



# 2019 Refinement to the 2006 IPCC Guidelines: Overview Chapter and General Guidance and Reporting Volume Overview

The 17<sup>th</sup> Workshop on GHG Inventories in Asia (WGIA17)

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# Introduction

# IPCC Inventory Guidelines and UNFCCC



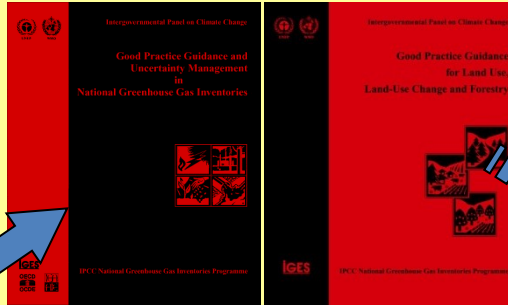
+

Currently, Non Annex I Parties use these under the UNFCCC.

Non-Annex I Parties are encouraged to use GPGs.

GPG2000 (non-LULUCF)

GPG2003 (LULUCF)

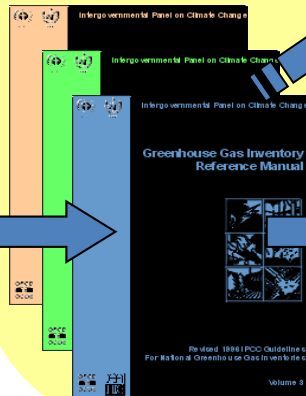
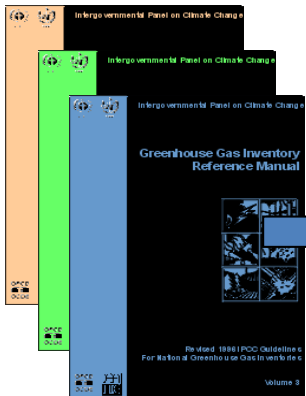


Annex I Parties must use from 2015

2006 IPCC Guidelines

1995 IPCC Guidelines

Revised 1996 IPCC Guidelines



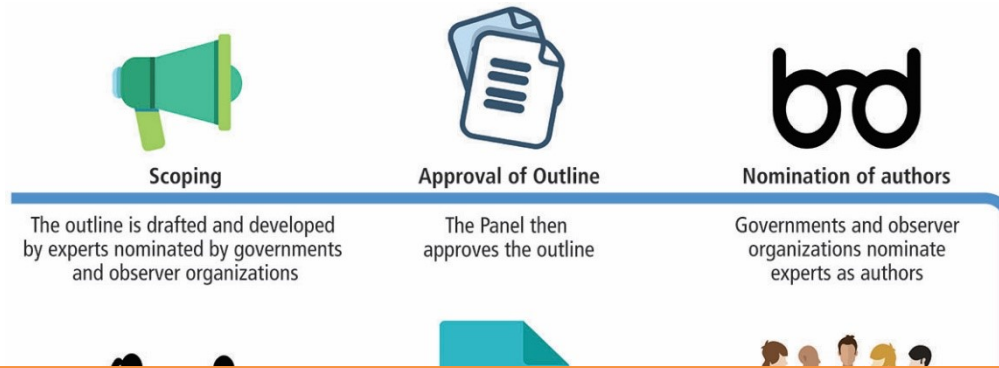
Actually, 2006 Guidelines are being used by more and more Non-Annex I Parties.

Revision/Update by the IPCC

# Need for refinement of 2006 IPCC Guidelines

- 2006 IPCC Guidelines – 13 years ago!!
- In August 2014, TFI Bureau discussed and concluded:
  - The 2006 IPCC Guidelines provide a technically sound methodological basis of national greenhouse gas inventory, and therefore fundamental revision is unnecessary.
  - To keep the validity of the 2006 IPCC Guidelines, certain refinements may be required, taking into account scientific and other technical advances that have matured sufficiently since 2006.
- In October 2016, IPCC decided to prepare a new Methodology Report titled “2019 Refinement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories”, and adopted its table of contents. (Decision IPCC/XLIV-5)

# 2019 Refinement was produced following IPCC Procedures

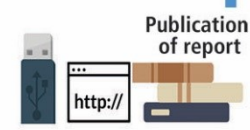


2019 Refinement was adopted/accepted by the IPCC at its 49<sup>th</sup> Session in May 2019 in Kyoto, Japan. (Decision IPCC-XLIX-9)



Peer reviewed and internationally available scientific technical and socio-economic literature, manuscripts made available for IPCC review and selected non-peer reviewed literature produced by other relevant institutions including industry

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Publication of report



# 2019 Refinement to the 2006 IPCC Guidelines

280

Prepared by over 280 scientists and experts.

47

Participated by authors from 47 countries.

10,000

More than 10,000 review comments from governments and experts were considered by authors.

Produced as one of the major IPCC products during its AR6 cycle.

