

## 添付-6-4

国内オープンセミナー 資料





JICA 東南アジア地域メコン流域の流域管理・環境保全に係る情報収集・確認調査

## メコン流域の流域管理と森林保全 ～パートナーシップを通じた気候変動対策への挑戦～

### 一般公開セミナー 次第

日時： 2019年8月9日(金) 9:00-12:30 (受付開始 8:30)

場所： JICA 竹橋ビル8F 多目的会議室

主催： 独立行政法人国際協力機構 (JICA)

時間	内容	講師 (敬称略)
9:00 - 9:05	開会の挨拶	JICA 地球環境部 技術審議役 山崎 敬嗣
9:05 - 9:35	基調講演 「Impacts of the Changes in Climate-Water-Forest-Sediment Environment on the Mekong River Basin」	国立研究開発法人土木研究所 水災害・リスクマネジメント国際センタ (ICHARM) センター長 小池 俊雄
9:35 - 9:55	Key Note Speech 「Outline of the MRC, Its Strategy, Challenges, Relationship Status with Donors, and Expectations for further Cooperation with Japan」	メコン河委員会 (MRC) 環境管理課 課長 Mr. So Nam
9:55 - 10:15	プロジェクト成果報告	JICA 情報収集・確認調査チーム 総括 株式会社建設技研インターナショナル 幡野 貴之
10:15 - 10:35	休憩 (Coffee Break)	
10:35 - 11:25	メコン流域各国からの報告	カンボジア国家メコン委員会: Mr. Chou Beang Ly ラオス国家メコン委員会: Mr. Phetsamone Khanopphet タイ国家メコン委員会: Mr. Panut Manoonvoravong ベトナム国家メコン委員会: Mr. Tien Hong Truong ミャンマー天然資源環境保全省: Mr. Soe Myint Oo
11:25 - 11:45	民間事例発表① 「サントリーグループの「水理念」及 びその取り組み」	サントリーホールディングス株式会社 コーポレートサステナビリティ推進本部 サステナビリティ推進本部 専任部長 内貴 研二
11:45 - 12:05	民間事例発表② 「イオンの森づくりを通じた持続可能 な社会の実現」	公益財団法人 イオン環境財団 事務局長 山本 百合子
12:05 - 12:25	質疑応答	会場のみなさまからのご質問
12:25 - 12:30	閉会の挨拶	JICA 地球環境部 森林・自然環境グループ 次長 森田 隆博

※使用言語: 日本語および英語 (同時通訳あり)

# JICA東南アジア地域メコン流域の 流域管理・環境保全に係る情報収集・ 確認調査 一般公開セミナー

## メコン流域の流域管理と森林保全 ～パートナーシップを通じた気候変動対策への挑戦～

2019年8月9日(金) 09:00-12:30



カンボジア



ラオス



ミャンマー



タイ



ベトナム

メコン下流域全体の森林資源、水資源について統合的な視点で情報を収集・整理し、将来の気候変動の影響予測などの分析を進める本調査では、カウンターパートであるメコン河委員会および各国メコン委員会から関係者を招き、調査で得られた知見を広く一般公開するための、セミナーを開催します。また、持続可能な森林資源・水資源管理においては、企業やNGOといった民間セクターの取り組みや官民連携にも期待が寄せられていることから、本セミナーでは、国内や海外で関連する活動を展開する企業の取り組みもご紹介し、みなさまと一緒に、持続可能な森林資源管理・水資源管理について考える場としたいと思います。ご関心のある多くの皆さまのご参加をお待ちしております。 ※日/英同時通訳付き



会場

竹橋合同ビル8F JICA 多目的会議室

東京メトロ東西線 竹橋駅 3b出口直結

東京メトロ千代田線、半蔵門線、丸の内線、都営三田線 大手町駅C2b出口徒歩5分

申込締切

2019年8月5日(月)

定員

約100名

参加費

無料

### 基調講演 講師

### プログラム

小池俊雄 氏

国立研究開発法人 土木研究所水災害・  
リスクマネジメント国際センター  
(ICHARM) センター長



- 8:30~ 9:00 受付(※合同ビル1Fで入室カードをお渡しします)
- 9:00~ 9:05 開会の挨拶 (JICA)
- 9:05~ 9:35 基調講演 (ICHARM 小池俊雄センター長)
- 9:35~ 9:55 Key Note Speech (メコン河委員会 代表者)
- 9:55~10:15 プロジェクト成果報告 (JICA調査チーム)
- 10:15~10:35 休憩 (Coffee Break)
- 10:35~11:25 下流域国内メコン委員会その他(5カ国)からの報告
- 11:25~11:45 サントリーグループの「水理念」及びその取り組み (サントリーホールディングス株式会社)
- 11:45~12:05 イオンの森づくりを通じた持続可能な社会の実現 (公益財団法人 イオン環境財団)
- 12:05~12:25 質疑応答
- 12:25~12:30 閉会の挨拶 (JICA)

### お申し込み方法

メールにて参加者名、所属、連絡先(電話、メールアドレス)をご記入の上、以下担当までお送りください。  
株式会社 建設技研インターナショナル 環境部 谷澤 (tanisawa.nozomi@ctii.co.jp) Tel: 03-3638-2622  
市川 (ichikawa-shumpei@ctii.co.jp)

写真



会場の様子



開会



開会の挨拶 (JICA 地球環境部 山崎技術審議役)



基調講演 (ICHARM 小池センター長)



Key Note Speech (メコン委員会 So Nam 課長)



プロジェクト成果報告 (調査チーム 幡野総括)



カンボジア国家メコン委員会: Beang Ly 氏



ラオス国家メコン委員会: Khanopphet 氏

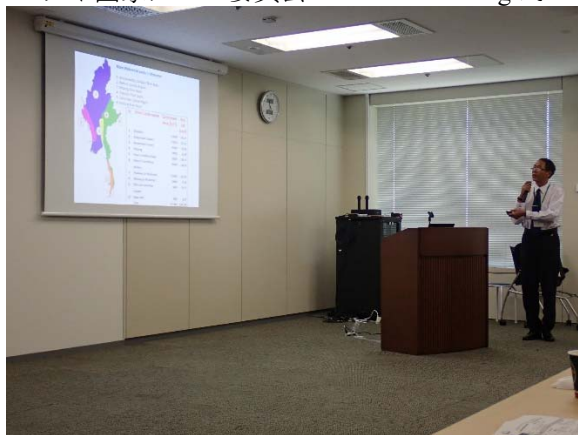
写真



タイ国家メコン委員会: Manoonvoravong 氏



ベトナム国家メコン委員会: Truong 氏



ミャンマー天然資源環境保全省: Myint Oo 氏



サントリーホールディングス サステナビリティ推進本部 内貴専任部長



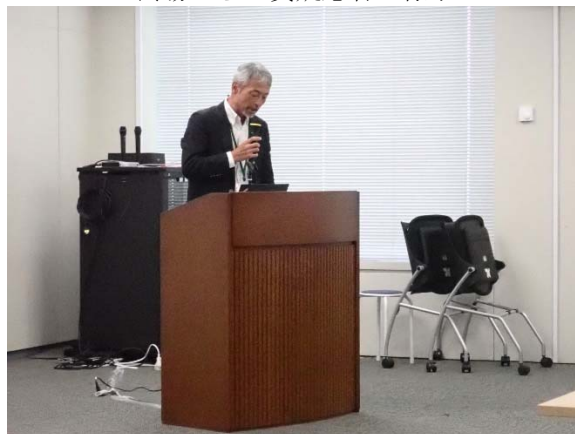
イオン環境財団 山本事務局長



会場からの質疑応答の様子



会場からの質疑応答の様子



閉会の挨拶 (JICA 地球環境部 森田次長)

Open Seminar for  
 JICA's Study on Data Collection survey on the Basin Management and Environmental  
 Conservation in Mekong River Basin  
 9 August 2019  
 JICA Head Office, Tokyo, Japan



# Outline of the MRC, Its Strategy, Challenges, Relationship Status with Donors, and Expectations for further Cooperation with Japan

*Dr. So Nam, Chief Environment Management Officer, MRCS ED*

*Dr. Prayooth Yaowakhan, Ecosystem and Wetland Specialist, MRCS ED*



## OUTLINE OF PRESENTATION

1. The Story of Mekong Cooperation
2. Vision and Mission
3. Outline of the MRC
4. MRC Strategic Plan 2016-2020
5. Management of the Mekong River Basin
6. Issues and Challenges of Management of the Mekong River Basin
7. Recommendations for Sustainable Management of the MRB
8. Cooperation with Development Partners, Dialogue Partners, and other River Basin Organizations and Regional Organizations
9. Expectations for further Cooperation with Japan



## THE STORY OF MEKONG COOPERATION

## 62+ Years of Mekong River Cooperation



- MRC builds on **long history of Mekong river cooperation dating back to 1957** – the Mekong Committee, with extensive knowledge base in terms of monitoring data, studies, basin plans, etc. (62+ yrs.)
- The **1995 Mekong Agreement (MA)** gives the MRC a strong legal foundation – the only one as a treaty based organization
- MRC has four members (Cambodia, Lao PDR, Thailand and Viet Nam) and two dialogue partners (China and Myanmar)
- The MA provides the MRC with a **mandate**: to **promote and coordinate** sustainable development and management of water and related resources of the Mekong River Basin
- This mandate has been **reaffirmed at the highest levels** (3 Summits of prime ministers) with **increasing financial contribution from countries** year by year (50% by 2021, 75% by 2025, 100% 2030)
- The mandate is also operationalized through successful implementation of the MA for the past 24 years





# VISION AND MISSION

## VISION AND MISSION

### VISION for the Mekong River Basin

- *An economically prosperous, socially just and environmentally sound Mekong River Basin*

### VISION for the Mekong River Commission

- *A world class, financially secure, International River Basin Organization serving the Mekong countries to achieve the basin Vision*

### MISSION of the Mekong River Commission

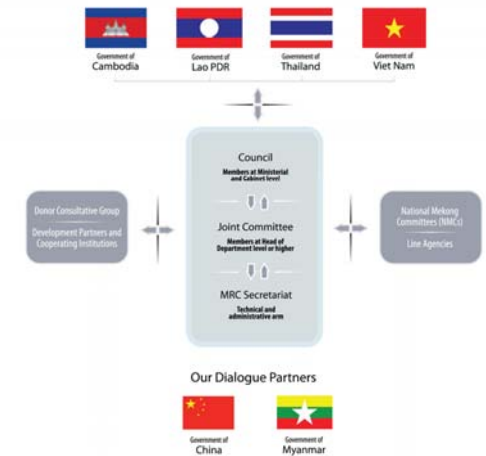
- *To promote and coordinate sustainable management and development of water and related resources for the countries' mutual benefit and the people's well-being*



# OUTLINE OF THE MRC

## MRC GOVERNANCE STRUCTURE

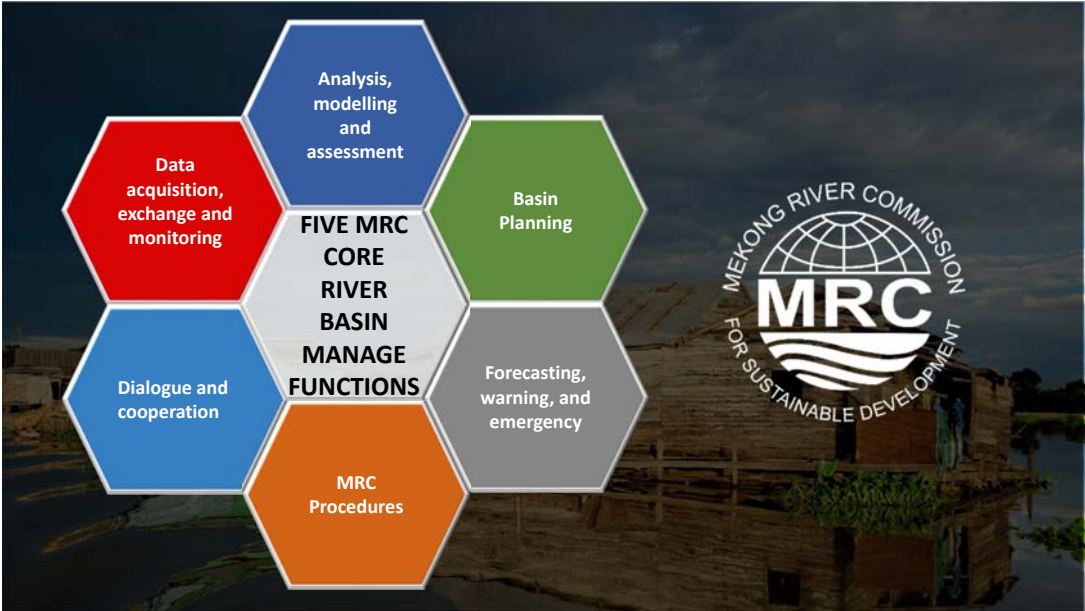
### Mekong River Commission Governance Structure





**MRC SECRETARIAT STRUCTURE**

**MRC SECRETARIAT STRUCTURE**



**MRC STRATEGIC PLAN 2016-2020**

**MRC**  
MEKONG RIVER COMMISSION  
FOR SUSTAINABLE DEVELOPMENT

## MRC STRATEGIC PLAN 2016-2020



- The plan has been developed based on:
  - The updated IWRM-based Mekong Basin Development Strategy 2016-2020;
  - MRC's organizational reform agenda; and
  - Recommendations from the mid term review of the 2011-2015 MRC Strategic Plan and the 2015 appraisal mission commissioned by MRC's Development Partners.

## STRATEGIC PLAN 2016-2020 OBJECTIVES (1)

Key Result Areas	Outcomes
<b>Key Result Area 1:</b> Enhancement of national plans, projects and resources based on basin-wide perspectives	<b>Outcome 1:</b> Increased common understanding and application of evidence-based knowledge by policy makers and project planners
	<b>Outcome 2:</b> Environment management and sustainable water resources development optimized for basin-wide benefits by national sector planning agencies
	<b>Outcome 3:</b> Guidance for the development and management of water and related projects and resources shared and applied by national planning and implementing agencies

## STRATEGIC PLAN 2016-2020 OBJECTIVES (2)

Key Result Areas	Outcomes
<b>Key Result Area 2:</b> Strengthening regional cooperation	<b>Outcome 4:</b> Effective and coherent implementation of MRC Procedures by the Member Countries
	<b>Outcome 5:</b> Effective dialogue and cooperation between Member Countries and strategic engagement of regional partners and stakeholders on transboundary water management

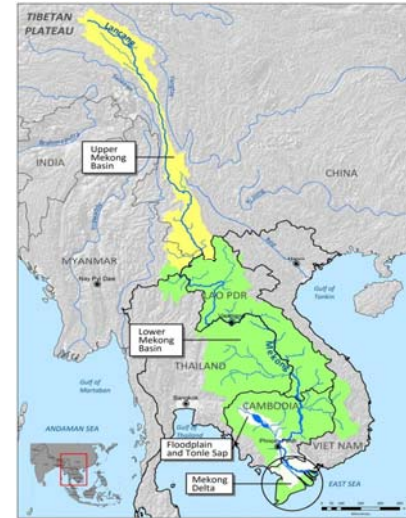
## STRATEGIC PLAN 2016-2020 OBJECTIVES (3)

Key Result Areas	Outcomes
<b>Key Result Area 3:</b> Better monitoring and communication of the Basin conditions	<b>Outcome 6:</b> Basin-wide monitoring, forecasting, impact assessment and dissemination of results strengthened for better decision-making by Member Countries
	<b>Key Result Area 4:</b> Leaner River Basin Organization



# Management of the Mekong River Basin

## The Mekong River Basin



- The Mekong River rises in the Himalayas in PR China at an elevation of about **5,000 m**, where it is known as **the Lancang River**.
- It is **the world's 12<sup>th</sup> longest river**, flowing for almost **4,763 km** through Myanmar, Lao PDR, Thailand and Cambodia into the East Sea (referred to also as the South China Sea) in Viet Nam.
- It has **the world's 8<sup>th</sup> largest flow**, with a mean annual discharge of approximately **446 km<sup>3</sup>**, and its basin is **the world's 21<sup>st</sup> largest by area**, draining **810,000 km<sup>2</sup>**.
- The Mekong River is closely linked with **the culture and development** of the countries through which it flows.
- For millennia, the river's abundant resources have nurtured a unique and rich ecosystem as well as sustained the livelihoods of those living in the basin.

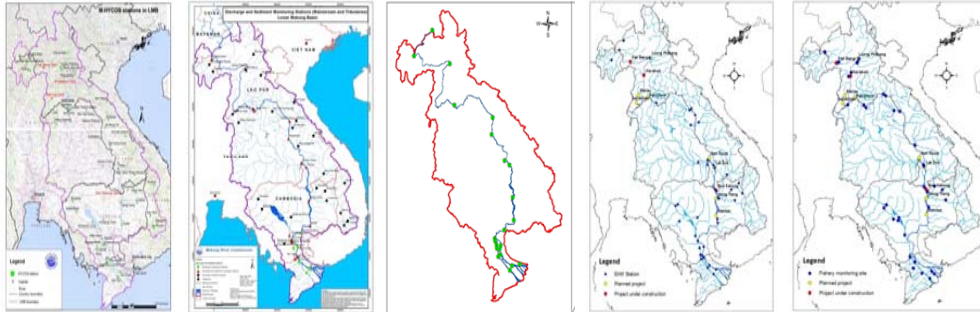
## The 1995 Mekong Agreement and its Procedures

1. The **1995 Mekong Agreement**: the Agreement for the Cooperation on the Sustainable Development of the Mekong Basin, signed in April 1995.; and
2. **Its Five Sets of Rules or Procedures for water utilization**
  - **Procedures for Data and Information Exchange and Sharing**: aim to operationalise data and information exchange among the MRC Member Countries. **Technical Guidelines (TGs)**
  - **Procedures for Water Use Monitoring**: aim to provide a comprehensive and adaptive framework and process to support effective monitoring of intra-Basin water use and diversion. **TGs**
  - **Procedures for Notification, Prior Consultation and Agreement**: aim to provide steps for the MRC Member Countries to support the establishment of the Rules for Water Utilisation and Inter-Basin Diversions. **TGs**
  - **Procedures for the Maintenance of Flows on the Mainstream**: Aim to maintain minimum monthly flows in the Mekong mainstream by the 4 MCs. **TGs**; and
  - **Procedures for Water Quality**: are designed to establish a cooperative framework for the maintenance of acceptable/good water quality to promote sustainable development in the Mekong River Basin. **TGs**

## Key Relevant Strategies and Guidelines

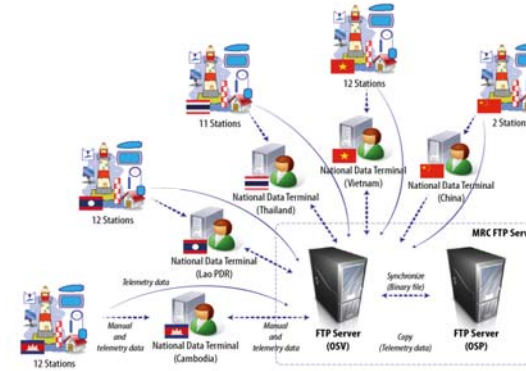
1. Basin-wide Fisheries Management and Development Strategy;
2. Mekong Adaptation Strategy and Action Plan;
3. Guidelines for Transboundary Environmental Impact Assessment, final version
4. Drought Management Strategy, final version to 49<sup>th</sup> JC Meeting;
5. Flood Management Strategy, being finalized;
6. Strategy for Basin-wide Environmental Management for Regional Important Environmental Assets, being prepared;
7. Sustainable Hydropower Development Strategy, being updated; &
8. The Preliminary Design Guidance for Mainstream Hydropower Projects, being updated.

