



# QA/QC System for reporting air pollutant emission inventories

What? Why? Who?



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# Objective of QA/QC

Assure and improve ...

- Transparency
- Consistency
- Comparability
- Completeness
- Accuracy

Reduce uncertainty ...

Increase in confidence ...

in national inventories of emission estimates.

# Quality Assurance & Quality Control

QC is a system of routine technical activities, to measure and control quality of the inventory as it is being developed.

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

QA activities include a planned system of review procedures conducted by personnel not directly involved in the inventory compilation/development process.

- verify that data quality objectives are met
- Ensure that inventory represents best possible emission estimates
- Support effectiveness of the QC programme

Verification: comparisons made by other bodies, or through alternative methods, or independent data

# Legal Requirement for QA/QC

## **NEC Directive (2001/81/EC)**

**Art.7 (2):** *Member States shall establish their emission inventories and projections using the methodologies specified in Annex III.*

**Annex III:** *Member States shall establish inventories and projections using the methodologies agreed upon by the Convention on Long-range Transboundary Air Pollution and are requested to use the joint EME/CORINAIR guidebook in preparing these inventories and projections.*

→ **EMEP/EEA air pollutant emission inventory guidebook 2009**  
**Chapter 6: Inventory management, improvement and QA/QC**

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## Requirements to QA/QC

EMEP/EEA air pollutant  
emission inventory  
guidebook 2009

Chapter 6: Inventory  
management,  
improvement and QA/QC

# Inventory Management System

1. a **clear inventory process so that key activities and resources can be focused towards** delivery deadlines and delivery quality;
2. **institutional arrangements: clearly defined roles and responsibilities for delivering the** inventory to specified time and quality standards;
3. a **quality framework to ensure that the data is fit for purpose.**

# Inventory Management System

## Institutional Arrangements

- Responsibilities Report to Conventions, Manage Inventory Process, ...
- Roles Inventory Compilers, Data Providers, Experts, Stakeholders, ...
- Arrangements Laws, Contracts, MoUs, Job Descriptions