# 2019 Refinement and Paris Agreement

- “Katowice Climate Package” was adopted by the UNFCCC COP24/CMA1 in December 2018 to operationalize the Paris Agreement. It stipulates in Decision 18/CMA.1:
  - Each Party shall use the *2006 IPCC Guidelines*, and shall use *any subsequent version or refinement of the IPCC guidelines* agreed upon by the Conference of the Parties serving as the meeting of the Parties to the Paris Agreement (CMA).



ipcc

INTERGOVERNMENTAL PANEL ON climate change



# Overview Chapter



# 2019 Refinement to the 2006 IPCC Guidelines

- The 2019 Refinement provides an **updated and sound scientific basis** for supporting the **preparation and continuous improvement of national greenhouse gas inventories**.
- The 2019 Refinement ***updates, supplements*** and ***elaborates*** them where the authors identified gaps or out-of-date science. The 2019 Refinement is to be used in conjunction with the 2006 IPCC Guidelines.
- Authors have examined a wide range of inventory methodologies and updated them where scientific advances and new knowledge made this necessary, following the IPCC decision.

# Structure of 2019 Refinement

- The same structure as that of the 2006 IPCC Guidelines so as to make it easier for inventory compilers to use the 2019 Refinement with the 2006 IPCC Guidelines.
- Comprising an Overview Chapter and five volumes:
  - Vol.1: General Guidance and Reporting (GGR)
  - Vol.2: Energy
  - Vol.3: Industrial Processes and Product Use (IPPU)
  - Vol.4: Agriculture, Forestry and Other Land Use (AFOLU)
  - Vol.5: Waste
- Glossary is also included.

# Key concepts unchanged from 2006 Guidelines

- Relevant but not prescriptive with respect to the reporting of national inventories under international agreements, and the use of reported information under these agreements.
- Provides methods for estimating emissions for each gas in mass units. No specific metrics (e.g., GWP values) is recommended to calculate emission estimates in CO<sub>2</sub> equivalent units.
- Structured so that any country, regardless of experience or resources, should be able to produce reliable estimates of their emissions and removals.

# Relationship with 2006 IPCC Guidelines

## Types of refinement from inventory compilers' perspective

Type	Explanation
<b>Update</b>	Inventory compilers should use the chapter/section/subsection in the <i>2019 Refinement</i> instead of the corresponding chapter/section/subsection in the <i>2006 IPCC Guidelines</i> .
<b>New Guidance</b>	Recognizing that there is no guidance in the <i>2006 IPCC Guidelines</i> , inventory compilers should use the chapter/section/subsection in the <i>2019 Refinement</i> .
<b>No Refinement</b>	Inventory compilers should use the corresponding chapter/section/subsection in the <i>2006 IPCC Guidelines</i> , because no refinement has been made in that chapter/section/subsection.
<b>Removed</b>	There were few cases where guidance/sections were removed because they were no longer relevant.

# **Volume 1: General Guidance and Reporting**

# GGR objectives

## □ To guide inventory compilers of Energy, IPPU, AFOLU and Waste sectors on:

- National GHG Inventory arrangements and management tools
- Data collection and adapting for inventory use
- Uncertainty assessment
- Methodological choice and identification of key categories
- Ensuring a consistent time series
- QA/QC and verification of emission estimates
- Use and reporting of models
- Calculation of emissions of precursors of GHGs and indirect emissions
- Reporting of emissions and removals

## □ To provide reporting framework in standard tabular format:

- Tables facilitate consistency between countries, categories, gases and years
- They are not intended to prescribe specific reporting formats under the UNFCCC

# Chapter 1 “Introduction to National GHG Inventories”

- ❑ New guidance on implementation of a national inventory management system, including:
  - Establishing arrangements to support the development, improvement and maintenance of national GHG inventories
  - Examples of institutional arrangements structuring, roles and capabilities of actors and stakeholders, data flows and suggested contents of Data Supply Agreements
  - Description of inventory management tools such as work plans, improvement plans, data management systems and quality systems with the illustrative examples
- ❑ Updated concept of “anthropogenic emissions and removals related to new optional approach for disaggregation of emissions and removals by human and natural components in Chapter 2 of Volume 4
- ❑ Elaborated guidance on the treatment of CO<sub>2</sub>, CH<sub>4</sub> and N<sub>2</sub>O emissions from combustion of biomass or biomass-based products

# Chapter 2 “Approaches to data collection”

- New guidance for the development of CS emission factors, including:
  - Examples of main EF sensitive parameters
  - Potential sources of EFs
  - Update on standard measurement methods
- New guidance for data collection, including:
  - Outline of data collection steps and decisions
  - Treatment of confidential data with illustrative examples
  - Update on potential data sources
- New guidance on the integration of emissions reported from facilities into national GHG inventories, including:
  - Designing facility-reporting programmes for inventory use (e.g. quality goals and reporting requirements for facility data)
  - Facility-reported data integration options into national dataset with illustrative example
  - Use of facility data not originally designed for inventory use



