



CAMBODIA REDD+ PROGRAMME

Update on MRV (National Forest Monitoring System) readiness process in Cambodia

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Prepared by: Mr. Lauri Vesa

Consultant for FAO Forest Investing Expert



Outline

Update on MRV (National Forest Monitoring System) readiness in Cambodia

1. Briefly about **National Forest Monitoring System (NFMS)**
2. Overview of NFMS **supporting frameworks** to Cambodia
3. Current **achievements**



Part 1. Briefly about National Forest Monitoring Systems (NFMS)

NFMS has **two functions** in REDD+ context:

- I. **Monitoring** (M) of Policies and Measures
- II. **Measurement, Reporting and Verification** (MRV) of emissions & removals

NFMS will be developed in a stepwise approach:

- Develop the NFMS in a stepwise approach through 3 Phases of REDD+ (1. Readiness, 2. Result-based demonstration, 3. Result-based actions)
- Fully operational in Phase 3, to allow for positive incentives under an international mechanism



About **MRV** function of NFMS

Practice:

The MRV function will always consist of three (3) main components (i.e. **'pillars'**):

1. The satellite land monitoring system (SLMS)

To collect Activity Data (AD)

2. The National Forest Inventory (NFI)

To gather information to obtain emission factors (EFs)

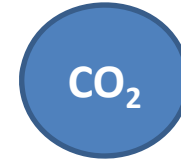
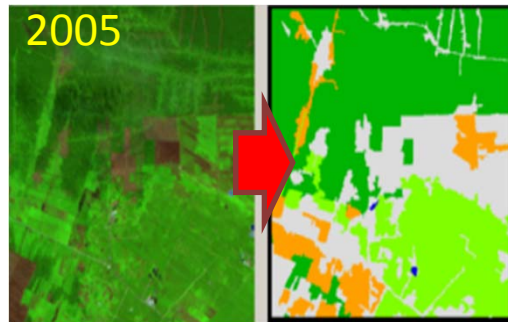
3. The national GHG inventory (GHG-I)

To provide emissions & removals estimates for national report



II. MRV function of NFMS

The Three Pillars of MRV



	FL, Wet evergreen	FL, Moist evergreen	FL, Moist semi-deciduous	FL, South-west subtype	FL, North-west subtype	FL, Dry semi-deciduous	Agricultural land	Settlements	Other land	Unclassified	Final Area
FL, Wet evergreen	51										51
FL, Moist evergreen	42										42
FL, Moist semi-deciduous		60									60
FL, South-west subtype			52								52
FL, North-west subtype				12							12
FL, Dry semi-deciduous					2	25		2			27
Agricultural land	5	2			2	3	1				13
Settlements					3	1		20			25
Other land					1				12		13
Unclassified									10	25	35
Initial Area	56	44	61	52	13	8	29	22	12	25	19
Net change (Δ = T0-T1)	-4	-2	-1	0	-1	-4	-2	-12	3	11	-8

Area change data from satellite remote sensing, and NFI

Forest carbon stock data from a national forest inventory, and possible sources

Inventory of greenhouse gas emissions from the forest sector

ACTIVITY DATA

EMISSION FACTOR

EMISSIONS ESTIMATE

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Part 2.

Overview of NFMS **supporting** **frameworks** to Cambodia

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Initiatives supporting implementation of the Cambodia

Outcome	Major Supporting Frameworks						
	UN-REDD	CAM-REDD	FCPF	FAO's TCP-NFI	LEAF	Embassy of Japan	REDD Projects in Community/Protected Forests
Outcome 1: Institutional Arrangements	✓✓	✓	✓✓		✓✓		
Outcome 2: Strategies/Policies	✓✓	✓	✓✓		✓✓		
Outcome 3: Projects/Sub-National Development	✓	✓✓				✓✓	✓✓
Outcome 4: MRV/REDD+ GHG Emissions Registry/Reporting to GHG Inventory	✓✓	✓✓	✓	✓✓		✓✓	✓

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National NFMS (MRV) support:

1. **Cambodian UN-REDD Joint Programme (FAO/UNDP/UNEP):** FAO responsible for Outcome 4 - Forest Monitoring and MRV section (Ongoing; 2011 – 2014)
2. **CAM-REDD (FA/JICA) :** Supporting both MRV and sub/national development
3. **Forest Carbon Partnership Facility (FCPF):** MRV Component (2014 -2016)
4. **FAO TCP/CMB/3304 –** Designing a multipurpose National Forest Inventory
5. **National Forest Inventory:** sources for implementation to be indicated

Notes:

