Annex 5: Materials for CTC

"GHG Mitigation and Low Carbon Society"

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Thailand Greenhouse Gas Management Organization

(Public Organization)

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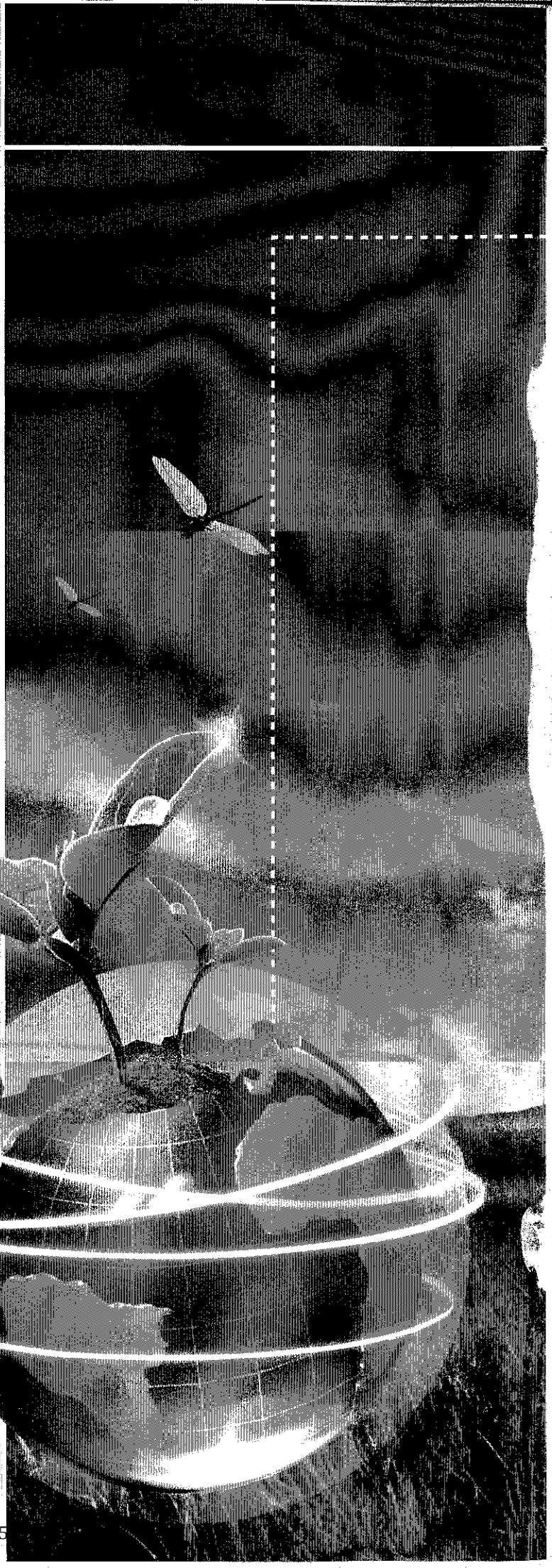


Contents

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.

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.

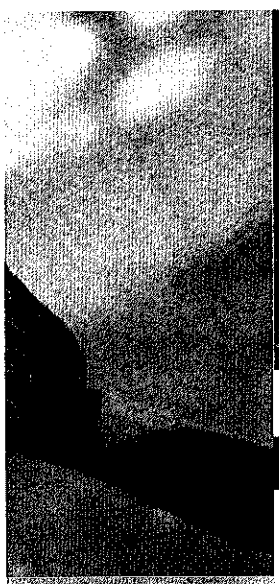
SIRITHAN PAIROJ-BORIBOON
Executive Director
Thailand Greenhouse Gas Management Organization
(Public Organization)

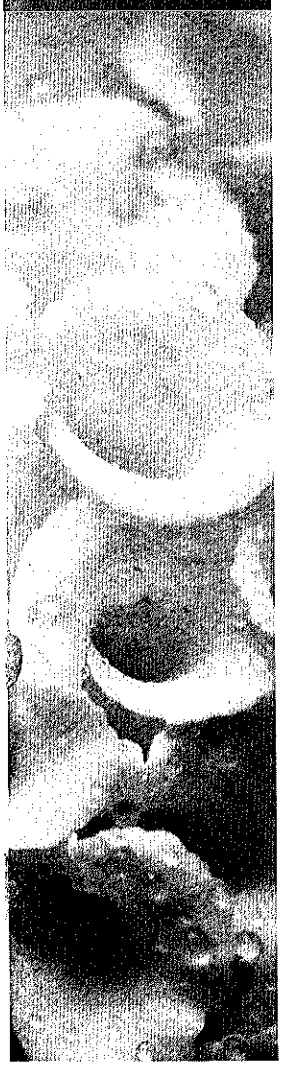
About TGO

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 2nd 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 2nd 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)

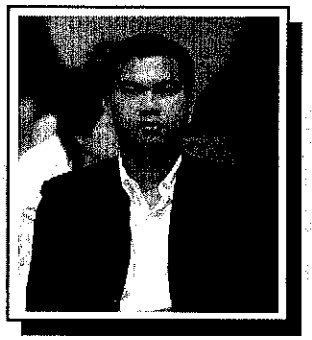
Vietnam

Dr. Huynh Thi Lan Huong

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

Presentations from Participants

Cambodia



1. Mr. Ou Chanthearith

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

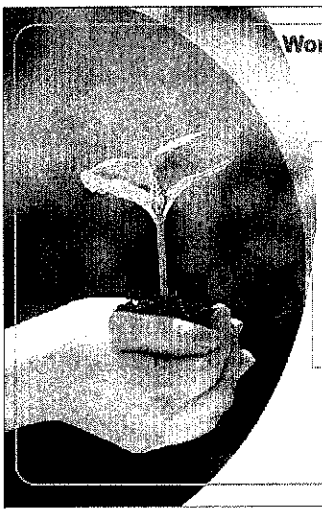
2. Mr. Uy Kamal

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 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

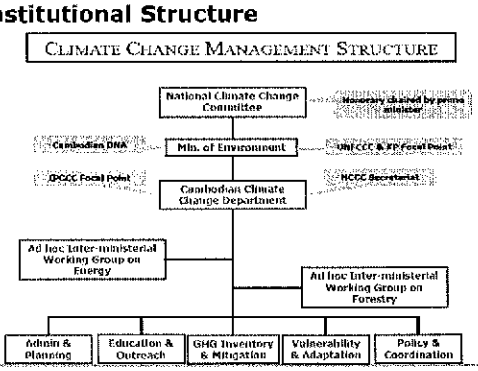
- **National Policy and Plan**
  - ➢ Adaptation Programs
    - ❑ NAPA and NAPA follow up project
      - ✓ A pilot project "Promoting Climate-Resilience Water Management and Agricultural Practices in Rural Cambodia
    - ❑ Cambodia Climate Change Alliance
    - ❑ Pilot Program For Climate Change Resilience
    - ❑ 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**



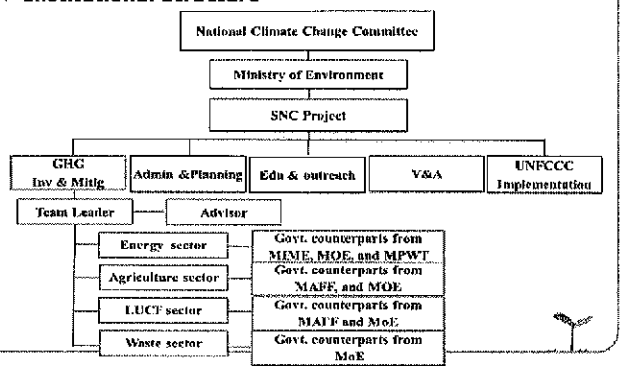
2. Overview of GHG Inventory Development

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 !

Contact Information

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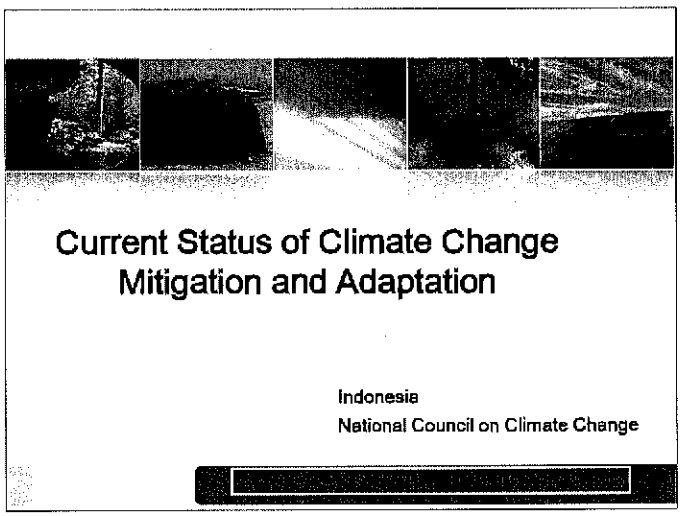
Email: ccwan@online.com.kh
Website: www.camclimate.org.kh

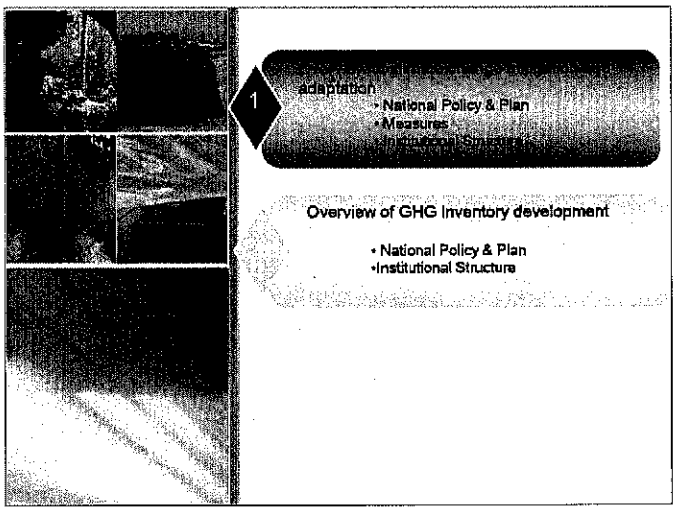
Indonesia

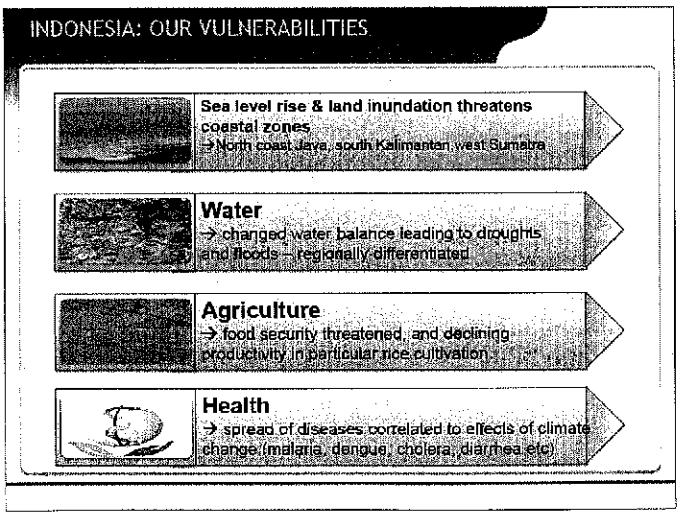
Mr. Ardiyanto Aryoseno

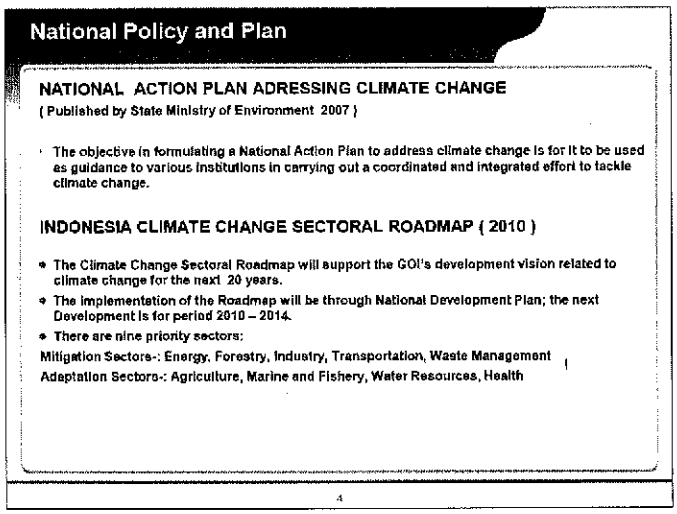
Staff, National Council on Climate Change

