Module 3.1 National data organization and management

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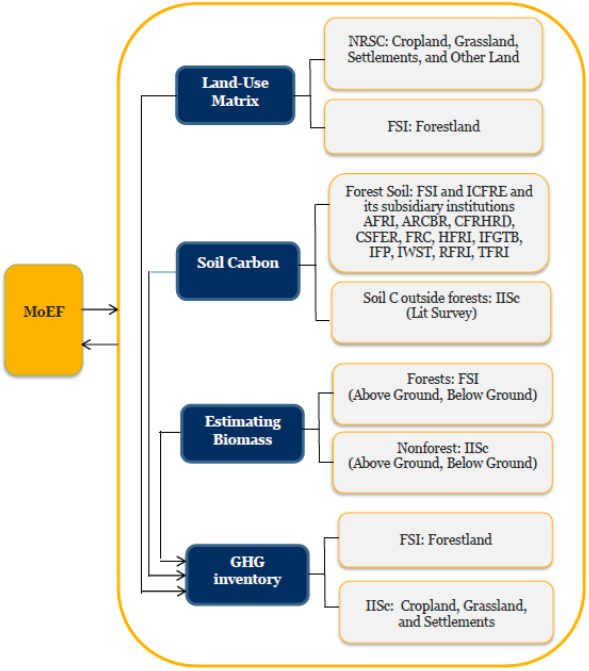

After the course the participants should be able to:

- Explain the importance of having a clear and stable institutional set-up
- Describe the different types of roles and responsibilities that agencies may have in organizing and managing data
- Understand the procedures on how to ensure IPCC reporting principles when collecting and managing data associated with MRV and carbon accounting

V1, May 2015

WAGENINGEN UR For quality of life

GOFC-GOLD Global Observation of Forest and Land Cover Dynamics

FOREST CARBON PARTNERSHIP FACILITY

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Outline of lecture

1. **Institutional framework**
2. Data management

Importance of institutional framework for MRV and data management

- To have different actors and sectors work together for efficiency and long-term sustainability
- To clearly define roles and responsibilities of involved agencies and stakeholders
- To improve coordination among ministries, subnational governments, and other agencies
- To improve efficiency and long-term **sustainability**
- To coordinate decision making and activities across political levels

Clear and stable institutional arrangements

- Institutional framework is important for best practices such as **documenting** and **archiving**
- Institutional memory requires documentation so other parties understand the nature of the data
- Benefits of institutional arrangements:
  - The inventory team knows who is providing data
  - If responsibility is clearly communicated to data providers, sector leads can be confident that data is available
  - Institutional memory is created if continuity exists in the arrangements
  - Appropriate agencies and experts are identified early on in the process

Requirements for institutional framework for MRV

- **Coordination**: High-level national coordination and cooperation mechanism to:
  - Link forest carbon MRV and national policy for REDD+
  - Specify and oversee roles and responsibilities
- **Measurement and monitoring** protocols and technical units for acquiring and analysing data
- **Reporting** unit for collecting data in central database -> national estimates, international reporting, etc.
- **Verification** framework

Recommended institutions for MRV

- A national coordination and steering body or advisory board, including a national carbon registry
- A central carbon monitoring, estimation, reporting, and verification authority, including forest carbon measurement units
- Spatial data infrastructure and/or forest and land-use information system

→ Actual institutional arrangements depend on national circumstances

→ Among others *EPA* can be used to summarize existing institutional arrangements and identify gaps and ways of improvements (see next section)

