Tools for National Forest Monitoring Systems in the context of REDD+

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UN-REDD Programme

- Supports countries benefit from REDD+ (UNFCCC)
  - National REDD+ Strategies and Readiness

- Established in 2008 by FAO, UNDP & UNEP
  - Response to UN Framework Convention Climate Change (UNFCCC) Bali Action Plan 2007

- Offers UN Joint Program: Delivering as One UN

- Agreed delivery platform with Forest Carbon Partnership (FCPF) and Forest Investment Programme (FIP)

- Current contributions: US$ about 70 million (without pledges) from donors Norway, Denmark, Spain and Japan
National Programmes (NP)

Countries receiving support to National Programmes: Bolivia, Cambodia, Democratic Republic of the Congo (DRC), Ecuador, Indonesia, Nigeria, Panama, Papua New Guinea, Paraguay, the Philippines, Republic of Congo, Solomon Islands, Sri Lanka, Tanzania, Viet Nam and Zambia.

Other partner countries: Argentina, Bangladesh, Benin, Bhutan, Cameroon, Central African Republic, Chile, Colombia, Costa Rica, Ethiopia, Gabon, Ghana, Guatemala, Guyana, Honduras, Ivory Coast, Kenya, Malaysia, Mexico, Mongolia, Myanmar, Nepal, Pakistan, Peru, South Sudan, Sudan, Suriname and Uganda.

www.un-redd.org
6 UN-REDD Work Areas

- MRV and Monitoring
- REDD+ Governance
- Stakeholder Engagement
- Multiple Benefits of forests/REDD+
- Transparent Equitable Accountable Management of REDD+ Payments
- REDD+ as Catalyst of Green Economy
Lead Implementation Role

MRV in the NP: FAO

Measurement (M), reporting (R), verification (V) (MRV)

- Cornerstone for carbon monitoring
  - national communications to UNFCCC
  - starting point for R(E)L establishment
  - supports national / sub-national implementation of incentive systems

- Support to policy formulation and feedback
  - knowledge of drivers of change
  - information on multiple benefits
The IPCC’s methodological approach to calculate anthropogenic GHG emissions by sources and removals by sinks related to forest land.
This information provides the basis to compile a GHG inventory

1) Activity data (AD)
   - Area / forest cover change data (hectares per year)
   - Achieved using a satellite land representation system (SLRS)
   - So far mainly based on Landsat, MODIS, upcoming RapidEye, DMCii in some cases as well as other commercial (VHR) data

2) Emission factors (EF)
   - Forest carbon change
   - Assessment of biomass, carbon stocks and emission factors
   - Data are obtained from national forest inventory (NFI)
   ! Upcoming: database and software based on allometric relationships gathered worldwide to calculate EFs and biomass, Initiative of FAO, CIRAD and University of Tuscia (to be launched in Doha) (L. Picard, L. Saint-André and M. Henry)

3) GHG Inventory (GHGI)
   - GHG assessment to determine national mitigation performance
   - Based on the data collected from the NFI and SLRS
   - UNFCCC templates available
Phase I
- Readiness
  - Development of P&Ms

Phase II
- Implementation of P&Ms and demonstration activities

Phase III
- Positive incentive for verified performance

REDD+ PHASES

Year 1
Capacity building & development

Year 2
Monitoring System

Year 3
SLRS

Phase I
REDD+ Safeguards Information System

Phase II
Monitoring System

Phase III
MRV System

SLRS: AD
NFI: EF
GHG-I: CO2e
Monitoring Systems

• To assess whether REDD+ is resulting in net positive outcomes, i.e. results-based

• In Phase 2 of REDD+
  – To monitor the outcomes of demonstration activities

• In Phase 3 of REDD+
  – To monitor the outcomes of national policies and measures on all the national territory

• Technical requirements
  – Satellite Land Monitoring System (operational remote sensing)
  – Web-GIS interface (for transparency, open access)
Monitoring systems : the end

- To sustainably manage forest at national level

- To fulfill the requirement of the REDD+ Decision (1/CP.16)
  (establish an operational NFMS and move towards the phase 2, phased approach)

- To demonstrate to the international community that the country is monitoring its REDD+ activities in a transparent and verifiable way

- To secure funds for the implementation of national REDD+ and forest policies

- To monitor the national forest resources and the impacts of national forest policies
FAO-INPE collaboration

- Development of prototypes of national forest monitoring systems for/with developing countries: DRC, PNG, Paraguay
  Upcoming in 2012: Zambia, Mongolia and Viet Nam
- Build on existing national forest monitoring experiences and algorithms
- Two components: **TerraX platform**
  National forest monitoring portal
- Combination of open-source database, user interface, tools and algorithms adapted according to country needs
- Free-of-charge and supported by analysis and programming teams in Brazil (INPE) and FAO HQ
- Linkage of information from other technical partners and contributors for analysis and verification.
- New outcomes to be presented at the 18th COP in Doha, Qatar (2012).
Objectives

1. Enable the developing countries countries to follow all the actions related to the implementation of its national REDD+ policies and measures using RS data;

2. Build a platform to obtain regular information on their REDD+ results;

3. Actions should be related, directly or indirectly, to the national REDD+ strategies and may also include actions unrelated to carbon assessment, e.g. forest law enforcement;

4. Support the REDD+ phased approach under Paragraph 73 1/CP.16;
Kinshasa

Forest Classification 2010

- Area (Km²)
- Non-forest
- Water bodies
- Woodland
- Primary
- Secondary

Forest Change

- Area (Km²)
- Woodlands
- Primary Forest
- Secondary Forest
- Non-forest

Forest Loss

- Woodlands
- Secondary
- Primary

Forest Change stacked

- Area (Km²)
- Woodlands
- Primary Forest
- Secondary Forest
- Non-forest
Way forward

• Integration of existing data pre-processing and change detection algorithms for different ecosystems
• Approach of ‘modules’ which allows the countries to pick and chose dependent on the country needs (data bulk downloading, preprocessing (geometric/radiometric), cloud masking, change detection, statistics, mapping)
• All open-source applications are more than welcome!
• Safeguards’s system
Other Web-GIS dissemination portals

- Web portal developed at FAO – HQ (GeoSolutions support)
- Allow all end-users to follow and have open access to available forest data, updated frequently to represent national forest conditions
- Launched in DRC, PNG and Paraguay

  [rdc-snsf.org](http://rdc-snsf.org)
  [png-nfms.org](http://png-nfms.org)
  [paraguay-smf.org](http://paraguay-smf.org)
Dual functions of the national forest monitoring system for REDD+
Fitting the Systems Together

NATIONAL FOREST MONITORING SYSTEM

REDD+ SAFEGUARDS INFORMATION SYSTEM
- Local Engagement
- Communication
- Documentation

REDD+ MONITORING SYSTEM
- Remote Sensing
- Web Interface
- Community Monitoring

MRV SYSTEM
- Measurement
- Reporting
- Verification

COMMUNITY MONITORING DOCUMENTATION

REMOTE SENSING WEB INTERFACE COMMUNITY MONITORING
Important data considerations

• For **sustainable** autonomous national systems: capacity building and technology transfer is needed in-country, especially in the field of radar/lidar, so far mainly efforts in optical domain.

• **Data availability/access** is a limiting factor for work done in-country.

• Important is to build links with **National Forest Inventories** (NFIs).

• Important to distinguish R&D from **operational applications** ready to be implemented in Non-Annex-I countries.
Thank you for your attention!

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www.rdc-snsf.org
png-nfms.org
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