



Developing an Archiving System and Preparing a National Inventory Improvement Plan

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

Sabino Del Vento and Serena Churchill

Ricardo Energy & Environment, on behalf of the U.S. Environmental Protection Agency

October 10th, 2024

Housekeeping

Chat and Q&A

- Please feel free to introduce yourselves in the Chat channel - **Name, Country, Organization and Role**
- Please place all questions in the chat channel and we will go through them in the Q&A sessions

Recording

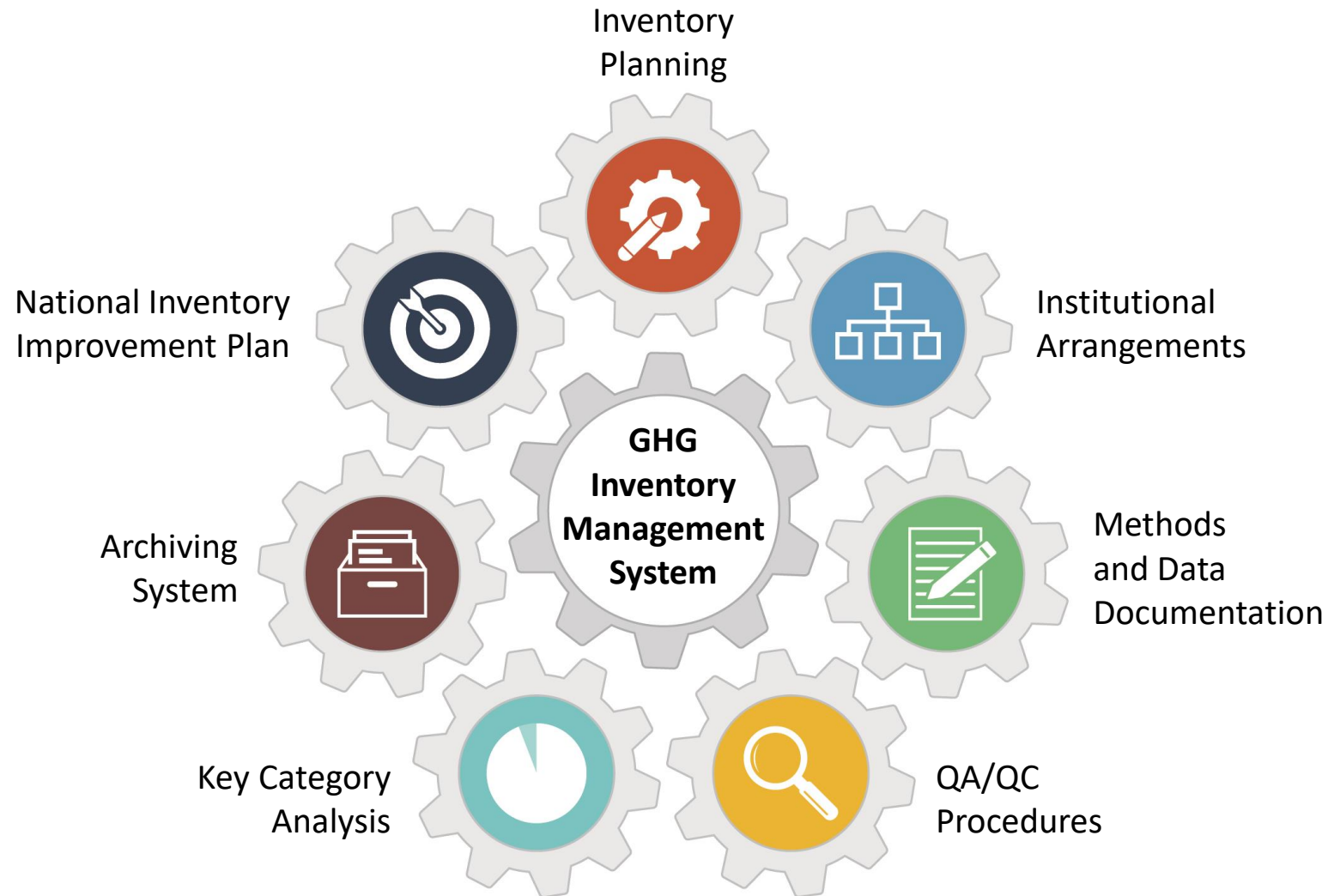
- Today's session will be recorded, so you can view it again later
- The link will be posted on:

<https://unfccc.int/process-and-meetings/transparency-and-reporting/support-for-developing-countries/ghg-support>

