



Developing an Archiving System

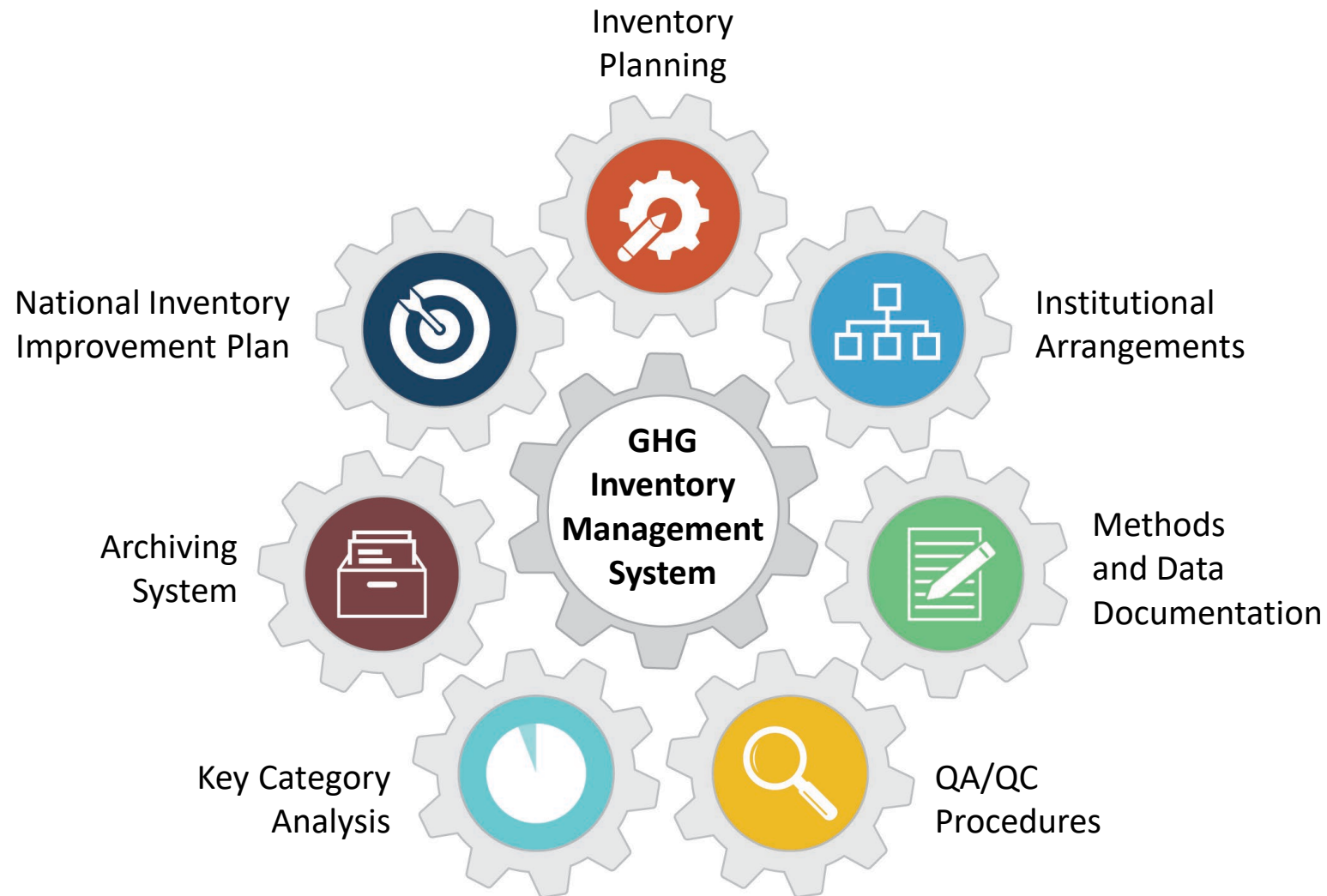
Remote Training on the Building of Sustainable National Greenhouse Gas Inventory Management Systems

