



Overview of IPCC Guidelines for National Greenhouse Gas Inventories, including on-going work on 2019 Refinement

Expert Meeting on Short-lived Climate Forcers (SLCF)

28 May 2018

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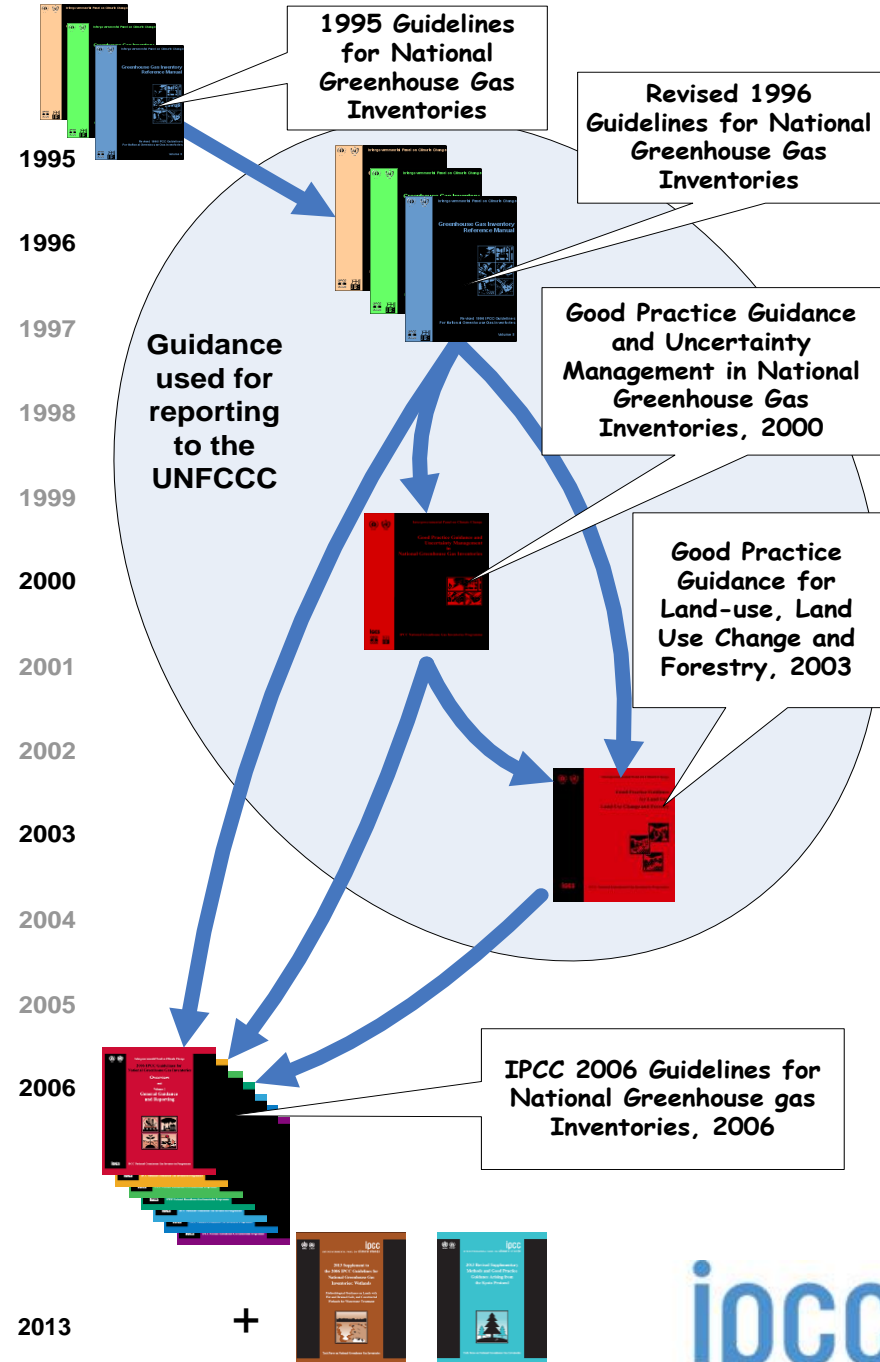
INTERGOVERNMENTAL PANEL ON climate change

