

DEVELOPING AN ARCHIVING SYSTEM

April/May 2024

U.S. Environmental Protection Agency



QUESTION #1

Which component(s) of your inventory management system do you consider to be the most well-documented?

- Inventory planning
- Institutional arrangements
- Methods and data documentation
- QA/QC procedures
- Key category analysis
- Archiving system
- National inventory improvement plan



WHO IS RESPONSIBLE FOR ARCHIVING?



Role	Archiving Responsibilities
Archiving Coordinator*	Develop and oversee implementation of Archiving System Plan
National Inventory Coordinator (NIC)	General archiving, archive documentation of national GHG inventory management system
Inventory Compilers: Sector/Category Leads, Consultants	Archive category-specific record/files; based on Archiving System Plan

* Archiving Coordinator is not typically a full-time role.



WHAT IS AN ARCHIVE?

An archive is a collection of records and where these records are kept.

- GHG inventory archives should include all materials created and used to develop your inventory
 - Methodological choices, data sources and references, calculation files, comments from and responses to QA reviews, and revisions
- Archiving helps with planning, preparing, and managing the inventory compilation process
- Archiving, with methods and data documentation, is a key step to ensure that your inventory is sustainable, consistent, and reproducible



QUESTION #2

- Do you have an archiving system for your national inventory?





CRITERIA FOR A GOOD ARCHIVE

- Safeguard against loss of information records (hard copy or electronic) and institutional knowledge (human capital)
- Documentation that is accessible to the right people
 - Access previous inventory files
 - More easily review inventory, reproduce estimates, and respond to inquiries (e.g., UN, government, expert, public)
- Improve efficiency and sustainability of inventory compilation and quality (transparency, consistency) of inventory





AVOID PREVENTABLE FUTURE CHALLENGES

A good archive avoids the following issues:

- Starting from scratch
- Losing information when staff changes
- Difficulty determining which versions of files predated others
- Difficulty referencing previous work
- No access to previous (editable) versions of inventory report





QUESTION #3

What information do you archive?

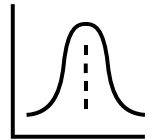
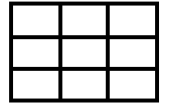
1. Inventory compilation files?
2. Uncertainty analysis?
3. Draft and final electronic versions of the inventory report?
4. QA or review comments and responses (if prepared/provided)?
5. National GHG Inventory Management System?



What Should Be Archived?

Inventory
compilation files

- Files used for calculations (e.g., raw input data, spreadsheets, models, databases, data sources, references for source data, assumptions, and documented expert judgement)
- Uncertainty analysis
- Draft and final electronic versions of the inventory (e.g., peer review drafts, NIR tables)
- Internal and external review comments and responses
- Documentation of personal communication with data suppliers, experts, etc.



Archive All Materials by Inventory Year for Easy Access!

What Should Be Archived?

National GHG
Inventory
Management
System

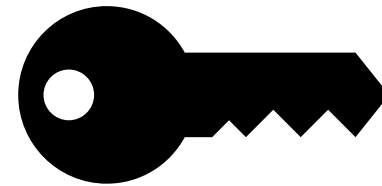
- Inventory plans and schedule
- Institutional arrangements
- Methodology and data documentation
- QA/QC plan and checklists
- Key category analysis
- Archiving plan
- Inventory improvement plan





QUESTION #4

Where is your archive saved? Who knows how to access the archived files?



BEST PRACTICES FOR AN EFFECTIVE ARCHIVING SYSTEM

- Store official archives for all inventories together
- Create at least one backup archive and store it in a different location than the official archive
- Keep records accessible
 - Archive does not need to be expensive or complicated
- Archive files at important stages during the inventory compilation cycle
- Implement a consistent file naming and folder structure convention for organizing files





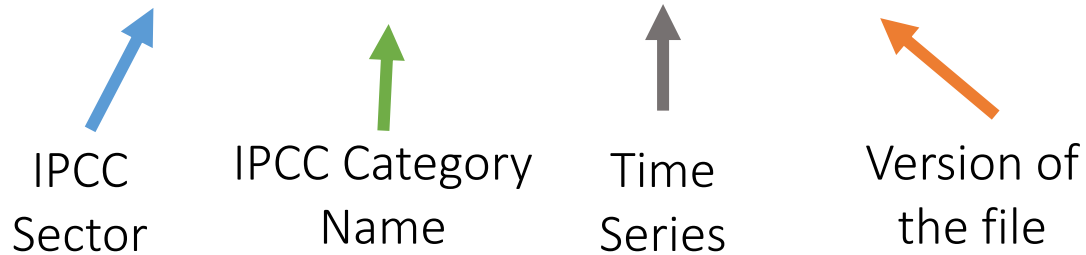
EXAMPLE FILE MANAGEMENT PROCEDURES

1. Naming Conventions



You do not need to use this naming convention.
Just be consistent!