## Five MRC's Water and Environmental Monitoring Programmes



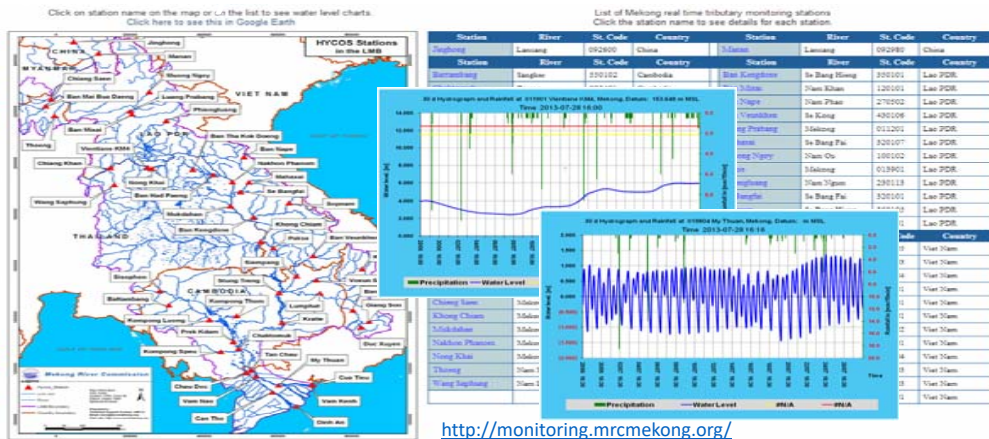
Programme	Start Date	Number of Sites
Hydrology (since 1900)	-	-
HYCOS (2008-Date)	2008-Date	58 stations
Discharge & Sediment	DSMP 2009 – Date	17 sites
Water Quality WQN	1993 - Date	22 sites
Aquatic Ecology EHM	2003 - Date	41 sites
Fisheries FADM + others	1994 – Date	38 sites

## Mekong-HYCOS network (15 minutes)

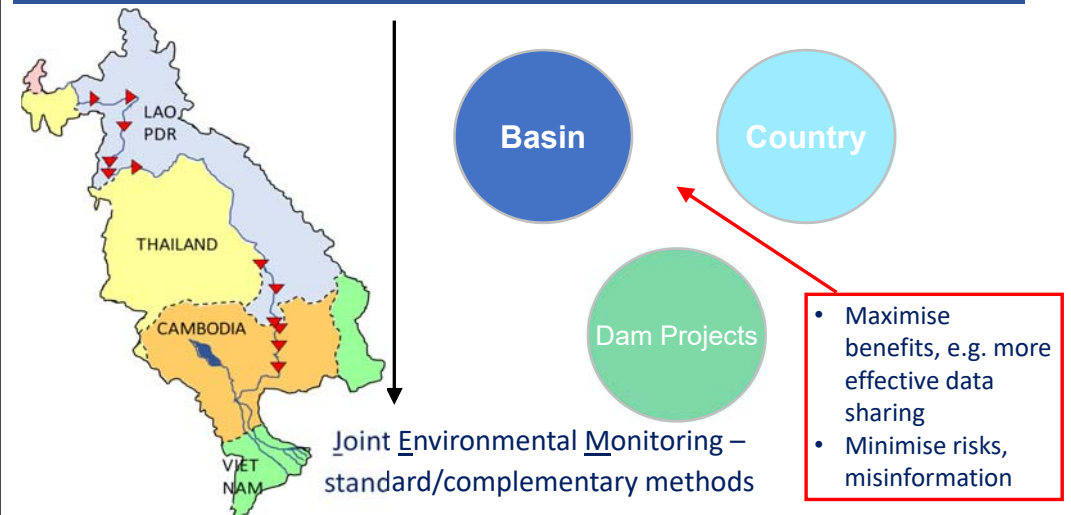


- The Hydromet system established in **2005** and updated to HYCOS telemetry system in **2008**
- **58** telemetry stations: 17 on the mainstream, 30 on tributaries, 2 tidal stations in the Mekong Delta
- Parameters: rainfall and water level
- Drought management project supported by Japanese Govt. over the past 10 years added some more stations for DMF

## Mekong-HYCOS network (15-min)



## Joint Environment Monitoring Programme- started in 2016



## MRC Contribution to the achievement of SDGs

- **Alignment** of MRC IF Assessment Indicators with Goals/Targets identifying both **primary and secondary linkages**.

- **Primary linkages** are to:

- *SDG 6: Clean water and sanitation*
- *SDG 2: Zero hunger*
- *SDG 7: Affordable and clean energy*
- *SDG 13: Climate action*
- *SDG 14: Life below water*
- *SDG 15: Life on land*

					<p>Water security</p> <p>Water-related health security</p> <p>Water quality compliance with the FWQ and ecosystem health</p> <p>Condition of riverine habitats</p> <p>Condition and status of ecologically significant areas</p> <p>Proportion of benefits derived from cooperation to total economic value of all LMB water-related sectors</p>
					
<p>Food Security</p> <p>Economic value of fisheries</p> <p>Economic value of agriculture</p> <p>Contribution to food grain supply</p> <p>Contribution to protein supply</p>	<p>Access to electricity</p> <p>Economic value of hydropower</p> <p>Contribution to power supply</p>	<p>Greenhouse gas emissions from LMB water-related sectors</p> <p>Relative contribution to global emissions</p> <p>Institutional response to the effects of climate change</p> <p>Flood protection measures</p> <p>Drought protection measures</p> <p>Coverage of disaster warning systems</p>	<p>Economic value of fisheries</p> <p>Cost of riverbank and coastal erosion</p>	<p>Extent of wetland area</p> <p>Condition of riverine habitats</p> <p>Condition and status of fisheries and other aquatic resources</p> <p>Condition and status of ecologically significant areas</p>	

## Issues and Challenges of Management of the Mekong River Basin

### Issues and Challenges: **Environment**

#### • **Mainstream flows:**

- Increase in dry season minimum flows; and
- Flood season flows in both the upper and lower reaches of the LMB appear to be declining.

#### • **Water quality and sediments**

- Total Phosphorous frequently exceeds threshold;
- With watch points for pesticide and fertiliser use; and
- Suspended sediment concentrations have declined considerably; erosion increase

#### • **Environmental assets**

- Wetland decline remains a concern;
- Channel and riparian habitat has declined;
- Signs of over-fishing with CPUE declining and fish size getting smaller;
- Forested area has improved, although questions remain about biodiversity values given the use of plantation forests; and
- Area affected by salinity increased: Salinity intrusion in the Mekong Delta.

### Issue and challenges: **Organization**

- A **mismatch between ambition** in MRC SP 2016-2020 and resources
- Concerns by external stakeholders on the **limited influence of MRC**
- MRC products are **not yet integrated** into national systems
- **Recognition of the implicit influence** that MRC has had due to its existence and the evolution of basin-wide thinking over the years
- **Differing perspectives** on what is meant by approval of MRC products and specific concerns that are seen as supra-national or quasi-regulatory instruments
- **Communications and dissemination of material** continues to improve
- **Recognition of different capacities** among Member Countries
- **Data and knowledge** gap remains



## Key Recommendations for Sustainable Management of the Mekong River Basin

### Key Recommendations (1)

- **Sustainable water resources development in the LMB** will not be achieved by a singular reliance on unilateral investment decisions of the Member Countries.
- The **transboundary connectivity**, mutual dependencies, shared resources, opportunities of scale and cooperation necessities require a set of supra-national development and planning policies to advance sustainable and beneficial projects.
- The **management of trade-offs between hydropower and fisheries** is more efficiently achieved by cross-sector benefit sharing than by the compensation of losses between countries.
- Member Country consideration of **emerging energy technologies** that are competitive with hydropower .

### Key Recommendations (2)

- ❑ Continue and enhance monitoring of **flow conditions and water quality**.
- ❑ Develop and implement an MRC **Data Acquisition and Generation Action Plan**.
- ❑ Address the problem of **reduced sediment concentrations**.
- ❑ Address the need to **take urgent action to preserve and protect** remaining environmental assets, including fish and forests
- ❑ Adopt a **more proactive approach** to basin planning and the management of trade-offs between sectors and countries.



## COOPERATION WITH DEVELOPMENT PARTNERS

## MRC DEVELOPMENT PARTNERS

### MRC Strategic Plan 2016-2020\$

by May 2019

- Australia\*
- Belgium
- European Union\*
- France
- Germany\*
- Japan
- Luxembourg\*
- Netherlands\*
- Sweden\*
- Switzerland\*
- World Bank

\$ Reduced funds by at least 50% compared SP 2011-2015

\* Basket Fund contributors



**DP Troika**  
 Germany – chair  
 France – past chair  
 Australia – next chair



## COOPERATION WITH DIALOGUE PARTNERS CHINA AND MYANMAR

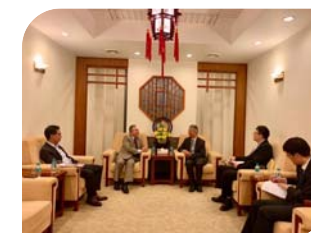
## The JICA – MRC Joint Project

Japan International Cooperation Agency (JICA) and MRC co-initiated the new project on “the Study on Data Collection Survey on the Basin Management and Environmental Conservation in Mekong River Basin” since March 2018. The Project will be successfully completed by August 2019.



## COOPERATION WITH CHINA

- The 2<sup>nd</sup> Riparian CEO, upon assuming his office, **has met with the permanent representative of China** to ESCAP and Chinese focal point for MRC in February 2019 on ongoing MRC-China cooperation.
- The **CEO will visit Beijing officially in July 2019** to meet senior Chinese officials and follow up on the above
- China has nominated a **JRP** from the Lancang Mekong Water Res. Cooperation Center to work with MRCS.



**Joint Research on extreme events.** The draft report of the joint research on the hydrological impacts of Lancang dam cascade on extreme floods and droughts, a collaboration between MRC, China and IWMI, has been prepared, and consultation took place on 14 June 2019 at the MRC RFDMC.

**Joint reporting:** the first SOBR 2018: Upper Mekong/Lancang in China State of the Basin Report

## COOPERATION WITH MYANMAR

- Myanmar (Ministry of Natural Resources and Environment Conservation) had reviewed and provided comments on the **State of Basin Report – Upper Mekong** (Myanmar) chapter through official letter on 15 March 2019.
- Myanmar has nominated a young professional to be the **JRP from Myanmar**.

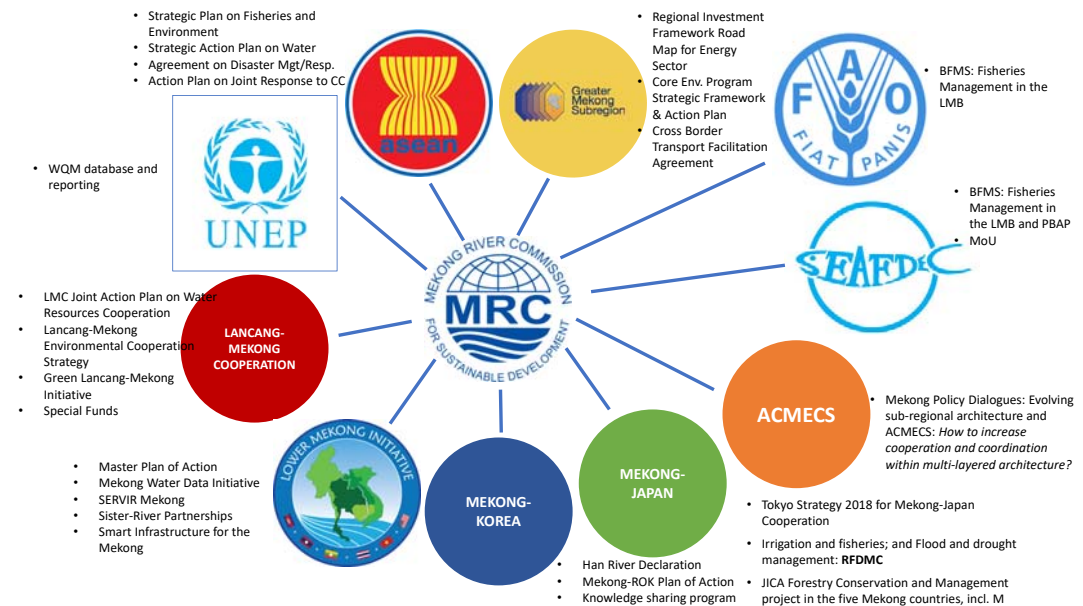


## COOPERATION WITH OTHER RIVER BASIN ORGANIZATIONS AND REGIONAL ORGANIZATIONS

### Cooperation with other River Basin Organizations

**Mississippi River Commission (MiRC)** and **US Army Corps of Engineers (USACE)** will be inviting MRC for the “Lower Water Inspection” on 12-16 August 2019. In addition, the USACE is supporting the MRC in terms of further understanding the Council Study results through shared vision planning and dam safety forum.

**Murray Darling Basin Authority (MDBA)**. Australia (DFAT) and MDBA renewed their existing MOU for another five years during the **Australia-Mekong Renewable Energy Dialogue** hosted by Australian DFAT in early June 2019.







## COOPERATION WITH OTHERS



### NGOs/CSOs

- MRC and the IUCN held a joint workshop on the results of the IUCN/ICEM/IWMI Nexus assessment of the Sekong, Sesan, and Srepok (3S) sub-basins in Cambodia, Lao PDR, and Vietnam in March 2019 at the MRCS.
- The MRCS CEO and management team met with the **Save the Mekong Coalition (SMC)** on 20 March 2019 to share information on the progress of key MRC works of their interest, to re-emphasize the role and mandate of MRC, to increase their understanding about the importance and value of continuing constructive engagement, and to demonstrate that MRC procedures and activities result in positive contributions.



## EXPECTATIONS FOR FURTHER COOPERATION WITH JAPAN

### EXPECTATIONS FROM MRC

- **New and practical technology** on sustainable watershed and forest management in the LMB.
- **Revision and dissemination** of the blueprints or frameworks for sustainable watershed management to the relevant users in the MCs.
- **Application** of the MRC Strategy for Basin-wide Environmental Management (SBEM) for Environmental Assets (EAs) with regional importance in the MCs.
- **Maintenance of good network** of Watershed Committees (RBO/RBCs) to continue exchange experiences and lessons learnt on WSM.
- **Capacity building and establishment of knowledge transfer center** of sustainable watershed and forest management in national level.

# Thank you



プロジェクト成果報告

Reporting of the Project Accomplishment



9 August 2019  
JICA Study Team (JST)

# 1. Outline of the Survey

## Project Information

Project Name:

Data Collection Survey on the Basin Management and Environmental Conservation in Mekong River Basin

東南アジア地域メコン流域の流域管理・環境保全に係る情報収集・確認調査

Target country: Cambodia, Lao PDR, Thailand, Viet Nam and Myanmar

Main counterpart:

Mekong River Commission (MRC) and 4 National Mekong Committees (NMCs)  
メコン河委員会(MRC)および各国メコン委員会(NMCs)

Objectives:

- 1) To **understand forest cover areas** in Lower Mekong Basin (except for China)
- 2) To **clarify triggers of deforestations** and issues of forest management
- 3) To **propose effective countermeasures** and to **recommend effective basin management policy** focusing on forestry sector in LMB

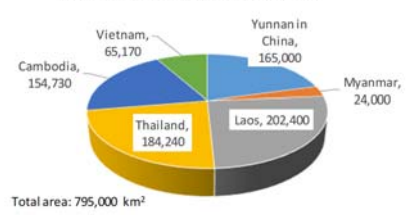
Project period: Dec 2017 to September 2019 2017年12月～2019年9月



Mekong River Basin  
(in 5 Countries: Thailand, Cambodia, Laos, Vietnam, and Myanmar)



Composition of Mekong River Basin



- Catchment area: 795,000 km<sup>2</sup>
- River length: 4,800 km
- Headwater: Tibetan Plateau
- River mouth: State of Ben Tre in Viet Nam
- General issues due to deforestation:  
Increase of natural disasters such as flooding, drought, collapse of ecosystems, acceleration of global warming and etc.

