Capacity Building for National GHG Inventory Systems: A Successful Approach

 Presented by:
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 Vice President
 ICF (USAID Contractor)

 January 26, 2017
Focus: Improved Ability to Prepare and Submit National GHG Inventories

National Greenhouse Gas Emissions by Economic Sectors

49 Gt CO₂ eq (2014)
National GHG Inventory System Capacity Building

The USAID Low Emissions Asian Development Program’s three-pronged approach addressed institutional and technical topics:

- **Regional Workshops/Trainings on National GHG Inventory Systems**
- **The Winter Institute on the 2006 IPCC Guidelines for National GHG Inventories**
- **In-country support**

**Institutional focus**

**Technical focus**
USAID LEAD Built on the Comprehensive Set of Topics and Tools in Collaboration with US EPA

US EPA’s *Developing a National Greenhouse Gas Inventory System Template Workbook*
- Institutional Arrangements
- Methods and Data Documentation
- Key Category Analysis
- Quality Assurance/Quality Control
- Archiving
- Inventory Improvement Plans

US EPA’s Inventory Toolkit
- Inventory Inception Memo
- Roles and Responsibilities
- Memorandum of Understanding
- Data Assessments
- Statement of Work
- Archiving Tips and Recommendations

Additional topics
- IPCC Inventory software; how to use an inventory (e.g., for national planning); measuring inventory progress
Ongoing Regional Collaboration & Learning
Value of USAID LEAD capacity building efforts

Result of USAID LEAD’s five-part regional training:
Six countries were able to prepare improved inventories

![Graph showing the comparison between baseline and final assessment within six countries.](image-url)
Comprehensive IPCC Guidelines Course

• In-person training on the 2006 IPCC Guidelines on National GHG Inventories
• Approximately 30 hours of classroom time each week = 60 hours total and two exams for students attending both weeks
• Hundreds of slides
• Week 1: In-depth coverage of key category analysis and uncertainty analysis, with several hours spent on relevant exercises
• Week 2: In-depth coverage of sector specific estimation methodologies
IPCC Guidelines Course Results

Figure 1. Introductory class on the 2006 IPCC Guidelines: Change in knowledge from before to after the class. **Average improvement: 19%**

Figure 2. Sectoral classes on the 2006 IPCC Guidelines: Change in knowledge from before to after the class. **Average improvement: 49%**
Essential Insights

Amplifying the impact

- Reliance on existing tools that are known to be successful
- Peer to peer learning that was fostered by a regional setting
- Shared responsibility for learning: the training design emphasized exercises where success depended on cooperative, purposeful interaction with others (i.e., *one succeeds when all succeed*)
- Responding to a clear need: Surveying participants for what they liked and what they want next
- Participation by same individuals helped foster a community of practitioners
- Expert trainers that are practitioners with same responsibilities as trainees

Limiting the impact

- Not having an inventory on which to work limited ability to apply learning
- Uncertain roles for inventory preparation limited ability to focus learning
- Experience with MS Excel and related IT challenges tempered success of some training elements
Further Reading/Study/Support

https://www.epa.gov/climatechange/national-ghg-inventory-capacity-building

National GHG Inventory Capacity Building

On This Page
- Approach to Building Sustainable Inventory Systems
- National System Templates
- Technical Assistance and Tools for Data Collection and Data Management

Related Information
- EPA's Landfill Methane Outreach Program


Asia LEDS Training

National Greenhouse Gas Inventory System Curriculum

Source Organization: USAID LEAD Program
Date: 07/28/2016
Length: 52 PDFs, 43 PPTs, 15 Excel spreadsheets
Training Audience: Planner / policy-maker / implementer (national government)

http://ghginstitute.org/courses/

501 IPCC: Introduction to Cross-Cutting Issues
511 IPCC: Energy
521 IPCC: Industrial Processes and Other Product Use
521 IPCC: Agriculture
Contact

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www.LowEmissionsAsia.org
Insight GEF/UNDP’s Third National Communication and Biennial Update Report Project Management

Presented by:
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Project Manager
Thailand’s Third National Communication and Biennial Update Report
United Nations Development Programme

26 January 2017
**Project Start Up**

**Objectives**
- To generate strategic/insightful inputs to be incorporated in the current project design to ensure that the project factors in the current development of UNFCCC.
- To seek endorsement from stakeholders on the project concept and scope in developing TNC/BUR for submission to the UNFCCC.

