

**HEALTHY FORESTS  
FOR HEALTHY PEOPLE**



**21 March  
International Day of Forests**



**Science Talk**  
**Topic "National Forest**  
**Monitoring System and Forest**  
**Inventory"**  
**March 24, 2023**

# Key points

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Why forest monitoring is important?

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FAO's work related to forest monitoring

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Key element of the Forest monitoring

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Relevant key element key elements in Cambodia

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Key messages

# FAO at the frontline in monitoring forests and ecosystems



PARIS2015  
UN CLIMATE CHANGE CONFERENCE  
COP21-CMP11

Faced with a climate emergency, countries are stepping up their actions to keep the rise in global average temperatures to well below 2°C above pre-industrial levels



Halting deforestation and forest degradation and restoring degraded ecosystems are key nature-based solutions to climate change.



Forest-positive policies and actions also have many non-carbon benefits, including food security, poverty alleviation, health, enhanced biodiversity, improved governance and the protection of other vital environmental services.



Innovative technology and increased capacity are making a positive difference in tracking land use and forest cover change.



FAO's work on national forest monitoring is driven by innovation, capacity development, and partnership.

## **FAO's National Forest Monitoring Systems (NFMS)**

- 50 countries in their development of robust NFMS supported by FAO
- Development of reliable forest resource information for creating national forest policies, planning, and sustainable development, based on the affirmation that better data leads to better decisions

# National Forest Monitoring (NFM)

- A comprehensive process that includes the systematic collection, analysis and dissemination of forest-related data and the derivation of information and knowledge at regular intervals to allow the monitoring of changes over time.
- Support forest-related decision making at international, national and sub-national level by providing timely, relevant and reliable information.
- NFMS components include:
  - ❑ Satellite land monitoring system (SLMS) and other means of data collection, providing information for activity data (AD)
  - ❑ National forest inventories (NFI) and other means of data collection, providing information on emission factors (EF)



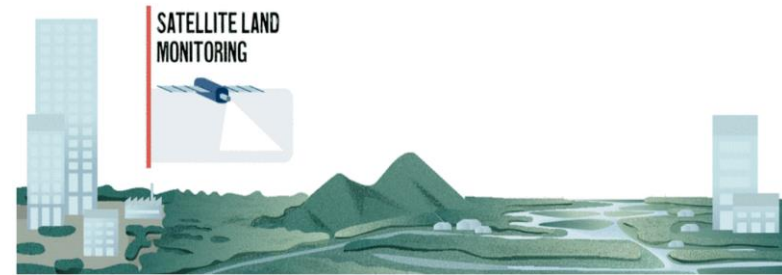
Assessment, evaluation, interpretation and reporting of the data and the derivation of information, usually from repeated inventories that allow for the monitoring of change and trends over time

Technical process of data compilation and analyses

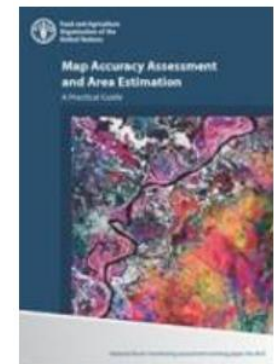
# SLMS & Web Geoportals

SLMS activities include:

- Support countries in generating, using and improving maps and land/forest cover statistics,
- Support countries in generating activity data for reporting to international climate frameworks,
- Conceptualize and disseminate geospatial data,
- Capacity building on technical issues,
- Tailor-made technical support,
- Conceptualization, development and deployment of web geoportals.



SEPAL, a big-data platform for forest and land monitoring



Map accuracy assessment and area estimation: a practical guide

## SATELLITE LAND MONITORING SYSTEMS (SLMS), EMPOWERED BY UN-REDD/FAO

### Background UN-REDD

The United Nations Collaborative Programme on Reducing Emissions from Deforestation and Forest Degradation in Developing Countries was launched in 2008 and builds on the convening role and technical expertise of the Food and Agriculture Organization of the United Nations (FAO), the United Nations Development Programme (UNDP) and the United Nations Environment Programme (UNEP). FAO Forestry supports countries in the design, set-up and deployment of their national forest monitoring systems.

