

## 資料 5: CTC 資料

# **“GHG Mitigation and Low Carbon Society”**

**Published by**

**Thailand Greenhouse Gas Management Organization  
(Public Organization)**

**Thailand Greenhouse Gas Management Organization (Public Organization)  
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## Foreword

Workshop on “GHG Mitigation and Low Carbon Society” was held by TGO (17-19 August 2011) in Bangkok, Thailand. It is my great pleasure to have had fruitful discussions in the workshop on topics in broad range of capacity development for Mitigation, Adaptation and GHG Inventory, together with supreme policy makers from eight ASEAN countries.

The workshop highlighted the outcome of the technical cooperation project “Capacity Development and Institutional Strengthening for GHG Mitigation” implemented from January 2010 to January 2012 by Japan International Cooperation Agency (JICA) and shared lessons learned for further necessary challenges in future.

I, on behalf of JICA, deeply appreciate TGO for the significant arrangement and hope that the result of the workshop contributes for continuous dialogue among ASEAN countries on the global climate change and joint effort solving the problem.



A handwritten signature in black ink, appearing to read 'M. Karasawa'.

**Masayuki Karasawa**  
Director General, Office for Climate Change,  
Japan International Cooperation Agency (JICA)

# Foreword

Climate Change mitigation and adaptation are the matter of survival for developing countries since the weather extreme events have revealed their impacts in our countries. The growing importance of climate change issue needs appropriate policies and actions to manage the greenhouse gas at all level. Enhancing the capacity building on climate change is one of the essential approaches toward sustainable development as green economy. In this context, it is very grateful to the Government of Japan that Thailand Greenhouse Gas Management Organization (Public Organization) (TGO) has received technical assistance provided by JICA to enhancing the existing abilities of TGO's personnel to cope with climate mitigation. The two-year implementation on this cooperation project on "Capacity Development and Institutional Strengthening for GHG Mitigation" has proved the beneficial gain in this respect.

Climate THAILAND Conference (CTC 2011) during 17-19 August 2011 was fruitfully success for technical address and awareness at local, its outcome has been even more valued by the Regional Workshop on GHG Mitigation and Low Carbon Society which was supported by JICA. The discussion among the policy makers from eight ASEAN countries showed interests and demand for the capacity building as necessity in this region. It would be somehow very worthwhile and benefit to all if there is a cooperative program in the form of both south-to-south and north-to-south cooperative training or capacity building forum in ASEAN on climate change issue. On behalf of TGO, we would try our best to ensure that the countries in this region will move forward together toward climate mitigation and adaptation since we cannot live alone on the matter of climate change.



A handwritten signature in black ink, appearing to read "Sirithan Pairoj-Boriboon". The signature is stylized and written in cursive.

**SIRITHAN PAIROJ-BORIBOON**

Executive Director

Thailand Greenhouse Gas Management Organization

(Public Organization)



## About TGO

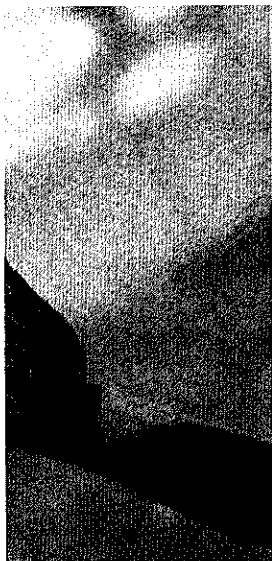
Thailand Greenhouse Gas Management Organization (Public Organization), or TGO, is an autonomous governmental organization under Ministry of Natural Resources and Environment with a specific purpose as an implementing agency on greenhouse gas (GHG) emission reduction in Thailand, promoting: low carbon activities; investment and marketing on GHG emission reductions; establishing GHG information center; reviewing CDM projects for approval; providing capacity development and outreach for CDM stakeholders and promote low carbon activities, and particularly performing its role as the Designated National Authority for CDM (DNA-CDM) office in Thailand. TGO is also assigned to be co-secretariat of National Committee on Climate Change (NCCC). NCCC is chaired by the Prime Minister, and responsible for consideration of national agenda and issues in tackling climate change.



## About JICA

Japan International Cooperation Agency (JICA) was established as an independent administrative institution. JICA aims to contribute to the promotion of international cooperation as well as the sound development of Japanese and global economy by supporting the socioeconomic development, recovery or economic stability of developing regions. In addition to the headquarters in Tokyo and 17 domestic offices, JICA has a network of 96 overseas bureaus and has undertaken projects in around 150 countries.





## Project Background

The impact of climate change can be now seen all over the world whether in developed or developing countries. The impact has been becoming extremely serious in the past decade which can be observed in various unexpected situations such as temperature and sea level rise, more frequent occurring of extreme storms and floods, as well as increased illnesses and diseases, to mention a few.

With the similarity of an economic cooperation in ASEAN region, Thailand Greenhouse Gas Management Organization (Public Organization): TGO believes that the co-operation in climate change's capacity building and knowledge transfer of mitigation and adaptation issues will support ASEAN countries in developing an appropriate plan or roadmap for tackling the climate change issue.

TGO has been dealing with this serious situation of climate change and has had a vision to become an international training hub for climate change mitigation and adaptation in ASEAN region. Furthermore, we are planning to create a networking among professionals in climate change field and provide them a platform to discuss and exchange ideas on this crucial issue.

In the course of realizing this vision, TGO has implemented various actions including implementation of a technical cooperation project with Japan International Cooperation Agency (JICA) titled "The Project for Capacity Development and Institutional Strengthening for GHG Mitigation in the Kingdom of Thailand".

As an achievement of the project, TGO held the first preliminary workshop for the international training center program as part of the 2<sup>nd</sup> Climate Thailand Conference (CTC 2011) in order to share the vision and concept of the program with key institutions in ASEAN region.



## Workshop Objectives:

1. To share background and objective of the International Training Center concept among relevant institutions in ASEAN region.
2. To provide training on the GHG mitigation.
3. To be a forum to exchange information on current status of climate change mitigation and adaptation in each country.
4. To establish a networking among climate change related institutions.
5. To identify and share capacity building needs in mitigation and adaptation field in each country.
6. To share ideas and address potential future framework and work plan of the International Training Center program.

## Programme of Activities:

The workshop program is divided into 3 sections during 17-19 August 2011.

**Section 1 (17 August 2011):** Training on "GHG Mitigation and Low Carbon Society" from TGO and JICA experts which is divided into the following topics;

1. Clean Development Mechanism (CDM)
2. Carbon Trading
3. GHG Mitigation Measures in relevant Sectors
4. UNFCCC Structure and Negotiations
5. Carbon Footprint
6. GHG Inventory



**Section 2 (18 August 2011 to 19 August 2011-morning session):** The opening ceremony of the 2<sup>nd</sup> Climate Thailand Conference: CTC 2011 entitled "Climate Change and Green Economy: Pathway to Response" and other related seminars on climate change mitigation and adaptation issues.

**Section 3 (19 August 2011- afternoon session):** Briefly presentation and discussion session on the following issues;

1. Overview of climate change mitigation and adaptation, including policy and plan, actual measures taken.
2. Overview of GHG inventory development, including institutional structure.
3. Capacity development and assistance needs for climate change mitigation, adaptation, and GHG inventory establishment/ development.

## Participants:

### **Cambodia**

**Mr. Ou Chanthearith**

Deputy Director of Climate Change Department, Ministry of Environment

**Mr. Uy Kamal**

Head of GHG Inventory and Mitigation, Ministry of Environment

### **Indonesia**

**Mr. Ardiyanto Aryoseno**

Staff, National Council on Climate Change

### **Laos**

**Mr. Syamphone Sengchandala**

Director of Climate Change Office, Department of environment, Ministry of Natural Resources and Environment

**Mr. Phonepasong Sithideth**

Technical staff, Ministry of Energy and Mines

### **Malaysia**

**Dr. Gary William Theseira**

Deputy Undersecretary, Ministry of Natural Resources and Environment

### **Myanmar**

**Mr. Hlaing Min Maung**

Head of Branch, Ministry of Forestry

**Mr. Than Naing Win**

Staff Officer, Dry Zone Greening Department

### **Philippines**

**Ms. Donna Lyne S. Sanidad**

Information Technology Officer II, Climate Change Commission

### **Thailand**

**Mrs. Nirawan Pipitsombat**

Acting Director, Office of Climate Change Coordination, Office of Natural Resources and Environmental Policy and Planning

**Mr. Thawatchai Somnam**

Assistant Senior Official, Strategy Office, Thailand Greenhouse Gas Management Organization (PO)

### **Vietnam**

**Dr. Huynh Thi Lan Huong**

Deputy Director, Climate Change Research Center, Institute of Meteorology, Hydrology and Environment

# Presentations from Participants

## Cambodia

### 1. Mr. Ou Chantearith

Deputy Director of Climate Change Department,  
Ministry of Environment



#### Work experience:

- Member group of research survey on provincial vulnerable to climate change and how is affected to the community people and their livelihood in order to prepare the Second National Communication report under UNFCCC
- Joining training program on Climate Change: Adaptation and Mitigation at SMHI Institute, Norrkoping, Sweden

#### Current responsibilities:

- All tasks assigned by director of the department such as: Organize workshop, meeting, and so on
- Joining workshop, meeting such as: national or international and
- Team member of Cambodia Climate Change Alliance (CCCA) responsible the component 2 Knowledge Learning Platform

### 2. Mr. Uy Kamal


Head of GHG Inventory and Mitigation,  
Ministry of Environment



#### Work experience and current responsibilities:

My first work experience was to develop environmental data base, environmental indicators, conducting environmental performance assessment and state of environment. In addition, I had also involved in national greenhouse gas inventory activities, national adaptation and mitigation assessments, and the national communication preparation. The main three current responsibilities are 1) national greenhouse gas inventory and greenhouse gas mitigation study, 2) developing and implementing clean development mechanism, national REDD+ program, and other low carbon development activities, and 3) climate change knowledge and learning activities.

