Developing an Archive System
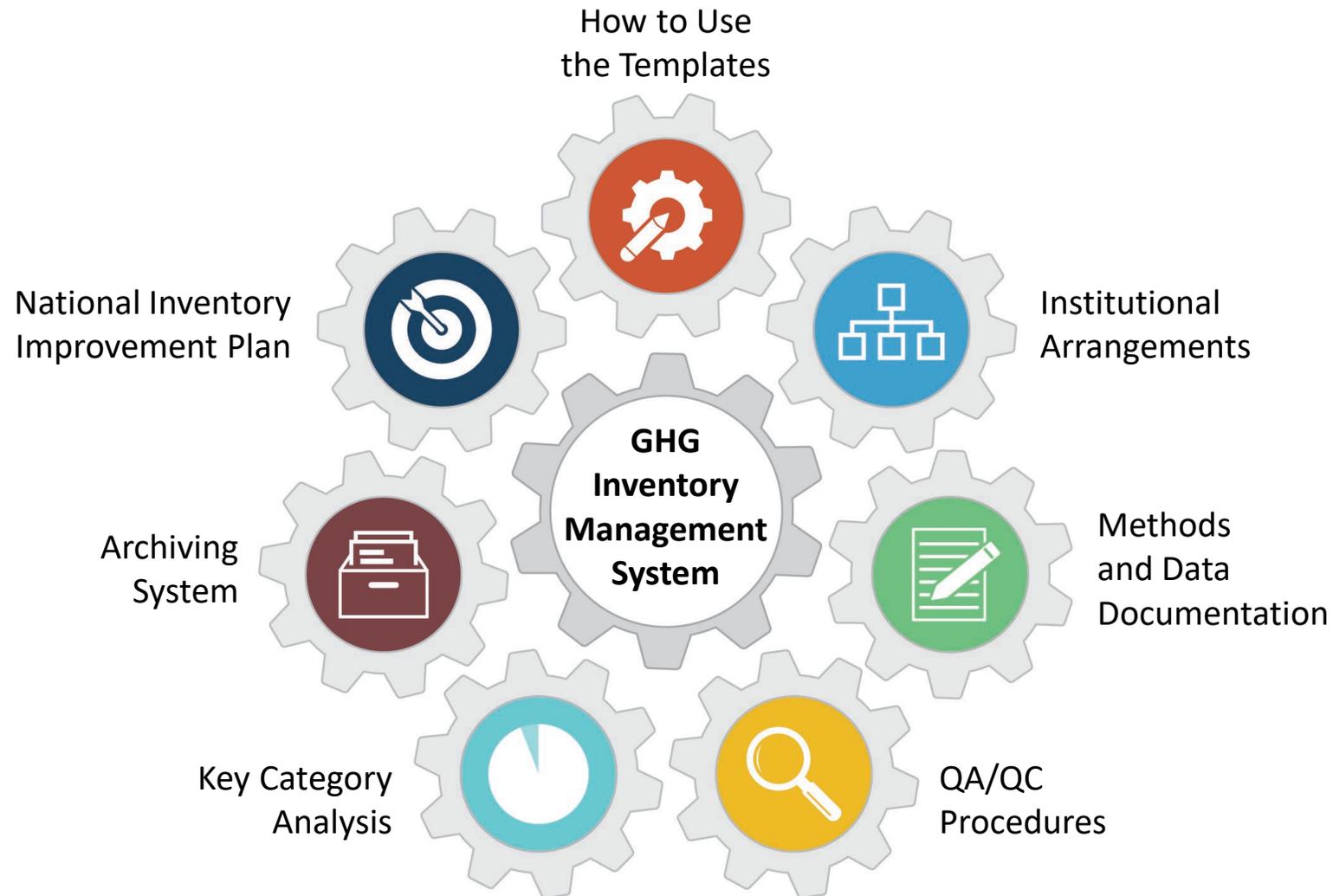
Remote Training on the Building of Sustainable National Greenhouse Gas Inventory Management Systems

