GHG Inventory Capacity Building in Developing Countries

Expert Meeting on Enhancing Coordination of Capacity-Building Activities

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Past and Current GHG Inventory Improvement Projects

Central America: Regional GHG inventory improvement project with U.S. AID (completed phase I, 2004-2007), **phase II (2007-2010)**

South East Asia: Regional GHG inventory improvement project in collaboration with U.S. AID, UNFCCC, Japan and other regional experts

China: Initiated cooperative activities with NDRC, includes translation of existing tools and use in provinces

Challenges for Inventory Compilation in Developing Countries

- Small teams with limited resources and multiple responsibilities;

- Incomplete or non-existent activity data;

- Lack of country-specific emission factors;

- Insufficient documentation of methods and data sources used in previous inventories;

- Difficulty retaining expertise

Characteristics of USG Inventory Capacity Building Efforts

- Two major components for successful capacity building:
  - Improving the institutional capacity (e.g., institutional relationships, documentation, QA/QC)
  - Providing technical assistance on inventory methods and AD collection
- Overall goal is to develop a solid Tier 1 or 2 AFOLU inventory
  - The process of building/completing an inventory is capacity building
  - Provides a solid foundation to build on for the future
- Emphasize on Activity Data:
  - It's not good enough to just explain the methods

Model for a US Government GHG Inventory Capacity Building Project

- Scoping Meeting
  - Invite countries in the region and donors who are interested
  - Determine objectives and level of support from the donors
  - Hold individual break-out meetings with countries---understand their needs
- Select project team based on objectives and coordinate funding
  - Identification of a "Regional Coordinator" is key
- Regional kick-off workshop
  - Countries present on current state of GHG Inventory
  - EPA overview of IPCC methodologies, AD needs and tools
- In-country workshops (2-4 visits ideal)—*Learn by Doing Not Just Training*
  - Assist with assembling activity data (GIS maps, data collection)
  - Assist with utilizing tools (EPA template workbook and ALU)
- Regional wrap-up workshop
  - Countries present on their improved inventory
  - Discussion on further assistance that may be needed
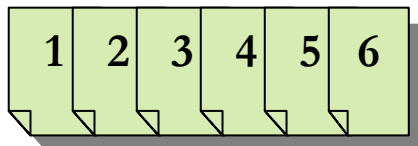
EPA GHG Inventory Capacity Building Tools
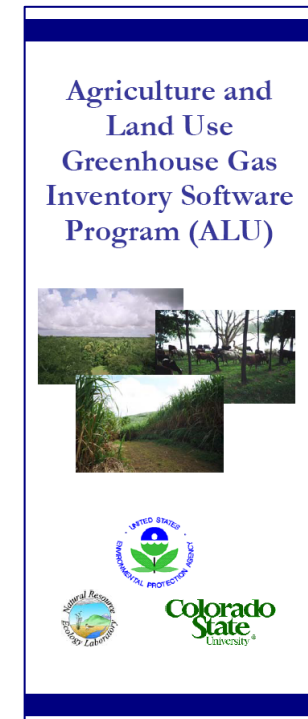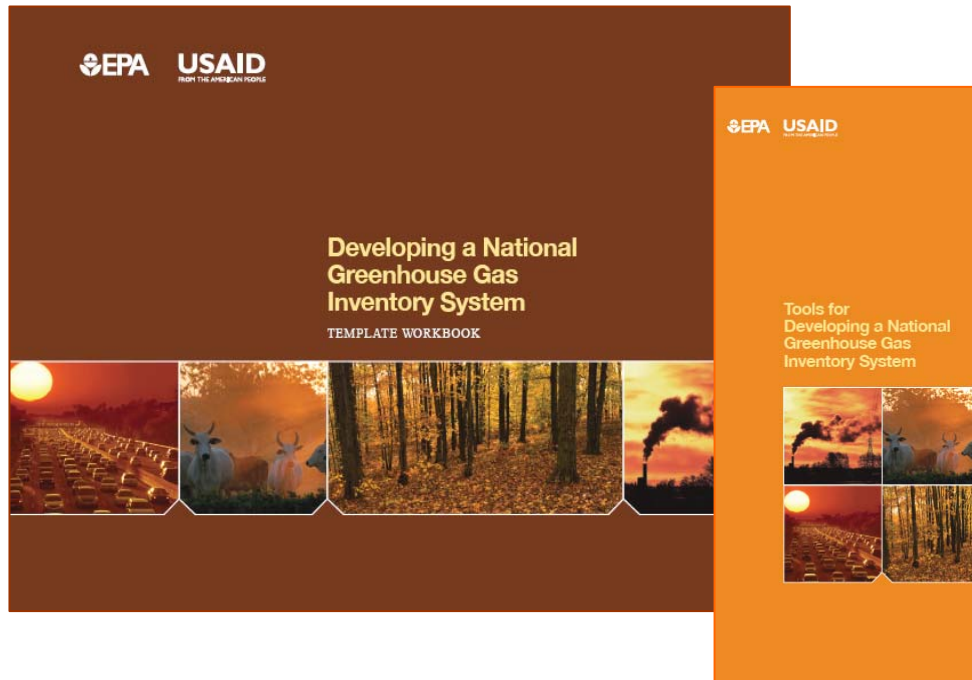
- **National System Templates** to document, institutionalize and streamline the inventory management process

