

Tanzania training on the preparation of national GHG inventories

Presentation 2: GHG Inventory Management Tools

19th September 2024

UNEP-CCC

Freya Milford

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GHG Inventory Management Tools

The IPCC defines in the new material added in the [2019 IPCC Refinements](#) to the 2006 IPCC Guidelines a series of [Inventory Management Tools \(IMT\)](#). These are aimed at helping to ensure efficiency and transparency in the compilation of activities required as a part of the inventory. This will ensure:

- [TACCC](#),
- [Timeliness](#), and,
- [Good use of resources](#).

Several of these are included within the MPGs as specific contents to be included by country Parties within their BTRs.

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GHG Inventory Management Tools



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Source: 2019 IPCC Refinements



*A workplan is a clearly defined **schedule of steps** for generating GHG inventory outputs.*

- **Benefit** to Parties compiling national GHG inventories on a regular basis,
- Workplans should be **reviewed** and revised, where necessary, prior to the start of a new inventory update cycle,
- Maintained by manager/team working and developing the inventory
- Workplans should be specific to national circumstances

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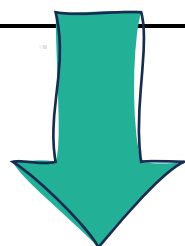


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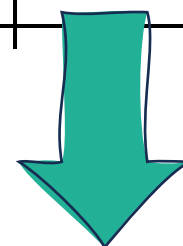


Source IPCC 2019

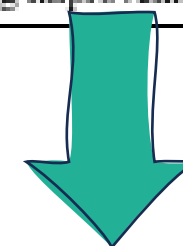
TABLE L.6 (NEW) ILLUSTRATIVE WORKPLAN FOR THE PREPARATION OF A GHG INVENTORY INCLUDING AN INDICATIVE TIMELINE		
Example Activity	Illustrative Milestones ¹⁰	Illustrative lead actor/stakeholder
Agreement on the scope of work (including stakeholder consultation and identified improvements and updates to the time-series) and timeframes with stakeholders/steering committee	Week 1	SNE/Inventory manager/coordinator & steering committee engaged for prioritising improvements



- **Activity**



- **Timeline**
- **Milestone date**



- **Personnel responsible**
- **Stakeholder**

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Workplans: Example

Date	Task & Deliverable	Responsible Party(ies)
March 1	Kick-off meeting to ensure team readiness distribute overall inventory preparation instructions, source preparation instructions and other supporting materials to inventory team.	Inventory Co-ordinator, Source(s) Team Leaders and Inventory Compiler
July 1	Meeting to discuss progress and problems	Inventory Co-ordinator, Source(s) Team Leaders and Inventory Compiler
September 1	Final spreadsheet and text files for each source due to Inventory Compiler	Source(s) Team Leaders
September 2-30	Compiling of 1st draft inventory	Inventory Compiler
October 1	1st draft inventory due to Inventory Co-ordinator	Inventory Compiler
October 3	Distribute 1st draft inventory for internal review	Inventory Co-ordinator
October 4-18	Internal review of 1st draft inventory (QC) submit comments to Inventory Compiler	Inventory Co-ordinator and Source(s) Team Leaders
October 19-22	Distribute source files and internal review comments to source(s) teams for revisions	Inventory Compiler
October 23-November 7	Incorporate internal comments	Source(s) teams and Inventory Compiler
November 8	1st revised final spreadsheet and text files for each source due to Inventory Compiler	Source(s) Team Leaders
November 9-30	Compiling of 2nd draft inventory	Inventory Compiler

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Preparing and updating a national GHG inventory requires data management systems due to the wide range of information compiled and combined, in various different formats and applications.

Formats and Applications:

- Datasets
- Documents
- References
- Assumptions
- Expert judgements
- Data conversions
- Manipulations (e.g. data combinations from different sources)

Functions:

- For **calculating** estimates
- For **sharing** information between providers-receptors, inter o intra institutional
- Aggregating and **reporting** GHG inventory data
- **Public outreach** of GHG inventory data

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Data Management Systems

Tools and systems are appropriate to national circumstances, including the complexity of their data and methods available to them.

'Simple' Approach

A collection of spreadsheets, databases and software systems for calculating GHG estimates.

'Sophisticated' Approach

More specific database tools, which can connect to the internet and users can upload and utilize systems and data from various locations at the same time.

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Differences in data management systems depends on the type of data to be managed.