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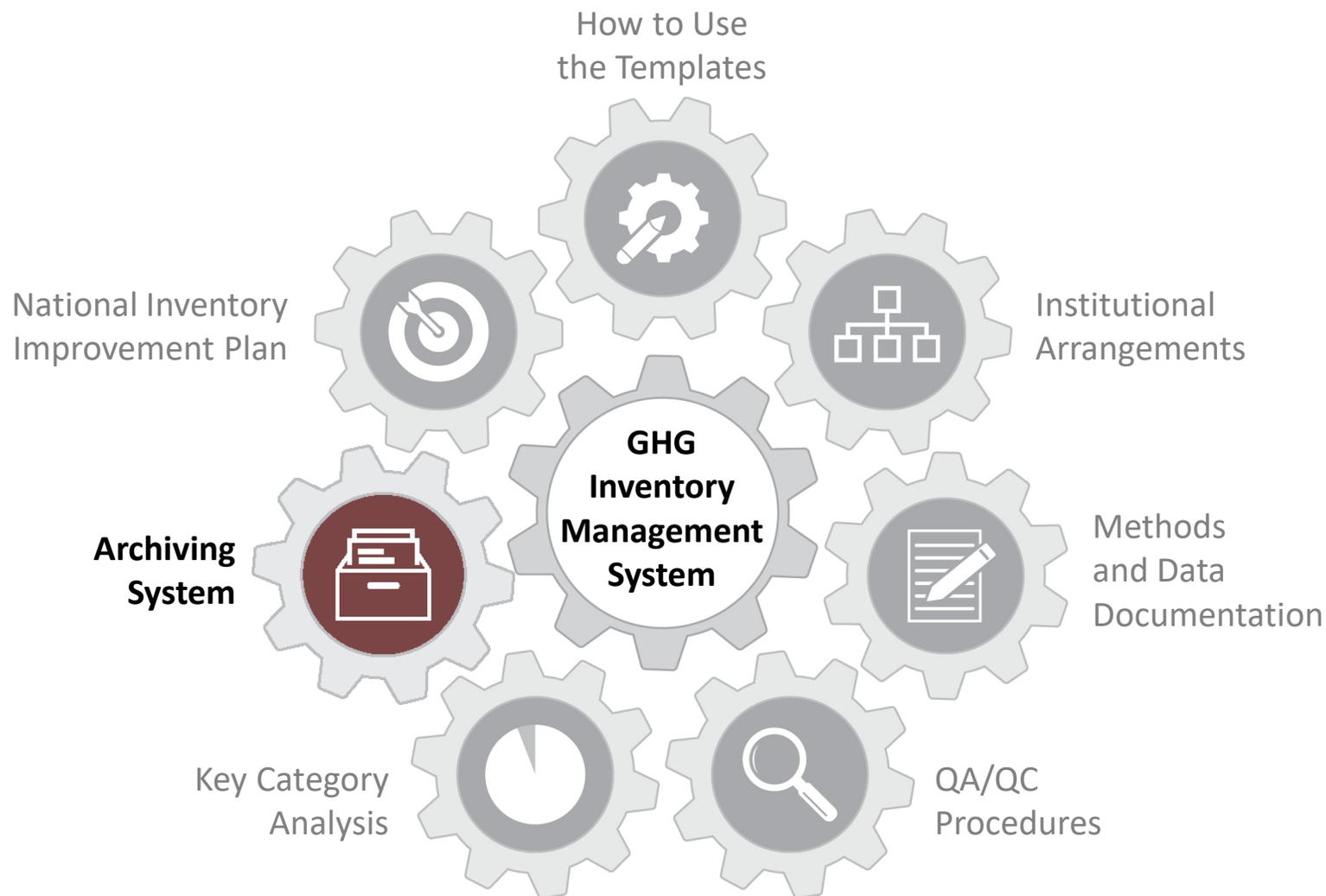
U.S. Environmental Protection Agency

November 19, 2021

Developing a Sustainable National GHG Inventory System

Establishing an Archiving System

How to Use
the Templates

Institutional
Arrangements

National Inventory
Improvement Plan

**GHG
Inventory
Management
System**

**Archiving
System**

Methods
and Data
Documentation

Key Category
Analysis

QA/QC
Procedures

Overview

Introduction to Archiving

Review of the Template

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 during the development of the inventory

  - Data sources, references, calculation files, methodological choices, comments from 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

Why Archive?

