Current Status of NFMIS in Myanmar
&
How MOLI data can Contribute to the ongoing Efforts

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Presentation Outlines

- **Background Information**

- **Challenges for SFM**

- **Current Status of NFMIS**

- **Expectation to use MOLI data for ongoing efforts**

- **Way forward**

Background Information

❑ Forest resources play a critical role for the livelihood of the people and the national economy as well as providing environmental services including climate change.

❑ 51 millions-75% rural population (2014 Population census) and over 100 national races-Different culture, custom and traditions related to natural resource uses.

❑ Being Managed by 30 Years Forestry Master Plan, 10 year-District Forest Management Plan

❑ Forest monitoring is necessary in national and international environmental and developmental policy processes.

❑ Sound forest monitoring system, reliable and updated forest resource information is crucial for the sustainable development.

National Forest Monitoring and Information System-NFMIS

• National Forest Monitoring and Information System (NFMIS)- a comprehensive process consisting of the collection, analysis and dissemination of forest-related data and the derivation of information and knowledge by regular intervals to monitor the changes.

• In Myanmar, three Types of Monitoring in Forestry Sector in general

❖ **Monitoring on situation of forest resources**

❖ Monitoring on utilization of forest resources

❖ Monitoring on forestry related stakeholders

Challenges for Sustainable Forest Management

Illegal logging

Land use changes

High Fuelwood consumption

Shifting Cultivation

Areas Classified by Type of Land in Myanmar (1,000 acres)

| Year	Reserved Forests	Current Fallows	Net Area Sown	Occupied Area	Cultivable Waste Other Than Fallows	Other Wood Land	Others	Total Area
1995-1996	25,503	3,042	22,017	25,059	19,697	54,557	42,370	167,186
2000-2001	31,910	1,695	24,486	26,181	17,804	48,892	42,399	167,186
2005-2006	38,813	910	26,989	27,899	15,516	44,055	40,903	167,186
2010-2011	44,271	569	29,703	30,272	13,333	38,621	40,689	167,186
2011-2012	45,058	795	29,454	30,249	13,279	37,926	40,674	167,186
2012-2013	45,232	1,086	29,258	30,344	13,246	37,577	40,787	167,186
2013-2014	46,203	1,128	29,092	30,220	13,078	36,672	41,013	167,186
2014-2015	43,871	1,094	29,617	30,711	13,014	36,409	43,181	167,186
2014-15 %	**26.24**	**0.65**	**17.72**	**18.37**	**7.78**	**21.78**	**25.83**	**100**
Source: CSOs reported by Department of Agricultural Land Management and Statistics								

