



Overview of IPCC TFI work in AR6 cycle and towards AR7 cycle

IPCC TFI Side Event

Sharm el-Sheikh Climate Change Conference

12 November 2022

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INTERGOVERNMENTAL PANEL ON climate change



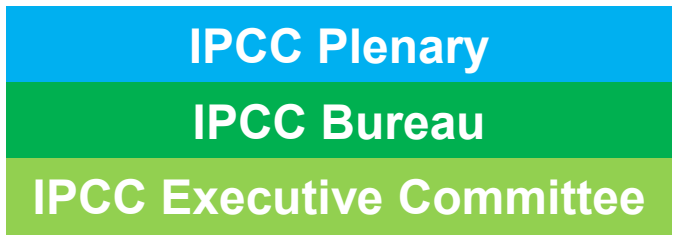
Outline

- IPCC Task Force on National Greenhouse Gas Inventories - IPCC TFI
- IPCC Inventory Software
- 2019 Refinement
- IPCC Emission Factor Database (EFDB)
- Work on Short-lived Climate Forcers (SLCFs)
- Other activities

IPCC Structure



AR6 cycle
(Oct 2015 – Jul 2023)



IPCC Secretariat
(Geneva,
Switzerland)

Working Group I

The Physical Science Basis

TSU
(France/China)

Working Group II

Climate Change Impacts, Adaptation and Vulnerability

TSU
(Germany/South Africa)

Working Group III

Mitigation of Climate Change

TSU
(UK/India)

Task Force on National Greenhouse Gas Inventories (TFI)

TSU
(Japan)

Authors, Contributors, Reviewers

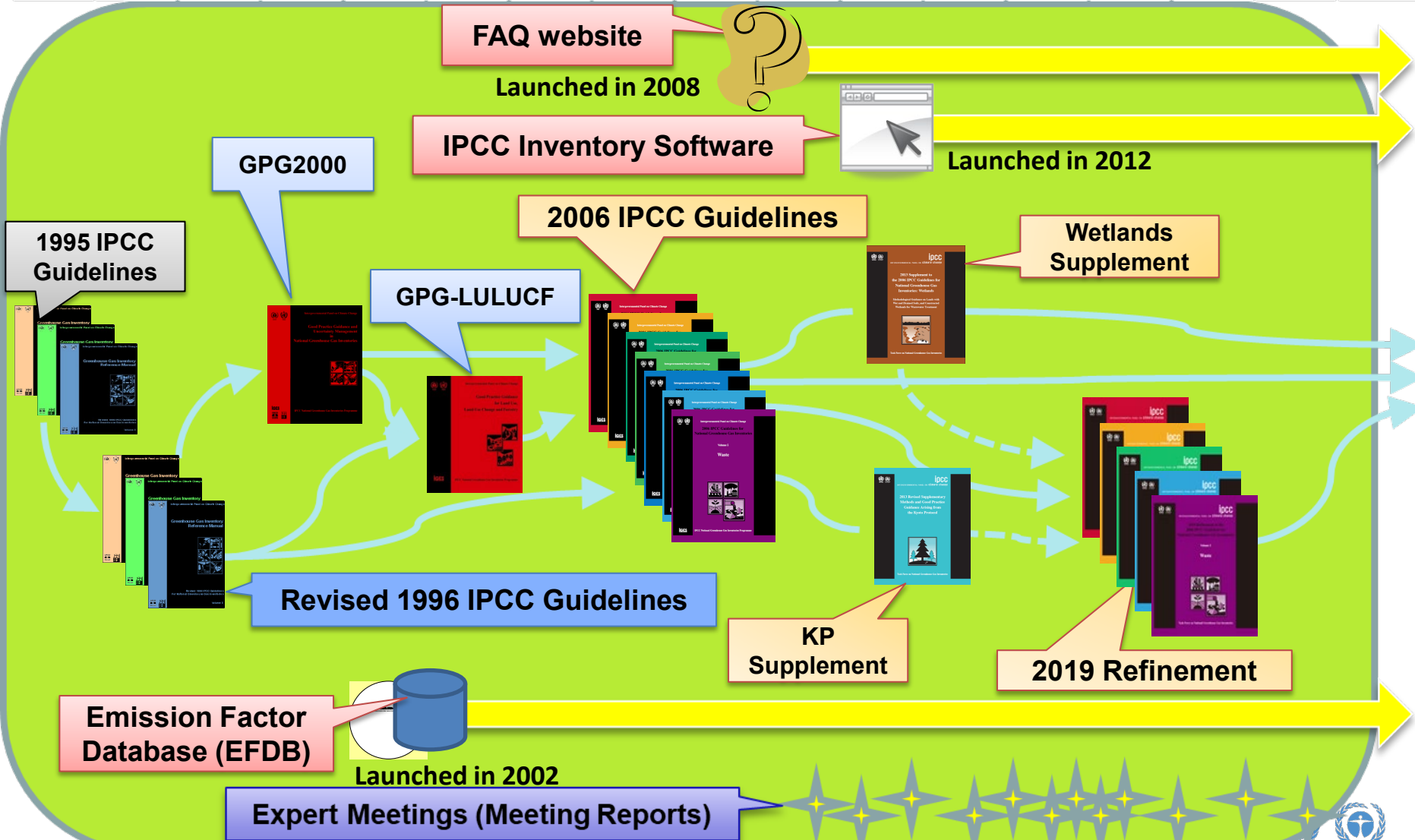
Develop and refine the internationally-agreed methodology to estimate GHG emissions and removals at national level