- Safeguard against loss of information records (hard copy or electronic) and institutional knowledge (human capital)

  - Access previous inventory files

  - More easily review and reproduce estimates

  - Respond to inquiries (e.g., government, expert, public)

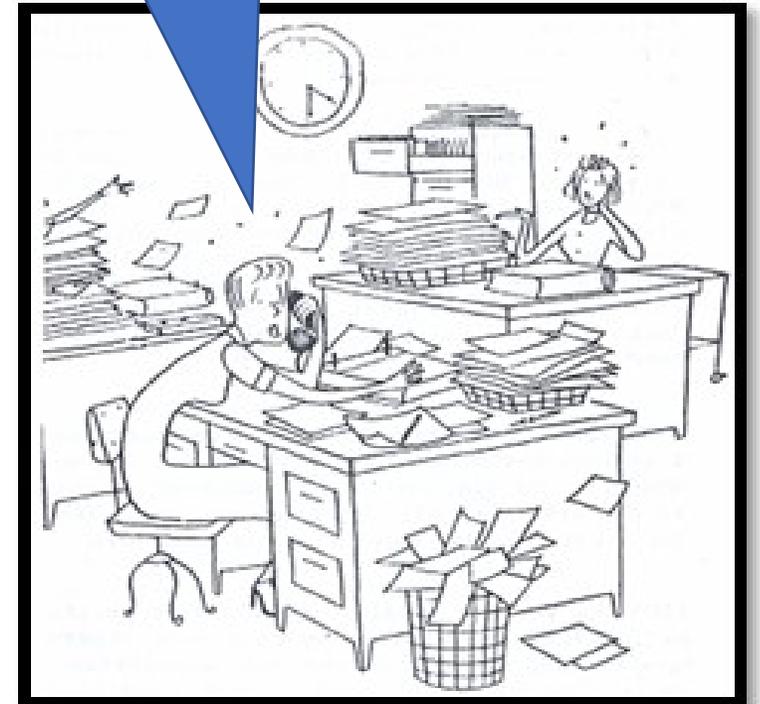- Increase sustainability and transparency of the inventory

Avoid Preventable Future Challenges

A good archive avoids the following issues:

- Starting from scratch

- Losing information when staff changes

- Difficulty referencing previous work

- Trouble finding previous work

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 Should Be Archived?

Inventory compilation files

- Files used for calculations (e.g., spreadsheets, models, databases, data sources, references)

- Uncertainty analysis

- Draft and final electronic versions of the inventory (e.g., peer review drafts, NIR tables)

- Comments and responses from internal and external reviews
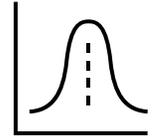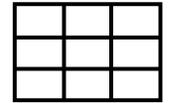
Archive All Materials by Inventory Year for Easy Retrieval!

What Should Be Archived? (continued)

National GHG Inventory Management System

- Inventory schedule, inception memo (see HUT template, national GHG inventory inception memorandum)

- Institutional arrangements (see IA template)

- Methodology and data documentation (see MDD template)

- QA/QC plan and checklists (see QA/QC template)

- Key category analysis (see KCA template)

- Archiving plan (see Archiving template)

- Inventory improvement plan (see NIIP template)

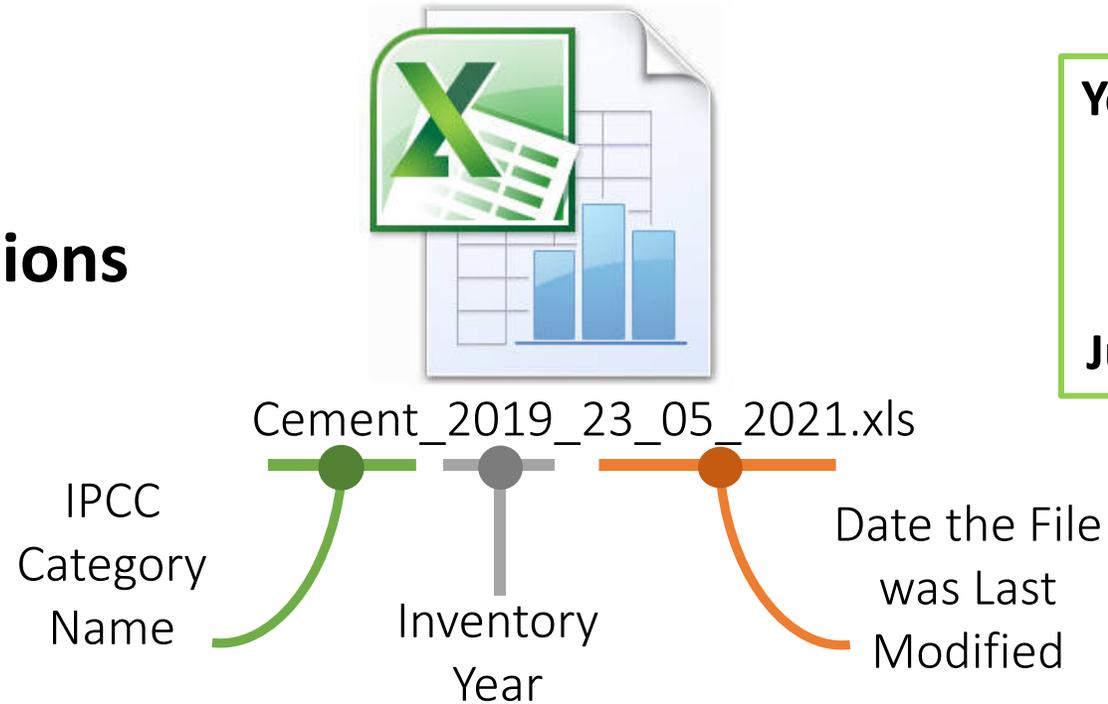- Store official archives for all inventories together