**Topics**
- Project management
- Project outcomes and outputs
- Sustainability of the development
- Knowledge sharing

**Phases**

- Project Awarded
- Local Project Appraisal Committee
- Internal UNDP/GEF process to get the Delegation of Authority from GEF to UNDP
- Letter of Agreement between UNDP and the country
## TNC-BUR Project Objective and Outcomes

<table>
<thead>
<tr>
<th>Objective</th>
<th>To assist the country in the preparation of its Third National Communication and (First) Biennial Update Report to the UNFCCC</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>OUTCOME 1</strong></td>
<td>Updated GHG Inventory and Improvement of GHG Inventory System</td>
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<tr>
<td><strong>OUTCOME 2</strong></td>
<td>Improved V&amp;A assessment approaches and management</td>
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<td><strong>OUTCOME 3</strong></td>
<td>Improved analysis and national capacity on mitigation options</td>
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<tr>
<td><strong>OUTCOME 4</strong></td>
<td>Updated Information on national circumstances, other relevant information for BUR and TNC</td>
</tr>
<tr>
<td><strong>OUTCOME 5</strong></td>
<td>The first BUR of Thailand and capacity building on NAMA, MRV and national registry system</td>
</tr>
<tr>
<td><strong>OUTCOME 6</strong></td>
<td>TNC-BUR Reports’ Preparation, Translation, and Publication</td>
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## Project Results Framework: GHG Inventory

<table>
<thead>
<tr>
<th>Indicators</th>
<th>Baseline</th>
<th>Targets @end of Project</th>
</tr>
</thead>
<tbody>
<tr>
<td>National GHG Inventory for 2011 and 2013</td>
<td>National inventory report in the SNC</td>
<td>National GHG Inventory chapter for the BUR and TNC are completed</td>
</tr>
<tr>
<td>QA/QC, key sources analysis, GPG applied</td>
<td>Documents/software prepared for the SNC</td>
<td>National inventory database and achieving is established</td>
</tr>
<tr>
<td>National inventory process is institutionalized</td>
<td>Database available under the SNC process</td>
<td>National inventory process is institutionalized</td>
</tr>
<tr>
<td>Database and achieving is enhanced</td>
<td></td>
<td></td>
</tr>
<tr>
<td>National capacity enhanced</td>
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Essential Insights

• National Inventory System (NIS) and effective training programs support sustainability of the development of NC and BUR.
• Seven principles in the Inventory Project Progress Indicator (IPPI) tool would help the country to prepare better National GHG Inventories.
• ICA provides good inputs for next reports.
• Local approval for submission to UNFCCC is a time consuming process in some countries.
• Language editor is essential.
• Knowledge sharing is challenge.
• M&E requirements from UNDP and GEF need attention.
M&E Framework

• **Project start**: Inception Workshop
• **Quarterly**: project progress report and risk analysis
• **Bi-annual progress**: survey questionnaire to indicate progress and identify bottlenecks as well as technical support needs.
• **Periodic monitoring**
• **Evaluation**: mid-term and final evaluation
• **Financial audit**
• **Learning and knowledge sharing**
THANK YOU

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Inclusive Green Growth and Sustainable Development
United Nations Development Programme, Thailand

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BACK UP SLIDES
TNC/BUR Project Management

• **Project Board**: Making management decisions for the project when guidance is required by the Project Management Unit

• **Project Management Unit (PMU)**: Overall management, monitoring and coordination of Project implementation

• **Project Manager**: ensure that the project produces the results specified in the project document.
Measuring Inventory Improvement, and Understanding its Key Factors

Presented by:
Mr. Joshua Forgetson
Senior Technical Officer
USAID Low Emissions Asian Development (LEAD) Program
ICF International (USAID Contractor)

January 26, 2017
The IPPI Tool

• IPPI = Inventory Project Progress Indicator
• Excel-based tool that quantitatively and qualitatively evaluates the quality of (mainly national) GHG inventories
• USAID-funded, with 10% contribution from UNFCCC
• USAID and USEPA built it
• What we learn when we use the tool to evaluate a series of national GHG inventories from a given country:
  ○ Improvements
  ○ The impact of capacity building efforts
• USAID LEAD used it successfully with program countries in South and Southeast Asia between 2013 and 2016
Demonstrating USAID LEAD’s Impact

- Six countries can prepare better national GHG inventories.
- USAID LEAD evaluated inventory documents created before its capacity building activities, and documents created after.
- Every country improved.
Seven Principles of the IPPI Evaluation