Calculating GHG Estimates

- Calculation tools can be specialized models or spreadsheets
- Common practice of calculation tools:
 - *Standard classification and nomenclature*
 - *Metadata list*
 - *Standard file naming*
 - *Evidence of QC/QA*
 - *Color and visual formatting*
 - *Methodology revision history recorded*
 - *Documentation of models*
 - *Standardized output format*

Collation, Aggregation and Reporting

- Data from different spreadsheets, calculation models to be collated into tables
- Tables are aggregated to detailed reporting formats, national totals and summary tables,

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Data Management Systems

TABLE 1.7 (NEW)

SUGGESTED INFORMATION IN A STANDARDISED DATA STRUCTURE FOR COLLATING GHG INVENTORY DATA

1. Year	2. National Nomenclature	3. Reporting Nomenclature	4. Geography	5. Gas	6. Type of variable	7. Value	8. Units	9. Notation Keys	10. Reference

Example of standardised structure for data collation.

1. Year (the year of the value in the time-series).
2. National nomenclature (if relevant the nomenclature used nationally and linked to the statistics, national definitions and/or source data, allowing reports for national use in a nomenclature familiar to national actors and stakeholders).
3. Reporting nomenclature (e.g. IPCC categories and fuels/activities).
4. Geography (identifying which part of the national geographical area is represented).
5. Gas/pollutant.
6. Type of variable (e.g. emission/removal, activity data, implied emission factor).
7. The variable value.
8. Variable units.
9. Notation key (if relevant).
10. Reference/description of updates since previous compilation; and reference for the source of the value (calculation file).

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Data Management Systems

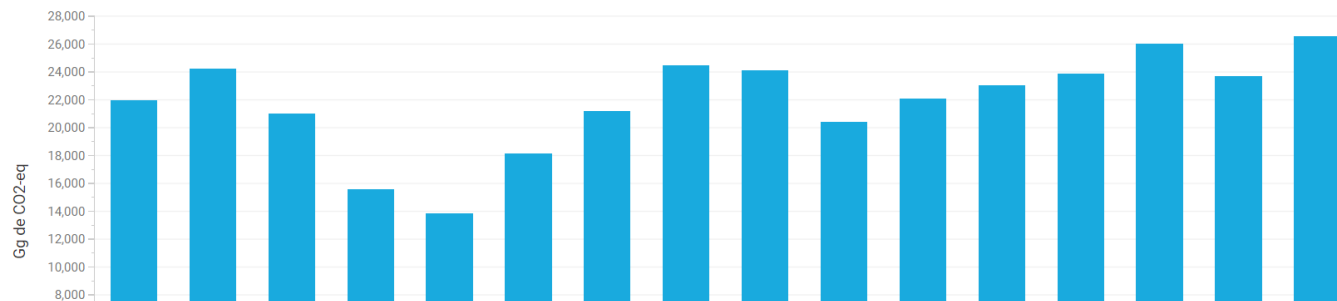


See here the results of estimates of direct and indirect greenhouse gas emissions and removals for Uruguay. The description of the sectors, categories, metrics and greenhouse gases can be consulted on the website of the [INGEI system](#).

Direct Greenhouse Gases

Metric GWP 100 AR5 GTP 100 AR5

Emissions per year in Gigagrams of CO₂ equivalent



Uruguay's Data Management System Approach:

- [Inventory Viewer \(gobiernoabierto.gub.uy\)](https://gobiernoabierto.gub.uy)
- https://visualizador.gobiernoabierto.gub.uy/visualizador/api/repos/%3Apublic%3Aorganismos%3Aambiente%3Avisualizador_inventario.wcdf/generatedContent