# Powerpoint presentation:



**Workshop on "GHG Mitigation and Low Carbon Society"**  
Bangkok, Thailand 17-19 August 2011

**Current Status of Climate Change Mitigation and Adaptation**

**Cambodia, Ministry of Environment**

## Contents

- 1. Overview of climate change mitigation and adaptation
  - National Policy & Plan
  - Measures
  - Institutional Structure
- 2. Overview of GHG inventory development
  - National Policy & Plan
  - Institutional Structure
- Other Issues

### 1. Overview of climate change mitigation and adaptation

❖ **National Policy and Plan**

- Cambodia ratified the UN Framework Convention on Climate Change (UNFCCC) in 1995 and acceded to the Kyoto Protocol in 2002.
- Cambodia fully supports the efforts to address climate change based on the key principles of the UNFCCC, namely "common but differentiated responsibilities and respective capabilities", "specific needs and special circumstances of developing country parties, especially those that are particularly vulnerable to the adverse effects of climate change and their right to promote sustainable development" and the "precautionary principle"
- Cambodia supports REDD+
- Integration of CC concerns into development policies is at the early stage
  - National Sustainable Development Plan (2009-2013) Updates expands CC scope as a Government priority

### 1. Overview of climate change mitigation and adaptation

❖ **National Policy and Plan**

- **Adaptation Programs**
  - NAPA and NAPA follow up project
    - ✓ A pilot project "Promoting Climate-Resilience Water Management and Agricultural Practices in Rural Cambodia"
  - Cambodia Climate Change Alliance
  - Pilot Program For Climate Change Resilience
  - Coastal zone adaptation project (under negotiation)
- **Mitigation Programs**
  - CDM and REDD+
  - Green Growth development in initial stage

### 1. Overview of climate change mitigation and adaptation

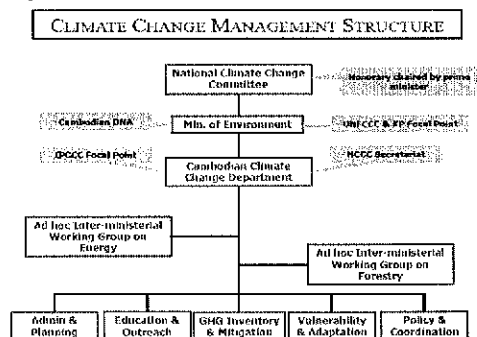
❖ **Measure**

- Cambodia recognizes important measures for adaptation, mitigation, technology transfer, financial assistance, and capacity building to address climate change. It promptly took action on national adaptation program of action, focusing on measures that have direct impacts on the livelihoods of local people, in particular the poorest, and the voluntary approaches for greenhouse gas emission reduction such as Clean Development Mechanism (CDM), REDD+, and other green growth and/or low carbon development activities.
- To reach ultimate achievement of the national programs/plans, the Royal Government of Cambodia keeps active cooperation and coordination with various development partners in term of technology transfer, capacity building, policy formulation, financial resource, etc.,

### 1. Overview of climate change mitigation and adaptation

❖ **Institutional Structure**

**CLIMATE CHANGE MANAGEMENT STRUCTURE**



```

graph TD
    NCCC[National Climate Change Committee] --- MoE[Min. of Environment]
    MoE --- CDD[Cambodian Climate Change Department]
    CDD --- E-WG[Ad hoc Inter-ministerial Working Group on Energy]
    CDD --- F-WG[Ad hoc Inter-ministerial Working Group on Forestry]
    E-WG --- AP[Admin & Planning]
    E-WG --- EO[Education & Outreach]
    E-WG --- GIM[GHG Inventory & Mitigation]
    F-WG --- VA[Vulnerability & Adaptation]
    F-WG --- PC[Policy & Coordination]
    
```



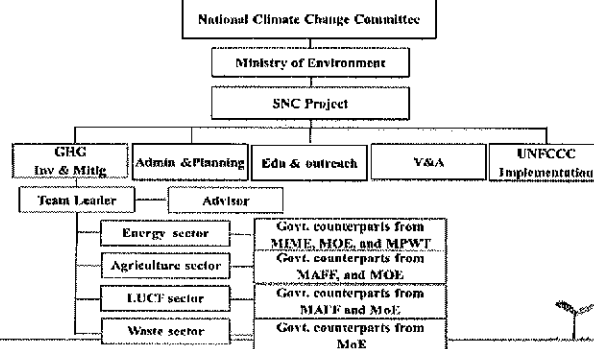
## 2. Overview of GHG Inventory Development

### ❖ National Policy and Plan

- The mandate of national greenhouse gas inventory is set in the sub-decree of the establishment of the National Climate Change Committee
- In the future national communication preparation, the GHG Inventory office plans to apply ALU (Agriculture and land use change) software and UNFCCC inventory software for preparing and reporting greenhouse gas inventory
- The office planned to engage broader participation with high responsibility from various key stakeholders including governmental ministries, universities in specific sector inventory activities
- Other carbon accounting systems including MRV and country verification emission reduction (VER), new market mechanisms, are under consideration and discussion.

## 2. Overview of GHG Inventory Development

### ❖ Institutional Structure



## 3. Other Issues

### ❖ Barriers with adaptation and Mitigation

- Insufficient of individual and institution capacity
- Institutional cooperation and coordination are considerably insufficient
- Limited of financial resources
- Lack of national and sectoral policy, goal and target

### ❖ Barriers with GHG Inventory

Additional barriers to GHG Inventory:

- Insufficient activity data and emission factors
- Lack of sustainable data management system
- Limited human resources(project-based)

## 3. Other Issues

### ❖ Some suggestion to remove barriers

Improving individual and institution capacity through:

- Strengthening institutional cooperation and coordination among stakeholder
- Mobilizing financial resources
- Mainstreaming climate change concept, knowledge including green growth and other low carbon initiatives into government institutions/agencies, private sector, NGOs, civil society organization, local communities
- Keep improving data base management systems, QA&QC
- Encourage on-the-job training practices to build capacity of local experts
- Improving cooperation with regional research organizations
- Extending research and development activities.

## 3. Other Issues

### ❖ Specific capacity needs:

- Vulnerable assessment and adaptation modeling,
- Cost analysis of mitigation and adaption options including cost curve development, and
- Strategic planning development in adaptation and mitigation options
- Establishing and improving national carbon accountant system, such as Measurement Reporting and Evaluation (MRV) and new market mechanism, etc.
- More research and development activities
- English languages skill



# Thank You !

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 Website: [www.camclimate.org.kh](http://www.camclimate.org.kh)

# Indonesia

## Mr. Ardiyanto Aryoseno

Staff, National Council on Climate Change



### Powerpoint presentation:

**Current Status of Climate Change Mitigation and Adaptation**

Indonesia  
National Council on Climate Change

**Adaptation**

- National Policy & Plan
- Measures
- Institutional Structure

**Overview of GHG Inventory development**

- National Policy & Plan
- Institutional Structure

**INDONESIA: OUR VULNERABILITIES**

- Sea level rise & land inundation threatens coastal zones**  
→ North coast Java, south Kalimantan, west Sumatra
- Water**  
→ changed water balance leading to droughts and floods – regionally differentiated
- Agriculture**  
→ food security threatened, and declining productivity in particular rice cultivation
- Health**  
→ spread of diseases correlated to effects of climate change (malaria, dengue, cholera, diarrhea etc)

**National Policy and Plan**

**NATIONAL ACTION PLAN ADDRESSING CLIMATE CHANGE**  
(Published by State Ministry of Environment 2007)

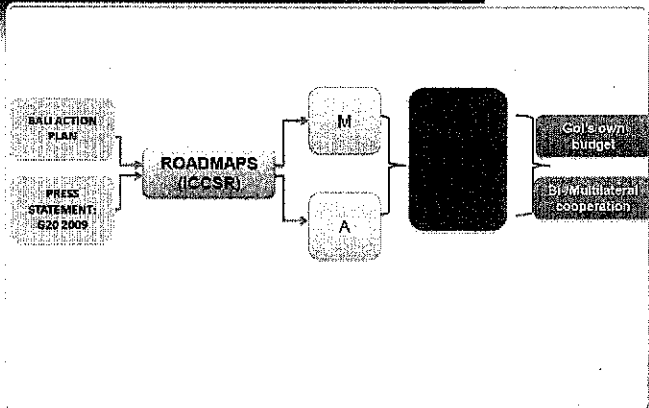
- The objective in formulating a National Action Plan to address climate change is for it to be used as guidance to various institutions in carrying out a coordinated and integrated effort to tackle climate change.

**INDONESIA CLIMATE CHANGE SECTORAL ROADMAP (2010)**

- The Climate Change Sectoral Roadmap will support the GO's development vision related to climate change for the next 20 years.
- The implementation of the Roadmap will be through National Development Plan; the next Development is for period 2010 – 2014.
- There are nine priority sectors:

Mitigation Sectors:- Energy, Forestry, Industry, Transportation, Waste Management  
Adaptation Sectors:- Agriculture, Marine and Fishery, Water Resources, Health

**MAINSTREAMING CLIMATE CHANGE INTO NATIONAL DEVELOPMENT AGENDA:**

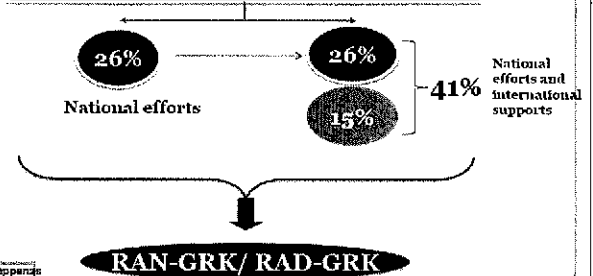


Source : Indonesia Second National Communication

GOI committed to implement Bali Action Plan and voluntarily set emission targets: 28% (national budget), additional 15% (with international support)

**GOI commitment at G-20 Pittsburgh and COP15**

GHG emission reduction by 2020

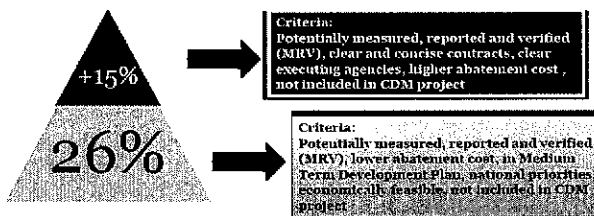


Source : Bappenas

**Scenario of 26% GHG Emission Reduction**

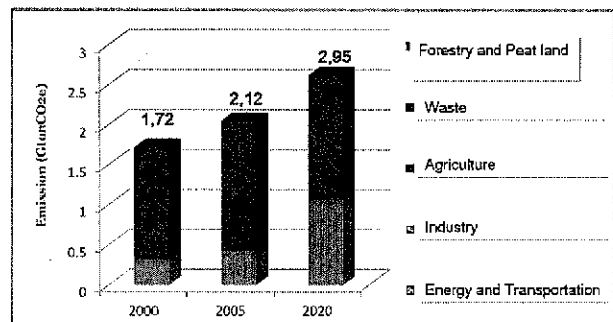
**RAN-GRK**

Compiled based on proposals of actions from Implementing Agencies  
Quick start: screened based on existing actions that have co-benefits in reducing GHG emissions

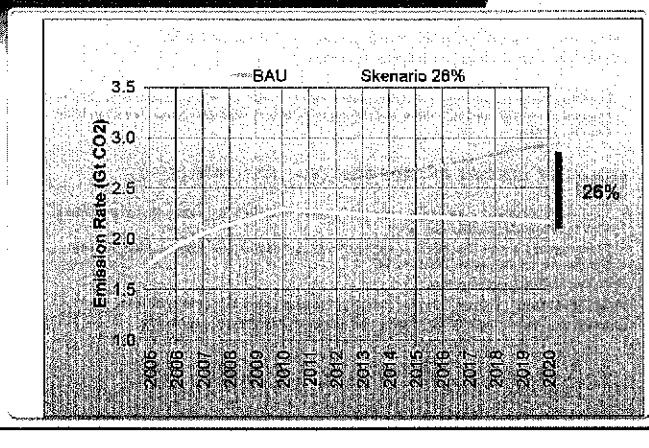


**Scenario of 26% GHG Emission Reduction**

GHG Emission in Indonesia is estimated to increase from 1.72 to 2.95 GtCO<sub>2</sub>e from 2000 to 2020



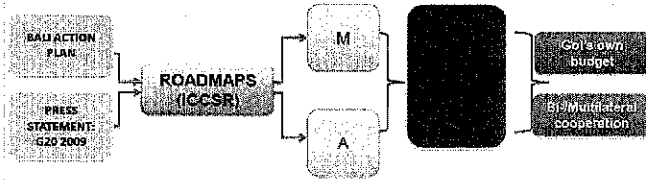
**Scenario of 26% GHG Emission Reduction**



The Dewan Nasional Perubahan Iklim (DNPI) or National Council on Climate Change (NCCC) was established in 2008

