

Climate MRV for Africa – Phase 2

Development of National GHG Inventory

Data Collection and QA/QC



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Data Collection

Data Collection Principles

- Focus on key categories
 - Largest emissions
 - Greatest potential to change
 - Highest uncertainty
- Choose procedures that continuously improve the quality of the inventory
- Collect data/information at a level of detail appropriate to the method used
- Review data collection activities and methodological needs on a regular basis



Data Suppliers

- **Engage data suppliers in activities such as:**
 - Offering an initial estimate of the category
 - Pointing out the potentially high uncertainties
 - Collaborate in improving estimates
 - Scientific or statistical workshops
 - Specific contracts/agreements/MoUs for regular data supply
 - Regular/annual informal updates on the methods that use the data

How to engage data suppliers relevant for agriculture?

Emission Factors – Sources

➤ Literature sources

- National and international testing facilities or research conducted in universities
- Industrial trade associations (technical papers such as reports, guidelines, standards, sectoral surveys or similar technical material),

➤ IPCC emission factor database

- Robustness
- Applicability
- Documentation



➤ Data obtained by measurements

Activity Data – Sources

- National and international literature
- National statistics office
- International statistics (FAO, World Bank, OECD, EEA)
- Farms (mixed farms, commercial farms, pastoralism)
- Ministries (e.g. agriculture or environment), municipal or other relevant administrations
- Agricultural statistics and surveys
- Developing new surveys

Think of:

- Annual average livestock number
- Weight of animal
- Feed intake
- Manure management systems
- National statistics office
- Arrears used for cultivation
- Organic and synthetic fertilization

Information & Data Templates

Concise format is important, in order to:

- Standardize tasks;
- Ensure roles & responsibilities of all stakeholders clearly defined;
- Provide objective & efficient system for future improvements;
- Present information in consistent, transparent complete & timely manner;
- Starting point for future teams;
- Create transparency in a Party's institutional arrangements.



Source: Toolkit for non-Annex I Parties on establishing & maintaining institutional arrangements for preparing NC & BUR

Standard Reporting Templates

Standard reporting templates specify what GHG inventory or MRV should include & in what format:

- Name, location, contact information, reporting period
- Emission information (total, by source/gas/activity, uncertainty)
- Input data fertilizers/ feed etc.
 - ❑ Data collection (metering data, invoices, production protocols);
 - ❑ Sampling of materials;
 - ❑ Laboratory analyses of materials;
 - ❑ Maintenance & calibration of meters;
- Methodologies & equations for calculations;
- QA/QC procedures.



QA/QC

QA/QC – Definitions

- **Quality control (QC)**

A system of routine technical activities accomplished by personnel compiling the inventory.

- **Quality assurance (QA)**

Accomplished by personnel not participating directly into the making and development of the inventory process.

- **Verification**

Activities performed during or after the compilation of the inventory to ensure it's reliability. Can occur during QC or QA depending on the stage independent information is used.



Objective of QA/QC

- Evaluating the appropriateness of the proposed default factors and activity data;
- To assess the quality of the national GHG inventory;
- QA, QC and verification are essential components of a good GHG inventory.

QA/QC Goals

- QA/QC and verification activities should be integral parts of the inventory process.
- A QA, QC and verification system contributes to the objectives of good practice in inventory development, namely to improve:
 - ❑ **Transparency**
 - ❑ **Accuracy**
 - ❑ **Consistency**
 - ❑ **Comparability**
 - ❑ **Completeness**



Elements of a QA/QC System

- The following are the major elements to be considered in the development of a QA/QC system to be implemented in tracking inventory compilation:
 - ❑ An inventory agency responsible for coordinating QA/QC activities
 - ❑ A QA/QC plan
 - ❑ General QC procedures (Tier 1)
 - ❑ Source category-specific QC procedures (Tier 2)
 - ❑ QA review procedures
 - ❑ Reporting, documentation, and archiving procedures



QA/QC Plan

- Outline QA/QC activities that will be implemented.
- Include a scheduled time frame that follows inventory preparation .
- Can be referenced and used in subsequent inventory preparation or modified as appropriate.



Category Specific QC: Emission Factors

- Assess the applicability of IPCC default values on national circumstances through:
 - Evaluation of national conditions vs. that of the IPCC default values
- Country specific Emission Factors :
 - QC checks on the data used to develop emission factors
 - QC check on models
 - Comparison of emission factors between countries
 - **Reference source of emission factor !**
(inc. input parameters)



Category Specific QC: Activity Data

➤ National Level Activity Data

- ❑ QC checks for the secondary source of the national data e.g. FAO
- ❑ Compare to previous year's data
- ❑ Carefully consider fraction of manure managed in each MMS

➤ Subcategory Specific Data

- ❑ Comparison between subcategories and totals (data aggregated correctly)
- ❑ Double-check climatic conditions in regions
- ❑ Double-check MMS by region and livestock
- ❑ QC checks of measurement techniques

Category Specific QC: Direct Measurements

- Encourage the use of standard measurements:
 - ❑ Maintained calibrated measurement equipment
 - ❑ Nationally or internationally recognized standards (e.g. ISO)?

QA Procedures

- QA Goals:
 - ❑ Assess the quality of the inventory
 - ❑ Suggest improvements
- The inventory may be reviewed as a whole or in parts.
- Conduct unbiased review of the inventory by:
 - ❑ **Expert peer review** – review by experts knowledgeable in the specific field
 - ❑ **Audits** - evaluate how effectively the inventory compiler complies with the minimum QC specifications outlined in the QC plan

Verification of Emissions Data

- Comparisons with other independently compiled national emissions data
- The verification process help in evaluating the uncertainty in emissions estimates
- Should be documented:
 - Improvements
 - Detailed results of the verification process



Internal Documentation and Archiving

- Emission factors used including references
- Activity data or sufficient information to enable activity data to be traced to the referenced source
- Information on the uncertainty associated with activity data and emission factors
- Rationale for choice of methods
- Methods used including those used to estimate uncertainty
- Changes in data inputs or methods from previous years

Standardize templates !

Reporting

Report a summary of implemented QA/QC activities and key findings

➤ The summary should describe:

- ❑ Activities that were performed internally
- ❑ External reviews conducted for each source category
- ❑ QA/QC plan

➤ The key findings should describe major issues regarding quality of:

- ❑ Input data
- ❑ Methods
- ❑ Processing
- ❑ Archiving

Thank you!

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