IPPU_Cement_1990-2020_v1.xls



2. Organization



IPPU Sector Spreadsheets



IPPU Folder



EXAMPLE WASTEWATER ARCHIVE

- 1990-2008 Wastewater GHG Inventory
- 1990-2009 Wastewater GHG Inventory
- 1990-2010 Wastewater GHG Inventory
- 1990-2011 Wastewater GHG Inventory
- 1990-2012 Wastewater GHG Inventory
- 1990-2013 Wastewater GHG Inventory
- 1990-2014 Wastewater GHG Inventory
- 1990-2015 Wastewater GHG Inventory
- 1990-2016 Wastewater GHG Inventory
- 1990-2017 Wastewater GHG Inventory
- 1990-2018 Wastewater GHG Inventory
- 1990-2019 Wastewater GHG Inventory
- 1990-2020 Wastewater GHG Inventory
- 1990-2021 Wastewater GHG Inventory
- 1990-2022 Wastewater GHG Inventory

- Name
- 1 Expert Review
 - 2 Public Review
 - 3 Final Inventory Report
 - QAQC Checklist
 - References
 - Review Comments
 - Uncertainty Analysis

Name
7.2 Wastewater Treatment and Discharge_90-21_...
Draft Production Data_07222022.xlsx
Draft Sludge Disposal_07222022.xlsx
Draft Wastewater Treatment Inventory_90-21_092...



SUGGESTIONS FOR ARCHIVING REFERENCES

Reports, Websites, Spreadsheets:

- Save the source in its original format (ex. report, spreadsheet, or webpage in Word, Excel, PDF format) or PDF the source if necessary

Books, Databases:

- If saving to PDF is not possible, scan cover/title page and relevant pages of the book or report, or take screenshots of the database showing the actual source data

Personal Communications or Interviews with Experts:

- Create a record of the communications, listing the expert, date and mode of communication (email, in-person interview, phone), the expert's contact information, and inventory compiler's contact information
- Include as much detail as possible from the expert source, including all source data

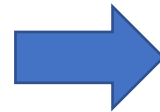


EXAMPLE: U.S. GHG INVENTORY ARCHIVING SYSTEM

Old system

Hard Copy: Each reference printed and tracking numbers assigned

Digital: Each reference and file converted to PDF format and placed in electronic docket



Current system

Digital: Each reference and file, as well as comments and responses from peer review, are saved to Cloud storage (SharePoint site).

Optional "Hard Copy": Files are copied to a CD/USB.