Some options for institutional arrangements

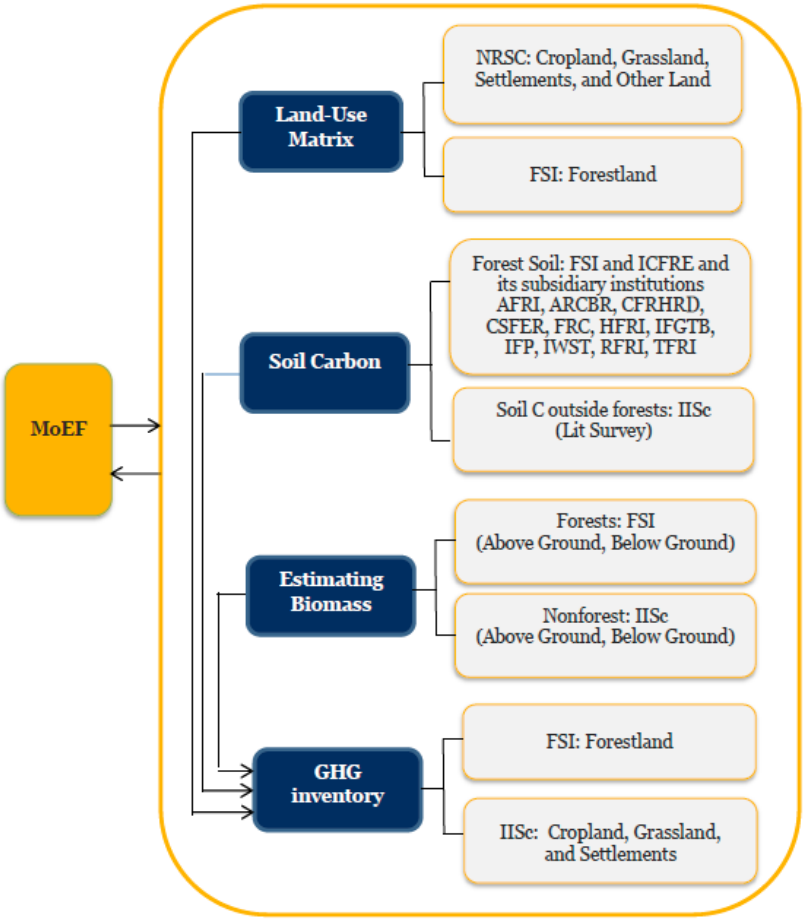
- Actual institutional arrangements depend on national circumstances:
  - Centralized vs. decentralized
  - In-sourced vs. out-sourced
  - Single agency vs. multiagency
  - Integrated vs. separate

Source: Hewson, Steininger, and Pesmajoglou 2013, ch. 2.4.

Example of institutional arrangement in India

Work allocation and implementation arrangements for developing the LULUCF GHG emissions inventory in India

Source: Bhatacharya 2012



Recommendations for institutional arrangements: Data management system

- Have high-level commitment from government
- Involve all relevant agencies
- Establish long-term financial support
- Invest in maintaining human capital (technical staff, institutional memory)
- Build subnational capacity and coordination
- Establish policy framework: e.g., to formalize **data sharing** and communication, legal arrangements, partnership agreements, access rights, etc.

Outline of lecture

1. Institutional framework
2. **Data management**

Importance of a national data organization and building a data management system

- Importance of national data organization and management:
  - Provide input to support policies and decisions
  - Improve coordination among ministries, subnational governments, and other agencies
- Developing a data management system:
  - Data integration (spatial and nonspatial data from multiple sources)
  - Data access
  - Data sharing among ministries and agencies

Concept of spatial data infrastructure

- Framework to facilitate and coordinate exchange and sharing of spatial data
- Enabling platform that links people to data