- **Transparency**: The data, assumptions, and methods in the inventory are presented clearly.
- **Accuracy**: Emission and removal estimates are as close as possible to their true values.
- **Consistency**: “Consistent” inventories are based on the same assumptions and equations.
- **Completeness**: The inventory includes estimates for each of the country’s emission sources and removal sinks.
- **Comparability**: The emissions and removals in the inventory have been estimated in accordance with the IPCC Guidelines.
- **Institutional Arrangements**: The inventory has been prepared systematically, in that the entities involved have effectively coordinated their varied roles.
- **Improvements**: The inventory identifies future needs and prioritized actions, which are explained in an inventory improvement plan.
All Countries

- Greatest advancements: Transparency, Accuracy, Improvements
- Future focus areas: Transparency and Accuracy

![Average, all countries](image)
Country 1

- Completeness: The inventory in the Third National Communication is set to include many important elements the Second NC did not.
- Institutional Arrangements: It is now much clearer who is responsible for the inventory and who will support it.
- Improvements: An important part of the TNC inventory, in contrast with the SNC.
- Essential Insights
  1. Intensified government interest
  2. Commitment to completing the EPA Template Workbook
  3. Steady support from in-country experts
Country 2

- Transparency: In its 1st Biennial Update Report (BUR), Country 2 describes its data sources and methods clearly, creating a reproducible inventory.
- Accuracy: The latest inventory used better methods and data than the previous inventory, and implemented extensive QA/QC plans.
- Essential Insights
  1. Instrumental staff: Full-time on-site leadership from expert supported by UNDP; long-term, motivated government staff; returning to the same contractors from academia for multiple inventories, and investing in their capacity
  2. Knowing how the inventory will be used
Country 3

- **Accuracy**: Country 3 is now using country-specific data instead of default assumptions, and a peer review committee is performing sector-specific Quality Assurance.
- **Comparability**: For an inventory created for its economic development plan, Country 3 used the 2006 IPCC Guidelines for the agriculture sector and transportation.
- **Institutional Arrangements**: Inventory responsibilities are outlined; non-governmental entities are supporting the inventory; and government is dedicating more resources to it.
- **Essential Insights**
  1. Whatever the country’s culture of record-keeping may be will impact accuracy. So, it is possible to be complete while at the same time being less useful than possible because data are only approximate. Difficult for the core inventory team to influence, but institutional arrangements offer an opening.
Country 4

- **Accuracy**: Country 4 is now developing country-specific emission factors for key emission sources, and has instituted extensive QA/QC procedures. These are linked to improvement planning.
- **Institutional Arrangements**: Recent national CC action plan identified need to develop a GHG inventory system; presidential order identified ministries’ roles and responsibilities.
- **Improvements**: All sectors must now have their own improvement plans.
- **Essential Insights**
  1. Presidential backing
  2. Stability of inventory body and contributing ministries
  3. Long-standing effort to record and elaborate upon procedures in order to reproduce them, i.e., to create an internal inventory operations manual
  4. Better institutional arrangements have allowed the inventory team to influence what data line ministries collect, thus improving accuracy
Country 5

- **Accuracy**: Advanced methodologies for more categories; extensive QA/QC, uncertainty assessed.
- **Completeness**: Key category analysis included; GHG estimates provided in aggregate and gas-by-gas for CO₂, CH₄, and N₂O; indirect emission estimates included for CO, NOₓ, NMVOCs, and SOₓ.
- **Improvements**: Areas needing improvement for each sector are described.
- **Essential Insights**
  1. Transfer of responsibility can cause short term obstacle while new responsibilities and skills are adopted
  2. Different participants at each training is an impediment to building knowledge
  3. Nevertheless, strong leadership with long experience, plus a clear national vision for low emission development and mitigation, can result in a strong inventory. Also, again, Prime Ministerial leadership is a high-influence factor
Country 6

- Transparency: Improved documentation of methods, assumptions, and data sources.
- Improvements: Measures are documented for nearly all sub-sectors, and a decision of the Prime Minister lists the tasks and responsibilities of all associated agencies with relation to inventory improvements.
- Essential Insights
  1. Prime ministerial leadership
  2. Semi-governmental office responsible for own funding
  3. Highly motivated staff operating in a supportive environment
The Take-Away

There are FOUR key ingredients to improving your national GHG inventory: 1) Knowledge; 2) Motivation; 3) An enabling environment (help, do not hinder); and 4) Recognition. Each of the following influencing elements we observed affect one or more of these four ingredients.