- Established under President Regulation #46/2008
  - The Dewan Nasional Perubahan Iklim facilitates the coordination of policies and activities on the management of climate change impacts and greenhouse gas emission reductions
  - The council is chaired by the President of Indonesia and is tasked with ...
- 1 Formulating national policies, strategies and programmatic activities related to climate change
  - 2 Coordinating climate change related activities that include mitigation, adaptation, technology transfer and financing Monitoring and evaluating policy
  - 3 Implementation on climate change management and control
  - 4 Strengthening the country's negotiating position in global climate change negotiations

**MAINSTREAMING CLIMATE CHANGE INTO NATIONAL DEVELOPMENT AGENDA:**



Source : Indonesia Second National Communication

GOI committed to implement Bali Action Plan and voluntarily set emission target: 26% (national budget), additional 15% (with international support)

**GOI commitment at G-20 Pittsburgh and COP15**  
GHG emission reduction by 2020



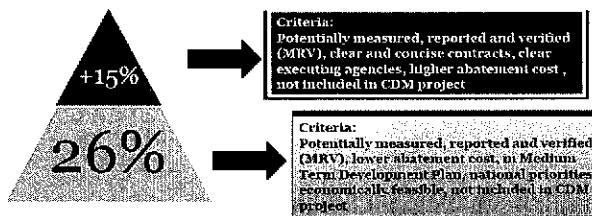
**RAN-GRK/ RAD-GRK**

Source : Beppanga

**Scenario of 26% GHG Emission Reduction**

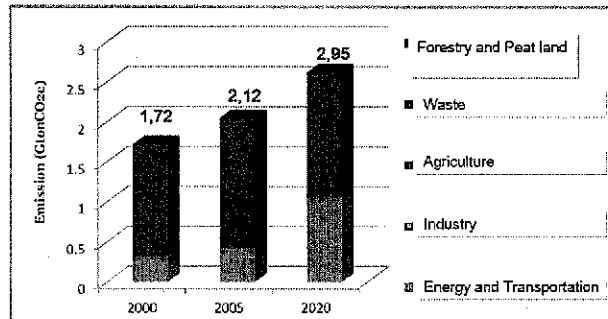
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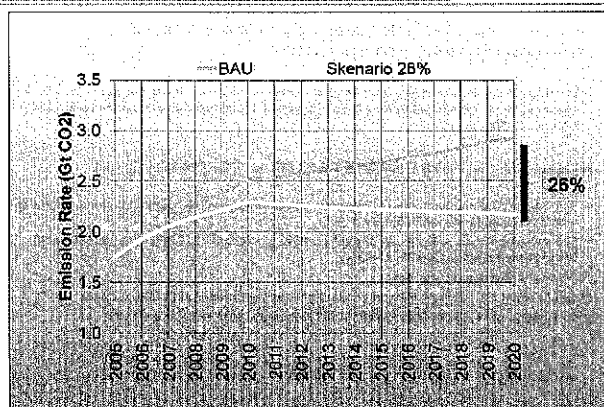


**Scenario of 26% GHG Emission Reduction**

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**Scenario of 26% GHG Emission Reduction**



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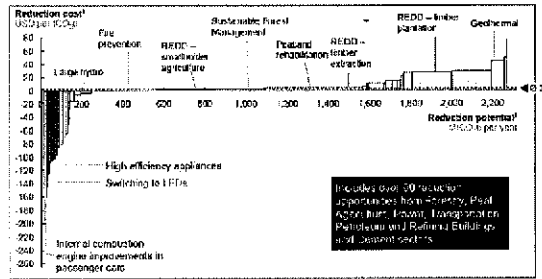
- 1 Formulating national policies, strategies and programmatic activities related to climate change
- 2 Coordinating climate change related activities that include mitigation, adaptation, technology transfer and financing  
Monitoring and evaluating policy
- 3 Implementation on climate change management and control
- 4 Strengthening the country's negotiating position in global climate change negotiations



## Mitigation Potential

Indonesia has the potential to reduce CO<sub>2</sub> emissions by up to 2.3 Gt per by 2030

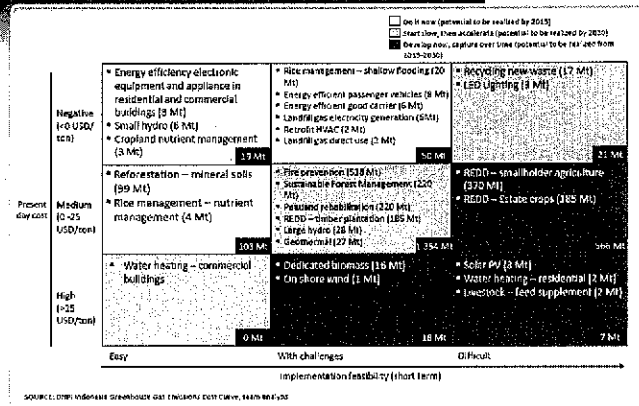
Scenario: pre-2010, 2030



1. Includes deep-sea and oil using 1% economic rate  
 2. The width of each bar represents the volume of potential reduction. The height of each bar represents the net reduction in emissions in 2030.  
 SOURCE: Indonesia GHG Abatement Cost Curve

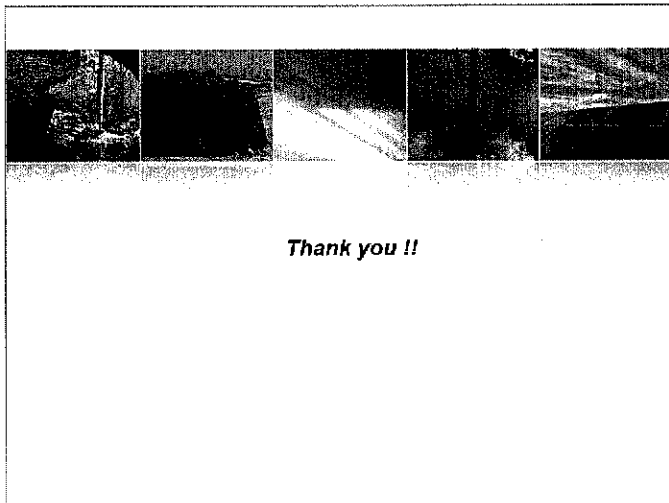
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## Mitigation Potential



SOURCE: OTHER INDONESIA GREENHOUSE GAS INVENTORY COST CURVE, 2007 BY ECLW

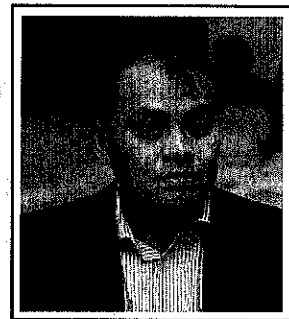
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Thank you !!

## 1. Mr. Syamphone Sengchandala

Director of Climate Change Office,  
Department of environment,  
Ministry of Natural Resources and Environment



## 2. Mr. Phonepasong Sithideth

Technical staff, Ministry of Energy and Mines




### Work experiences and current responsibilities:

I am technical staff. I work for Department of Electricity (DOE), Ministry of Energy and Mines. My responsibility as following:

- Reviewed on EIA report on Hydropower development project that concern on environment management program such as: pollution control during under construction and operation and other issues to make sure that the project would make less impact to environment.
- Participated to follow up the implementation on the national policy on environment and social sustainability of hydropower sector. Furthermore, my sector develops the renewable energy strategy of Lao PDR.
- Participated for Cleaner Production Project.
- Participated the Hands-on Training on Greenhouse Gas Mitigation for Lao PDR Second National Communication (SNC) by using 'LEAP' model for GHG mitigation study

# Powerpoint presentation:



**Current Status of Climate Change Mitigation and Adaptation**

Syamphone SENGCHANDALA,  
Director of Climate Change Office,  
Ministry of Natural Resource and Environment (MONRE), Laos

**Contents**

- Overview of climate change mitigation and adaptation
  - National Policy & Plan
  - Institutional Structure
  - Measures
- Overview of GHG inventory development
  - National Policy & Plan
  - Institutional Structure
- Other Issues

**National Policy and Plan: Initiatives and Programs (1)**

- ❖ Lao PDR ratified :UNFCCC in 1995 and Kyoto Protocol in 2003
- ❖ Established National Steering committee under the leadership of the Deputy Prime Minister
- ❖ Eight cross sectoral working groups established
- ❖ Climate Change Office established
- ❖ National Strategy on Climate Change approved by the government on 12 March, 2010
- ❖ Climate Change mainstreamed in National Social-Economic Development Plan(NSEDP7)

**National Policy and Plan: Initiatives and Programs (1)**

1. Initial National Communication (INC) in collaboration with UNDP/GEF, 2000
2. National Adaptation Plan of Action (NAPA) in collaboration with UNDP/GEF May 2009
3. National Strategy on Climate Change (NSCC) in collaboration with ADB/WB/UNDP 2010.
4. Second National Communication on Climate Change (SNC) in collaboration with UNDP/GEF, (ongoing)
5. Capacity Enhancement for coping with Climate Change (ABD TA)(ongoing)

**National Policy and Plan: Initiatives and Programs (2)**

6. Capacity Building CDM for DNA(ongoing)
  - CDMs- 10 projects covering hydro (6) energy (2) forest (1) biogas (1).
  - Issues LOA 7 Projects
7. Awareness and education on Environment and Climate Change (GIZ) (pipeline)
8. Technology Need Assessment for mitigation and adaptation (UNEP) (ongoing)

**National Policy and Plan: Initiatives and Programs (3)**


9. REDD+ 3 ongoing pilot projects
10. National Appropriate Mitigation Action (NAMA) for Transport Sector- case study on bus rapid transit (BRT)
11. NAPA follow-up: one approved on agriculture another on water sector identified and being formulated

To secure a future where the Laos is capable of mitigating and adapting to changing climatic conditions in a way that promotes sustainable economic development, reduces poverty, protects public health and safety, enhances the quality of Lao PDR's natural environment, and advances the quality of life for all Lao people.

Adaptation

- 1. Agriculture & Food Security
- 2. Forestry and Land Use Change
- 3. Water Resources
- 4. Energy and Transport
- 5. Industry
- 6. Urban Development
- 7. Public Health


Mitigation



### National Policy and Plan:

**Adaptation Options:**

1. Planning and designing of future investment programmes that take into account climate abnormalities;
2. Development of climate-resilient, disease-resilient crop varieties
3. Strengthen adaptive capacity of the agricultural agencies
4. Build financial capacity and human capital for farmers
5. Integration of local knowledge in adaptation plans at local and national levels
6. Undertaking a country-specific, sector-based research
7. Enhancing information dissemination and extension support to farmers in regard to climate change preparedness and responses.