Sina Wartmann

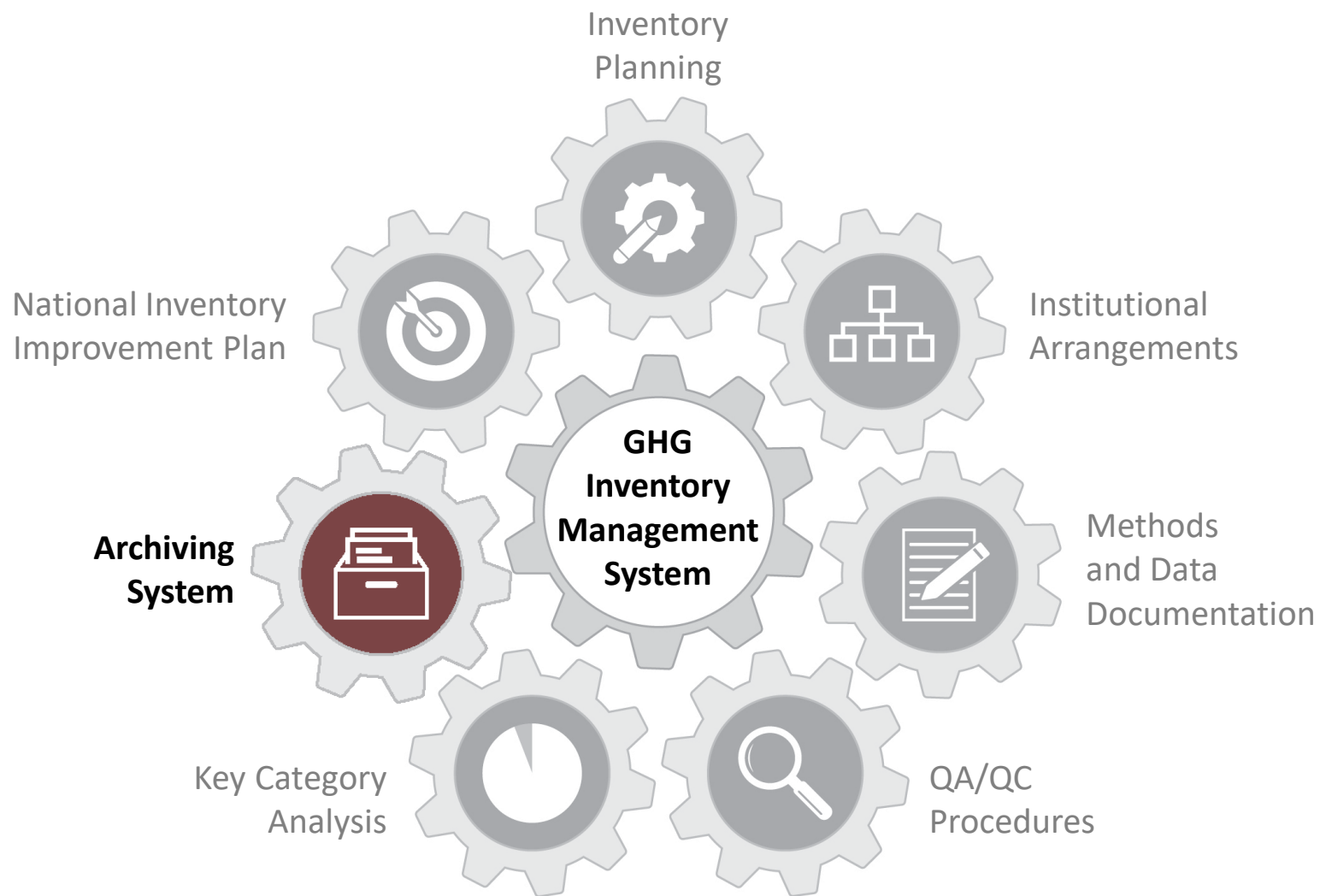
Ricardo Energy & Environment

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Developing a Sustainable National GHG Inventory System



Establishing an Archiving System





Introduction to Archiving



Review of the Template

Polls #1-#4

Respond using Mentimeter link in the chat!