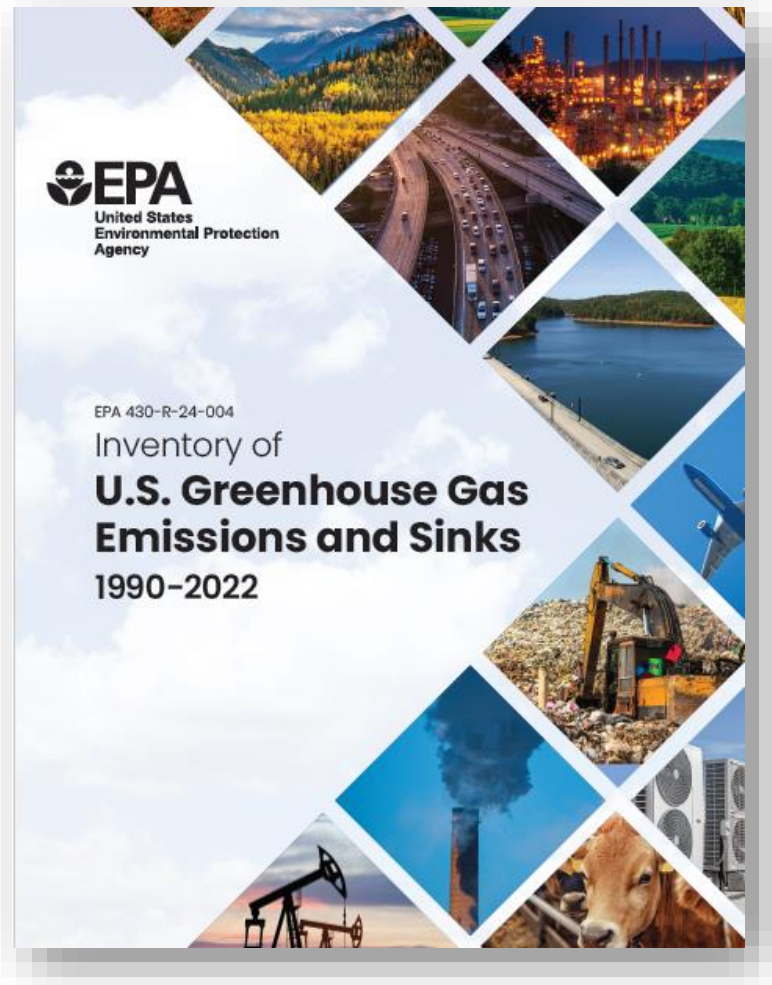


EXAMPLE: U.S. GHG INVENTORY ARCHIVING SYSTEM

- Archiving Coordinator: National Inventory Coordinator
- Archive is on a cloud-based server & includes compilation files saved at key compilation stages: peer reviews and final
- Archiving system is communicated to inventory compilers (category/sector leads) in annual inventory "kick-off" memo:
 - Includes compiler responsibilities
 - Defines a file naming convention
 - Identifies where to save files
 - Procedures updated as needed based (e.g., standardizing reference naming conventions to facilitate reference searches)



EXAMPLE: U.S. GHG INVENTORY ARCHIVING SYSTEM



Older versions of the U.S. GHGI reports are also available online

U.S. Greenhouse Gas Inventory Report Archive

This page contains past versions of the *Inventory of U.S. Greenhouse Gas Emissions and Sinks* developed by the U.S. government to meet U.S. commitments under the United Nations Framework Convention on Climate Change (UNFCCC). Article 4.1a of the UNFCCC requires that all countries periodically publish and make available to the Conference of the Parties (COP) inventories of anthropogenic emissions and removals by sinks of all greenhouse gases not controlled by the Montreal Protocol. [Learn more about greenhouse gas emissions.](#)

Subsequent decisions under the UNFCCC require the United States to submit these reports on an annual basis and include emissions of carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulfur hexafluoride (SF₆) and nitrogen trifluoride (NF₃). The Inventory also calculates carbon dioxide emissions that are removed from the atmosphere by "sinks," e.g., through the uptake of carbon and storage in forests, vegetation, and soils from management of lands in their current use or as lands are converted to other uses. Below is a complete list of past inventory submissions:

- [Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2021](#)
(April 2023) EPA 430-R-23-002
- [Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2020](#)
(April 2022) EPA 430-R-22-003

Related Links

Visit the [Greenhouse Gas Emissions home page](#) for basic information on the main greenhouse gases and their sources, as well as information on global emissions, facility-level emissions in the United States, and Individual Emissions (your carbon footprint).

Visit the [U.S. Greenhouse Gas Inventory Report page](#) to view the most recent Inventory Report.

<https://www.epa.gov/ghgemissions/us-greenhouse-gas-inventory-report-archive>

EXAMPLE: SHAREPOINT SYSTEM (SCREENSHOTS)



We limit members to EPA Category Leads and compilation team members. Data providers do not have access to our SharePoint worksite.

Resources, provides links to:

- Facility-level GHGI information
- 2006 IPCC Guidelines
- 2019 Refinements to the 2006 IPCC Guidelines

Inventory schedule allows us to show calendar of key deadlines for Team members

The "Documents" section house:

- 1) General Inventory Information (e.g., SharePoint best practices)
- 2) Archived and current Inventory AD, estimates, data/calculation files, and NIR text files
- 3) Archived UNFCCC Review Information

Reports:

- Archived Inventories and data (see image to the right)
- Workspace for current Inventory data, spreadsheets, and NIR text files

Documents > Reports

Name	Modified
GHGI_1990_2014	June 21, 2021
GHGI_1990_2015	June 21, 2021
GHGI_1990_2016	June 18, 2021
GHGI_1990_2017	June 18, 2021
GHGI_1990_2018	June 18, 2021
GHGI_1990_2019	June 18, 2021
GHGI_1990_2020	June 10, 2021
GHGI_1990_2021	May 4, 2022
GHGI_1990_2022	May 10, 2023



EXAMPLE: SHAREPOINT SYSTEM (SCREENSHOTS)

My Workplace SharePoint Search this site

Inventory of U.S. GHGs Worksite Private group

Published 3/1/2024 Share Edit

Documents > Reports > GHGI_1990-2022

Name	Modified	Check In Com...	Modified By
I.Kick-off_90-22	May 16, 2023		
II.Expert-Review_90-22	August 30, 2023		
III.Public-Review_90-22	September 15, 2023		
IV.Final-Report_90-22	September 15, 2023		
QC_90-22	August 4, 2023		
Submission files	April 17		
Inventory Style Guide.docx	October 23, 2023		
Schedule_1990-2022_EPA_Slv3.do...	February 14		
Working_USGHGI_KO_Memo_IY9...	February 23		

Inventory of U.S. Greenhouse Gas Emissions and Sinks | US EPA

State GHG Emissions and Removals | US EPA

Greenhouse Gas Inventory Data Explorer | US EPA

Find and Use GHGRP Data | US EPA

Each Inventory cycle gets a new FOLDER within the REPORTS page.

