

An Overview of GHG Inventory QA/QC system in Korea

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- Table of Content -

I. Present Status of National GHG Inventory in Korea

II. Definition of QA/QC

III. Practical Example (1)

: QA/QC procedure for waste sector Inventory Report

IV. Practical Example (2)

: QA/QC procedure for Local government GHG Inventory

I . Present Status of GHG Inventory in Korea

■ Kyoto Protocol Article 7 requires,

– Annex I Parties to submit

Annual Greenhouse Gas Inventory Report, National Communications to UNFCCC.

■ Korea is included in Non-Annex 1 parties,

– Has been drawing up GHG Inventory to monitor National & Local GHG emission

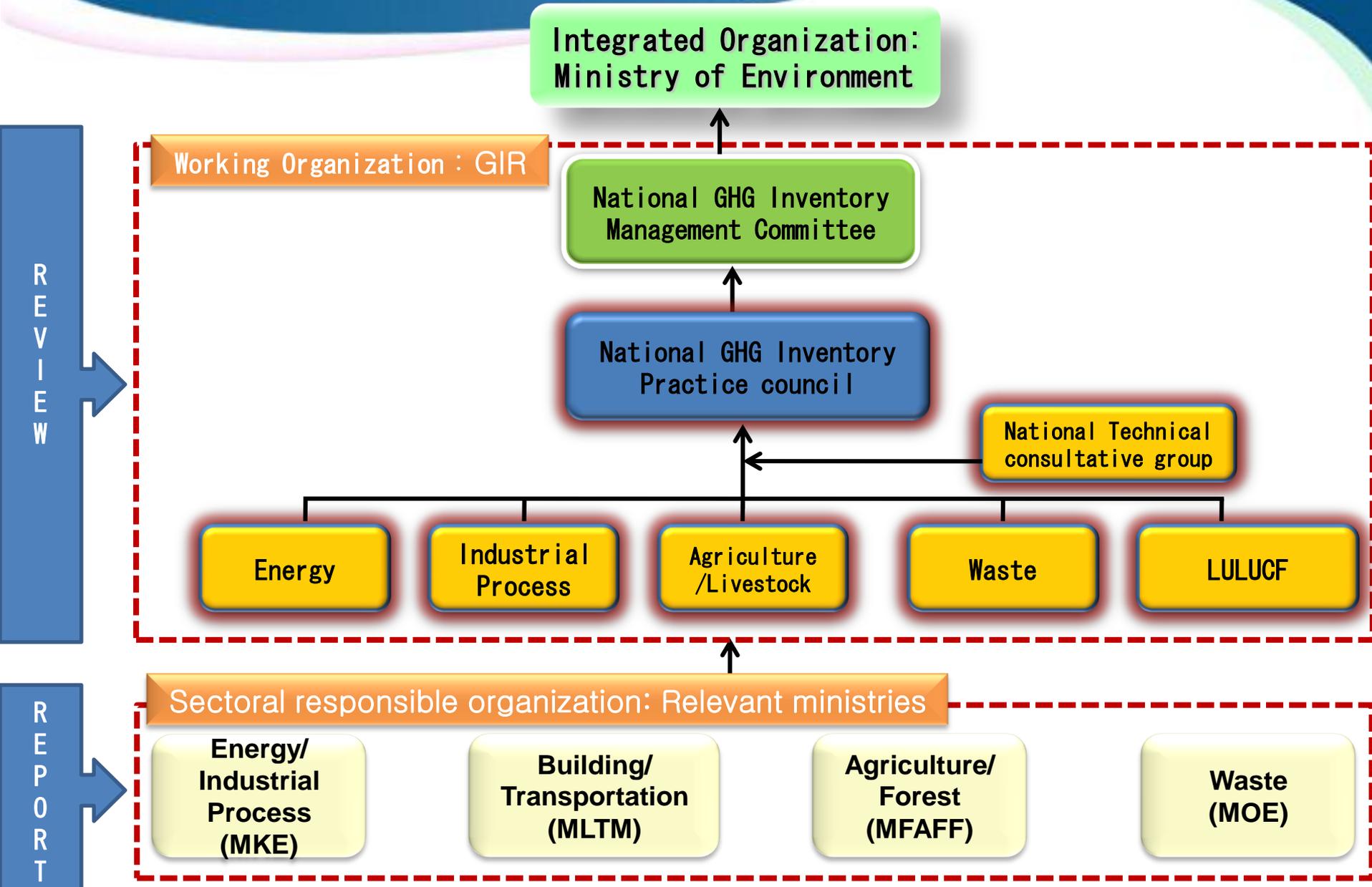
■ **GIR**(Greenhouse gas Inventory & Research center of Korea), launched in June, 2010,

systematically manages National GHG Inventory and Emission.