National Greenhouse Gas Inventory

- Emission Inventory = Estimates of all emissions (and removals) of particular gases from given sources from a defined region in a specific period of time
- National GHG inventory deals with
 - **Anthropogenic** emissions/removals of Greenhouse Gases
 - **National** estimates (within national territory and offshore areas over which the country has jurisdiction)
 - **Annual** estimates
- Not based on life-cycle analysis
- Basis for scientific understanding of climate change
- Basis for policy making
 - To monitor progress towards policy goals
 - To help develop cost-effective policy /etc

IPCC Inventory Guidelines

- Guidelines have evolved from 1996 to 2006
- Development of Good Practice Guidance (GPG) was a major step forward
 - Complete, consistent, comparable, transparent, and accurate inventories taking account of available resources
 - Major change was from 1996 LUCF to GPG LULUCF
- 2006 Guidelines [2.5 years work, 250 authors]
 - Have 4 sectors
 - Have improved methods and default data
 - Cover more greenhouse gases and methods
 - Integrate GPG
 - Require similar resources
 - Do not pre-empt accounting choices
 - The best globally applicable methods





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IPCC Inventory Guidelines

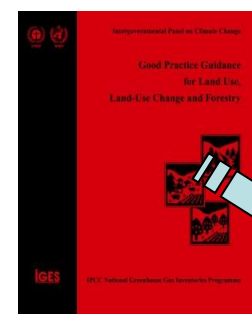
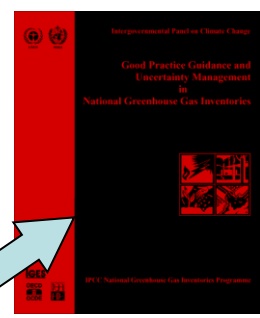
Non-Annex I Parties should use 1996 Guidelines. (Annex to Decision 17/CP.8)

Non-Annex I Parties are encouraged to use GPGs.

Annex I Parties must use from 2015
2006 IPCC Guidelines

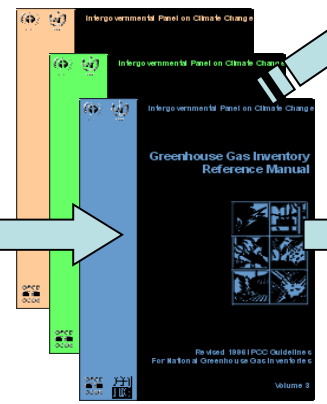
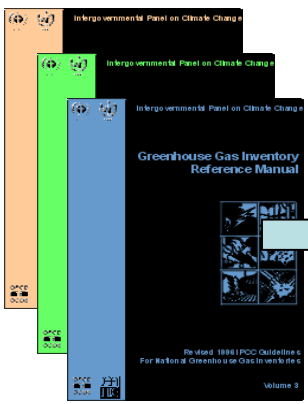
GPG2000 (non-LULUCF)

GPG2003 (LULUCF)



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

Sources/Sinks and Gases covered

- Sources/Sinks
 - Energy Sector
 - Industrial Processes and Product Use (IPPU) Sector
 - Agriculture, Forestry and Other Land Use (AFOLU) Sector
 - Waste Sector
- Gases
 - CO₂, CH₄, N₂O, HFCs, PFCs, SF₆, NF₃
 - Other halogenated gases
 - For precursors (NO_x, NMVOC, CO, SO₂, ...), estimation methodology is not provided. **Instead, links to information on methods used under other agreements and conventions are provided.** (e.g. “EMEP/CORINAIR Emission Inventory Guidebook”)

