

Need for up-to-date data to support inventory compilers in implementing IPCC methodologies to estimate emissions and removals for AFOLU Sector

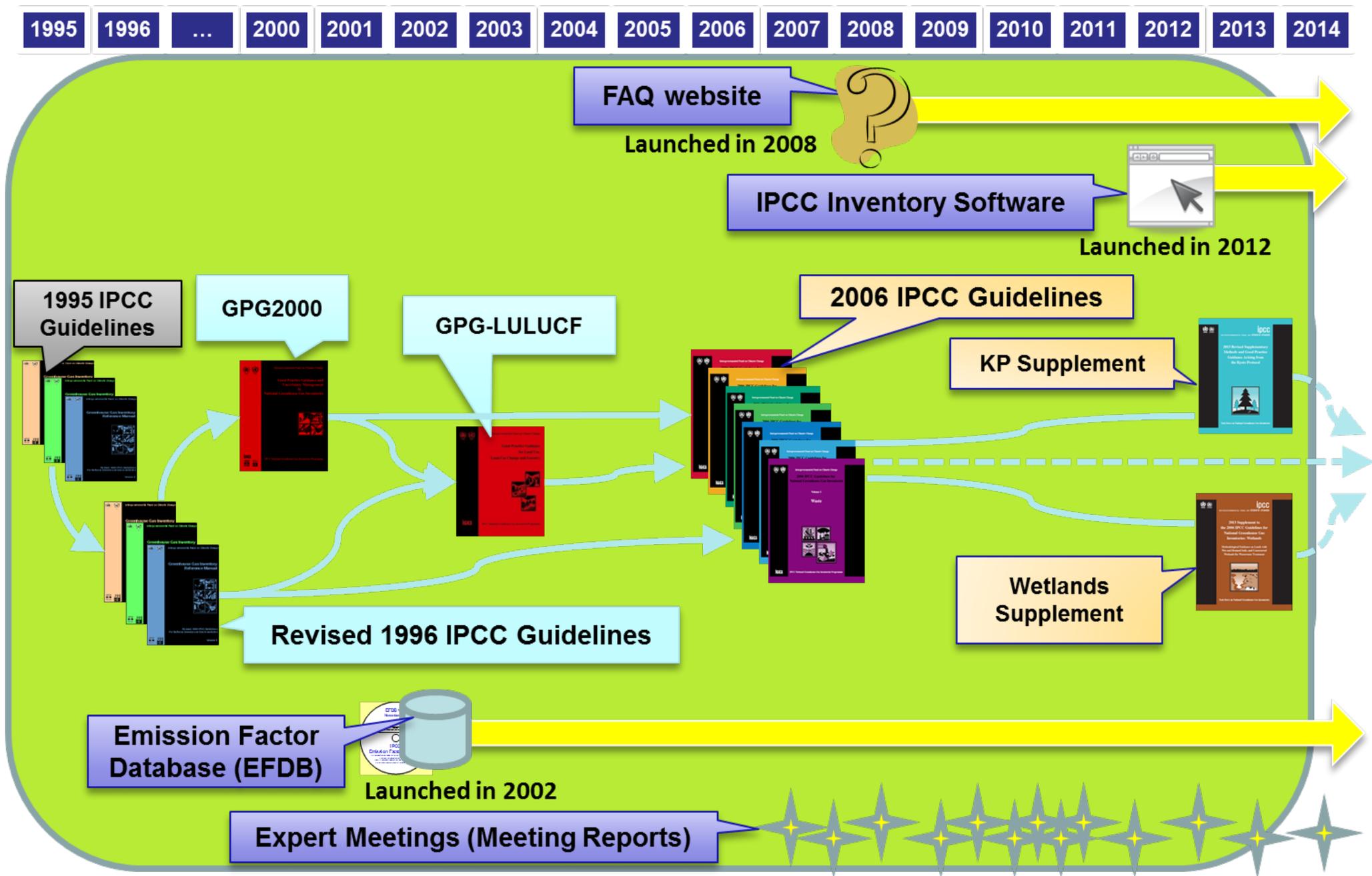
Joint FAO-IPCC-IFAD expert meeting: Emerging activities to combat climate change – use of FAO data and IPCC GHG Inventory Guidelines for Agriculture and Land Use