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

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



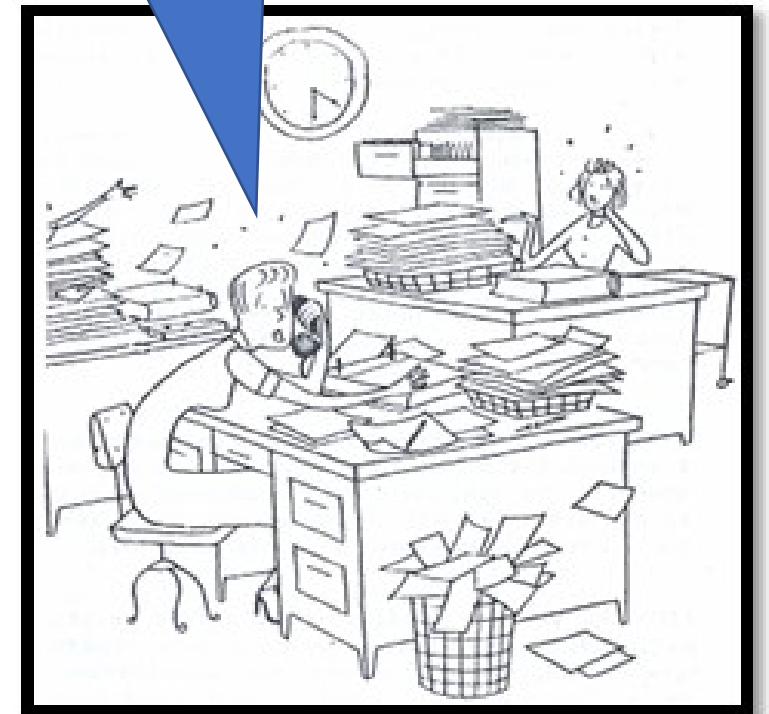
Avoid Preventable Future Challenges



We can't find anything!
We need a system!

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

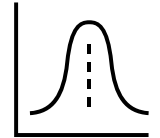
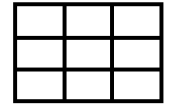
* Archiving Coordinator is not typically a full-time role.

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)
- Internal and external review comments and responses



Archive All Materials by Inventory Year for Easy Access!

What Should Be Archived? (continued)



National GHG Inventory Management System

- Inventory plans and schedule (see Template 1, national GHG inventory inception memorandum)
- Institutional arrangements (see Template 2)
- Methodology and data documentation (see Template 3)
- QA/QC plan and checklists (see Template 4)
- Key category analysis (see Template 5)
- Archiving plan (see Template 6)
- Inventory improvement plan (see Template 7)