1. Government interest; presidential/prime ministerial leadership (e.g., directive, decree, or sitting on the inventory board).
2. Knowing how the inventory will be used. Clear national vision for low emission development and mitigation can result in a strong inventory. Think: using your inventory to create evidence-based policies and help you meet your NDCs. This incentivizes improvement by adding value to the inventory.
3. Using learning tools, like the EPA Template Workbook, EPA Inventory Toolkit, or IPCC Guidelines and related courses (e.g., GHGMI online courses on IPCC Guidelines)
4. Taking advantage of and learning from in-country experts funded by development partners
5. Having instrumental staff, like long-term government officers or consultants (returning to the same contractors for multiple inventories
6. Investing in the capacity of government staff or contractors
7. Stability of inventory body and contributing ministries. However, stability of staff is not alone a predictor of inventory quality. Some staff or offices may not be the best for the assignment. So, while changing the responsible office/staff can cause short term obstacles, could be best in long term. Just remember to not send different participants to each training – this impedes the accumulation of knowledge in the people who need it.
8. National record-keeping practices can affect accuracy. Institutional arrangements offer an opening to influence what data are collected, archived, and shared.
9. Investing in recording and elaborating upon procedures in order to reproduce them, i.e., to create an internal inventory operations manual.
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www.LowEmissionsAsia.org
Institutionalizing the National GHG Inventory

Philippine Case Study

Webinar: Strengthening Your National Greenhouse Gas Inventory System: Essential Insights

USAID LEAD and UNDP Inclusive Green Growth and Sustainable Development Unit

Ms. Sandee G. Recabar
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Climate Change Commission
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National Climate Change Action Plan (2011 – 2028) : Knowledge and Capacity Development

<table>
<thead>
<tr>
<th>1.2.3. Implement a national system for monitoring greenhouse gas emissions.</th>
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</thead>
<tbody>
<tr>
<td>a. Develop a system of national GHG inventory from various sectors</td>
<td>System to inventory GHG emissions developed and implemented.</td>
</tr>
<tr>
<td>b. Develop a policy for government agencies’ reporting of GHG emissions from sectors within their mandates</td>
<td>Policy on government agencies’ monitoring and reporting of GHG from sectors within their mandate developed and implemented.</td>
</tr>
<tr>
<td>c. Develop an integrated data and information system on greenhouse gas with the Climate Change Commission</td>
<td>Integrated database and information system of GHG developed.</td>
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</table>
Timeline of Initiatives for the National GHG Inventory

2000: INC Submitted GHG Inventory year: 1994

2009: RA 9729: CC Act

2011: GHG Inventory component of the SNC completed

NCCAP
EC LEDS MOU
LECB Programme Initiated
SEA GHG Engagement

2012: RA 10174: CC Act as Amended

Start of capacity building activities

2013: Information Matters Project kick off

2014: EO 174 Signed

Guidance Document For EO 174

2015: Conduct of the National GHG Inventory by Government Agencies as per EO 174

2016: Draft GHGI

2017: NICCDIES (MRV Sys) operational
EXECUTIVE ORDER 174 s 2014

- Executive Order 174 (signed by the President)
- Functions and role of CCC as overall lead
- Functions and responsibilities of Lead agencies
- Funding
- GHG Inventory in the context of sustainable development
- Established to institutionalize the GHG inventory management and reporting system in relevant government agencies to enable the country to transition towards a climate-resilient pathway for sustainable development.
National GHG Inventory Plan

Climate Change Commission (Over-all Coordinator for GHG)

- Archiving System
- Energy
- LULUCF
- Transport
- Agriculture
- Waste
- Industry
- QA/QC

- Department of Energy
- DENR (Forest Management Bureau)
- Department of Transportation and Communication
- Department of Agriculture Philippine Statistics Authority
- DENR (Environmental Management Bureau)
- DENR (Environmental Management Bureau)

External Reviewer
Philippine M&E/MRV System for CC: National Integrated Climate Change Database Information and Exchange System (NICCDIES)

Means of Implementation

- Climate Finance (CCET, PSF, GCF, GEF, Etc)
- Technology Dev’t & Transfer (TNA)
- Capacity Building (CNA)

Results-Based Monitoring and Evaluation System of the NCCAP
Success Factors for Institutionalizing the National GHG Inventory

- Strategic direction to institutionalize the NGHGI
- Capacity Building activities
- Legal instrument
- Co-benefits of conducting the NGHGI