- UNREDD Programme and CAM-REDD support to establish capacities and systems at the national scale (NFMS, MRV, etc.).
- FCPF to improve the NFMS (eg. Allometric Equitation development) and test the developed systems (incl. Manuals, REL accounting system, etc.) on a subnational scale (subnational – national link)
- FAO TCP and subsequent implementation of the NFI to facilitate the implementation of the UN-REDD national programme (e.g. by development of more robust emission factors)



UN-REDD Programme (outcome 4) in brief

Outcome 4: Design of a Monitoring System and Reference Emissions Level framework and capacity for implementation

Output 4.1: Establishment National MRV/REL Technical Team and build appropriate national capacity;

Output 4.2: Develop Cambodia Monitoring system plan;

Output 4.3: Review of the forest cover assessments to provide REDD+ activity data and design the satellite forest monitoring system;

Output 4.4: Design of a National Forest Inventory;

Output 4.5: Support the development of a REDD+ related GHG Reporting System;

Output 4.6: Support the development of Cambodia RL/REL framework.



Part 3.

Current **achievements**

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Establishment National MRV/REL Technical Team and build appropriate national capacity

- **Four (4) technical teams** will inform and advise the REDD+ taskforce on their respective areas
 - The ToR for the MRV Technical team has been approved in the first taskforce meeting.
 - The first Technical Team meeting will be organized 20 January 2014
- A **joint MRV training programme** with UN-REDD and JICA has been prepared which will be reviewed by the technical team;
- Several **meetings and workshops** have been held including a GHG workshop and training in respective technical areas (e.g. Remote Sensing, Geographic Information Systems (GIS), use of tools, allometric equations, and forest inventories).



Develop Cambodia Monitoring system plan (NFMS)

- A report on the existing national and sub-national Land Cover classification is available.
- A National consultation has been held on Land Cover Classification and forest monitoring systems. Consultants have been involved to compile existing data and land cover/use systems for comparison and advice on a harmonized legend.
 - LCCS workshop planned for February 2014.
 - Time series of land use maps to be created for GHG reporting requirements



Develop Cambodia Monitoring system plan (NFMS)

Example:
consistency and
comparability

BPAMP 2007			FA 2002, 2006 & 2010				
GENERAL ECOLOGY		VEGETATION FORMATION	EF	SEF	DF	OF	NF
VERY HUMID	Low Elevation	Dense Evergreen Forest					
	Medium Elevation	Dense Evergreen Forest					
HUMID	Low Elevation	Dense semi-deciduous Forest					
		Dense forest/secondary vegetation mosaic (dense forest predominant)					
		Dense forest/secondary vegetation mosaic (secondary vegetation predominant)					
	Medium Elevation	Dense semi-deciduous Forest					
SUB-HUMID FORMATIONS		Mixed Deciduous Forest					
		Woodland with <i>Dipterocarpaceae</i>					
		Degraded Woodland with crops					
		Dense Thicket					
EDAPHIC FORMATIONS		Swampy degraded plant communities (flooded forests)					
		Herbaceous hydromorphic types					
OTHER FORMATIONS		Mosaic of crops and degraded vegetation					
		Paddy fields					
		Paddy fields with <i>Borassus flabellifer</i>					

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Review of the forest cover assessments to provide REDD+ activity data and design the satellite forest monitoring system (SLMS)

- A delegation of Cambodian technical specialist has been to INPE Brazil to complete a training on forest monitoring system.
- A inventory report on existing satellite and aerial imageries has been prepared
- Available Remote Sensing and GIS data has been compiled, and a test version of satellite forest monitoring system web platform is under development



