



Food and Agriculture
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FAO and the Enhanced transparency framework

ENHANCED TRANSPARENCY FRAMEWORK WEBINAR SERIES

Quality Assurance (QA) of the National GHG Inventory Management System and National GHG Inventories

*1. QA/QC WITHIN THE GHG INVENTORY CYCLE & THE NEED FOR AN IMPROVEMENT
PLAN - IORDANIS TZAMTZIS (FAO)*

*2. THE QUALITY ASSURANCE OF THE NATIONAL GREENHOUSE GAS INVENTORY
MANAGEMENT SYSTEMS AND NATIONAL GREENHOUSE GAS INVENTORIES FROM
DEVELOPING COUNTRIES - DOMINIQUE REVET (UNFCCC)*





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ENHANCED TRANSPARENCY FRAMEWORK WEBINAR SERIES

QA/QC within the GHG inventory cycle & the need for an improvement plan

Iordanis Tzamtzis

Office of Climate Change, Biodiversity and Environment

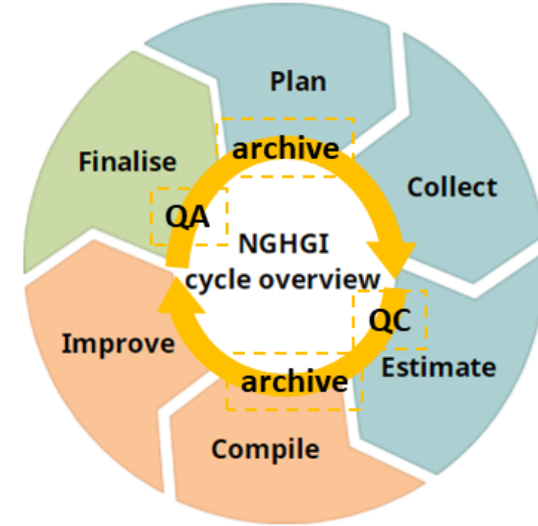
24th November 2020



QA/QC within the GHGI: what?

Quality control (QC): system of routine technical activities to assess & maintain the **quality** of GHGI **as it is being compiled**. Performed by personnel **compiling** the GHGI. Is meant to:

- Provide routine & consistent checks to ensure data integrity, correctness, completeness
- Identify & address errors & omissions
- Document & archive GHGI material & record all QC activities.



Quality Assurance (QA): planned system of **review** procedures. Performed by personnel **NOT directly involved** in the GHGI compilation/development process, preferably by independent parties.

Verification (V): activities & procedures during the planning & development, or after completion of GHGI → establishes reliability of the GHGI.

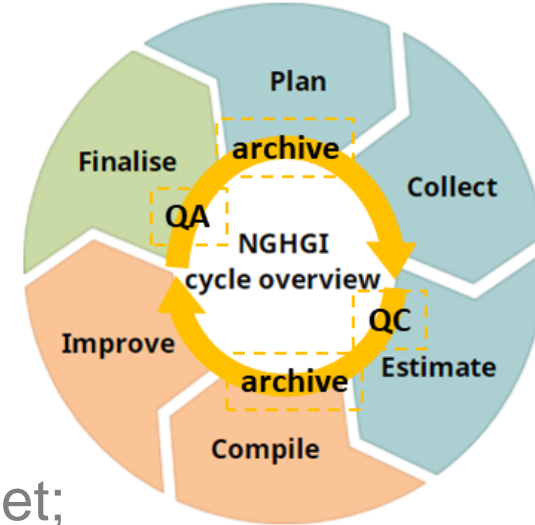


QA/QC within the GHGI: what?

QC: general methods (data acquisition & calculations accuracy checks, use of approved standardized procedures for emission/removal calculations, uncertainties, archiving information & reporting), technical review of categories, AD, EFs, parameters, methods.

QA: upon a **completed** inventory **following** the implementation of QC procedures. Verify measurable objectives (data quality objectives) are met; ensure the GHGI represents the **best possible** estimates for the current state of scientific knowledge & data availability; supports the effectiveness of the QC programme.

V: external methods applying independent data (comparisons with estimates by other bodies, alternative methods). May be part of QA/QC.