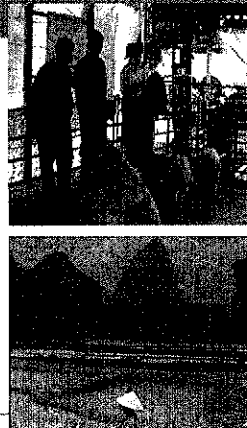


### National Policy and Plan:

#### I. Food Security and Climate Resilient Agriculture:

**Mitigation Options:**

1. Reducing methane emissions from rice paddies
2. Reducing methane emissions from enteric fermentation
3. Reducing emissions from livestock manure
4. Promoting new technology transfers

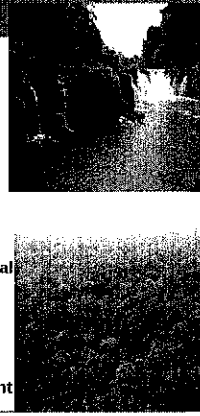


### National Policy and Plan:

#### II. Forestry and Land Use Change

**Adaptation Options :**

- 1) Mainstreaming climate change to Forestry sector development plans and programs
- 2) Seeking and developing plant species resilient to the increasing pest and climate change impacts;
- 3) Strengthening information gathering, modeling of climate change-forest dynamics, and vulnerability assessment.
- 4) Improving forest management system to support rural economies;
- 5) Providing options and opportunities for villagers to adapt to climate change;
- 6) Enhancing biodiversity conservation and management to ensure sustainability by adapting to climate change;

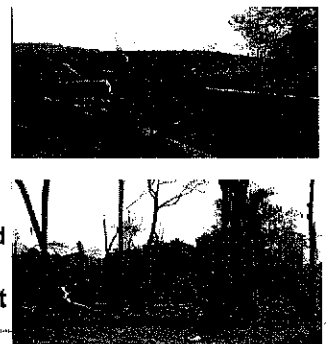


### National Policy and Plan:

#### III. Forestry and Land Use Change

**Mitigation Options:**

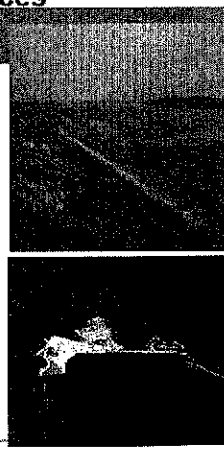
1. Reducing "slash and burn" agriculture :
2. Reducing off-site burning
3. Reducing forest fires:
4. Integrating forest management
5. Effectively mapping and planning
6. Pursuing carbon market opportunities



### National Policy and Plan:

#### III. Water Resources

- 1) Assess the industry's vulnerability to climate change effects;
- 2) Develop climate change scenarios for the river basins
- 3) Develop reliable early warning systems to reduce disaster impacts
- 4) Downscaling climate and hydrological models to a watershed level;
- 5) Integrating climate change measures into current risk management strategies and planning processes
- 6) Planning and design criteria for hydropower structure.







**National Policy and Plan:  
IV. Energy and Transport**

**Adaptation Options (3):**



- 1) Incorporating a range of possible climate change effects into the transportation investment decisions and management strategies;
- 2) Developing long-range transportation plans and investment strategies that are sufficiently robust to accommodate unanticipated future events;
- 3) Identification of the at-risk critical infrastructure, monitoring of conditions.

**National Policy and Plan:  
IV. Energy and Transport**

**Mitigation Options:**



- 1) **Electrification:** reaching the target of 70% by 2010 and 90% by 2020, as set in the National Growth and Poverty Reduction Strategy (NGPES);
- 2) **Renewable energy:** accelerating the development of solar and wind as well as hydropower including mini-hydro
- 3) **Cleaner energy:** by making use of the coal-bed methane and coalmine methane, and seeking cleaner technologies for the development of the country's abundant lignite resources;

**National Policy and Plan:  
IV. Energy and Transport**

**Mitigation Options:**

- 4) **Energy efficiency and savings:** by introducing energy-efficient lighting and appliances, and energy-efficient buildings;
- 5) **Low-carbon transport:** by promoting the use of alternate energy operated motor vehicles, pursuing environmental sustainable transport strategy;
- 6) Generating public awareness on energy saving by implementing initiatives such as car free day, marking Earth Day and World Environment Day;
- 7) Seeking the opportunities under CDM or other flexible, pragmatic financing mechanisms to undertake the development of climate-friendly renewable resources,



**National Policy and Plan:  
V. Industry**

**Adaptation Options:**

- Access to clean energy technology and clean production technology with emphasis on SME.

**Mitigation Options:**



- 1) Improve energy efficiency during the production process;
- 2) Reduce wood waste through improvement of furniture manufacturing techniques and methods
- 3) Promoting the use of waste biomass or agricultural residues to produce renewable energy or thermal energy for drying and heating products through combustion, gasification;

**National Policy and Plan:  
VII. Urban Development**

**Adaptation Options:**

- 1) Develop climate proofed urban environmental development plans;
- 2) Formulate climate proofing to climate change policies and action plans
- 3) Conduct climate change risk audits for each of key infrastructure services and identify climate vulnerability.
- 4) Climate-proofing the most vulnerable existing infrastructure to protect the current asset
- 5) Building storm surge barriers for wastewater treatment plants and landfills; and
- 6) Developing new design criteria for infrastructure that reflect non-stationary hydrologic processes;

**National Policy and Plan:  
VII. Urban Development**

- 1) Reduction of GHG emissions from the solid waste sector in Laos through applying the 3Rs (reduces, reuse and recycle);
- 2) Upgrading solid waste collection services
- 3) Building recycling facilities
- 4) Composting organic contents to manufacture organic fertilizers;
- 5) Effectively managing sewage sludge
- 6) Constructing new landfill facilities that can capture methane; if financially viable, retrofitting the existing landfill;
- 7) Promote environmental sustainable urban development,
- 8) Encourage the participation of the private sector and international partners in GHG emission reduction from wastes under the CDM and other financing mechanisms.

**National Policy and Plan:  
VIII Public Health**

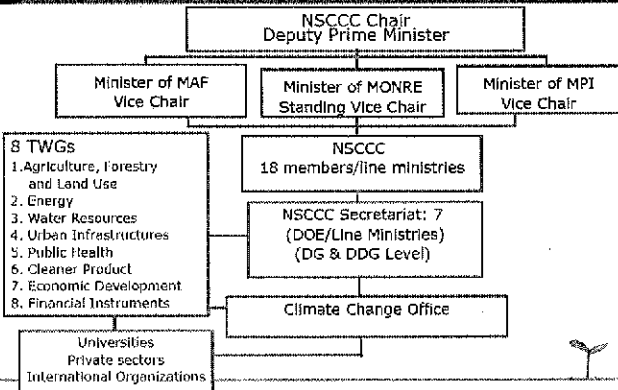
**Adaptation Options:**

- 1) Providing access to safe water and improved sanitation to reduce diarrhoeal diseases and other infectious diseases;
- 2) Incorporating current climate change concerns into ongoing programmes and measures
- 3) Regular evaluation and monitoring of climate proofed programs
- 4) Raising public awareness, effectively using local resources, appropriate governance arrangements and community participation;
- 5) Strengthening existing capacity and applying new approaches

**National Policy and Plan:**

- ❖ Agriculture: 13 priority projects: Top 2 priority:
  - \* Strengthening capacity of the national disaster management committee
  - \* Promote secondary professions for farmers affected by disasters
- ❖ Forestry: 14 priority projects: Top 2 priority:
  - \* Slash and burn eradication
  - \* Strengthen capacity of villages forestry volunteers to support village forest management
- ❖ Water resources: 10 priority projects: 6 top priorities: (awareness, map of flood prone areas, early warning, capacity building, survey of ground water and development of reservoirs for drought areas)
- ❖ Public Health: 8 priority projects: Top 2 priority:
  - \* Improve system for the sustainable use of drinking water and sanitation
  - \* Capacity building for designing water and sanitation system ( in flood and drought prone areas)

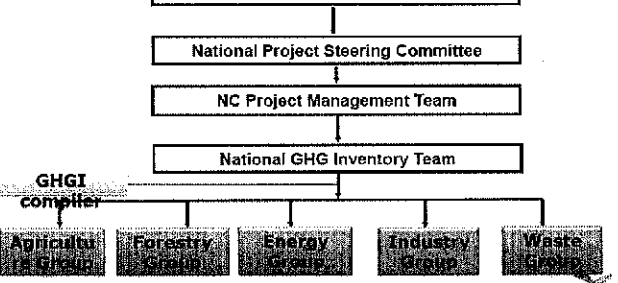
**Institutional structure**



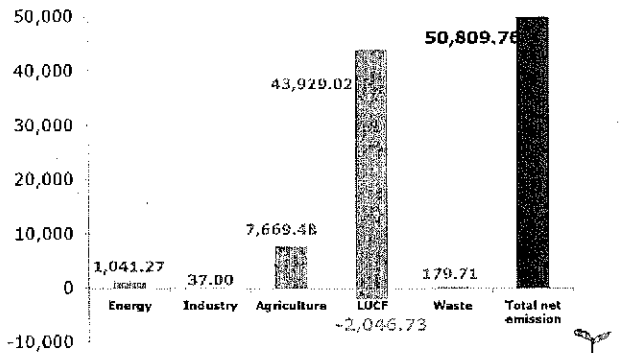
**2. Overview of GHG inventory development**

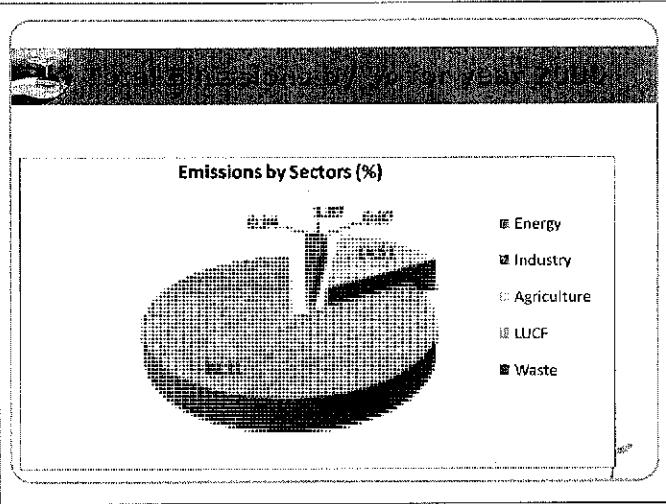
- ❖ Established GHG institutional framework
- ❖ Conducted GHG inventory for 1990 and 2000 (National Communication)

**MONRE**



**GHG Inventory (GtCO2e)**



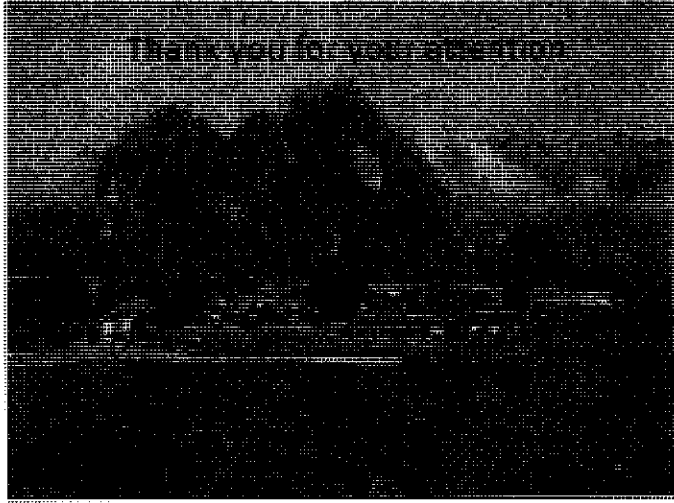


**Other issues:**  
Needs for capacity development and assistance

1. Need to strengthen cross cutting multi sector awareness generating programs on Climate Change to policy planners and decision makers
2. Need for program approach rather than time bound project approach
3. Need for continued and co-ordinated support from development partner
4. Need for major capacity building within the government, the private sector and the academic

**Other issues:**  
Needs for capacity development and assistance

5. Need for more resource mobilization and capacity enhancement
6. Need also for developing more absorptive capacity
7. Need for further strengthening South-South and Regional co-operation



## Malaysia

### **Dr. Gary William Theseira**

Deputy Undersecretary,  
Ministry of Natural Resources and Environment



#### **Work experience:**

I have worked more than 10 years in the physical, biological and environmental sciences. In my earlier role as a scientist, I was involved in conducting research on forest ecosystems and designing and developing crop and forest and ecosystem scale models. These models were then applied within a project framework to address specific research questions and modeling objectives. In addition to modeling ecological systems, I also have experience modeling other physical, chemical and biological processes. This modeling experience proved useful in my work to develop the national carbon inventory of Malaysia as part of the team tasked with producing Malaysia's Second National Communication to the UN Framework Convention on Climate Change (UNFCCC). More recently I have been involved in the development of environment and sustainability policy in Malaysia. In particular, I am part of a team charged with developing a national roadmap to reduce Malaysia's emission intensity of GDP through 2020 and beyond. Finally, since 2001, I have represented Malaysia as a delegate to the Conferences of the UNFCCC including meetings of the Subsidiary Bodies and Specific Multi-lateral negotiating groups such as the REDD Plus Partnership Programme.