IPCC AR7 cycle

- IPCC AR7 cycle planned to start in July 2023 with the election at IPCC59 of the IPCC Bureau and of the TFI Bureau (TFB)
- IPCC Bureau composition -same as in AR6-, 34 members:
 - ✓ IPCC-Chair and 3 IPCC Vice-Chairs
 - ✓ 2 TFI Co-Chairs
 - ✓ WG I Bureau, with 2 Co-Chairs and 7 Vice-Chairs
 - ✓ WG II Bureau, with 2 Co-Chairs and 8 Vice-Chairs
 - ✓ WG III Bureau, with 2 Co-Chairs and 7 Vice-Chairs
- TFB composition -same as in AR6-, 2 Co-Chairs and 12 members (2 for each Region)
- Subject to the following overall regional balance within the IPCC Bureau:
 - ✓ Region I (Africa): 7 positions
 - ✓ Region II (Asia): 6 positions
 - ✓ Region III (South America): 4 positions
 - ✓ Region IV (North and Central America, Caribbean): 4 positions
 - ✓ Region V (South-West Pacific): 4 positions
 - ✓ Region VI (Europe): 8 positions

IPCC Guidelines and Supporting Tools

2015 - AR6 cycle - 2023



IPCC Inventory Software

IPCC Inventory Software - TSU - [Worksheets]

Application Database Inventory Year Worksheets Reports Tools Export/Import Administrate Window Help

2006 IPCC Categories

- 1 - Energy
 - 1.A - Fuel Combustion Activities
 - 1.A.1 - Energy Industries
 - 1.A.1.a - Main Activity El
 - 1.A.1.a.i - Electricity**
 - 1.A.1.a.ii - Combined
 - 1.A.1.a.iii - Heat Plan
 - 1.A.1.b - Petroleum Refi
 - 1.A.1.c - Manufacture of
 - 1.A.1.c.i - Manufactu
 - 1.A.1.c.ii - Other Ene
 - 1.A.2 - Manufacturing Indust
 - 1.A.2.a - Iron and Steel
 - 1.A.2.b - Non-Ferrous M
 - 1.A.2.c - Chemicals
 - 1.A.2.d - Pulp, Paper an
 - 1.A.2.e - Food Processin
 - 1.A.2.f - Non-Metallic Mi
 - 1.A.2.g - Transport Equip
 - 1.A.2.h - Machinery
 - 1.A.2.i - Mining (excludin
 - 1.A.2.j - Wood and wood
 - 1.A.2.k - Construction
 - 1.A.2.l - Textile and Leat
 - 1.A.2.m - Non-specified I
 - 1.A.3 - Transport
 - 1.A.3.a - Civil Aviation
 - 1.A.3.a.i - Internation
 - 1.A.3.a.ii - Domestic
 - 1.A.3.b - Road Transport
 - 1.A.3.b.i - Cars
 - 1.A.3.b.i.1 - Pass
 - 1.A.3.b.i.2 - Pass

