2006 IPCC Guidelines & Data Collection

7th Workshop on GHG Inventories in Asia (WGIA7), 7-10 July 2009, Seoul

Simon Eggleston, Head, Technical Support Unit,
Task Force on National Greenhouse Gas Inventories

WMO UNEP

ipcc
INTERGOVERNMENTAL PANEL ON climate change

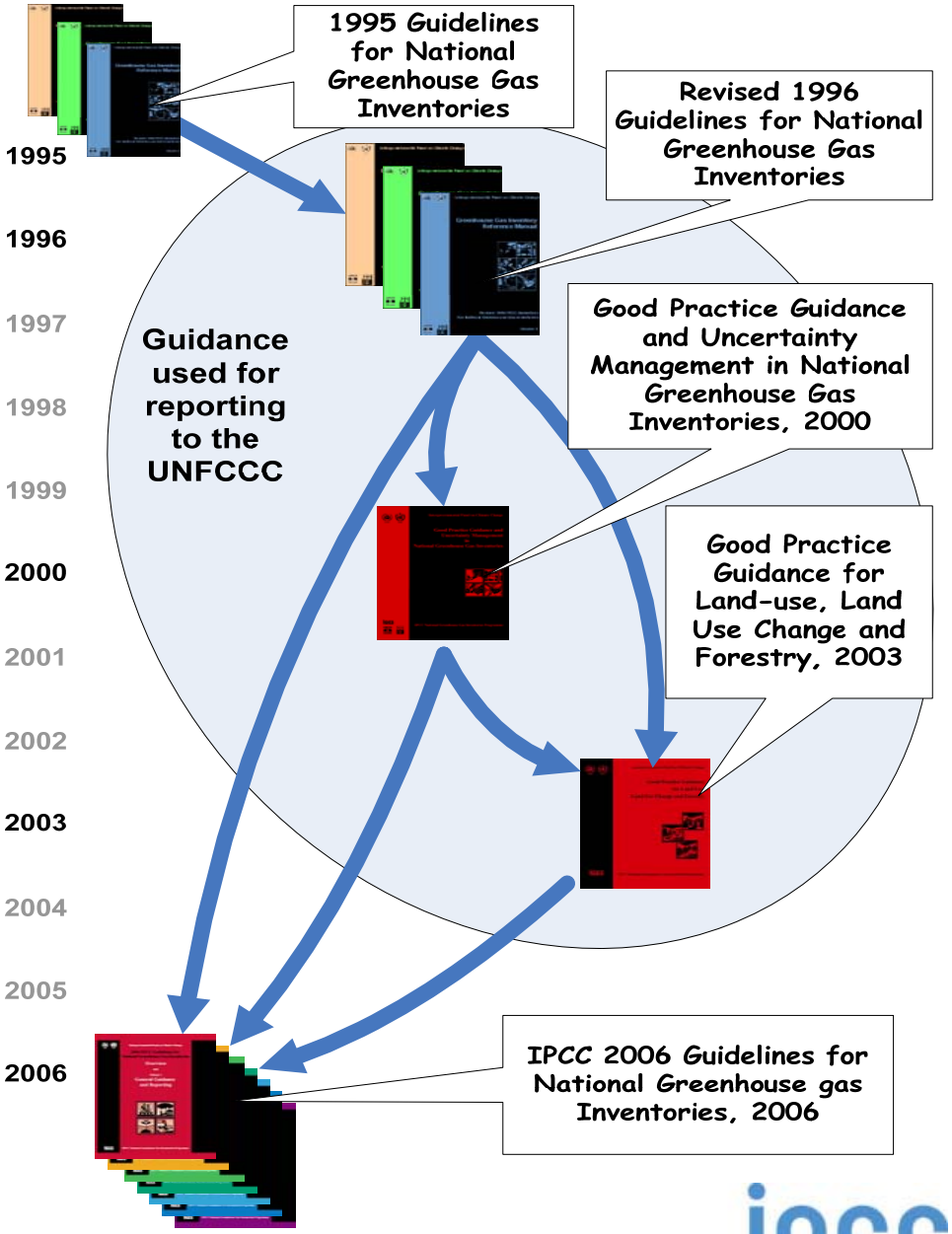
INTRODUCTION

ipcc

INTERGOVERNMENTAL PANEL ON climate change

Introduction

- 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 gases and methods
  - Integrates GPG
  - Require similar resources
  - Do not pre-empt accounting choices
  - The best globally applicable methods



ipcc
INTERGOVERNMENTAL PANEL ON climate change

20O6 IPCC GUIDELINES - DEFINITIONS

ipcc

INTERGOVERNMENTAL PANEL ON climate change

Direct & Indirect: CO_2 and N_2O





Direct CO_2 Emissions

CO_2

"Total" CO_2 Emissions – the total increment in the atmosphere form direct and indirect sources of CO_2

2006 Guidelines "CO_2 Emissions"

2006 Guidelines "CO_2 Emissions" do not include this automatically

CO_2

2006 Guidelines give methods to calculate this

CH_4, CO & Hydrocarbons

Oxidises in the Atmosphere to form CO_2
Sometimes called "Indirect CO_2 Emissions"