#### **Current responsibilities:**


As deputy undersecretary, I currently assist the division undersecretary in overseeing all work programmes under the Environment Management and Climate Change Division of the Ministry of Natural Resources and Environment. These include air and water quality management, management of environmentally hazardous substances, ozone depleting substances and hazardous waste. Under issues relating to climate change, my responsibilities include:

- Participation in the Ministerial Core Group on Climate Change
- Second National Communication Working Group
- CDM Technical Committee and the National Committee on CDM
- National Climate Change Negotiator, (COP 7, Marrakech, and COP 12, Nairobi through COP 16, Cancun)
- Assessment of low hanging fruit toward reducing the emissions intensity of GDP
- Specific issues covered:
  - UN Framework Convention on Climate Change (UNFCCC)
  - Bali Roadmap and Action Plan
  - Kyoto Protocol
  - Land Use, Land Use Change and Forestry (LULUCF)




- Clean Development Mechanism (CDM)
- Copenhagen Accord
- REDD+ Partnership on Forests and Climate

## Powerpoint presentation :



### Current Status of Climate Change Mitigation and Adaptation



Ministry of Natural Resources and Environment Malaysia

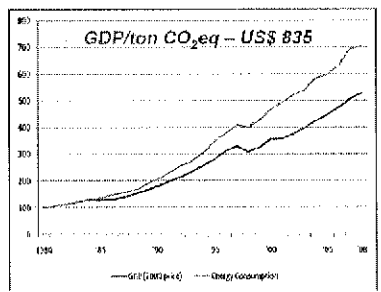
with appreciation to:

TGO  
JICA

### Contents

- 1 Overview of climate change mitigation and adaptation
  - National Policy & Plan
  - Measures
  - Institutional Structure
- 2 Overview of GHG inventory development
  - National Policy & Plan
  - Institutional Structure
- 3 Other Issues
  - Challenges

### Malaysia: Wealth Creation at Increasing Energy Consumption



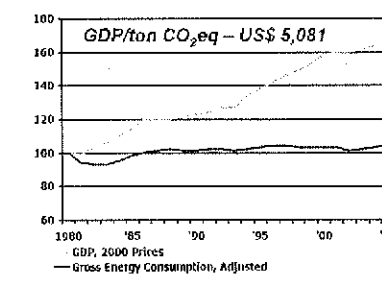
**GDP/ton CO<sub>2</sub>eq – US\$ 835**

The Malaysian gross domestic product (GDP) grew by 4.7 times from 1980 to 2006 (at 2000 constant prices).

In the same period the consumption of energy increased by 6.3 times!

Source: National Energy Balance, 2008

### Denmark: Wealth Creation at Constant Energy Consumption



**GDP/ton CO<sub>2</sub>eq – US\$ 5,081**

The Danish gross domestic product (GDP) grew by 75 percent from 1980 to 2006 (at constant prices).

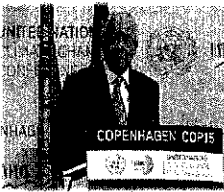
In the same period the consumption of energy in Denmark has been more or less constant.

Source: Danish Energy Authority

### Background

“voluntary reduction of up to 40% in terms of carbon emission intensity of GDP by the year 2020 compared to 2005 levels.

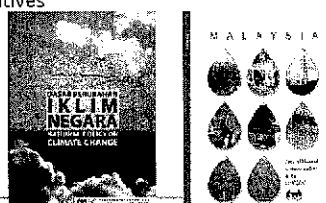
....conditional on receiving the transfer of technology and finance of adequate and effective levels from Annex 1 countries”



Prime Minister YAB Datu' Sri Mohd. Najib bin Tun Abdul Razak, 17<sup>th</sup> December 2009, during his address to the 15<sup>th</sup> Conference of the Parties to the UNFCCC

### Sustainable development and climate change policies

- ❖ National Policy on Climate Change
- ❖ National Green Technology Policy
- ❖ National Roadmap to Reduce the Emission Intensity of GDP
- ❖ National Green Technology Roadmap
- ❖ Green Township and Green Buildings Initiatives
- ❖ Waste Management Initiatives



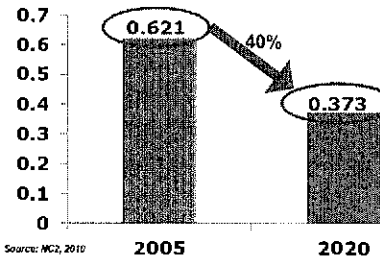
### Key GHG and GDP statistics

	Unit	2005 (baseline)	2020 (BAU projection)	2020 (40% Reduction Indicator)
GDP	RM billion	449.25	906.64	906.64
Population	Million	26.38	34.4	
CO <sub>2</sub> eq Emission	Million tons CO <sub>2</sub> eq.	279.2	375.4	335
CO <sub>2</sub> eq Emission per capita	tons/capita	10.58	10.92	
CO <sub>2</sub> eq Emission per GDP	tons/RM thousand	0.621	0.414	0.373

Source: NCI, 2010.

### Target Reduction of Emission Intensity of GDP

CO<sub>2</sub> Emission Intensity at 2005  
Level  
(tons CO<sub>2</sub> eq/ RM thousand)

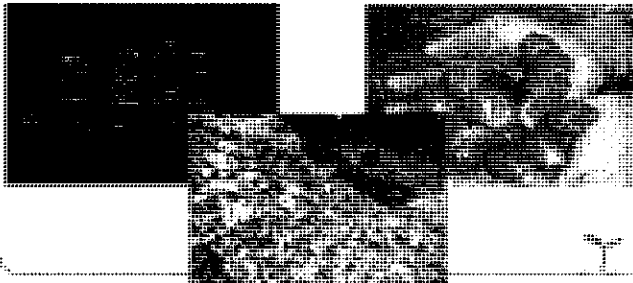


What potential  
mitigation  
options are  
available to  
achieve the 40%  
reduction?

Source: NCI, 2010

### Carbon Emissions Avoided to Date

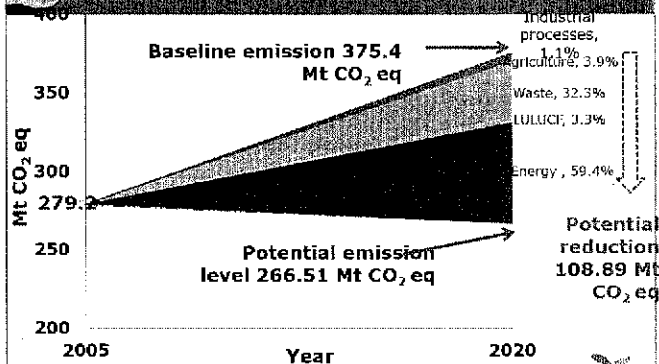
- Energy Efficiency – 4.544 million tons CO<sub>2</sub>eq
- Renewable Energy (OP mesocarp) – 19 million tons CO<sub>2</sub>eq
- Waste Mgt. (paper recycling) – 6.187 million tons CO<sub>2</sub>eq



### Long-Term Roadmap Development

- Spearheaded by NRE under the 10<sup>th</sup> Malaysia Plan
- Collaboration with UNITEN and The Energy and Resources Institute of India (TERI)
- Series of stakeholder consultations and workshops
- Data collection exercises
- Inception report produced in December of 2010
- Potential mitigation options identified
- Final report due in mid-2012

### Potential Emission Reduction



### Overall Mitigation Potential

Sector	CO <sub>2</sub> Reduction Potential (Mt CO <sub>2</sub> eq)
<b>Energy</b>	<b>64.71</b>
• Power Generation (EE and RE)	28.85
• Residential & Commercial (Green Building Initiative)	2.45
• Manufacturing (EE, RE, Green procurement)	8.96
• Transportation (Public transport enhancement)	24.45
<b>Waste (sorting and composting organics, RDF)</b>	<b>35.2</b>
<b>Industrial Processes (New technologies)</b>	<b>1.13</b>
<b>LULUCF (SFM, RIL, Tree planting)</b>	<b>3.6</b>
<b>Agriculture (Animal waste, Fertilizer &amp; H<sub>2</sub>O management)</b>	<b>4.25</b>
<b>TOTAL</b>	<b>108.89</b>

### Malaysia Green Technology and Climate Change Council

- ❖ *Chaired by Hon. Prime Minister*
- ❖ *Joint secretariat – Ministry of Energy, Green Technology and Water and the Ministry of Natural Resources and Environment*
- ❖ *Seven working groups*
  1. *Industry*
  2. *Research & Innovation*
  3. *Human Capital*
  4. *Promotion and Public Awareness*
  5. *Transportation*
  6. *Green Townships*
  7. *Adaptation*



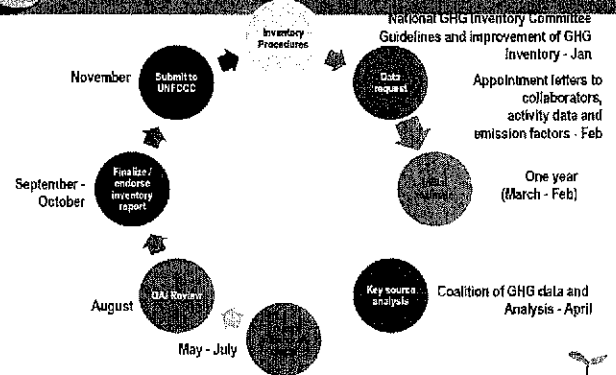
### Measures Implemented

- ❖ Removal of import duties on Hybrid Cars
- ❖ No stamp duty on new certified green buildings
- ❖ Energy audits and retrofitting of government buildings
- ❖ Government rebates on energy efficient appliances
- ❖ Minimum 24°C temperature in all government buildings (excluding health, IT and other facilities as appropriate)
- ❖ Establishment of the Green Technology Financing Scheme (GTFS)
- ❖ Measured Promotion of Market-based Mechanisms
  - Selling credits to developed countries means taking on their emissions
  - Recall intensity target of 0.373 (US\$ 893 per ton CO<sub>2</sub>e)

### Adaptation Measures

- ❖ Establishment of Adaptation Working Group under the National GTCC Council
- ❖ Study on the Economics of Climate Change (Economic Planning Unit, Prime Minister's Dept.)
- ❖ Study on Coastal Resources Risk Index (CORRI)
- ❖ Flood mitigation projects
- ❖ Moisture variability and temperature impacts on key agricultural industries
- ❖ Review of slope stability in view of higher rainfall intensities
- ❖ Biological Diversity Studies on Highland and other Vulnerable Ecosystems

### Proposed Biennial GHG Inventory Cycle



### Challenges (far more than shown below)

- ❖ Lack of legal and regulatory frameworks governing the emission of greenhouse gases by large emitters and key sectors;
- ❖ More cooperation needed among stakeholders, government agencies, research institutes, and private and government-linked corporations;
- ❖ Wavering commitment among the general public to participate actively in energy austerity and waste management measures, and,
- ❖ The current subsidy structure on fossil fuels that could constrain buy-in to energy efficiency and renewable energy measures.