2006 IPCC Guidelines

Worksheet notes

User notes

1.A.1.a.i - Time Series

CARBON DIOXIDE (CO₂) Emissions (Gg CO₂ Equivalents)

Equation 2.4

| Subdivision | Fuel | Consumption Unit | Consumption (Mass, Volume or Energy Unit) | Conversion Factor (TJ/Unit) (NCV) | Total consumption (TJ) |
|-------------|---------------------|------------------|---|-----------------------------------|------------------------|
| S | F | U | C | CF | TC = C * CF |
| Unspecified | Natural Gas Liquids | Gg | 3000 | 44.2 | 132600 |
| Total | | | | | 132600 |

Fuel Manager... Time Series data entry...

<https://www.ipcc-nggip.iges.or.jp/software/index.html>

IPCC Inventory Software - Achievements

- Version 2.691 released in 2020 is available at the IPCC TFI website:
- New version 2.83 released at this COP27 with full capability to prepare estimates according to each and every methodological Tier provided in the 2006 IPCC Guidelines and in its Wetlands Supplement
- Draft version of the User's Guidebook for the Energy Sector
- IPCC Expert Meeting to collect Software and EFDB users' feedback (26-28 July 2022, Rome, Italy)
 - ✓ Testing of Energy and AFOLU sectors

IPCC Inventory Software – Work in Progress

- Interoperability with UNFCCC reporting tool for CRT under the Paris Agreement (in collaboration/cooperation with UNFCCC secretariat)
- User's Guidebook for other sectors
- Supporting tools: Add-ons for land representation (wall-to-wall and sampling data collection and analysis)
- Additional elements and functionalities:
 - ✓ Indirect CO₂ and N₂O emissions and AR5 GWPs
 - ✓ Approach 2 for key category and uncertainty analyses, etc.
- Testing, in particular of IPPU and Waste sectors

2019 Refinement to the 2006 IPCC Guidelines

Adopted/accepted by IPCC at its 49th Session in Kyoto in May 2019

280

Prepared by over 280 scientists and experts

47

Authors from 47 countries

10,000

More than 10,000 review comments received from governments and experts

One of the major IPCC products during AR6 cycle

4th Lead Author Meeting, October 2018

Rome, FAO



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2019 Refinement to the 2006 IPCC Guidelines

- The 2019 Refinement updates, supplements and elaborates the 2006 IPCC Guidelines, where the authors identified gaps or out-of-date science.
- The 2006 IPCC Guidelines continue to provide a technically sound methodological basis for preparing national greenhouse gas inventories.
- The 2019 Refinement is to be used in conjunction with the 2006 IPCC Guidelines.



<https://www.ipcc-nggip.iges.or.jp/public/2019rf/index.html>

2019 Refinement to the 2006 IPCC Guidelines

- There are several refinements with a new and updated guidance in all sectors
 - ✓ ENERGY -*fugitive emissions, fuel transformation, etc.-*
 - ✓ IPPU -*hydrogen and rare earths production, electronics industry, etc.-*
 - ✓ AFOLU -*natural disturbances, flooded lands, etc.-*
 - ✓ WASTE -*solid waste disposal, wastewater treatment, etc.-*
- The general guidance contained in Volume 1 was also refined. Among others, Chapter 6 provides updated information on Verification, including guidance on comparison with atmospheric observations.
- CMA noted that Parties may use on a voluntary basis the 2019 Refinement under the Paris Agreement (Decision 5/CMA.3)