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

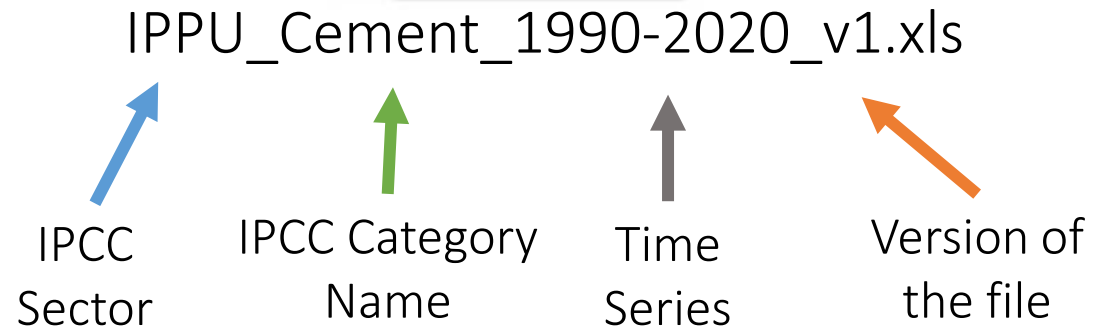


Example File Management Procedures

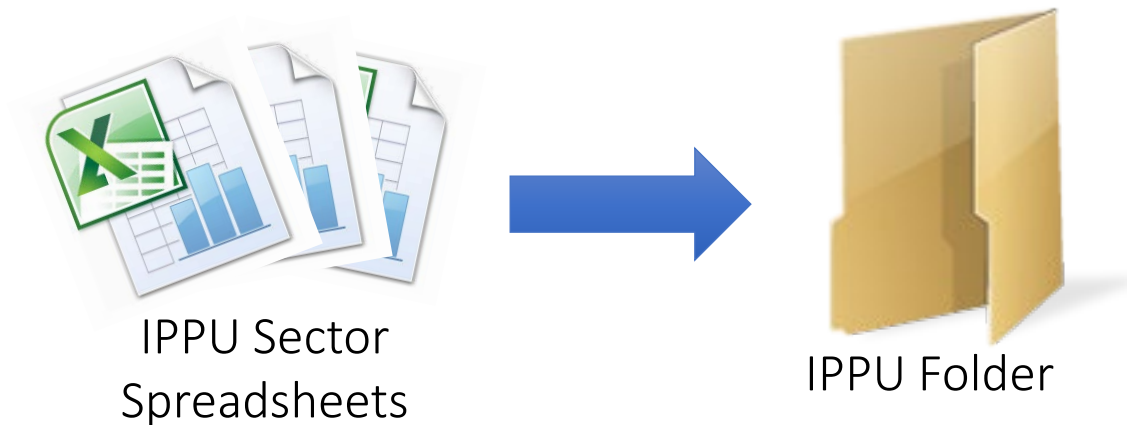


Use consistent naming conventions and file structures.

1. Naming Conventions



2. Organization



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
- Archiving system 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

Hard Copy: Each reference was printed and assigned tracking numbers

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



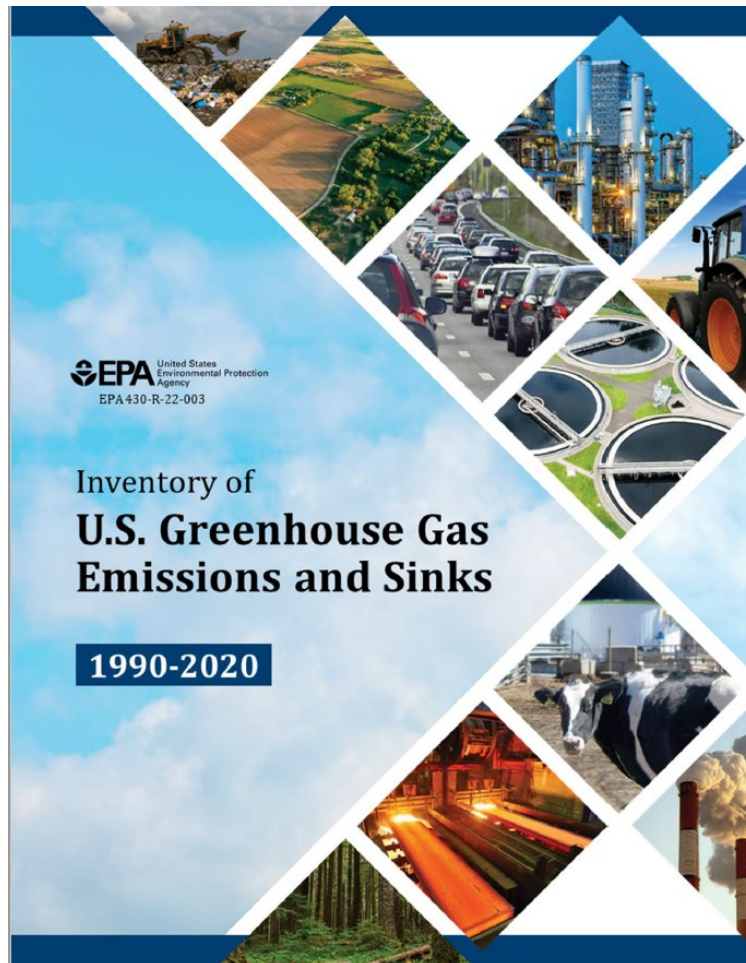
Current system

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

“Hard Copy”: Files are copied to a CD/USB.