**UN-REDD**  
PROGRAMME



Food and Agriculture  
Organization of the  
United Nations



UN  
D P



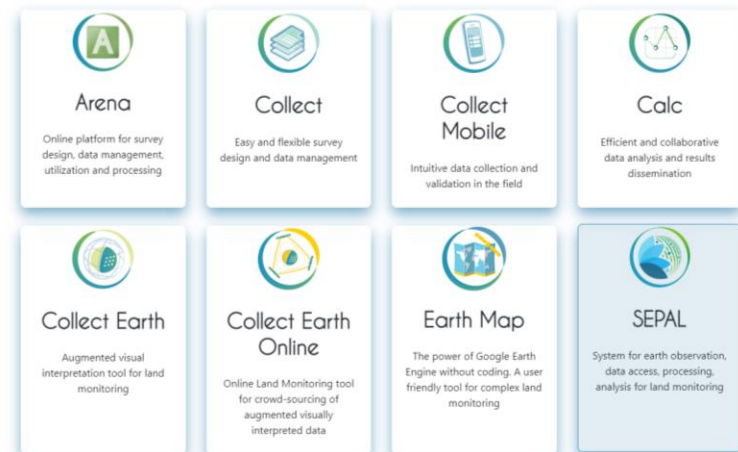
UN  
environment

# Innovative Tools-Open Foris and SEPAL

- Free open-source solutions for environmental monitoring
- Open Foris is a set of free and open-source software tools that facilitates flexible and efficient data collection, analysis and reporting.