Data source: JICA

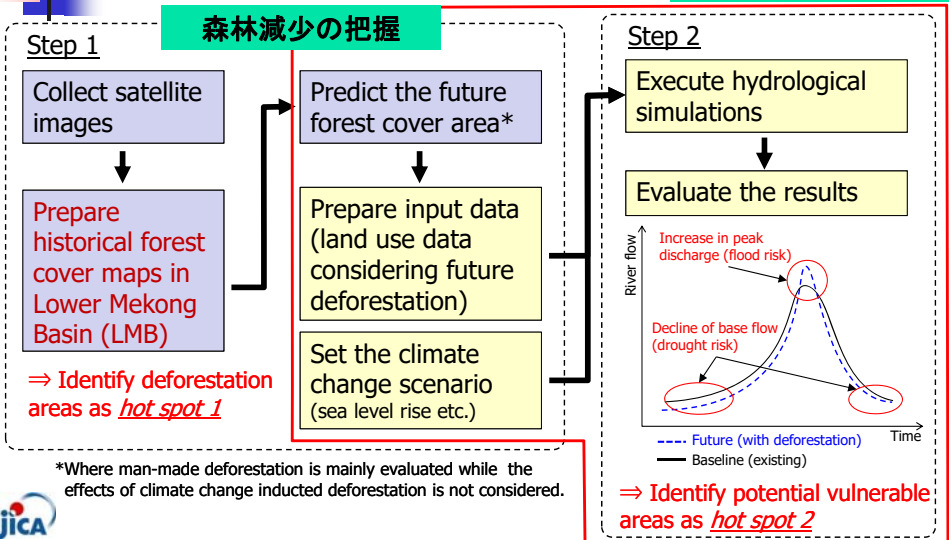


Location Map

# 1. Outline of the Survey

## Work Procedure

森林減少による流況変化の推定

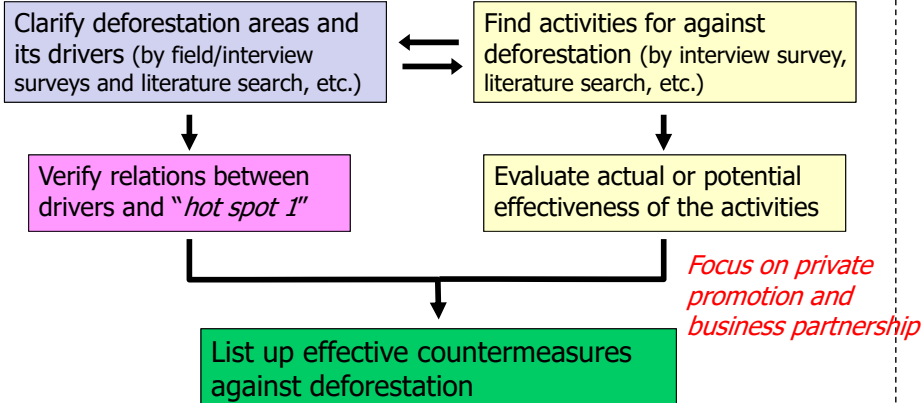


# 1. Outline of the Survey

## Work Procedure

Step 3-1

### 森林減少ドライバーの特定

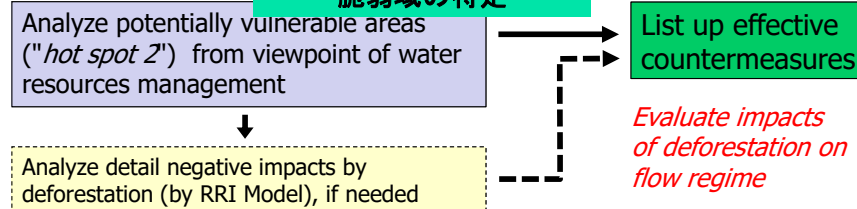


# 1. Outline of the Survey

## Work Procedure

Step 3-2

### 水資源管理の観点からの脆弱域の特定



Step 4

### 森林セクターに注目した流域管理方法・将来活動の提言

Propose effective countermeasures and to recommend effective basin management policy focusing on forestry sector in LMB based on the output from Step 3



Step 1

## (1) Historical Land Cover Maps

### Land Cover Maps



Land Cover Classification: Total 18-class  
 (1) forest (6 class types)  
 (2) urban area  
 (3) cropland  
 (4) rice paddy  
 (5) others (8 class types)  
 (6) unknown

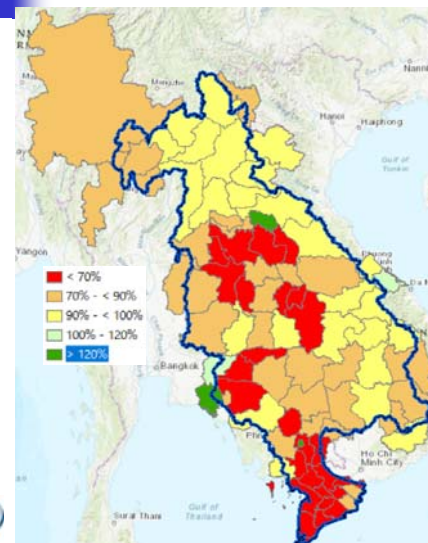
Fig- Land Cover Map by ADPC



Step 1

## (1) Historical Land Cover Maps

### Result on Image Analysis (1)



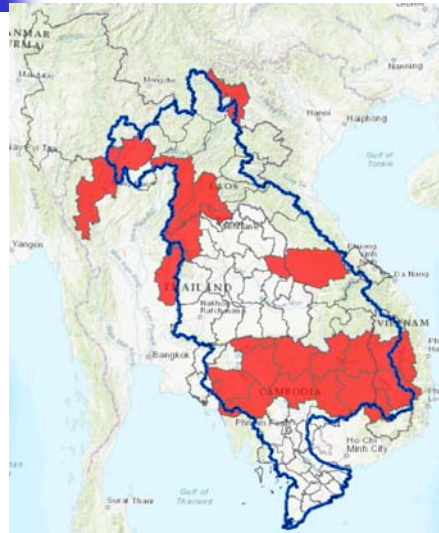
- The map indicates decrease/increase of provincial tree cover area.
- By using global observation data such as satellite images, change of forest cover area can be examined even for broad study area.
- Deforestation rates and areas can be calculated.

Fig- Tree Cover Residual Rate in LMB (from 1988 to 2017)



# (1) Historical Land Cover Maps

## Result on Image Analysis (2)



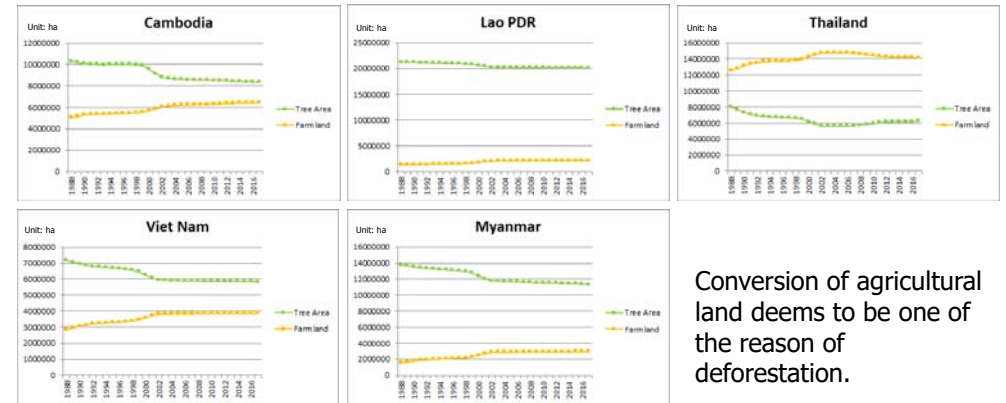
- Hotspot criteria
  - ✓ Forest cover ratio at province  $\geq 50\%$  in 1988
  - ✓ Deforestation  $\geq 0.22\%$  / Year
  - ✓ Correlation  $\leq -0.7$
  - \* Forest area and Agricultural Area

Fig- Hotspot Provinces in LMB (from 1988 to 2017)



# (1) Historical Land Cover Maps

## Result on Image Analysis (3) – Country Level



Conversion of agricultural land seems to be one of the reason of deforestation.

Fig- Historical Changes of Forest and Agricultural Area (Farm Land and Paddy field)  
**Note: Province area was not counted if out of Lower Mekong Basin**



# (1) Impact by Deforestation on Flow Regime

## Scenarios

[Scenario 1]

Based on the historical forest cover maps, future deforestation in 2040 is predicted at Step-1. Most of forest areas are expected to decrease.

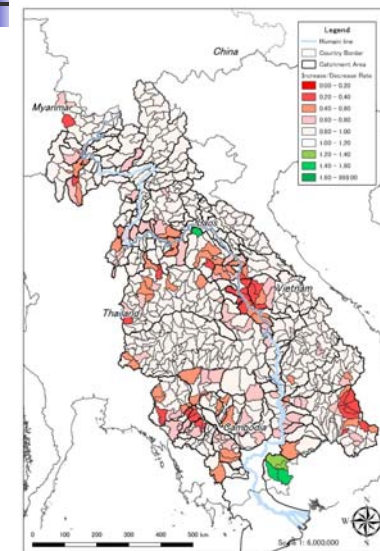
[Scenario 2]

Forest cover area which will recover up to past maximum forest areas from 1987 to 2018 was prepared as ideal case (scenario 2).



# (1) Impact by Deforestation on Flow Regime

## Changes of Forest Cover Area



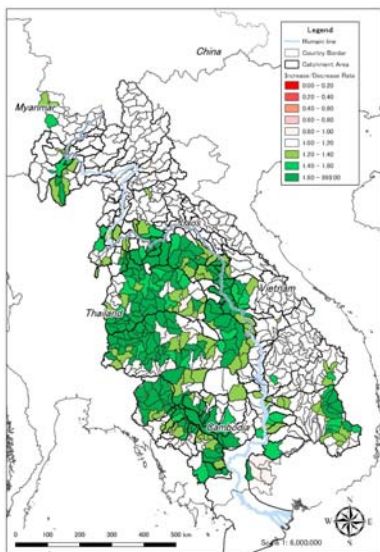
- At Scenario 1 set by historical forest cover areas, forest cover area decreases in whole LMB, especially, middle of Mekong River in Lao PDR

Fig- Increase/Decrease rate of forest cover area from baseline (scenario 1).



# (1) Impact by Deforestation on Flow Regime

## Changes of Forest Cover Area



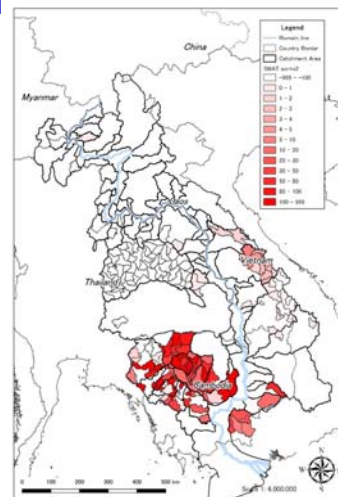
- At Scenario 2, forest cover area could be recovered up to past maximum forest cover area
- Forest cover areas in Thailand increases dramatically, which suggests that deforestation of Thailand in 1980's was serious.

Fig- Increase/Decrease rate of forest cover area from baseline (scenario 2).

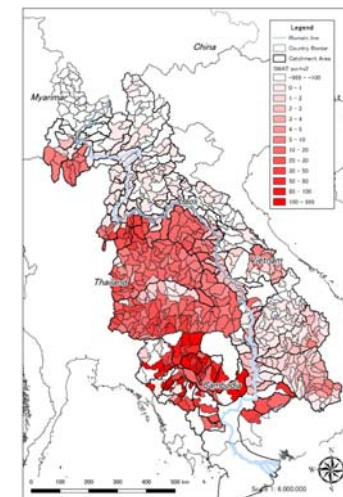


# (2) Extraction of "Hot spot 2"

## Increase in Runoff volume (+% vs Baseline)



[Scenario-1 (deforestation)]

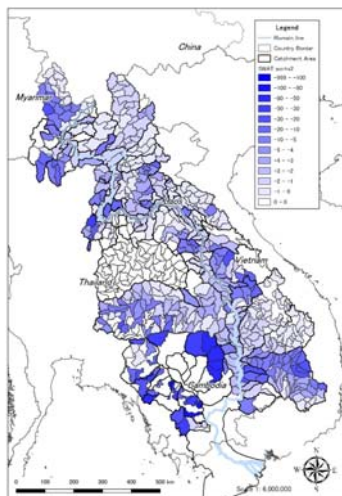


[Scenario-2 (recovery)]

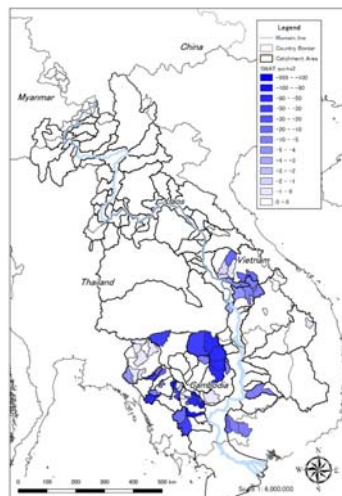


# (2) Extraction of "Hot spot 2"

## Decrease in Runoff volume (- % vs Baseline)



[Scenario-1 (deforestation)]

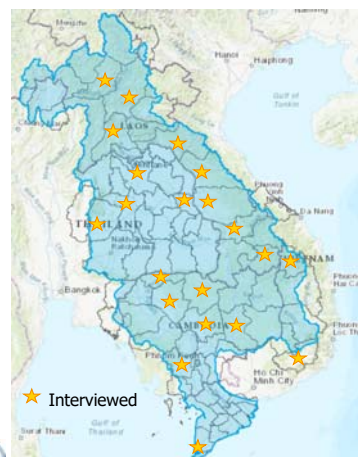


[Scenario-2 (recovery)]



# (1) Mitigations of Deforestation

## Interviewed Provinces



Country	Interviewed Provinces
<b>Cambodia</b>	Kompong Speu , Siem Reap , Otdar Meanchey, Preah Vihear, Kampong Thom, Kratie
<b>LAO PDR</b>	Savannakhet , Khammouan , Bolikhamsai , Vientiane Province , Luang Prabang , Oudomxay , Luang Prabang , Attapeu , Salavan
<b>Thailand</b>	Khon Kaen, Chaiyaphum, Mukdahan, Udon Thani
<b>Viet Nam</b>	Ca mau, Lam dong, Kon Tum

Fig- Interviewed Provinces in LMB



# (1) Mitigations of Deforestation

## Driver of deforestation and forest degradation in the LMB



# (1) Mitigations of Deforestation

## Driver of deforestation and forest degradation in the LMB

Condition	Forest	Forest degradation <sup>1</sup>	Forest degradation <sup>2</sup>	Deforestation
Image				
Activity (Example)	—	-Wood extraction -Road extension for development	-Wood extraction -Unsustainable use of NTFPs -Forest fires -Shifting cultivation	-Change of land use to agricultural use and/or use for residences

Example Image : Gia Lai Province, Viet Nam

# (1) Mitigations of Deforestation

## Proposed Approach

- ❑ Procurement of Fund
- ❑ Strengthen of Monitoring in the LMB level
- ❑ Involving Private Sector
- ❑ Spread and introduction of Eco DRR
- ❑ Strengthening of forestry in the LMB
- ❑ Sustainable Energy use

# 1. Draft Final Report

## Draft Final Report on Step-4

- (1) Recommendations for Future Watershed Management
- (2) Propose of Effective Forest Management

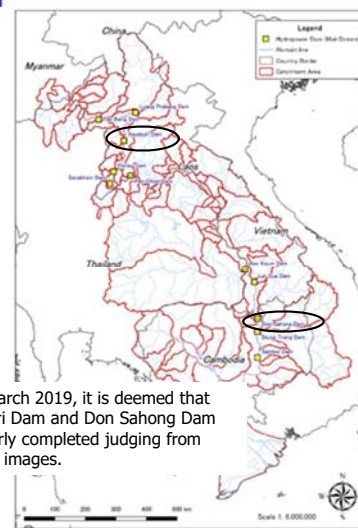
## (1) Recommendations for future watershed management

As the results of examination on the impacts, the following 4 topics are concluded as the major concerns of the watershed management for the LMB.

1. Securing Ecology and Morphology of Mekong River
2. Securing Food Security of the LMB
3. Securing Water Security of Mekong River
4. Adaptation of Climate Changes

## (1) Recommendations for future watershed management

### 1. Securing Ecology and Morphology of Mekong River

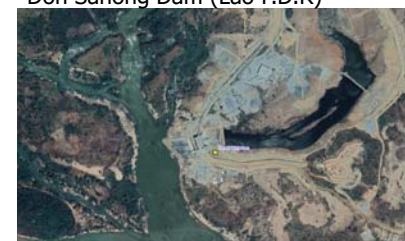


As of March 2019, it is deemed that Xayaburi Dam and Don Sahong Dam are nearly completed judging from satellite images.

Xayaburi Dam (Lao P.D.R)



Don Sahong Dam (Lao P.D.R)



## (2) Proposal of Effective Forest Management

### Proposed Approach

- ❑ Procurement of Fund
- ❑ Strengthen of Monitoring in the LMB level
- ❑ Involving Private Sector
- ❑ Spread and introduction of Eco DRR
- ❑ Strengthening of forestry in the LMB
- ❑ Sustainable Energy use

## (2) Proposal of Effective Forest Management

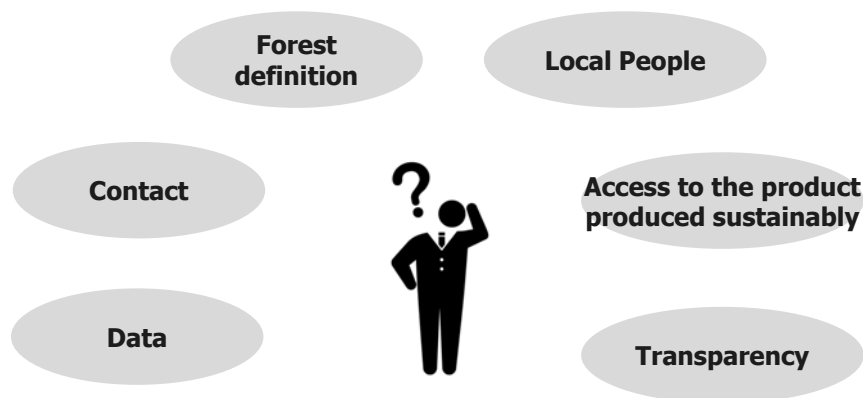
### Mobilization of the private sector





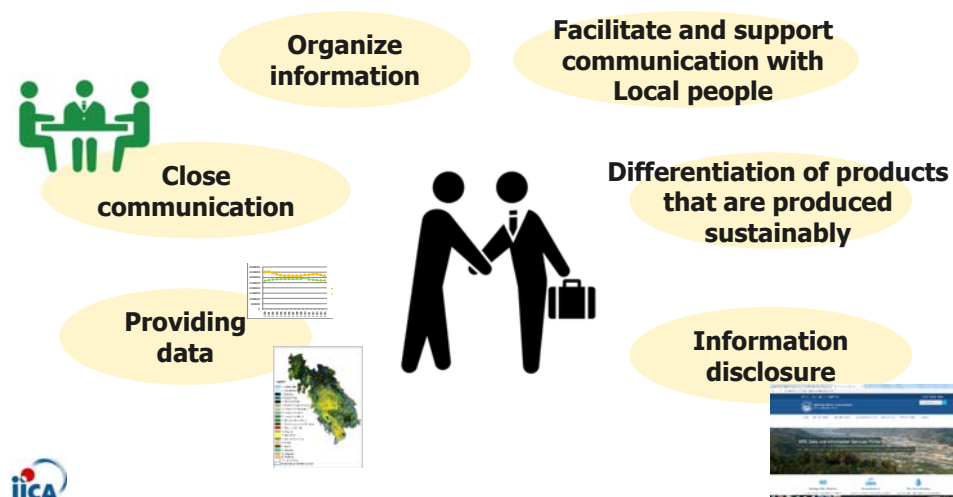
## (2) Proposal of Effective Forest Management