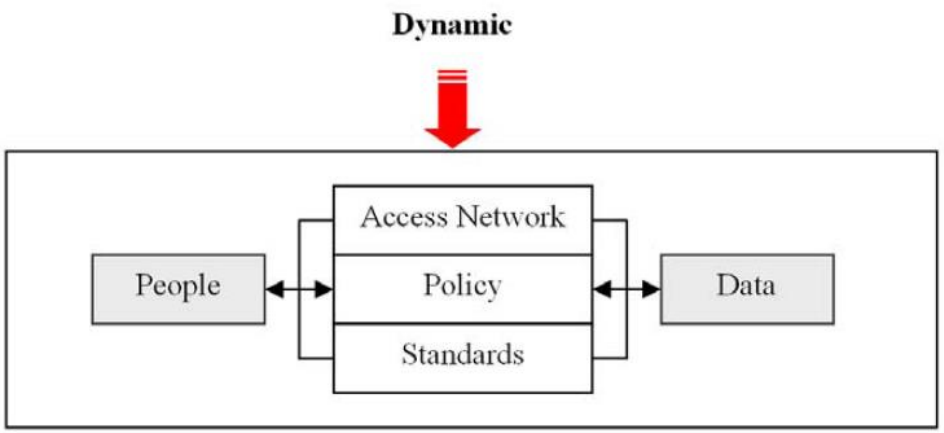
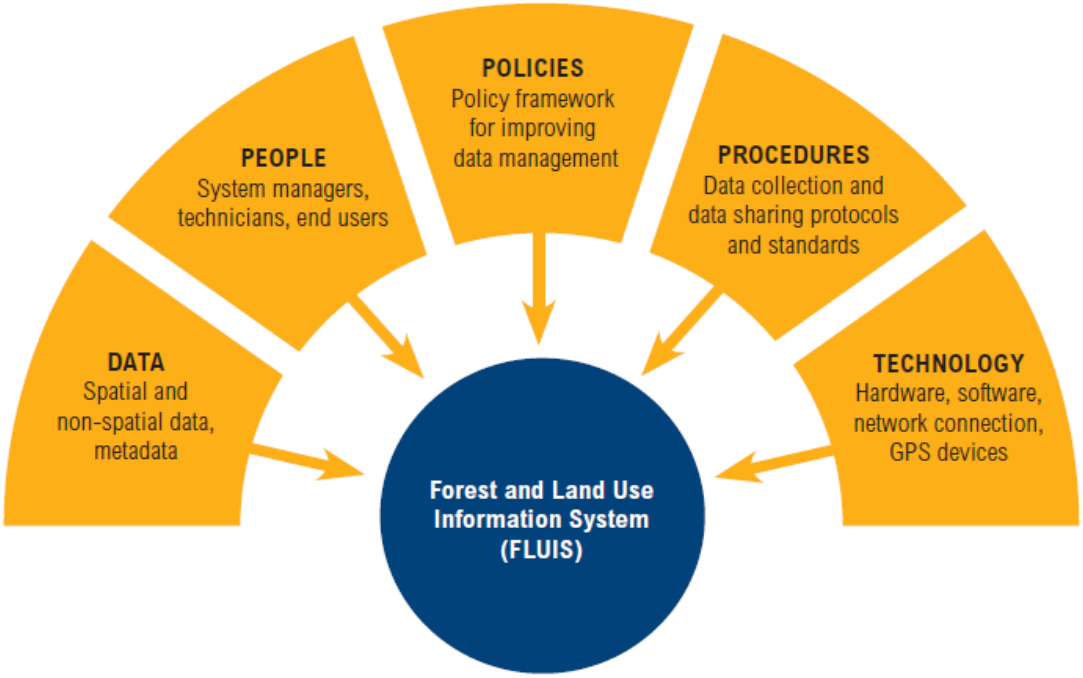


Figure 1.1: SDI nature and Components

Source: Crompvoets et al. 2008.

Forest and land-use information systems (FLUIS)