Powerpoint presentation:

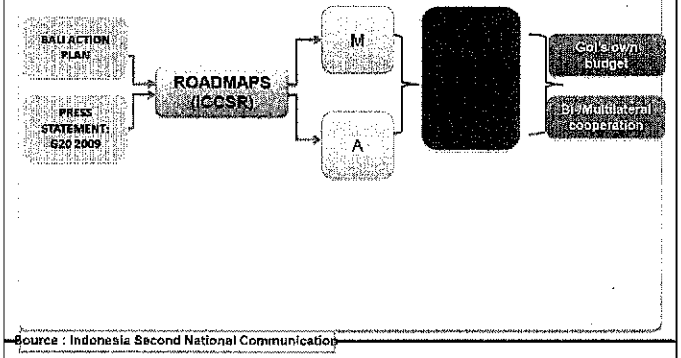








MAINSTREAMING CLIMATE CHANGE INTO NATIONAL DEVELOPMENT AGENDA:

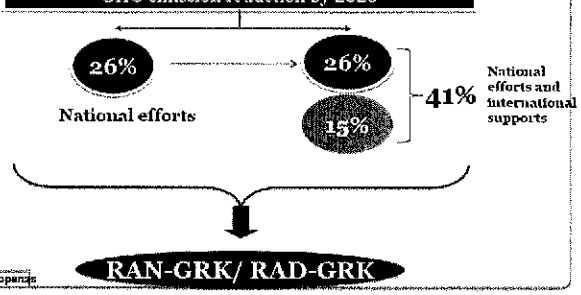


Source : Indonesia Second National Communication

GOI committed to implement Bali Action Plan and voluntarily set emission targ... 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 : Bappenas

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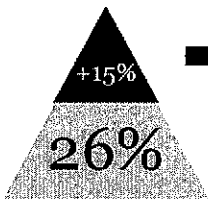
Scenario of 26% GHG Emission Reduction

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

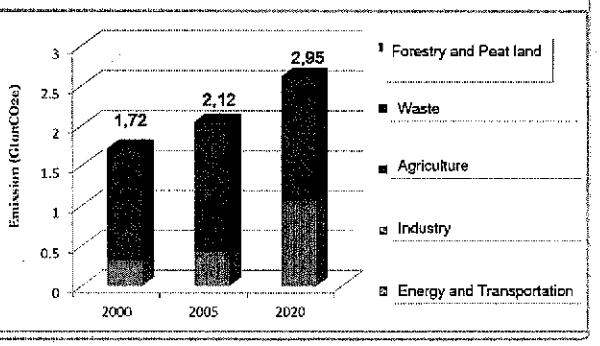


Criteria:
Potentially measured, reported and verified (MRV), clear and concise contracts, clear executing agencies, higher abatement cost , not included in CDM project

Criteria:
Potentially measured, reported and verified (MRV), lower abatement cost, in Medium Term Development Plan, national priorities, economically feasible, not included in CDM project

Scenario of 26% GHG Emission Reduction

GHG Emission in Indonesia is estimated to increase from 1.72 to 2.95 $GtCO_2e$ from 2000 to 2020



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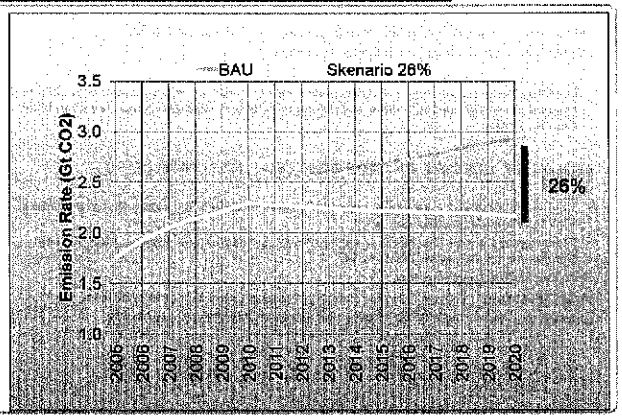

The Dewan Nasional Perubahan Iklim (DNPI) or National Council on Climate Change (NCCC) was established in 2008

- 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

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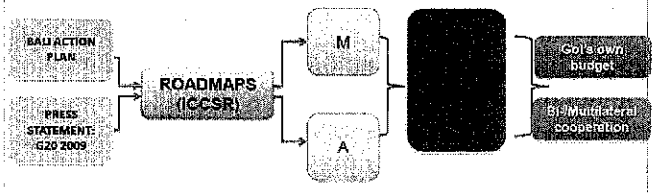
MAINSTREAMING CLIMATE CHANGE INTO NATIONAL DEVELOPMENT AGENDA:



Source : Indonesia Second National Communication

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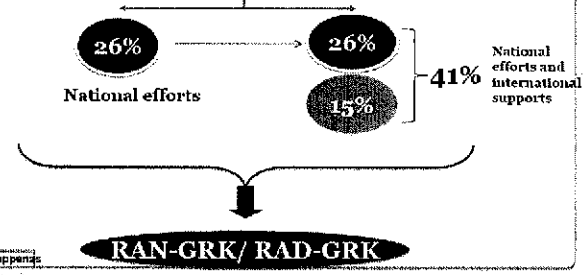
GOI commitment at G-20 Pittsburgh and COP15

GHG emission reduction by 2020



RAN-GRK/ RAD-GRK

Source : Bappenas

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Scenario of 26% GHG Emission Reduction

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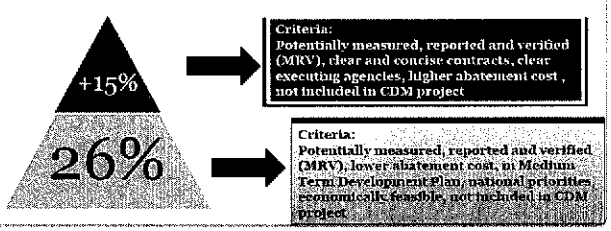

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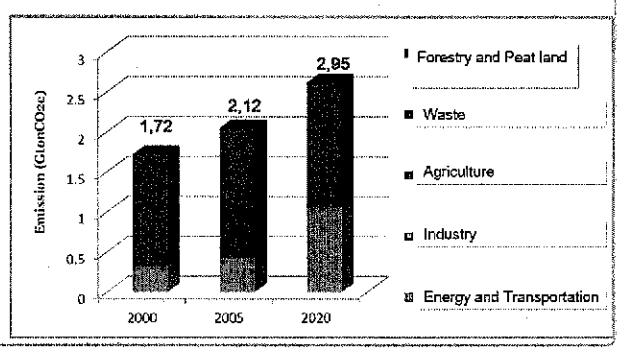

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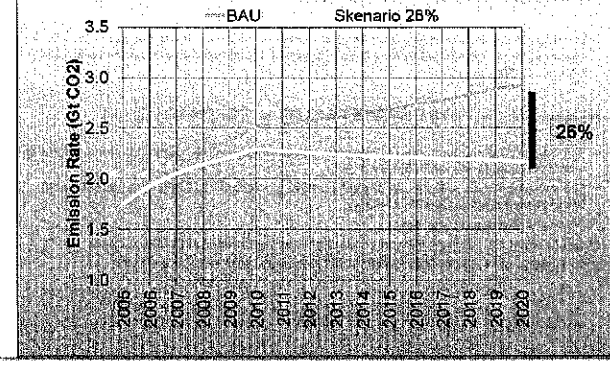

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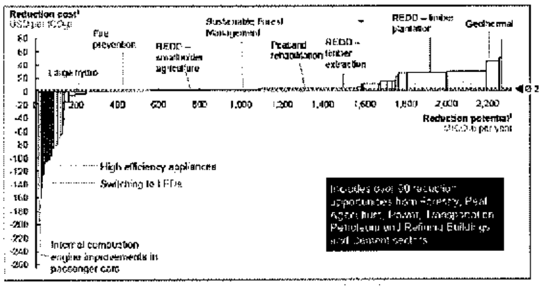
Mitigation Potential

Indonesia has the potential to reduce CO_2 emissions by up to 2.3 Gt per by 2030



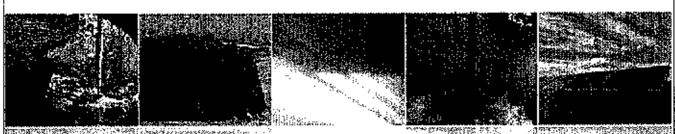
SOURCE: Indonesia GHG Abatement Cost Curve

Mitigation Potential

- Do it now (potential to be realized by 2015)
- Start slow, then accelerate (potential to be realized by 2030)
- Develop now, capture over time (potential to be realized from 2015-2030)

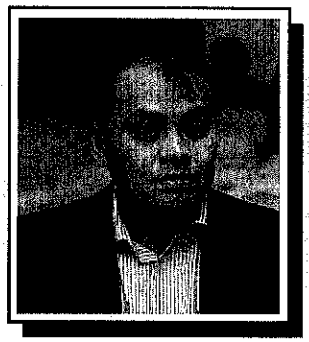
Present day cost	Easy	With challenges	Difficult
Negative (<0 USD/ton)	• Energy efficiency electronic equipment and appliance in residential and commercial buildings (8 Mt) • Small hydro (6 Mt) • Cropland nutrient management (3 Mt) 17 Mt	• Rice management – shallow flooding (20 Mt) • Energy efficient passenger vehicles (8 Mt) • Energy efficient good carrier (6 Mt) • Landfill gas electricity generation (5Mt) • Retrofit HVAC (2 Mt) • Landfill gas direct use (2 Mt) 50 Mt	• Recycling new waste (17 Mt) • LED Lighting (3 Mt) 21 Mt
Medium (0 -25 USD/ton)	• Reforestation – mineral soils (99 Mt) • Rice management – nutrient management (4 Mt) 103 Mt	• Fire prevention (518 Mt) • Sustainable Forest Management (220 Mt) • Peatland rehabilitation (220 Mt) • REDD – timber plantation (185 Mt) • Large hydro (28 Mt) • Geothermal (27 Mt) 1,354 Mt	• REDD – smallholder agriculture (370 Mt) • REDD – Estate crops (185 Mt) 566 Mt
High (>25 USD/ton)	• Water heating – commercial buildings 0 Mt	• Dedicated biomass (16 Mt) • On shore wind (1 Mt) 18 Mt	• Solar PV (3 Mt) • Water heating – residential (2 Mt) • Livestock – feed supplement (2 Mt) 7 Mt

Implementation feasibility (short term)



Thank you !!