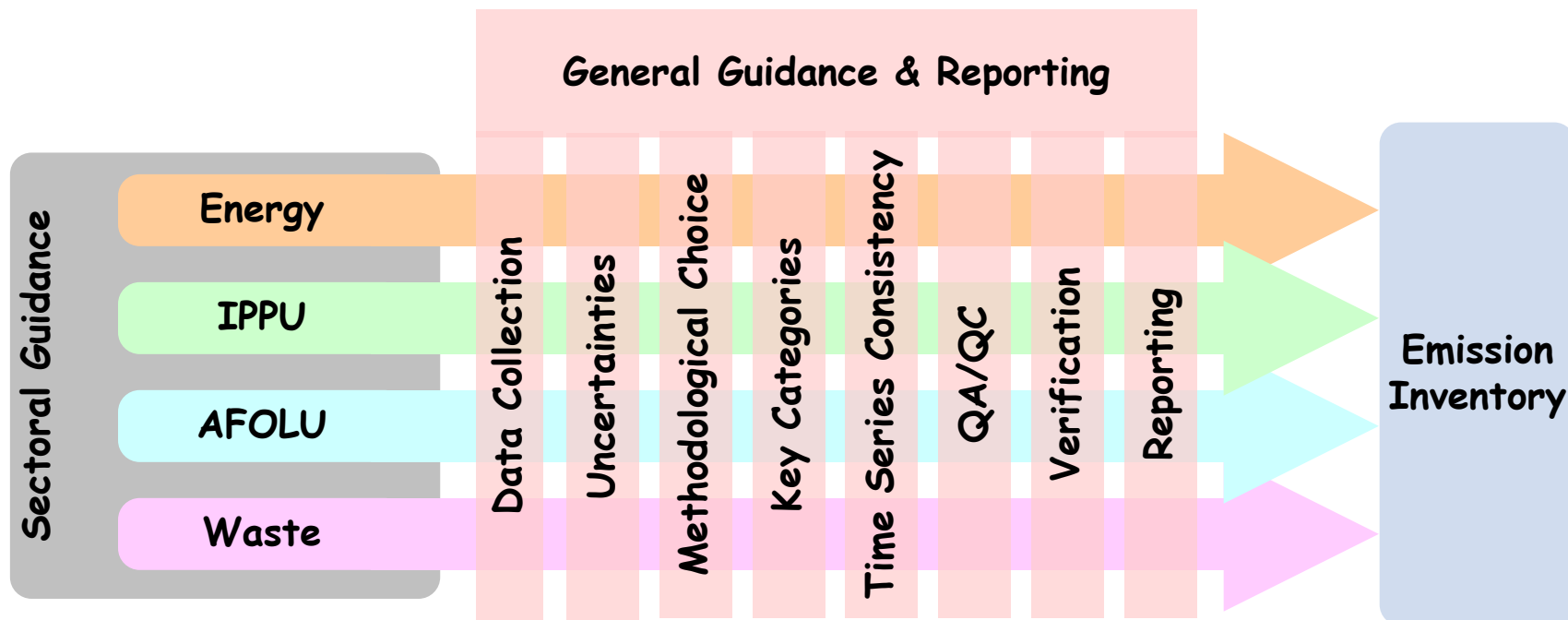
TABLE 2
GASES FOR WHICH GWP VALUES ARE AVAILABLE IN THE TAR⁸

Name	Symbol
Carbon Dioxide	CO ₂
Methane	CH ₄
Nitrous Oxide	N ₂ O
Hydrofluorocarbons	HFCs (e.g., HFC-23 (CHF ₃), HFC-134a (CH ₂ FCF ₃), HFC-152a (CH ₃ CHF ₂))
Perfluorocarbons	PFCs (CF ₄ , C ₂ F ₆ , C ₃ F ₈ , C ₄ F ₁₀ , c-C ₄ F ₈ , C ₅ F ₁₂ , C ₆ F ₁₄)
Sulphur Hexafluoride	SF ₆
Nitrogen Trifluoride	NF ₃
Trifluoromethyl Sulphur Pentafluoride	SF ₅ CF ₃
Halogenated Ethers	e.g., C ₄ F ₉ OC ₂ H ₅ , CHF ₂ OCF ₂ OC ₂ F ₄ OCHF ₂ , CHF ₂ OCF ₂ OCHF ₂
Other halocarbons	e.g., CF ₃ I, CH ₂ Br ₂ , CHCl ₃ , CH ₃ Cl, CH ₂ Cl ₂ ⁹

