Technical Assessment of IPCC Inventory Guidelines

IPCC TFI Side-event

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Sekai Ngarize
Technical Support Unit, IPCC TFI

WMO UNEP

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Outline

- Background
- Aims
- Scope
- Results
- Expert meetings – Outcomes for Sectoral and Cross-sectoral issues

Background and Approach

Technical Assessment of IPCC Inventory Guidelines- Background

- 10 years since *2006 IPCC Guidelines* were produced
- Expert Meeting on Systematic Assessment of TFI Products (25-27 August 2014 in Ottawa, Canada)
  - Assessed the TFI products including the *2006 IPCC Guidelines*
- Subsequently, TFI Bureau (TFB) 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
  - More in–depth technical assessments should be undertaken

Technical Assessment of IPCC Inventory Guidelines - Approach

- Through the combination of an on-line questionnaire survey and expert meetings

- The on-line questionnaire survey aimed to collect inputs from inventory experts about the need and the feasibility of methodological development or refinement for specific categories and gases
  - Conducted from 30 January to 27 February 2015

- The TFB considered the results of the survey and developed a provisional list of categories and gases as well as cross-sectoral issues for consideration more in detail at the expert meetings
  - Expert Meeting on Energy, IPPU, Waste Sectors (29 June -1 July 2015, Geneva, Switzerland)
  - Expert Meeting on AFOLU Sector (13-16 July 2015, Sao Paulo, Brazil)
  - Follow up Expert Meeting and Cross-Sectoral Meeting (25-29 April 2016, Wollongong , Australia)

Aims and scope

Aims of Technical Assessment Work

- The work aims:
  - to assess where science and data availability have developed sufficiently since the 2006 IPCC Guidelines to support the refinement or development of methodological advice for specific categories and gases, with a view to identifying any specific areas or issues to be prioritized.
  - to conduct technical assessment on cross-sectoral issues, such as those covered in Volume 1, including improvement of user-friendliness of other inventory tools with a view to contributing to capacity development programmes.

Technical Assessment -Scope

- Technical assessment on all the four sectors:
  - Available science and data
  - Need and feasibility of methodological development/refinement
- The assessment took into account:
  - Existing guidance in the 2006 IPCC Guidelines and the 2013 Wetlands Supplement
  - Associated Products such as IPCC Inventory Software and the Emission Factor Database
- Focused on specific source/sink categories and gases selected according to significance and prioritization criteria.

Technical Assessment of IPCC Inventory Guidelines

- The on-line questionnaire survey
  - Experts who were nominated by governments and international organizations
  - Experts who have contributed to TFI work
- 243 experts submitted their views

	Number of respondents	Number of comments
Energy Sector	76	206
IPPU Sector	42	128
AFOLU Sector	137	380
Waste Sector	43	112
Other Sector	5	6
Cross-Sectoral	58	155
TOTAL	243	987

Expert Meetings

High priority issues

- TSU analyzed comments and provisionally identified "high priority issues" for further consideration at the expert meetings based on prioritization criteria:
  - Applicability of refinement to a wide range of countries
  - Sufficient scientific basis for improvement
  - Ease of implementation of refined guidance
  - Impact (leading to great decrease in uncertainty?)
  - Frequency of the comment
- Some additional issues were identified as significant by TFB and also by experts during the meetings

Possible ways to address issues

- Possible options to address the issues:
  - Production of **Methodology Report**
  - Holding an **expert meeting** and publishing a **meeting report** or a **technical bulletin**
  - Utilizing the Emission Factor Database (**EFDB**)
  - Utilizing the Frequently-Asked-Questions (**FAQs**) website
  - Other
- Important difference – whether or not to undergo official rigorous IPCC Publication Procedures
  - Methodology Report: More rigorous scientific review process
  - Others: Have not undergone through the rigorous scientific or expert peer reviews

Expert Meetings in 2015

- The meetings aimed:
  - To assess the maturity of scientific advances and availability of new data
  - To identify any specific areas or issues that should be prioritized in TFI's future work
  - To consider cross-sectoral issues including improvement of the inventory tools of the IPCC
- Considered comments submitted by experts in response to the online questionnaire survey to make recommendations to TFB on:
  - Categories for which the science is sufficiently mature and data are available to recommend refinement or development of inventory guidance
  - Where such refinement or development would lead to a noticeable improvement to inventory guidance
  - Specific type of refinement that is needed (e.g. update or addition of default emission factors)
  - How these refinements could be made (e.g. Methodology Report)
- Outcomes of the expert meetings were considered by TFB and reflected in the TFI's work programme for 2016

Expert Meetings in 2015: Outcomes (1)

