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Organizing data management for MRV and community monitoring

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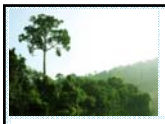
FAO UNDP UNEP



The basis for MRV and monitoring

- Decision 4/CP.15, paragraph 1, lays the foundation for the National MRV System:

"*Requests* developing country Parties (…) to take the following guidance into account (…) relating to measurement and reporting:

(a) To identify drivers of deforestation and forest degradation resulting in emissions and also the means to address these;

(b) To identify activities within the country that result in reduced emissions and increased removals, and stabilization of forest carbon stocks;

(c) To use the most recent IPCC guidance and guidelines (…) as a basis for estimating anthropogenic forest-related greenhouse gas emissions by sources and removals by sinks, forest carbon stocks and forest area changes;

(d) To establish, according to national circumstances and capabilities, robust and transparent national forest monitoring systems and, if appropriate, sub-national systems as part of national monitoring systems that:

(i) Use a combination of remote sensing and ground-based forest carbon inventory approaches for estimating, as appropriate, anthropogenic forest-related greenhouse gas emissions by sources and removals by sinks, forest carbon stocks and forest area changes;

(ii) Provide estimates that are transparent, consistent, as far as possible accurate, and that reduce uncertainties, taking into account national capabilities and capacities;

(iii) Are transparent and their results are available and suitable for review as agreed by the Conference of the Parties; "

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The Cancun Agreements

- The Cancun Agreements reiterate the Decision from Copenhagen and adds, in paragraph 71(d):

"A system for providing information on how the safeguards (…) are being addressed and respected throughout the implementation of the activities (…), while respecting sovereignty;"

- These safeguards are in Appendix I:

(a) That actions complement or are consistent with the objectives of national forest programmes and relevant international conventions and agreements;

(b) Transparent and effective national forest governance structures, taking into account national legislation and sovereignty;

(c) Respect for the knowledge and rights of indigenous peoples and members of local communities, by taking into account relevant international obligations, national circumstances and laws, and noting that the United Nations General Assembly has adopted the United Nations Declaration on the Rights of Indigenous Peoples;

(d) The full and effective participation of relevant stakeholders, in particular indigenous peoples and local communities (…);

(e) That actions are consistent with the conservation of natural forests and biological diversity, ensuring that the actions are not used for the conversion of natural forests, but are instead used to incentivize the protection and conservation of natural forests and their ecosystem services, and to enhance other social and environmental benefits;

(f) Actions to address the risks of reversals;

(g) Actions to reduce displacement of emissions.

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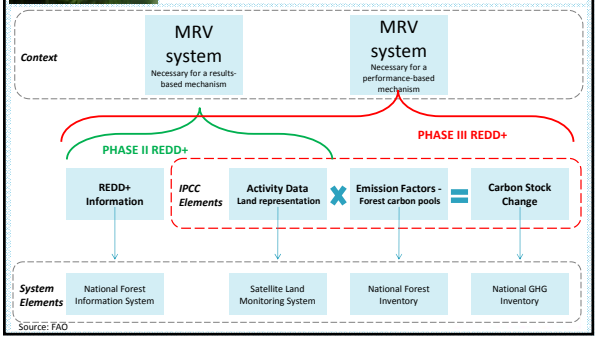
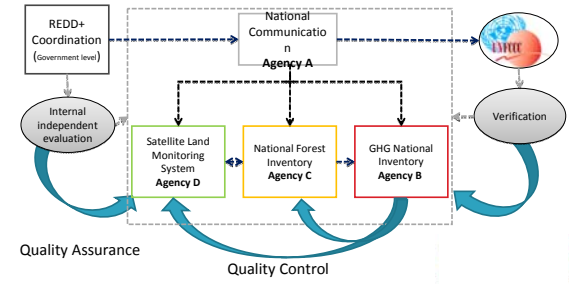
The MRV System from the Cancun Decisions