QA/QC within the GHGI: requirements

Parties (dec.18/CMA.1)

shall *elaborate* inventory **QA/QC plan** (2006 IPCC GLs)

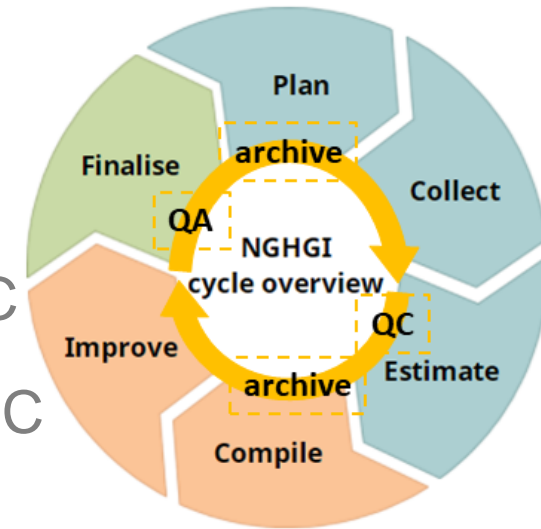
shall *report* information on the inventory **agency responsible** for QA/QC

shall *implement & report* information on **general QC procedures** (QA/QC plan, 2006 IPCC GLs)

should *apply* **category-specific QC procedures** (key categories, categories with significant methodological changes and/or data revisions)

should *implement* **QA procedures**

shall *report* on **QA/QC plan, QA/QC procedures** implemented or to be implemented, **review results, planned GHGI improvements**



QA/QC within the GHGI: why?

contributes to the objectives of *good practice*
improve **TACCC** of NGHGI & the **NGHGI systems**

outcomes → re-assessment of inventory or category
uncertainty estimates; subsequent improvements in
emissions/removals estimates

variables in the
estimation
methodology

deficiencies in
organization structure
of the inventory
arrangements

CHAPTER 6

QUALITY ASSURANCE / QUALITY CONTROL AND VERIFICATION

QA/QC, V activities should be **integral parts** of the GHGI process

QC procedures may be **general** & extend to **category specific**
procedures

2006 IPCC GLs

volume 1, chapter 6

volume 4 (AFOLU)

General technical considerations

Category-specific applications

Volume 4: Agriculture, Forestry and Other Land Use

the entire time series and to recalculate the entire time series if one or more of the model
Failure to do so may result in artificial sources or sinks, for example as a result of decay ra

4.4.3 Quality Assurance and Quality Control

The characteristics of the greenhouse gas inventory estimate of Forest Land can have di
accuracy and levels of bias. Moreover, the estimates are influenced by the quality and
information available in a country, as well as gaps in knowledge. In addition, depending



QA/QC within the GHGI: how?