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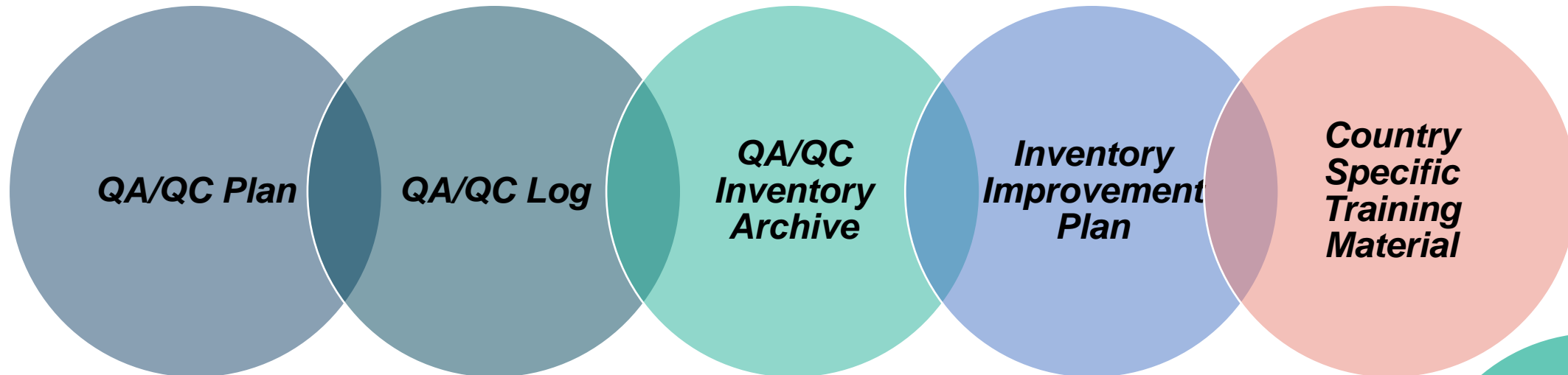


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Management of QA/QC and Documentation Materials

Made up of the following components:



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Management of QA/QC and Documentation Materials



QA/QC Plan

- A **systematic drafting** of the review procedures and processes for the next inventory submission. The QA/QC plan explicitly addresses **inventory improvement** with activities in the following build process.
- The plan should **clearly identify** all significant activities used by the inventory compiler and ensure that the **minimum data quality objectives** required under relevant reporting obligations are met.
- The QA/QC plan includes **general and category-specific QA objectives, procedures, and activities.**

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Management of QA/QC and Documentation Materials



Log of implemented QA/QC and verification activities

- A record of QA/QC **activities** and **verification implemented** with reference to documentation and associated findings



QA/QC Inventory Archive

- Archive which structures and stores relevant data on current, latest and historic GHG inventory estimates, reports, methodologies, and calculations

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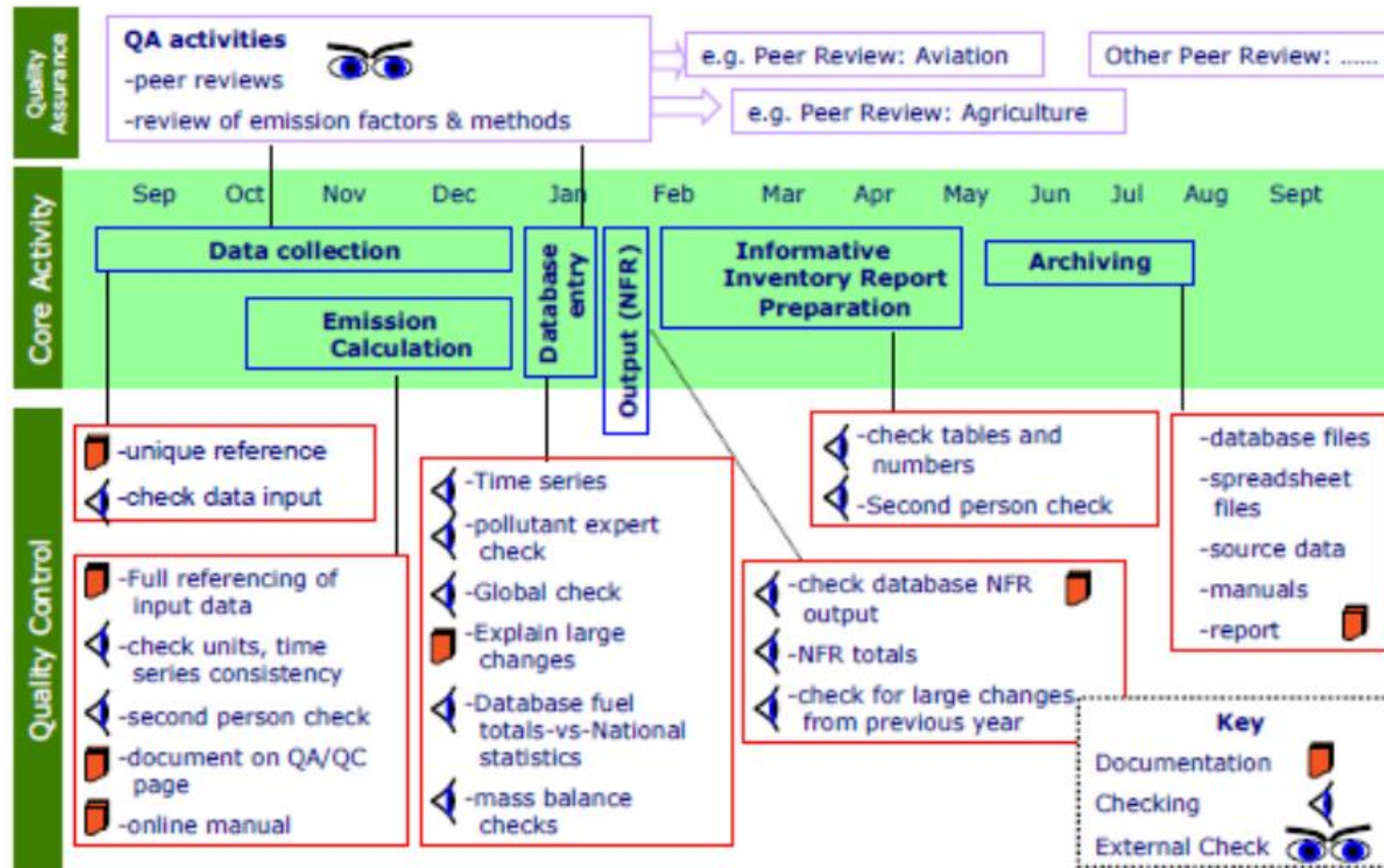