Source: FAO

Implementing MRV functions



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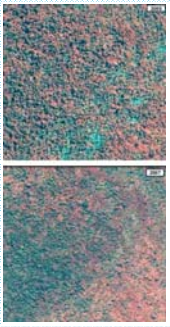
Activity data and verification



- Activity data assessment and verification are ideally done with remote sensing
  - Avoid too many expensive field visits
  - Consistency in repeated assessments of forested land areas
  - Verification should validate the claim of emission reduction, not repeat the carbon measurement
  - Verification can be done on a sampling basis, using statistically proven methods that are acceptable by the UNFCCC
  - In order to capture reduction in forest degradation high resolution data sources must be used

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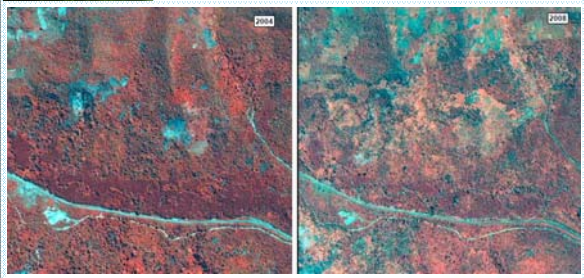
Activity data and verification



Source: Diana Chavarro, ITC

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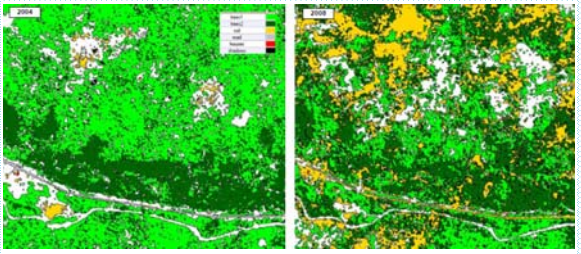
Activity data and verification



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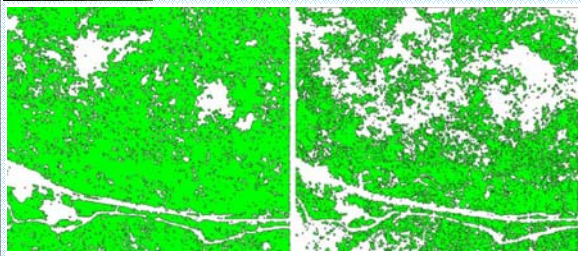

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Emission Factors

- Emission factors for the different land-use change processes and carbon pools are typically collected through a National Forest Inventory, following IPCC guidelines and guidance
- Determining emission factors is costly, especially for the below-ground carbon pools
  - There is a trade-off between the detail in which the EFs are collected and the reporting Tier
  - Higher Tiers imply a lower uncertainty and will therefore have a higher value in the carbon market
- For individual participants this is an important aspect
  - If extra effort in reducing net emissions is not rewarded because a national EF is applied, then why make the extra effort?

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Data requirements for REDD+

- REDD+ has many requirements that call for advanced data management and analysis
  - Create maps of the forest estate
  - Record measurements of forest area and properties made in the field
  - Record activities aimed at reducing deforestation and forest degradation
  - Monitor deforestation and forest degradation
  - Monitor safeguards
  - Report changes over time
  - Verify changes over time
  - Distribute benefits to stakeholders

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Data requirements for REDD+

- Spatial data management and analysis plays an important role in REDD+ in at least four areas
  - **Stratification of the forest** – Reduce effort required for measuring carbon
  - **Monitoring** of effectiveness of the National REDD+ Program – Direct efforts to combat deforestation and forest degradation
  - **Management of measurements** – What is measured where, when and by whom?
  - **Verification** of national emission reduction claims – Using RS to validate claims