IPCC Expert Meeting on Use of Atmospheric Observation Data in Emission Inventories - September 2022, Geneva, WMO



2022 09 05

IPCC Expert Meeting on Atmospheric Observation Data




- The expert meeting aimed to discuss issues relating to the use of atmospheric observation data and models in verification of national GHG inventories, building on guidance provided in the 2019 Refinement
- The four areas of interest discussed were:
 - ✓ CO₂ emissions from fuel combustion
 - ✓ Fugitive CH₄ emissions
 - ✓ AFOLU GHG emissions
 - ✓ F-gases emissions
- The expert meeting brought different communities together – experts on atmospheric observation of GHGs, experts on inverse modelling and experts on national emission inventories.

IPCC Expert Meeting on Atmospheric Observation Data

- Experts agreed, and Co-Chairs concluded, on usefulness of atmospheric observation data for verification purposes in national GHG inventories as well as on the necessity to continue and further deepen conversation between inventory experts and atmospheric scientists
- To ensure accuracy and purpose of comparison main challenges in the use of atmospheric observation data remain:
 - ✓ Identification and quantification of the anthropogenic component of emissions and removals
 - ✓ Attribution of GHG emissions/removals to NGHGI categories
 - ✓ Geographically and/or temporally gridded NGHGI information, to ensure the appropriate spatial and temporal scales (*with those of atmospheric observation data*)

IPCC Emission Factor Database (EFDB)

EFDB
emission factor database

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Home
Basic search
Fulltext search
Search by ID
Documents
Off-line version of EFDB
Help

Basic search

[Select Gases](#) |
 [Select Fuels](#) |
 [IPCC Default Data](#) |
 [Other \(non-default\) Data](#)

[Choose table columns](#) |
 [Hide IPCC Category tree](#) |
 [Hide status](#)

IPCC Guidelines: 2006

- IPCC 2006 Categories
 - 1 - Energy
 - 2 - Industrial Processes and Product Use
 - 3 - Agriculture, Forestry, and Other Land Use
 - 4 - Waste
 - 5 - Other

Status

- IPCC 2006 Source/Sink Category: [\(All\)](#)
- Gases: [\(All\)](#)
- Fuels: [\(All + NA\)](#)
- Type of parameter: [\(All\)](#)

Displayed records: 1 - 20 / 18299. [Export to XLS](#)

| Filter | Select Gases | | Select Fuels | | | | | | | | | | | Apply filter | |
|----------------|-----------------------------------|----------------------------|--------------|------|-------------------|---|--------------------------|-------------------------|------------------------------|----------------------------------|------------------|-------|------------|---|------------------------|
| Active Filters | | | | | | | | | | | | | | | |
| EF ID | IPCC 1996 | IPCC 2006 | Gas | Fuel | Type of parameter | Description | Technologies / Practices | Parameters / Conditions | Region / Regional Conditions | Abatement / Control Technologies | Other properties | Value | Unit | Source of data | Action |
| 62639 | 6A - Solid Waste Disposal on Land | 4.A - Solid Waste Disposal | METHANE | | 1996 IPCC default | Municipal Solid Waste (MSW) Generation Rate | | | United States of America | | | 2.0 | kg/cap/day | Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories (Table 6-1 on Pages 6.6 - 6.7 of the Reference Manual) | Detail |
| | 6A - Solid Waste Disposal on Land | 4.A - Solid Waste Disposal | METHANE | | 1996 IPCC default | Municipal Solid Waste (MSW) | | | Canada | | | 1.81 | kg/cap/day | Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories (Table 6-1 on Pages 6.6 - 6.7 of the Reference Manual) | Detail |