Laos



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

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

Other Issues

National Policy and Plan:

- 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

National Policy and Plan:

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:

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

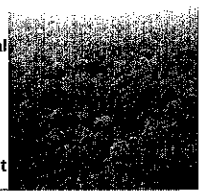
2) Seeking and developing plant species resilient to the increasing pest and climate change impacts;

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:

II. Forestry and Land Use Change

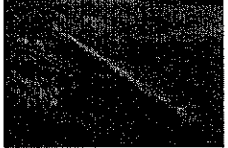
Mitigation Options:

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;

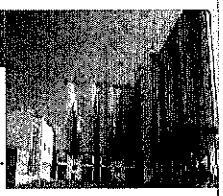
6) Generating public awareness on energy saving by implementing initiatives such as car free day, marking Earth Day and World Environment Day;

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 infrastructur that reflect non-stationary hydrologic processes;

National Policy and Plan:
VII. Urban Development

Mitigation Options:

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

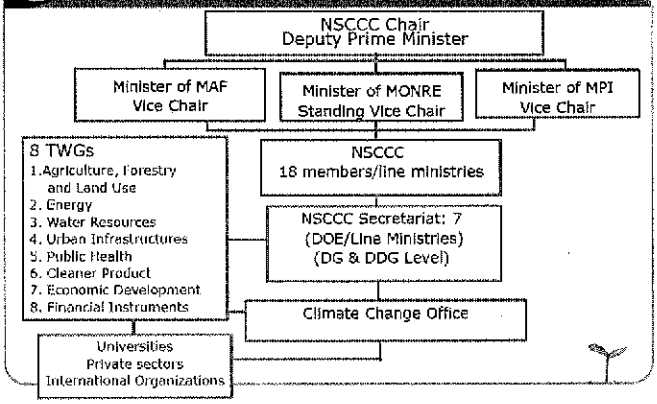
Adaptation Options:

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:
NAPA: focus on four key sectors

- 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)

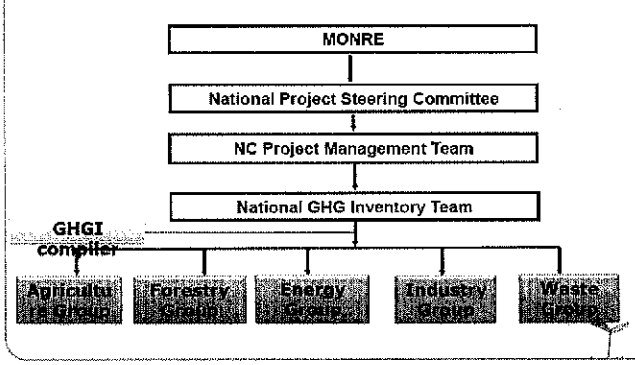
Institutional Structure



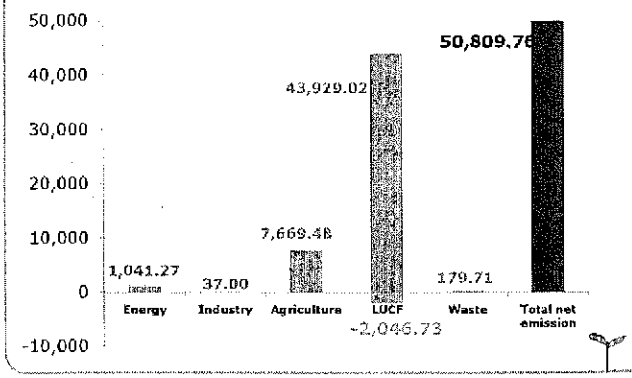
2. Overview of GHG inventory development

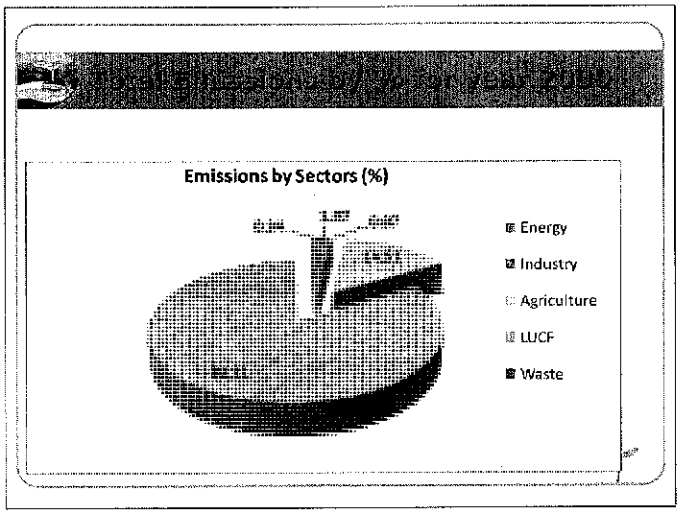
- Established GHG institutional framework
- Conducted GHG inventory for 1990 and 2000 (National Communication)

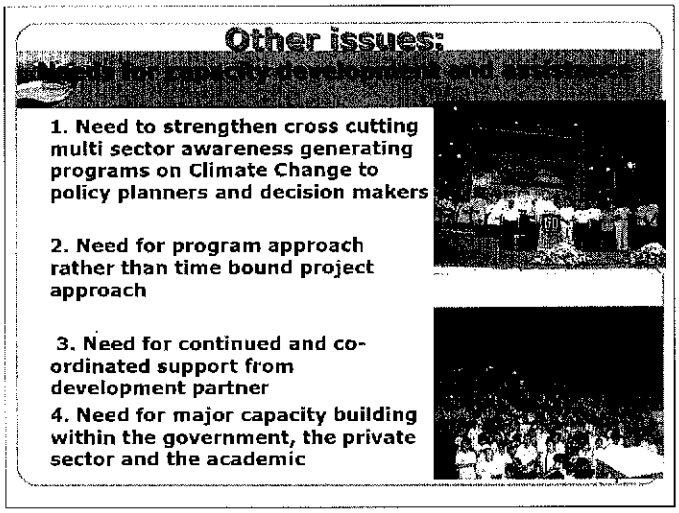
Institutional Arrangement of GHG Inventory

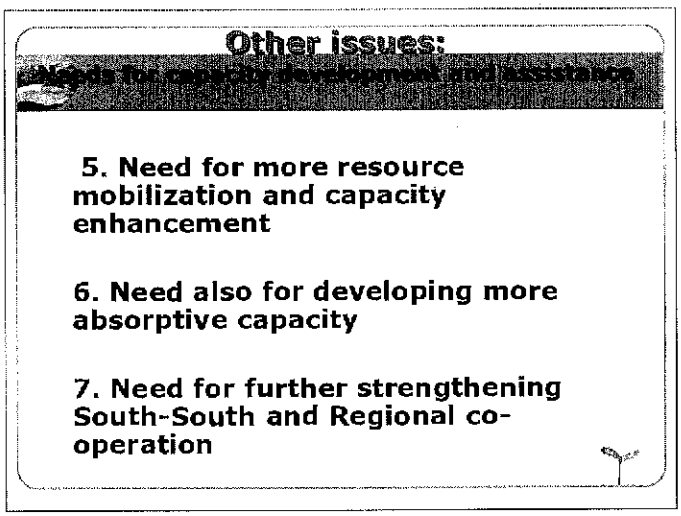


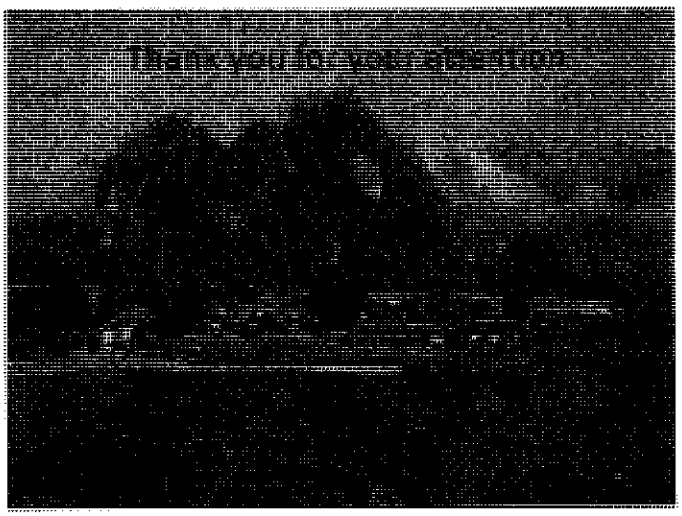
GHG Inventory (2000)




Emissions by Sectors (%)
Energy
Industry
Agriculture
LUCF
Waste


Other issues:
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:
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


Thank you for your attention

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.

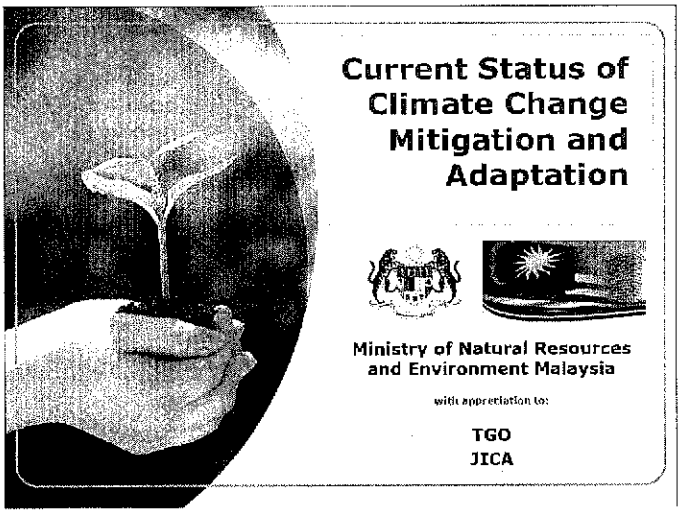
Current responsibilities:

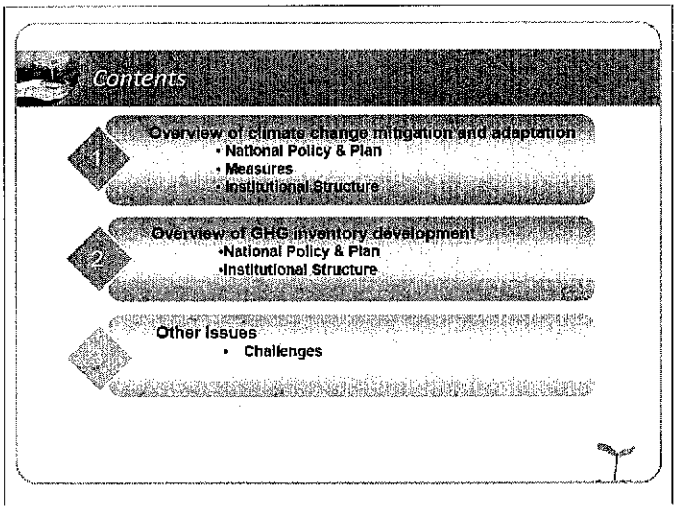
As deputy undersecretary, I currently assist the division undersecretary in overseeing all work programmes under the Environment Management and Climate Change Division of the Ministry of Natural Resources and Environment. These include air and water quality management, management of environmentally hazardous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

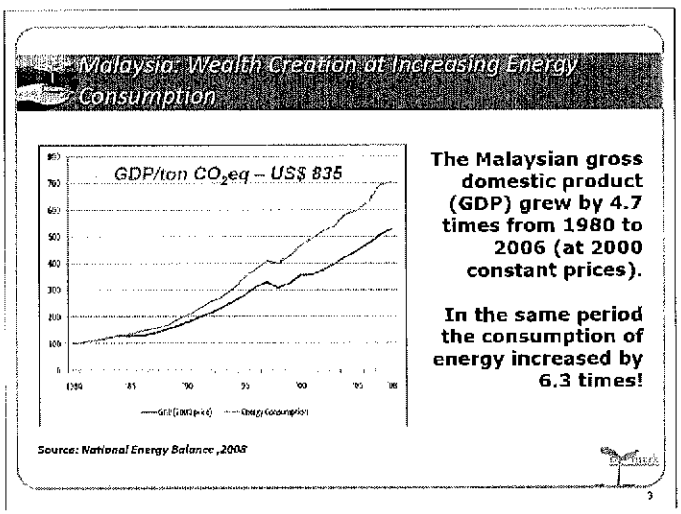
- Participation in the Ministerial Core Group on Climate Change
- Second National Communication Working Group
- CDM Technical Committee and the National Committee on CDM
- National Climate Change Negotiator, (COP 7, Marrakech, and COP 12, Nairobi through COP 16, Cancun)
- Assessment of low hanging fruit 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)

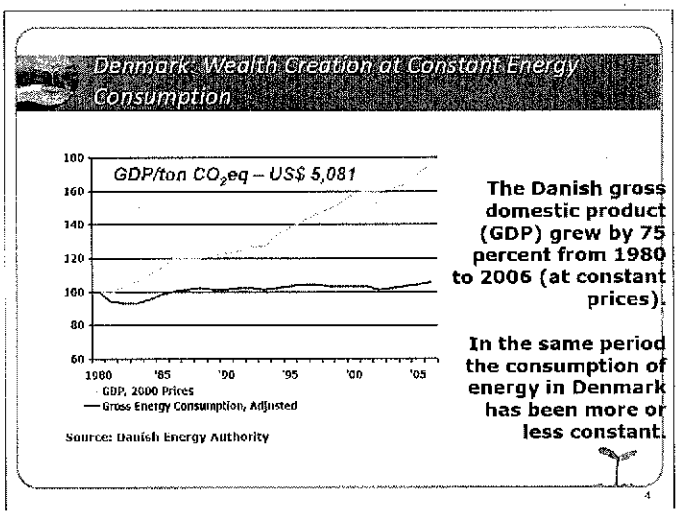
- Clean Development Mechanism (CDM)
- Copenhagen Accord
- REDD+ Partnership on Forests and Climate