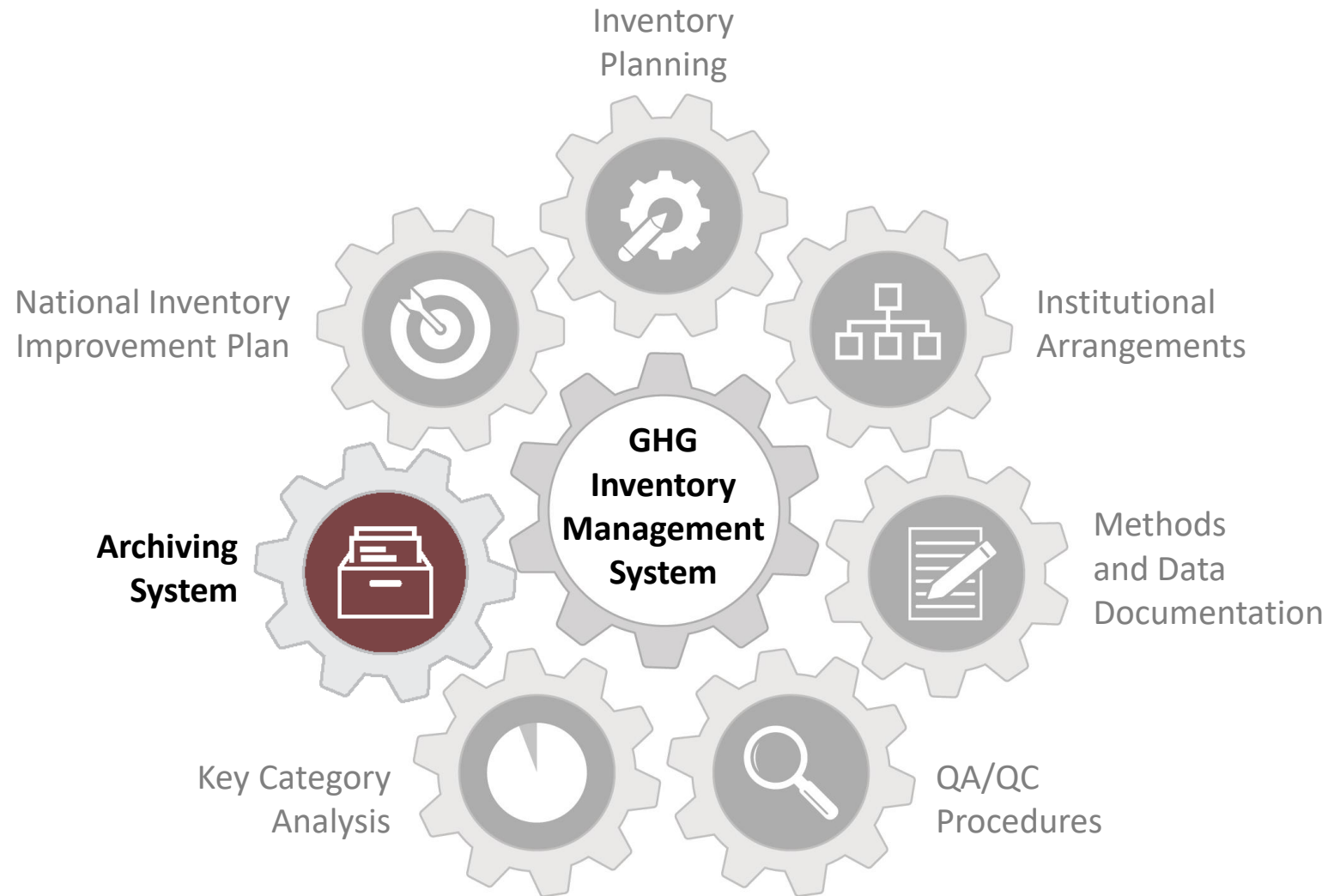
Agenda

5 min	Welcome and Introduction	Serena Churchill & UNFCCC
5 min	Mentimeter poll on Archiving	Serena Churchill
35 min	Template 6: Archiving System	Serena Churchill
10 mins	Q&A	Serena Churchill
5 min	Break	
15 min	Template 7: National Inventory Improvement Plan	Sabino Del Vento
5 min	Mentimeter poll on NIIP	Serena Churchill
25 min	National Inventory Improvement Plan Template Walk-Through	Sabino Del Vento
10 min	Q&A	Sabino Del Vento
5 min	Conclusions	Sabino Del Vento and UNFCCC

Developing a Sustainable National GHG Inventory System



Establishing an Archiving System



Overview



**Introduction to
Archiving**



Review of the Template

Polls #1-#4

Go to

www.menti.com

Enter the code

1725 3907



Or use QR code

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



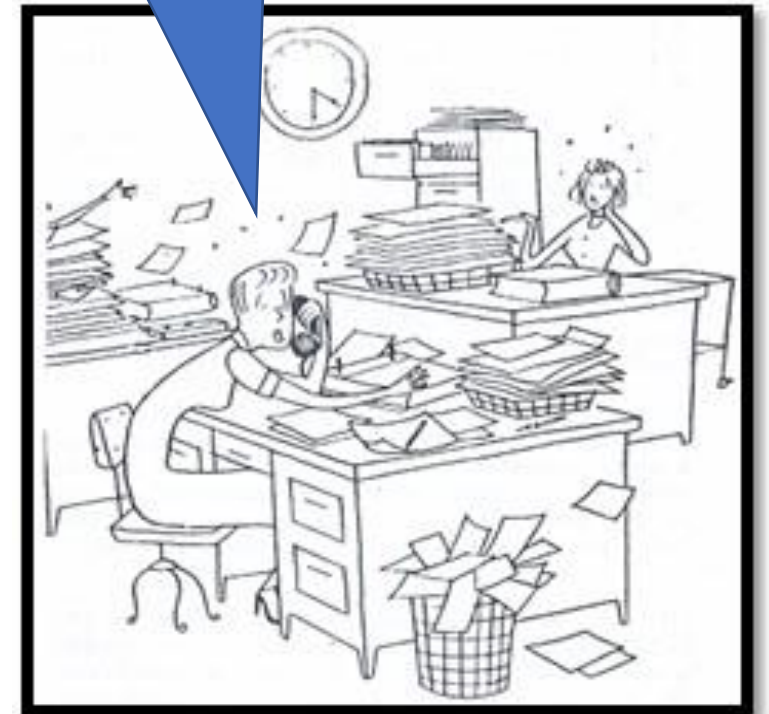
Avoid Preventable Future Challenges



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

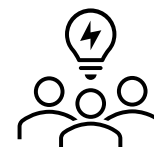
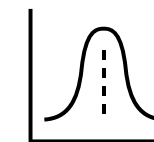
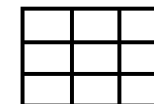
* Archiving Coordinator is not typically a full-time role.