https://www.ipcc-nggip.iges.or.jp/EFDB/main.php

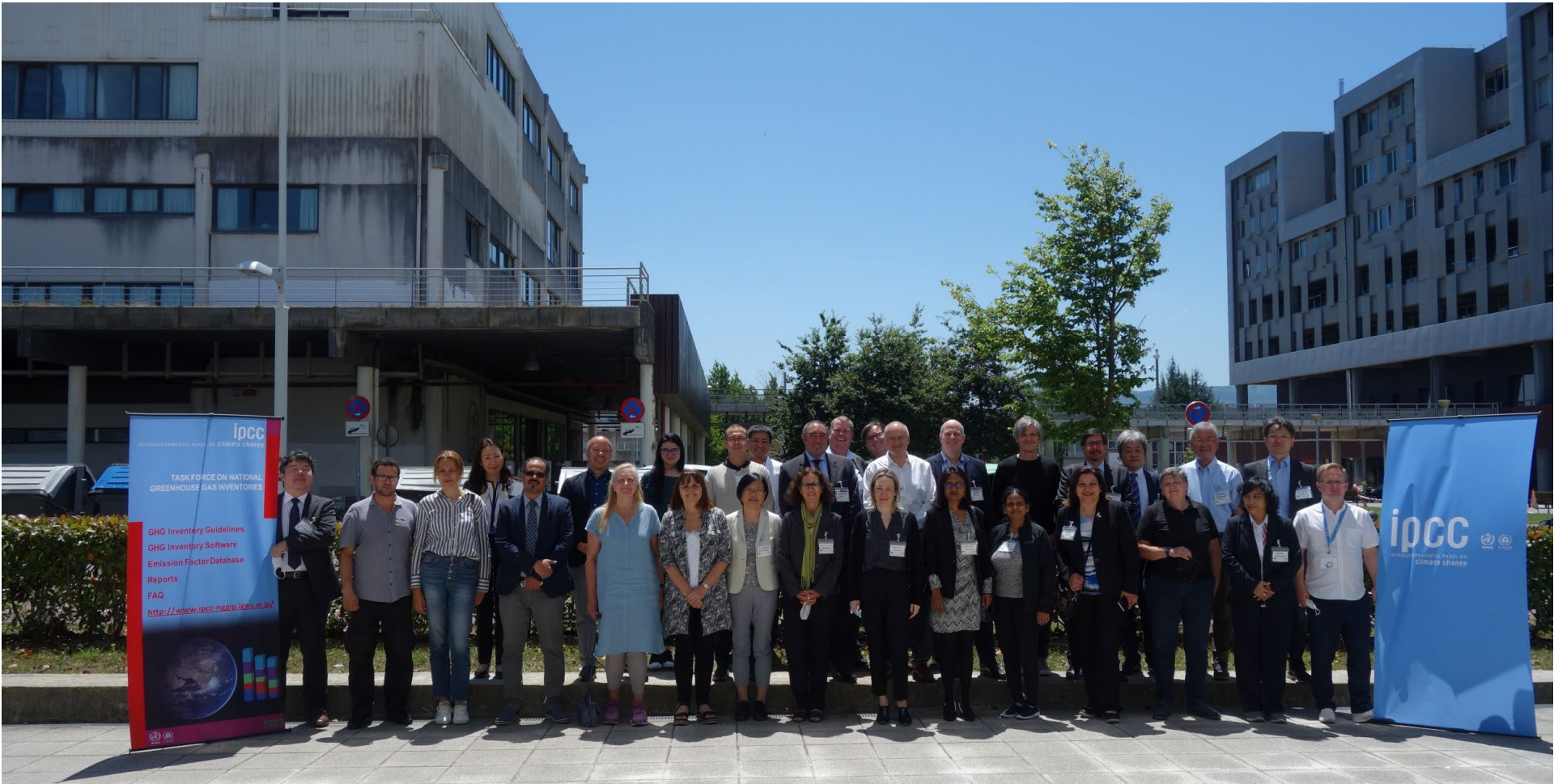
IPCC Emission Factor Database (EFDB)

