

## You Can't Manage What You Can't Measure: The Importance of National Greenhouse Gas Inventory Systems

A greenhouse gas (GHG) inventory is a cornerstone of a country's reporting obligations to the United Nations Framework Convention on Climate Change (UNFCCC) – the mechanism by which Parties estimate and report on their national sources of GHG emissions, as well as any carbon capture (also known as carbon “sinks” or sequestration). All countries must include a GHG inventory for a specified base year and for specified sectors in their national reports (known as “national communications”) to the UNFCCC on a periodic basis. Developing countries receive funding from the Global Environment Facility to prepare these national communications.

### It all adds up

**Beyond UNFCCC obligations, GHG inventories can be a valuable tool for policy makers to understand development trends, improve resource management and energy efficiency, and develop policies and programmes to address climate change. More accurate GHG inventories enable more informed policy choices, with greater confidence.**

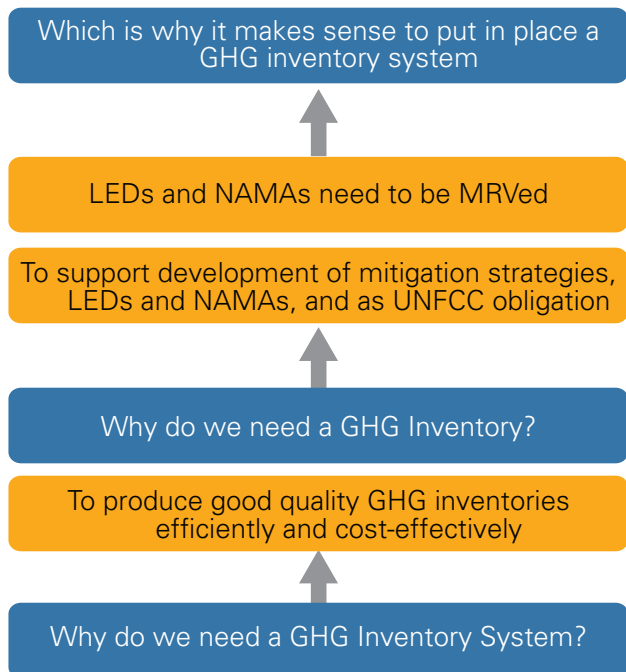
**In the context of the Low-Emission Capacity Building (LECB) programme, a high-quality GHG inventory provides the underlying scientific basis for Nationally Appropriate Mitigation Actions (NAMAs) and Low Emission Development Strategies (LEDS), and sets the foundation for the Measuring, Reporting & Verification (MRV) requirements associated with NAMAs and LEDS.**

In contrast, a national GHG inventory system creates a process for documenting the procedures and processes involved in estimating GHG inventories and ensuring that data, information, and assumptions are reported and archived. Robust national inventory systems also include quality assurance and quality control (QA/QC) measures and introduce legal and institutional mechanisms for ensuring periodic reporting of necessary data. In essence, a national inventory system is a set of relations between people and institutions that is described in several documents to ensure: i) the sustainability of the inventory preparation in the country, ii) consistency of reported emissions, and iii) standard quality of results. Thus, an inventory system comprises both the documentation of the GHG inventory itself (i.e., what was calculated, how, and what does it mean) as well as documents “around” the inventory describing how to make an inventory, e.g., workplans, manual of procedures, legal and organisational basis, responsibilities, reporting obligations, etc (UNDP, 2005).

Although most developing countries have made significant improvements in carrying out GHG inventories, very few attempts have been made to put in place national GHG inventory systems. The most common constraints reported by developing countries in this context include lack of: adequate archiving and management of data; application of QA/QC procedures in inventory compilation; procedures to fill data gaps; and use of methodologies to assess uncertainties of GHG inventories, among others.

There is no one specific approach to putting in place a national GHG inventory system – the system should be designed based on national circumstances and processes. In particular, consideration should be given to the processes already being used by key data providers, such as line Ministries and/or a national statistics bureau, in order to streamline data collection in a way that it can be easily adapted for GHG inventory reports.

Among the recommended elements of a national inventory system are:



1. Description of the institutional arrangements for GHG inventory management, i.e., who is the designated inventory agency and GHG inventory team and what are the sectoral roles and arrangements (e.g., are there formal arrangements with data providers, how is information and data shared, etc).
2. Documentation of the methodologies, data-sets (including activity data and emission factors) and assumptions used to estimate emissions and removals from each category.
3. Description of QA/QC procedures, i.e., who is responsible for QA/QC, how is the QA/QC conducted, etc.
4. Description of the data archiving system.
5. An inventory improvement plan, with short, medium and longer-term goals.
6. A legal act or decree to define responsibilities, ensure budgetary resources, and provide access to data.

## Useful tools and resources

The Intergovernmental Panel on Climate Change (IPCC) oversees the elaboration of internationally adopted approaches for estimating GHG emissions, as well as good practice guidance. These materials are available in all UN languages:

- IPCC Guidelines for National Greenhouse Gas Inventories ([1996 Revised, 2006](#))
- IPCC 2000: [Good Practice Guidance & Uncertainty Manual](#) (GPGAUM)
- IPCC 2003: [Good Practice Guidance for Land-Use, Land-Use Change & Forestry](#)

UNDP, through the GEF-funded National Communications Support Programme, and US-EPA have also prepared complementary guidance materials that describe how to set up a GHG national inventory system:

- UNDP 2005: [Handbook: Managing the National GHG Inventory Process](#)
- US EPA/US AID 2011: [Template Workbook: Developing a National GHG Inventory System](#) (English, Spanish, French) and [Key Category Analysis Excel tool](#) (English, Spanish)



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