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





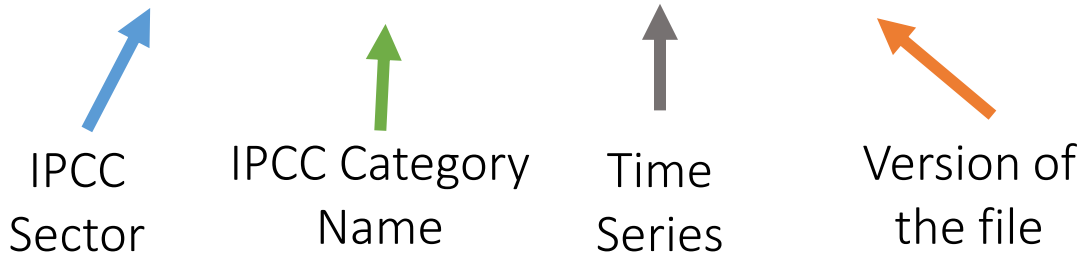
Example File Management Procedures

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

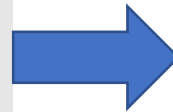
Digital: Each reference and file converted to PDF format and placed in electronic docket



Current system

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

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

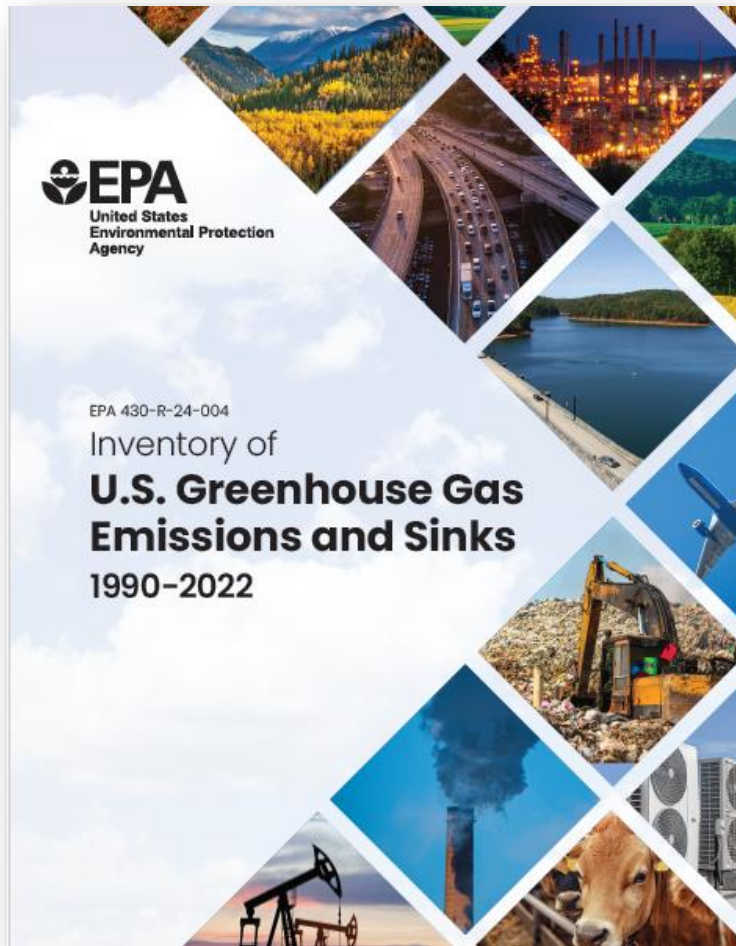


Example: U.S. GHG Inventory Archiving System

- 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 inventory inception memo:
 - Includes compiler responsibilities
 - Defines a file naming convention
 - Identifies where to save files



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:

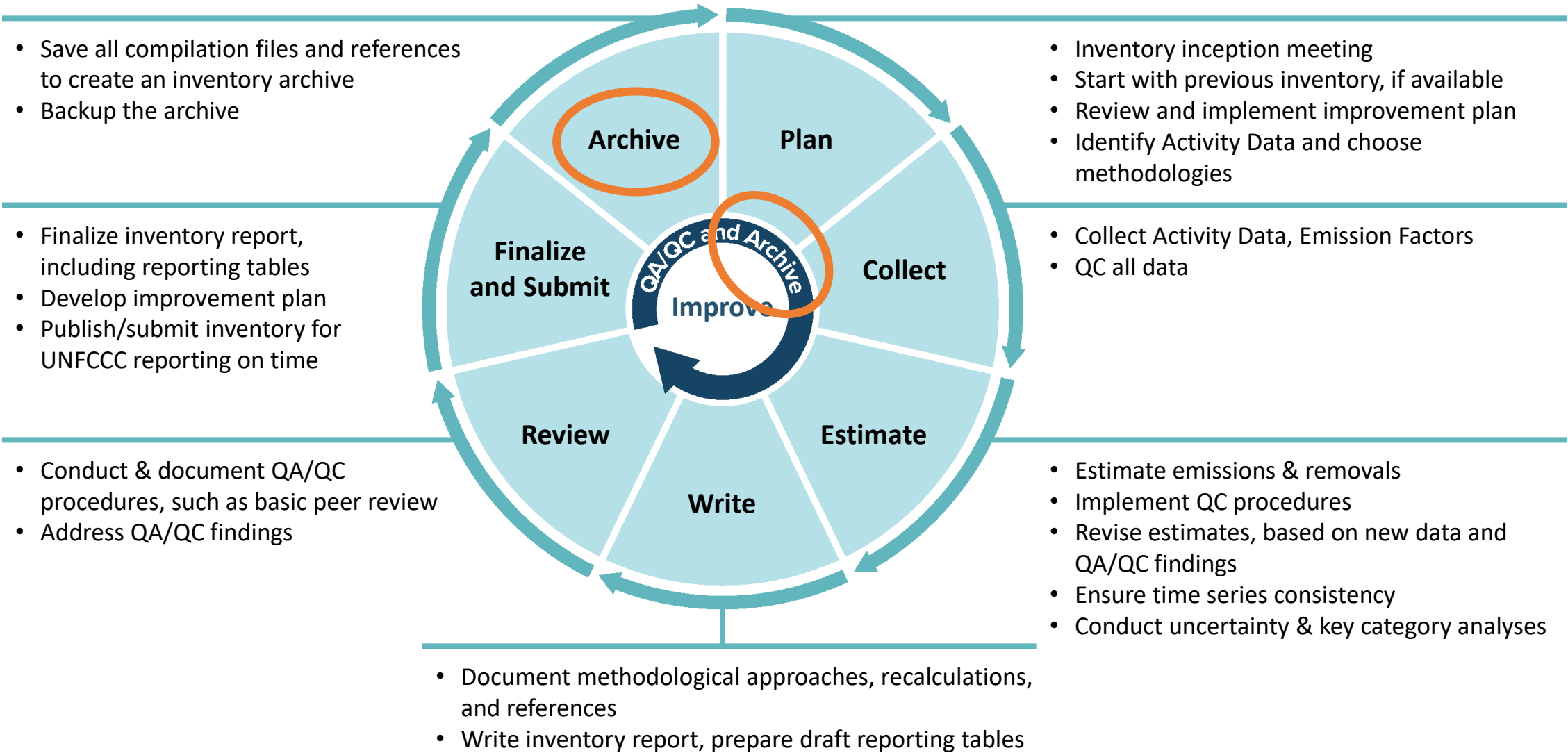
- [Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2021](#)
(April 2023) EPA 430-R-23-002
- [Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2020](#)
(April 2022) EPA 430-R-22-003

