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

Emission Factors – Sources

- **Literature sources**
  - National and international testing facilities (e.g. Landfills which capture methane, WWTP measurements)
  - 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 (World Bank, OECD, EEA)
- Waste management companies & industrial facilities
- Ministries (e.g. local development, health, housing and infrastructure), municipal or other relevant administrations, waste association
- Waste statistics and surveys
- Developing new surveys

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
  - Compare with site or plant-level factors
- Country specific Emission Factors :
  - QC checks on the data used to develop emission factors
  - QC check on models
  - Comparison with IPCC default emission factors
  - Comparison of emission factors between countries
  - Comparison with plant-level emission factors

Category Specific QC: Direct Emission Measurements

- Direct emissions measurement for a source category can be achieved from the following:
  - Continuous emissions monitoring;
  - Sample emissions measurements (representative).
- Encourage the use of standard measurements:
  - Maintained calibrated measurement equipment
  - Nationally or internationally recognized standards (e.g. ISO)?

Category Specific QC: Activity Data

- National Level Activity Data
  - QC checks for the secondary source of the national data
  - Compare to previous year's data
  - Comparison check of activity data from multiple reference sources
- Site Specific Activity Data
  - Comparison between sites and national data
  - QC checks of measurement techniques

Key Considerations for SWDS

- Countries using the IPCC FOD model should include the model in the reporting.
- Countries using other methods or models should provide similar data (description of the method, key assumptions and parameters).
- If country-specific data are used for any part of the time series, it should be documented.
- The distribution of waste to managed and unmanaged sites for the purpose of MCF estimation should also be documented with supporting information.
- If CH4 recovery is reported, an inventory of known recovery facilities is desirable. Flaring and energy recovery should be documented separately from each other.
- Changes in parameters from year to year should be clearly explained and referenced.

Key Considerations for Burning & Incineration

Review of activity data

- Diagram of distribution of waste according to management practices should be developed to ensure that the total amount of waste generated is the same as the sum of waste recycled and treated under different management practices.

Review of emission factors

- Compare country-specific or plant-specific values to the default values provided. When there is difference, they should check whether sound explanation is provided.

Review of direct emission measurements

- Where emissions are measured directly, compare plant-level factors among plants, and also with IPCC defaults. They should review any significant differences between factors

Key Considerations for Waste Water

Activity Data

- Characterize all wastewater according to the percentages flowing to different treatment systems (aerobic and anaerobic), and the percentage of untreated wastewater. Make sure it sums to 100 percent of the wastewater generated in the country.
- Compare country-specific data on BOD in domestic wastewater to IPCC default values. Provide documented justification why country-specific values are more appropriate for their national circumstances.

Emission Factors

- Compare country-specific values for Bo with the IPCC default value (0.25 kg CH4/kg COD or 0.6 kg CH4/kg BOD).

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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