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 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 (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:

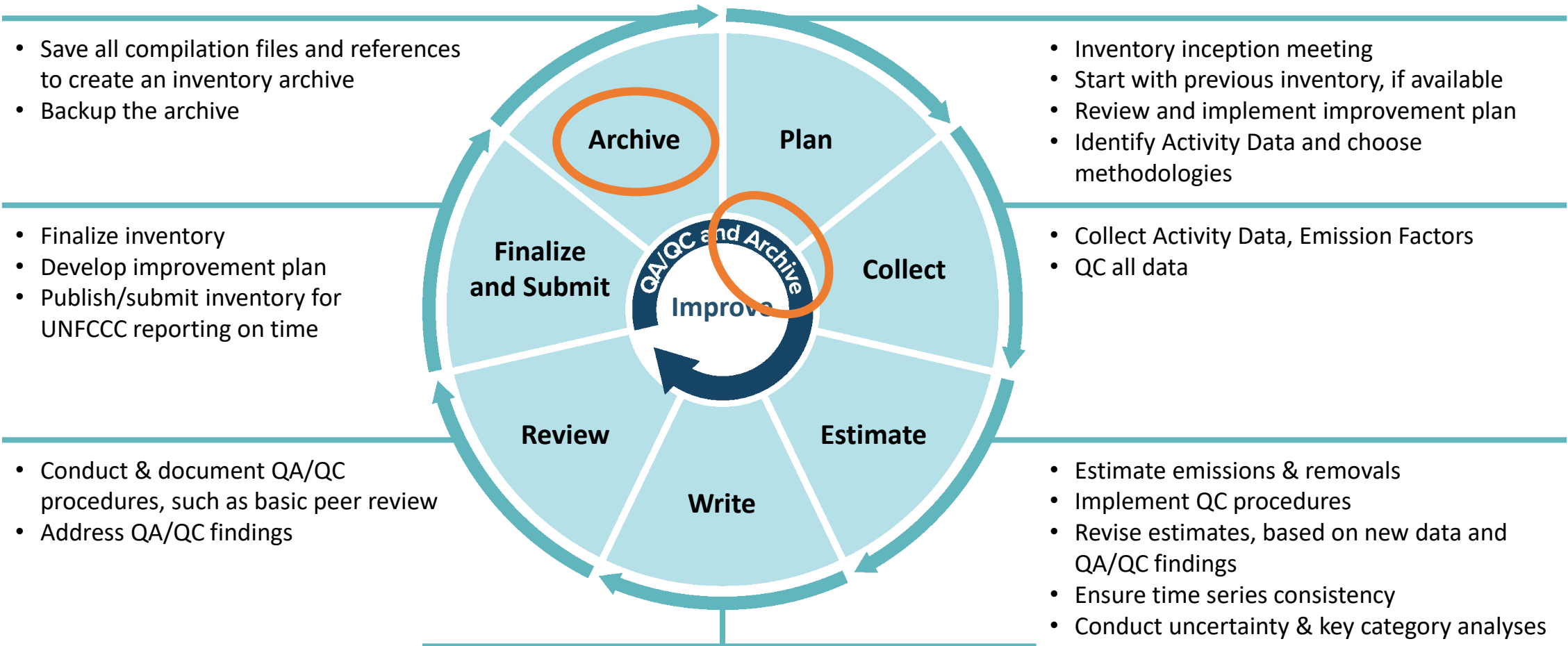
- [Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2019](#) (April 2021) EPA 430-R-21-005
- [Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2018](#) (April 2020) EPA 430-R-20-002

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.

Archiving in the National Inventory Compilation Cycle



A graphic for an archiving system. It features a central dark grey horizontal bar with the text "Archiving System" in white. The bar is surrounded by several grey gears of varying sizes. One gear on the right is highlighted with a dark red center and contains a white icon of a filing cabinet. Other gears contain icons for a target, a pencil and gear, a hierarchy chart, a document with a pencil, a magnifying glass, and a clock.

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

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)	<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 can be simple – it just needs to connect to the process being recommended.