Do we have unlimited resources/time?? **NO**

Prioritize QA/QC & V

Key category

High uncertainty

Significant changes in category characteristics, trends

Higher tiers, complex models

Time passed since last update of EFs, parameters

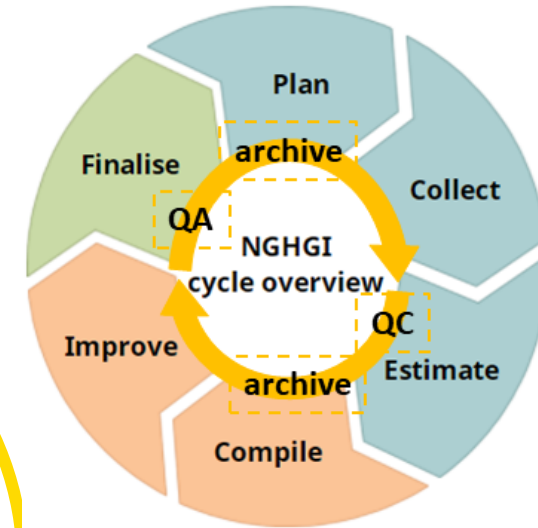
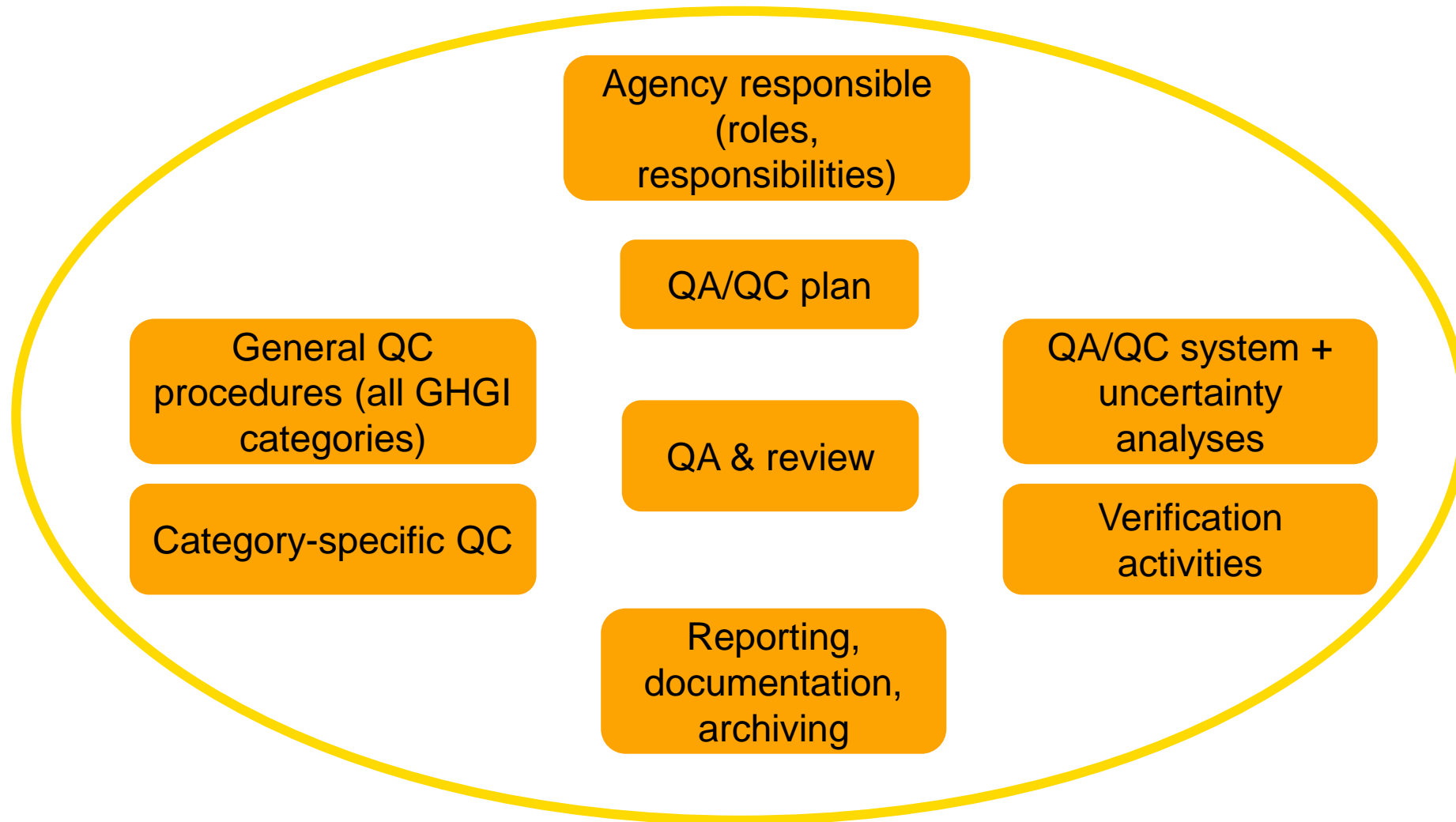
Time passed since the last QA/QC

Overlaps with other categories

Significant changes in methodologies, data processing, data acquisition



QA/QC within the GHGI: system elements



QA/QC within the GHGI: General QC

- ❑ Generic checks (calculations, completeness, documentation, etc.) applicable to all GHGI categories
- ❑ Apply a step-wise approach (sample per category) → cover the whole GHGI aspects in specific time period
- ❑ Request QC checks/results/documentation from external consultants, agencies (e.g. national statistics)

➤ **Table 6.1**, vol.1, ch.6, 2006 IPCC GLs

Examples of general QC activities

- ✓ Completeness (NE, notation keys)
- ✓ Time-series consistency
- ✓ Emissions/removals trends
- ✓ Correctness of emissions/removals
- ✓ Data flow
- ✓ Uncertainty, KCA analysis
- ✓ Transparency, documentation (AD, EFs, assumptions,...)
- ✓ References
- ✓



QA/QC within the GHGI: Category-specific QC

IPCC default EFs

- Applicability to national circumstances?
- Background information of the EFs
- Check with national EFs (even if data are limited)

Country-specific EFs

- Background information of the EFs
- QC on models (assumptions, equations, validation, documentation, completeness...)
- Comparison with IPCC defaults
- Comparison with other country(ies)
- Comparison between regions/types...