SharePoint serves as an archive and an active worksite

Each Inventory cycle folder contains:

- **Kick-off Folder** - contains kick-off files to start the current inventory cycle
- **Expert Review folder** – where EPA category leads upload the draft Inventory deliverables (spreadsheets, estimates, NIR text) that are used for the expert review QA process
- **Public Review folder** – where EPA category leads upload the draft Inventory deliverables (spreadsheets, estimates, NIR text) that are used for the public review QA process
- **Final Report folder** - where EPA category leads upload the FINAL Inventory deliverables (data sources, spreadsheets, estimates, NIR text, uncertainty, CRF tables) that are the final Inventory products

EPA Category Leads upload their completed QC checklists to the **QC Folder**

Each Inventory cycle folder includes:

- **Kick-off memo** – describes the latest processes and key information EPA Category Leads need to follow for the current cycle
- **Schedule** – described the key deadlines, deliverables, milestones throughout the Inventory cycle

ARCHIVING IN THE NATIONAL INVENTORY COMPILATION CYCLE

- Save all compilation files and references to create an inventory archive
- Backup the archive

- Finalize inventory
- Develop improvement plan
- Publish/submit inventory for UNFCCC reporting on time

- Conduct & document QA/QC procedures, such as basic peer review
- Address QA/QC findings



- Inventory inception meeting
- Start with previous inventory, if available
- Review and implement improvement plan
- Identify Activity Data and choose methodologies

- Collect Activity Data, Emission Factors
- QC all data

- Estimate emissions & removals
- Implement QC procedures
- Revise estimates, based on new data and QA/QC findings
- Ensure time series consistency
- Conduct uncertainty & key category analyses

- Document methodological approaches, recalculations, and references
- Write inventory report