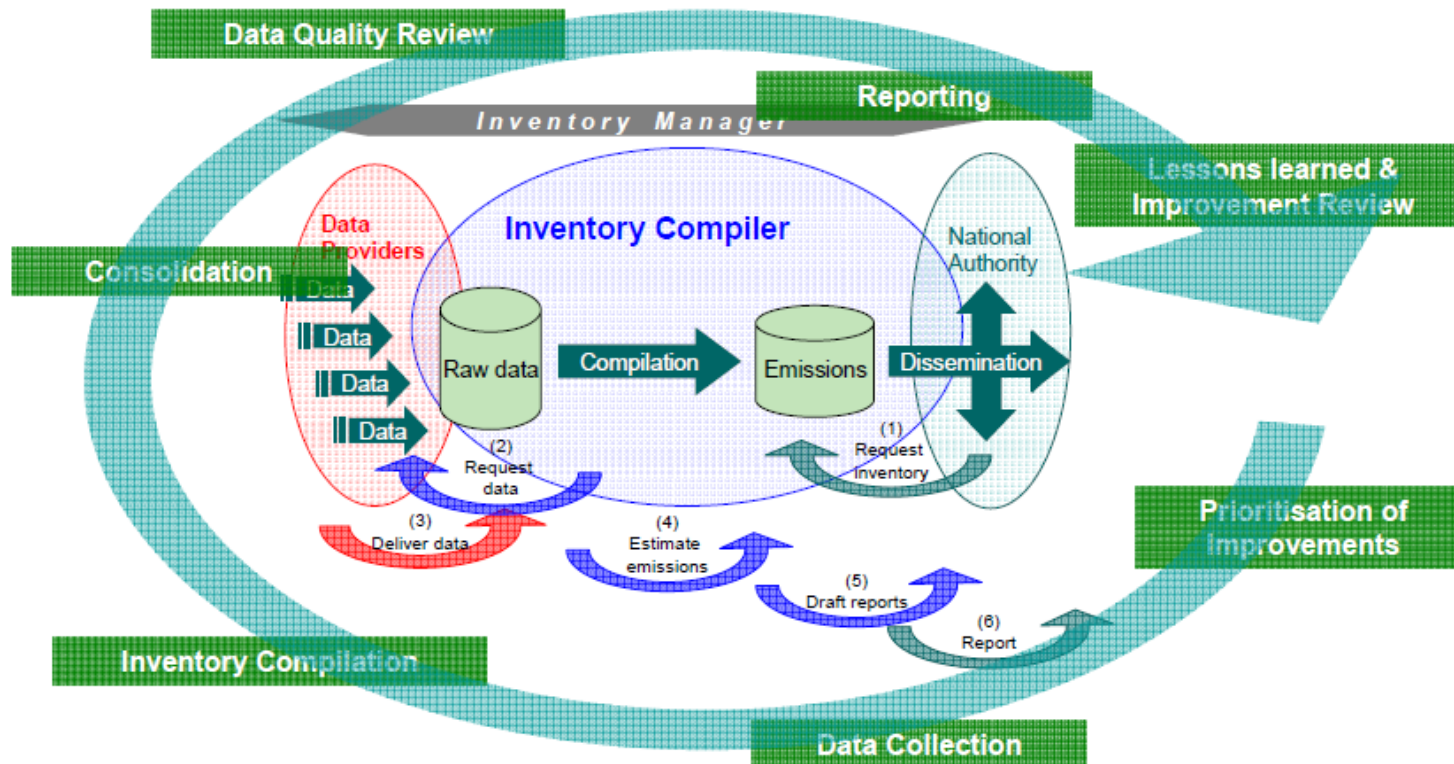


Figure 1-1 Aspects of Inventory Management



# Inventory Management System

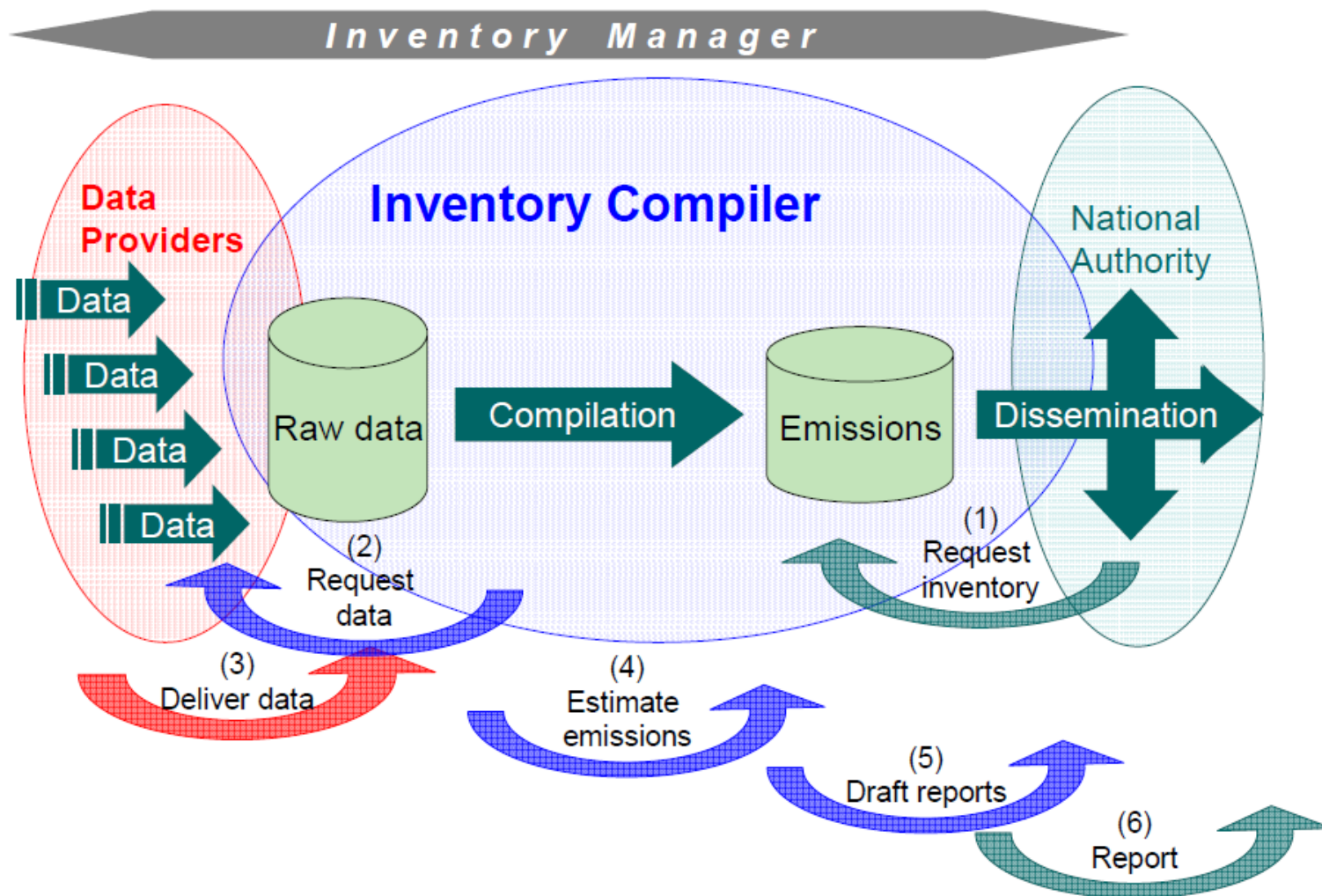


Figure 2-1 Schematic representation of the inventory process

## QA/QC plan

- establishes all procedural and technical issues to produce an annual inventory
- Evaluation of completed cycle feeds into the management plan to the next year

### **Institutional arrangements:**

Who does what when and what will happen if they do not?