- Create at least one backup archive and store it in a different location than the official archive

- Keep records <u>accessible</u>
  - Archive does not need to be expensive or complicated

- Implement a consistent file naming and folder structure convention for archived files

- Archive files at important stages <u>during</u> the inventory compilation cycle

Example File Management Procedures

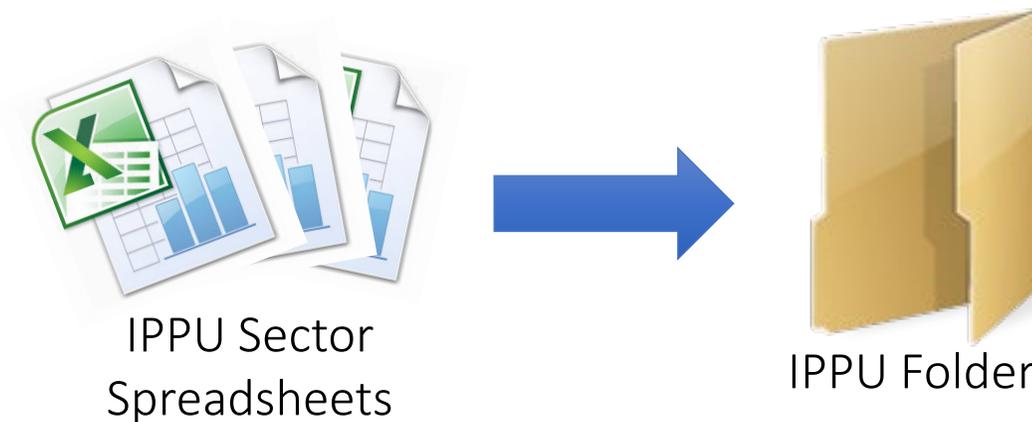## 1. Naming Conventions

You do not need to use this naming convention.

Just be consistent!

Cement_2019_23_05_2021.xls

IPCC Category Name

Inventory Year

Date the File was Last Modified

2. Organization

IPPU Sector Spreadsheets → IPPU Folder

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

- Archiving Coordinator: National Inventory Coordinator

- Archive is on a cloud-based server & includes compilation files saved at key compilation stages: peer reviews and final

- Archive plan is communicated to inventory compilers (category/sector leads) in inventory inception memo:
  - Includes compiler responsibilities
  - Defines a file naming convention
  - Identifies where to save files