**Thank You !**

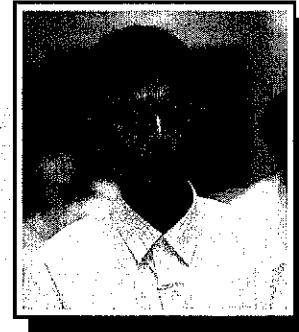
**Dr. Gary W. Theseira**  
[gtheseira@mre.gov.my](mailto:gtheseira@mre.gov.my)

**Environment Management and  
Climate Change Division  
Ministry of Natural Resources and  
Environment Malaysia**  
[www.mre.gov.my](http://www.mre.gov.my)

# Myanmar

## 1. Mr. Hlaing Min Maung

Head of Branch, Ministry of Forestry



### Work Experience:

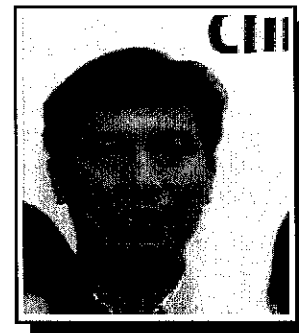
In 1996, I started my position in forest department as a reange officer. I published forestry research paper titled with "evaluation of the provenance trails of some tropical pine species in Shan state and Pyin-Oo-Lwin Township" in 1997. At that time, I was responsible for establishment of neem provenance trials. Yemane plantation and gap plantation. In January 2007, I was responsible to assist the director of planning and statistics division on land use related issue such as preparing works plans, formulating project proposal and developing plan for forestry development. Through accrued knowledge on land use at planning and statistics division, I could make a presentation in poster section of workshop on land cover/land use change process in monsoon Asia region which was held in 2009 in Thailand. In March 2009, I was transfer to national commission for environmental affairs, ministry of forestry and assigned as a head of branch. At that time, I wrote an article titled "Climate change and forests" in environmental awareness journal which was publish in national world environmental day 2009 Myanmar. In November 2009, I have share experience and knowledge of climate change issue in Myanmar and lessons learned from Thailand's experience from training course in climate change and its impacts held in Mahidol University, Thailand. In April 2010, I attended the expert training on climate change and energy in Seoul, Korea. I mostly attended the meeting and workshops concerned with climate change related issue.

### Current responsibilities:

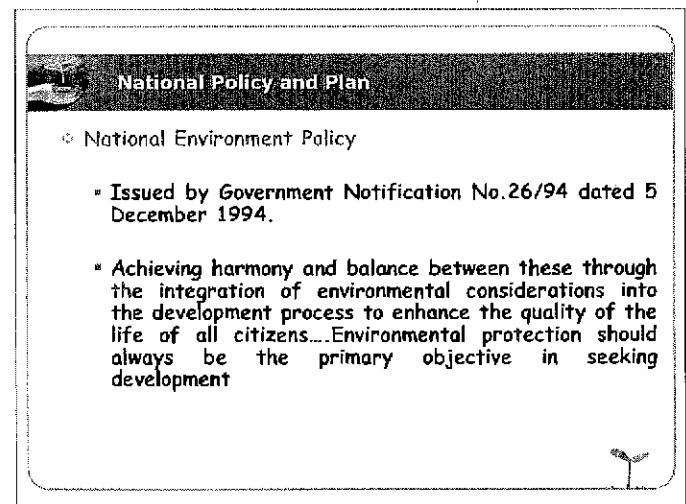
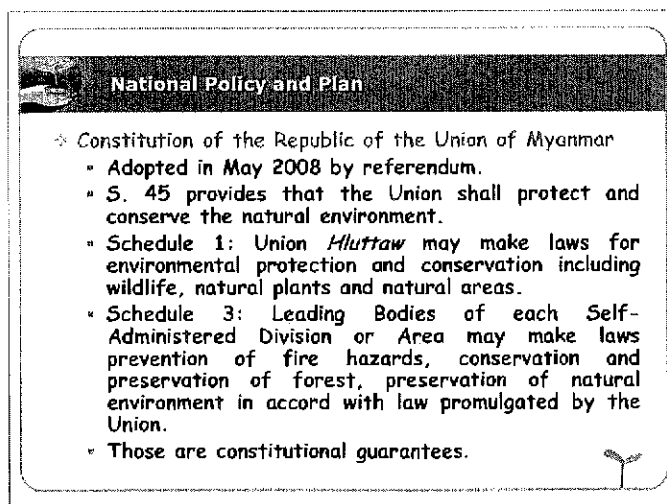
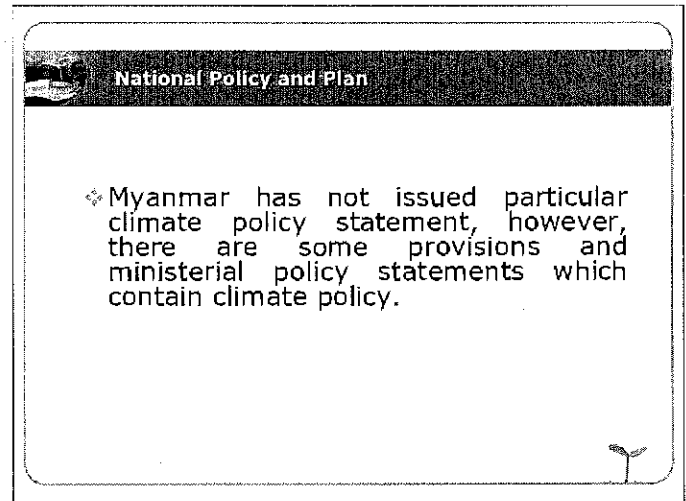
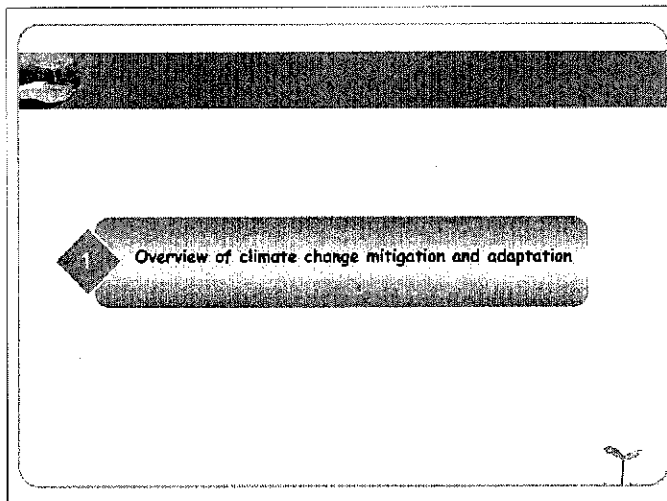
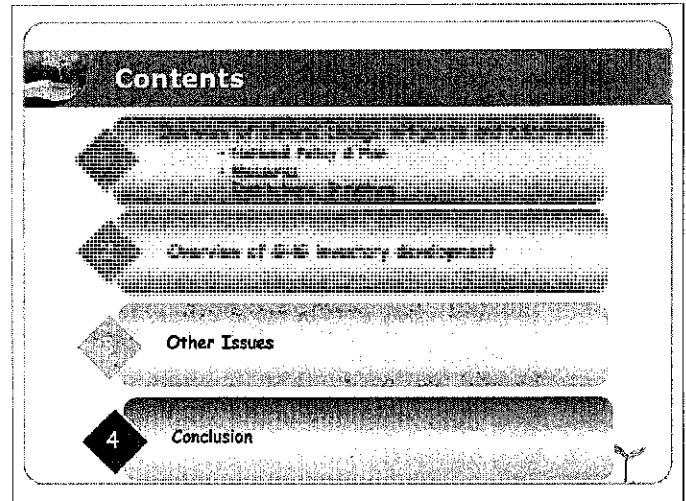
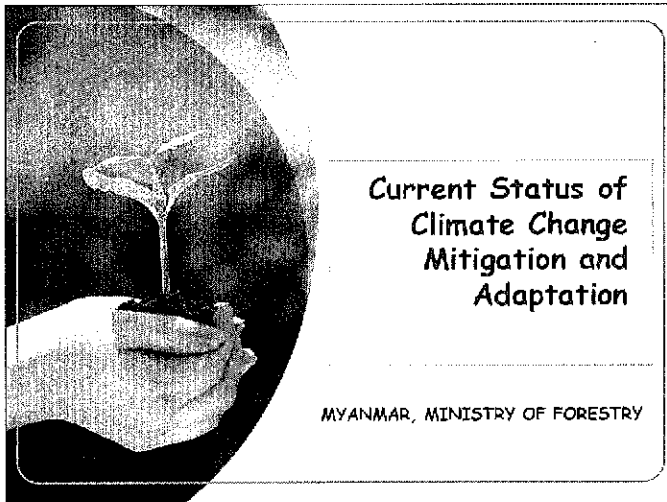
I am responsible for the desk of climate change and preparing necessary documents for Myanmar delegates attending for the climate change conference. Moreover, I am in charge of Myanmar's initial national communication project under UNFCCC. In addition, I am a national contact point for southeast asia network of climate change focal points.

## 2. Mr. Than Naing Win

Staff Officer, Dry Zone Greening Department



# Powerpoint presentation:



### National Policy and Plan

#### ❖ Myanmar Forest Policy

▪ Issued by the Ministry of Forestry in 1996.

#### ▪ Six Imperatives:

1. Protection of soil, water, wildlife, biodiversity and environment;
2. Sustainability of forest resources to ensure perpetual supply of both tangible benefits accrued from the forests of the present and future generations;
3. To fulfill the Basic needs of the people
4. Efficiency
5. People participation
6. Public awareness

### National Policy and Plan

#### ❖ The National Health Policy

▪ to extend protection against air pollution and water pollution in carrying out work of environmental sanitation.

### National Policy and Plan

#### ❖ The National Energy Policy

- to maintain the status of energy independence
- to promote wider use of new and renewable sources of energy
- to promote energy efficiency and conservation
- to promote use of alternative fuel in household

### National Policy and Plan

#### ❖ Myanmar Agenda 21

▪ published in 1997

▪ aims at strengthening and promoting systematic environmental management in the country. The Myanmar Agenda 21 makes recommendations for the drafting and promulgation of National Framework Environmental Law, and Environmental Impact Assessment (EIA) law for systematic integration of environmental considerations in the development process of the country.

### National Policy and Plan

#### ❖ National Sustainable Development Strategy (NSDS)

▪ Myanmar's NSDS vision is "Wellbeing and Happiness for Myanmar People".

#### ❖ Three goals:

- Goal 1: Sustainable Management of Natural Resources;
- Goal 2: Integrated Economic Development; and
- Goal 3: Sustainable Social Development.