### Mobilization of the private sector



## (2) Proposal of Effective Forest Management

### Mobilization of the private sector



## (3) Private Promotion and Business Partnership

### Types of the Business Targeted

- Deforestation Driver related
- Non-Timber Forest Products : NTFPS related
- Enhancing Added-Value related
- Timber Value Chain related
- Alternative Energy related
- Disaster Prevention Technology related
- Eco-Tourism related
- CSR, SDGs related
- Others

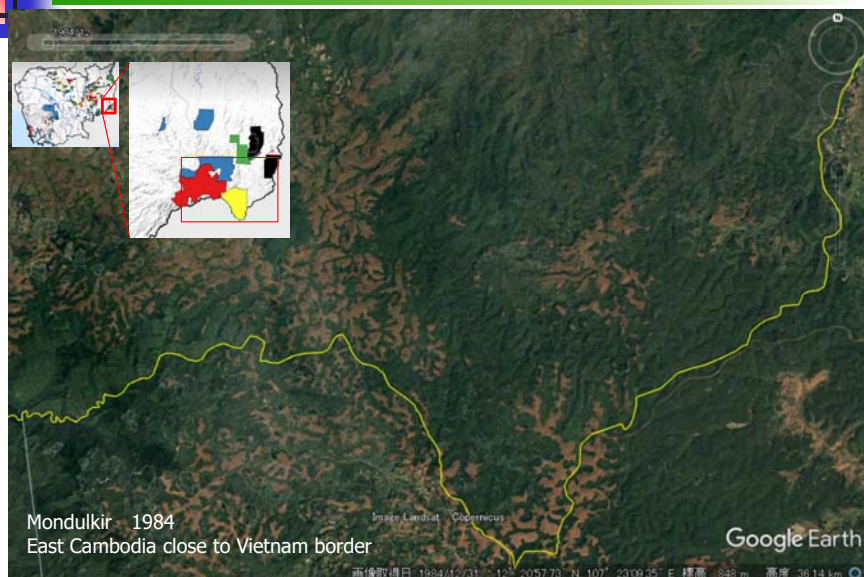
## (3) Private Promotion and Business Partnership

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- Others

## (3) Private Promotion and Business Partnership

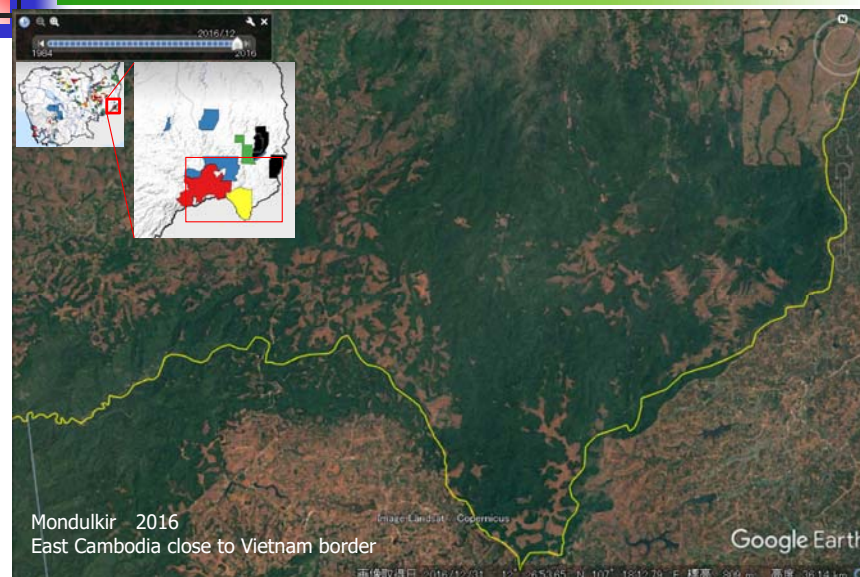
## Wood extraction –before-



28

## (3) Private Promotion and Business Partnership

## Wood extraction -after-



29

## (3) Private Promotion and Business Partnership

## Costal Erosion



30

## (3) Private Promotion and Business Partnership

## Recommendation to MRC

- Monitoring more detailed hydrological/hydraulic condition including sediment and forest conditions in Mekong River Basins focusing more on climate change and biodiversity.  
気候変動と生物多様性を更に勘案した流域の河床・森林状況を含むより詳細な水文・水理状況の観測の実施
- Active delivering of possessed/analyzed information to public/private sector.  
公共・民間セクターへの積極的な情報公開
- Conducting Campaign for enhancing the consciousness of forest.  
森林への関心を高めるキャンペーンの実施

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# Report from Lao PDR



**Phetsamone Khanophet**  
**Director of Monitoring and Evaluation Division,**  
**Lao National Mekong Committee Secretariat,**  
**Ministry of Natural Resources and Environment**

Open Seminar for  
 JICA's Study on Data Collection survey on  
 the Basin Management and Environmental Conservation in Mekong River Basin  
 9 August 2019  
 JICA Head Office, Tokyo, Japan



## Agenda

1. Introduction
2. Water Resources Management in Lao PDR
3. Challenge and Strategy toward Forestry Conservation
4. Expectation/ Comment on the Result of the Study Project

ຄະນະກຳມະການແມ່ນໍ້າຂອງແຫ່ງຊາດ Lao National Mekong Committee



## 1. Introduction

- The Lao People's Democratic Republic (Lao PDR) has abundant water resources. The Mekong river is the main river and 90 percent of the country is located in the Mekong river basin
- About 25 percent of the Mekong river basin is located in the Lao PDR, which contributes 35 percent of the Mekong's total flow.
- There are about 39 main tributaries in the Mekong river basin and the main ones that have their largest catchment area in the Lao PDR such as Nam Ou, Nam Ngum, Nam Theunkading.
- For planning purposes, the Lao part of the Mekong river basin is divided into 32 sub-basins.



ຄະນະກຳມະການແມ່ນໍ້າຂອງແຫ່ງຊາດ Lao National Mekong Committee



## 2. Water Resources Management in Lao PDR (National Perspective)

Prior 1975	1975-2000	2000-2011	2011-Present
<ul style="list-style-type: none"> <li>- Traditional management /practice</li> <li>- No clear institutions and specific legislations on IWRM</li> </ul>	<ul style="list-style-type: none"> <li>- Water and water resources law, 1996</li> <li>- Mekong Agreement 1995</li> <li>- Local knowledge and some regional and international applied</li> </ul>	<ul style="list-style-type: none"> <li>- IWRM principle introduced</li> <li>- Water Resources Coordination Committee and its secretariat established</li> <li>- Water Resources and Environment Agencies established 2007 (including Department of Water Resources)</li> <li>- Integrated River Basins Planning</li> <li>- Local knowledge + regional + international experiences</li> </ul>	<ul style="list-style-type: none"> <li>- Ministry of Natural Resources and Environment established 2011 (Dept of Water Resources)</li> <li>- Water &amp; water resource law revised &amp; approved (May 2017)</li> <li>- Water Resources Sub-sector working group established</li> <li>- Expand IWRM into 10 priority river basins</li> <li>- Technical guidelines developed</li> <li>- Up scale local knowledge + regional + international experiences</li> </ul>

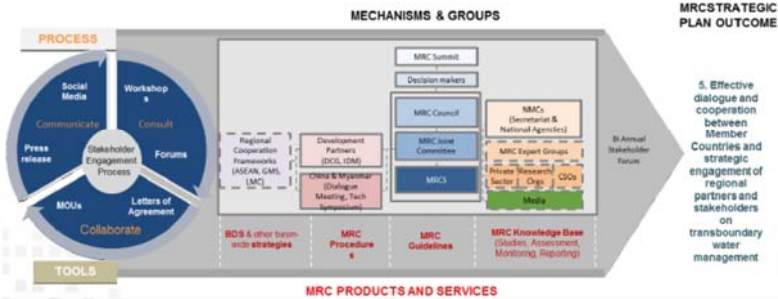
ຄະນະກຳມະການແມ່ນໍ້າຂອງແຫ່ງຊາດ Lao National Mekong Committee



## 2. Water Resources Management in Lao PDR (Regional Perspective)

- MRC Established by international treaty – the 1995 Mekong Agreement
- Highest level of commitments from Prime Ministers (2010 2014 & 2018 Summits), yearly ministerial meetings (MRC Council), heads of departments meetings twice yearly (JC), regular technical meetings and
- broader stakeholder forums (basin planning, climate change, fisheries, etc)

MRC Partners and Stakeholder Engagement Platform

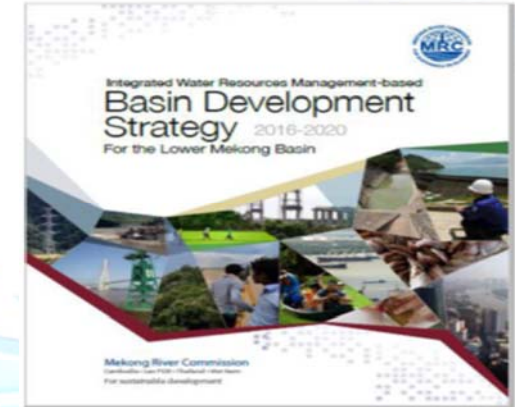


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## 2. Water Resources Management in Lao PDR (Regional Perspective)

- MRC is only one with agreed basin-wide Basin Development Strategy and forthcoming basin strategies for climate change, fisheries, navigation, hydropower, environment, etc
- Identifies development opportunities, risks, and priorities for development and management of water resources in the region through joint actions and projects



ຄະນະກຳມະການແມ່ນ້ຳຂອງແຫ່ງຊາດ Lao National Mekong Committee



## 2. Water Resources Management in Lao PDR (Regional Perspective)

- MRC is the only one with comprehensive Procedures framework for managing the basin



ຄະນະກຳມະການແມ່ນ້ຳຂອງແຫ່ງຊາດ Lao National Mekong Committee



## 2. Water Resources Management in Lao PDR (Regional Perspective)

- MRC has the most extensive and sound knowledge base about the Mekong: monitoring, assessments, guidelines since 1957



ຄະນະກຳມະການແມ່ນ້ຳຂອງແຫ່ງຊາດ Lao National Mekong Committee



### 3. Challenge and Strategy toward Forestry Conservation

**Challenges:**

- Lack of land use planning and coordination among stakeholders.
- Incomplete sets of regulations for forest classification.
- Need to link forest classification at macro and village level.
- Complex factors behind deforestation and forest degradation.



### 3. Challenge and Strategy toward Forestry Conservation

**Target based on forest strategy.**

- To improve quality of existing forested area, which are about 70% of the total land area, by naturally regenerating up to 6 million ha and planting trees up to 500,000 ha in unstocked forest area as an integral part of a rural livelihood support system encompassing stable water supplies and prevention of natural disasters.
- To provide a sustainable flow of forest products for domestic consumption and to generate household income through sale and export, thus contributing to livelihood improvement, fiscal revenue and foreign exchange earnings whilst increasing direct and indirect employment.
- To preserve the many species and unique habitats, which are, for different reasons, threatened both within the country and elsewhere.
- To conserve environment including protection of soil, conservation of watershed and climate.



### 4. Comment on the Result of the Study Project

**Result of Forest Cover Assessment 2015**

- The proportion of forest cover is 46.7% in 2015 There has been 6.5% increase in forest cover between 2010 and 2015, which equals to 1.29% annual increase.
- Simultaneously, the potential forest cover has decreased by -7.8%.
- Country level standard error of sampling is 0.60, which means that with 95% confidence the current forest cover is between 45.54 - 47.90%.
- The forest cover increase has been rapid in all regions: Southern 1.7%/year, Central 1.2%/year and Northern 1.2%/year.
- Again, the growth of forest cover has been mainly due to decrease of potential forests, which has been fast in all regions: Southern -2.4%/year, Central -1.8%/year and Northern -0.8%/year.
- The main difference in regional changes is in permanent agriculture category, which has increased in Southern (1.3%/year) and Central (0.6%/year) regions, but remained stable in Northern (0.0%/year) region



### Protected Forest Area Change Assessment - Results

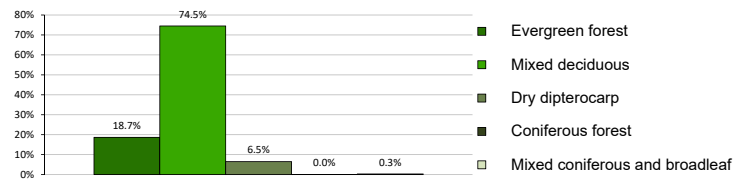
**Deforestation Rates**

Natural forest	2000-2005	2005-2010	2010-2015
Total forest loss in PFA	13073 ha	26706 ha	25169 ha
Annual deforestation rate in PFAs	Deforestation rate is 0.22 % <b>lower</b> in PFAs		0.30 %
Annual deforestation rate in untreated area			0.52 %
All forest (inc. plantations)	2000-2005	2005-2010	2010-2015
Annual deforestation rate in PFAs	Deforestation rate is 0.09 % <b>higher</b> in PFAs		0.26 %
Annual deforestation rate in untreated area			0.17 %

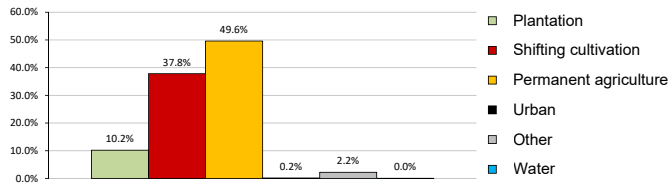
**NOTE!** Rubber plantations are expanding outside PFAs and are considered forests by current definition

## Deforestation by Forest Type and Drivers

Deforestation by forest type 2010-2015



Deforestation drivers in 2010-2015



13


Showing

- **Capacity building and exchange** on how to apply the tools such as modelling tools to support forest and water management
- Need to exchange the forest management practice in the upstream of river
- Need to exchange the coordination mechanism between forestry and water sectors



Thank you very much





# Basin Management and Forest Conservation in Mekong River Basin - Challenge toward Climate Change Strategy through Partnership -

## In CAMBODIA

Mr. LY CHOU BEANG

Deputy Director of Department of Forestry and Community Forestry, Forestry Administration, Ministry of Agriculture Forestry and Fisheries

9 August 2019

## Agenda

1. Introduction
2. Water Resources Management in Cambodia
  - 2.1. Main Rivers and Watershed Classification Map in Cambodia
  - 2.2. Watershed Classification
  - 2.3. Catchment Areas Map in Cambodia
  - 2.4. Map of Forestry Cover 2016 in Cambodia
  - 2.5. Forestry Cover change in Cambodia
3. Challenge and Strategy toward Forestry Conservation
4. Expectation/ Comment on the Result of the Study Project

## 1. Introduction

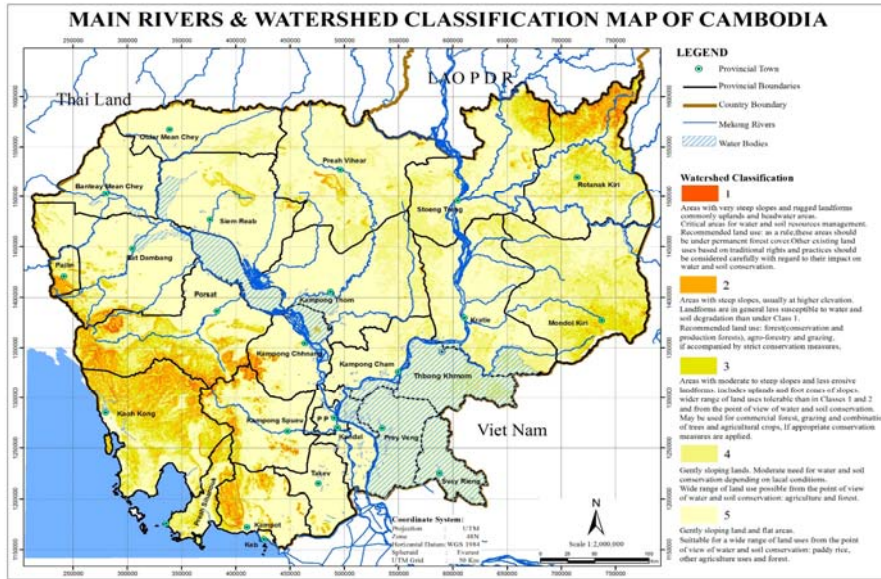
### General Information of Cambodia

- Geographic area = 181,035 Km<sup>2</sup>
- Forest Cover 2016 = 48.14%
- Municipality = 1 (Phnom Penh) and 24 Provinces
- Population = 16 Million
- Population growth rate = 1.48%
- Avg. GDP growth rate = 7.7%
- GDP per capita 2016 = 1,308USD

## 2. Water Resources Management in Cambodia

- Basin Areas in Cambodia has 155.000Km<sup>2</sup> equal 86% of total areas country and have as such as:
  - Main River (Mekong main river)
  - River/Steng (Se San, Se Kong, Tonlasab, Tenlabasak, and Tonlatoch rivers...)
  - Preak/Stream/o (Preak Te, O Talas, Preak Kreing...)
  - Lake (Tonlasab Lake)