## The tools

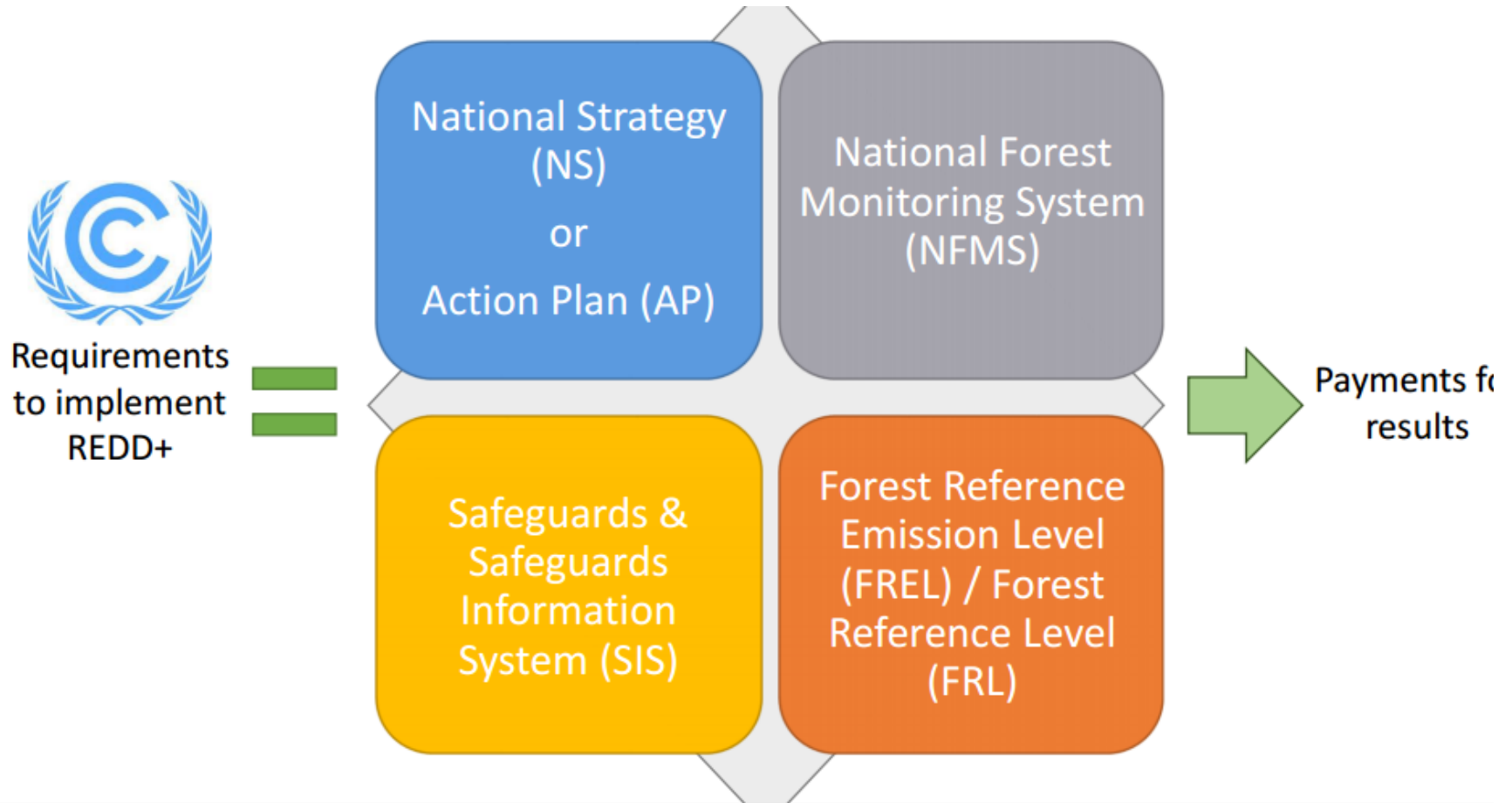


# NFMS for REDD+

- **Strengthening National Forest Monitoring Systems for REDD+**
- Global forest cover loss is addressed under a range of international agreements and conventions, including the UNFCCC, which has specific provisions for REDD+ (Reducing Emissions from Deforestation and Forest Degradation and the role of conservation, sustainable management of forests, and enhancement of forest carbon stocks in developing countries).
- In the context of REDD+, an NFMS is a system for recording and monitoring how land is used in a country, and for estimating levels of Greenhouse Gas (GHG) emissions and removals related to forests.
- An NFMS is one of the four elements that countries are required to develop in order to participate in REDD+ under the UNFCCC. By combining information about how land use patterns are changing, for example, deforestation or reforestation, and with information from a national forest inventory, countries can make estimates about overall GHG emissions and removals in the forest sector.
- FAO also assists countries in participating in results-based payments for REDD+ by supporting their efforts to construct the systems and establish the capacity that are necessary for REDD+ MRV.



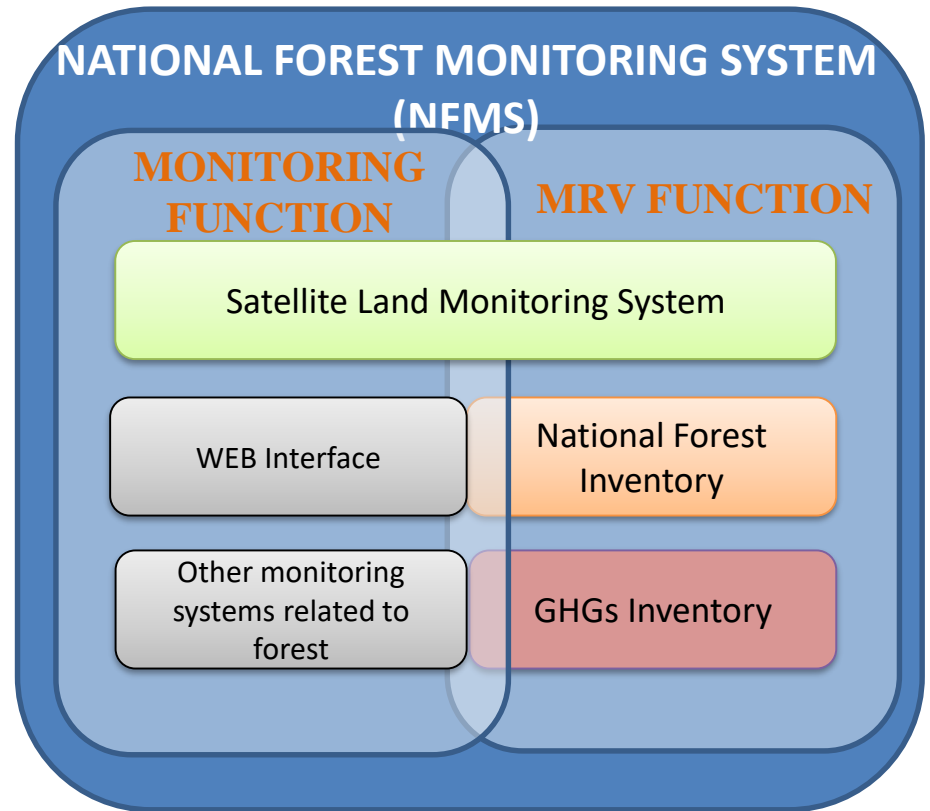
# UNFCCC/COP19 Warsaw Framework or REDD+ Rules



# Cambodia's NSMS

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

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



# Satellite Land Monitoring System (SLMS)

Satellite Land Monitoring System (SLMS) is to monitor Land cover, Land use and Land use change through satellite data.