“Framework act on Low carbon and Green Growth” Article 45
(Establishment of Integrated Information Management System for GHG)

The Government shall establish an integrated information management system for greenhouse gases with which it shall develop, verify, and manage the quantity of green housegases emitted and absorbed, the emission and absorption factors, and various information and statistics related to greenhouse gases.

Organizational Structure of National GHG Inventory management



II. Definition of QA/QC

■ 2006 IPCC Guideline

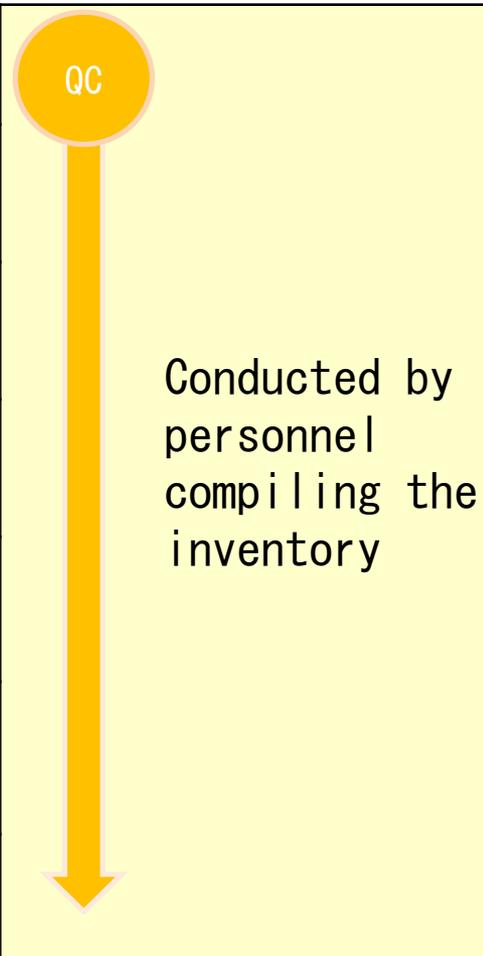
QA (Quality Assurance)	<i>Quality Assurance (QA) is a planned system of review procedures conducted by personnel not directly involved in the inventory compilation/development process.</i>
QC (Quality Control)	<i>Quality Control (QC) is a system of routine technical activities to assess and maintain the quality of the inventory performed by personnel compiling the inventory.</i>

※ Comparison of QA/QC

	QA	QC
Conducted by	<i>Not directly involved personnel in the inventory compiling process</i>	<i>personnel compiling the inventory</i>
Timing	After Drawing up a draft of IR	During the whole cycle of Establishment of GHG Inventory
Activities	<ul style="list-style-type: none"> - Review on GHG Emission - Review on CRF & NIR - Review on QA/QC Report - Suggestion of amendments required 	<ul style="list-style-type: none"> - Planning through GHG Inventory establishment - Documentation & Filing - Compliance of Standardized method

III. Practical Example (1) : QA/QC Procedure for Waste sector Inventory Report

■ General Procedure of Inventory Report drawing up

Step1	Review of last year IR	 <p>QC</p> <p>Conducted by personnel compiling the inventory</p>
Step2	Activity Data Collection	
Step3	GHG Emission Calculation	
Step4	<ul style="list-style-type: none"> - GHG Emission Analysis - Drawing up a draft of IR 	
Step5	 Internal/Domestic Expert	
	 External/Foreign Expert	
Step6	<ul style="list-style-type: none"> - Confirmation of GHG Inventory - Documentation (CRF, IR) 	

III. Practical Example (1) : QA/QC Procedure for Waste sector Inventory Report

■ Major check points in QC procedure

Check Points	Result	Corrective Action
Accuracy of Input data (AD, EF)		
Accuracy of Calculation method		
Integrity of Spreadsheet		
Completeness of Data File		
Specification of Reference		
Completeness of Report		

■ Major review points in QA procedure

Review Points	Result	Corrective Action
Criteria/Assumption for AD, EF Selection		
Data Input Error / Data Unit Conversion Error		
Consistency of time-series data		
Consistency of data in each category		
Uncertainty Assessment		
Comparison with previous data		