### National Policy and Plan

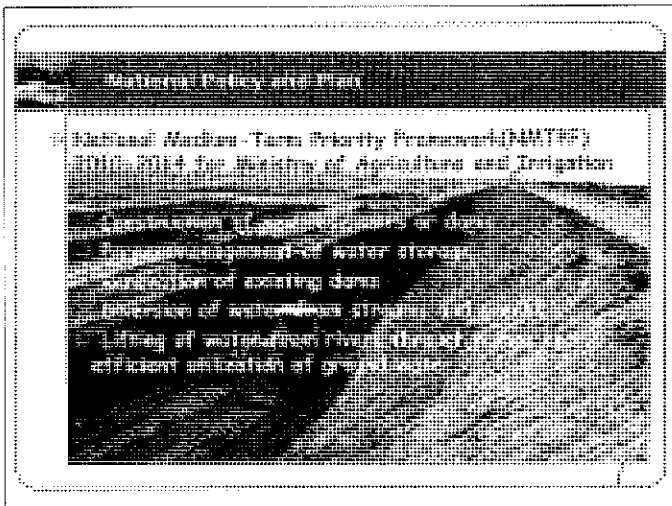
#### ❖ National Environment and Health Action Plan (NEHAP)

▪ To deal effectively with the environmental health problems in Myanmar by increasing the capacity of Myanmar on environmental health management.

▪ Priority areas of environmental concern:

- ❖ Air Quality
- ❖ Water supply, Sanitation and Hygiene
- ❖ Solid and Hazardous Waste
- ❖ Toxic chemicals and hazardous substances
- ❖ Climates change, Ozone depletion and ecosystem changes.
- ❖ Contingency planning, preparedness and response in environmental health emergencies.





### Measures

- ❖ Promoting environmental education and awareness
  - Article 6 of the UNFCCC provides for the development and implementation of education, training and public awareness on climate change and its effects.
  - In Myanmar, the importance of environmental management and deforestation are implemented by following activities:
    - ❖ discussion in editorial and article in daily newspaper
    - ❖ billboards' Slogan "climate depends on forest"
    - ❖ celebration of Environmental Day
    - ❖ Tree Plantation Ceremony
    - ❖ education in Schools and Universities
    - ❖ activities by MAAF

### Measures (Continued)

- ❖ Greening activities
  - Myanmar forests cover about 47% of the total land area.
  - Scientific forest management was initiated in 1856 and the concept of Sustainable Forest Management (SFM) has been employed since then.
  - Until now a total of more than 500,000 hectares of forest plantations were established throughout the country and they are actually carbon sinks.

### Measures (Continued)

Conservation of natural forests

### Measures (Continued)

- ❖ Greening Activities (continued)
  - Environmental conservation plans are integrated in every 5- year economic plan
  - Project under implementation to make Yangan and its surrounding within 30 miles green through tree planting
  - Bago hills greening project (13 forestry activities are being made to rehabilitate the hills)
  - Dry Zone Greening Activities in central Myanmar since 1954

### Measures (Continued)

Bago Yoma and Dry Zone Greening Activities

Measures (Continued)

❖ Nationwide Cleaner Fuel Changes

- Policy → to use CNG in place of petrol and diesel in short term and bio-fuel in the long term
- Plan → to convert 100, 000 petrol and 150, 000 diesel vehicle to CNG vehicles  
(Total Registered vehicles in the country - 1,00,000 in 2006)
- Practice → to provide loan to the owner for the expanse of conversion kit  
23,741 diesel and petrol cars have been converted to CNG vehicles in Yangon. Buses and taxis are given in first priority

Measures (Continued)

❖ Clean Electricity Generation

2009-2010

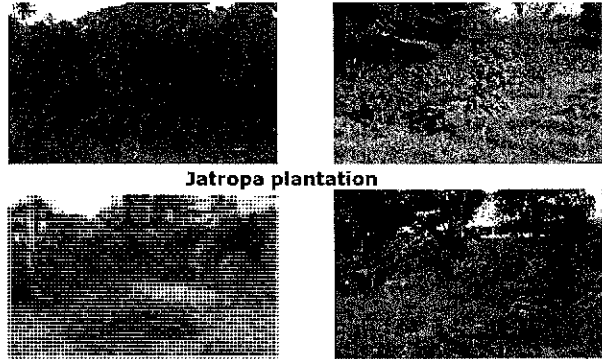
- HYDRO power stands at the top with the highest amount generated 75.6 %
- followed by natural gas at 16.7 %
- using coal and diesel are very small amount.

Measures (Continued)

❖ Biofuel

- *Jatropha curcus* for cleaner fuel was initiated in 2004 with people participation
- 1,190 plants/ha
- 2 million-ha of *Jatropha* planting is completed
- Also sugarcane planting for fuel production has been initiated since 2005.

Measures (Continued)

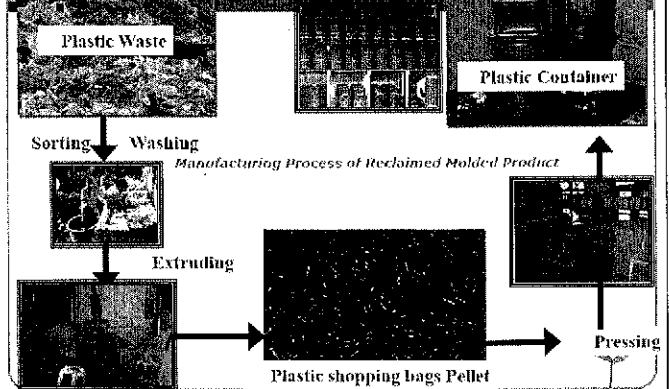


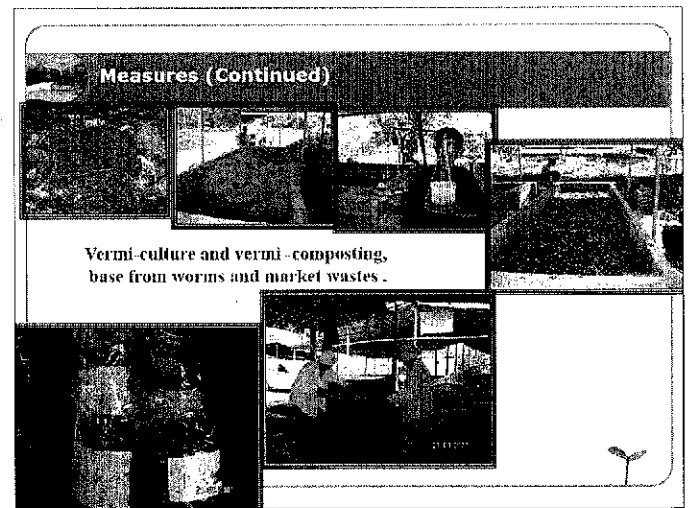
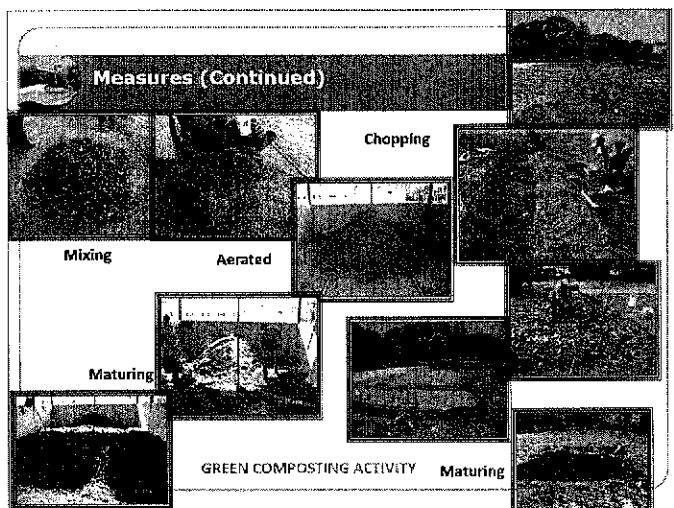
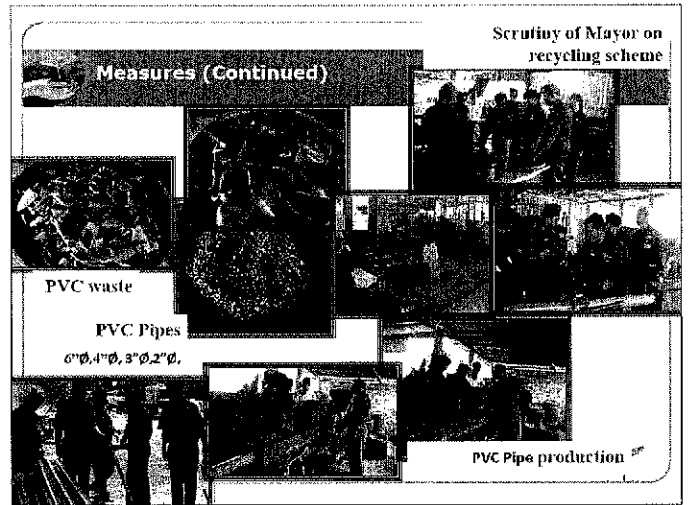
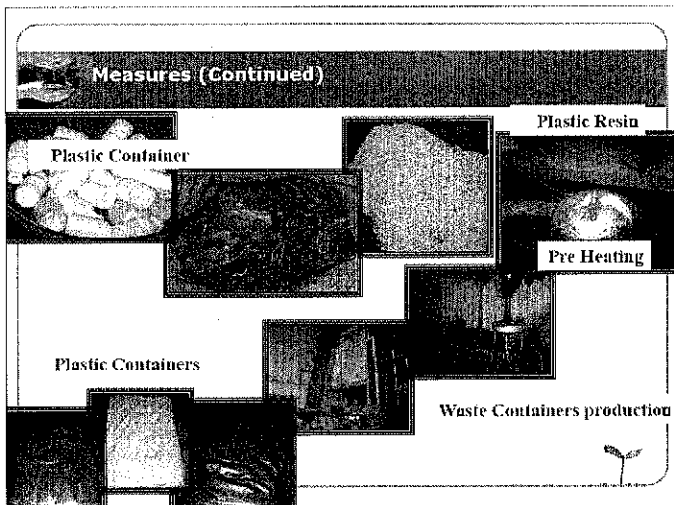
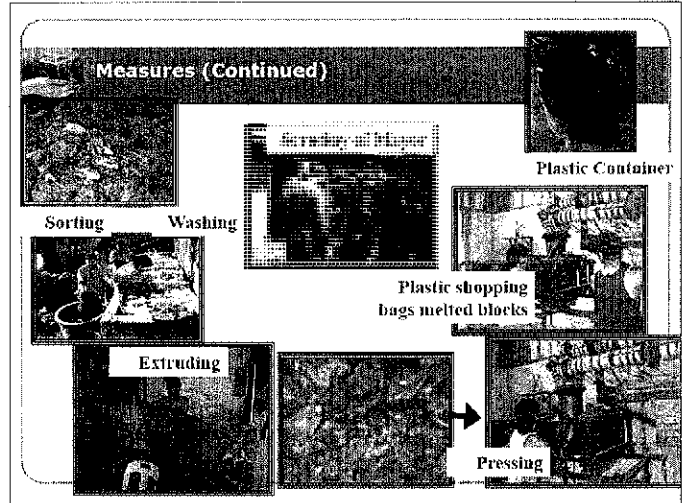
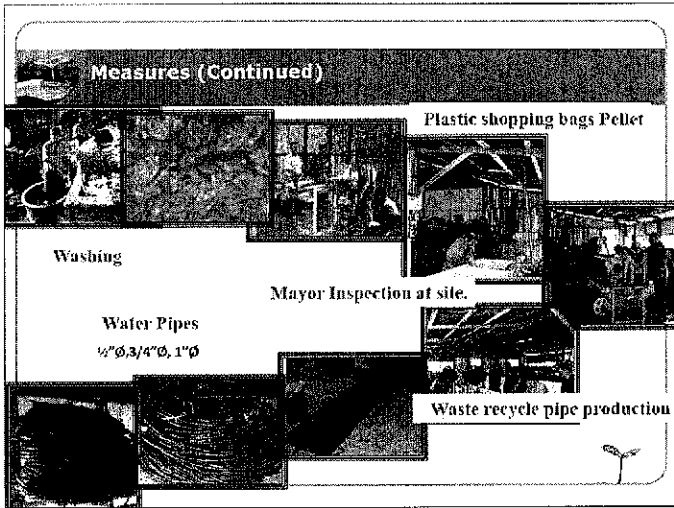
Measures (Continued)

❖ Waste Sector

- Recycling of plastic wastes, reuse and recycling of wood and agricultural residues are being promoted in recent years.
- Recycling of waste papers, rubber goods, broken glass wares, steel and various metals, broken plastics and steel pipes, etc are being done in Myanmar long before 3Rs concepts has been introduced.