- **Agriculture and Land Use (ALU) Tool** to compile AD and perform inventory calculations

Template Work: Designed to Build Institutional Memory

Introduction

Chapter 1 - Identification of Key Sources

1

Chapter 2 - Documentation of Institutional Arrangements

2

Chapter 3 - Source-by-Source background document (methods and data)

3

Chapter 4 - Description of Archiving system

4

Chapter 5 - Description of QA/QC procedures

5

Chapter 6 - National Inventory Improvement plan

6

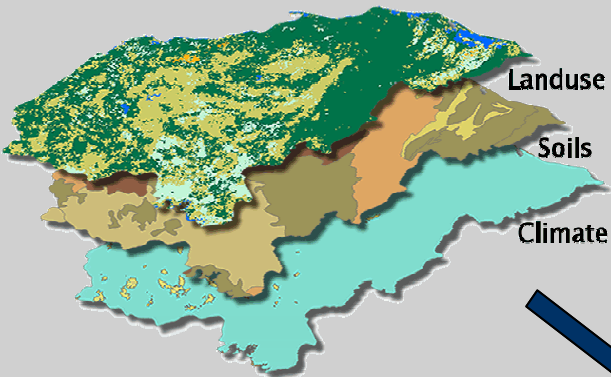## The preparation of the report will be as useful as the report itself:

1 2 3 4 5 6

- • Preparation of National Communication
- • Background for future GHG inventories
- • Priorities for future capacity building projects

Agriculture and Land Use (ALU) Software

- **Greenhouse Gas Inventory Software Program**
  - Estimates emissions and removals for Agriculture and LULUCF
  - Based on IPCC methods (96 GL, GPG & 2006 GL)
  - Accommodates IPCC Tier 1 and 2 approaches
- **User-interface guides compiler through inventory process**
  - Activity data entry, emission factor assignment and emission/stock change estimation
  - Produces emission reports and archives all inputs and calculations
- **Activity data workbook/spreadsheet and Help Manual**

Inventory Framework: ALU Tool

GIS Spatial Data:
Land Use/Cover,
Soils and Climate

Landuse

Soils

Climate

**ALU
Inventory
Software Tool**

Emission Factors:
IPCC Defaults or Country-Specific
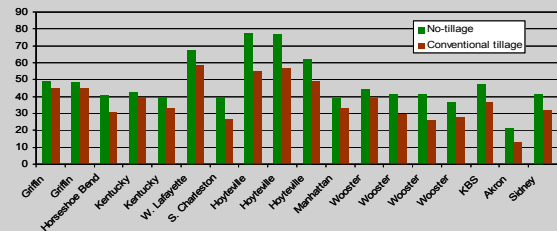
Management Activity Data:
National Agriculture and Forestry
Statistics

ALU Tool (Version 2.0.1.6)

File   Help

Agriculture and Land Use National Greenhouse Gas Inventory Software

Module I: Activity data entry

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Current Database: **example II**

Create New /
Change Database

Available Sessions by Source Category:
Source Category:

Biomass C Stocks

Subsource Category: Reset

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Module II: Assign Emission Factors

Module III: Complete Emission Calculations

Data Management Utilities

Session
Status

Session & File
Management

Database
Management

Quit Application

Module I: Specify Activity Data

Primary Data Specification

- ◉ Land Use and Management
- ○ Livestock
- ○ N Fertilizer
- ○ Liming
- ○ Sewage Sludge Amendments

Select

Secondary Data Specification

- ○ Crop Residue Management
- ○ Livestock Management
- ○ Rice Management
- ○ Savanna/Grassland Burning
- ◉ Biomass Carbon Loss

Select

QA/QC Primary Data   QA/QC Secondary Data

Module II: Specify Emission/Stock

le
on-CO2 GHG

Biomass C Stocks
○ Soil C Stocks

Select

QA/QC Emission/Stock
Change Factors

Module III: Inventory Calculations QA/QC

- ○ Enteric Methane
- ○ Manure Methane
- ○ Manure Nitrous Oxide
- ○ Biomass Burning Non-CO2 GHG
- ○ Soil Nitrous Oxide
- ○ Rice Methane
- ◉ Biomass C Stocks
- ○ Soil C Stocks

Select

Create Emissions
Report

USDA Forest Service – Carbon in Forests and Other Treed Lands

- Provide technical assistance with design of national/local forest inventories.

- Working DR Congo, Dominican Republic, Peru, Guyana, and Mexico

- Indo-Pacific Forest Carbon Study: Mitigation and adaption strategies in peat forests and mangroves in Asia Pacific

- Scientific exchange, training, and technical assistance with instruments such as eddy flux towers is available

EPA Efforts Looking Forward

- ALU software enhancements
  - Mitigation module
  - Uncertainty analysis
- SE Asia Phase II
  - Complete Ag/LULUCF inventories
  - LULC maps
  - Mitigation assessment
- SE Africa—Ongoing scoping effort

Contact Information

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  http://www.nrel.colostate.edu/projects/ghgtool
- EPA Inventory Preparation Tools:
  www.epa.gov/climatechange/emissions/ghginventorycapacitybuilding

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