Forest Cover Changes in Myanmar (FAO FRA)
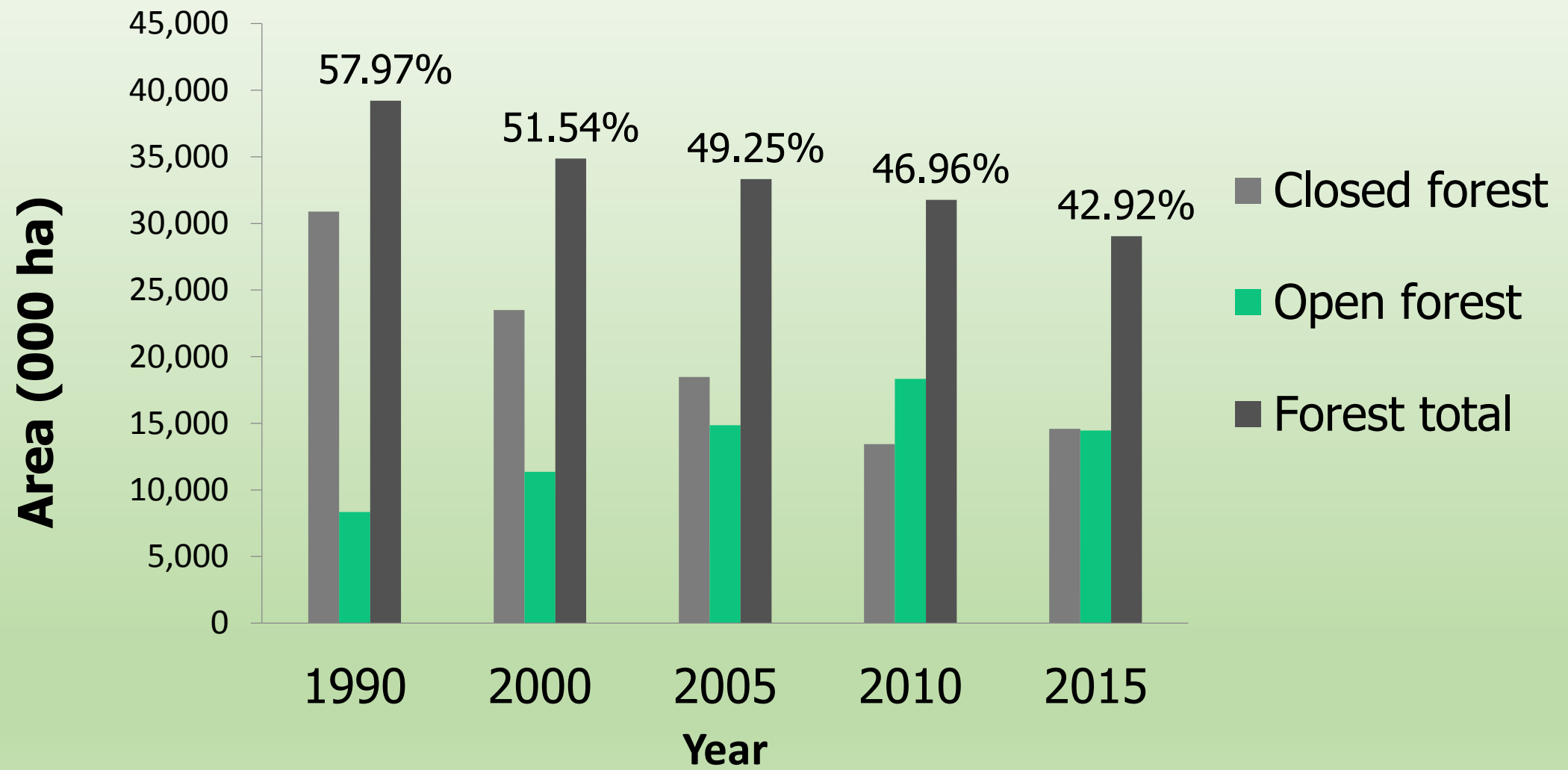
Major Developments towards SFM

- Exploitation of timber within AAC
- Establishment of permanent forest estate
- Biodiversity conservation
- Plantation forestry
- Community forestry
- Tree planting programs
- Rehabilitation programs
- Forest Law Enforcement, Governance and Trade' (FLEGT) process
- **REDD+**
- International cooperation/coordination
- **Monitoring and Evaluation**
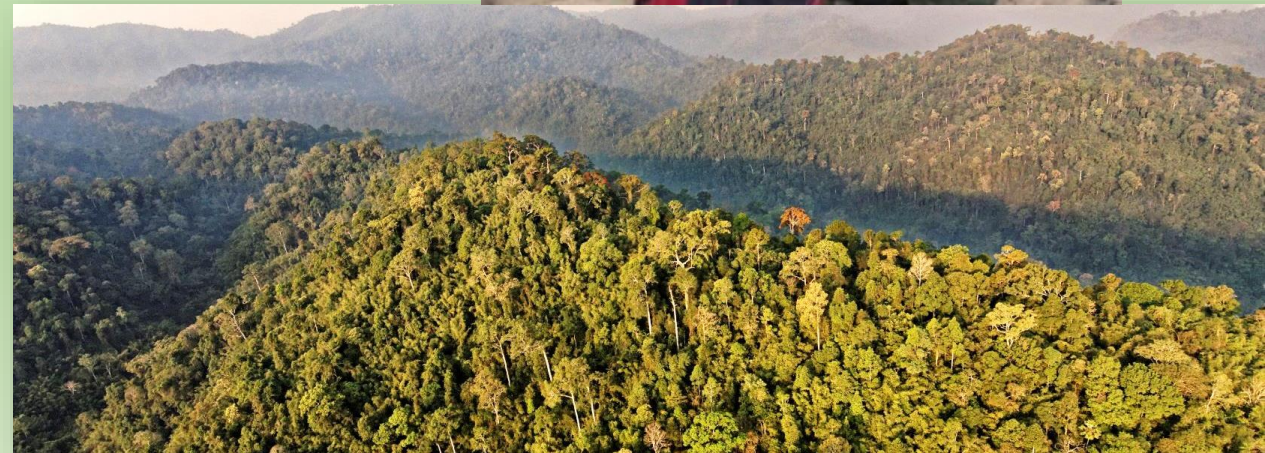
Current Status of NFMIS