III. Practical Example (1) : QA/QC Procedure for Waste sector Inventory Report

■ Peer Review on Waste Sector IR

- In order to review IR by the third parties
- Annually held since 2008 ('08.10 : Seoul, '09. 11 : Tsukuba, '10.11: S



Participant	<ul style="list-style-type: none">- Domestic expert (Korea) : MOE KECO- Foreign Expert (Japan) : NIES UNFCCC Reviewer
Mutual Review	<ul style="list-style-type: none">- CRF & NIR- QA/QC Report- Amendment on Methodology, Activity data, Emission Factor

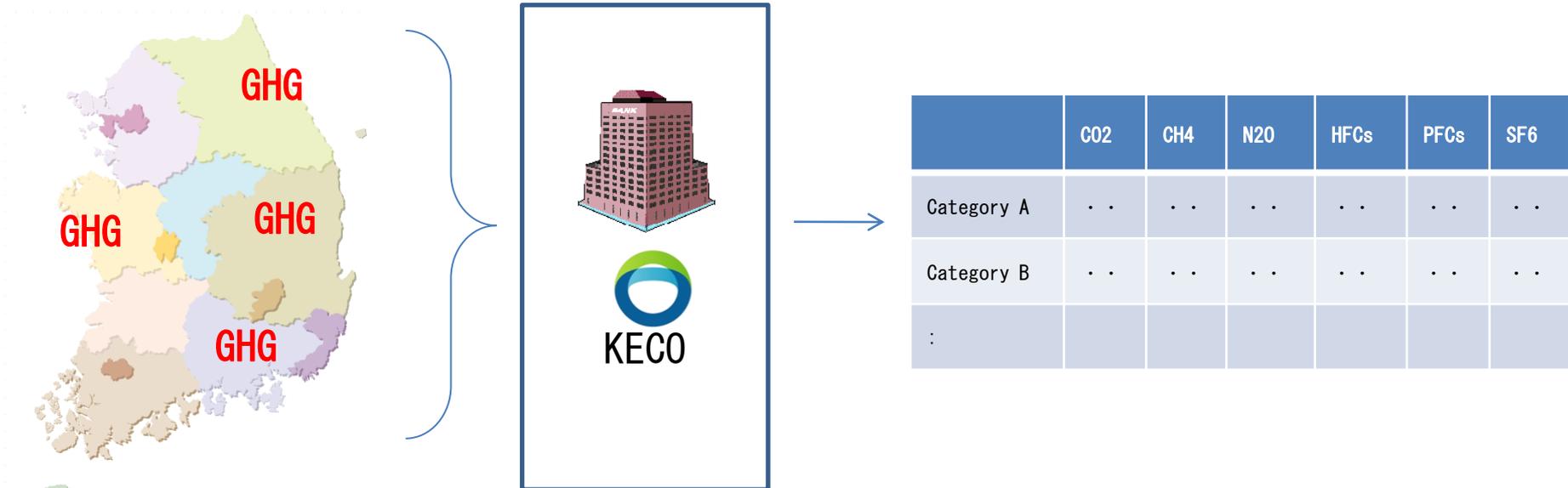
IV. Practical Example (2) : QA/QC procedure for Local government GHG Inventory

■ Framework Act on Low Carbon Green growth requires,

- Local Government to prepare “Implement Plan for Local Government Green Growth” in order to accomplish “Local level Green growth” harmonized with National Green Growth strategy.

■ Local Government Inventory Project

- Korea Environment Corporation(KECO) performs local government GHG Inventory project



