Introduction to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories

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UNFCCC Mandate

- SBSTA17 (Oct 2002, Delhi):
  - Invited IPCC to revise the 1996 IPCC Guidelines and to aim to complete the work by early 2006;
- SBSTA19 (Dec 2003, Milan):
  - Considered an initial analysis of available information prepared by the secretariat and decided to forward it to the IPCC for its consideration;
- SBSTA20 (June 2004, Bonn):
  - Considered some documents that deal with relevant methodological issues;
- SBSTA21 (Dec 2004, Buenos Aires):
  - Noted with appreciation the information provided by the IPCC on the development of the 2006 IPCC Guidelines for National Greenhouse Gas Inventories;

- IPCC20 (Feb 2003, Paris) and IPCC21 (Nov 2003, Vienna):
  - Initiated a process that led to an agreement of Terms of Reference, Table of Contents and a Workplan, aiming at completing the work in time for adoption and acceptance at IPCC24 in April 2006.

The Revised 1996 IPCC Guidelines

- The 1996 Guidelines have been very successful:
  - The Tier approach provides options for all countries;
  - There are methods for almost all source and sink categories;
  - The IPCC created standardized reporting tables, which serve as a basis for UNFCCC tables;
  - The 1996 GL have successfully standardized source/sink category definitions, units, classifications, and reporting techniques across countries;
  - The IPCC Guidelines have played a critical role in furthering the goals of the UNFCCC.

IPCC Good Practice Guidance

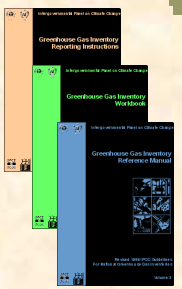
- Good Practice Guidance enhances the 1996 Guidelines
  - New framework for prioritizing resources through methodological choice and key category analysis;
  - QA/QC and quantitative uncertainty analysis;
  - Improved category-specific guidance on methodological choice, data selection, reporting and documentation, time series consistency, uncertainty analysis and QA/QC;

- GPG 2003 applied these improvements to the LUCF sector
  - Change from activity-based to land-based accounting system;
  - New guidance on land classification, Kyoto accounting, additional categories;
  - New reporting structure and tables.

Policy Relevance of the 2006 Guidelines

- Response to a request of the country Parties to the UNFCCC to revise the IPCC 1996 Guidelines: should be suitable for future reporting of greenhouse gas inventories to the UNFCCC, if countries wish to adopt them for this purpose;
- Provide up to date and policy neutral methodologies for the calculation of national greenhouse gas inventories;
- **Not** address or pre-empt any political decision on accounting for greenhouse gas emissions and removals.