13-14 November 2014, Rome, Italy

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IPCC Guidelines for National Greenhouse Gas Inventories and UNFCCC

IPCC Guidelines and Various Supporting Tools



National GHG Inventory Quality

- The IPCC Guidelines help inventory compilers produce a high quality national GHG inventory.
- Good practice inventory - containing **neither over- nor under-estimates so far as can be judged**, and reducing uncertainties as far as practicable.
- Indicators of quality:

- Transparency
- Completeness
- Consistency
- Comparability
- Accuracy

TCCCA

Three methodological Tiers



- IPCC Guidelines provide **three methodological tiers** varying in complexity to be chosen on the basis of national circumstances
- **Tier1 :**
 - **Simple first order approach**
 - spatially coarse default data based on globally available data
 - methods involving several simplifying assumptions.
 - default values of the parameters from the IPCC guidelines
- **Tier 2:**
 - **A more accurate approach**
 - country or region specific values for the general defaults
 - more disaggregated activity data
- **Tier 3:**
 - **Higher order methods**
 - detailed modeling and/or inventory measurement systems
 - data at a greater resolution

IPCC Guidelines and UNFCCC

Currently, all the Parties use these under the UNFCCC and the Kyoto Protocol.

Annex I Parties shall use GPG.
Non-Annex I Parties are encouraged to use GPG.

GPG2000
(non-LULUCF)

GPG2003
(LULUCF)

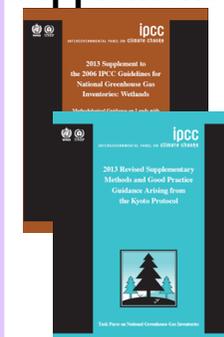
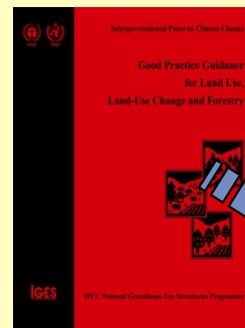
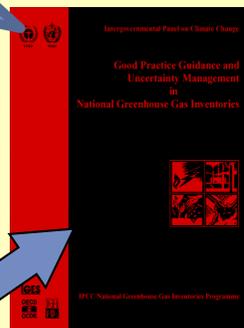
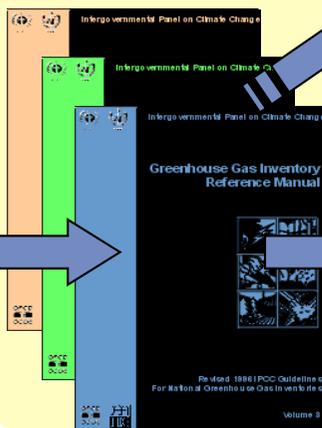
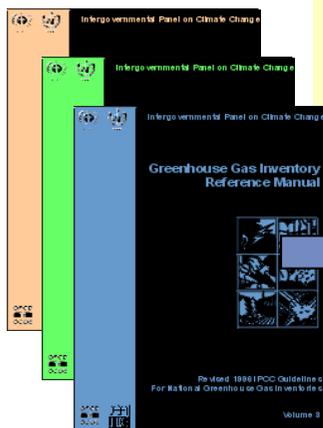
Annex I Parties
must use from 2015

**2006 IPCC
Guidelines**

**2013
Wetlands
Supplement**

**1995 IPCC
Guidelines**

**Revised 1996
IPCC Guidelines**



**2013 KP
Supplement**

Revision/Update by the IPCC

Changing Reporting Requirements under UNFCCC

◆ Annex I Parties:

- Start using the 2006 IPCC Guidelines from annual inventory submission in 2015.
- May start using the Wetlands Supplement. (SBSTA continues the discussion to explore the use of the Wetlands Supplement.)
- KP Supplement will be used for the 2nd commitment period under the Kyoto Protocol.

◆ Non-Annex I Parties:

- Start preparation and submission of Biennial Update Reports (BURs).
- Efforts need to be made to produce better and more comparable time series estimates of GHG emissions and removals.