AD

- QC checks by reference source
- Comparison with independent data-sets
- Comparison with samples
- Trend checks
- Comparison from different sources

Calculations

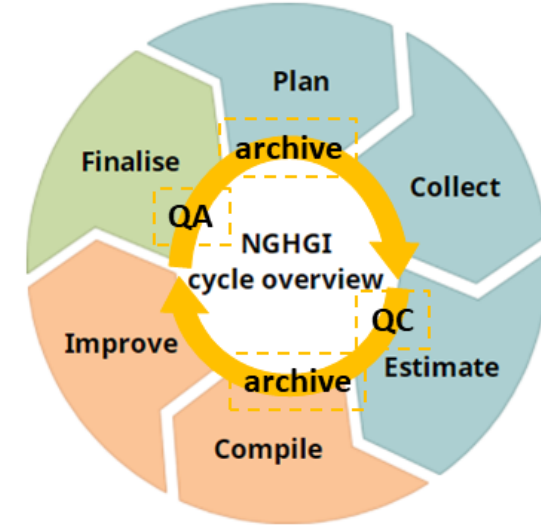
- Reproducible?
- Input data, methodologies, output documentation, intermediate calculations, reference sources, formulas, assumptions

➤ Volume 4, ch.1-12, 2006 IPCC GLs



QA/QC within the GHGI: QA

- ❑ Reviews, audits, external assessments
- ❑ Implemented to whole or part of the GHGI
 - Unbiased, objective reviews
 - Independent reviewers (independent agency, other country)
- ❑ Review of calculations, assumptions, data, EFs, documentation, GHGI
- ❑ Assessment of the inventory processes (preparation, development, after submission)
- ❑ Assessment whether the QA/QC & V plan is followed
- ❑ UNFCCC TER, UNFCCC voluntary QA activity



**GHGI
improvement**



QA/QC within the GHGI: Verification

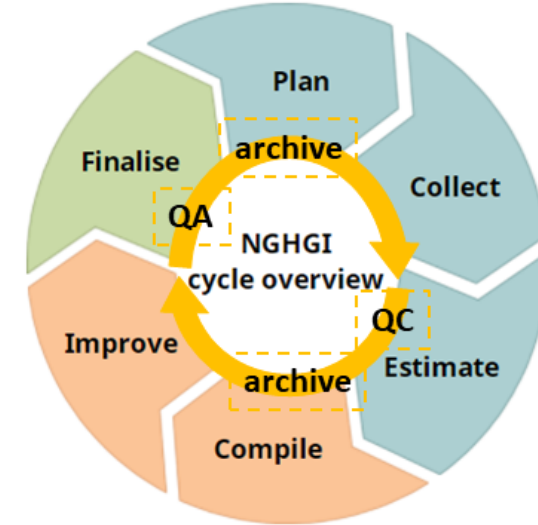
- ❑ Comparisons with estimates from third parties
- ❑ Correspondence, increases confidence & reliability of GHGI

Applying lower tier methods

Comparison with independent estimates

Applying higher tier methods

- Identify weaknesses, re-evaluate GHGI parts



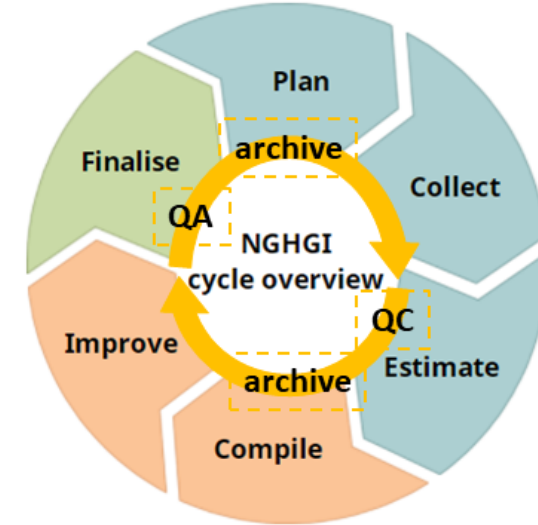
QA/QC within the GHGI: Document, archive, report