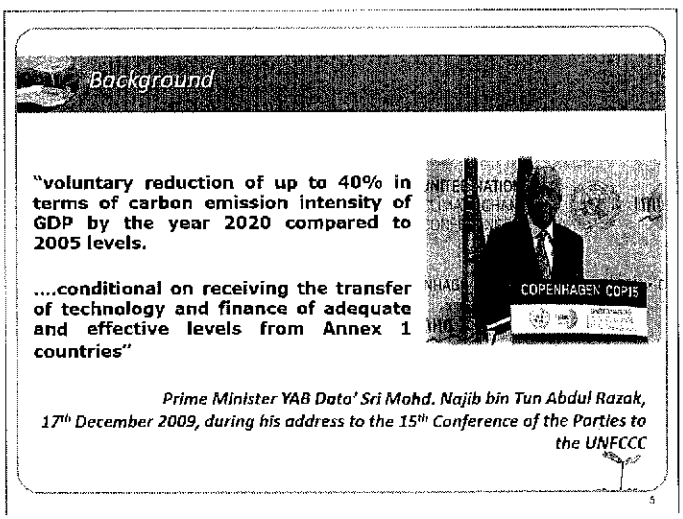
Powerpoint presentation :

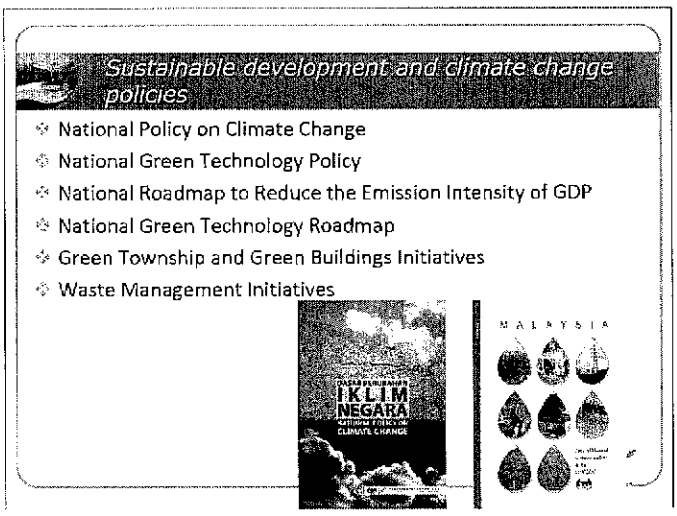










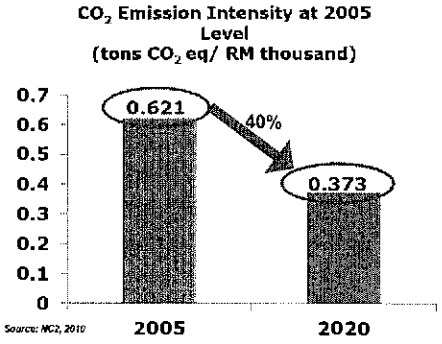


Key GHG and GDP statistics

	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_{2eq} Emission	Million tons CO_2 eq.	279.2	375.4	335
CO_{2eq} Emission per capita	tons/capita	10.58	10.92	
CO_{2eq} Emission per GDP	tons/RM thousand	0.621	0.414	0.373

Source: NC2, 2010;

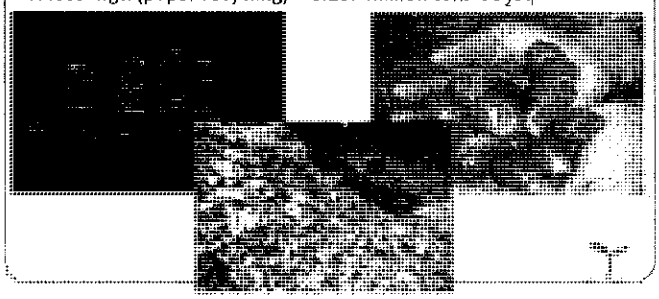
Target Reduction of Emission Intensity of GDP



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

Carbon Emissions Avoided to Date

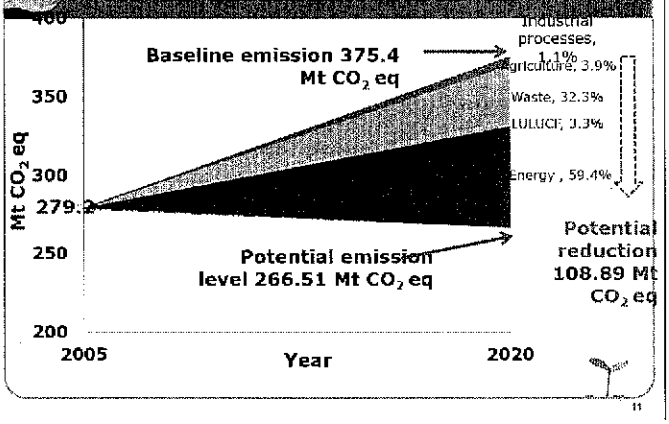
- Energy Efficiency – 4.544 million tons CO_2eq
- Renewable Energy (OP mesocarp) – 19 million tons CO_2eq
- Waste Mgt. (paper recycling) – 6.187 million tons CO_2eq



Long-Term Roadmap Development

- Spearheaded by NRE under the 10th 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

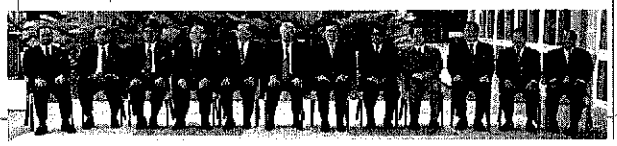


Overall Mitigation Potential

Sector	CO_2 Reduction Potential (Mt CO_2eq)
Energy • Power Generation (EE and RE) • Residential & Commercial (Green Building Initiative) • Manufacturing (EE, RE, Green procurement) • Transportation (Public transport enhancement)	**64.71** *28.85* *2.45* *8.96* *24.45*
Waste (sorting and composting organics, RDF)	**35.2**
Industrial Processes (New technologies)	**1.13**
LULUCF (SFM, RIL, Tree planting)	**3.6**
Agriculture (Animal waste, Fertilizer & H2O management)	**4.25**
TOTAL	**108.89**

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_2eq)

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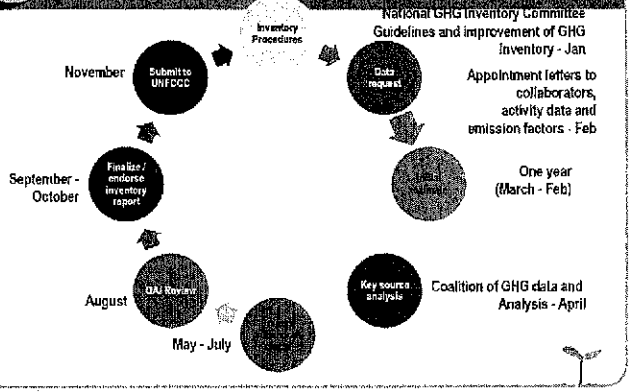
Adaptation Measures

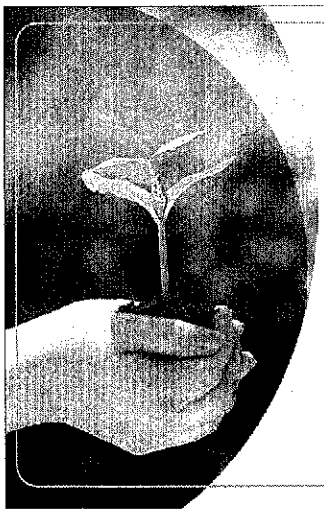
- Establishment of Adaptation Working Group under the National GTCC Council
- Study on the Economics of Climate Change (Economic Planning Unit, Prime Minister's Dept.)
- Study on Coastal Resources Risk Index (CORRI)
- Flood mitigation projects
- Moisture variability and temperature impacts on key agricultural 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@nre.gov.my

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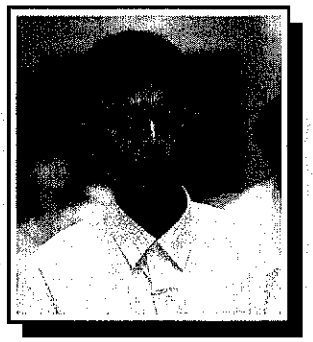
Myanmar



1. Mr. Hlaing Min Maung

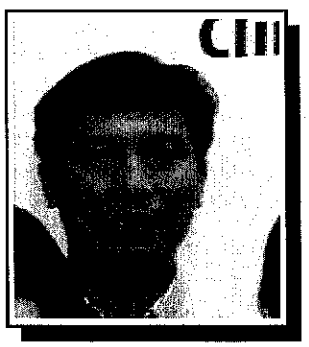
Head of Branch, Ministry of Forestry

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:

Current Status of Climate Change Mitigation and Adaptation

MYANMAR, MINISTRY OF FORESTRY

Contents

Overview of climate change mitigation and adaptation

National Policy and Plan

- Myanmar has not issued particular climate policy statement, however, there are some provisions and ministerial policy statements which contain climate policy.

National Policy and Plan

- Constitution of the Republic of the Union of Myanmar
  - Adopted in May 2008 by referendum.
  - S. 45 provides that the Union shall protect and conserve the natural environment.
  - Schedule 1: Union *Hluttaw* may make laws for environmental protection and conservation including wildlife, natural plants and natural areas.
  - Schedule 3: Leading Bodies of each Self-Administered Division or Area may make laws prevention of fire hazards, conservation and preservation of forest, preservation of natural environment in accord with law promulgated by the Union.
  - Those are constitutional guarantees.

National Policy and Plan

- National Environment Policy
  - Issued by Government Notification No.26/94 dated 5 December 1994.
  - Achieving harmony and balance between these through the integration of environmental considerations into the development process to enhance the quality of the life of all citizens….Environmental protection should always be the primary objective in seeking development

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.

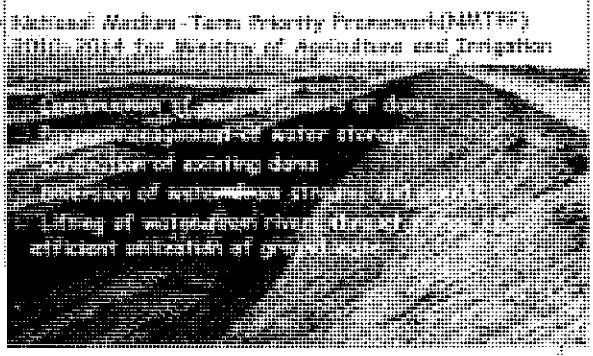
National Policy and Plan

- 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 charges.
    - Contingency planning, preparedness and response in environmental health emergencies.