IPCC Guidelines in the context of REDD+

- Developing country Parties are requested ...
 - To use the most recent IPCC guidance and guidelines, as adopted or encouraged by the COP, as appropriate, as a basis for estimating anthropogenic forest-related GHG emissions and removals, etc. [Dec 4/CP.15, para 1(c)]
- Guidelines for submission of information on reference levels:
 - The information provided should be guided by the most recent IPCC guidance and guidelines, as adopted or encouraged by the COP, as appropriate, [Dec 12/CP.17, Annex]
- Forest reference emission levels and/or forest reference levels shall be established maintaining consistency with each country's national GHG inventories [Dec 12/CP.17, para 8].

IPCC Guidelines in the context of REDD+

- IPCC Guidelines may play a key role in the results-based REDD+ process to ensure transparency, consistency, (completeness,) accuracy, and reducing uncertainties of estimates of forest-related GHG emissions and removals:
 - In establishing national forest monitoring system
 - In establishing forest reference emission levels and/or forest reference levels
 - In quantifying “results” of the implementation of the REDD+ activities
- IPCC Guidelines may also be useful in taking step-wise approach (periodic update of FRELs/FRLs).
- Conformity with the IPCC Guidelines may be considered as key in the technical assessment of FRELs/FRLs and in the technical analysis during the ICA.

Recent discussion on future improvement of IPCC Inventory Guidelines in relation to AFOLU Sector

Consideration on Role of Remote Sensing in Forest and National Greenhouse Gas Inventories

- ❖ IPCC Expert Meeting on Role of Remote Sensing in Forest and National Greenhouse Gas Inventories
(Hayama, Japan on 23-25 October 2012)
 - ✓ Significant challenge in application of IPCC Guidelines to estimation of emissions and removals from forests with regard to:
 - Difficulties with data collection, both current and time series
 - Difficulties with appropriate parameters for use in inventory compilation.
 - ✓ Remote sensing (RS) technologies have the potential to address some of the issues in light of:
 - Considerable improvement in quality, coverage, availability and cost of remote sensing products in recent years
 - Much wider experience in their use by inventory compilers.

Refinement of Methodological Guidance

◆ Application of 2006 IPCC Guidelines to other areas:

- An IPCC expert meeting on this topic was held in Sofia, Bulgaria on 1-3 July 2014. The meeting concluded:
 - ✓ The 2006 IPCC Guidelines have been increasingly used in other areas (e.g. subnational level inventories and mitigation projects); and
 - ✓ Guidance could be improved in some areas to assist the users of the guidelines.

◆ Refinement of inventory guidelines:

- Task Force Bureau concluded, following a relevant IPCC expert meeting in Ottawa, Canada on 25-27 August 2014, that:
 - ✓ 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, there are certain refinements that may be required, taking into account scientific advances that have sufficiently matured since 2006.

Consideration on National GHG Inventory and Mitigation Actions (in Sofia meeting)

- In national reporting consistency in the estimations made in national GHG inventories, projections, estimation of mitigation actions is important.
- For mitigation actions to be reflected in national total emissions, their effect must be reflected in a country's national GHG inventory.
- Activity data need to be related to drivers of the projections.
- Data collection for the future inventory will need to be sensitive to the effect of the mitigation action on future activity data and emission factors.
- Need to consider data issues as part of design and implementation of mitigation policies.

Need for AFOLU data to support inventory compilers

- Efforts made in 2009 and need for update its outcome

IPCC data needs and FAO datasets

- AFOLU sector presents a greater challenge in inventory compilation than most other sectors, especially for developing countries, due to a lack of reliable national data.
- IPCC Guidelines generally recommend the use of FAO datasets (e.g. FRA, FAOSTAT) for the simplest Tier 1 methods in the absence of reliable national statistics.
- Inventory compilers from the developing countries face difficulties in using FAO data due to a lack of information on how to access and interpret FAO datasets for actual inventory compilation in AFOLU sector.

Datasets for use in the IPCC Guidelines (2009)

FAO data and how it can be used in the IPCC Agriculture and Land Use Guidelines

- IPCC-FAO-IFAD Expert Meeting (20-22 October, 2009, IFAD, Rome, ITALY)
 - Many inventory compilers have noted the difficulty in obtaining suitable data for LULUCF and/or AFOLU
 - While national data is preferable the FAO data provides a useful set of data especially for smaller categories
 - Much of the data is available from the FAO but it is not clear to inventory compilers where this is held or how to use it
- The outcome was a report that lists the data items (largely activity data) needed to compile an inventory and where to find it on the FAO web site, or FAO contacts