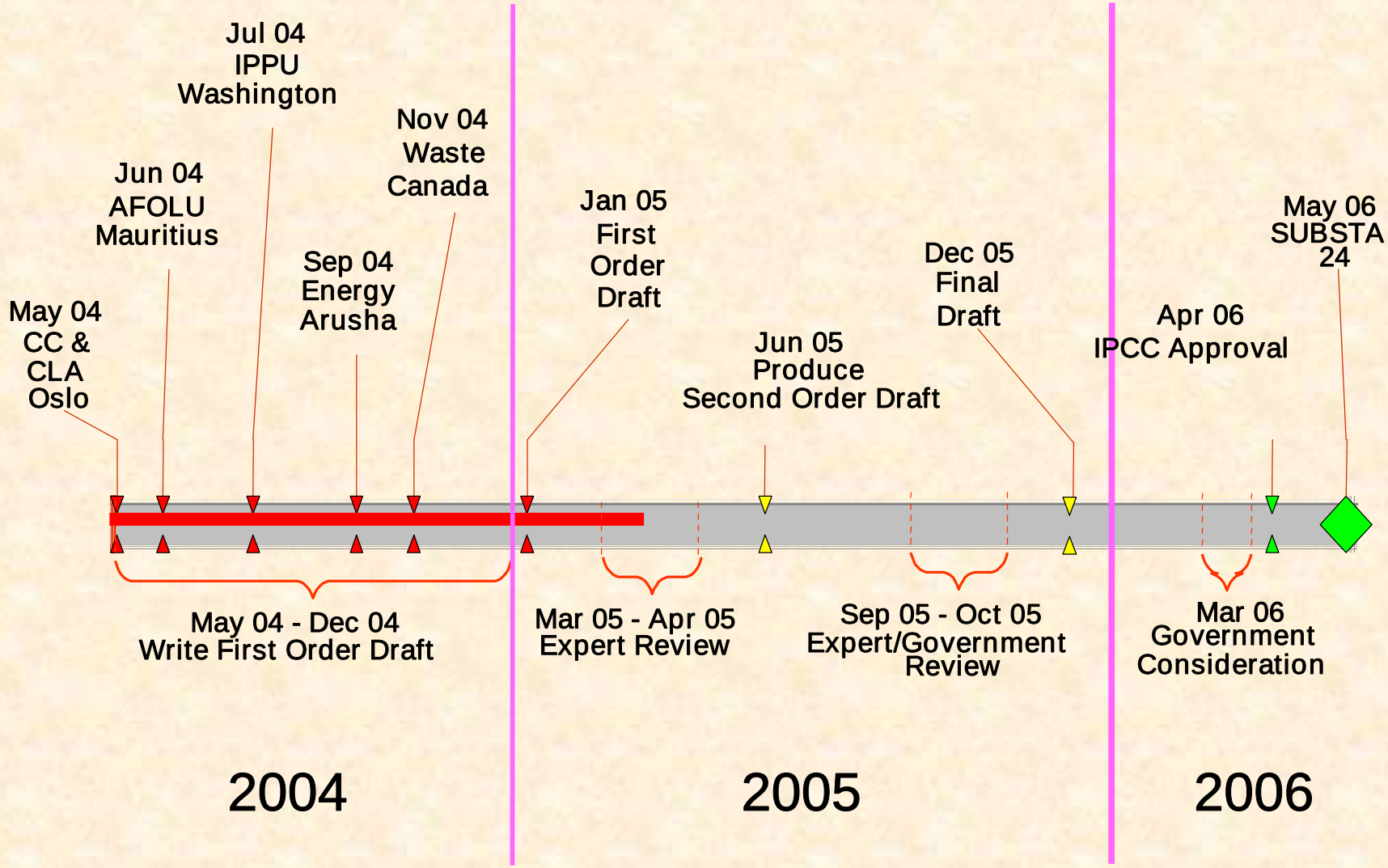
Policy Relevance of the 2006 Guidelines



- Will be based on
  - the existing Guidelines and Good Practice Guidance reports
  - Emission Factor Database (EFDB)
  - Advances in science and technology
  - The experience in the use of GLs/GPGs as well as experience from UNFCCC inventory reviews

- A key principle: evolution not revolution
  - Retain continuity with the IPCC 1996 Guidelines: approach the revision with flexibility and maintain the existing structure as much as possible to facilitate the job of inventory preparers
  - Where appropriate, update the scientific information and seek to rationalize and improve efficiency
  - Avoid overlaps with method development of other conventions and guidelines

Work Plan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Apr 06
IPCC Approval
Jun 05
Produce
Second Order Draft
May 04 - Dec 04
Write First Order Draft
Mar 05 - Apr 05
Expert Review
Sep 05 - Oct 05
Expert/Government
Review
Mar 06
Government
Consideration
2004
2005
2006

Coverage and Structure of the 2006 Guidelines

Volumes	Chapters
1 General Guidance and Reporting	1. Introduction 2. Approaches to Data Collection 3. Uncertainties 4. Methodological Choice and Identification of Key Categories 5. Time Series Consistency and Recalculation 6. Quality Assurance/ Quality Control And Verification 7. Ozone Precursors and SO_2 Emissions 8. Reporting Tables and Guidance
2 Energy	1. Introduction 2. Stationary Combustion 3. Mobile Combustion 4. Fugitive Emissions 5. Geological Storage of Carbon Dioxide 6. Reference Approach
3 Industrial Processes and Product Use	1. Introduction 2. Mineral Industry Emissions 3. Chemical Industry Emissions 4. Metal Industry Emissions 5. Non-Energy Product Uses of Fossil Fuels and Completeness of Reporting 6. Electronics Industry Emissions 7. Emissions of Fluorinated Substitutes for Ozone Depleting Substances 8. Other Product Use
4 Agriculture, Forestry and other Land Use	1. Introduction 2. Consistent Representation of Land And Management Systems 3. Overview of Generic Methodologies for Pools and Fluxes 4. Agriculture 5. Forest Lands 6. Wetlands 7. Settlements 8. Other Land 9. Harvested Wood Product
5 Waste	1. Introduction 2. Solid Waste Treatment and Disposal 3. Wastewater Treatment and Discharge 4. Incineration and Open Burning of Waste

Coverage and Structure of the 2006 Guidelines

General Structure of Sectoral Guidance Chapters

- Methodological Issues
  - Choice of Method, including decision trees and definition of tiers
  - Choice of Emission Factor
  - Choice of Activity Data
  - Completeness
  - Developing a Consistent Time Series
- Uncertainty Assessment
  - Emission Factor Uncertainties
  - Activity Data Uncertainties
- Quality Assurance/Quality Control, Reporting and Documentation
- Reporting Tables and Worksheets

Symbol	Name
CO_2	Carbon Dioxide
CH_4	Methane
N_2O	Nitrous Oxide
HFC	Hydroflurocarbons
PFC	Perflurocarbons
SF_6	Sulphur Hexaflouride
NF_3	Nitrogen Trifluoride
SF_5CF_3	Trifluoromethyl Sulphur Pentafluoride
	Ethers and Halogenated Ethers

Specific Developments in the 2006 Guidelines

Volume 1 (General Guidance and Reporting)

- Extended advice on data collection:
  - Introduce systematic cross-cutting advice on data collection from existing sources and by new activities, including design of measurement programmes and cross references to ISO standards.