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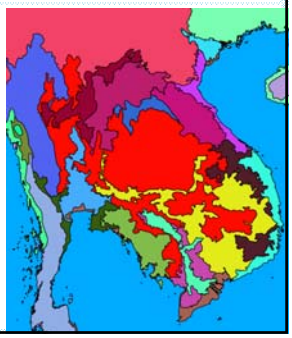
Stratification

- Stratification creates uniform units of forest
- Stratification can be based on:
  - Ecology, forest type
  - Management regime
  - Forest condition
- Stratification helps reduce error and uncertainty
- Separate RELs and possibly MRV options for every stratum



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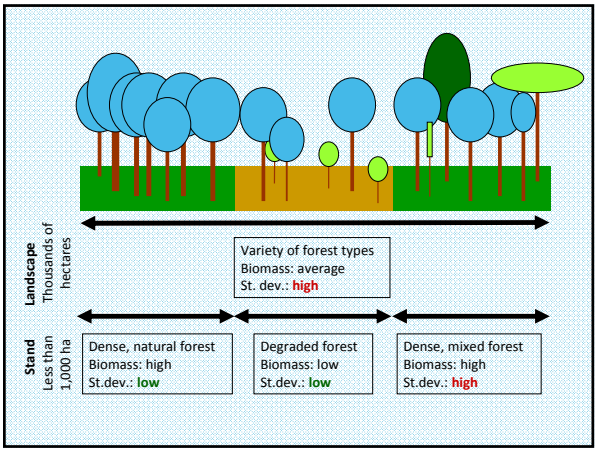
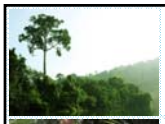
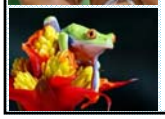




Monitoring REDD+



- The UNFCCC has repeatedly mentioned a national monitoring system for REDD+
  - Functions of the system are not well specified
- Monitoring systems have already been developed for other purposes
  - Forest resources assessment and inventory
  - Environmental management, hydrological management
  - Agriculture and cadastral systems
- Existing techniques can be applied for REDD+

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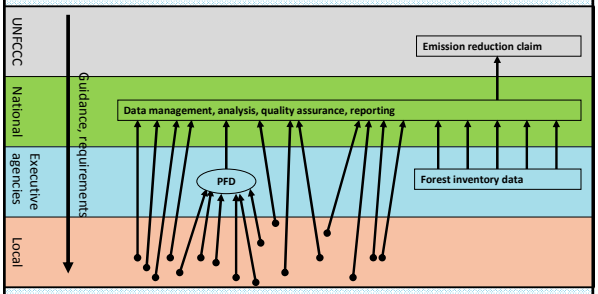
Data management for REDD+



Making participation full and effective

- Participatory monitoring should be part of a comprehensive strategy to provide **full and effective participation** to **indigenous people and local communities**
- Participatory (monitoring) activities can include
  - Implementing the *eligible activity*
  - Measurement of basic forest properties
  - Safeguards, in particular *conservation of natural forests and biological diversity, other social and environmental benefits* and the *risk of reversals*
  - Benefit distribution
- Participation can make REDD+ a success
  - Profitable for the government and stakeholders
  - Much more data than would otherwise be possible
  - Data management and analysis procedures should be designed around the basic data that communities can provide

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Participatory Forest Management

- The management of local forest resources by organized community groups has proven to be very successful
  - Ownership
  - Long-term commitment
  - Social / Cultural pressure to protect the forest
- Many communities rely on the forest for sustenance or livelihood
  - Exclusion of local communities will most likely have negative impacts on REDD+ effectiveness
- Livelihood options may be combined with REDD+
  - They may be complimentary – non-wood goods such as fruits, herbs, leaves
  - They can increase the "productivity" of the forest – higher total income from the forest
  - Together they can be a viable alternative for deforestation or forest degradation

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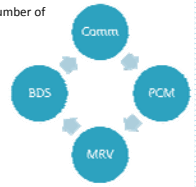
The role of participation in REDD+ implementation