Datasets for use in the IPCC Guidelines

FAO data and how it can be used in the IPCC Agriculture and Land Use Guidelines

IPCC Expert Meeting Report

20-22 October, 2009, IFAD, Rome, ITALY

Task Force on National Greenhouse Gas Inventories

2009 Rome meeting report

- Gave an overview of FAO Databases and data collection process
 - Global Forest Resources Assessment (FRA)
 - FAOSTAT Database
 - Planted Forest Database
 - National Forest Monitoring and Assessment Programme (NFMA)
 - Other relevant FAO databases

2009 Rome meeting report

- Gave guidance on FAO datasets and how they can be used with IPCC Inventory Guidelines
 - Forest Land
 - Cropland
 - Grassland
 - Wetlands, Settlements & Other land
 - Emissions from Livestock and Manure Management
 - N₂O Emissions from Managed Soils, and CO₂ Emissions from Lime and Urea Application
 - Harvested Wood Products
 - Waste Sector Data

IPCC Stratification Scheme for AFOLU Data

CLIMATE

- Boreal
- Cold temperate dry
- Cold temperate wet
- Warm temperate dry
- Warm temperate moist
- Tropical dry
- Tropical moist
- Tropical wet

SOIL

- High activity clay
- Low activity clay
- Sandy
- Spodic
- Volcanic
- Wetland
- Organic

BIOMASS (ECOLOGICAL ZONE)

- Tropical rainforest
- Tropical moist deciduous forest
- Tropical dry forest
- Tropical shrubland
- Tropical desert
- Tropical mountain systems
- Subtropical humid forest
- Subtropical dry forest
- Subtropical steppe
- Subtropical desert
- Subtropical mountain systems
- Temperate oceanic forest
- Temperate continental forest
- Temperate steppe
- Temperate desert
- Temperate mountain systems
- Boreal coniferous forest
- Boreal tundra woodland
- Boreal mountain systems
- Polar

MANAGEMENT PRACTICES

- Intensive tillage/
Reduced till/No-till
- Long term cultivated
- Perennial tree crop
- Liming
- High/Low/Medium Input
Cropping Systems
- Improved Grassland
- Unimproved Grassland

Datasets for use in the IPCC Guidelines (2009)

FAO data and how it can be used in the IPCC Agriculture and Land Use Guidelines

- Information available
 - Description of the information needed
 - Description of where the data is used in both the 2006 and 1996 Guidelines
 - Description of the dataset including units and other conversions
 - Comments describing the dataset and any limitations

5.1.3 Growing Stock

Description	Information on growing stock of managed forests as feasible according to different climate zones, ecological zones, soil types, forest types, management systems, and regions of a country or other nationally relevant stratification systems.
Definition(s) in the IPCC Guidelines	Volume over bark of all living trees more than X cm in diameter at breast height. It includes the stem from ground level or stump height up to a top diameter of Y cm, and may also include branches to a minimum diameter of W cm. Countries indicate the three thresholds (X, Y, W in cm) and the parts of the tree that are not included in the volume. Countries also indicate whether the reported figures refer to volume above ground or above stump. The diameter is measured at 30cm above the end of the buttresses if these are higher than 1 meter. It includes wind-fallen living trees and excludes smaller branches, twigs, foliage, flowers, seeds, and roots.
Units in the IPCC Guidelines	m ³ /ha
2006 IPCC Guidelines	See guidance in Chapter 4, Volume 4(1), and Equation 2.8(b) (Parameter V _{ij})
GPG/GPG-LULUCF	GPG-LULUCF: Chapter 3, Equation 3.2.3 (Parameter V)
1996 IPCC Guidelines	N.A.