Document, archive all information, including QA/QC plan & implementation

Record of QA/QC & V activities performed (when, how, who), outcomes

Report a **summary** of implemented QA/QC & V activities & key findings supplementary to GHGI

- Reference the QA/QC plan
- Describe QA/QC & V activities
- Present key findings



Develop an improvement plan & report on planned improvements

Prioritize actions, set a time-table, prepare for the next GHGI cycle



FAO and the Enhanced transparency framework

www.fao.org/climate-change/our-work/what-we-do/transparency/
etf@fao.org

Thank you !



The Quality Assurance of the National Greenhouse Gas Inventory Management Systems and National Greenhouse Gas Inventories from developing countries

Organized by the UNFCCC Secretariat with the collaboration of the FAO



Mr. Dominique Revet, Team Lead, GHG Support Unit (DRevet@unfccc.int)

What is a Quality Assurance (QA) Workshop?

- Upon **request for technical assistance** received from a National Focal Point of the Convention, the UNFCCC secretariat, in collaboration with the FAO provides a **new type of capacity building**, with a view to supporting the quality assurance of **(1) GHG Inventory Management System (IMS)** and **(2) national GHG inventories** before their submission.
- Takes the form of an **in-country workshop** for which all costs are taken care of by the UNFCCC secretariat.
- The entire exercise is **voluntary, facilitative** and **non-intrusive** in nature, and entirely held **on a confidential basis**, so it will not result in any official report to the intergovernmental process.
- The QA exercise will result in a comprehensive (**168 pages**) **template** filled in with **comments** and **recommendations agreed** by the country and ranked according to **three levels of priority** to inform the **National Inventory Improvement Plan (NIIP)**.



The Objectives of a QA Workshop



- Support the current **MRV system** and **prepare** developing countries for the **full implementation** of the **Enhanced Transparency Framework** under the Paris Agreement.
- Support the setting-up and maintenance of **sustainable GHG IMS**.
- Perform an **in-depth assessment** with a view to **improve the quality of the national GHG inventories** for all sectors (energy, IPPU, AFOLU and waste), ideally before their official submission.
- **Build the technical capacity of national experts** on the use of the **2006 IPCC Guidelines** for the full implementation of the **Modalities, Procedures and Guidelines (MPGs)** adopted at COP 24 by **Decision 18/CMA.1**.

The Outcomes of a QA Workshop



- **168 pages** long filled-in **QA Template** containing all the findings, and **recommendations** identified and **agreed** during the QA, ranked by order of **priority**. This template is available in **English, French** and **Spanish**.
- **Revised GHG inventories** based on findings and clarifications provided during **in-depth assessment and exchanges** with very experienced resource persons, and **recommendations** for improvements to be implemented.
- Input to the country's next (or often first) **NIIP** and basis for **developing projects to address the needs identified**.
- **Knowledge enhancement** of the 2006 IPCC GLs, including the IPCC inventory software, and the MPGs.
- **Facilitates coordination and dialogue between institutions and key stakeholders** involved in the national GHG inventory development (*inventory management system and NIR*).