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.

Archiving in the National Inventory Compilation Cycle



The graphic features a central dark grey horizontal bar with the text "Archiving System" in white. Surrounding this bar are 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. A blue geometric pattern is visible on the left side of the slide.

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?	
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 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).

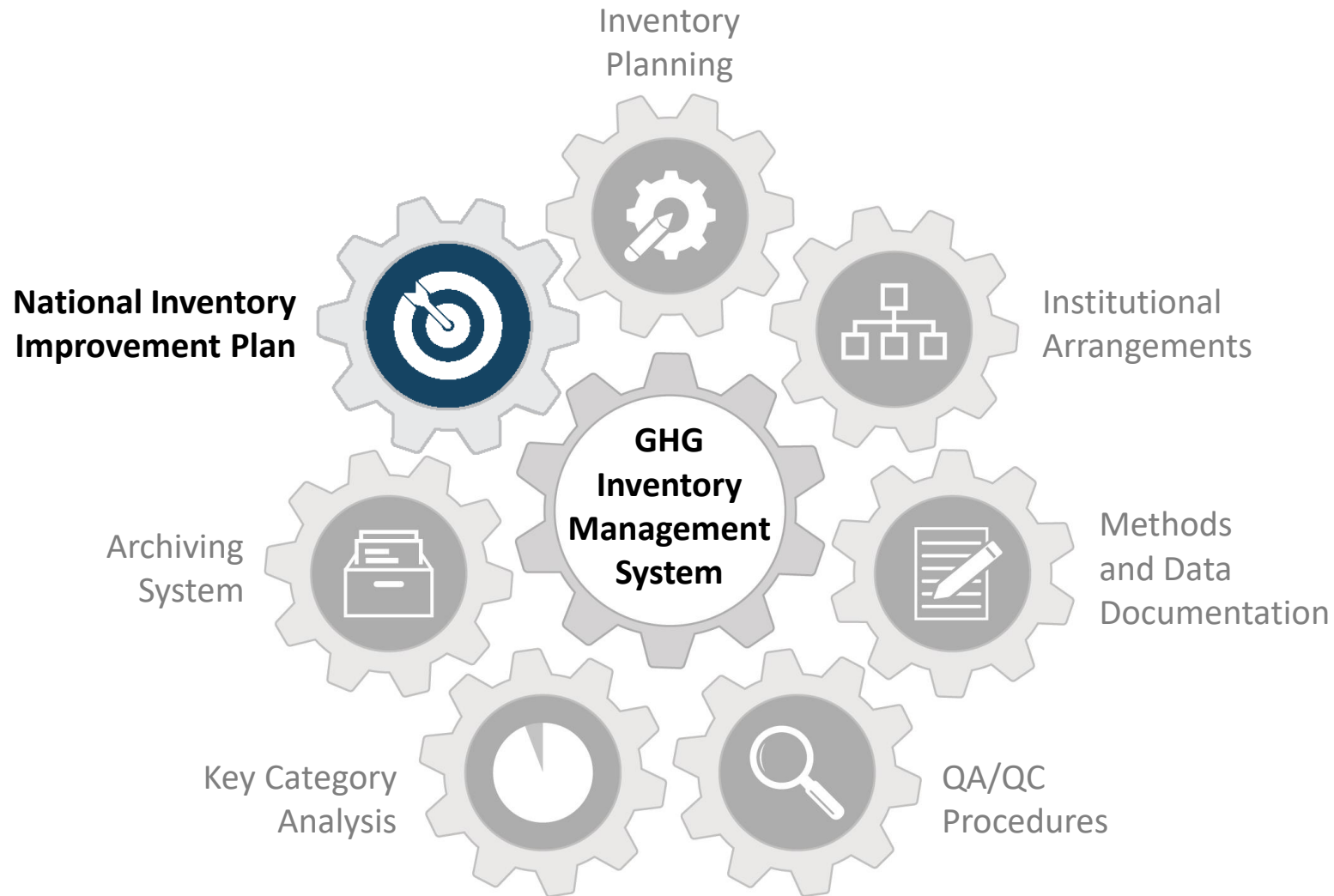
Action Items for Archiving System



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

Questions?