FAO Dataset(s)	<ul style="list-style-type: none"> • FRA 2005 • FRA 2010 • Country reports to FRA • National Forest Monitoring and Assessment(NFMA)
URL	<p>www.fao.org/forestry/fra (FRA home page)</p> <p>www.fao.org/forestry/nfma (NFMA home page)</p>
Features of the data sets including definitions	<p>The FRA definitions are the same as in the IPCC Guidelines.</p> <p>Note: the FRA data set contain information on growing stock disaggregated by forest and other wooded land and in FRA 2010 also by coniferous and broadleaved species. No further disaggregation is available. The country reports to FRA provide additional information on how the growing stock was estimated.</p>
Units in the dataset	<p>FRA: Million cubic meters (over bark)</p> <p>NFMA: harmonized with FRA</p>
Availability (Years/country/region)	<ul style="list-style-type: none"> • FRA 2005: <ul style="list-style-type: none"> ○ Data availability: 146 out of 229 countries and territories. Data set contains some gaps and does not cover all 233 reporting units. ○ Reporting years: 1990, 2000, and 2005 • FRA 2010: <ul style="list-style-type: none"> ○ Data availability: not available yet ○ Reporting years: 1990, 2000, 2005 and 2010 • National Forest Monitoring and Assessment(NFMA): Available only for selected countries

2009 Rome meeting report also...

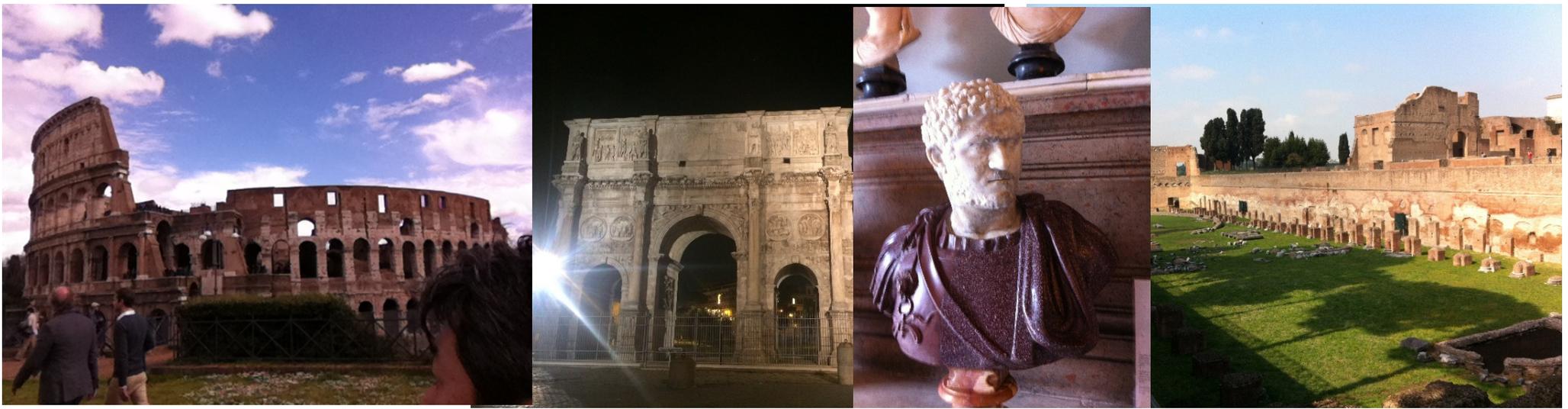
- Proposed refinements to data collection efforts by FAO
 - Harmonization of IPCC and FAO definitions and categories
 - Coverage and disaggregation of information
 - Improvement in presentation and access to information

Need for updating information in the 2009 meeting report

- 5 years passed since 2009 IPCC-FAO-IFAD Expert Meeting in Rome.
- FAO data has been significantly enhanced since then. A revision of the information in the 2009 Rome meeting report is timely.
- It is also relevant to consider how the information on the use of the FAO datasets in AFOLU GHG inventories could be continuously updated and made available to inventory compilers in an efficient and user-friendly way.

Summary

- IPCC Guidelines have been evolving taking into account advancement of scientific knowledge, and widely used by the Parties to the UNFCCC.
- Particularly for developing countries (in the context of BURs, REDD+, other mitigation actions, etc), up-to-date data availability to ensure time series consistency in estimation of GHG emissions and removals is getting more and more crucial.
- AFOLU sector presents a greater challenge in inventory compilation than most other sectors, especially for developing countries, due to a lack of reliable national data.
- IPCC-FAO-IFAD Expert Meeting in 2009 produced guidance on how to use FAO datasets in implementing the IPCC Inventory Guidelines to help inventory compilers address the issue of data availability.
- 5 years passed since then. Now it is time to update the information and consider how could be continuously updated and made available to inventory compilers in an efficient and user-friendly way.



Thank you



ipcc
INTERGOVERNMENTAL PANEL ON climate change