National Policy and Plan



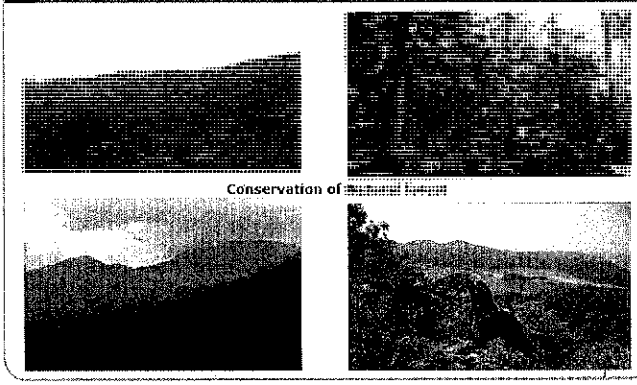
Measures

- 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 MWAF

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)

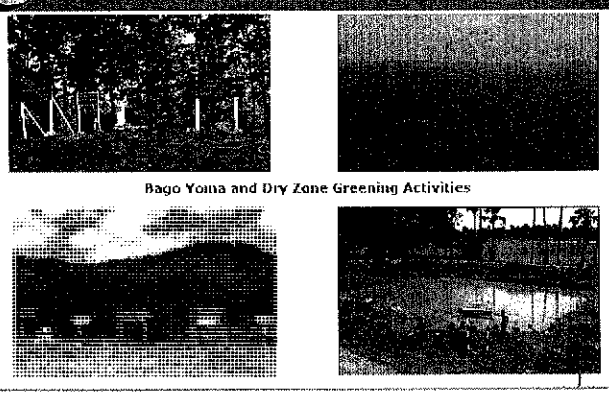


Conservation of

Measures (Continued)

- Greening Activities (continued)
  - Environmental conservation plans are integrated in every 5- year economic plan
  - Project under implementation to make Yangon and its surrounding within 30 miles green thorough 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) to provide loan to the owner for the expanse of conversion kit
Practice	⇒	23,741 diesel and petrol cars have been converted to CNG vehicles in Yangon, Buses and taxies are given in first priority

Measures (Continued)

- Clean Electricity Generation

2009-2010

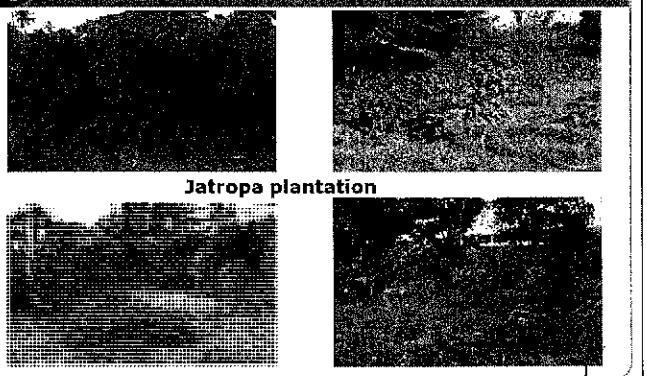
- **HYDRO power stands at the top with the highest amount generated 75.6 %**
- **followed by natural gas at 16.7 %**
- **using coal and diesel are very small amount.**

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)



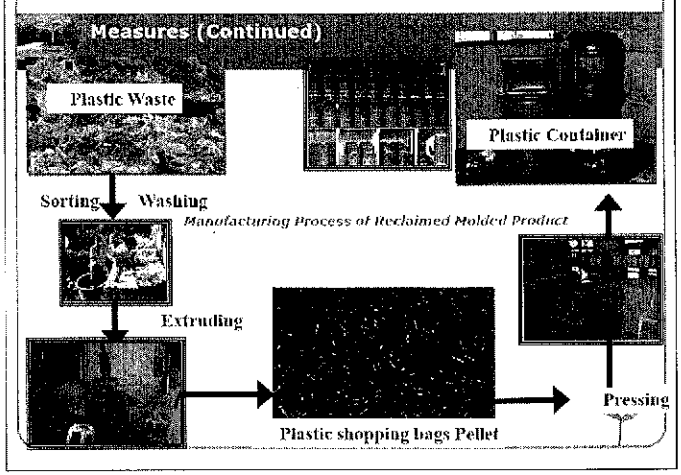
Jatropa plantation

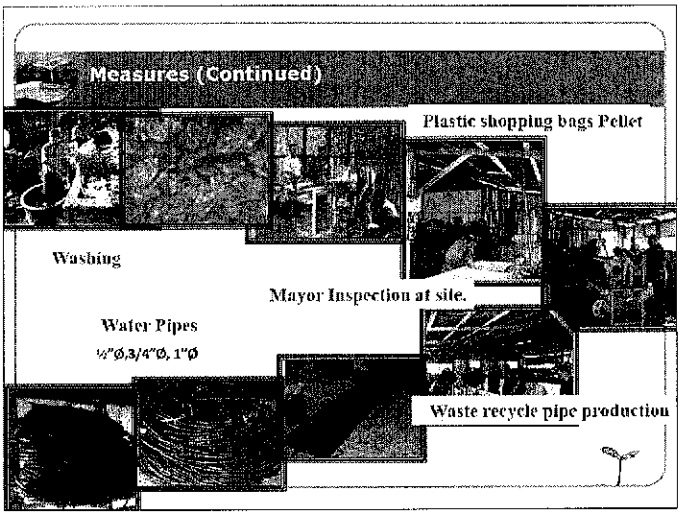
Measures (Continued)

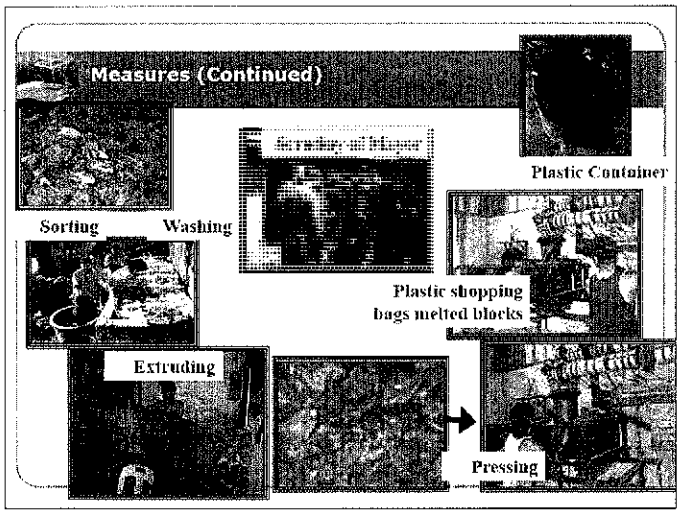
- *Waste Sector*

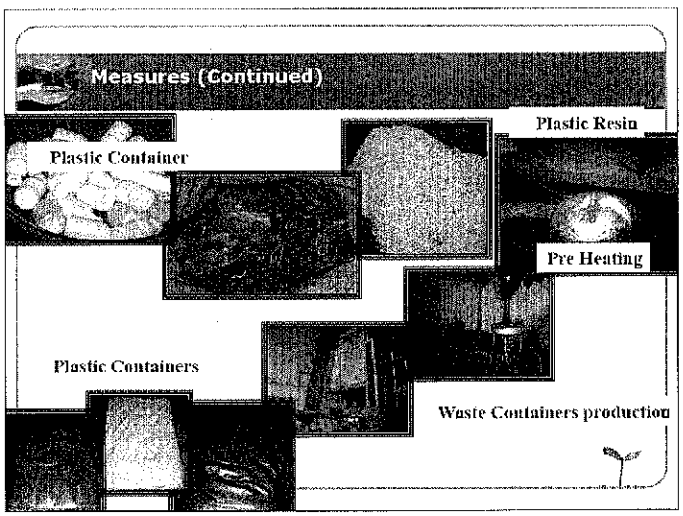
- Recycling of plastic wastes, reuse and recycling of wood and agricultural residues are being promoted in recent years.
- Recycling of waste papers, rubber goods, broken glass wares, steel and various metals, broken plastics and steel pipes, etc are being done in Myanmar long before 3Rs concepts has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

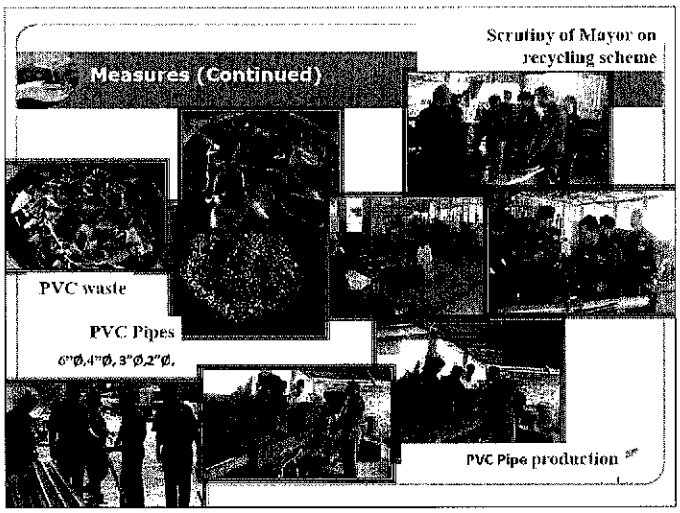
Measures (Continued)

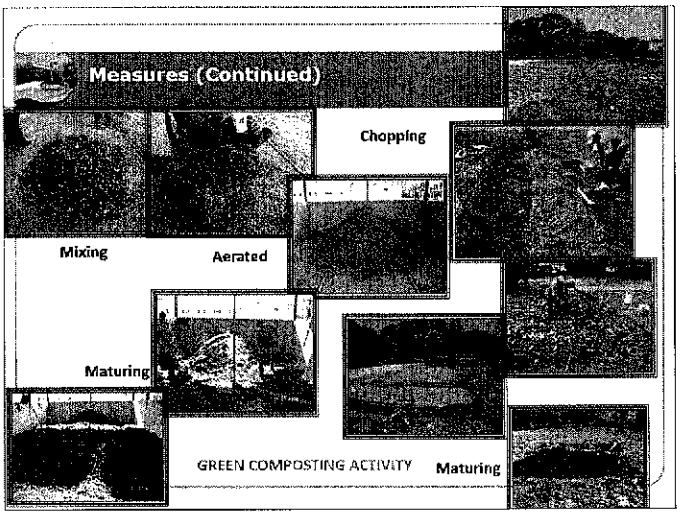


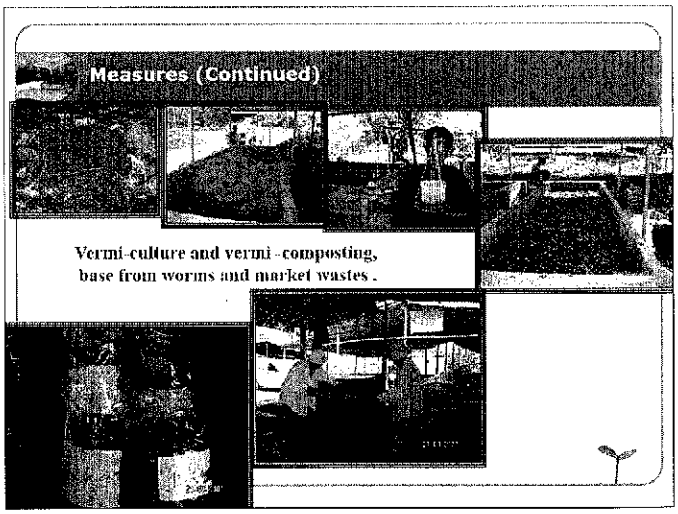

Measures (Continued)
Plastic shopping bags Pellet
Washing
Mayor Inspection at site.
Water Pipes
½"Ø,3/4"Ø, 1"Ø
Waste recycle pipe production


Measures (Continued)
Plastic Container
Sorting
Washing
Plastic shopping
bags melted blocks
Extruding
Pressing


Measures (Continued)
Plastic Resin
Plastic Container
Pre Heating
Plastic Containers
Waste Containers production

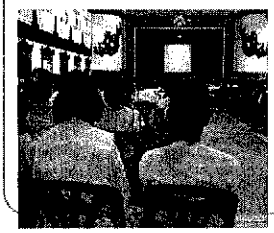

Scrutiny of Mayor on
recycling scheme
Measures (Continued)
PVC waste
PVC Pipes
6"Ø,4"Ø, 3"Ø,2"Ø.
PVC Pipe production


Measures (Continued)
Chopping
Mixing
Aerated
Maturing
GREEN COMPOSTING ACTIVITY
Maturing


Measures (Continued)
Vermi-culture and vermi-composting,
base from worms and market wastes .

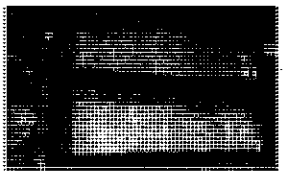
Measures (Continued)

Thin Plastic Bag Free Zone



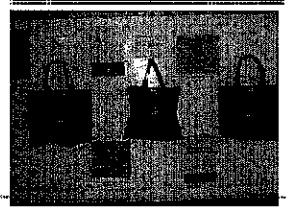
Production, trading, and even keeping thin plastic-bag were totally prohibited in Mandalay, Yangon and Nay Pyi Taw.

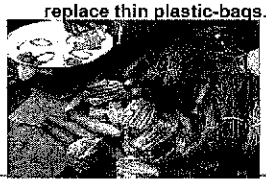
Measures (Continued)



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.

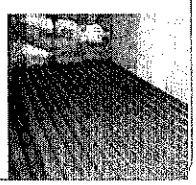




Measures (Continued)

- 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.

Thin Plastic Bag Free Zone

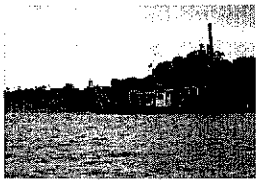


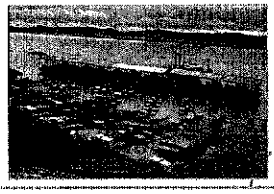
Measures (Continued)

Measures (Continued)

Water Resources

River water pumping station

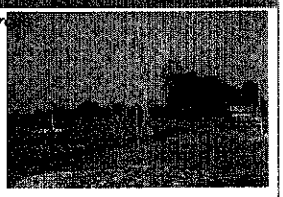




Measures (Continued)

Water Resour

A gasifier used for groundwater extraction from a tube well Magyipinbu village, Meiktila 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.