- Library of emission factors/parameters and other relevant data that can be used for estimation of national greenhouse gas (GHG) emissions/removals
<https://www.ipcc-nggip.iges.or.jp/EFDB/main.php>
 - ✓ Default values from IPCC Guidelines
 - ✓ Data from peer-reviewed scientific papers
 - ✓ Data from other publications (e.g., government reports, industry studies etc.)
- Communication platform to share relevant data and information
- Evolves dynamically: data proposals (e.g., inventory compilers, researchers) and data collection efforts (e.g., expert meetings, literature search)
- Open to any data proposals
- Continuously updated with new data

IPCC Emission Factor Database (EFDB)

- EFDB Meetings in 2022
 - ✓ 20th Editorial Board Meeting (28 June -1 July 2022, Bilbao, Spain)
 - ✓ Joint 19th and 20th Expert Meeting on Data (29-30 June 2022, Bilbao, Spain)
 - ✓ More than 600 data were accepted by Editorial Board for inclusion into the EFDB
- Upgraded version of the EFDB (both web and offline applications) *will be released next year before the AR6 cycle ends*
 - ✓ 2019 Refinement categories are added
 - ✓ Statistics tables are included
 - ✓ Search/filter functions are enhanced (e.g., Select C pool, Region, Country criteria are added for Basic search; static drop-down list is incorporated in Source of data column)
 - ✓ Accordingly, the User Manual and the Data Entry Form are updated

20th EFDB EB Meeting and 19th/20th EFDB Data Meetings 28 June -1 July 2022, Bilbao, Spain



Work on Short-lived Climate Forcers (SLCFs)



Expert Meeting on Short-Lived Climate Forcers (SLCF)

Meeting Report

28-31 May 2018, Geneva, Switzerland

Task Force on National Greenhouse Gas Inventories (TFI) /
Working Group I (WGI)



https://www.ipcc-nggip.iges.or.jp/public/mtdocs/1805_Geneva.html

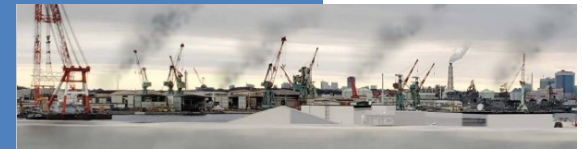
https://www.ipcc-nggip.iges.or.jp/public/mtdocs/2110_SLCF.html

https://www.ipcc-nggip.iges.or.jp/public/mtdocs/2204_SLCF_EM3.html



Joint 1st and 2nd IPCC Expert Meeting on Short-lived Climate Forcers

Task Force on N



Third IPCC Expert Meeting on Short-lived Climate Forcers

Report of IPCC Expert Meeting
11 – 15 April 2022, Virtual Meeting

Task Force on National Greenhouse Gas Inventories



Work on Short-lived Climate Forcers (SLCFs)

- At IPCC45 (March 2017) some governments proposed the work on development of methodologies for estimation of emissions of Short-lived Climate Forcers (SLCFs) and at IPCC46 (September 2017) it was decided to hold an expert meeting on SLCFs to discuss issues on estimation of emissions and climate effects (Decision IPCC/XLVI-6)
- The expert meeting was held jointly by TFI and WGI on 28-31 May 2018 in Geneva, Switzerland

Work on Short-lived Climate Forcers (SLCFs)

- The meeting concluded, among others:
 - ✓ Science on SLCFs has significantly advanced since the IPCC expert meeting held in 2005
 - ✓ Improved emission inventories of SLCFs are necessary to enhance scientific understanding and assessment of their role in climate change as well as to inform climate policy at national and international levels
 - ✓ Internationally-agreed, globally applicable methodologies and emission factors for SLCFs emission inventories are necessary, and the IPCC TFI is in a good position to do that work
- The meeting report is published at the IPCC TFI website:
https://www.ipcc-nggip.iges.or.jp/public/mtdocs/1805_Geneva.html

Work on Short-lived Climate Forcers (SLCFs)