IV. Practical Example (2) : QA/QC procedure for Local government GHG Inventory

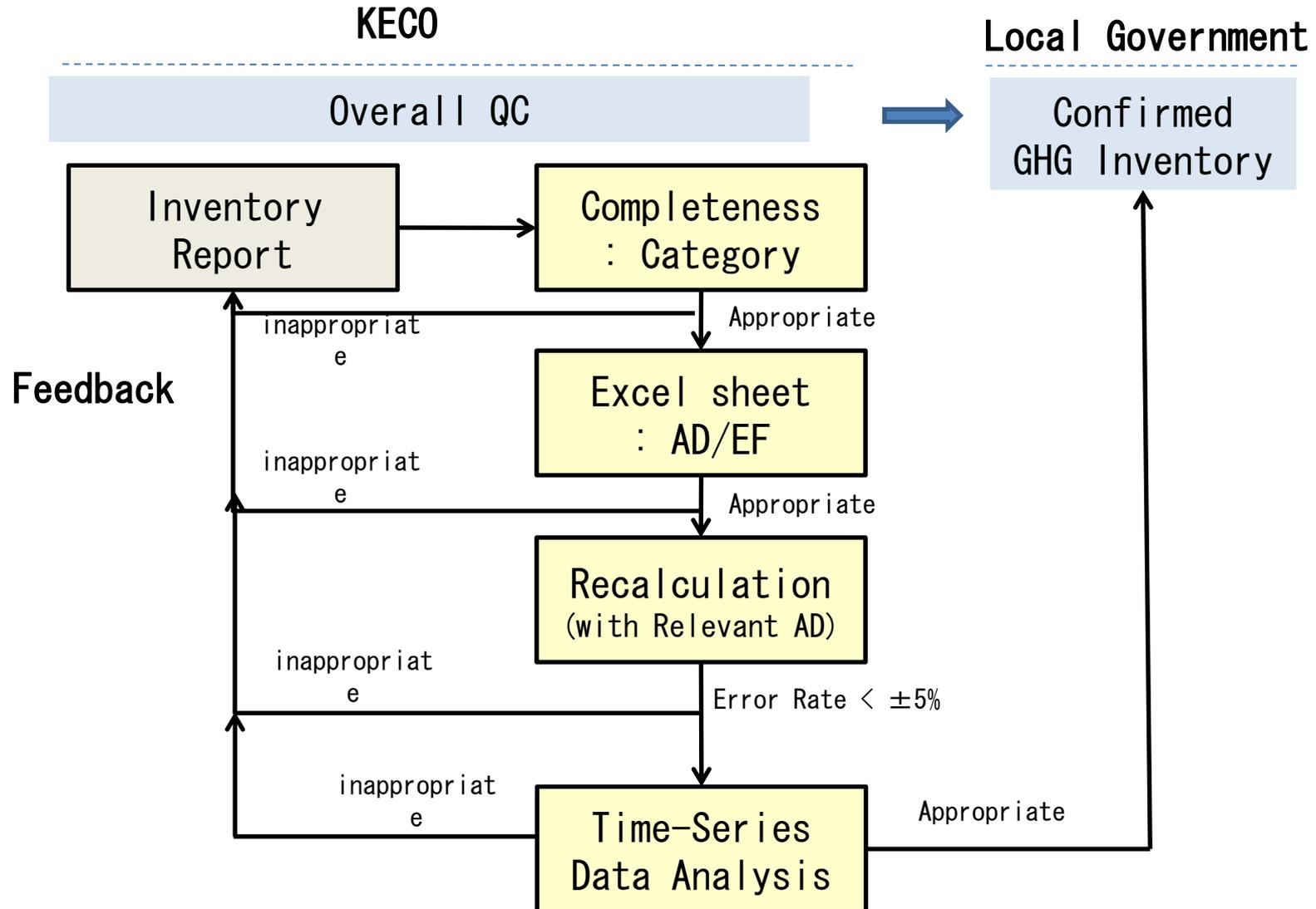
■ Local Government GHG Inventory QC Procedure ('10)

- Purpose : To check overall accuracy of Inventory
- Method : mutual check by persons compiling the inventory
- Conducting party : KECO
- Major QC Point

Completeness	<ul style="list-style-type: none">- All the main/sub categories are included ?- Inventories are presented over planned period?
Accuracy	<ul style="list-style-type: none">- Does the estimated Activity data have validity?- Does the error rate exceed 5% on each category when recalculated with relevant Activity Data?
Time-series analysis	<ul style="list-style-type: none">- Is it reasonable to time-series analysis?
Documentation & Filing	<ul style="list-style-type: none">- Are the related information, such as specific reference/ explanation/ estimation/ variable/ unit/ model applied/ data resource, presented?, ?

IV. Practical Example (2) : QA/QC procedure for Local government GHG Inventory

Overall QC Flow Chart



Conclusion

GHG Inventory QA/QC Procedure

- ◆ is partially specified in 2006 IPCC Guideline & each country's NIR.
- ◆ is in the process of Research and Development .

For Systematic & Reliable QA/QC

- ◆ need to develop scientific and definite QA/QC method
- ◆ need in-depth case study on other countries's GHG inventory
- ◆ need to develop & apply ISO QA/QC standard method