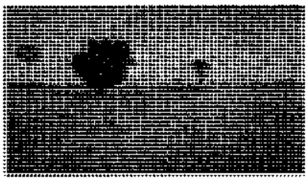
Measures (Continued)

❖ *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

Sunflower, corn and sesame

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

Measures (Continued)

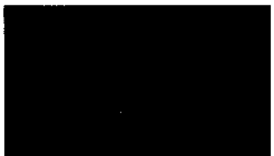
Food security (Continued)

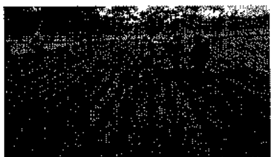
Crop Rotation in Central Myanmar: Black gram after rice

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

Measures (Continued)

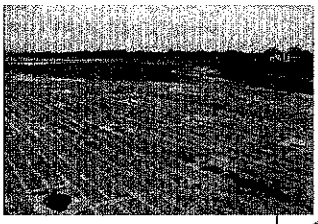
Food security (Continued)





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

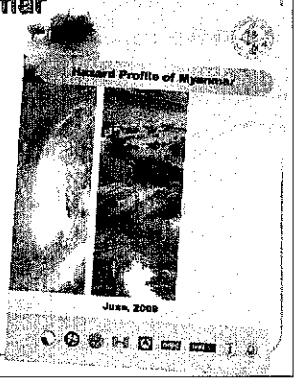
- As required by all parties to the UNFCCC, Myanmar conducted its first GHG inventory with the assistance of ADB in 1997 under the Asian Least Cost Greenhouse Gas Abatement Strategy (ALGAS) Project.
- According to the party of the UNFCCC, the effort toward making necessary preparation for initial communications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

3 Other Issues

Other issues

Hazard Profile of Myanmar

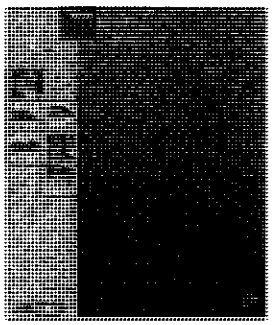
- Includes 9 hazards
  - Fire
  - Floods
  - Tsunami
  - Storm Surge
  - Landslide
  - Forest Fire
  - Earthquakes
  - Cyclone
  - Drought
- Prepared by Fire Services Dept, DMH, MES , Irrigation Dept, Forest Dept, RRD, MGS, MIMU and ADPC



Other issues

Institutional Arrangements for DM in Myanmar

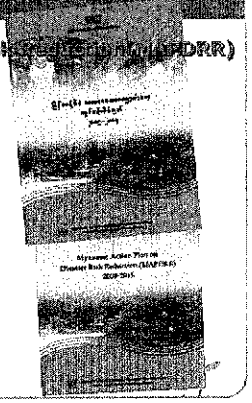
- Chapter : 1 *Overview of Union of Myanmar*
- Chapter : 2 *Hazard profile of Myanmar*
- Chapter : 3 *Global and Regional Commitment of Myanmar*
- Chapter : 4 *Existing Institutional arrangement at National level*
- Chapter : 5 *Study of Key DRR related Departments*
- Chapter : 6 *Existing Institutional 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

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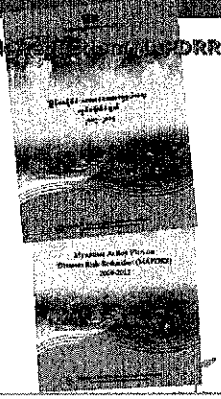

Other issues

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 yeor 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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Philippines

Ms. Donna Lyne S. Sanidad

Information Technology Officer II,
Climate Change Commission

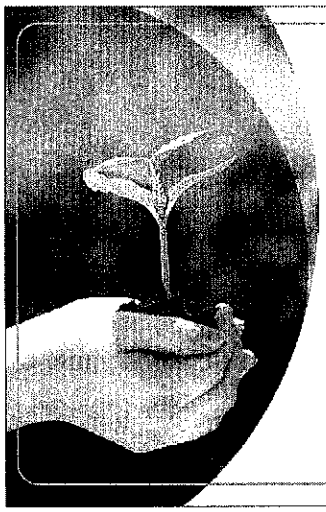
Work experience:

My previous job at the Manila Observatory has equipped me and become knowledgeable about how to address the issue of climate change. As a web developer at the Manila Observatory, I was under the klima Climate Change Center which was envisioned to be the climate change hub in the East Asian region. The staffs in the klima Climate Change Center were required to learn about climate change and its issues. I was required give lectures about climate change from grade school to university students, attend climate change related seminars, workshops, and conferences. I also attended the workshop on The Philippine Greenhouse Gas Accounting and Reporting Program (PhilGARP). I was also part of the team in writing a working paper entitled "In the Eye of the Perfect Storm: What the Philippines should do about Climate Change". Furthermore, I took part in the Philippines Second National Communication to the United Nation Framework Convention on Climate Change (UNFCCC) in 2010.

Current responsibilities:

Currently, I am working as an IT Officer II at the Climate Change Commission (CCC). This position not only requires me to be knowledgeable in IT and programming but also be knowledgeable about climate change issues. Under the Knowledge Management division, my responsibilities include the design and development of the Climate Change Commission web site, design and development of the databases needed for the website, create graphics, and help in the advocacies of the Climate Change Commission.

Powerpoint presentation:



Current Status of Climate Change Mitigation and Adaptation

Philippines, Climate Change Commission

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

Philippine CC Policy Initiatives

15 August 2007: A.O 171 amended with PTFCC Chairmanship transferred from DENR to DOE (A.O. 171-A)

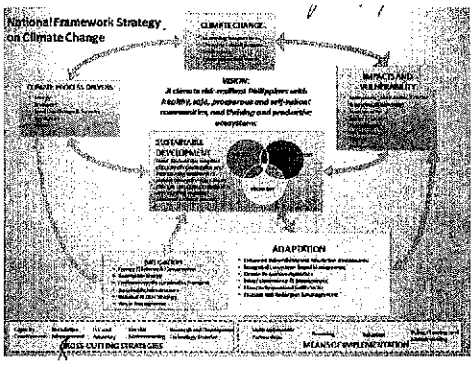
July 2009: Climate Change Act of 2009 (RA 9729)

2010: National Framework Strategy on Climate Change

2010: Philippine Strategy on Climate Change Adaptation

2011: National Climate Change Action Plan

National Framework Strategy on Climate Change



National Climate Change Action Plan 2011-2028

GOAL: To build the adaptive capacities of women and men in their communities, increase the resilience of vulnerable sectors and natural ecosystems to climate change, and optimize mitigation opportunities towards a gender-responsive and rights-based sustainable development.

ULTIMATE OUTCOMES: 1.0 Enhanced adaptive capacity of communities, resilience of natural ecosystems, and overall stability of the environment to climate change. | 2.0 Successful transition towards climate-smart development.

INTERMEDIATE OUTCOMES	100 Food Security	200 Water Sufficiency	300 Ecosystems and Environmental Stability	400 Human Security	500 Climate-smart Industries and Services	600 Sustainable Energy	700 CC Knowledge and Capacity Development
	Availability, stability, accessibility, affordability, safe and healthy food ensured amidst climate change.	Water resources sustainably managed and equitable access ensured.	Enhanced resilience and stability of natural systems and communities.	Reduced risks of the population from climate change and disasters.	Climate-smart, eco-efficient and environment-friendly industries and services developed, promoted and supported.	Sustainable non-renewable energy and reliable, locally efficient technologies adopted as major components of sustainable development.	Enhanced knowledge on and capacity to address climate change.

Measures

- **Mitigation**
  - Department of Energy (DOE) – Renewable Energy (CDM Projects: Wind Farm, Biodiesel 5%)
  - DA – Organic Law (Organic Farming), Capacity Development for farmers
  - DOTC – Environmentally Sustainable Transport
  - Waste – Solid Waste Management
  - Forestry – National Greening Project
  - CCC – Conserve-Protect-Restore (CPR)

Measures

- **Adaptation**
  - Department of Environment and Natural Resources (DENR) - Adaptation to Climate Change and Conservation of the Biodiversity in the Philippines (AccBio) Project – Philippine Strategy on Adaptation Measures.
  - CCC - Enhanced Vulnerability and Adaptation Assessments – VA Tools (scoping)
  - Integrated Ecosystems Based Management - Ecotown

Measures

- **Adaptation**
  - Department of Agriculture (DA) - Climate Responsive Agriculture – DA has Agriculture Plan (R&D crop varieties that are resilient to extreme climate, climate proofing of agricultural structures, Irrigation and rain fed crops
  - Department of Public Works and Highways (DPWH) and Department of Education - Water Governance and Management (flood control and water catchment)

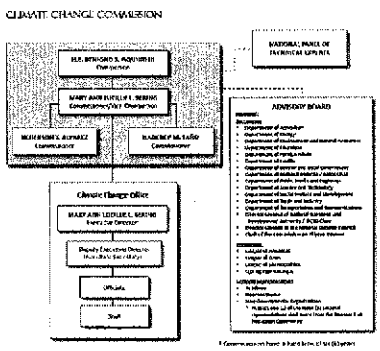
Measures

- **Adaptation**
  - Department of Environment and Natural Resources (DENR) - Adaptation to Climate Change and Conservation of the Biodiversity in the Philippines (AccBio) Project – Philippine Strategy on Adaptation Measures.
  - CCC - Enhanced Vulnerability and Adaptation Assessments – VA Tools (scoping)
  - Integrated Ecosystems Based Management - Ecotown

Measures

- **Adaptation**
  - Department of Health (DOH) – Surveillance on vector diseases
  - National Disaster Risk Reduction Management (NDRRM) - MOU with CCC
    - RA 10121. Calamity fund can be used for DRR measure
    - Maps of vulnerable areas

Institutional Structure

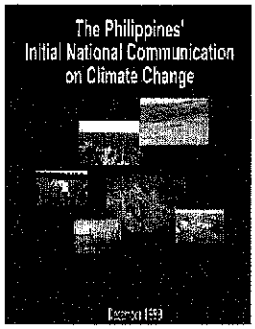


GHG Inventory and Development

- **Types of GHG Accounting**
  - **National Inventory**
  - **LGU Inventory**
  - **Corporate GHG Inventory**

GHG Inventory for the 1st National Communication

- **Base year 1994**
- **Sectors**
  - Energy
  - Industry
  - Agriculture
  - LUCF
  - Waste
- **Submitted in 2000**



GHG Inventory 1st National Communication

Figure 2.1. 1994 GHG Emissions from the Four Non-LUCF Sectors of Energy, Agriculture, Industry, and Waste .

SECTOR	CO_2 Emissions (ktons)
Energy	50,038
Industry	19,463
Agriculture	33,130
Wastes	7,084
TOTAL	109,864

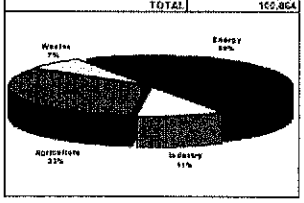
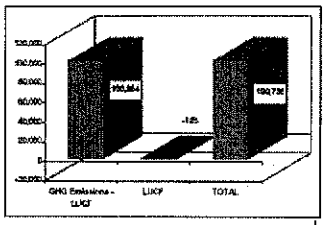


Figure 2.2. Net GHG Emissions with the LUCF Sector.