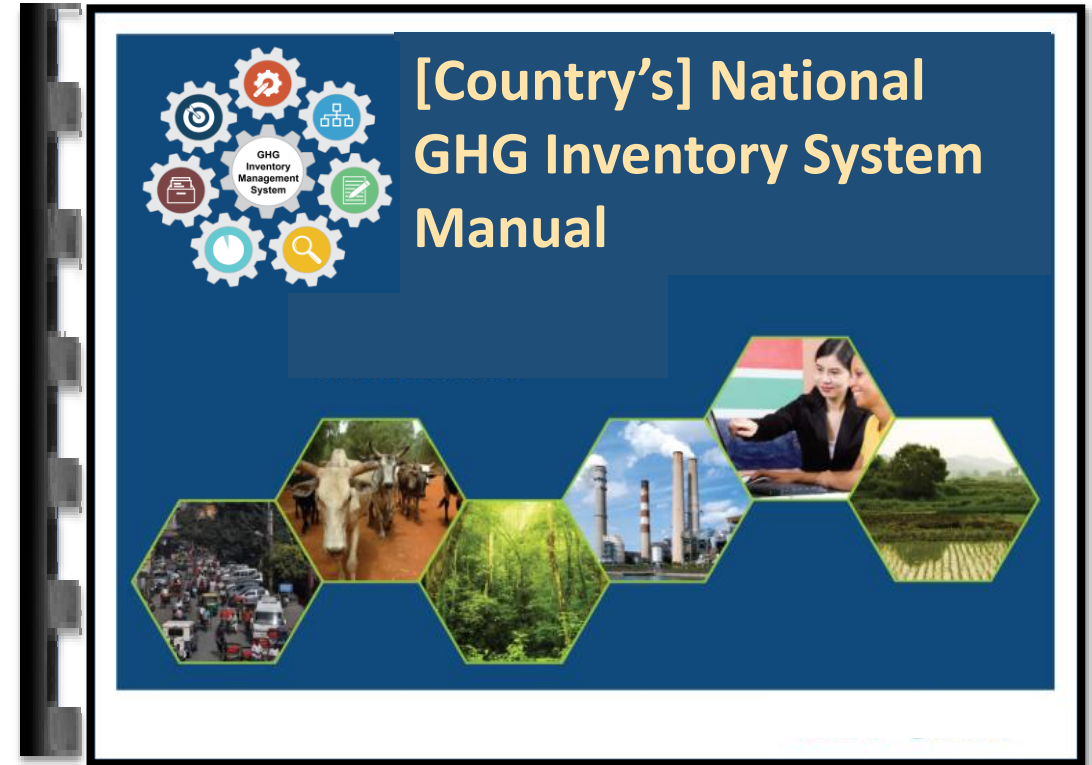
ARCHIVING SYSTEM



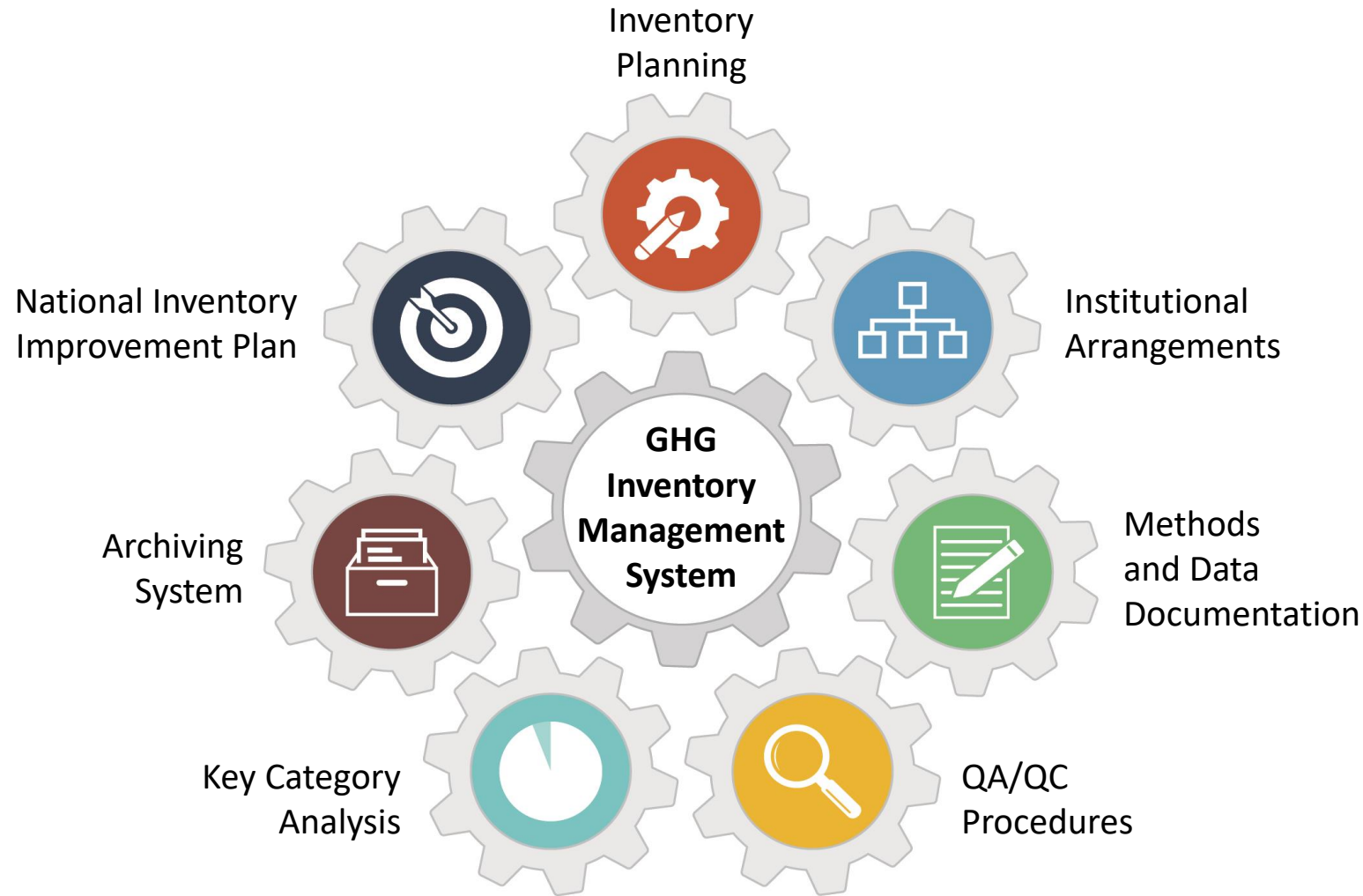
COMPLETED TEMPLATES BECOME A NATIONAL INVENTORY SYSTEM MANUAL

What are templates?