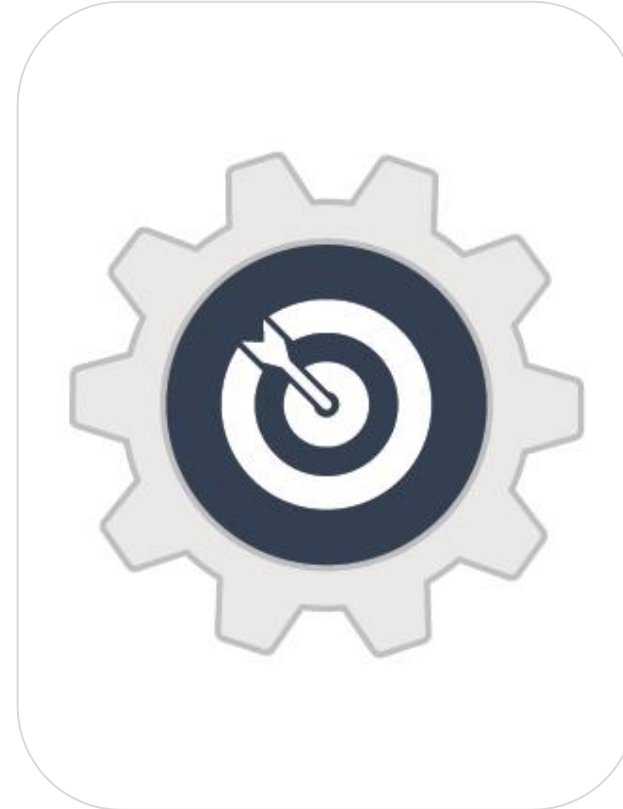
National Inventory Improvement Plan



National Inventory Improvement Plan



What is a National Inventory Improvement Plan?

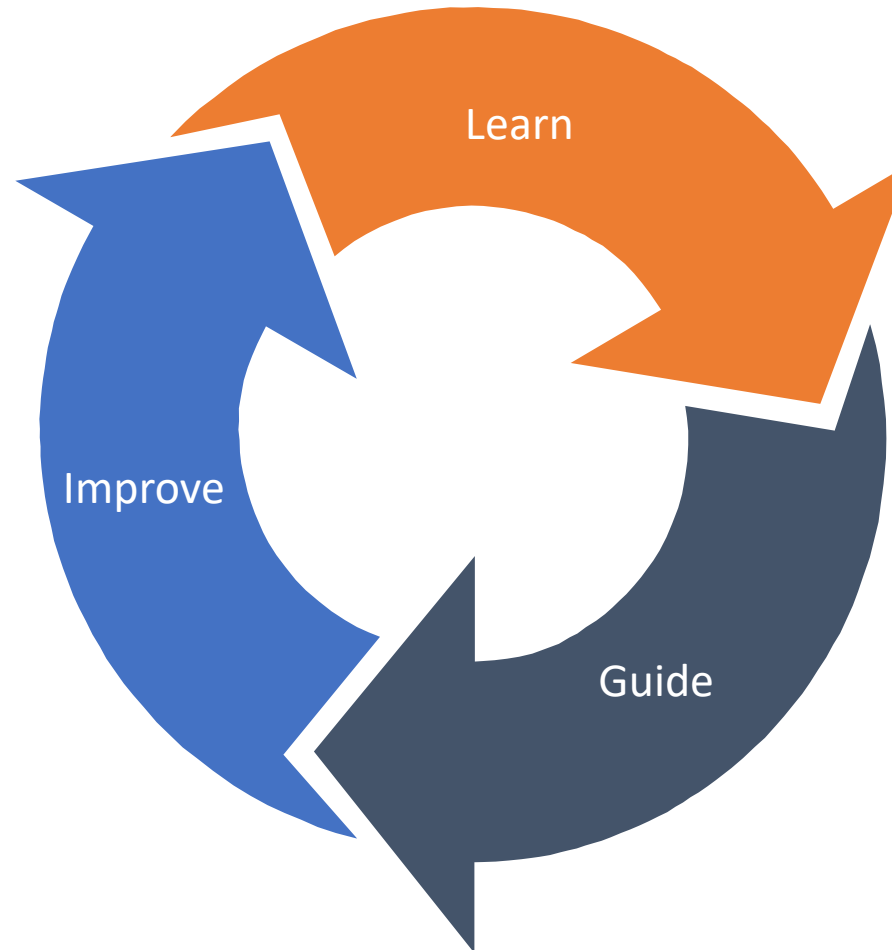


Review of the Template

Continual Improvement



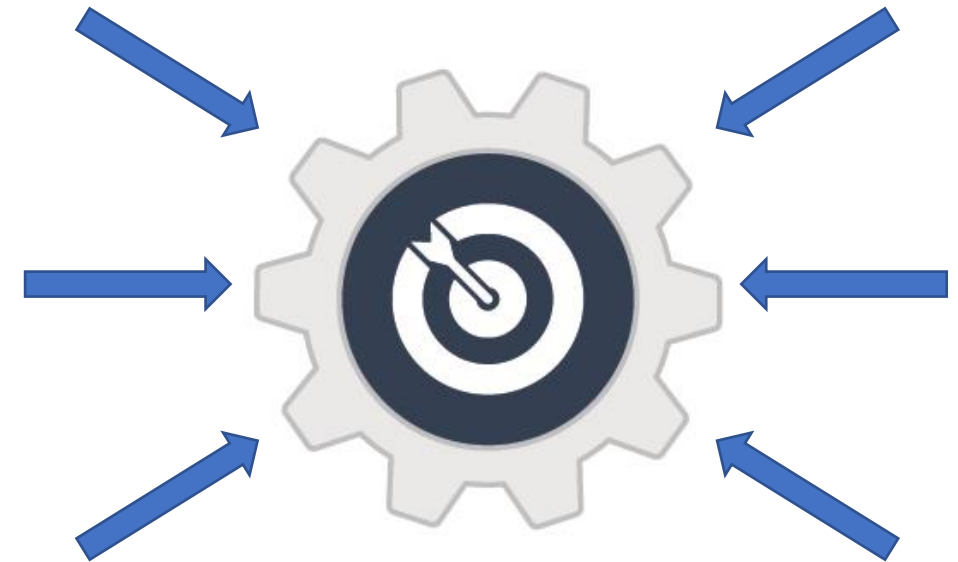
The NIIP will facilitate **continual** inventory improvements over time