- Local communities will only be engaged fully and effectively if a number of conditions is met:
  - Rights, knowledge and culture are respected
  - Awareness of REDD+, its actions and the benefits it brings
  - Actions are complementary to their other activities
  - Self-assessment of performance and the associated benefits
  - Access to settlement of disputes
- National data on emission factors will not be able to establish the performance of individual participants in REDD+
  - Emission factors are not specific enough
  - This forms the basis for the determination of benefits
- If these conditions are not met, REDD+ is not likely to be successful
  - The UNFCCC recognizes the need for participation
  - No specifics on what *full and effective participation* means. This is up to the individual countries!



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Communities measuring forest properties

- With very little training and support, communities can accurately assess basic parameters of the forest
  - Tree count
  - Species identification
  - DBH measurement
- Cost of assessment is between $1 ~ $4 per hectare per year
- Potential for collecting large volumes of data

Supplementary data

- The data that the communities collect is relatively basic
- Supplementary services and data collection by a professional party must be used to increase accuracy
  - Stratification of the forest, determination of number and location of sampling plots
  - Wood density, free branch height, total tree height
  - Development of allometric equations
- Large-scale data collection opens up opportunities for statistical analysis and filtering of data

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Data collection procedures

- Communities do not need much training to collect data
- Plot and data management requires support
  - Support can be provided by NGOs or other service providers that serve multiple communities
  - Equipment to support data collection is ever more accessible and affordable: GPS, PDA, smart phone
  - NGOs can help share knowledge and equipment between communities

Data to be collected

- Typical data are:
  - Diameter at breast height
  - Tree count
  - Tree species
- Data should be collected in sampling plots to which the local community already has access
  - Provide labour in return for benefits – money, use of forest resources
  - This depends very much on land use rights, economic opportunity, etc
- Data can be collected on a regular basis
  - It is preferable to do so more often than strictly required
    - Create awareness, maintain involvement and experience
    - Extra data can be used for quality control
- Other data should be collected as well
  - Use of the forest resources by the local population
  - Substitution of non-renewable resources by forest products
  - Ownership, use rights, cultural and social importance

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Data quality assurance

- Data has to be checked for consistency over time and spatially
  - Remove measurement or reporting errors
  - Check if there are consistent errors from a location
    - Is the stratification wrong?
    - Does the community receive support or training?
- Data are grouped in large homogeneous units for reporting
  - Multiple measurements give indication of variability and accuracy of the measurement
  - If the accuracy is too low:
    - Refine the stratification
    - Add more measurements
    - Improve quality of measurements
- Data coming from communities may be of low quality (completeness) but there is a lot of it, making data quality assurance possible

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Managing data

- The volume of data that will be collected on a national scale is likely to be enormous
  - Can be millions of samples per year for a single country
- The Government needs to set up professional computer and internet infrastructure to manage the data
  - Specially trained and dedicated staff will be necessary to operate the data management system
  - Unless the data management system is properly designed, analysis, quality assurance and reporting will be very difficult or impossible
  - UNFCCC will likely have stringent data management and reporting guidelines and validation may require reviewing of raw data

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Access to data

- Even if all the data is uploaded to a national database, access should be given to third parties to support their efforts
  - Sub-national authorities and Forest Departments
    - Planning
    - Evaluation of performance
    - Distribution of benefits
  - Communities
    - Overview of performance
    - Insight in benefits
  - Society at large
    - Overview of achievements
- Access can be provided through a web site or with brochures, newsletters, etc

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Conclusion

- Countries will phase development of National MRV Systems and monitoring systems over the coming years
- The UNFCCC calls for participation of local communities, without being specific on implementation or topics
- Local communities have demonstrated to be effective guardians of local forest resources
- Local communities have demonstrated that collection of forest resource data by them is feasible in technical and financial terms
- The integration of participatory measurement and monitoring in National MRV Systems should be specific for every country

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