CO_2

NH_3 & NO_x

"Indirect N_2O Emissions"

2006 Guidelines includes ALL NH_3 & NO_x Emissions

N_2O

Deposition of N onto soils and the subsequent chemistry gives rise to N_2O Emissions – "Indirect N_2O"

Estimation of Actual Annual Emissions



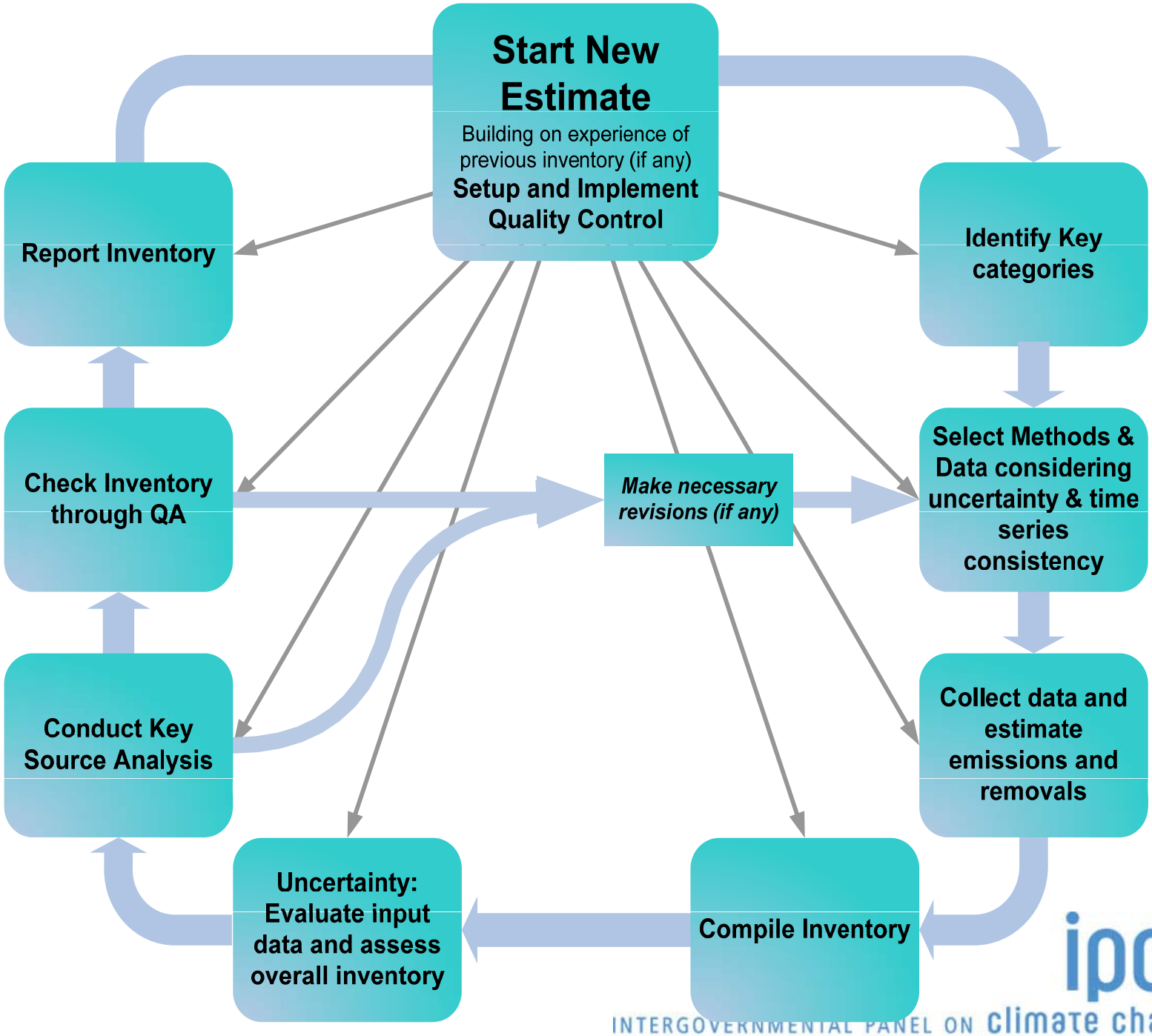


- In the 1996 Guidelines and Good Practice Guidance for a few sources, the simplest methodology estimates a "potential emission" rather than the actual annual emission.
  - *This "potential emission" assumes all the emissions from an activity occur in the current year, ignoring the fact they will occur over many years (e.g. methane emissions from waste in landfills occurs over decades as the decay processes take place).*
- In the 2006 Guidelines, simple default methods estimate emissions when they occur, thus removing the need for potential emissions.
- The removal of potential emission estimates also allows the emission reductions of abatement techniques to be properly estimated and ensures that the Tier 1 methods are compatible with higher tier methods. The areas where this occurred are:
  - *Actual emissions of fluorinated compounds*
  - *Methane from landfills*