Developing a National Inventory Improvement Plan (NIIP)



1. Compile & synthesize improvements from other templates
2. Identify specific actions to address improvements
3. Prioritize improvements
4. Plan how to implement of improvements



The template gives an inventory team a place to organize a NIIP.

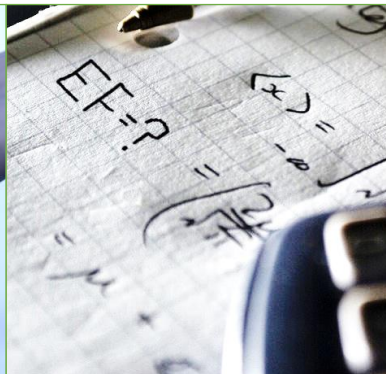
Benefits of a National Inventory Improvement Plan



Find better data



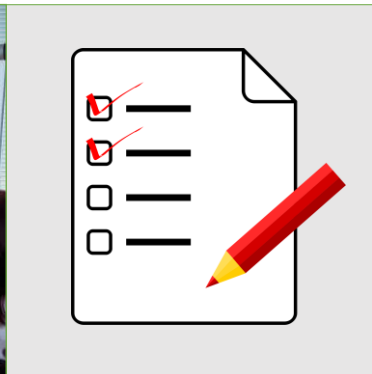
Facilitate coordination among institutions to support data collection



Adopt a higher Tier methodology



Train current staff members



Enhance QA/QC procedures



Guide new staff

Mentimeter Poll

Go to

www.menti.com

Enter the code

1725 3907



Or use QR code

The graphic features a central dark grey banner with the text "National Inventory Improvement Plan" in white, italicized font. The banner is surrounded by several grey gears of varying sizes. One gear on the right side of the banner is highlighted with a dark blue center and a white target icon. Other gears contain icons for a target, a pencil, a hierarchy, a folder, a document, a clock, and a magnifying glass. A blue geometric pattern is visible on the left side of the slide.

*National Inventory Improvement
Plan*

How this Template Will Help!



The *National Inventory Improvement Plan* template will help the inventory team:



- Record improvements identified in previous templates, including QA/QC findings
- Prioritize improvement projects
- Outline implementation steps/details for high priority projects

Step 0: Review “Default” Introduction in Template



Review and update default introduction to *National Inventory Improvement Plan* included in template



National Inventory Improvement Plan

This National Inventory Improvement Plan (NIIP) presents options for improving the national GHG inventory system to support compilation of a high-quality inventory consistent with the 2006 IPCC Guidelines. The NIIP will guide future efforts to increase the transparency, consistency, comparability, completeness, and accuracy of future inventories. It will inform the overall improvement of the national GHG inventory, including strengthening institutional capacity over the coming years. These improvements have been identified through documentation of existing institutional arrangements, category-by-category analyses of methods and data, QA/QC procedures, key categories, and the archiving system.

Table 7-1 identifies the improvement options for this NIIP and their level of priority. Table 7-2 proposes inventory improvement projects, consisting of the high-priority options from Table 7-1.

STEP 1: Compile the list of improvement options in Table 7-1, below.

Purpose of Table 7-1	To provide a clear overview of the improvement options identified by the inventory team in Templates 2 through 6 and an explanation of the basis of the assigned priority level.
How to use the table when complete	To guide efforts to increase the transparency, accuracy, consistency, comparability, and completeness (TACCC) of future national GHG inventories.
General instructions	Consolidate all improvements listed in Templates 2 through 6 into this table. Ensure that these improvements include enough identified in Templates 2 through 6. Improvements in these categories need to be specific, not general. Improvements that are too general are unlikely to be completed

Who completes this table: National Inventory Coordinator (NIC)

Step 1: Listing Improvement Options from Template 2 through 6

Instructions by column	Key Category: Record "Yes" if the category to which the issue applies is a key category. Record "No" if it is not a key category. Record "N/A" if the issue does not pertain to an individual category.
	Category Code and Name: If the relevant improvement is related to methods and data documentation, record the IPCC code and name of the <u>source</u> or sink category to which this improvement relates. The codes are in the <i>2006 IPCC Guidelines, Volume 1, Chapter 8, Table 8.2</i> , available here: https://www.ipcc-nggip.iges.or.jp/public/2006gl/vol1.html .
	Issue: Describe the issue and why an improvement is recommended.
	Improvement Option: Describe what will be done to address the issue.
	Priority of Improvement: Indicate the priority of the improvement: High, Medium, or Low. Explain why this level of priority is warranted. For example, acquiring activity data for a category that has not been estimated to date but is considered to have substantial emissions, will likely be more important than developing a country-specific emission factor for a non-key category. Consider what your high-level priorities for the GHG inventory should be (e.g., improving completeness, enhancing accuracy with key categories, reducing overall uncertainty, improving time series consistency, increasing transparency, improving data availability, enhancing institutional structures). This may help you decide whether an improvement option should be <u>high-priority</u> .