- Serve as a starting point for a national inventory
- Contain the outline of an inventory system – you provide the details
- The final product will be a manual for your country to refer to for the next national inventory



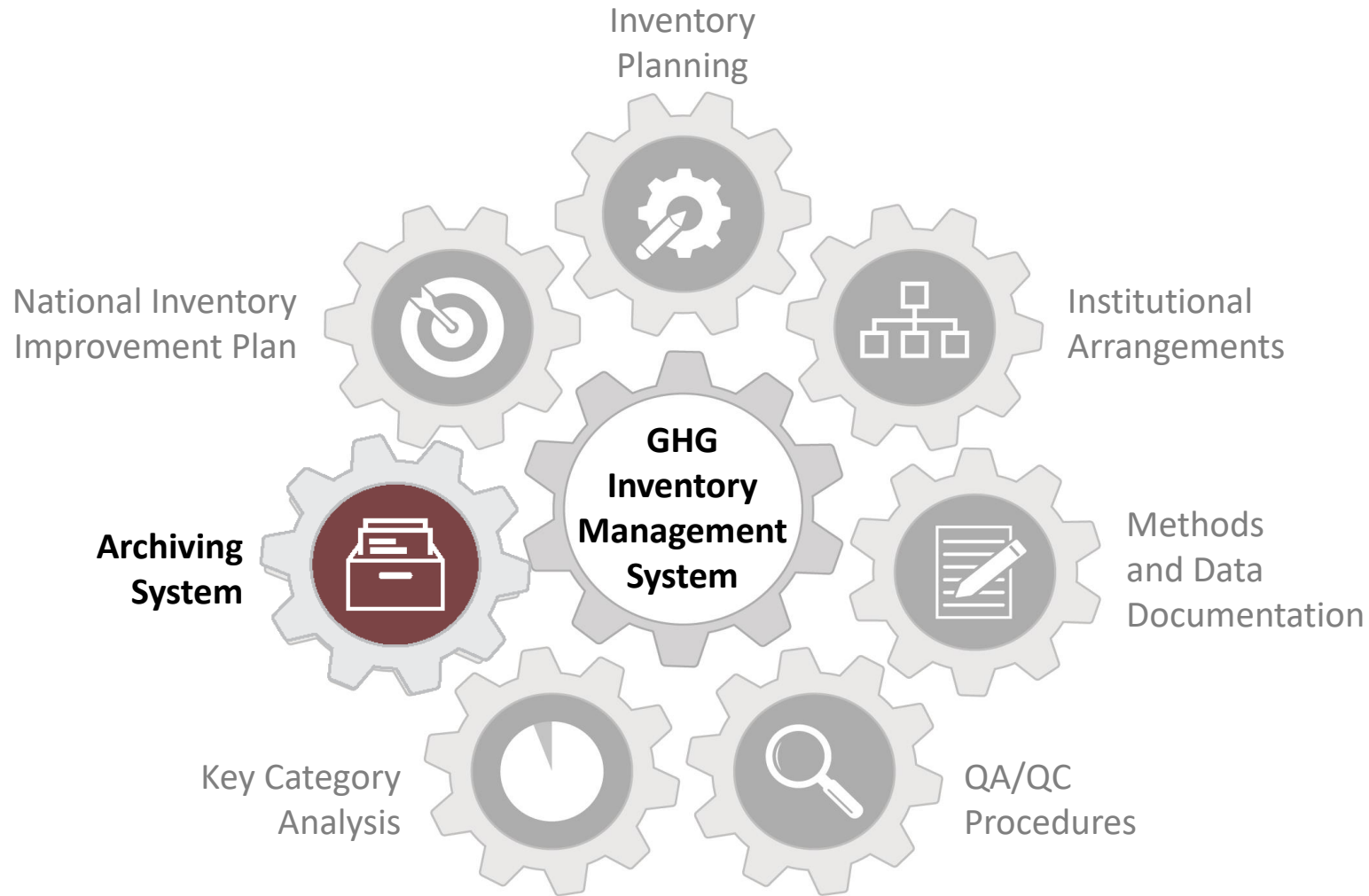
DEVELOPING A SUSTAINABLE NATIONAL GHG INVENTORY SYSTEM



BENEFITS OF THE NATIONAL INVENTORY SYSTEM TEMPLATES

Completing the templates will help you...	...which yields these benefits
Document critical information about inventory plans and procedures	Improve Transparency and Credibility
Define inventory tasks and development stages	Break down work into discrete tasks
Accommodate varying levels of national capacity	Different priorities and roles based on budget and staff capacity
Clarify roles and responsibilities of individuals and institutions	Easier accountability and role development
Identify priorities for future improvements	Continuous improvement and refinement
Provide a clear starting point for future inventories	Help establish a sustainable national system that <ul style="list-style-type: none"> • Meets TACCC principles • Enables transition to ETF commitment of submitting a Biennial Transparency Report (BTR) every 2 years

ESTABLISHING AN ARCHIVING SYSTEM





HOW THIS TEMPLATE WILL HELP!