Example: U.S. GHG Inventory Archiving System

Old system

<u>Hard Copy</u>: Each reference printed and tracking numbers assigned

<u>Digital</u>: Each reference and file converted to PDF format and placed in electronic docket
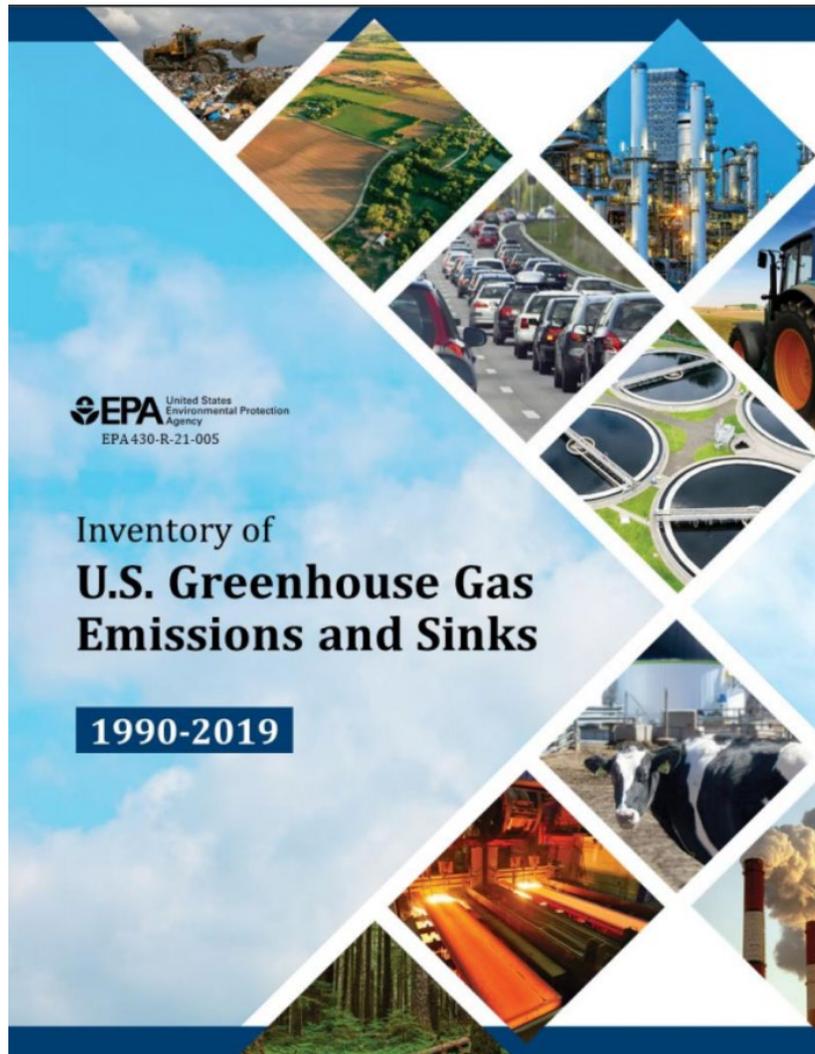

Current system

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

<u>"Hard Copy"</u>: Files are copied to a CD/USB.

Example: U.S. GHG Inventory Archiving System

EPA 430-R-21-005

Inventory of **U.S. Greenhouse Gas Emissions and Sinks**

1990-2019

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 U.S. Greenhouse Gas Inventories 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 by the COP require the United States to submit these reports on an annual basis and include emissions of carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulfur hexafluoride (SF_6) and nitrogen trifluoride (NF_3). 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. Below is a complete list of past inventory submissions:

- *Inventory of U.S Greenhouse Gas Emissions and Sinks: 1990-2018* (April 2020) EPA 430-R-20-002
- *Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2017* (April 2019) EPA 430-R-19-001

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

Archiving in the National Inventory Compilation Cycle

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

Archive

Plan

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

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

Finalize and Submit

QA/QC and Archive

Improve

Collect

- Collect Activity Data, Emission Factors
- QC all data

Review

Estimate

Write

- Conduct & document QA/QC procedures, such as basic peer review
- Revise estimates, based on QA/QC findings

- Estimate emissions & removals
- Implement QC procedures
- Revise estimates, based on QA/QC findings
- Conduct uncertainty & key category analyses

- Document methodological approaches and references
- Write inventory report

Poll Question #1

Do you have an archiving system for your national inventory?

1. Yes
2. No

Respond using Mentimeter link in the chat!

Is your archive electronic or hard copy?

1. Electronic
2. Hard copy

Respond using Mentimeter link in the chat!