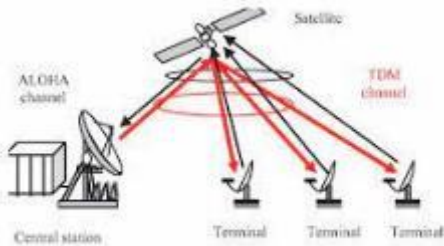
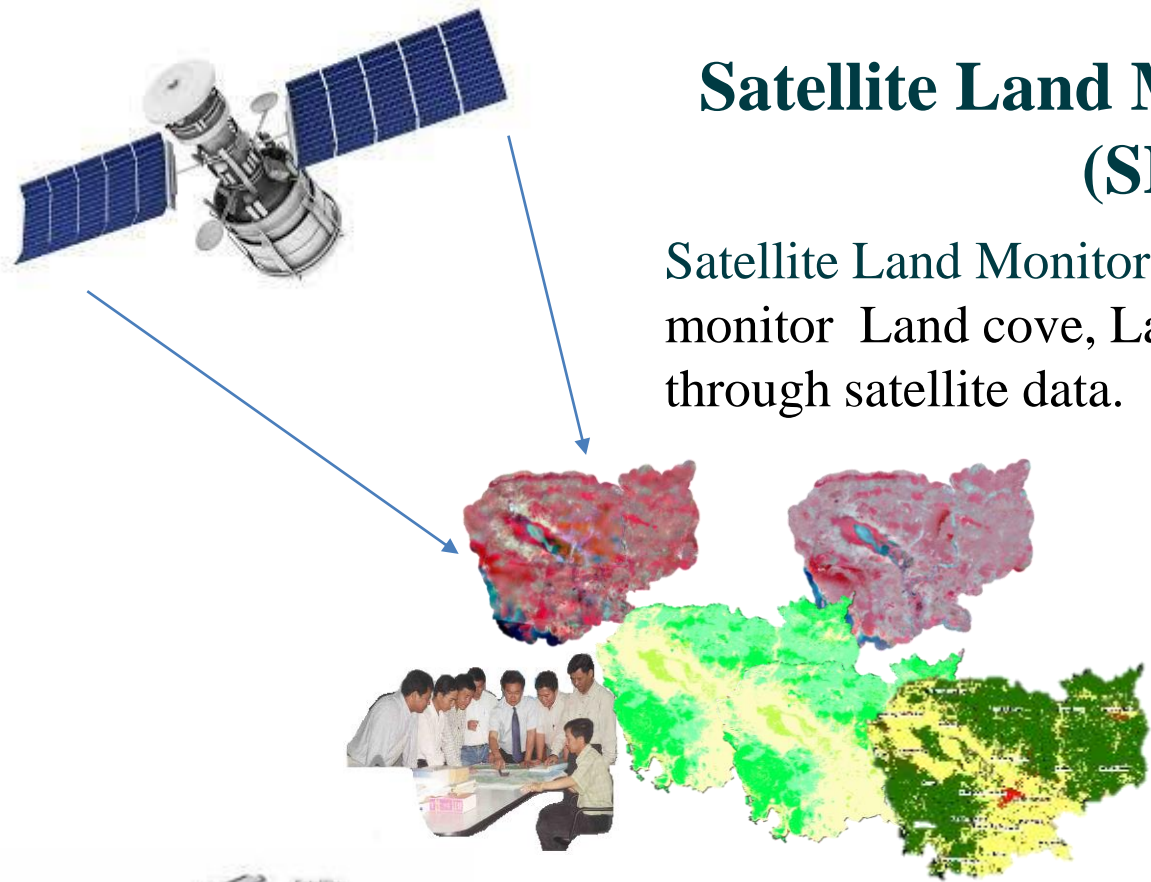


Figure 1. The model of VSAT satellite network



SLMS also provide easy access to consistent, harmonized and quality-controlled land information on country / global scale, readily available for management and reporting requirements, made possible through a fully automated land monitoring system built on multi-mission satellite data streams.

# Web Geoportals

The screenshot displays the Cambodian National Forest Monitoring System web geoportal. At the top left is the Cambodian flag. The title "Cambodian National Forest Monitoring System" is prominently displayed in the center, with the Khmer text "ភាសាខ្មែរ" (Khmer) to its right. Navigation links for "Admin", "Feedback", "Upload KML", "banner.measure", and "PDF" are located below the title. On the left side, a "Layer List [4]" panel is visible, containing several expandable categories: "Base Layers [1]", "Administrative [2]", "REDD+ Sites", "Forest Covers [1]", "IPCC © 2014" (with sub-options for 2006, 2010, and 2014), "National Forest Inventory", and "Other Layers". The main map area shows a satellite view of Cambodia with various administrative regions labeled, including Oddar Meanchey, Preah Vihear, Stung Treng, Ratanak Kiri, Banteay Meanchey, Siemreap, Kampong Thom, Mondul Kiri, Pailin, Battambang, Kampong Chhnang, Kampong Cham, Tboung Khmum, Pursat, Koh Kong, Kampong Speu, Phnom Penh, Prey Veng, Svay Rieng, Preah Sihanouk, Takeo, and Kampot. A zoom control with "+" and "-" buttons is on the right. At the bottom, there are logos for REDD+, UN-REDD, and Forest Carbon Partnership Facility, along with the coordinates "107.6300, 13.6361" and a footer for Bing © 2019 Microsoft Corporation Earthstar Geographics SIO Terms of Use.

# Key messages

Monitoring the change of the forest resources by spatial and temporal for:

- Decision making
- Planning for sustainable use of the forest resource
- Estimation of emission and sequestration of CO<sub>2</sub> for proper climate change action and efficiency evaluation of mitigation policy
- Transparency reporting to the Global community
- Economic development & resource mobilization