The *Archiving System* template will help the inventory team:

- Assess past and current archiving systems
- Provide guidance to develop an archiving system plan
- Document how to improve the archiving plan for the future





IDENTIFY CURRENT INVENTORY MANAGEMENT TEAM

Identify the current inventory team members, per your national circumstances, and what roles need to be filled

Personnel
Inventory Director/ Coordinator
Subject Matter Experts (ex. compilers)
Additional Entities Involved in the Inventory
Personnel who can direct overall implementation of QA/QC and archiving system
Personnel who can conduct/ direct implementation of uncertainty analysis



Possible Roles
Inventory Coordinator or Lead
Sector or Category Leads
QA/QC and Archiving Coordinators
Uncertainty Analysis Coordinator

The same person can have multiple roles. Not all roles are full time!

STEP 1: ASSESS AND DOCUMENT ARCHIVING PLAN FROM PREVIOUS INVENTORY COMPILATION CYCLES



Table 6-1 Assessment questions

Example Assessment Questions	Assessment Findings and Comments
Is there an archiving plan from previous compilation cycles, or are archiving procedures documented in any other way?	
Where is previous GHG inventory compilation material stored and in which format (e.g., electronically)?	
Who has access to it?	
Which documents were archived?	
Were both drafts and final versions archived? If so, at which points in the GHG inventory compilation cycle were drafts archived?	
If there is an archiving plan, was its implementation tracked (e.g., by a checklist within the plan, or an external spreadsheet)?	
If files were archived electronically, was a folder structure used to enable easy access to the documents? If so, describe the structure.	
Was a naming convention for files used (e.g., to indicate sectors, categories, status, type of document, date, or responsible staff)? If so, describe the convention used.	

STEP 1: ASSESS AND DOCUMENT ARCHIVING PLAN FROM PREVIOUS INVENTORY COMPILATION CYCLES



Table 6-1 Assessment questions

Example Assessment Questions	Assessment Findings and Comments
Is there an archiving plan from previous compilation cycles, or are archiving procedures documented in any other way?	Yes
Where is previous GHG inventory compilation material stored and in which format (e.g., electronically)?	Stored electronically on SharePoint, backed up on USB, and stored at https://www.epa.gov/ghgemissions/us-greenhouse-gas-inventory-report-archiv
Who has access to it?	All GHGI team members
Which documents were archived?	See content of archiving plan
Were both drafts and final versions archived? If so, at which points in the GHG inventory compilation cycle were drafts archived?	Yes. Archiving happened once documents were finalized.
If there is an archiving plan, was its implementation tracked (e.g., by a checklist within the plan, or an external spreadsheet)?	Yes, by the team lead, who supervises the archiving coordinator.
If files were archived electronically, was a folder structure used to enable easy access to the documents? If so, describe the structure.	Yes, electronically with folder structure, see Q:/Climate Change Department/GHGI compilation/Archiving
Was a naming convention for files used (e.g., to indicate sectors, categories, status, type of document, date, or responsible staff)? If so, describe the convention used.	Yes, see Q:/Climate Change Department/GHGI compilation/Archiving/Guidance File structure

Who completes this table: Archiving Coordinator



STEP 2: DEVELOP THE ARCHIVING SYSTEM

Table 6-2 Materials to be Archived

Materials to be archived	Staff from whom the materials should be obtained	Point in time at which the materials should be obtained
Institutional Arrangements (Template 2)		
Inventory compilation plan (Template 1; Inception Memorandum supporting template)		
Methods and Data Documentation (Template 3)		
Any files used for calculations (e.g., spreadsheets or models)		
QA/QC Procedures (Template 4)		
Results of quality control processes (Template 4)		
Key Category Analysis (Template 5)		
Drafts and final electronic versions of the inventory report		
Internal and external review comments and responses		
Archiving System Plan (Template 6)		
National Inventory Improvement Plan (Template 7)		
Contacts and contact information for data sources		
Communication with data sources and the data obtained		
Decision-making documents related to the compilation process		