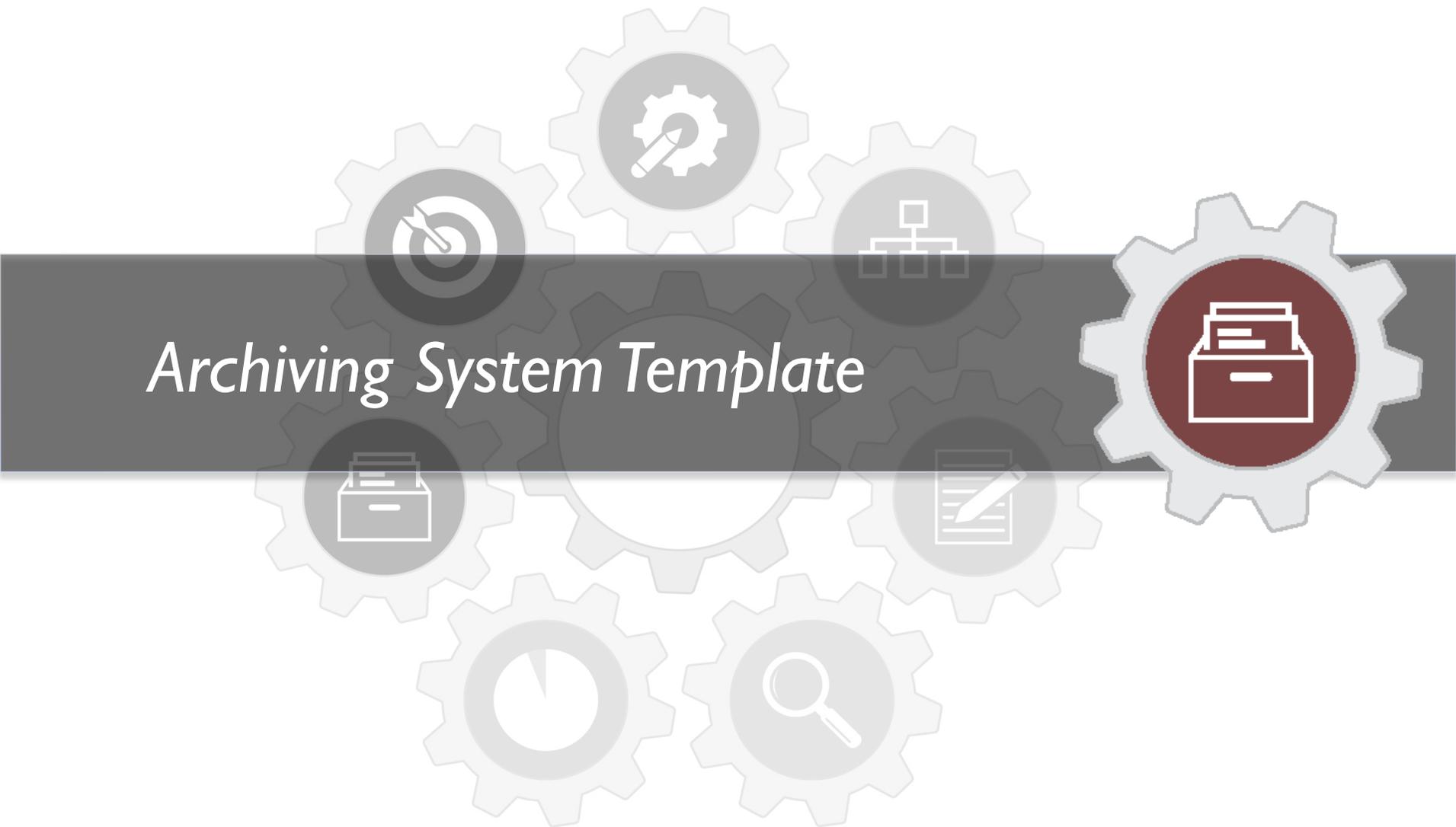What platform do you use to save your archive? What barriers are preventing you from archiving your inventory?

Describe…

Respond using Mentimeter link in the chat!

Archiving System Template

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 plan for the future

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)?	Stored electronically on SharePoint, backed up on USB, and stored at https://www.epa.gov/ghgemissions/us-greenhouse-gas-inventory-report-archive
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.	

Who completes this table: Archiving Coordinator

Step 2: Develop the Archiving System Plan

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

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			
2			

Who completes this table: Archiving Coordinator

Overall Archive Procedures Checklist

Develop a checklist to ensure common archiving procedures are followed. A good plan can be simple – it just needs to connect to the process being recommended

| Activity	Due Date	Activity Completed	
		Completed by (name)	Date
Archiving Coordinator:			
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

Action Items from Archiving System Plan

1. Identify an Archiving Coordinator who will organize the Archiving Plan.

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 it should be named, and when it should be archived.