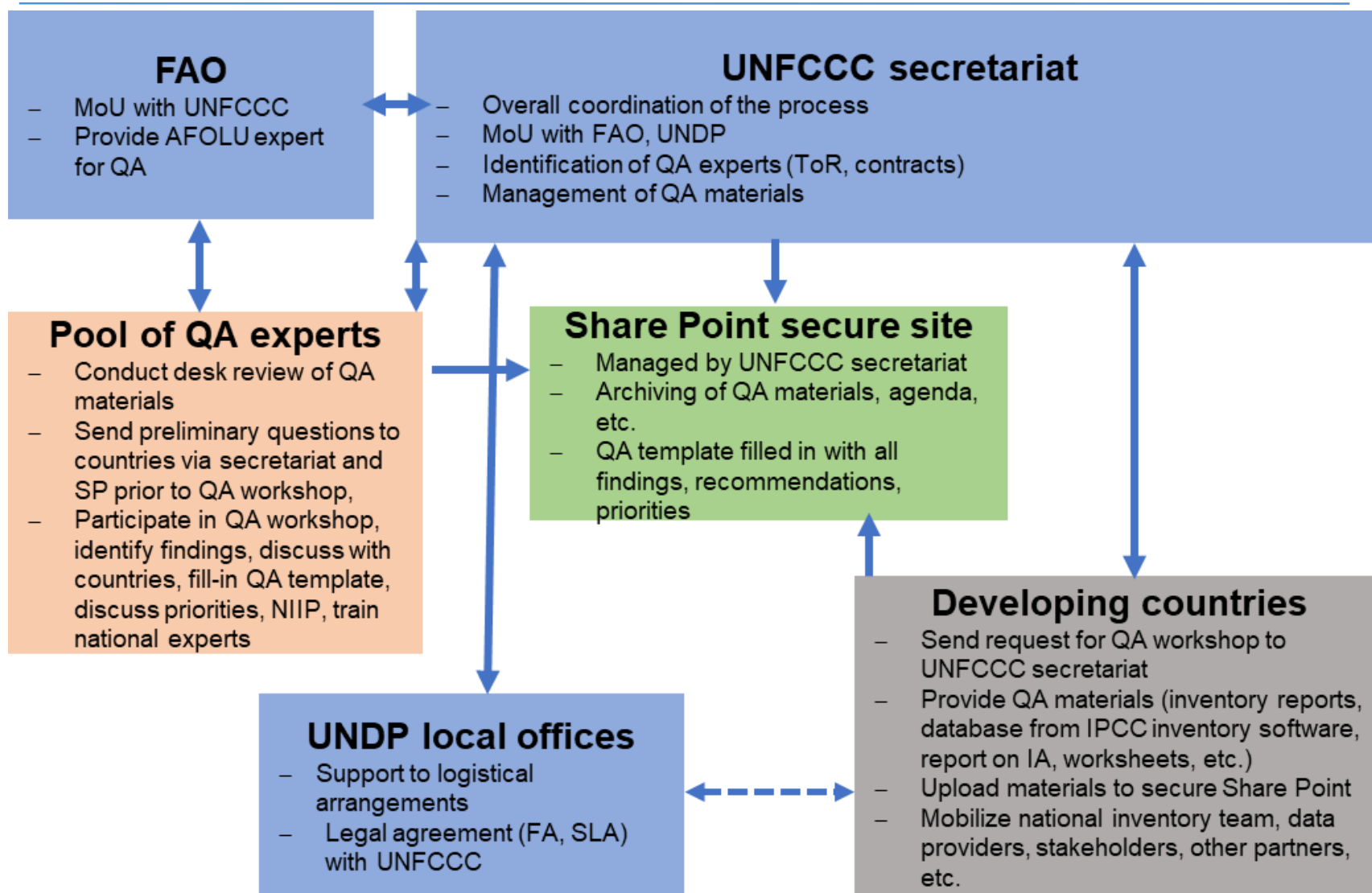


Countries having requested a QA

- **23 countries** have requested a QA since March 2018
 - ❑ **20 In-country QA workshops:** Africa (10), Asia Pacific and Eastern Europe (6) and Latin America and the Caribbean (4)
 - ❑ **1 Remote QA workshop:** Africa (Sept. 2020)
 - ❑ **2 Upcoming remote workshops:** Asia Pacific and Eastern Europe (Dec. 2020 and Jan. 2021)



Overview of the QA Process



More Technical Assistance after the QA



- In order to address key recommendations from the QA beneficiary countries receive **additional targeted technical assistance or training**:
 - ✓ Institutional arrangements;
 - ✓ Development of NIIPs;
 - ✓ Specific technical issues, such as conducting the Uncertainty Analysis in GHG inventories, and developing Energy Balances;
 - ✓ Tools (for e.g. Full Lands Integration Tool, FLINT);
 - ✓ Annual meeting of the QAed countries to discuss progress of implementation of recommendations and further capacity building needs identified.
- **Feedback** received from beneficiary countries:
 - ✓ Always **very positive**, as confirmed by surveys;
 - ✓ QAs are always seen as **eye-opening experience** by countries.



Thank you for your attention!