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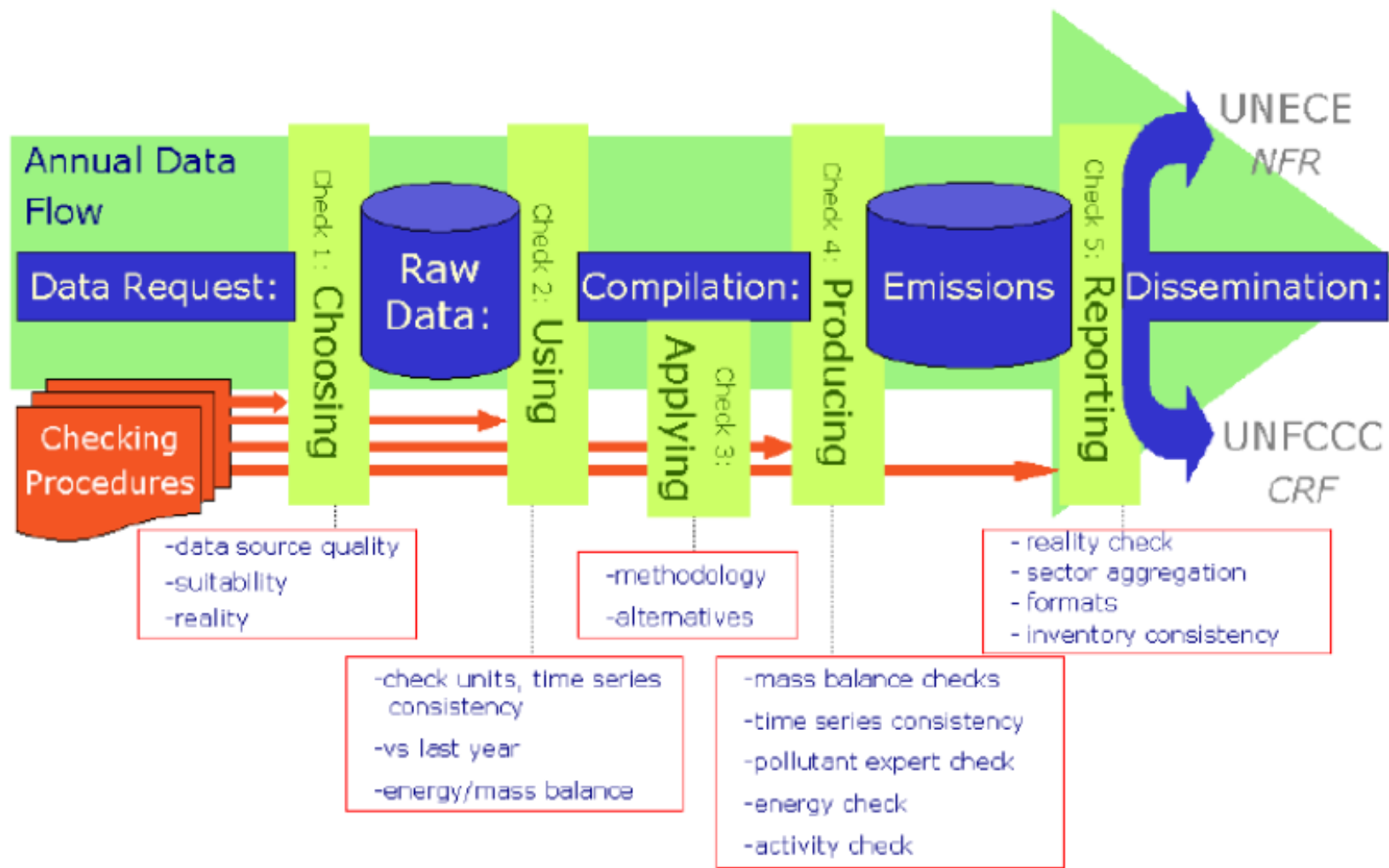
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Source: EMEP/EEA air pollution emission inventory guidebook 2019 (EEA Report 13/2019)