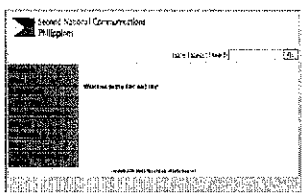
GHG Inventory for the 2nd National Communication

- **Base year is 2000**
- **To be submitted this year to the UNFCCC**
- **Inventory part of the SNC accomplished by 2009**

SNC: Key Methodologies used for GHG Inventory and Data Collection Process

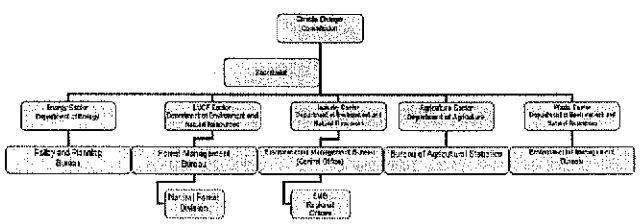
- **Used the methodologies provided in the 1996 IPCC Guidelines**
- **UNFCCC software version 1.3.2**
- **Base year: 2000**
- **Recipe and Reference Manuals**
- **Database for the 2000 Philippine GHG Inventory was created**
- **Capacity building workshops were conducted for each of the sectors**

SNC Website

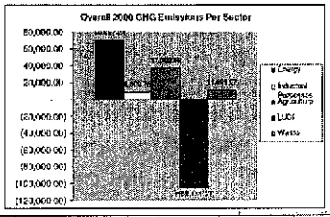


- **Database for the 2000 Philippine GHG inventory including worksheets and documentation was created for inventory members**
- **Developed in order to have a central repository of all inventory files**

Suggested Institutional Structure for future GHG Inventory



Second National Communication



Sector	a CO_2 (in Gg)	b CH_4 (in Gg)	c CH_4 GW Potential	d N_2O (in Gg)	e N_2O GW Potential	f CO_2-eq Emission (in Gg)
Energy	62,493.10	304.14	21	2.52	310	69,667.24
Industrial Processes	8,604.74	0.24	21	-	-	8,609.78
Agriculture	-	1,209.70	21	97.41	310	57,002.69
LUCF	(101,910.28)	(46.58)	21	46.32	310	(105,111.57)
Waste	-	500.67	21	3.50	310	11,899.07
Totals	(32,907.45)	1,968.56		49.11		24,767.41

Key Findings/Challenges/Recommendations

- **Energy Sector**
  - GHG emissions from the Energy Sector already semi-institutionalized in the Department of Energy
  - Need to develop the capacity of the Department of Transportation and Communications to estimate GHG emissions from the transport sector
  - Explore the possibility of getting data needed to move to Tier 2 approach for emissions calculation
- **Industry Sector**
  - Difficulty in getting GHG emissions data as there is no single institution within the government that acts as the main repository of GHG data
  - Relied heavily on private entities and industry associations for most of the inventory data
  - Need to identify a point agency which will be responsible for establishing and maintaining a database of information necessary for the estimation of emissions at a national level

Key Findings/Challenges/Recommendations

- **Agriculture Sector**
  - Used IPCC default values except for rice cultivation. Country emission-factors for rice cultivation in the Philippines derived from research findings of IRRI
  - Apart from rice cultivation, this sector used Tier 1method to estimate GHG emissions. Lack of disaggregated data and country-specific EF makes it difficult to move to a higher tier.
  - Estimate of GHG emissions from grassland burning was confronted with inadequate data on the area of grassland in the Philippines and management practices applied.
  - No central repository of emissions data for the sector

Key Findings/Challenges/Recommendations

- **Waste Sector**
  - Most of the data used were from the National Capital Region only
  - Emissions from waste incineration were not included
  - Methane emissions from industrial wastewater treatment was calculated using the First Order Decay model
- **LUCF**
  - The huge difference between the 1994 and 2000 data was largely due to data availability and different methodologies used

Key Findings/Challenges/Recommendations

- **Mitigation Analysis**
  - Continue to develop in-country capacity to conduct mitigation analysis, which includes developing the capacity of institutions tasked with database management and analysis
  - Given limited resources in developing countries such as the Philippines, mitigation potential needs to be evaluated in tandem with adaptation potential
  - Developing and expanding the base of inventory and mitigation experts will help in assuring better quality in the analysis

Key Category Analysis

- **CO2 removal from changes in forest and other woody biomass stock (36.8%);**
- **CO2 emissions from forest and grassland conversion (13.1%)**
- **CO2 from mobile combustion – road vehicles (9.7%);**
- **CH4 emissions from rice production (7.8%); and**
- **CO2 emissions from manufacturing industries and constructions (4.3%)**

Key Category Analysis w/o LUCF Sector

- **CO2 emissions from mobile combustion-road vehicles (19.3%);**
- **CH4 emission from rice production (15.6%);**
- **CO2 emission from manufacturing industries and construction (8.5%);**
- **N2O direct and indirect emissions from agricultural soils (8.5%); and**
- **CH4 emission from enteric fermentation in domestic livestock (6.3%).**

LGU GHG Inventory

- **LGUs start to conduct their own GHG inventory but they still need guidance**
- **Possibility of including GHG Inventory for their Local Climate Change Action Plan (?)**
- **Helps them identify mitigation and adaptation measures**

Corporate GHG Accounting

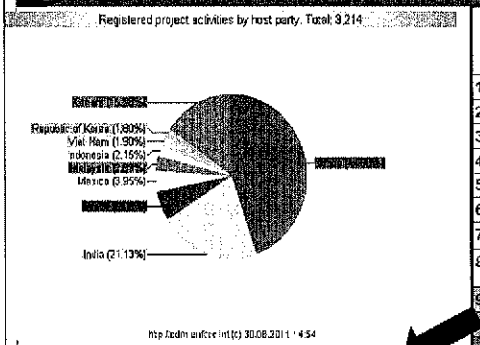
- **PhilGARP project (2006)**
  - Voluntary GHG inventory of companies
  - Confidentiality issues
- **What protocols to be used**
- **Increasing awareness of the need for GHG accounting**
- **GHGMI through CEnergy project of USAID**

Current Status of Philippine CDM Project Activities As of 1 July 2011

- **No. of CDM applications**
  - **98** = 26 large and 72 small scale
    = At least 3.6M CERs
- **No. of LOAs issued**
  - **89** = 27 large scale and 62 small scale
  - 2,314,822 CERs large + 1,250,195 CERs small scale
  - **= 3,565,017 CERs (3.5M CERs)**
- **No. of Registered CDM projects**
  - 54 = 2,104,988 **CERs (2.1M)**
  - 11 large (1,248,312+ CERs) and 43 small scale (328,992+ CERs)
  - Philippines rank **no. 9**; 1.7% of the total 3,214 project activities
- **159,023 CERs issued - 3 projects: Northwind Bangui Bay Project, QC Controlled Disposal Facility Biogas Emissions Reduction Project and Phil. Sinter Corp. Waste Heat Recovery Power Generation Project**

Registered Projects by Host Party

As of 30 June 2011



	Host Party	# of Registered CDM Projects
1	China	1443
2	India	679
3	Brazil	193
4	Mexico	127
5	Malaysia	93
6	Indonesia	69
7	Vietnam	61
8	Republic of Korea	58
9	Philippines	54
	Others	437
	Grand Total	3214

Philippines: 2,104,988 expected average annual CERs

Other Issues

- **Third National Communication**
  - Start proposing for the TNC hopefully this year
  - Base year to be determined

Challenges

- **Data quality, data availability and data accessibility**
- **Different methodologies used for INC and SNC making it difficult to compare results**
- **Lack of country-specific emission factors**
- **Need to harmonize data available with what the UNFCCC worksheets need**
- **Institutionalizing the GHG inventory**

Opportunities

- **Process of mainstreaming GHG inventory to different critical agencies/ministries**
  - DOE, NSCB, BAS, etc
- **Capacity building initiative – SEA GHG project**
  - LULUCF and Agriculture sector

Thank You !

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Thailand

Mrs. Nirawan Pipitsombat

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

Powerpoint presentation:

Policy Related to Climate Change in Thailand

Ms. Nirawan Pipitsombat
Director of the Office of Climate Change Coordination
Office of Natural Resources and Environmental Policy and Planning
Ministry of Natural Resources and Environment

Thailand Status

Thailand had ratified

- United Nations Framework Convention on Climate Change (UNFCCC) in December 1994
- Kyoto Protocol (KP) in August 2002

Institutional Framework

Ministry of Natural Resources and Environment (MNRE)
Office of Natural Resources and Environmental Policy and Planning (ONEP)

- National Focal Point of UNFCCC
- Designated National Authority (DNA) of KP

Office Climate Change Coordination (OCCC)	Thailand Greenhouse Gas Management Organization (TGO)
- National Focal Point of UNFCCC & KP - Climate Change Coordinator Office - Secretariat office of National Committee on Climate Change	- Secretariat office of DNA - Coordinate on GHG Management & CDM implementation

Committee and Sub-Committee

National Climate Change Committee
(Prime Minister is a Chairman)

- Sub – Committee on Climate Change for Technical Supporting (Permanent Secretary of MNRE is A Chairman)
- Sub – Committee on Climate Change for Negotiation Supporting (Director – General of Department of International Organizations and Secretary – General of ONEP are a Chairman)
- Climate Change Coordination Committee (CCC) (30 Agencies) 19 Ministries 31 Agencies under the Prime Minister's Office (8 September 2009)
- Climate Change Sub-Committee for Adaptation
- Climate Change Sub-Committee for NAMAs (Nationally Appropriate Mitigation Actions)

4

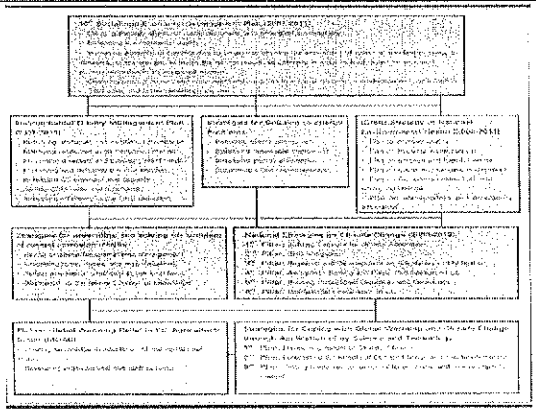
Thailand's Implementations on Climate Change

Thailand's Responses "National Strategic Plan on Climate Change Management B.E. 2551-2555 (2008-2012)" was approved by the Cabinet on 22 January, 2008

Vision Statement

"Thailand is a climate-resilient society and cooperates with the global community to mitigate climate change base on the principle of sustainable development"

Linkages between policies on Climate Change Operations



National Strategic Plan on Climate Change B.E. 2551 – 2554 (2008 – 2012)

STRATEGY 1 Build capacity to adapt and reduce vulnerabilities to climate change impacts

STRATEGY 2 Promote greenhouse gas mitigation activities based on sustainable development

STRATEGY 3 Support research and development to better understand climate change, its impacts and adaptation and mitigation options

STRATEGY 4 Create awareness and participation of problem solving on climate change

STRATEGY 5 Build capacity of relevant personnel and institutions and establish a framework of coordination and integration

STRATEGY 6 Support international cooperation to achieve the common goal of climate change mitigation and sustainable development

(Draft) National Master Plan on Climate Change B.E. 2011 – 2050

ONEP is on the process of drafting the National Master Plan

Role of Thailand's Climate Change Master Plan 2011 - 2050

Mission:

- To enhancement capacity for resilience socio-economic development and ecosystems
- To reconstruct economic development to a low carbon society
- To promote sustainable development in a Thai context

Thailand's Climate Change Master Plan 2011 - 2050

Thailand's climate change master plan has long term goal for 40 years and is separated into 3 phases:

First Phase: 2 – 5 years (Urgent Actives Base)
Second Phase: 6 – 20 years (Project Base)
Third Phase: 20+ years (Program Base)

Master Plan must be revised and updated every 5 years

Thailand's Climate Change Master Plan 2011 - 2050

The Ultimate Goal of Thailand's Climate Change Master Plan is to reduce GHG emission and to be a Low Carbon Society in the next 40 years (2050) by focusing on:

Adaptation Measures

Adaptation :

- Behavior and lifestyle changes
- Ecological preservation and protection
- Harmonization of humans and nature
- Self-sufficiency
- Food Safety and Security
- Water Resource Management

Mitigation Measures

Mitigation :

- Keep balancing between GDP Growth and GHG emission reduction
- Energy efficiency, alternative and renewable energy
- Low carbon production
- Low carbon technology development and technology transfers
- Eco-friendly consumption
- Capacity building for SMEs

Tools and Key Elements of Success

- Sufficiency economic
- Financial mechanism
- Research and development
- Agriculture and farming protection
- Local wisdom and appropriate technology
- Sufficiency and effective education
- International cooperation
- Forest and ecosystem protection