Table 7-1 Improvement options

No.	Key Category	Category Code and Name	Issue	Improvement Option	Priority of Improvement	Timing of Improvement	Additional Information Needed for Improvement
1							
2							
3							



Who completes this table: National Inventory Coordinator (NIC)

Step 1: Listing Improvement Options from Template 2 through 6

Table 7-1 Improvement options (examples)

No.	Key Category	Category Code and Name	Issue	Improvement Option	Priority of Improvement	Timing of Improvement	Additional Information Needed for Improvement
1		Cross-cutting (Inventory Planning)	Limited time for Inventory cycle (See “Inventory Planning”)	Start the GHG Inventory development cycle 1 month earlier	High	Next Inventory cycle (beginning in June 2022)	Communicating plan needs to begin ASAP
2	Y	1A3b Road Transport-CO2	Required data is not submitted to inventory in time for Expert Review (See “Inst. Arrangements”)	Develop a formal MOU with Department of Transportation to ensure data is provided in a timely manner and format	Medium	Next Inventory cycle (pending signature of MOU)	Use Memorandum of Cooperation (MoC) template as starting point
3	Y	3A1 Enteric Fermentation-Cattle-CH ₄	Shift from Tier 1 methods to Tier 2 given this is key category (See MDD and KCA)	Collect data to implement enhanced characterization or Tier 2 methods consistent with IPCC methodological decision tree and improve accuracy.	High	Longer-term, complete within 2 Inventory cycles, by 2024	See Task 3 in contract with University DC
4		Cross-cutting (Archiving)	No back-up of data (See “Archiving”)	Copy data files from Source Lead computers to a CD or back-up external hard drive	High	At the end of the next inventory cycle	

Who completes this table: National Inventory Coordinator (NIC)



Step 2: Detail inventory improvement projects from Step 1 (Table 7-1) that were high priority



Table 7-2. Potential projects for improving the national GHG inventory system

No. (from Table 7-1)	Estimated Staff Time (workdays)	Estimated Cost for Services (local currency)	Estimated Cost of Equipment (local currency)	Reference to Further Information	Responsible Staff

Who completes this table: National Inventory Coordinator (NIC)

Example of Identifying Potential Projects to Implement High-Priority Improvements



Table 7-2. Potential projects for improving the national GHG inventory system

No. (from Table 7-1)	Estimated Staff Time (workdays)	Estimated Cost for Services (local currency)	Estimated Cost of Equipment (local currency)	Reference to Further Information	Responsible Staff
1	60	\$10,000	N/A	See Task 2 in contract with University DC	V. Cambo
2	120	\$15,000	N/A	See Task 3 in contract with University DC	J. Steller

**From Table
7-1**

Upon completion of 7-1 and 7-2, improvement plan is ready to move forward

NIIP Example from Republic of Moldova



Available here: https://unfccc.int/sites/default/files/resource/NIS_Report_2021_EN_211211-web.pdf

Chapter 6: National Inventory Improvement Plan



6. National Inventory Improvement Plan

6.1. Objectives

This National Inventory Improvement Plan (NIIP) presents actions that the Republic of Moldova has identified to improve its national GHG inventory. The NIIP will guide future efforts to increase the transparency, consistency, comparability, completeness, and accuracy of future inventories, address many of the shortcomings of the previous inventory, and will inform future inventory teams of needed improvements. These improvements are identified through documentation of existing institutional arrangements, category-by-category analyses of methods and data, QA/QC procedures, archiving systems, and an assessment of key categories in the Republic of Moldova.



6.2. Institutional Arrangement Priorities

The National Inventory System involves all of the institutional, legal, and procedural arrangements made by the Republic of Moldova for estimating anthropogenic emissions and removals, as well as the reporting and archiving of inventory information. Identified within a National Inventory System is the government agency responsible for producing a national greenhouse gas inventory, the key organizations that contribute data and methods, and the end-users of the inventory.

Preparing a comprehensive inventory requires establishing, identifying, and documenting all relevant contributors to the National Inventory System, documenting the status of existing institutional arrangements for inventory development will ensure continuity and integrity of the inventory, and facilitate prioritization of future improvements.

Table 6.1 lists the priority actions identified in the Chapter 1: Institutional Arrangements.

Table 6.1: Priority Actions for the National Inventory System

Strengths of the National Inventory System Management Structure	Potential Improvements of the National Inventory System
<p>The key strengths in the management structure of the National Inventory System (NIS) are as follows:</p> <ul style="list-style-type: none"> The existence of regulatory provisions (Government Decision No. 1277 of 26 December 2018 on establishing the National System for Monitoring and Reporting (NSMR) Greenhouse Gas Emissions and Other Information Relevant to Climate Change) that establish the obligation to submit data related to the inventory process of GHG emissions towards specific deadlines to the competent authority designated with responsibility for national inventory preparation; Existence of a group of qualified experts specializing in areas related to the process of GHG emissions inventory with rich experience gained over the years 1998-2020, starting from the first cycle of GHG emissions inventory conducted during preparation of the First National Communication of the Republic of Moldova to the UNFCCC (1997-2000) and ending with the latest inventory cycles conducted during preparation of the Second Biennial Update Report of the Republic of Moldova under the UNFCCC (2017-2019) and of the Third Biennial Update Report of the Republic of Moldova under the UNFCCC (2020-2021); Possibilities for elucidation of quantitative and qualitative aspects related to the inventory process from sectorial, national and international statistical reports and publications; The existence of national studies in various sectorial areas, which allowed for the possibility in the near future to start using calculation methodologies of higher tiers within the national inventory; The existence of a database of activity data related to the inventory process of GHG emissions, which is updated within each inventory cycle and is maintained institutionally starting from the first cycle of GHG emissions inventory; Experience gained in implementing quality verification, quality control and quality assurance measures for the national inventory of GHG emissions. 	<p>The estimations process of anthropogenic GHG emissions can be also enhanced through the following potential improvements:</p> <ul style="list-style-type: none"> Enhancing the level of knowledge of national experts involved in developing the national GHG emissions inventory through a series of thematic trainings; Enhancing the professional skills of national experts involved in developing the inventory process, utilizing the gradual transition from default EFs and Tier 1 country specific EFs and Tier 2 and 3 methodologies; Strengthening the data management system used in the inventory process, as well as the periodic archiving of the information on which inventory was drawn up, in accordance with the principle of transparency;

Source: Chapter 1: Institutional Arrangements.