Specific Developments in the 2006 Guidelines

Volume 2 (Energy)

- Treatment of carbon capture and storage:
  - Fugitive emissions from fossil fuel CO_2 injected into geological formations are included in the inventory as a source of emissions, including the fugitive losses from engineered components and any losses from CO_2 accumulated underground;
  - Amounts of CO_2 from combustion of sustainably produced biofuel that injected underground are included in the inventory as a negative emission, but no distinction is made between any subsequent leakage of this CO_2 and leakage of CO_2 from fossil sources;
- Methane from closed coal mines:
  - A methodology for estimating these emissions is included for the first time.

Specific Developments in the 2006 Guidelines

Volume 3 (Industrial Processes and Product Use)

- New sources and new gases:
  - Lead production, zinc production, titanium dioxide production, petrochemical production, and liquid crystal display (LCD) manufacturing;
  - NF_3, SF_5CF_3, ethers and halogenated ethers;

- Non-Energy Product Uses of Fossil Fuels:
  - A method has been introduced for checking the completeness of accounting CO_2 emissions from this feedstock use;
  - Improvements are also made in how and where these are reported;

- Actual emissions:
  - The potential emissions approach used as a Tier 1 approach in the Revised 1996 IPCC Guidelines is no longer considered appropriate, as it does not estimate true emissions and is not compatible with higher tiers;
  - The Tier 1 approaches proposed in this volume are therefore actual emission estimation methods, although often based on default activity data where better information is not available;
  - Simplified mass balance approaches have also been used in appropriate sectors such as refrigeration.

Specific Developments in the 2006 Guidelines

Volume 4 (Agriculture, Forestry and Other Land Use)

- Systematic approach to biomass stocks:
  - The 2006 Guidelines take a systematic approach to the transfers of carbon that may take place between living and dead biomass pools as well as between biomass pools and the atmosphere;
  - This improves consistency, increases accuracy and rationalizes the associated datasets and ensures a complete coverage without double counting;

- Harvested wood products:
  - The 2006 Guidelines provide detailed methods that can be used to estimate the underling factors that are needed to estimate emissions, removals and carbon stock changes associated with any of the approaches used to report harvested wood products in the inventories;
  - Information from the waste sector on carbon stocks in landfills is used for cross checking.

Specific Developments in the 2006 Guidelines

Volume 5 (Waste)

- Revised methodology for methane from landfills:
  - The previous tier 1method, based on release of potential methane in the year of placement has been replaced by a simple first order decay model based on data available form the FAO for all countries, including defaults suitable for all countries;
  - Provides a consistent basis for estimating emissions across all tiers;
  - This gives a more accurate time series for estimated emissions and should avoid the situation in which usage of landfill gas apparently exceeds the amount generated in a particular year.

Specific Developments in the 2006 Guidelines

Relevant to all volumes

- Indirect fossil CO_2 emissions:
  - For combustion sources, the IPCC 1996 Guidelines and the GPG2000 count all the carbon combusted as CO_2, including those emitted as CO, CH_4 or volatile organic compounds (VOC);
  - The IPCC 2006 Guidelines extends this treatment in a consistent manner to all sources of fossil carbon by simply including the fossil carbon increment from the corresponding emission of a non-CO_2 emission in the CO_2 total where this is not already done.

Specific Developments in the 2006 Guidelines

Relevant to all volumes

- Treatment of nitrogen (N) deposition:
  - The GPG2000 lists sources of anthropogenic nitrogen deposition that indirectly give rise to anthropogenic emissions of nitrous oxide, but only provides estimation methods for a small subset of these, associated with agricultural sources of NH_3 and NO_X.
  - The IPCC 2006 Guidelines extend this to all significant sources of N deposition, including industrial and other combustion sources, with the ultimate nitrous oxide emission attributed to the country responsible for the nitrogen originally emitted.

Specific Developments in the 2006 Guidelines

Relevant to all volumes

- Relationship to the IPCC Emission Factor Database:
  - All emission factors provided in the IPCC 2006 Guidelines are also included in the database for easy reference;
  - The database will expand over time, overseen by an editorial board established by IPCC for the purpose;
  - The database provides an opportunity to share information on emission factors that reflect particular circumstances, technologies or new research;
  - Differentiate IPCC default EFs in the guidelines and EFs in the IPCC EFDB that are provided from various sources

Conclusions

- Some key points considered during the revision process:
  - Anticipate the future needs of inventory experts from all countries;
  - Be aware of the limited resources available in all countries;
  - Be pragmatic in developing guidance for small categories and new categories;
  - Look across categories and sectors/volumes to ensure consistency, minimize gaps, avoid double counting, minimize errors;
  - Ensure that the 2006 Guidelines as practical and usable as possible;
- The 2006 Guidelines are a thorough scientific review and a structural enhancement of the IPCC inventory methodology across all source categories: more consistent, more complete, easier to use;
- The guidelines will set the new standard for the next decade;
- The revision work is critical to addressing global climate change.

Thanks!

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