistency

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

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

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

## **Chapter 6: Waste (CRF sector 4)**

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

6.2. Category (CRF category number)

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

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

6.2.3. Uncertainties and time-series consistency

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

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

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

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

### Chapter 8: Indirect CO<sub>2</sub> and N<sub>2</sub>O emissions

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

## Chapter 9: Recalculations and improvements

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

## REFERENCES

## ANNEXES TO THE NATIONAL INVENTORY REPORT

### Annex 1: Key categories

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

### Annex 2: Assessment of uncertainty

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

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

**Annex 4:** Detailed discussion of methodology and data for estimating CO<sub>2</sub> emissions from fossil fuel combustion

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

A.3.X (sector or category name)

**Annex 6:** Relevant information on the national energy balance

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

**An Outline and General Structure of the NIR (Option 2 - EU)****EXECUTIVE SUMMARY**

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

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

~~ES.1.2 Background information on greenhouse gas inventories~~

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

ES.2.1 GHG inventory

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

ES.3.1 GHG inventory

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

**Chapter 1: Introduction**

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

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

~~1.1.2. Background information on greenhouse gas inventories~~

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

1.2.1. Institutional, legal and procedural arrangements

*Please indicate arrangements for planning, preparing, managing and submitting the annual GHG inventory, including information addressing each sector*

1.2.2. Overview of inventory planning, preparation and management

1.2.3. Quality assurance, quality control and verification plan

- QA/QC procedures applied

- QA/QC plan

- Verification activities

- treatment of confidentiality issues

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

1.3. Inventory preparation

~~1.3.1. GHG inventory~~

1.3.2. Data collection, processing and storage

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

1.4. Brief general description of methodologies and data sources used

Please provide a summarized indication of methodological tiers used

1.4.1. GHG inventory

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

1.5. Brief description of key categories

Please indicate a list with the key categories identified for the latest reporting year on the basis of table 4.11 of the 2006 IPCC guidelines and provide more detailed information in Annex 1

1.5.1. GHG inventory (including and excluding LULUCF)

~~1.6. Information on QA/QC and verification activities undertaken, including the treatment of confidentiality issues where relevant~~

~~1.6.1. QA/QC procedures (i.e. applied in this submission and results)~~

~~1.6.2. Verification activities (i.e. undertaken in this submission)~~

~~1.6.3. Treatment of confidentiality issues~~

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

1.7.1. GHG inventory (e.g. assumptions, expert judgement, data)

1.8. General assessment of the completeness

Please provide inter alia information and explanation in relation to categories not reported or reported elsewhere, information related to the geographical scope, or the use of calendar years/ fiscal years for the reporting. This chapter should not duplicate information provided in CRF table 9.

1.8.1. GHG inventory [in terms of activities (categories), gases, years and territory]

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

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

~~2.2. Description and interpretation of emission trends by gas~~

2.3. Description and interpretation of emission trends by sector category

Please explain inter alia significant changes compared to 1990 and to the previous year.

~~2.4. Description and interpretation of emission trends for indirect greenhouse gases (CO, NO<sub>x</sub>, NMVOC) and SO<sub>2</sub>~~

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

~~X.1. Overview of sector (e.g., description and quantitative overview, including analysis of emission trends)~~

~~X.2. Category (CRF category number)~~

~~X.2.1. Category description (e.g., characteristics of sources)~~

~~X.2.2. Methodological issues (e.g., choice of methods/activity data/emission factors such as the use of emissions trading data, higher tier methods and models, assumptions, parameters and conventions underlying the emission and removal estimates – the rationale for their selection, use of higher tier methods and/or models, any specific methodological issues (e.g. description of national methods))~~

~~X.2.3. Uncertainties and time-series consistency~~

~~X.2.4. Category specific QA/QC and verification, if applicable~~

~~X.2.5. Category specific recalculations, if applicable, including changes made in response to the review process [and impact on emission trend]~~

~~X.2.6. Category specific planned improvements, if applicable (e.g., methodologies, activity data, emission factors, etc.), including [tracking of those identified in the review process]~~

## Chapter 3: Energy (CRF sector 1)

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

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

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

3.2.2 International bunker fuels

3.2.3 Feedstocks and non-energy use of fuels

~~3.2.4. CO<sub>2</sub> capture from flue gases and subsequent CO<sub>2</sub> storage, if applicable~~

~~3.2.5 Country-specific issues~~

3.2.6 Category (CRF category number)

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

3.2.6.2 Methodological issues (e.g., choice of methods/activity data/emission factors, information on CO<sub>2</sub> capture, such as the use of emissions trading data, higher tier methods and models, assumptions, parameters and conventions underlying the emission and removal estimates – the rationale for their selection, any specific methodological issues (e.g. description of national methods and models))