## 2.1. Main Rivers and Watershed Classification Map in Cambodia

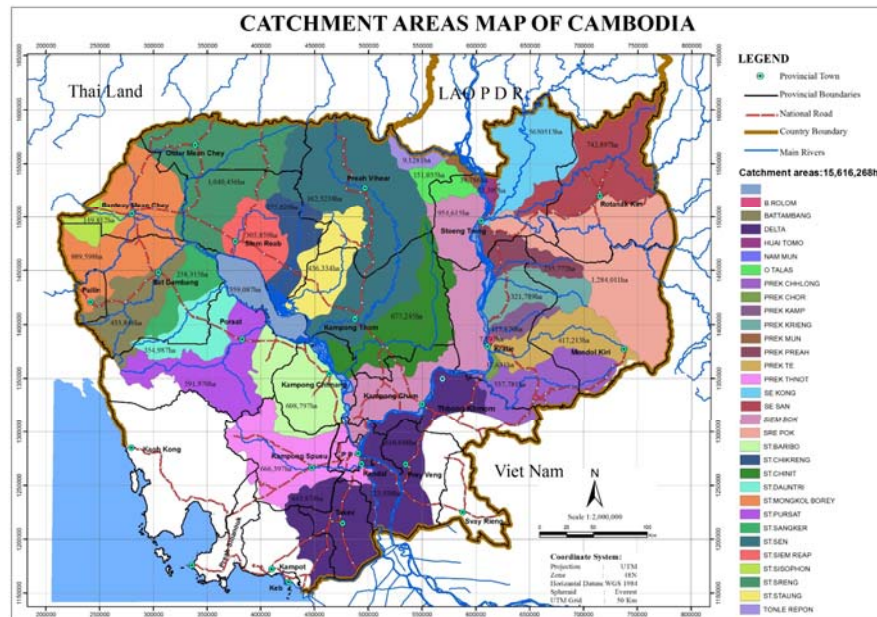


## 2.2. Watershed Classification

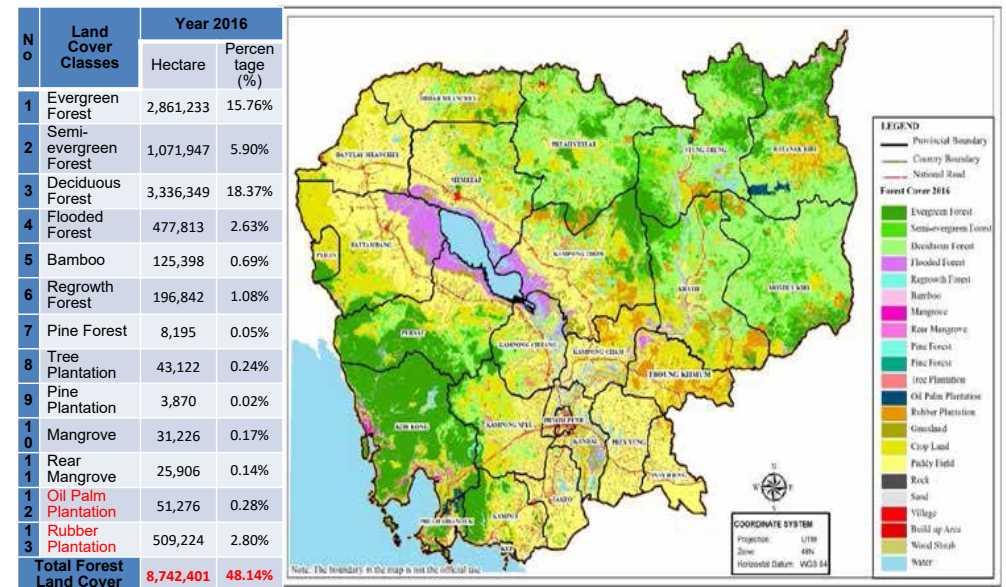
### Watershed classes

- **Class 1-** Areas with very steep slopes and rugged landforms, commonly uplands and headwater areas.
- **Class 2-** Areas with steep slopes, Usually at higher elevation landforms are in general less susceptible to water and soil degradation than under class1
- **Class 3-** Areas with moderate to steep slopes and less erosive landforms. Includes uplands and foot zones of slopes.
- **Class 4-** Gently sloping lands, Moderate need for water and soil conservation depending on local conditions.
- **Class 5-** Gently sloping land and flat areas.

## 2.3. Catchment Areas Map in Cambodia

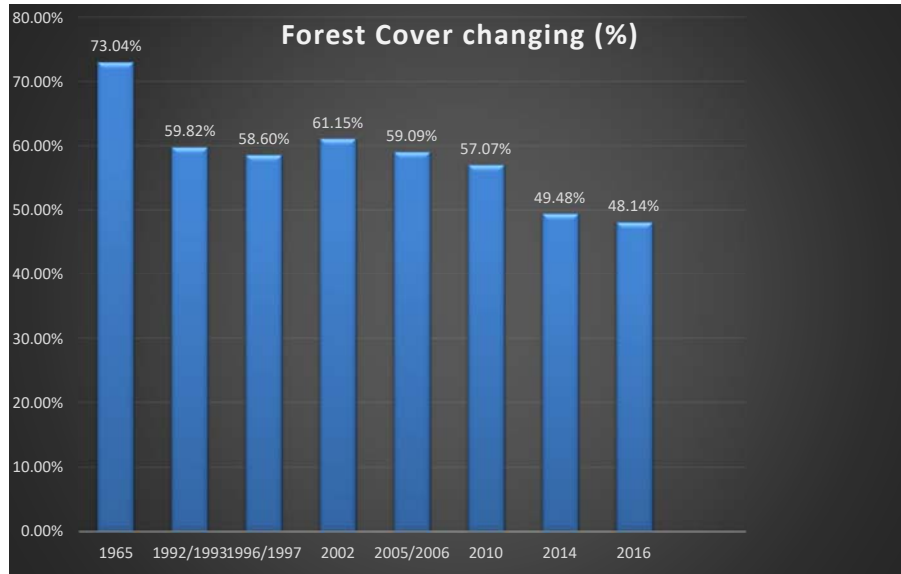


## 2.4. Map of Forestry Cover 2016 in Cambodia





## 2.5. Forestry Cover change in Cambodia



## 3. Challenge and Strategy toward Forestry Conservation

### Challenge

- Forest degradation and soil erosion
- Population increasing
- Expansion agriculture land
- Limited capacity and Knowledge among key stakeholders including government agencies on watershed management
- Overlapping roles and responsibility among the line agencies
- Limited national budget



## 3. Challenge and Strategy toward Forestry Conservation (cont.)

### Strategy toward Forestry Conservation

- Capacity building on watershed management
- Awareness raising on the importance of watershed management approach in forest conservation and management
- Piloting watershed management on the ground to draw lessons and experiences
- Integrating watershed management into policy and national development plan



## 4. Expectation/ Comment on the Result of the Study Project

- Information in the study project are importance for relevant stakeholders include government agencies, especially policy makers to consider for further with watershed management approach
- **Expected JICA and Japan government**
  - Building capacity at national and sub-national levels in watershed management;
  - Building up knowledge sharing network on watershed management within the country;
  - Enhance participation of relevant stakeholders (public, private, community, civil society...) in watershed management development process;
  - Support in-country project development and implementation;
  - Support the development of financial mechanism for long-term planning and implementation.

**THANK YOU**

**អរគុណ!**



## Report from Thailand



## Strategies of Water Resources Management

### 5-year plan (2018 – 2022)

1. 4 pillars of Water security
  - Water Act 2018 for equitable water allocation
  - 20-year water management master plan including mountainous reforestation and agriculture, water way conservation, water quality, and synergized water management btw organizations
  - National Water Committee and River Basin Committee under the hub of Office of the National Water Resources including both national and international water agencies
  - Water Resources Management Innovation in consistent with climate change and environmental awareness

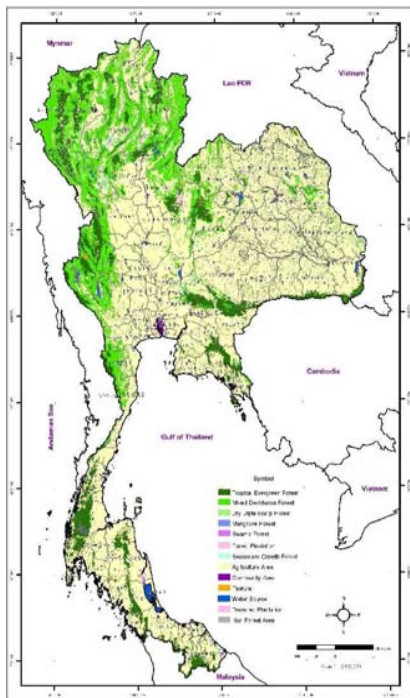
## Strategies of Water Resources Management

2. Expansion of Potable water from tabs in 55 economic cities, 82,000 mil m<sup>3</sup> of raw water in reserve, 3,200 mil m<sup>3</sup> water additional supporting rain-fed agriculture, Promoting less water consumption agriculture i.e., dripping irrigation and water saving technology, and developing local water resources strategies
3. Rehabilitation and preservation nation wide water ways and reservoirs, and watershed forest (restoring headwater forest) with living check dams and weirs to retard run off and recharge g.w. storage

## Strategies of Water Resources Management

4. Flood and drought management planning for not only normal but also extreme event conditions by integrating cooperation among relevant line agencies, e.g., ad hoc crisis centre establishment





## Forest Resource situation in Thailand

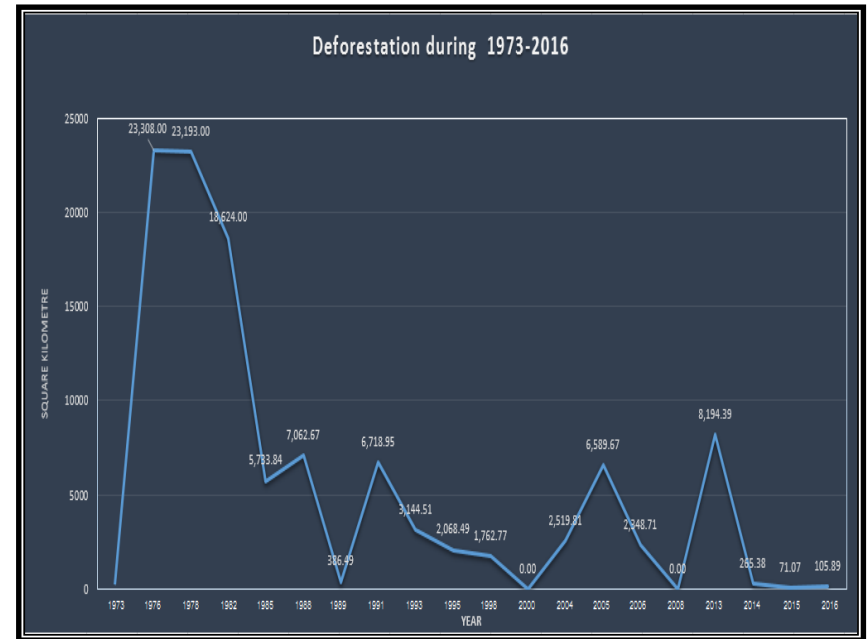
Area of the country: # 51.3 m ha  
 Forested area: 16.8 m ha  
 Forest area need to be rehabilitated 3.6 m ha

National Forest Policy (1985) targeting 73% (20.5 m ha)  
 Conservation Forest 25 %  
 Economical Forest 15 %

Since the logging was banned in 1989  
 Existing forest area in 2010 was 33.09 %  
 (7.36 m ha to achieve national target)

Reserved Forest (7.5 m ha)  
 Conservation or protected forest (7.6 m ha)

103 national parks  
 84 forest parks  
 55 wildlife sanctuaries  
 56 non-hunting areas  
 16 botanical gardens  
 55 arboreta



## Causes of Deforestation

- Land prices
- Land productivity
- Crop prices
- Off-farm employment and income
- Forest accessibility
- Wood demand and prices
- Population growth



## Challenge and Strategy toward Forestry Conservation

- The cooperation between communities and government on forest management #
- Community-based river basin development and conservation
- Sanctuary and agricultural area management
- Constructing check dams for soil and water conservation in forest and agricultural areas
- Founding community organisations for forest conservation and reforestation
- Training and capacity building for people and youth on value and benefit of forest including promoting forest conservation

## Propositions for Further Collaboration with JICA

- Land stability analysis and imagery technology development for economic plantation (e.g., teak, rosewood, etc.)
- DNA identification of rosewood to prevent further illegal logging and DNA database management for economic plantation
- Support REDD+ Project in Thailand
- Research studies on the proper ways to rehabilitate existing degradation forests

Thank you

## Report from Viet Nam

Truong Hong TIEN  
Deputy Director General of Viet Nam  
National Mekong Committee  
9 August 2019

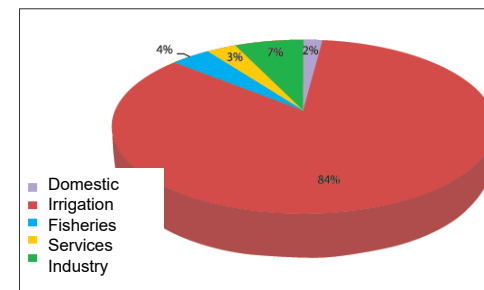
## Agenda

1. Introduction
2. Water Resources Management in Viet Nam
3. Challenge and Strategy toward Forestry Conservation
4. Expectation/ Comment on the Result of the Study Project

## 1. Introduction

- ❑ Natural Area : 331,690 km<sup>2</sup>
- ❑ Population (2019) : 97,943,000 – the 15<sup>th</sup> in the world
- ❑ Climate: tropical monsoon
- ❑ Annual average rainfall: 2,050mm (90% in rainy season)
- ❑ Total average annual surface water: 830 bill.m<sup>3</sup> (60% generated outside the country)
- ❑ Dense river network with 2,360 rivers more than 10 km length, of which two big rivers (Red and Mekong rivers)
- ❑ About 3,600 reservoirs and dams with various sizes. Total active storage: 37 bill.m<sup>3</sup> (about 4.5%)
- ❑ Total potential exploitable reserves nearly 60 bill. m<sup>3</sup> per year.

## WATER RESOURCES USAGE



**Distribution of Water Usage by Sector**  
Source: State of Environment 2010

In Vietnam, 70% of water for daily life comes from surface water and 30% from ground water.

## 2. Water Resources Management in Viet Nam

### Basic Regulation:

- Law on Water Resources updated in 2012 replacing the Law on water Resources 1998
- Law on Environment protection (updated in 2014)

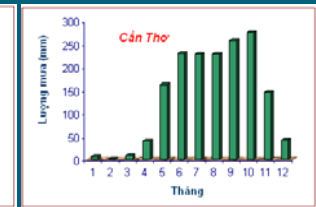
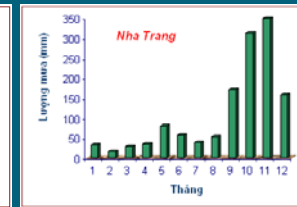
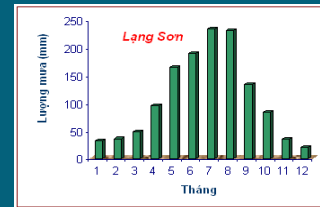
### Other key Regulations

- Decree No 142 on sanction of administrative violation in water and mineral fields
- Decree No.102/2008/ND-CP on collection, management, exploitation and use of natural resources and environment data and information
- Decision No. 182/QĐ-TTg approving National Action Plan on Improving management, protection and integrated utilization of WR for the period 2014-2020
- Decision No. 81/2006/QĐ-TTg National Water Resources Strategy towards the year 2020
- Circular No. 27/2014/TT-BTNMT on Groundwater Exploitation Registration, Exploitation, Extraction and Use of Water Resources and Discharge of Wastewater into Water Sources
- 11 inter-reservoirs operation rules in main river basins

The LWR provides provisions on basic survey, strategy and planning of water resources; Protection of water resources; Exploitation and use of water resources; the prevention, combat against the harms caused by water; Finance for water resources; International relations on water resources; Responsibility of water resources management; the Specialized inspection and settling disputes on water resources; and implementation.

## Challenges for Water Resources

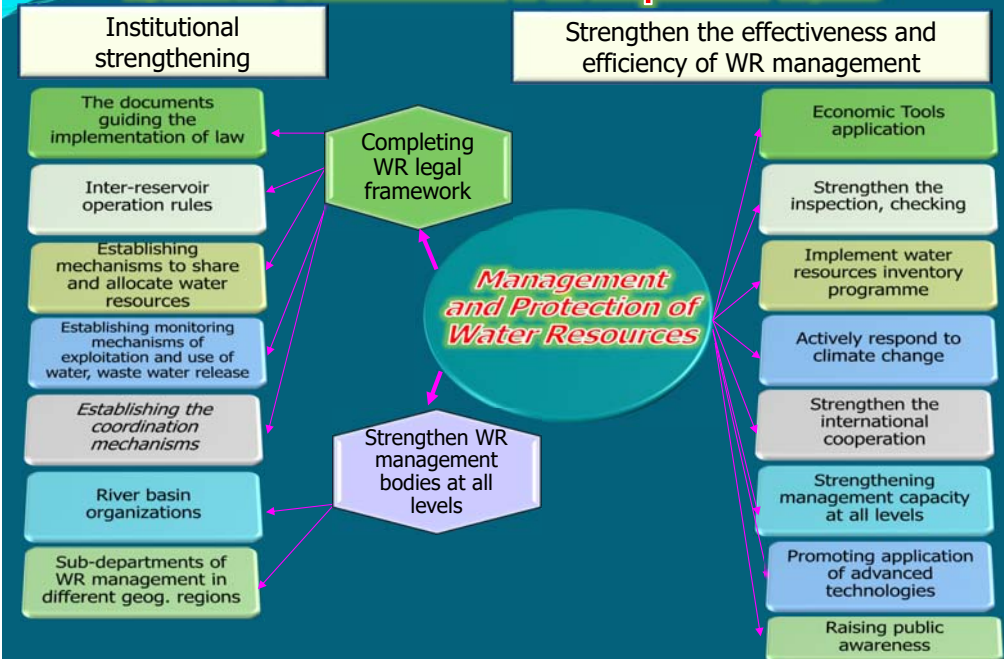
1. Uneven distribution (temporal - most of annual rainfall occurs during 4-5 months in rainy season, account for 75-85% of the annual rainfall volume and spatial - 600 mm to more than 5000 mm);
2. Impacts of climate change;
3. Impacts of water exploitations in the upstream (outside Vietnam territory; 2/3 total flow come from other countries);
4. Impacts of social-economic development, population growth and poverty.