RS Data Sets used in FD

- **Landsat 4-5 TM, Landsat 7 ETM+, and Landsat 8 OLI/TIRS** (30 m x 30 m)- forest cover assessment of whole country (FRA 1990, 2000, 2005) and 2015

- **IRS Liss 3** (23.5 m x 23.5 m)-FRA 2015

- **Rapideye and Sentinel for land use/land cover mapping**

- High resolution satellite imageries such as – **Quickbird**, **IKONOS, ALOS, Spot 7** and **Aster imageries** were also used for conservation priority areas, such as, Tanintharyi Nature Reserved, Irrawady Delta, Naypyitaw region, Wunbaik, Rakhine State and Shan State.

- Started application of UAV Drone in 2013-2014

Forest Cover Data (Activity Data)

- 1989

- 2000 (Source: 1998-2000 Landsat TM)

- **FRA 2010 (Source: 2005-2007 Landsat 7, 5)**

- **FRA 2015 (Source: 2010 IRS Liss III)**

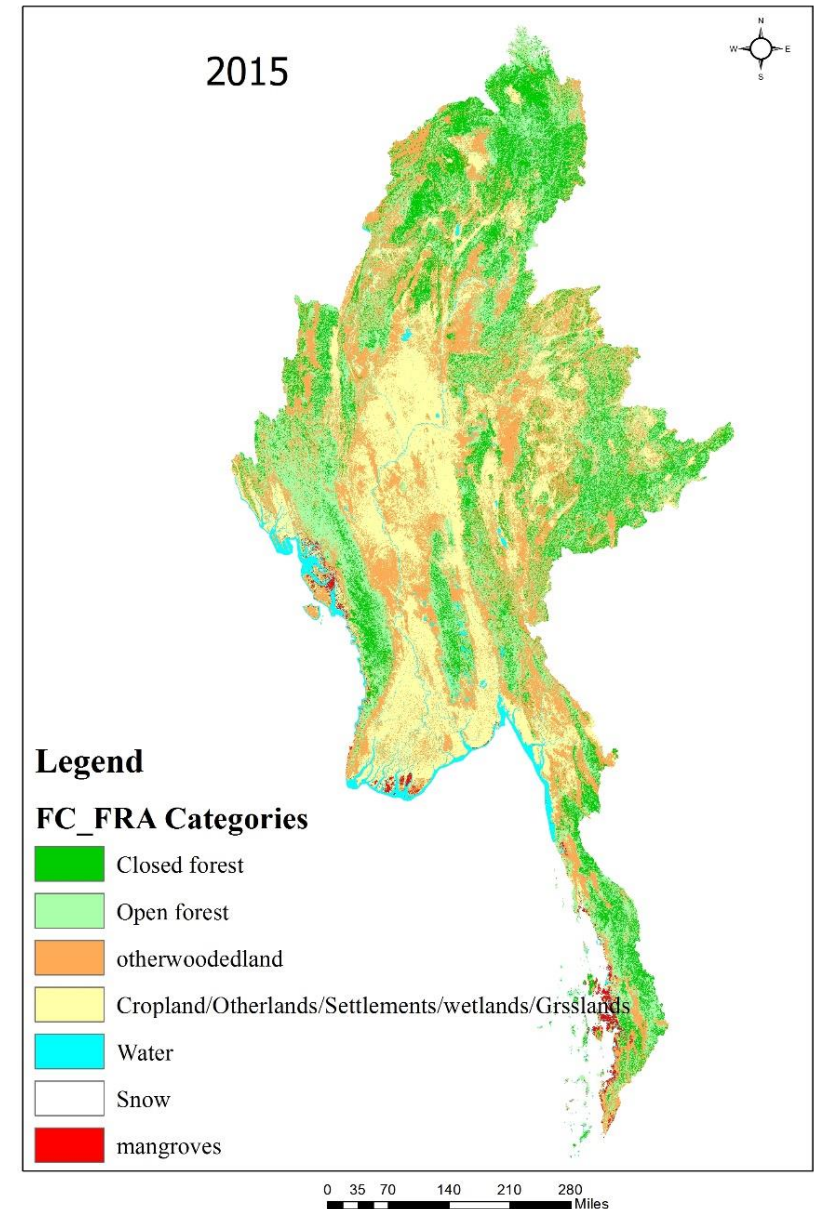- **2015 (FAO TCP based on 2015 Landsat 8)**