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

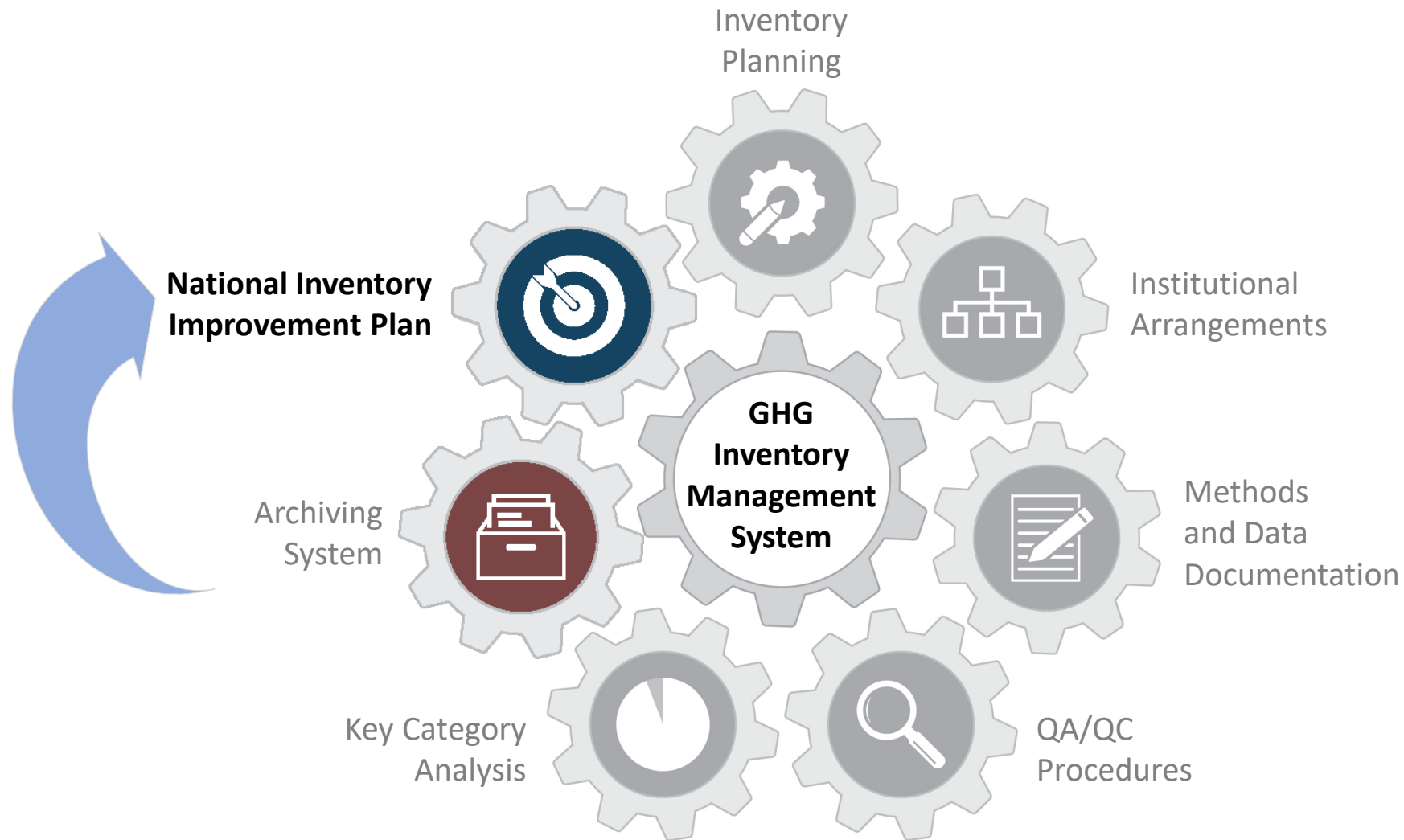
- **Background:** Country X has compiled inventories periodically in the past on a project basis, but is now preparing to regularly prepare their inventory every 2 years to meet their commitments made under the Paris Agreement.
- **Issue:** Inventory compilation files have not been saved and archived consistently for previous inventories
- **Resolution:** Because the country is preparing to compile their national inventory every 2 years, they are investing in preparing an archiving plan for this inventory cycle to improve documentation of their inventory and help them prepare their next inventory. The Archiving Coordinator was identified earlier in the Inventory Planning template (Template 1).

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

Next template...





Thank You For Your Attention!

For questions & more information, email:
ghgi.transparency@epa.gov



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