- IPCC49 (May 2019) decided that IPCC TFI should develop a new Methodology Report on SLCFs during AR7 cycle with a preparatory work during AR6 cycle (Decision IPCC-XLIX-7)
- Preparatory work for the Methodology Report in AR6 cycle included:
 - ✓ Preliminary technical analysis
 - ✓ Expert meetings (virtual): Joint 1st and 2nd Expert Meeting on SLCFs (11-22 October 2021) and 3rd Expert Meeting on SLCFs (11-15 April 2022)
 - ✓ Publication of the Expert meeting reports:
<https://www.ipcc-nggip.iges.or.jp/public/index.html>
- Scoping Meeting for the Methodology Report on SLCFs will be held during AR7 cycle in accordance with the agreement by the Panel at its 53-bis Session

Work on Short-lived Climate Forcers (SLCFs)

- IPCC TFI Technical Support Unit (TSU) conducted technical analysis of the main methodological frameworks on SLCFs source categories and associated emissions:
 - ✓ *EMEP/EEA Air Pollutant Emission Inventory Guidebook 2019*
 - ✓ *US EPA AP-42: Compilation of Air Pollutant Emissions Factors*
 - ✓ *UNEP Atmospheric Brown Clouds (ABC) Emission Inventory Manual*
- This analysis was the basis for discussion at the Joint 1st and 2nd Expert Meeting. Working on the technical documents, this expert meeting successfully achieved its goals:
 - ✓ *Complete list of SLCF source categories and associated SLCF species for all sectors – Energy, IPPU, AFOLU and Waste*
 - ✓ *List of knowledge gaps*
- All outcomes (category list, gaps' list, BOGs' discussion and conclusions, presentations and tables for each sector) are part of the meeting report published at the IPCC TFI website: https://www.ipcc-nggip.iges.or.jp/public/mtdocs/2110_SLCF.html

Work on Short-lived Climate Forcers (SLCFs)

- The 3rd Expert Meeting further considered issues identified at the Joint 1st and 2nd Meeting and discussed cross-cutting issues in relation to the inventory of SLCFs emissions taking into account the assessments in the IPCC WGI and WGIII contributions to AR6
- The discussion was focused on main three topics :
 - ✓ Definitions of SLCF species and methods of their identification
 - ✓ General inventory issues (Data Collection, Key category analysis, Uncertainty, Verification, etc.)
 - ✓ Refined Category and Gaps' list including issues related to the Category list
- The meeting report was published on the IPCC TFI website:
https://www.ipcc-nggip.iges.or.jp/public/mtdocs/2204_SLCF_EM3.html

Work on Short-lived Climate Forcers (SLCFs)

- The meeting reports and all background information will inform the scoping process of a new Methodology Report on SLCFs during AR7 cycle
- The Scoping Meeting on the Methodology Report on SLCFs is planned to be held in AR7 cycle as early as possible
- Nominations of experts for the Scoping Meeting will be collected from the IPCC member governments and the observer organizations during AR6 cycle

Other Activities

- Technical support to users of the IPCC Guidelines and supporting tools:
 - ✓ *IPCC Inventory Software*
 - ✓ *IPCC Emission Factor Database*
- Collaboration with other organizations:
 - ✓ *UNFCCC regional workshops on the use of the 2006 IPCC Guidelines and the IPCC Inventory Software*
 - ✓ *Global Forest Observations Initiative (MGD 3.0)*

Towards AR7 Cycle

During AR7, IPCC TFI is mandated to:

- produce a new Methodology Report on SLCFs emission inventory

Also, IPCC TFI is annually expected to :

- work on the IPCC Inventory Software maintenance and development
- work on IPCC EFDB management and update
- organize expert meetings relating to the IPCC Inventory Software, EFDB and other subjects relevant to national GHG inventories that may emerge
- cooperate with UNFCCC secretariat to provide training on the use of the 2006 IPCC Guidelines, the IPCC Inventory Software and the EFDB

IPCC TFI Work programme will be reconsidered by the new TFB and decided by the Panel after the AR7 cycle starts.

Thank You

Questions?

<https://www.ipcc-nggip.iges.or.jp/index.html>