TABLE 3
ADDITIONAL GASES FOR WHICH GWP VALUES ARE NOT AVAILABLE IN THE TAR

C ₃ F ₇ C(O)C ₂ F ₅ ¹⁰
C ₇ F ₁₆
C ₄ F ₆
C ₅ F ₈
c-C ₄ F ₈ O

Good Practice Guidance



- Assists countries in producing inventories that are accurate in the sense of being neither over- nor underestimates so far as can be judged, and in which uncertainties are reduced as far as possible

Quality of Inventory

- 2006 IPCC Guidelines help countries compile a high quality inventory of anthropogenic emissions and removals of greenhouse gases that is credible & convincing.
- Indicators of quality:
 - Transparency
 - Completeness
 - Consistency
 - Comparability
 - Accuracy

TCCCA

How to estimate emissions/removals

- Make estimates based on parameters associated with emission rates
 - CO₂ proportional to amount of fuel burnt
 - Changes on stocks of carbon in forests give emissions (or removals) of CO₂
- Tiered methodologies:
 - ✓ Tier 1 – basic, simplest method (Use of default emission factors, etc)
 - ✓ Tier 2 – intermediate method (Use of country-specific emission factors, etc)
 - ✓ Tier 3 – most demanding in terms of complexity and data requirements

Typical Tier 1
method

$$E = EF \cdot AD$$

Where:

E = Emission

EF = Emission Factor

AD = Activity Data

Use of metrics to calculate CO₂-equivalent

- 2006 IPCC Guidelines do not require inventory compilers to calculate and report national total emissions in CO₂ equivalent unit.
- However, for some elements/processes, aggregation of emissions of different gases in CO₂ equivalent unit is necessary.
 - ✓ Reporting Table 6D – 6F: Trends of HFC, PFC and SF₆
 - ✓ **Key category analysis**
 - ✓ **Uncertainty assessment (aggregation of uncertainties)**
- 2006 IPCC Guidelines do not specify which metrics should be used to calculate CO₂ equivalent.

2019 Refinement to the 2006 IPCC Guidelines

- More than 10 years have passed since 2006...
- IPCC decided to develop a new Methodology Report to refine the 2006 IPCC Guidelines.
- **Aim:**
 - to provide an updated and sound scientific basis for supporting the preparation and continuous improvement of national GHG inventories;
 - not to revise the 2006 IPCC Guidelines, but update, supplement and/or elaborate the 2006 IPCC Guidelines where gaps or out-of-date science have been identified.
- **Will be completed in May 2019**
(= well in advance of the 1st Global Stocktake under Paris Agreement)

The 2019 Refinement will not replace the 2006 IPCC Guidelines.
It should be used in conjunction with the 2006 IPCC Guidelines.

2019 Refinement: Work Plan / Milestones

Event	Date
1 st Lead Author Meeting (LAM1)	7 - 14 Jun 2017
2 nd Lead Author Meeting (LAM2)	25 - 28 Sep 2017
FOD Expert Review	4 Dec 2017 - 11 Feb 2018 (10 weeks)
3 rd Lead Author Meeting (LAM3)	Week of 10 - 13 Apr 2018
Literature Cut-off Date	25 June 2018
SOD Government/Expert Review	2 Jul - 9 Sep 2018 (10 weeks)
4 th Lead Author Meeting (LAM4)	Week of 22 - 27 Oct 2018
Final Draft Government Review	14 Jan - 10 Mar 2019 (8 weeks)
IPCC Panel Adoption/Acceptance	May 2019



FOD: First Order Draft; SOD: Second Order Draft

- Home IPCC
- IPCC-TFI Home**
- Organization
- Technical Support Unit
- NGGIP Publications
- Presentations
- Meetings
- Support to Inventory Compilers
- FAQs
- Links
- Emission Factor Data
- Electronic Discussion

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

Thank you!
For further information, please visit our website.

<http://http://www.ipcc.ch/>

<http://www.ipcc-nggip.iges.or.jp/>

Greenhouse Gas

Use Change and

Inventory Emissions
Forests and

Management in

More Publications]



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[Meeting Documents Available](#)

Meeting Report

IPCC Expert Meeting on Uncertainty and Validation of
Emission Inventories