# Chapter 3 “Uncertainties”

- Updated guidance on uncertainty by providing more default values, calculation examples and best practices, including:
  - Structure of uncertainty assessment process
  - AD uncertainty assessment based on complete and random samples (with examples)
  - Clarification on key requirements for use of Approach 1 for combining uncertainties
  - Application of Approach 1 in practice
  - Uncertainty assessment steps description
  - Stepwise example demonstrating the use of Approach 2 uncertainty assessment (Monte-Carlo analysis)
- Excel-based addendum to Chapter 3: Tier 1 Uncertainty calculation tool

# Chapter 4 “Methodological Choice and Identification of Key Categories” and Chapter 5 “Time series consistency”

- Updated guidance on Key category analysis, including:
  - Treatment of disaggregation of categories
  - Treatment of particularly significant subcategories
  - Simplification of equation on trend assessment (Approach 1)
  - Introducing of key categories ranks
  
- Elaborated guidance on time series consistency, including:
  - Information on how to ensure time series consistency when using facility level data and different data sources
  - Case studies of overlap, linear and non-linear interpolation method
  - Examples of surrogate data by sector

# Chapter 5 “Time Series Consistency”

- A new methodology for non-linear interpolation analysis has been added.
  - Relevant in cases where time series consistency is best represented by multiplicative (exponential) rather than additive (linear) relationships.

# Chapter 6 “QA/QC and Verification”

- Elaborated definitions of QA/QC and verification, including:
  - Distinguishing of term “verification” defined in IPCC Guidelines from that used e.g. in carbon markets
- Updated guidance on comparisons with atmospheric measurements, including:
  - Advantages, limitations and prospects of using atmospheric measurements for verification of GHG emissions
  - Key steps in applying inverse modelling for verification of national inventory (with country examples)
  - Checklist to identify whether inverse model estimates are applicable for verification
  - Outline of inventory comparison to global/regional inverse modelling products and satellite observations
- New guidance on the use and reporting of models, including:
  - Identification of model suitability
  - Implementation and evaluation of model
  - Checklist for ensuring good practice in use of models

# Chapter 7 “Precursors and indirect emissions”

- Elaborated guidance on indirect CO<sub>2</sub> inputs to the atmosphere from emissions of carbon-containing compounds, including:
  - Treatment of emissions of precursors and indirect CO<sub>2</sub> from fossil fuel combustion, fugitives and biogenic sources in national inventories
  - Options to address indirect CO<sub>2</sub> depending on metrics chosen (e.g. GWP for fossil methane)
  - Steps to estimate CO<sub>2</sub> inputs to atmosphere from NMVOC emissions
  - Description of non-biogenic sources of indirect CO<sub>2</sub> from oxidation of CH<sub>4</sub>, CO and NMVOC
  - Carbon content in NMVOC species from different source categories
  - Carbon content in solvent portion of various materials (NMVOC emissions)

# Chapter 8 “Reporting Guidance and Tables”

- ❑ Updated to reflect refinements made in other Volumes (although it was not explicitly included in the original scope of refinements), including:
  - Reporting guidance
  - List of GHGs
  - List of IPCC categories and their definitions
  - Reporting Tables
  
- ✓ Chapter is not intended to prescribe reporting format to be used under the UNFCCC (e.g. GWP, gases, structure of categories etc.)

- Home IPCC
- IPCC-TFI Home**
- Organization
- Technical Support Unit
- NGGIP Publications
- Presentations
- Meetings
- Support to Inventory Compilers
- FAQs
- Links
- Emission Factor Database (EFDB)
- Electronic Discussion Group (EDG)

The Intergovernmental Panel on Climate Change (IPCC) was established by the World Meteorological Organization (WMO) and the United Nations Environment Programme (UNEP) in 1988. Its main objective was to assess scientific, technical and socio-economic information relevant to the understanding of human induced climate change, potential impacts of climate change and options for mitigation and adaptation. The IPCC has completed four assessment reports, developed methodology guidelines for national greenhouse gas inventories, special reports and technical papers. For more information on the IPCC, its activities and publications, please see the [IPCC homepage](#).

The IPCC National Greenhouse Gas Inventories Programme (IPCC-NGGIP) had been undertaken since 1991 by the IPCC WG I in close collaboration with the Organisation for Economic Co-operation and Development (OECD) and the International Energy Agency (IEA).

[ [More about IPCC-NGGIP](#) ]

## IPCC-NGGIP Publication



- 2006 IPCC Guidelines for National Greenhouse Gas Inventories
- Good Practice Guidance for Land Use, Land-Use Change and Forestry
- Refinement and Methodological Options to Inventory Emissions

Thank you very much.  
For details on IPCC TFI, please visit:  
<http://www.ipcc-nggip.iges.or.jp/>

### SB32

- Presentation of Side Event at UNFCCC-SB32 in Bonn, 31 May 2010 has been uploaded on [Presentations](#). (1 June 2010)

### Meeting Documents Available

- Meeting Report

### Future Meetings

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### Previous Meetings

- IPCC Expert Meeting on Uncertainty and Validation of Emission Inventories