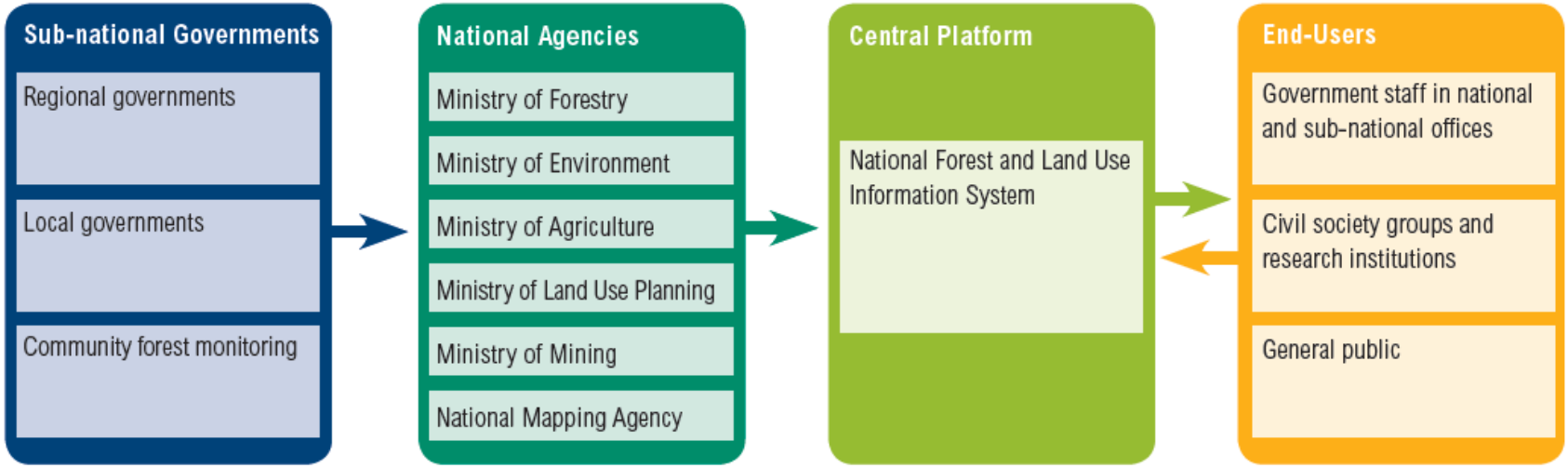
- Data management system for storing, organizing, and integrating large amounts of forest and land-use data from multiple sources



Components of a FLUIS

Source: Cheung et al. 2014 .

FLUIS: Sample flow of data from data collectors to end-users



Source: Cheung et al. 2014.

Examples: DRC & Indonesia

- DRC webportal empowered by UN-REDD
  - Web-based tool built on open source

  GIS platform with map-viewing

  application
  - In progress: Uganda, RoC, Ethiopia

- Indonesia's One Map policy
  - One set of authoritative maps
  - Web-based portal with commercial server for sharing of maps, geodatabases and tools