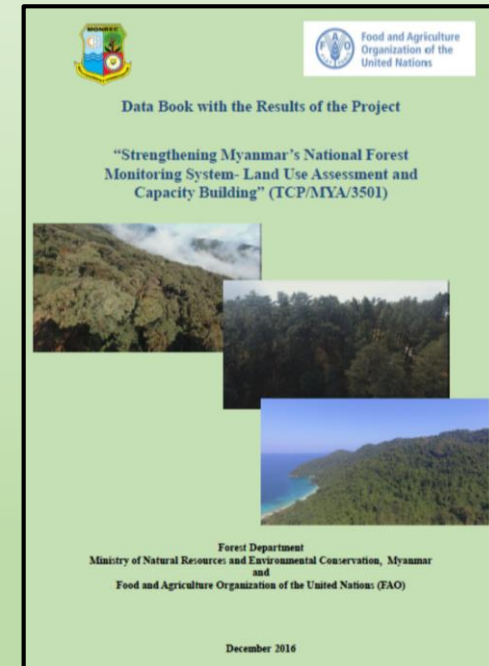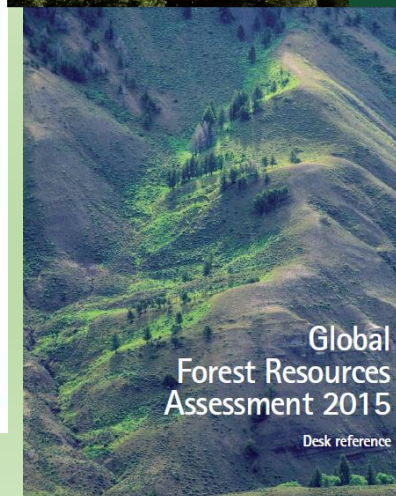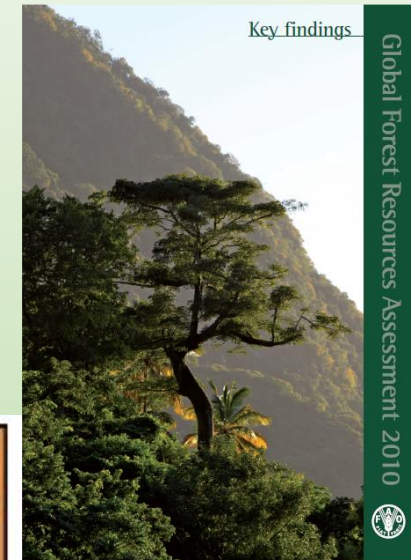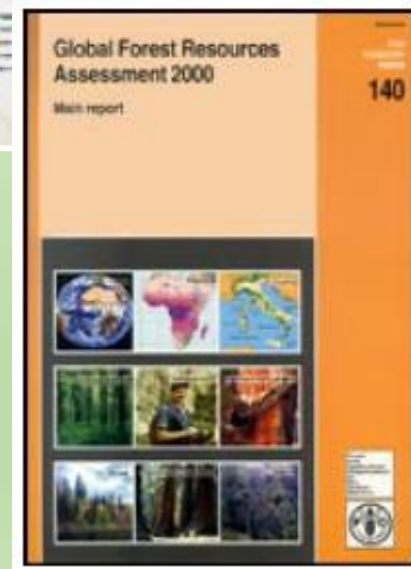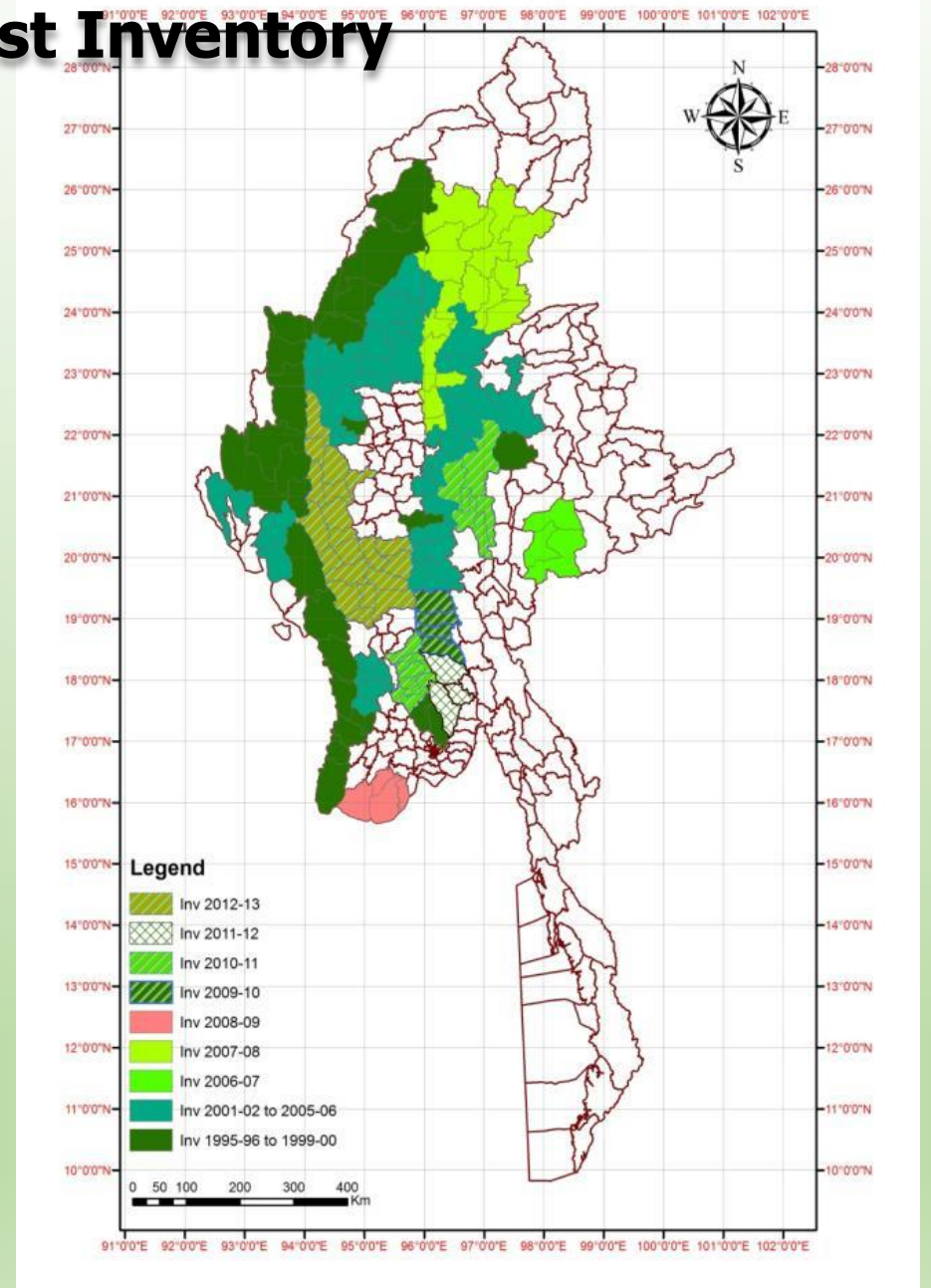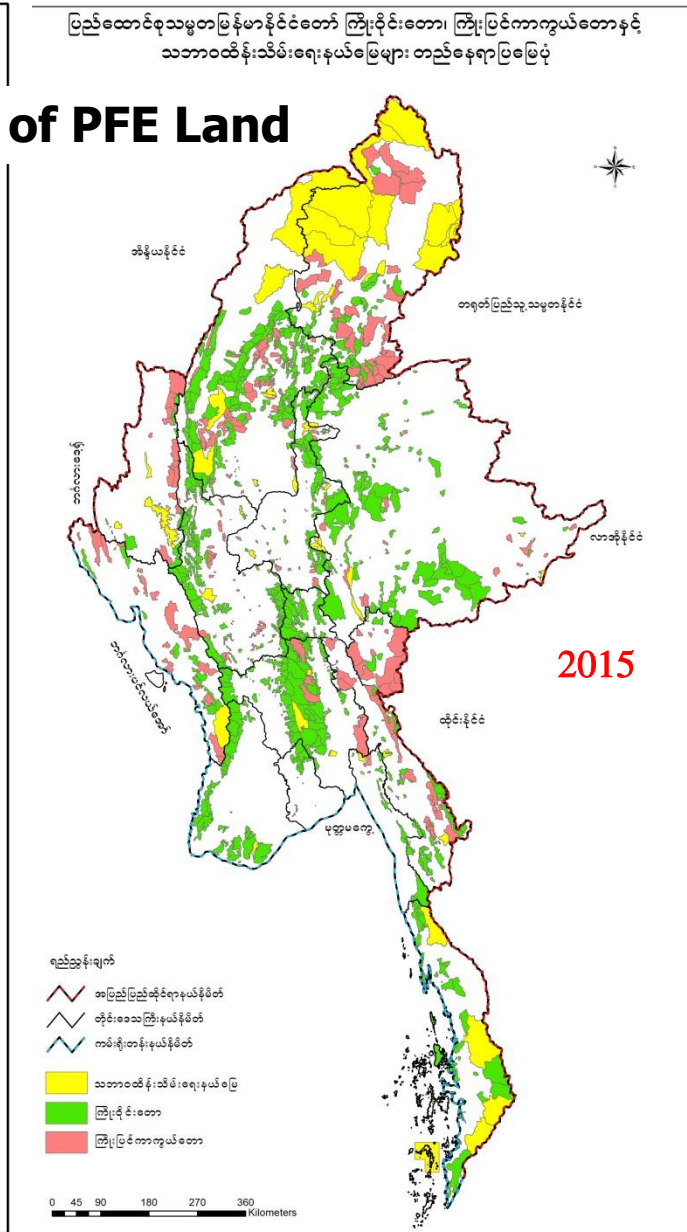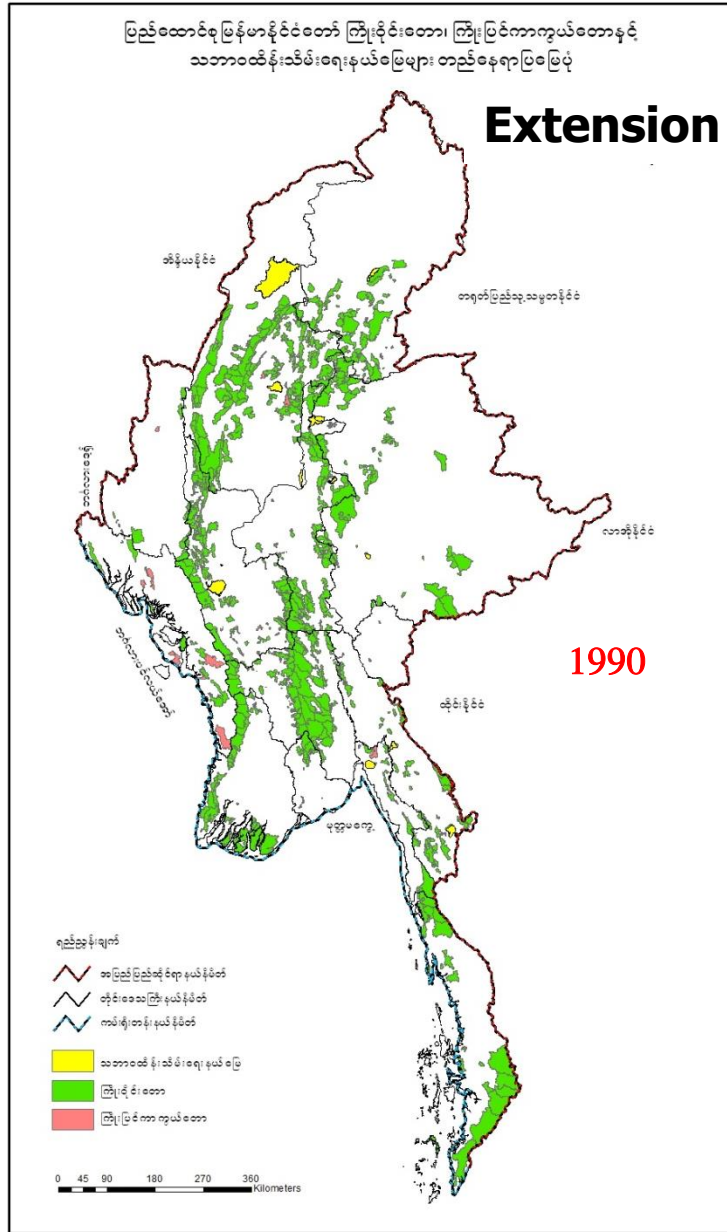
No Thematic Map on Major Forest Types