3.2.6.3 Uncertainties and time-series consistency

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

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

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

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

3.3.1. Category (CRF category number)

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

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

3.3.1.3. Uncertainties and time-series consistency

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

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

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

### 3.4. 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 ~~such as the use of emissions trading data, higher tier methods and models~~, assumptions, parameters and conventions underlying the emission and removal estimates – the rationale for their selection, any specific methodological issues (e.g. description of national methods))

3.4.1.3. Uncertainties and time-series consistency

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

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

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

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

4.1. Overview of sector (e.g., quantitative overview and description 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, information on CO<sub>2</sub> capture ~~such as the use of emissions trading data, higher tier methods and models~~, assumptions, parameters and conventions underlying the emission and removal estimates – the rationale for their selection, any specific methodological issues (e.g. description of national methods 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

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

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

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

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### **5.2. Category (Agriculture)-(CRF category number)**

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

~~5.2.2. Information on use of higher tier methods and/or models~~

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

5.2.4. Uncertainties and time-series consistency

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

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

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

## **Chapter 6: Land use, land use change and forestry (CRF sector 4)**

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

6.2. Land-use definitions and the classification systems used and their correspondence to the LULUCF 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

~~5.3.~~ 6.4. **Category (Forestry and other land use) (CRF category number)**

~~5.3.6.4.1.~~ Description (e.g., characteristics of category)

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

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

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

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

5.3.6. Uncertainties and time-series consistency

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

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

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

## **Chapter 7 6: Waste (CRF sector 5 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)

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

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

6.2.3. Uncertainties and time-series consistency

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

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

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

## **Chapter 87: Other (CRF sector 65) (if applicable)**

### **Chapter 98: Indirect CO<sub>2</sub> and N<sub>2</sub>O emissions**

8.1 Description of sources of indirect emissions in GHG inventory

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

8.3 Uncertainties and time-series consistency

- 8.4 Category-specific QA/QC and verification, if applicable
- 8.5 Category-specific recalculations, if applicable, including changes made in response to the review process and impact on emission trend
- 8.6 Category-specific planned improvements, if applicable (e.g., methodologies, activity data, emission factors, etc.), including tracking of those identified in the review process

## Chapter 109: Recalculations and improvements

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

## REFERENCES

## ANNEXES TO THE NATIONAL INVENTORY REPORT

### Annex 1: Key categories

- Description of methodology used for identifying key categories.
- Reference to the key category tables in the CRF.
- Information on the level of disaggregation
- Table [4.2 and 4.3] of the [2006 IPCC guidelines]

### Annex 2: Assessment of uncertainty

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

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

**Annex 4:** Detailed discussion of methodology and data for estimating CO<sub>2</sub> emissions from fossil fuel combustion

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

A.3.X (sector or category name)

**Annex 6:** Relevant information on the national energy balance

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

## **References and Annexes**

All references used in the NIR must be listed in the References.

## Appendix

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

### Background:

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

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

### Issues for further discussion :

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

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

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

#### **Energy**

##### Fuel combustion

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

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

##### Fugitive fuel emissions

Coal mining:

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

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

##### Oil and natural gas

- More specific information than that required in CRF table 1.B.2 could be provided, e.g.
- Pipeline length

- Number of oil wells
- Number of gas wells
- Gas throughput<sup>1</sup>
- Oil throughput<sup>17</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)
- 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.

<sup>17</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 I.B.2 of the CRF.

**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 (CRF) tables

Due to the complexity of the CRF tables and the importance of colour coding in the CRF tables, they are not included in this document but can be downloaded from the secretariat's web site:

[http://unfccc.int/documentation/documents/advanced\\_search/items/3594.php?such=j&meeting=%22\(SBSTA\),+thirty-fourth+session%22&sorted=agenda#begin](http://unfccc.int/documentation/documents/advanced_search/items/3594.php?such=j&meeting=%22(SBSTA),+thirty-fourth+session%22&sorted=agenda#begin)

The common reporting format (CRF) tables are included in the following three files:

- Set 1 - WS 4 - Energy, industrial processes and waste.pdf contains the CRF tables for the energy, industrial processes and waste sectors;
- Set 2 - WS 4 - AFOLU.pdf contains the CRF tables for the agriculture and land use, land-use change and forestry sectors;
- Set 3 - WS 4 - cross-sectoral.pdf contains the cross-sectoral tables.