Measures (Continued)



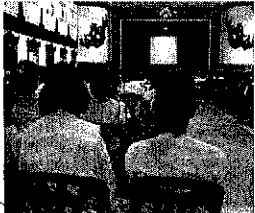


**Measures (Continued)**

**Thin Plastic Bag Free Zone**

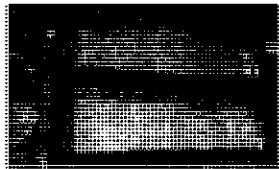


Production, trading, and even keeping thin plastic-bag were totally prohibited in Mandalay, Yangon and Nay Pyi Taw.

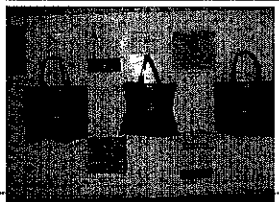


**Measures (Continued)**

**Thin Plastic Bag Free Zone**





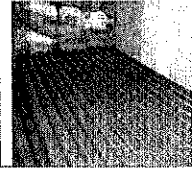
In order to support the campaign, multiple-use bags, recyclable bags and paper bags were freely distributed to the shopkeepers in order to replace thin plastic-bags.




**Measures (Continued)**

**Thin Plastic Bag Free Zone**


- As for used plastic-bags, MCDC bought back them as raw materials for recycle products such as rubbish bins and plastic pipes.
- Nowadays, Mandalay city becomes scale-model of plastic-bag free civilization in the country, and Yangon and Nay Pyi Taw are now going to adopt the success of MCDC.

**Measures (Continued)**



**Water Resources**

Innovative Facilities installed in the last 5 decades





**Measures (Continued)**

**Water Resources**





**River water pumping station**





**Measures (Continued)**

**Water Resources**



A gasifier used for groundwater extraction from a tube well Magyipinbu village, Melktla township




Treadle pump to fetch the ground water from a tube well

**Measures (Continued)**

❖ *Food security*


- MOAI is also implementing some tasks for better soil and water conservation practices, more tolerant crop varieties, improved pest and weed control, and more use of irrigation to adapt to changes in the weather.



**Measures (Continued)**

❖ *Food security (Continued)*

- Conservation of Plant Genetic Resources
  - Diverse rice varieties grown in Ayeyarwady delta: rainfed lowland rice, deep water rice, coastal salinity resistant rice, quality rice.






**Measures (Continued)**

*Food security (Continued)*

Water Harvesting Technology in Central Myanmar, Dry Zone

Frequent Ploughing and Harrowing while waiting for the sufficient rain

**Measures (Continued)**





*Food security (Continued)*

Groundnut with chili

Groundnut with sesame

Mixed or inter-cropping rice in the dry season with

Adaptation for drought: Mix-cropping (crop diversification) is common with low input technology

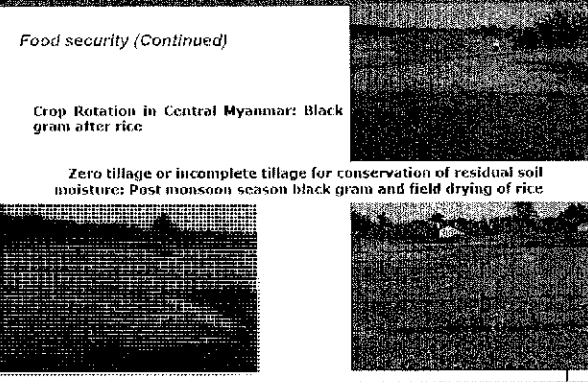
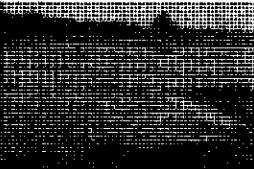






**Measures (Continued)**

*Food security (Continued)*

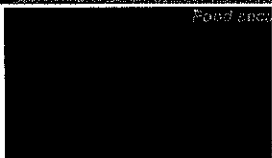
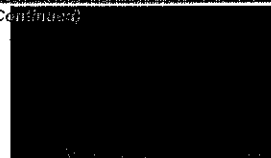
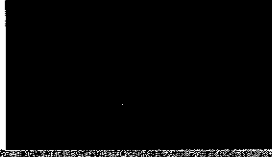

Crop Rotation in Central Myanmar: Black gram after rice

Zero tillage or incomplete tillage for conservation of residual soil moisture: Post monsoon season black gram and field drying of rice

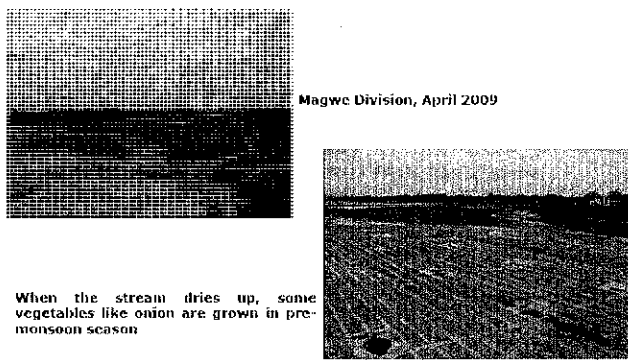
**Measures (Continued)**

*Food security (Continued)*



**Measures (Continued)**



Magwe Division, April 2009

When the stream dries up, some vegetables like onion are grown in pre-monsoon season.

**Measures (Continued)**

- ❖ Project implementation Under the UNFCCC
  - ❑ Myanmar has implemented the Initial National Communication (INC) project by the assistance of Global Environment Facility (GEF) and it is now just need to submit the report to UNFCCC.
  - ❑ The Project of the National Adaptation Programme of Actions (NAPA) which is funded by UNEP-GEF has been started. Project Executing Agency is Department of Metrological and Hydrology, Ministry of Transport, in cooperation with Ministry of Forestry.

**Institutional Structure**

- ❖ National Disaster Preparedness Committee
- ❖ National Environment Conservation Committee

**2 Overview of GHG inventory development**

**Overview of GHG inventory development**

- ❖ As required by all parties to the UNFCCC, Myanmar conducted its first GHG inventory with the assistance of ADB in 1997 under the Asian Least Cost Greenhouse Gas Abatement Strategy (ALGAS) Project.
- ❖ According to the party of the UNFCCC, the effort toward making necessary preparation for initial communications gave GHG inventory for the base year 2000.
- ❖ Need to develop GHG inventory policy and Plan if necessary.

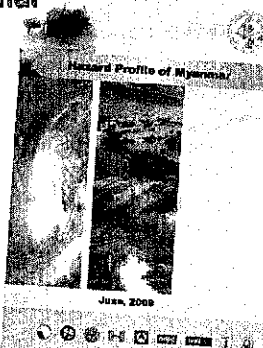
**Other Issues**



**Other Issues**

### Hazard Profile of Myanmar

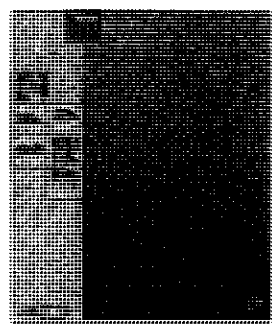
- Includes 9 hazards
  - Fire Forest Fire
  - Floods Earthquakes
  - Tsunami Cyclone
  - Storm Surge Drought
  - Landslide
- Prepared by Fire Services Dept, DMH, MES, Irrigation Dept, Forest Dept, RRD, MGS, MIMU and ADPC



**Other Issues**

### Institutional Arrangements for DM in Myanmar

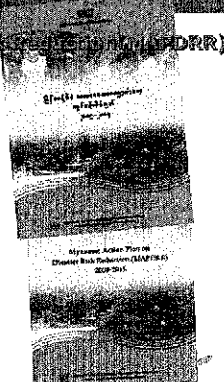
- Chapter : 1 Overview of Union of Myanmar
- Chapter : 2 Hazard profile of Myanmar
- Chapter : 3 Global and Regional Commitment of Myanmar
- Chapter : 4 Existing Institutional arrangement at National level
- Chapter : 5 Study of Key DRR related Departments
- Chapter : 6 Existing Institutional arrangement at Division/State
- Chapter : 7 Existing Institutional arrangement at District level
- Chapter : 8 Existing Institutional arrangement at Township level
- Chapter: 9 Concluding remark



**Other Issues**

### Myanmar Action Plan on Disaster Risk Reduction (MAPDRR) 2009-15

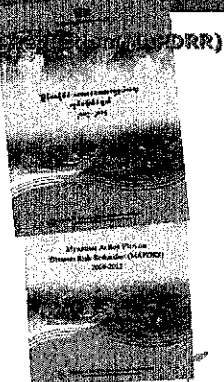
- Chapter 1 : Disaster Management in Myanmar
- Chapter 2 : MAPDRR components and future Disaster Risk Reduction projects (2009-2015)
- Chapter 3: Implementing MAPDRR: Actions to be taken & Proposed Next Steps



**Other Issues**

### Myanmar Action Plan on Disaster Risk Reduction (MAPDRR) 2009-15


- Chapter 1 : Disaster Management in Myanmar
- Chapter 2 : MAPDRR components and future Disaster Risk Reduction projects (2009-2015)
- Chapter 3: Implementing MAPDRR: Actions to be taken & Proposed Next Steps



**Other issues**

### Ozone Layer Protection


- As a developing country Party to the Vienna Convention and Montreal protocol, Myanmar has an obligation to phase out ODS as set in the phase out schedule of ODS for developing countries.
- Ministry of Forestry, in collaboration with ministries concerned and with the assistance of UNEP, formulated the country programme to phase out ODS especially CFC in Myanmar.
- The Institutional Strengthening (IS) Project for National Ozone Unit Team consisting representative from various respective ministries have been formed.
- A Refrigerant Management Plan (RMP) had also been developed in April 2005.
- Ozone regulation Law has been drafted.



**Other issues**

### Air Quality Measuring

- With the support of JICA, Myanmar has carried out Air Quality Monitoring for Urban Centres in Myanmar from 15 February 1999 to 7 March 2000.
- National Air Quality Monitoring Project funded by UNEP has also been carried out in the year 2007, 2008, and 2009 in Yangon, Mandalay, and Nay Pyi Taw respectively.
- Moreover, with the assistance of Thai government, air quality measuring was carried out in Tachileik, near Thai-Myanmar border area, in 2010 and 2011.



4 Conclusion

Conclusion

- > Need to develop country specific emission factor.
- > Myanmar National Climate Change Policy is necessary.
- > An Organ or Committee on Climate Change to coordinate the country's climate change is also necessary.
- > To understand the country's vulnerability to climate change and to implement mitigation and adaptation measures, it has to promote public awareness of the impacts of climate change.
- > Joint study coordinately neighboring countries on different climate change characteristic needed to be considered.
- > Human behaviour and industrial behaviour are also necessary to change from individual benefit to the behaviour which reduces the emission of greenhouse gases and maintenance of carbon sinks.

**Thank You !**

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