## Issues of WR management framework

1. Lack of an integrated and multi-purpose approach in water exploitation and use
2. Incomplete legal system for water resources management and inadequate organisation and management capacity in water resources
3. Lack of mechanisms and policies, especially economic and financial policies in water resources
4. Lacking information and data on water resources and constraints on information sharing

## Management and Protection of Water Resources towards Sustainable Development Goals



### 3. Challenge and Strategy toward Forestry Conservation



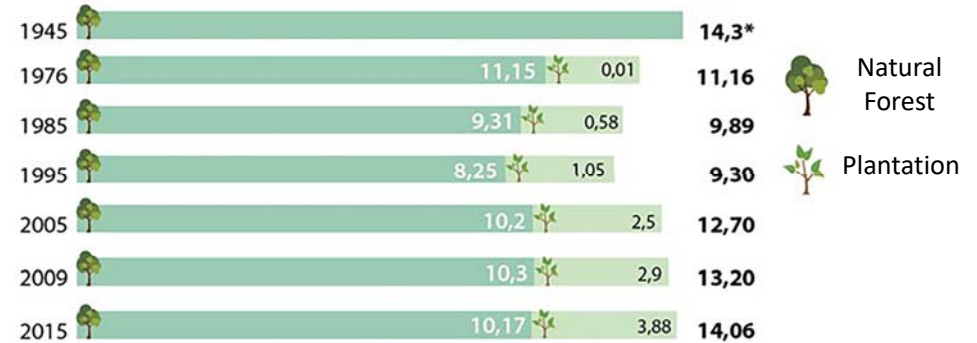
#### Overview

Forest Cover in Vietnam

- Forest Cover types
- Deciduous broadleaf forest
  - Deciduous/semi-deciduous broadleaf forest
  - Evergreen needleleaf forest
  - Freshwater swamp forest
  - Lower montane forest
  - Lowland evergreen broadleaf rain/forest
  - Mangrove
  - Mixed broadleaf/needleleaf forest
  - Mosaic: Tree Cover / Other natural vegetation
  - Needleleaf forest
  - Sclerophyllous dry forest
  - Semi-evergreen moist broadleaf forest
  - Sparse trees/parkland
  - Tree Cover, broadleaved, deciduous, closed
  - Tree Cover, broadleaved, evergreen
  - Tree Cover, needle-leaved, evergreen
  - Tree Cover, regularly flooded, saline water
  - Upper montane forest

### Overview

Total Forest Area Mil. Ha



Forest Cover (%)



### Challenges toward Forestry Conservation

- ❑ Population increase, free migration continues
- ❑ Using agricultural and forestry land less effective, creating constant pressure on forests to expand agricultural land;
- ❑ Increasing demand for forest products is putting pressure on forest resources and the environment, especially for natural forests. Currently, the demand for forest products is exceeding the sustainable supply capacity of the forest.
- ❑ Suitable land area for for high productivity forests is very limited and fragmented;



### Challenges toward Forestry Conservation...

- ❑ Conflicting between fast, comprehensive and sustainable development requirements with limited resources of the forestry sector (human resources, infrastructure, capital, management level, etc.);
- ❑ The importance of the forestry sector has not been fully, objectively and equitably evaluated, thus affecting the planning of investment and industry development policies.





## Strategy toward Forestry Conservation

- Establish, manage, protect, develop and sustainably use 16.24 million hectares of land planned for forestry;
- Increase the percentage of forested land to 42-43% by 2010 and 47% by 2020;
- Ensuring greater participation of all economic sectors and social organizations in forestry activities to contribute to increasing socio-economic development and ecological environment protection, biodiversity conservation, providing environmental services, poverty reduction, improving living standards for rural mountainous people and contributing to maintaining national security and defense.

## 4. Expectation/ Comment on the Result of the Study Project

- Products of the project like maps, reports, tools, database should be embedded into MRC Database
- Pay more attention on sedimentation
- Capacity building: for staffs of MRCS and member countries.

**Thank you!**

# Report from Myanmar

Mr. Soe Myint Oo  
Watershed Management Division  
Forest Department  
9 August 2019

# Agenda

1. Introduction
2. Water Resources Management in Myanmar
3. Challenge and Strategy toward Forestry Conservation
4. Expectation/ Comment on the Result of the Study Project

## 1. Introduction

## Country Profile



- > **Location**
  - Latitudes = 9° 58' to 28° 29' North
  - Longitudes = 92° 10' to 101° 10' East
- > **Area**
  - Total land area = 676,577 km<sup>2</sup>
  - Length (north to south) = 2,090 km
  - Maximum width (west to east) = 805 km

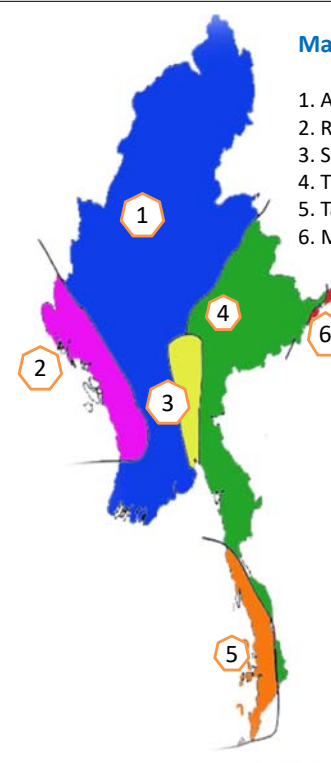
- > **Climate**
  - **Temperature**
    - 25° C to 33° C (Rainy Season)
    - 10° C to 25° C (Cold Season)
    - 32° C to 38° C (Hot Season)
    - 43° C (Maximum Temperature)

- > **Rainfall**
  - Minimum rainfall = 500 mm
  - Maximum rainfall = 5,000 mm

- > **Population**
  - > 51.6 million (2014 Census)
  - > Over 100 Ethnic groups

- ❑ Water resource is essential for the development Life Support System.
- ❑ Myanmar is a country that rich in water resources.
- ❑ Yearly, the amount of water flowing through main rivers is 876 million cubic feet.
- ❑ There are so many good opportunities for the country's water resources development so that the current water usage amount is 45 million cubic feet which is 5 % of the total water draining.
- ❑ Ministry of natural resources and environmental conservation systematically manage watershed forests that plays important role in the development of water resources.

### Main Watershed areas in Myanmar



1. Ayeyarwaddy, Chindwin River Basin
2. Rakhine Coastal Region
3. Sittaung River Basin
4. Thanlwin River Basin
5. Taninthayi Coastal Region
6. Mekong River Basin

Sr.	River basin name	Catchment area (km <sup>2</sup> )	Run off (km <sup>3</sup> )
1.	Chindwin	115300	141,29
2.	Ayeyarwady (Upper)	193300	227,92
3.	Ayeyarwady (Lower)	95600	85,80
4.	Sittaung	34400	41,95
5.	Rivers in Rakhine State	58300	139,25
6.	Rivers in Tanintharyi division	40600	130,93
7.	Thanlwin (in Myanmar)	158000	257,92
8.	Mekong (in Myanmar )	28600	17,63
9.	Bilin river and other rivulets	8400	31,17
10	Bago river	5300	8,02
	<b>Total</b>	<b>737800</b>	<b>1081,88</b>

## 2. Water Resources Management in Myanmar

### Causes and Effects of destruction of Watershed Areas in Myanmar

#### Two Causes of destruction of Watershed Areas in Myanmar

1. Natural
2. Anthropogenic

#### 1. Natural

Consequences of global climate change;

- Droughts
- Floods
- Extreme in temperature
- Forest fires
- Storms
- Earthquakes
- Untimed storms,
- Changes of ecosystems and natural environments



## Causes and Effects of destruction of Watershed Areas(cont)

### 2. Anthropogenic

- deforestation
- shifting cultivation
- more demand for timber and fuelwood due to population growth
- Incorrect land use practices
- development activities
- mining
- agricultural expansion
- grazing land expansion
- predicted large and rapid increases in ecotourism
- lack of tools for sustainable management
- others



## Causes and Effects of destruction of Watershed Areas(cont)

### Effects of destruction of Watershed Areas in Myanmar

- Reduced Surface area of open water
- Declining water quality
- Sedimentation of lakeside zones
- Soil erosion in hillside areas
- Declining agricultural productivity in lakeside zones
- Threats to human health
- Changing water flows
- Losing natural water supplies and underground water shortage
- Decreasing Hydropower supply
- Climate Change

## Causes and Effects of destruction of Watershed Areas(cont)

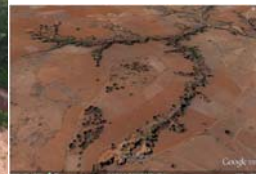
### Effects of destruction of Watershed Areas in Myanmar



Water Pollutants



Sediments in Lakeside Zones



Erosion in Hillside Areas of the Watershed



Threats to human health



Increase in Ecotourism



Year 2015



Year 2010

Drought

## Conservation and Protection Activities

1. By the Government
2. By the International Cooperation

# 1. By the Government

- a) Conserving the natural forests
- b) Establishing plantations
- c) Conserving the soil and water
- d) Raising awareness
- e) Combating illegal logging
- f) Conserving biodiversity

## a) Conserving the natural forests



Noticing with signboard



Tent for monitoring



Assisted natural regeneration



Distributing cook stoves

## b) Establishing plantations



Economic plantation



Watershed plantation



Gap planting



Agro-forestry practices

## c) Conserving the soil and water



Contour bunding



Constructing small check dams



Wattling method



Diverting Ditch

#### d) Raising awareness



Public talk



Extension



Community forestry training



Field works training

### 1. JICA

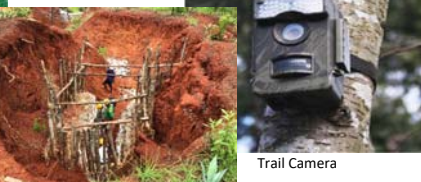
#### Component 1 – Forest Management

- SFM Tools
- Quality Seedling Production
- External fund



#### Component 2 – Inle Watershed Management

- Baseline survey
- Detailed design
- Implementation
  - Soil conservation
  - Community Forest
  - Dissemination



#### Component 3 – Biodiversity

- BRC construction
- Initial Operation

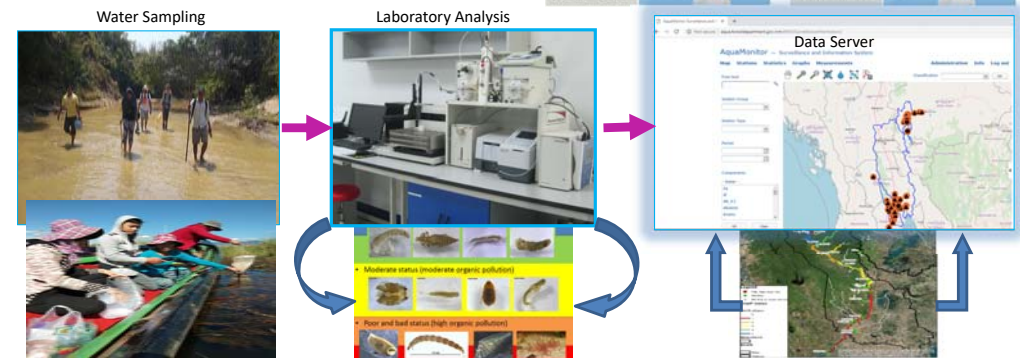
Biodiversity Research Centre

## 2. By the International Cooperation

ID	Name of the Project	Organization	Period
1	Project for Capacity Building for Sustainable Natural Resource Management	JICA (Japan International Cooperation Agency)	2018 - 2023
2	Integrated Water Resources Management Institutional Building and Training	NIVA (Norwegian Institute for Water Research)	2015 - 2018 (Phase I) 2019 - 2023 (Phase II)

### 2. NIVA

- Output 1.** Training in IWRM and IWRM tools
- Output 2.** Establishment of Water Quality Criteria
- Output 3.** A national Water Quality Laboratory
- Output 4.** Adaptation of the EU WFD to the Myanmar Administrative Context
- Output 5.** Performing the water management work tasks in a river system
- Output 6.** Monitoring activities in *Inlay Lake*
- Output 7.** Water quality database



## Priority Issues to be addressed for Water Resources Management in Myanmar

- 1) Baseline data on the natural and social environment
- 2) Institutional framework
- 3) Reduced threat to human health
- 4) Improved environmental awareness
- 5) Reforestation in the watershed
- 6) Biodiversity conservation and fisheries resource management
- 7) Sustainable agricultural practices
- 8) Sedimentation and soil erosion mitigation
- 9) Promotion of sustainable tourism practices

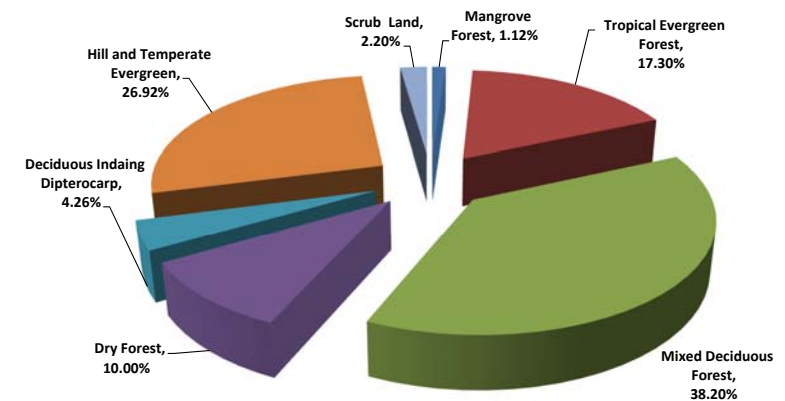
## 3. Challenge and Strategy toward Forestry Conservation

### Current Status of Forest and Forestry

#### Background Information

- Myanmar is still relatively rich in forest resources and 42.92% of the country area is covered with forests.
- However, the country standing at a place of third most deforestation rate in the world between 2010 and 2015. (FRA 2015)
- Annual deforestation rate : 546 thousand ha (1.7% of 2010 forest area)

Status of Major Forest Types (FRA 2015)



Source: FRA 2015



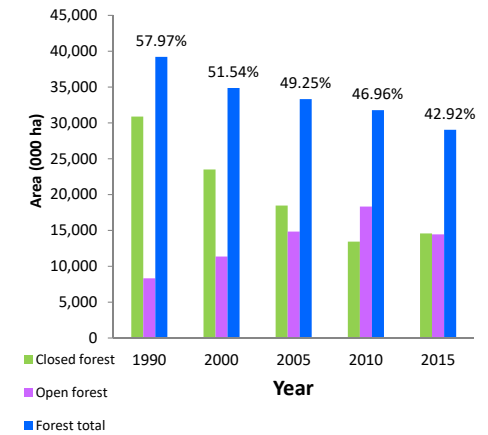
## Current Status of Forest in Myanmar

### Permanent Forest Estate (PFE)

- Target of Forest Policy 1995
  - Area of Reserve Forest (RF) and Protected Public Forest (PPF) - **30 %**
  - Area of Protected Area System(PAS) - **10 %**
- Existing PFE
  - Area of Reserve Forest and Protected Public Forest - 168044 km<sup>2</sup> **24.83 %**
  - Area of PAS(39) - 38,880 km<sup>2</sup> **5.75 %**

## Status of forest cover in Yearly

Year	Area (Sq-mile)	%
1990	151,421	57.97
2000	134,626	51.54
2005	128,653	49.25
2010	122,676	46.96
2015	112,127	42.92



### 4. Periodically Deforestation rate

Period	Annual deforested Area (Sq-m)	Annual deforested Area (%)
1990-2000	1679.535	1.2
2000-2010	1195.327	0.9
2010-2015	2109.651	1.8

## Direct Causes of deforestation



1. Over Exploitation
2. Illegal logging
3. Fuel wood extraction
4. Agricultural land expansion
5. Shifting Cultivation
6. Mining
7. Hydropower/irrigation Dam Construction
8. Urban Development
9. Fish and Shrimp farming/ponds in Mangrove area
10. Natural Disaster such as Cyclone, forest fire, etc

## Indirect Causes of deforestation

1. Poverty and limited job opportunity
2. High market demands of forest products
3. Lack of Land use policy in the past
4. Weak monitoring and assessment in natural resource management
5. Limited budget
6. Weak Law Enforcement
7. Ever increasing population
8. Weak coordination among stakeholders
9. Corruption
10. Weak political support



## Drivers of Deforestation /forest degradation



Illegal logging in border areas

## Problems & Impacts of Deforestation

- **Change in species composition** in the forest, particularly, deforestation and forest degradation leads to significant decline in composition of commercial species like teak.
- **Loss of mangrove forests** increases vulnerability of people living in the coastal areas to storm surges (Experience of cyclone Nargis); reduces fishery productivity, intrusion of saline water in paddy fields.
- **Depletion and degradation of watershed areas** leads to increased sedimentation rate in stream, river, reservoir, dam and lake. Consequently, it causes reduction of water holding capacity and impacts on river and lake ecosystem (Inle Lake experience)
- Deforestation causes **habitat loss and fragmentation**. As a result, human-elephant conflict are very frequent experiences in Myanmar.

## Problems & Impacts of Deforestation

### An increase in the prevalence of drought events:

- Drought years were frequent in the 1980s and the 1990s, and there was a **severe drought in 2010**

### Impact on wetland ecosystem (Inle Lake)

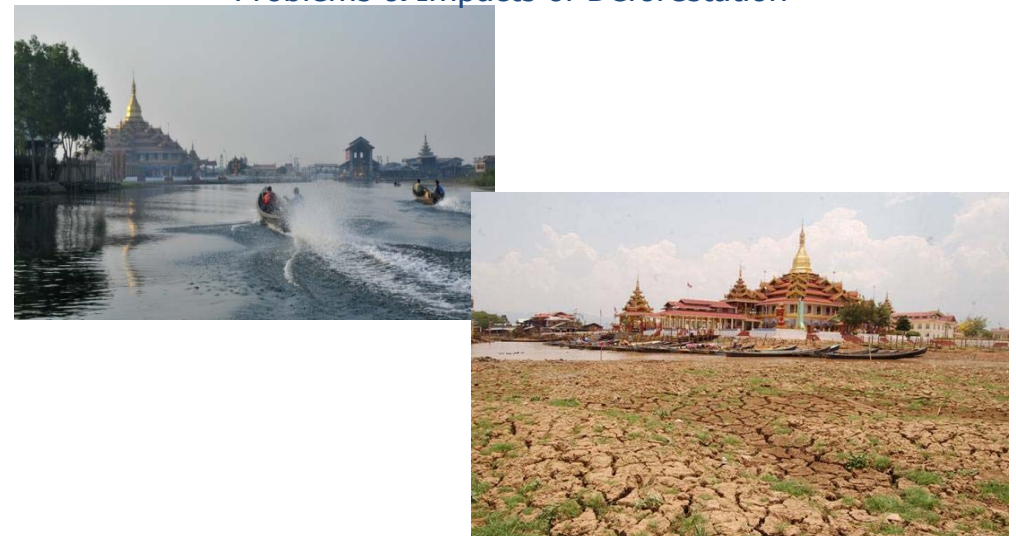
- 29 streams flows into the Inle Lake and of which Namlet, Yay Pei, Kalaw, Bilu stream are the major streams. There are 139 springs.
- Source of Bilu chaung hydro power plant
- Rich in biodiversity with endemic fish species, Algae, migratory birds and orchids
- Designated as ASEAN heritage Park in 2013, and one of the tourist attraction sites in Myanmar
- Man and Biosphere (MAB) at UNESCO meeting held in France in June, 2015
- **Lowest water holding capacity due to recorded temperatures in 2010 and low rainfall in 2009.**
- Socio-economic impacts: drinking water shortage, difficulties in water transportation (by boat), and affects on tourism



### Main causes of declining water holding capacity of the Lake

- Deforestation in watershed area
- Reduce in frequency of raining and rainfall in watershed
- High evaporation resulting from high temperature
- Decrease in inflow into the Lake

## Problems & Impacts of Deforestation



Inle Lake in 2010

## Problems & Impacts of Deforestation

### An increase in intensity and frequency of cyclones/strong winds:

- Recent cyclones of note include Cyclone Mala (2006), Nargis (2008) and Giri (2010).
- **Cyclone Nargis** hit the Ayeyarwady Delta in May 2008.
  - ✓ 138,373 people dead
  - ✓ about 4000 schools damaged
  - ✓ 75 % of health facilities destroyed
  - ✓ 269530 acres of farmland damaged (acre)
  - ✓ Affected population 2.4 million
  - ✓ Total damage and Loss 4057 US\$ (mil)
- **Cyclone Giri** hit Rakhine State in October 2010, destroying 21,242 houses and affecting at least 224,212 people.