Tidal Forest

Beach and Dune Forest

Swamp Forest

Evergreen Forests — 16%
- Tropical Wet Evergreen
- Tropical Semi Evergreen

Mixed Deciduous Forests
- Moist Upper Mixed
- Lower Mixed — 34%
- Dry Upper Mixed — 5%

Dry Forests — 10%
- Than-dahat
- Thorn

Deciduous Dipterocarp or Indaing Forest — 5%

Hill and Temperate Evergreen Forests — 26%
- Sub Tropical Wet Hill
- Sub Tropical Mixed Hill and Savannah
- Alpine

4%

Source: *A Checklist of the Trees, Shrubs, Herbs, and Climbers of Myanmar.* Contributions from the United States National Herbarium. Volume 45: 1-590

2015

Legend

FC_FRA Categories
- Closed forest
- Open forest
- otherwoodedland
- Cropland/Otherlands/Settlements/wetlands/Grsslands
- Water
- Snow
- mangroves

0 35 70 140 210 280
Miles

Extension of PFE Land and Limitation on Forest Inventory

Extension of PFE Land

1990

2015

Forest Inventory Cover Area (1995-2014)

Harmonizing national land use categories with FRA and IPCC land use categories

LU-CODE	National LULC Categories	FRA	IPCC
1	Closed Forest	Forest (includes primary forest, other naturally regenerated forest, and planted forest)	Forest land
8	Mangrove		
2	Open Forest		
3	Other wooded land	Other wooded land	
11	Grassland		Grassland
4	Crop land	Other land with tree cover Other land	Cropland
5	Other lands		Other lands
9	Snow		
6	Settlements		Settlement
7	Wetland		Wetlands
10	Water	Inland water bodies	

NFMS and REDD+ Readiness Roadmap

❖ GOM signed UNFCCC on 11 June **1992** and ratified the convention on 25 November **1994**.

❖ Myanmar became a partner country of the UN-REDD Programme in December 2011.

❖ The Roadmap was developed between July 2012 and September 2013 with the support of Norway and UNREDD.

❖ Two Action Plans on NFMS and FREL/REL(in English and Myanmar) already finished in 2016.