STEP 2: DEVELOP THE ARCHIVING SYSTEM

Table 6-2 Materials to be Archived

Materials to be archived	Staff from whom the materials should be obtained	Point in time at which the materials should be obtained
Institutional Arrangements (Template 2)	<i>NIC</i>	<i>At the beginning of the inventory compilation cycle</i>
Inventory compilation plan (Template 1; Inception Memorandum supporting template)	<i>NIC</i>	<i>At the end of the inventory compilation cycle</i>
Methods and Data Documentation (Template 3)	<i>NIC</i>	<i>At the beginning and at the end of the inventory compilation cycle</i>
Any files used for calculations (e.g., spreadsheets or models)	<i>Sector leads</i>	<i>At the end of the inventory compilation cycle</i>
QA/QC Procedures (Template 4)	<i>NIC</i>	<i>At the end of the inventory compilation cycle</i>
Results of quality control processes (Template 4)	<i>Sector leads</i>	<i>At the end of the inventory compilation cycle</i>
Key Category Analysis (Template 5)	<i>NIC</i>	<i>At the end of the inventory compilation cycle</i>
Drafts and final electronic versions of the inventory report	<i>NIC</i>	<i>Intermediate, draft final, and final versions</i>
Internal and external review comments and responses	<i>NIC</i>	<i>At the end of the inventory compilation cycle</i>
Archiving System Plan (Template 6)	<i>Archiving Coordinator</i>	<i>At the end of the inventory compilation cycle</i>
National Inventory Improvement Plan (Template 7)	<i>NIC</i>	<i>At the end of the inventory compilation cycle</i>
Contacts and contact information for data sources	<i>Sector leads</i>	<i>At the end of the inventory compilation cycle</i>
Communication with data sources and the data obtained	<i>Sector leads</i>	<i>At the end of the inventory compilation cycle</i>
Decision-making documents related to the compilation process	<i>NIC and Sector Leads</i>	<i>Whenever communication has taken place</i>

Who completes this table: Archiving Coordinator

STEP 3: IDENTIFY IMPROVEMENTS TO THE ARCHIVING SYSTEM



Table 6-3: Improvements to the Inventory Archiving System

Improvement #	Issue	Improvement Option	Implementation Action
1	Calculations in the energy sector were updated shortly before the submission of the report was due. This final version was not archived and is now not available.	Request sectoral experts to check whether final versions are archived right after submission.	Add check to the archiving checklist
2			

Who completes this table: Archiving Coordinator

OVERALL ARCHIVE PROCEDURES CHECKLIST



- Develop a checklist to ensure archiving procedures are followed.
- A good archiving plan is simple – it just needs to reflect your country’s inventory compilation process.

Activity	Due Date	Activity Completed	
		Completed by (name)	Date
<i>Archiving Coordinator:</i>			
Create official archive, backup, and access requirements			
Generate folder structure and naming convention			
Update the archiving system plan and deadlines			
Convey archive structure, naming convention, access, and archiving system plan to inventory compilers			
Collect and archive documents describing institutional arrangements (Template 2)			
Collect and archive documents describing methods and data collected (Template 3)			
Collect and archive the inventory compilation plan, e.g., Template 1. How to Use the Templates, or the Inception Memorandum supporting template			
Collect and archive any files used for calculation, e.g., data from IPCC software, spreadsheets, or models			
Collect and archive the QA/QC plan and results of QA/QC assessments (Template 4)			

Who completes this table: Archiving Coordinator

CASE STUDY: PREPARING FOR REGULAR INVENTORIES EVERY 2 YEARS

- **Background:** Country X has compiled inventories periodically in the past on a project basis and is now preparing to regularly prepare their inventory every 2 years to meet their commitments made under the Paris Agreement.
- **Issue:** Inventory compilation files from previous inventories have not been saved and archived consistently
- **Resolution:** Because the country is preparing to compile their national inventory every 2 years, they are investing in an archiving plan during this inventory cycle to improve documentation of their inventory and help them prepare their next inventory. An Archiving Coordinator will be identified to lead this effort.



ACTION ITEMS FOR ARCHIVING SYSTEM

1. Identify an Archiving Coordinator who will organize the Archiving System.
2. Decide where you will save the archive and how you will structure the archive.
3. Create a list of what should be archived, how files should be named, and when files should be archived.
4. Identify potential improvements to Archiving System.
 - This will make the National Inventory Improvement Plan (Template 7) easier to complete



Thank You For Your Attention!

For questions & more information, email:

ghgi.transparency@epa.gov



<https://www.epa.gov/ghgemissions/toolkit-building-national-ghg-inventory-systems>