## Policy & Legislation and Strategies & planning in forestry sector

## Forest Policy and Legislation

### Forestry

- Myanmar Forest Policy 1995
- Forest Law 1992
- Forest Rules 1995
- Protection of Wildlife & Wild Plants & Conservation of Natural Areas Law 1994
- Protection of Wildlife & Wild Plants & Conservation of Natural Areas Rules 2002
- Community Forestry Instructions 2016 (revised 1995)
- Forest Law 2019 (revised 1992)

### Environment

- Environmental Conservation Law 2012
- Environmental Conservation Rules 2014
- EIA Procedures 2015

### Land

- National Land Use Policy (2016)



## Myanmar Forest Policy

**PROTECTION:** of soil, water, wildlife, biodiversity and environment;

**SUSTAINABILITY:** of forest resources to ensure perpetual supply of both tangible and intangible benefits

**BASIC NEEDS:** of the people for fuel, shelter, food and recreation;

**EFFICIENCY:** to harness, in the socio-environmentally friendly manner, the full economic potential of the forest resources;

**PARTICIPATION:** of the people in the conservation and utilization of the forests;

**PUBLIC AWARENESS:** about the vital role of the forests in the well being and socio-economic development of the nation.

## Strategies & planning in forestry sector

- 30-year National Forest Master Plan (2001-2002 to 2030-2031)
- Forestry Sector Comprehensive Development Plan (2011-2012 to 2030-2031)
- Forest Management Plan (2016-17 to 2025-26) for 68 districts
- National Biodiversity Strategy and Action Plan (adopted in 2012, revised in 2016)
- Myanmar Reforestation and Rehabilitation Programme (2017-2018 to 2026-2027)



## INDC

- Myanmar has submitted INDC to UNFCCC in September, 2015.
- By 2030, PFE target is to increase as follows:
  - ✓ Reserved Forest (RF) and Protected Public Forest (PPF) = 30% of total national land area
  - ✓ Protected Area Systems (PAS) = 10% of total national land area
- To increase the number of energy efficient cook-stoves disseminated in order to reduce the amount of fuel wood used for cooking ( Approx. 260,000 stoves between 2016 & 2031).

### Actions:

- Following the implementation plan as set out in the 30-year National Forestry Master Plan (2001-2030)
- Implementation of Myanmar REDD+ Readiness Road Map
- Participation in EU-FLEGT programme
- To implement Comprehensive Plan for Dry Zone Greening (2001-31)

## Activities for addressing deforestation

## Extension of PFE

### Target in Forest Policy/ INDC

- ❖ RF+PPF – 30% of total country's area
- ❖ PAS – 10% of total country's area

### Designated PFE

- ❖ RF+PPF – **24.83%** of total country's area
- ❖ PAS – **5.75%** of total country's area



## Management of natural forest

- Myanmar forests are being managed under MSS, exploitation-cum-cultural system
- MSS involved adoption of felling cycle (30 yrs), fixing exploitable girth limit, girdling/green teak marking, selection felling of other hardwood, thinning & improvement felling, enumeration of future yield trees, leaving high quality tree as seed trees, calculating AAC.
- Current AAC is **19,210** trees (32,642 m3) for teak and 592,330 trees (1,174,235 m3) for other hardwood

• Recognizing significant deforestation rate in the country, following policy measures has been laid down by the Ministry very recently.

- Log Export Ban ( since April, 2014)
- Paused timber harvesting in 2016-17& harvest below AAC in following years
- Implementation of National Reforestation Programme

## Reforestation of degraded forest

### ❖ Government sector (FD)

- FD established a total of **885,619** ha of forest plantation between 1981-2017

### Plantation Established by Forest Department (1981-2016)

Plantation type	Area (ha)
Commercial	1,217,395
Watershed	338,909
Industrial	179,121
Village supply	449,586
<b>Total</b>	<b>2,185,011</b>

## Reforestation of degraded forest

### ❖ Private sector

Private Forest Plantation( as of March, 2017)

Type of Plantation	Area (ha)
Teak plantation	<u>56,103</u>
Non-teak other hardwood plantation	<u>36,430</u>
<b>Total</b>	<b>92, 533</b>



## Community Forestry-CF

### Salient points of CFIs (1995)

- **Any land** at the disposal of the state can be alienated as community forests
- **Land tenure** is initially granted for 30 years
- The tenure right is **inheritable**
- Forest products harvested from CF for local use are **tax-free**
- **Seeds and seedlings** needed for the first rotation and **technical assistant** are provided by FD free of charge
- **No restriction** is imposed on the selling and pricing of the surplus forest products



## Community Forestry-CF

### Consultations for revision of CFIs

- Currently, consultation process for revision of CFIs is on going
- 8 Stakeholder consultation meetings on revised CFIs (Draft) were organized in State/Region Plan to organize validation WS on Revised CFIs in June & July 2016.
- Revised CFIs aims to broaden scope of the CF:
  - ✓ CFIs (1995)>>>limits to small scale or farm level
  - ✓ revised CFIs>>> community-based forest enterprise



Consultation meeting in Ayeyawady Region



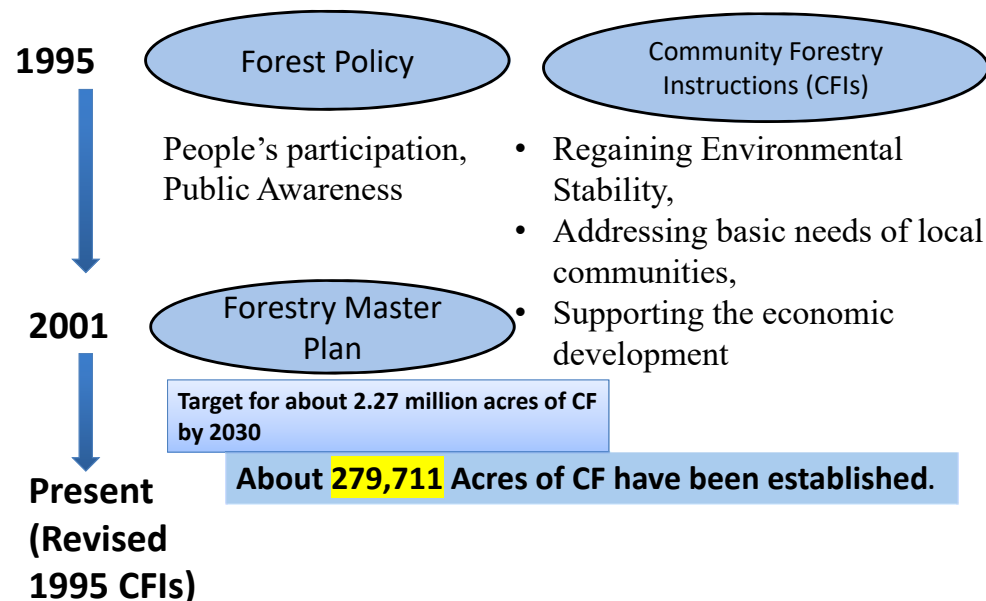
Consultation meeting in Yangon Region

## Characteristics of Community Forestry in Myanmar

- ❖ **Any land** at the disposal of the state can be alienated as community forests;
- ❖ **Land tenure** is initially granted for 30 years
- ❖ The tenure right is **inheritable**;
- ❖ **Forest products** harvested from CF for domestic use are tax-free;
- ❖ **Seeds and seedlings** needed for the first rotation and **technical assistant** are provided by FD with free of charge;
- ❖ **No restriction** is imposed on the selling and pricing of the surplus forest products



## Development of Community Forestry



## Challenges in implementation of CF

- More labour and time for site preparation due to thickness of bushes, weeds, climbers etc.
- Illegal cutting in community forests
- Encroachment into community forests for the purposes of agriculture and shrimp farming
- Pest (Stem borer) attack on *S. apetala* which is fast growing species



## Solutions to overcome the challenges

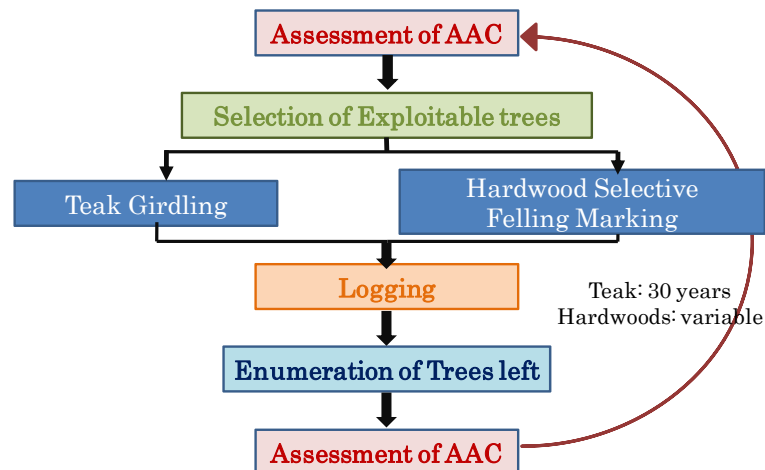
- Taking technical advice and financial assistance from the project to conduct the site preparation ( For instance, Clearing line by line in stead of clear cutting the whole area)
- Setting up of warning sign boards to prevent illegal cutting and encroachment into community forests.
- Announcement of establishment of community forests and making a request to local firewood cutters to avoid encroachment and illegal cutting in community forests
- Education on illegal cutters and making pledge not to commit the illegal cutting again
- Finally, taking action on illegal cutters who do not follow their pledge, with the assistance of FD, Police Department and Local authority.
- Removal of trees attacked by pests and re-establishment of mixed plantations

## REDD+

- Myanmar joined UN-REDD Programme in December 2011
- Developed Myanmar's REDD+ Readiness Roadmap through a multi-stakeholder participation process in 2013
- Implementation of REDD+ Readiness Roadmap with the support of UN-REDD Programme, ITTO, KFS, RECOFTC, ICIMOD, FFPRI, AAS Co., Ltd etc.)



## Myanmar Selection System - MSS



### Criteria and Indicators (C&I) for SFM

- There are 63 districts (Forest Management Unit-FMU) across the country.
- 7 Criteria and 73 Indicators were identified for Forest Management Unit (FMU) level.
- 7 Criteria and 78 Indicators were identified for National level.

## Preparation of FLEGT – VPA Process

- According to EU FLEGT Action Plan, Myanmar is now moving forward to involve Voluntary Partnership Agreements –VPA's Partner Country to export Myanmar's timber to EU market since Forest Law, Enforcement, Governance and Trade Workshop held in July 2013, Myanmar.
- On behalf of Myanmar, Ministry of Natural Resources and Environmental Conservation (MONREC) informed to EU to initiate the VPA process starting from "Request for a dialogue on a FLEGT VPA approach" which is a preparation phase in country consensus building.
- In accordance with the bilateral trade agreements between the EU and Myanmar, MONREC is now implementing the information dissemination about VPA to multi-stakeholders for consensus building.

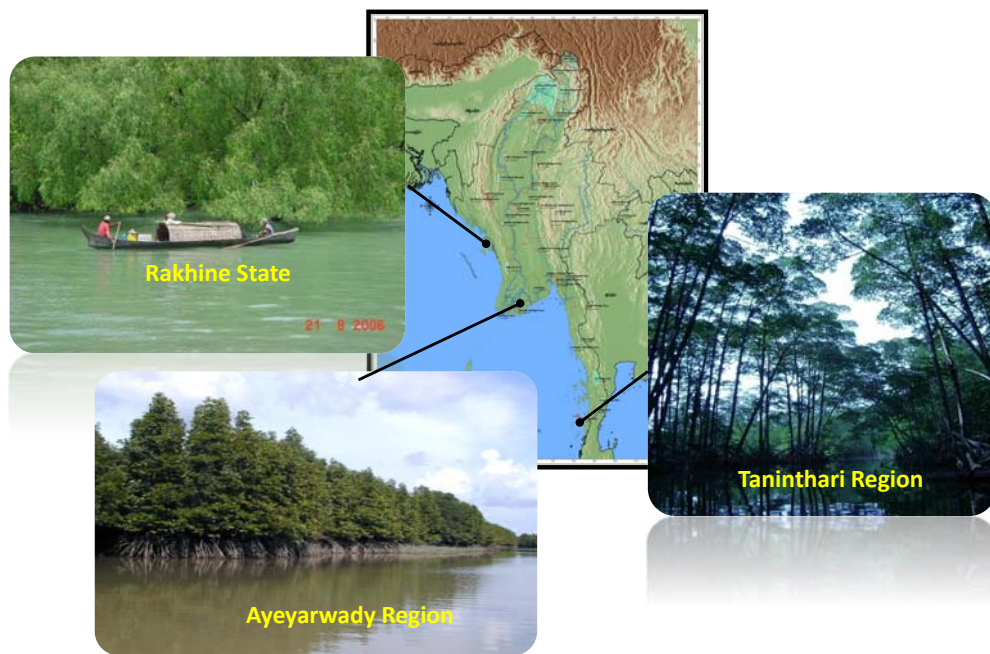
## Combating Illegal Logging

- seriously paying attention to combat illegal wildlife trade as well as illegal timber trade that leads to the deforestation, forest degradation and loss of royalties.
- collaborative action between Forest Department, Myanmar Police Force and local administration.
- taking actions against the laws, particularly with Forest Law (1992)
- Collaboration with neighboring countries to combat illegal logging so as to promote legal timber trade.

## ❖ National Land Use Policy

- National land use policy has been adopted by Union Cabinet in **January 2016**.
- Objectives
  - ❖ To benefit to the people and country, harmonize land use systems, balance between development and conservation;
  - ❖ To protect the land use right of the citizens and
  - ❖ To improve land administration system;

## Mangrove in Myanmar



## Mangrove Conservation

### Cooperation with FFI

- Establishment of village firewood plantation
- Conducting surveys on crocodile, fish and birds
- Support for crab cultivation and dissemination of efficient cookstoves
- Awareness and education
- Conducting feasibility study for ecotourism
- Organizing consultation workshop on sustainable tourism development in Bogalay, on 3-6-2014



## Mangrove Conservation

### Cooperation with JICA

- “Mangrove Rehabilitation Plan for Enhancement of Disaster Prevention in the Ayeyarwady Delta” is being implemented (2013-2017)
- Establishment of Mangrove plantation ( 2852 ac.)
- Construction of cyclone shelter
- Providing training on disaster preparedness



## Partnership: key to success

- Deforestation, as a global challenge, can only be addressed by an alliance of partners, from to global level.
- Deforestation and forest degradation result in substantial reductions in forest carbon stocks and increase in emissions
- Deforestation and forest degradation in forestry sector contributes about 20% of total CO2 emission
- Deforestation/ forest degradation and CC issues needs to be addressed together.

### Common challenges to address issues:

- Weak policy and strategy framework
- Limited and inconsistent data for planning & policy formulation
- Capacity and financial gaps
- Inadequate coordination at different levels
- Poor socio-economic conditions

### Opportunities:

- INDC prepared and submitted to UNFCCC
- REDD+ has been recognized as a mechanism to address CC
- Existing multilateral and bilateral frameworks at international & regional level
- Availability of more financial sources (eg. GCF)

**Partnership is a Key to success in addressing deforestation**



## The Way Forward

- Extending Permanent Forest Estate (Reserved Forest+ Public Protected Forests) up to 30% of total country areas while Protected Areas up to 10 %.
- Strengthening SFM and forest governance
- Develop and implement National Reforestation Programme
- Decentralization in forest management through promoting CF, JFM etc.
- Capacity building and institutional strengthening
- Implementation of REDD+ Readiness Roadmap
- Enacting National Land Law
- Developing Timber Legality and Assurance System (Timber Certification)
- Promoting PES and green economy in forestry sector
- Encouraging ecotourism development
- Resource mobilization and developing sustainable financing
- Finalize NCCSAP & Develop CC policy
- **More collaboration with International/ Regional / Local Partners**



## 4. Expectation/ Comment on the Result of the Study Project

- ✓ Suggestions and comments for the water resources management in Myanmar, from various experts
- ✓ Learning the advanced methodologies in terms of water resources management used by the project
- ✓ Exploring about how the Japan is being managing its water resources
- ✓ Application of affordable good practices of water resources management in Myanmar
- ✓ Seeking for possible future bilateral or multi - lateral collaboration between Japan, Mekong countries and Myanmar in sustainable water resources management
- ✓ Curiosity upon how the final results of the project would contribute in tackling issues and challenges being currently occurred in Mekong river basin

THANK YOU VERY MUCH!