→ Formal agreements

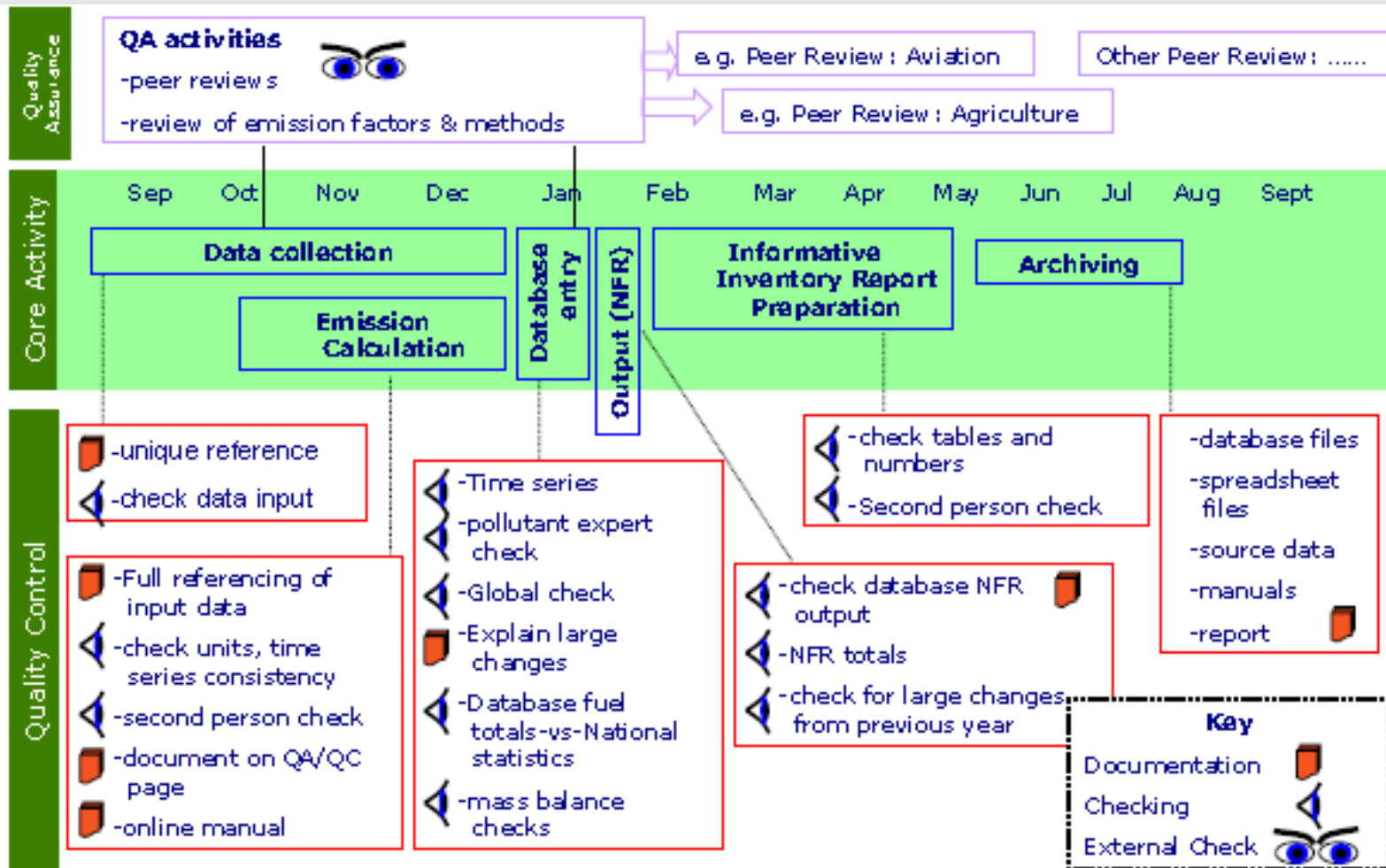
### **Data collection:**

What data are needed when and in what format.

→ data delivery protocols

**Inventory Management Report:** Evaluation

# QA/QC plan



## QA/QC plan

Key element: list of data quality objectives against which an inventory can be measured during the review

Describes all QA/QC and verification actions

Identification of institutional arrangements

Responsibilities for implementing these activities

Scheduled time frame for activities

→ Annual review and revision fo QA/QC plan

→ Use of guidelines (ISO)

# QC procedures

Checks for

- choosing data (internal, external supplier)
- using data (conversions, calculations)
- reporting emissions (approximate method, time series consistency, comparability)

Documentation and archiving → Calculations are fully reproducible

## QA procedures

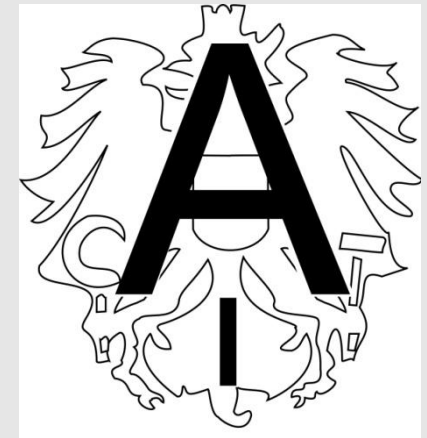
Reviews and audits by experts not involved in the actual inventory compilation → unbiased review

Prioritise: key categories, categories with changes in method or data

# Austrian Approach

- Goes beyond basic QA/QC system!

The *Umweltbundesamt* is **accredited** as inspection body (Id.No. 241) in accordance with the Austrian Accreditation Law (AkkG), Federal Law Gazette No. 468/1992 last amended by federal law gazette I No. 85/2002, by decree of the Minister of Economics and Labour, No. BMWA-92.715/0036-I/12/2005, issued on 19 January, valid from 23 December 2005. The requirements of EN ISO/IEC (Type A) are fulfilled.



## **Austrian Air Emission Inventory - Österreichische Luftschadstoff-Inventur (OLI)**

- Exist since 1994; estimations of emission of SO<sub>2</sub> started in 1978 under the UNECE/LRTAP Convention - EMEP;
- Prepared annually
- Comprises the greenhouse gases CO<sub>2</sub>, CH<sub>4</sub>, N<sub>2</sub>O, HFC, PFC and SF<sub>6</sub>, and the air pollutants SO<sub>2</sub>, NO<sub>x</sub>, NMVOC, NH<sub>3</sub>, CO, heavy metals, persistent organic pollutants, and particulate matter
- Is used as data base for fulfilment of national and inter-national reporting obligations
- Is subject to a continuously improvements process
- Accredited since 2005 as Inspection Body for GHG Inventories according to International Standard 17020
- Extension planned for 2011: incorporation of the Emissions Trading Registry (with a completely revised quality manual)

**Currently 594 sources, 6 greenhouse gases and 14 air pollutants  
time series 1980 – 2009 respectively 1985 - 2009**



## Where to start

- Definition of roles, including job description
  - - Identify Inventory compilers
  - Identify inventory manager
  - QA/QC manager
- List of data suppliers and sources: What, Who, Where, When
- Prepare calculation sheets
- Document calculations and assumptions (References)
- Establish archiving system
- Document every action taken
- Elaborate check list

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