4. Identify potential improvements to Archiving System.
   - This will make the National Inventory Improvement Plan (Template 7) easier to complete

Next template...
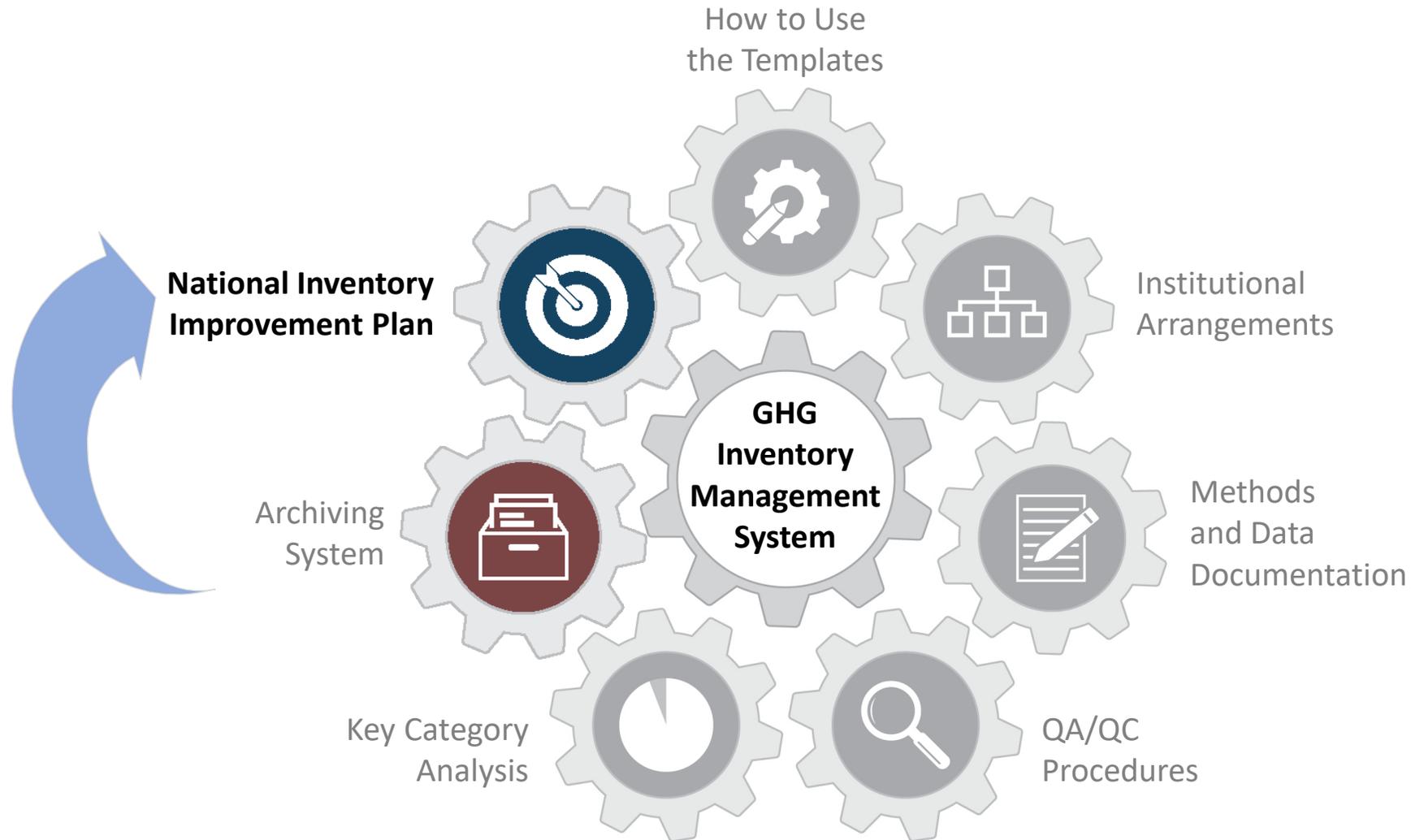
Thank You For Your Attention!

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Toolkit for Building National GHG Inventory Systems
https://www.epa.gov/ghgemissions/toolkit-building-national-ghg-inventory-systems