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Source: EMEP/EEA air pollution emission inventory guidebook 2019 (EEA Report 13/2019)



Management of QA/QC and Documentation Materials

Inventory Improvement Plan

- Plan detailing potential, planned and implemented improvements... *see following slides*

Country Specific Training Material

- Addressing country specific methods and data management tools

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Inventory Improvement Plan

Improvement Plan

Plan setting out potential, planned and implemented improvements to GHG inventories

Made up of the specific actions including:

- Compilation
- Prioritization
- Synthesis
- Future implementation

Benefits and Constraints

Benefits:

- Find better data
- Facilitate coordination
- Train current staff members
- Enhance QA/QC procedures
- Guide new staff

Constraints:

- Staff availability
- Staff expertise
- Cost
- Time
- Responsible

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Inventory Improvement Plan

TABLE 1.8 (NEW)

SUGGESTED DESCRIPTION OF POTENTIAL, PLANNED AND IMPLEMENTED IMPROVEMENTS IN INVENTORY IMPROVEMENT PLAN

1. Categorisation	2. Name	3. Description	4. Origin	5. Status	6. Priority	7. Owner

1. The **categorization** of the improvement. This could include the sector or categories, and the type of improvement activity (e.g. improved QA/QC processes, improved uncertainties or key category analysis, improving activity data, moving to higher tier methods).
2. A short unique **name**.
3. Improvement **description** including information on timeframes and technicalities for development.
4. The **origin** of the improvement (e.g. recommendation or expert suggestion or international review process).
5. The **status** (e.g. suggested, proposed, planned, work in progress, implemented) of the improvement.
6. The **priority** of the improvement (informed by the *key category* analysis).
7. The **owner** is the person or entity responsible for implementing the improvement.

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Information Sources and Further Information

- **IPCC:** <https://www.ipcc.ch/report/2019-refinement-to-the-2006-ipcc-guidelines-for-national-greenhouse-gas-inventories/>
- **MPGs:** https://unfccc.int/sites/default/files/resource/cp24_auv_transparency.pdf
- **CGE:** <https://unfccc.int/process-and-meetings/transparency-and-reporting/support-for-developing-countries/consultative-group-of-experts/enhanced-transparency-framework-technical-material>
- **UNFCCC GHG Inventories:** <https://unfccc.int/process-and-meetings/transparency-and-reporting/support-for-developing-countries/ghg-support>
- **US-EPA Templates:** <https://unfccc.int/process-and-meetings/transparency-and-reporting/support-for-developing-countries/ghg-support/ghg-help-desk/ghg-documents>

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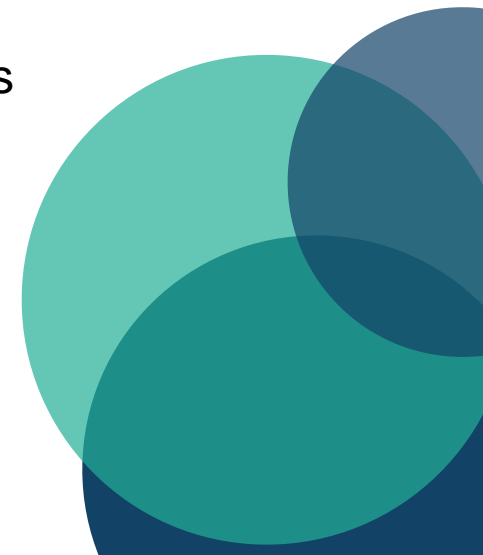
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Thank you for your attention!

For more information:
<https://climate-transparency-platform.org>

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