Système National de Surveillance des Forêts de la RDC

2005

Commentaires

http://rdc-snsf.com

Informations sélectionées

a Carte

ministratives

REDD+

REDD+

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Orientale

Equateur

Nord-Kivu

Maniema

Bandundu

Sud-Kivu

Kasaï-Oriental

Kasaï-Occidental

Provinces: Kasaï-Occidental

Statistics

Causes de la déforestation

DRC National Forest Monitoring Portal

http://unredd.geo-solutions.it/index2.html

DRC National Forest Monitoring System

Ministère de l'Environnement, Conservation de la Nature et Tourisme

transparency

Feedback

Francais

English

FACET Forest Classification

Administrative Areas

Provinces

Administrative Units

REDD+ Activity

REDD+ Registry

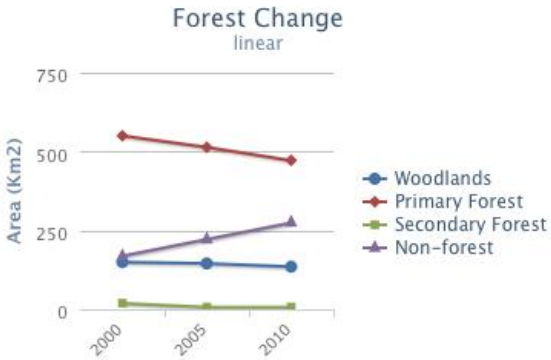
Land-use

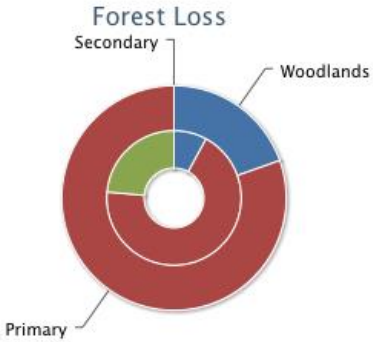
Forest Area Changes

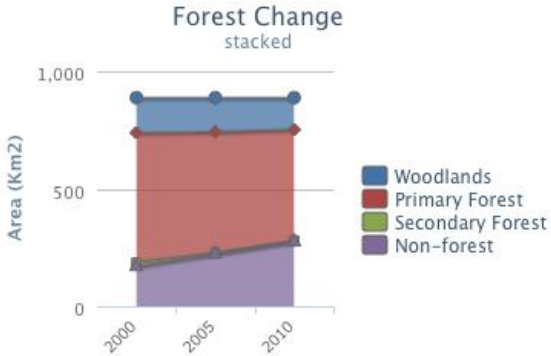
Safeguards

Other

Kinshasa







Data source OSFAC

Data source OSFAC

FACET Forest Classification

No Data (outside DRC)

Non-forest areas

Water bodies

No Data (within DRC)

Data management needs for preparing a national GHG inventory (1/3)

Data collection and data management should comply with five IPCC principles: *transparency, completeness, consistency, comparability, accuracy* (See Module 1.1 and Module 3.3 for more details)

Data collection and assimilation

- Collecting AD and collecting data to develop EF:
  - Ensure quality of data through planning, preparation, and management of inventory activities
  - Use national standards and best practice for measuring forest area and carbon stock (See Modules 2.1 and 2.2 on AD and 2.3 and 2.5 on EF)

Data management needs for preparing a national GHG inventory (2/3)

Data assimilation and processing:

- Processing of data into a suitable format for estimating anthropogenic GHG emissions and removals
- Estimating anthropogenic GHG emissions by sources and removals by sinks
- Implementing uncertainty assessments

Data management needs for preparing a national GHG inventory (3/3)

Data management in the context of MRV and carbon accounting:

- Organization of MRV data into a reporting format
- Implementing quality assurance / quality control procedures for national and subnational MRV (see next slide)
- Verification of data

Data archiving:

- Archive all relevant data, information, methods, explanations:
  - Database management process for archiving, storing, and retrieving information (using a FLUIS)

Quality assurance / Quality control

- QC procedures for key categories have a significant contribution to the total emissions/removals in terms of:
  - Absolute level (all inventory activities that account for 95% of the total GHG emissions)
  - Trend
  - Uncertainty in emissions and removals
- QC for categories in which significant methodological and/or data revisions have occurred
- In accordance with guidance provided by IPCC

→ For more information, see section 5.4 of IPCC (2003) GPG-LULUCF.

National System Templates from the U.S. Environmental Protection Agency (EPA) – new version 2016

EPA provides templates to document and organize different components of the national inventory system:

- *Template 1: Institutional arrangement*
- *Template 2: Methods and Data Documentation* (documenting and reporting origin of methodologies, activity datasets, and EFs)
- *Template 3: Description of QA/QC Procedures*
- *Template 4: Description of Archiving System*
- *Template 5: Key Category Analysis* (indicates most important GHG emissions by sources and removals by sinks)

In summary

- Clear and stable institutional set-up and clearly defined **roles and responsibilities are important** for preparation of GHG estimation for the LULUCF sector.
- Recommended institutions include a national coordination and steering body or advisory board; a central carbon monitoring, estimation, reporting, and verification authority; and a spatial data infrastructure and/or forest and land-use information system (FLUIS).
- A data management system for storing, organizing, and integrating large amounts of forest and land-use data from multiple sources and connects data collectors with end-users.
- Data management needs include collection, assimilation, processing, estimation, uncertainty assessment, QA/QC, verification, and archiving.