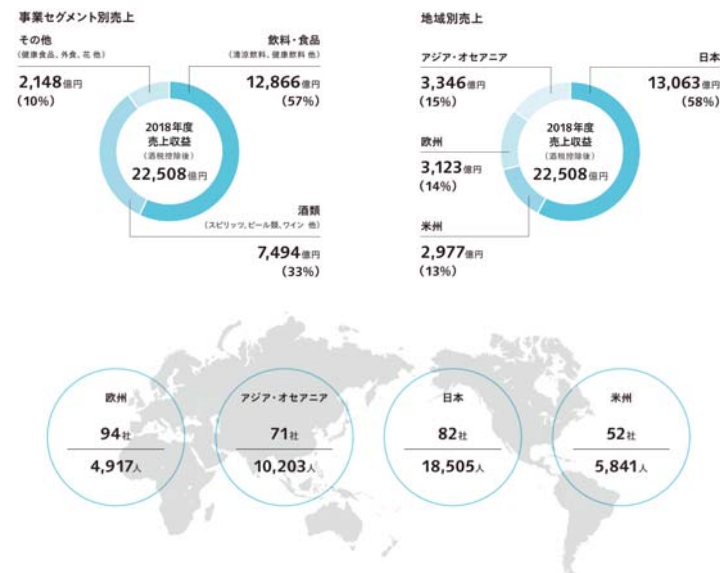


# サントリーグループの「水理念」 およびその取り組み

2019.8.9  
サントリーホールディングス株式会社  
コーポレートサステナビリティ推進本部

創業：1899年

従業員数と地域別・セグメント別売上高（2018.12.31時点）



## 主な事業

### 飲料・食品



### 酒類



## サントリーのオリジンは“水”

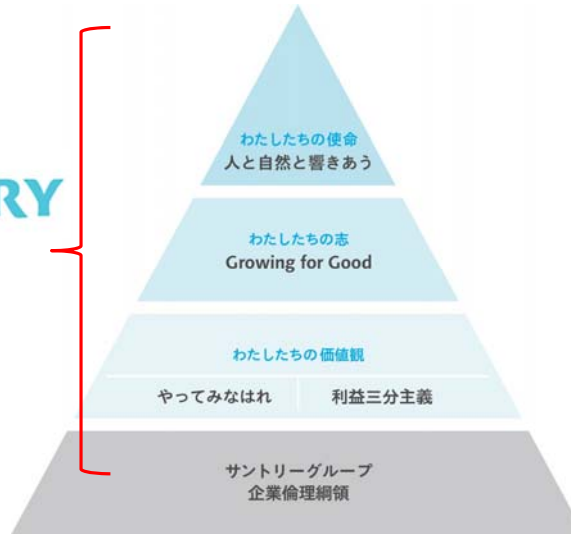


# 水と生きる SUNTORY

## 水と生きる SUNTORY

企業理念に基づく思いを  
広く社会と共有するための言葉

“社会との約束”



# サントリーグループ「水理念」

水はグループにとってもっとも重要な原料であり、かつ貴重な共有資源です。環境基本方針の最上位に掲げる「水のサステナビリティの実現」に向けて、次の理念をグループ全体で共有し、ステークホルダーの期待に応えていきます。

### 1. 水循環を知る

使用する水の循環について科学的アプローチに従って流域を調べ、理解を深めます。

### 2. 大切に使う

水の3R (Reduce/Reuse/Recycle) 活動を通じて節水に努め、浄化した水は自然に還し、環境インパクトを軽減します。

### 3. 水源を守る

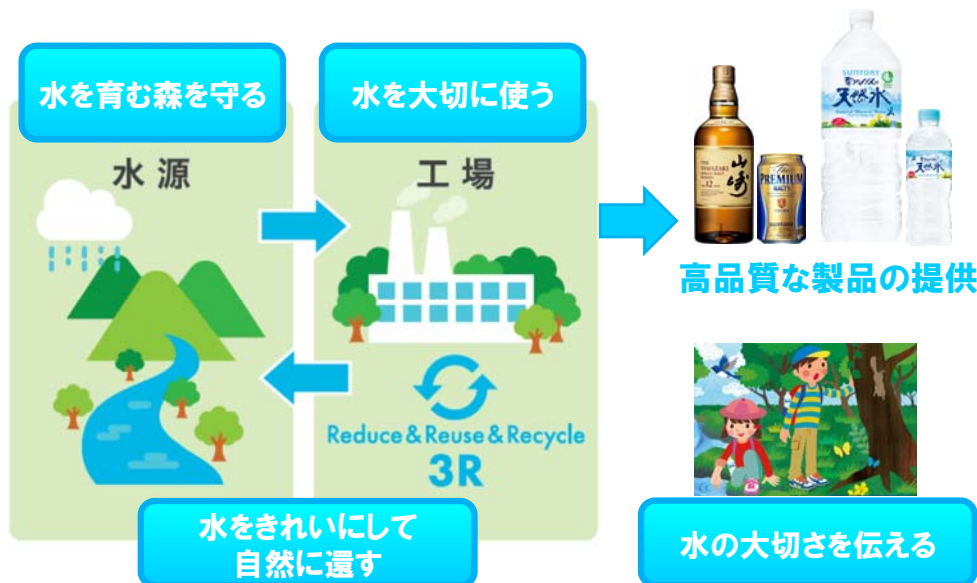
サステナブルな未来を実現していくため、ステークホルダーと協力しながら使用する水の水源保全に努めます。

### 4. 地域社会と共に取組む

社会が豊かになるよう、水課題の解決への貢献を通じて地域コミュニティを支援します。

2017年1月制定

# 「水」への取組み



# 水源涵養活動「天然水の森」とは？

水循環のイメージ



- ◇ 水源涵養林としての高い機能を持った森林
- ◇ 生物多様性に富んだ森林
- ◇ 洪水・土砂災害などに強い森林
- ◇ CO2の吸収力の高い森林
- ◇ 豊かな自然と触れ合える美しい森林

2010年9月

2011年6月

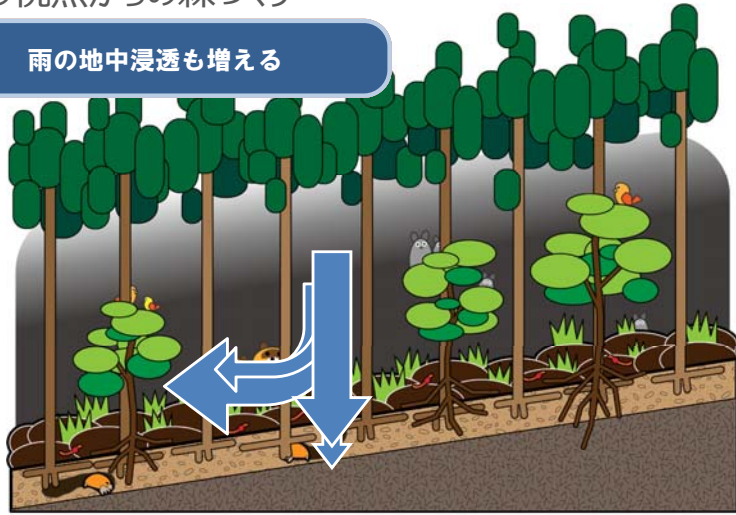
2016年7月



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### 水の視点からの森づくり

雨の地中浸透も増える



## サントリー「天然水の森」

★全国15都府県21ヶ所、合計の面積は約12千ha  
(2019年6月時点)



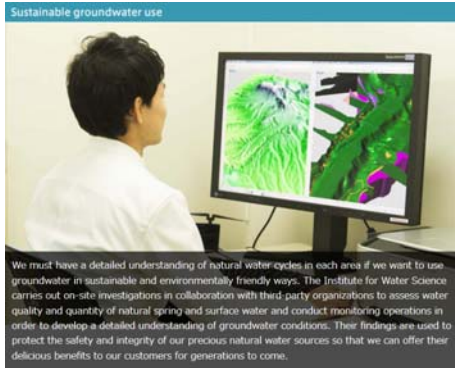
## 活動フロー



## 水科学研究所

水を扱う企業グループとして「水」への理解を深め、将来にわたって「水」を守り抜くため水科学研究所を設置。包括的な水への理解と知見の普及を推進。

- 「水文学(すいもんがく)を基盤とした水源を育む森づくりや国内外の水資源問題など自然界の水を扱う研究
- 総合酒類食品企業として水における健康や嗜好に関する研究など



<https://www.suntory.co.jp/sic/research/mizu/>

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SUNTORY

## サントリー 次世代環境教育「水育」

「水育」は、子どもたちが、自然のすばらしさを感じ、水や、水を育む森の大切さに気づき、未来に水を引き継ぐために何ができるかを考える、次世代に向けたプログラムです。

### 水育

#### 「森と水の学校」

2004年～(15年目)  
690回 約25,000人



#### 「出張授業」

2006年～(13年目)  
1,800校 約138,000人



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## 外部からの評価



CDP Water  
3年連続 Aランク獲得  
(2016年～2018年)



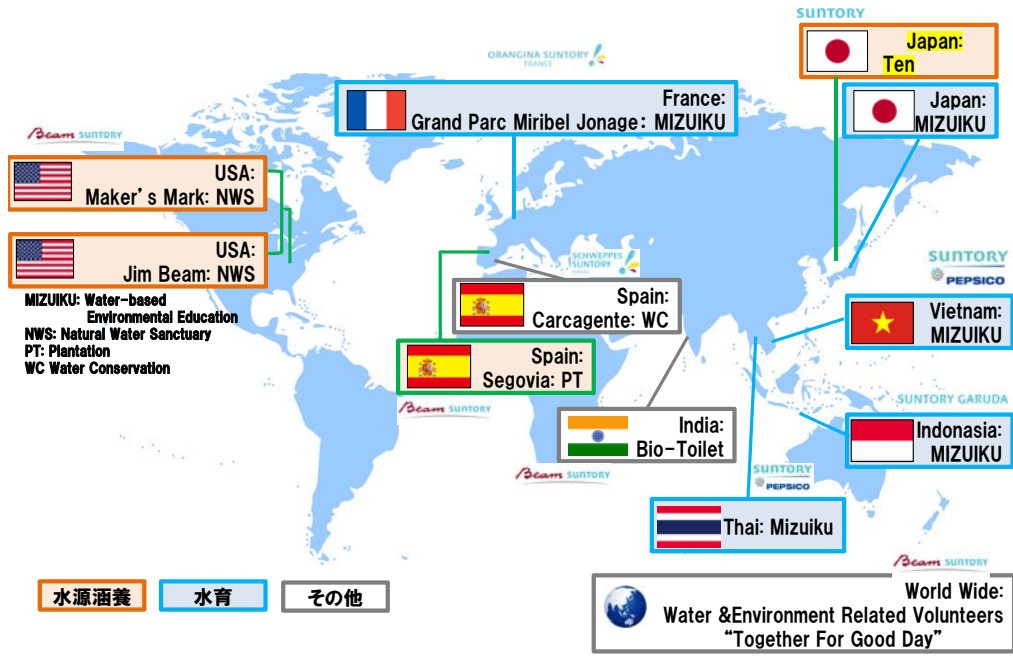
サントリー天然水 奥大山ブナの森工場  
日本で初めてAWS認証取得  
(2018年10月)

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SUNTORY

## 【映像】「水理念」に基づく活動の展開

# Suntory's Global Initiatives on Water



# 水と生きる SUNTORY



おわり



# 「イオンの森づくり」を通じた 持続可能な社会の実現

公益財団法人イオン環境財団  
山本 百合子

## イオングループの概要

### ■イオングループ店舗一例



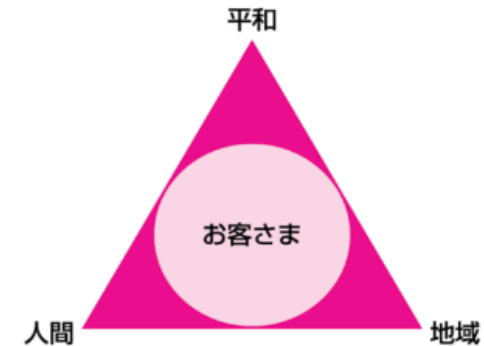
## 1. イオングループの概要

- ・創業 1926年(大正15年)
- ・グループ企業 約330社
- ・店舗数 約22,000店舗  
ショッピングセンター  
総合スーパー  
スーパーマーケット  
金融・サービス・専門店ほか
- ・営業収益 8兆5,182億円
- ・従業員 58万人
- ・来店客数 約36億人/年
- ・資本金 2,200億700万円

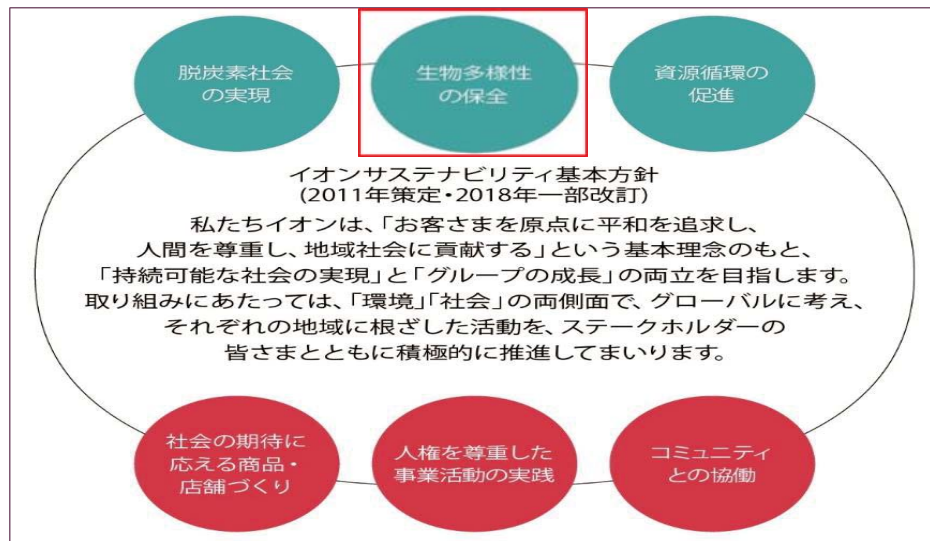


## イオンの基本理念

お客さまを中心に平和を追求し、人間を尊重し、地域社会に貢献する。



イオンは基本理念のもと、絶えず革新し続ける企業集団として、「お客さま第一」を実践してまいります。



設立：1990年（29年目）

活動目的：

平和の追求・人間の尊重・地域社会への貢献という基本理念に基づき、環境保全活動に対する助成・支援を行うとともに、生物多様性の保全と利用、地球温暖化防止等の活動を自ら行うことにより、地球環境の保全に貢献していくことを目的とする



**イオンの森づくり**  
・当財団の植樹本数は10か国  
累計で228万本  
・イオン全体では1,193万本



**助成**  
年助成先数 2,948団体  
助成総額 26億8,289万円  
(2019年2月現在)



**環境教育**  
・アジア学生交流環フォーラム  
・太陽光発電システムの寄贈  
・環境展示



**パートナーシップ**  
・アジア各国の大学  
・国際環境機関  
・日本ユネスコエコパーク  
ネットワーク  
・リモート・センシング技術  
センター

## 2. 持続可能な社会の実現のために カンボジア事例

カンボジアとイオンのこれまでの交流



2014年1号店  
2018年2号店開業

## バタンバン義肢センター支援(1998-2000年)

地雷被害の義肢支援・リハビリを通じた社会復帰支援  
イオン店舗のお客さまからの募金と合計 1億7,300万円寄付







イオンマンゴースクール

2019年8月5日 アジア10各国大学生80名との国際交流



イオン・シハヌーク博物館寄贈 (2007年)

アンコール王朝期の仏像保存展示  
上智大学  
アジア人材養成研究センター運営  
開館式典シハモニ国王陛下隣席  
2018年リノベーション



文化遺産をカンボジアの人の自ら手で後世へ



遠方への水汲みのため、学校へ通えない子どもたちのために  
衛生的な水の確保を通じた健康支援

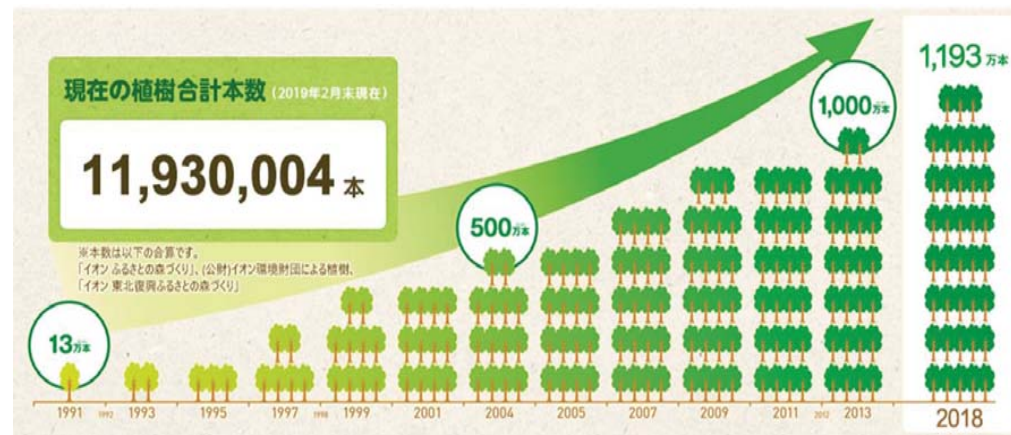


©UNICEF/JNI193997/Gilbertson VII Photo

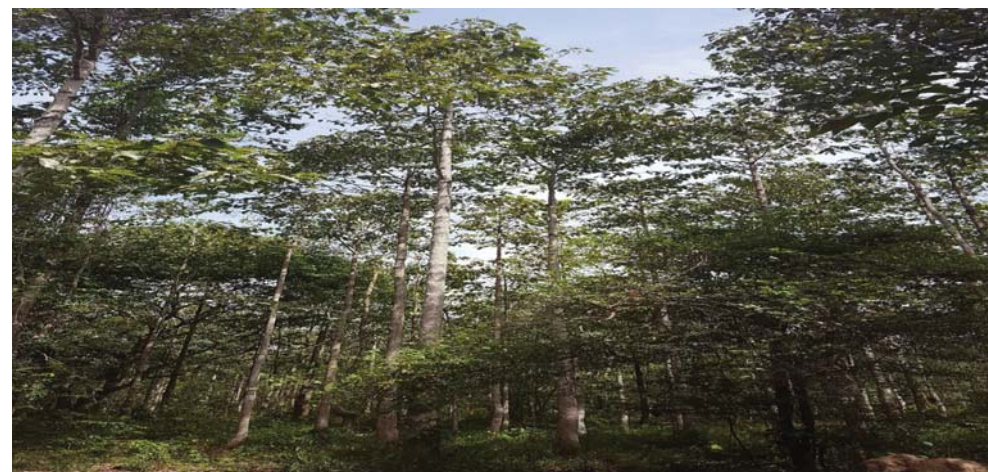
2015-2017年

カンボジア最大級の動植物園

内戦・活伐により荒廃したセンター内に森林を再生



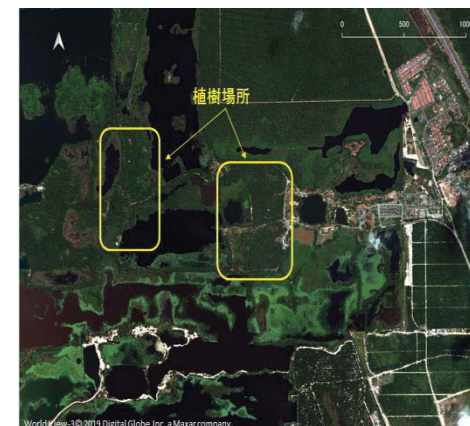
- ・アンコールワット遺跡周辺 2002年、2004年、2005年
- ・遺跡群チャウスレイ・ヴィヴォル 2010年、2011年
- ・ふるさとの森づくり(イオン店舗周辺) 2014年





植樹前 (2004年2月)

植樹後 (2019年3月)



マレーシア植樹地の事例