6 - 2

Chapter 6: National Inventory Improvement Plan



Table 6.10: National Inventory Improvement Priorities

#	Sector	Priority Level	Improvements Needed
1	General	High	Enhancing the professional capacities of national experts involved in the inventory process, specifically in the application of 2006 IPCC Guidelines and the associated GHG emissions calculation and reporting software, through thematic trainings with participation of international trainers.
2	General	High	Transitioning from default EFs and Tier 1 methodologies to country specific emission factors and Tier 2 and 3 methodologies, particularly focusing on key categories.
3	General	High	Strengthening the data management system for tracking and archiving the inventory information used in each inventory cycle.
4	Energy	High	Implementing in extent possible all recommendations contained in the "Report on the technical review of the National Greenhouse Gas Inventories of the Republic of Moldova for 1990-2016 periods – Energy Sector", conducted by Dr. Veronica Ginzburg, Institute of Global Climate and Ecology, Roshidromet / Academy of Science of the Russian Federation within January-February 2019 periods.
5	Energy	Medium	Transitioning from default EFs and Tier 1 methodologies to country specific emission factors and Tier 2 and 3 methodologies, in particular for the following key categories: 1A3 Transport and 1B2 Fugitive Emissions from Oil and Natural Gas.
6	Industrial Processes and Other Products	High	Setting up an on-line reporting system for collecting AD from companies that import, use, dispose, recover and recycle refrigerants and refrigerant equipment; this information system will provide the Ministry of Environment, Environment Agency and Public Institution "Environmental Projects Implementation Unit" more accurate AD that could potentially help reduce uncertainties in estimating GHG emissions from the 2F "Product Uses as Substitutes for ODS" category in the Republic of Moldova.
7	Agriculture	High	Estimate the share and usage of manure management systems in the Republic of Moldova (MS%) in order to enhance the accuracy of GHG inventory results within 3B "Manure Management" (the activity will be similar to that undertaken within May-June 2015 periods by the specialists from the Scientific-Practical Institute of Biotechnology in Animal Breeding and Veterinary Medicine as well as from the National Agency for Food Security, when dairy cows and other cattle farms with a herd of more than 5 heads were inspected, as well as pig farms with more than 30 heads and the largest poultry farms in the country, the inspections covered 36 districts of the country, in total, manure management systems from 179 farms have been inspected, of which 96 cattle farms, 66 pig farms and 17 poultry farms).
8	LULUCF	High	Complete the implementation process of the recommendations contained in the "Report on the technical review of the National Greenhouse Gas Inventories of the Republic of Moldova for 1990-2016 periods – LULUCF Sector", conducted by Dr. Viorel Blujdea from the National Institute for Forestry Research and Development "Marin Dracea" (former ICAS Bucharest, Romania) in January-February 2019.
9	LULUCF	High	Raising the quality of GHG inventory in the LULUCF sector, through periodic (e.g., at least once in 5 years) "Forest Inventory" to provide updated information, not only for the state of forest land, but also for private forest land or those under the administration of local authorities; also, new production tables and other forest relevant information are needed, to accomplish these imperatives, the inter-institutional collaborative effort, and the needed financial resources may be very significant; thus, it is imperative to identify as soon as possible opportunities for obtaining such a financial support from the international donors and/or partners.
10	LULUCF	Medium	In collaboration with the specialists from the Institute of Pedology, Agrochemistry and Soil Protection "Nicolae Dimo" and Forestry Research and Management Institute of "Moldova" Agency, undertake a research study focused on identifying the soil organic carbon stocks (SOC ₀) in the most recent years; the content of humus in arable soils (the layer of 0-30 cm) has to be identified in representative cities in the northern part of the country (e.g., Napadova, Floresti district), in the southern part of the country (e.g., Lebedenco, Cahul district), as well as in the central part of the country (e.g., Ivancea, Orhei district); the results of the study will be used to estimate CO ₂ emissions from annual change in carbon stocks in mineral soils through a Tier 2 methodological approach.
11	Waste	Medium	Accomplishing an external independent technical evaluation of the GHG inventories – Waste Sector, by an international consultant with a good knowledge of the 2006 IPCC Guidelines and with extensive expertise in assessing GHG inventories of the Annex I Parties.
12	Waste	Medium	Conducting a new study on determining the morphological composition of solid municipal waste deposited in various urban areas of the Republic of Moldova, in each locality at least 3 analyses per season (autumn, winter, spring and summer).

6 - 12

Improvement Planning in the Inventory Compilation Cycle



Action Items for National Inventory Improvement Plan



1. To save time and effort, identify improvements and issues when completing the other templates, so they can feed into the NIIP.
2. Identify the *issue*, the *improvement plan*, the *priority*, and the *timing* of when the improvement needs to or can be completed.
3. For each improvement, estimate staff time, cost, when the improvement should be completed, and who is responsible
 - This planning supports efficient use of resources

Questions?



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>