- For those issues which needed to be addressed by producing a new Methodology Report(s). It was necessary to:
  - develop new or additional guidance on sources and/or gases that are not covered by the *2006 IPCC Guidelines* (e.g. GHG emissions from unconventional oil and gas production, GHG emissions from hydrogen production, N_2O emissions from industrial wastewater treatment)
  - refine guidance to reflect significant scientific or technical developments since the *2006 IPCC Guidelines* were produced (e.g. guidance on land representation linking land classification system and digital maps)
  - update or add default data of emission factors and other parameters for some categories (e.g. fugitive emissions from oil and gas, substitutes for ozone depleting substances used for refrigeration and air conditioning, N_2O emissions from wastewater treatment, values for litter, deadwood, biomass expansion factors (BEF)/biomass conversion and expansion factors (BCEF), direct and indirect N_2O emissions from managed soils)

Expert Meetings in 2015: Outcomes (2)

- Some other issues can be addressed by utilizing other means (IPCC Supporting Materials) including
  - Emission Factor Database (EFDB)
  - TFI's webpage on Frequently Asked Questions (FAQs)
  - Technical bulletins or expert meeting reports
- Some issues required further intensive consideration by relevant experts before starting refinements. Consequently, after TFB's further consideration, the following 4 areas were identified for follow up expert meeting:
  - Unidentified sources of perfluorocarbons (PFCs)
  - Emissions from soils
  - Land representation
  - Emissions from flooded land

Expert Meeting in 2016: Follow-up Meeting

- Focused on the four main areas identified
- Made recommendations to the TFB on whether the issues need to be addressed in a new Methodology Report(s)
- Key considerations were:
  - Whether the science is sufficiently mature and data are available to recommend refinement or development of inventory guidance
  - Whether such refinement or development would lead to a noticeable improvement of the *2006 IPCC Guidelines*
  - Specific type of refinement or update that is needed (e.g. update or addition of default emission factors/parameters, provision of a new method)

Expert Meeting in 2016: Outcomes of the Follow-up Meeting

- Some issues needed to be addressed in a new Methodology Report(s):
  - **Unidentified sources of PFCs** (e.g. new guidance on "non-anode effect" for emissions from aluminium production, new guidance on emissions from rare earth elements production, update of some default emission factors)
  - **Emissions from soils** (e.g. alternative method for estimation of C stock change in mineral soils under cropland and grassland, update of default C stock change factors, disaggregation of emission factor for N inputs for direct N_2O emissions from managed soils)
  - **Land representation** (e.g. elaboration of existing guidance on Chapter 3 of Volume 4 including elaboration on the guidance on linking land classification system with remote sensing and digital maps, use of global data sets, products and tools for land use representation, elaboration of guidance on activity data uncertainties and how to use Tier 1 and 2 methods with Approach 3)
  - **Emissions from flooded land** (e.g. new guidance on flooded land)
- Some other issues can be addressed by utilizing other means such as TFI FAQs website (e.g. list of potential sources of training materials on land representation)

Expert Meeting in 2016: Cross-sectoral Issues (1)

- Cross-sectoral expert meeting identified issues related to the Volume 1. General Guidance and Reporting of the 2006 IPCC Guidelines which could be addressed by a Methodology Report
- **Approaches to Data Collection**:

i) Development of additional guidance to develop country-specific emission factors and design new surveys for activity data collection

ii) Development of guidance on the integration of GHG emissions reported from industrial facilities into national GHG inventories and development of guidance on use of models

- **Uncertainty Analysis:**

i) Refinement of guidance on uncertainty based on the latest scientific knowledge and simplification of guidance by providing more default values, calculation examples and best practices

Expert Meeting in 2016: Cross-sectoral Issues (2)

- **Methodological Choice and Identification of Key Categories:**

i) Additional guidance on key category analysis to address treatment of disaggregation of categories, trend analysis, equations for trend analysis and the need for consistent definition of significant subcategories across the different volumes of the IPCC Guidelines

- **Time series consistency:**

i) Review and refinement of guidance on time series consistency (including discussion on the applicability of default EFs over time)

- **QA/QC and Verification: Comparisons with atmospheric measurements:**

i) Development or improvement of guidance on the verification using other estimation results like FAOSTAT emissions database and GHG concentration in atmosphere by satellite observation (remote sensing data

- **Precursors and Indirect emissions:**

i) Clearer guidance for the calculation of indirect CO2 emissions

Technical Assessment: Outcomes

- **Co-Chairs Summary** of the experts meetings available at TFI website http://www.ipcc-nggip.iges.or.jp/meeting/meeting.html

- **The issues selected for Methodology Report(s) were the core recommendations to the Scoping Meeting**

Thank You

Any Questions?