DATA COLLECTION

ipcc

INTERGOVERNMENTAL PANEL ON Climate Change



ipcc
INTERGOVERNMENTAL PANEL ON climate change

Methodological principles

- Focus on the collection of data needed to improve estimates of key categories
- Choose procedures that iteratively improve the quality of the inventory in line with the data quality objectives.
- Activities should lead to continuous improvement of the data
- Collect at a level of detail appropriate to the method
- Review data collection activities regularly
- Introduce agreements with data suppliers

ipcc
INTERGOVERNMENTAL PANEL ON climate change

Sources of Data

- National Statistics Agencies
- Experts, stakeholder organisations
- Other national experts
- IPCC Emission Factor Database
- Other international experts
- International organisations publishing statistics e.g., United Nations, Eurostat or the International Energy Agency, OECD and the IMF

- Reference libraries (National Libraries)
- Scientific and technical articles in environmental books, journals and reports.
- Universities
- Web search for organisations & specialists
- National Inventory Reports from Parties to the United Nations Framework Convention on Climate Change

ipcc
INTERGOVERNMENTAL PANEL ON climate change

Generating New Data





- Measurement Programme
  - Representative sample
  - Standardised methods (ISO, EN, USEPA, VDI etc.)
  - Document standards and quality management
  - Well-designed programme
    - Defined objectives
    - Suitable methods
    - Clear instruction
    - Defined data processing and reporting
    - Documentation

ipcc
INTERGOVERNMENTAL PANEL ON climate change

Adapting Existing Data





- Filling in gaps in periodic data (time series consistency)
- Time series revision
- Incorporating improved / Compensating for deteriorating data
- Incomplete coverage
- Combining data sets
- Multi-year averaging
- Non-calendar year data

ipcc
INTERGOVERNMENTAL PANEL ON climate change

Expert Judgment





- A last resort when all else fails!
- Expert judgment should be elicited using an appropriate protocol (e.g. Stanford/SRI)
  - Motivating explain background, reasons and biases
  - Structuring clearly define quantities needed
  - Conditioning expert defines data, models & theory used
  - Encoding quantify data and uncertainty
  - Verification feedback to test experts response
- Biases
  - Availability, Representativeness, Anchoring & Adjustment
  - Motivational, Expert, Managerial, Selection

ipcc
INTERGOVERNMENTAL PANEL ON climate change

SOME NOTABLE IMPROVEMENTS IN 2006 GUIDELINES

ipcc

INTERGOVERNMENTAL PANEL ON climate change

AFOLU





- Agriculture and Land Use, Land-use Change and Forestry (LULUCF) combined to form a new sector AFOLU – Agriculture, Forestry and Other Land Use
- However methods largely unchanged
  - Methodological change between revised 1996 GL and GPG LULUCF NOT from previous to 2006 GL
  - Small improvements/clarifications to methods.
- Many more improved default values

ipcc
INTERGOVERNMENTAL PANEL ON climate change

Additional gases in 2006 Guidelines – Sources Identified in 2006 Guidelines





Only in IPPU Sector

By-product & fugitive emissions

	Electronics Industries	Magnesium production	Halogenated Compounds Production	GWP in TAR	GWP in AR4
nitrogen trifluoride (NF_3)	✓		✓	✓	✓
trifluoromethyl sulphur pentafluoride (SF_5CF_3)			✓	✓	✓
halogenated ethers (e.g. $C_4F_9OC_2H_5$, $CHF_2OCF_2OC_2F_4OCHF_2$, $CHF_2OCF_2OCHF_2$)	✓		✓	✓	✓
CF_3I, CH_2Br_2, $CHCl_3$			✓	✓	
CH_2Cl_2, CH_3Cl			✓	✓	✓
$C_3F_7C(O)C_2F_5$		✓	✓		
C_4F_6, C_5F_8, c-C_4F_8O	✓		✓		

Separate Guidance for categories included elsewhere in earlier guidelines

Fuel Combustion

- CO_2 -Transport and Storage
- Urea-based Catalysts (Road Transport)

Fugitive Emissions from Fuels

- Abandoned Underground Mines

Mineral Industry

- Glass Production
- Ceramics
- Non Metallurgical Magnesia Production

Chemical Industry

- Caprolactam, Glyoxal & Glyoxylic Acid
- Titanium Dioxide Production
- Petrochemical and Carbon Black Production

Metal Industry

- Lead Production
- Zinc Production

Electronics Industries

- Integrated Circuit or Semiconductor
- TFT Flat Panel Display
- Photovoltaics
- Heat Transfer Fluid

Other Product Manufacture and Use

- Electrical Equipment
- Military Applications
- Accelerators
- Medical Applications
- Propellant for Pressure and Aerosol Products

Substitutes for Ozone Depleting Substances

Land Use

- Complete, consistent treatment of fires
- Liming
- Settlements remaining Settlements
- Some wetlands categories
- Urea Application
- Indirect N_2O Emissions from Manure
- Harvested Wood Products

Waste

- Open Burning of Waste
- Biological Treatment of Solid Waste

Other

- Indirect N_2O Emissions from the Atmospheric Deposition of N (excluding agriculture)

Thank- you

Any questions?