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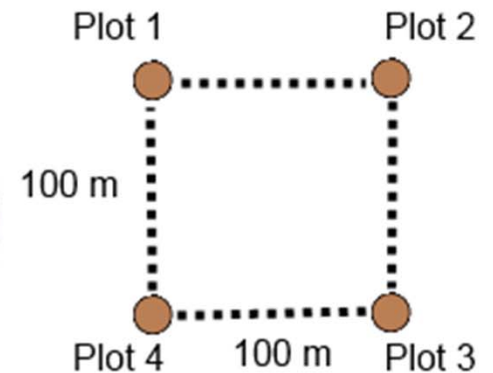
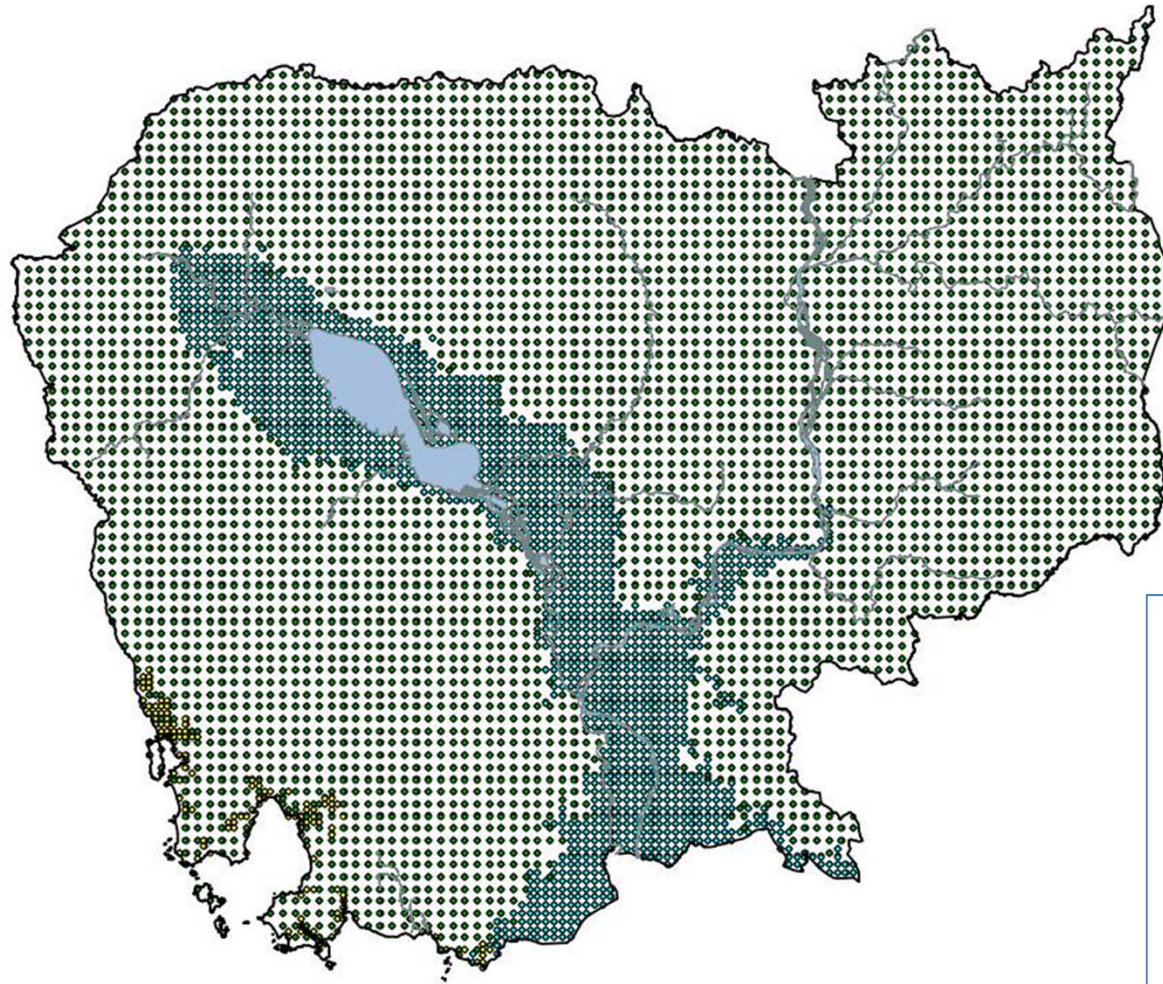


Design of a National Forest Inventory (NFI) to develop emission and removal factors for REDD+ related activities

- Training on *Allometric Equation* development has been conducted.
- A Report and database existing allometric equations of Cambodia is available.
 - Equations can be accessed using **Globalometree** at www.globalometree.org
- Already available and accessible forest inventory data have been collected and stored in the REDD+ secretariat to support analysis and preparation of a NFI Design for Cambodia
- NFI Design proposal has been prepared in December 2013



Design Proposal of National Forest Inventory



Systematic sampling:

Uplands: 6 km x 6 km

Wetlands: 4 km x 4 km

2-phase sampling

Mangroves: 3 km x 3 km
(at 2nd phase)

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Design Proposal of National Forest Inventory (NFI)

- Subsequent work is undertaken on the NFI Manual and Field Forms (to be presented in February 2014). The recorded data will preliminary consist of following 'baskets':

#	Form
1	Cluster data
2	Plot data
3	Tree data
4	Regeneration data
5	Deadwood data
6	Stump data
7	Bamboo data
8	Litter data
9	Soil data
10	Biodiversity

The proposed NFI design covers all 5 carbon pools which have to be reported under the UNFCCC.



Thank You!

Mathieu van Rijn

Email: mathieu.vanrijn@fao.org

Website: www.cambodia-redd.org / <http://www.un-redd.org>

Update by Lauri Vesa

Email: lauri.vesa@fao.org

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