❖ MRV/NFMS and FRELs/RELs Technical Working Group

UN-REDD
PROGRAMME

**Myanmar REDD+
Readiness Roadmap**
UN-REDD PROGRAMME
July 2013

The Government of Norway, DFID and the UN REDD Programme provided financial support for the development of this Roadmap

UN-REDD
PROGRAMME

Development of a National Forest
Monitoring System for Myanmar

September 2015

UN-REDD
PROGRAMME

Forest (Emissions) Reference Level
action plan for Myanmar

September 2015

Projects for REDD+ and Monitoring

- **International Tropical Timber Organization (ITTO):** Capacity building for developing REDD-plus activities in the context of sustainable forest management (3 years project)

- **AFoCo**: Regional Project on Forest Resource Assessment Capacity Building

- **AAS :** Study on Forest Degradation Monitoring for REDD+ (Technical cooperation, 2 years project)

- **UN-REDD Programme:** Targeted support for implementation of REDD+ Roadmap, REDD+ MRV

- **FAO:** Strengthening Myanmar's National Forest Monitoring System-Land Use Assessment and Capacity Building (TCP/MYA/3501)

- **AIT/JAXA Mini-Project:** Remote Sensing Application in Forestry and Biomass Estimation (by using ALOS PALSAR and AVNIR-2 with field data)

-focusing on capacity building and methodology development

On Going Projects for REDD+ and Monitoring

No	Project Name	Donor Agency	Project Period	Project Area
1	Capacity Building of Relevant Stakeholders for REDD+ Readiness of Myanmar	KFS	2016-2018	Bago Region, Three RFs
2	REDD+ Himalayas: Developing and using experience in implementing REDD+ in the Himalayas	ICIMOD	2016-2018	Shan State, Townships in Taungoo District
3	Tenure and Global Climate Change (USAID Myanmar Land Tenure Project))	United States Agency for International Development	2014-2017	Three Pilot Areas
4	OneMap Myanmar Project	Swiss Agency for Development and Cooperation-SDC	2015-2023	Myanmar
5	Sustainable cropland and forest management in priority agro- ecosystems of Myanmar (GCP/MYA/017/GEF)	FAO	2016-2021	Ayeyarwady, Mandalay, Chin
6	Nesting a REDD+ project carbon accounting and monitoring system under the (sub-) national system – a case study	Japan Government/FFPRI	On going	Paunglaung Watershed
7	IC-MNFI	Finnish Government	2017-2020	Capacity Development
8	Development of NFMIS	Finnish Government UNREDD FAO	2017-2021	Myanmar

2017 Work Plan of TWG

- Technical Backstopping mission by FAO on implementing NFMS/ FREL APs- (On going)

- **GHG training**, GHG Inventory including use of IPCC software tools (Finished during February 2017)

- Technical support mission on FREL development and implementation of FREL action plan (On going)

- Develop initial Efs and activity data (first order assessment) for FREL (On going)

- National Workshop on initial FREL (to be at the end of this year)

- Myanmar Web-Portal for Spatial data established and functional (on going)

- Design of a multipurpose national forest inventory-NFI Piloting (on going)

- IC-MNFI (Finnish Project started 2017 beginning)

- Revise planning for NFMIS for five years plan

Expectation to use MOLI data

Challenges in Forest Resources Monitoring

- Increasing information needs in forestry sector

- REDD+ readiness- require **substantial amendments** of the existing forest information system in **technical, organizational** and **institutional** terms

- Existing forest information – **high margins of error and uncertainties** (forest biomass estimations, carbon stocks, its changes over time at national level etc…)

- Status and change of land areas and forest cover **inconsistencies** over time (sources, methodologies, definitions etc…)

- Clear forest definition but uncertainty in image interpretation (difficulties in thresholds of categories)

- Limited methodology and information concerning with Forest degradation

- Limited scientific reports and research programme

Assessment on Dry Forest

Seasonal Effects

Way Forward

- Myanmar- good capacity in forest area change monitoring and forest inventory capacity but limited capacity in carbon pool reporting capacity and the low level of completeness of GHG inventory (Romijn et al. 2012).

- Integrated application of MOLI Data and forest inventory data for estimation of carbon stock

- Development of standardized methodology on forest degradation

- Future Collaboration between FD and JAXA for capacity development

- strengthening of Myanmar's NFMIS for forestry decision making.

- making reliable information and data available and promoting information exchange within government and among other stakeholders.

Thank you very much!!!