Obstacle Elements of Line Agencies for implementing GHG Inventory

the Third National Communication

Obstacle Elements of Line Agencies for implementing GHG Inventory

- **Insufficient data**
- **Chaotic and unsystematic data**
- **Lack of research and development**
- **Lack of expertise and experienced**
- **Lack of technologies and tools**
- **Lack of new methodologies**

Challenge Solutions

- **Data systematization**
- **Human and organization capacity building**
- **Data and methodology integration**
- **Line agencies provide their own GHG inventory**

Thank You

Contact Details:

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92 Phahonyothin Soi 7, Phahonyothin Road, Bangkok 10400 THAILAND

Tel. / Fax + 662 2265 6692

Email: nirawanfang@gmail.com

Unfccc.thailand.focalpoint@gmail.com

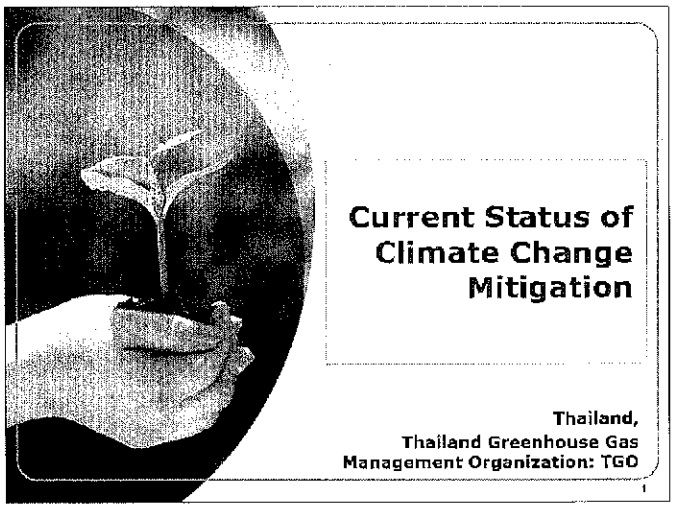
Mr. Thawatchai Somnam

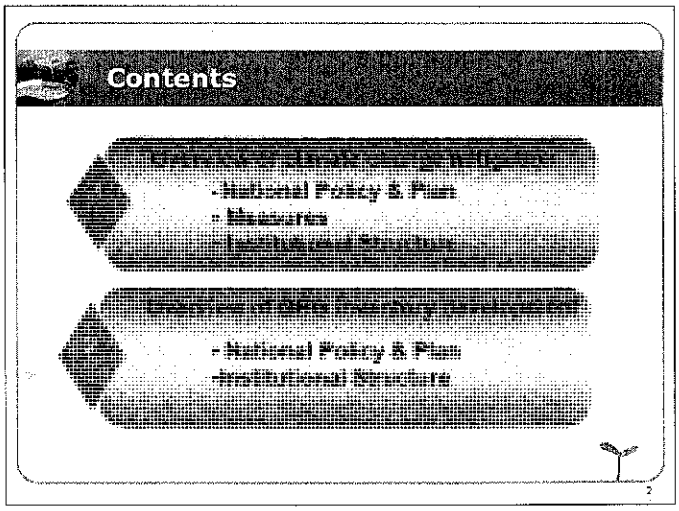
Assistant Senior Official, Strategy Office,
Thailand Greenhouse Gas Management Organization
(PO)

Current responsibilities:

- Prepare Strategic plan for the organization.
- Coordination to the Project of Nationally Appropriate Mitigation Actions (NAMAs)
- Prepare quarter report of the organization.
- Summarize meeting reports.
- Comments on Climate Change related topics and reports.

Powerpoint presentation:





1 Overview of climate change mitigation

- **Policy framework regarding Climate Change: National Strategy on Climate Change B.E. 2551- 2555 (2008 - 2012)**
- **There are six strategies in Thailand's Strategic Plan on Climate Change B.E. 2551-2555 (2008-2012).**

3

National Strategy on Climate Change B.E. 2551 - 2555 (2008 - 2012)

STRATEGY 1:
Build capacity to adapt and reduce vulnerabilities to climate change impacts

STRATEGY 2:
Promote greenhouse gas mitigation activities based on sustainable development

STRATEGY 3:
Support research and development to better understand climate change, its impacts and adaptation and mitigation options

STRATEGY 4:
Raise awareness and promote public participation

STRATEGY 5:
Build capacity of relevant personnel and institutions and establish a framework of coordination and integration

STRATEGY 6:
Support international cooperation to achieve the common goal of climate change mitigation and sustainable development

4

TGO performs its roles as the Designated National Authority for CDM (DNA-CDM) office for Thailand.

5

TGO duties

TGO

1. Promote Low Carbon activities
2. Review CDM projects for approval
3. Set up the GHG Information Centre and provide GHG related information
4. Promote investment and carbon market on GHG emission reductions
5. Provide capacity development and outreach for CDM stakeholders and promote low carbon activities
6. Provide information and public outreach on GHG mitigation
7. Promote and support all activities related to mitigation measures and climate change.

6

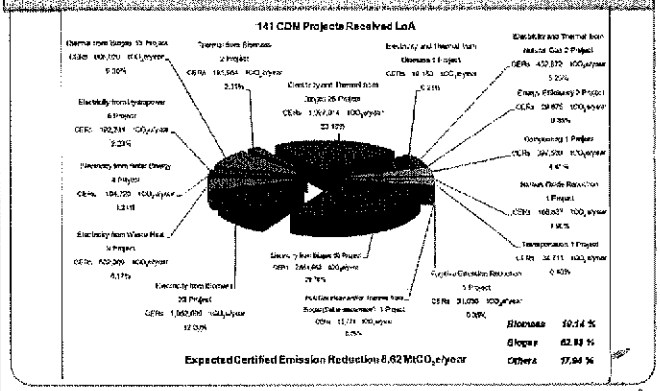
Implementation on CDM and GHG Mitigation in Thailand

One of the main duties of TGO

- **to review and issue a letter of approval to the Clean Development Mechanism (CDM) projects hosted in Thailand**
- **to ensure that these projects could contribute to sustainable development in the country**

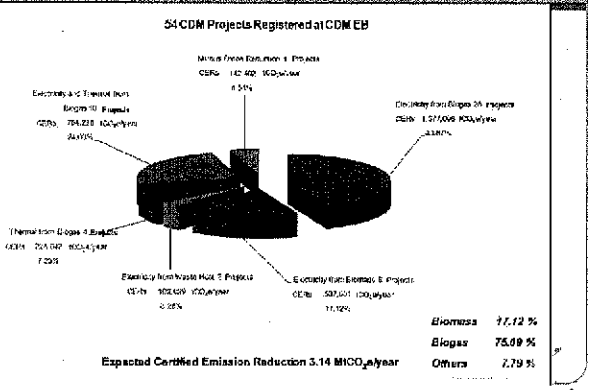
7

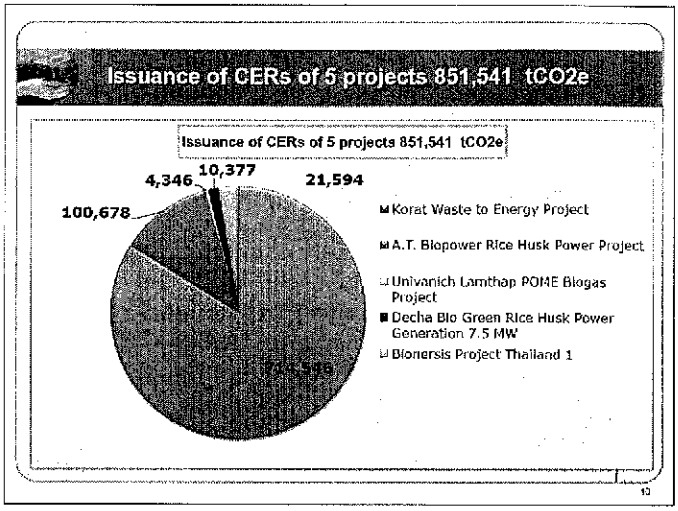
At present, 141 CDM projects have been approved and could lead to GHG emission reduction up to 8.6 million ton CO_2 equivalent/year .



8

At present, The number of registered project is 54 projects. Expected average annual CERs is 3.14 $MtCO_2e$.



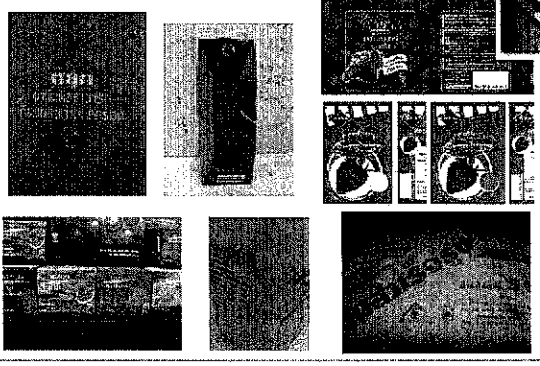


Carbon Labeling to enhance GHG reduction in Thailand

Carbon reduction label & Carbon footprint

- Carbon Reduction Label Manufacturers could apply for the "Carbon Reduction Labeling", which is a product to encourage the industrial process that emits -10% less than GHGs emission level in 2001.
- Up to present, there are 145 products, registered for carbon and granted for use.

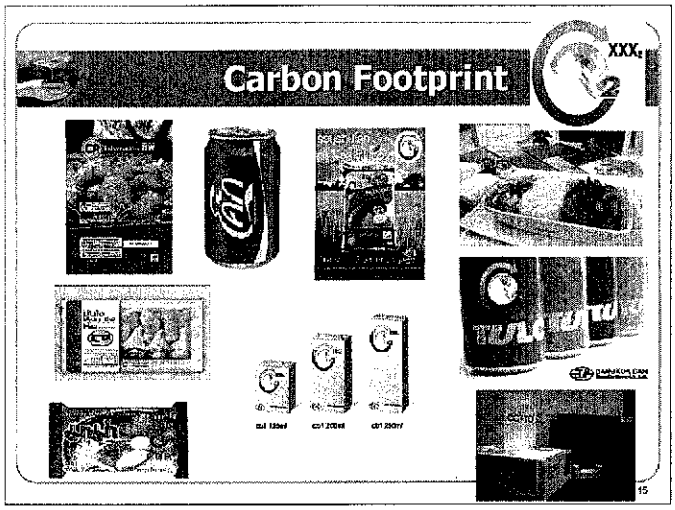
Carbon Reduction Label



Carbon reduction label & Carbon footprint

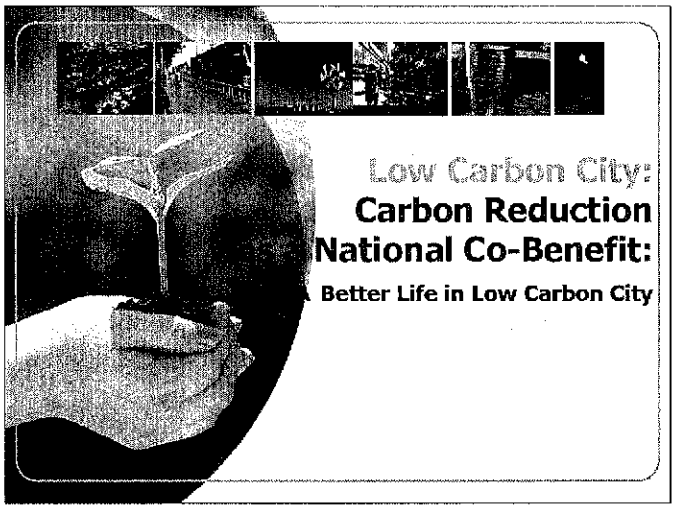
- Carbon Footprint The carbon footprint indicates the quantity of greenhouse gas emissions from each production unit for the whole life cycle (cradle to grave) of a particular product.
- Currently, there are 197 products were trained by TGO about the carbon footprint, and allowed to use the carbon footprint.

Carbon Footprint



Carbon reduction label & Carbon footprint

- CoolMode TGO's CoolMode clothing is especially suited for hot weather, and allows for people to stay comfortably in air conditioning set at 25-26 degrees Celsius (or higher).

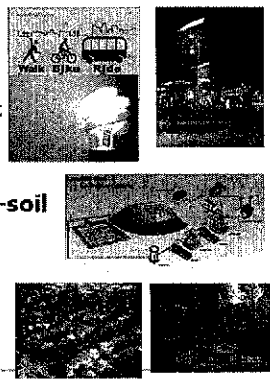


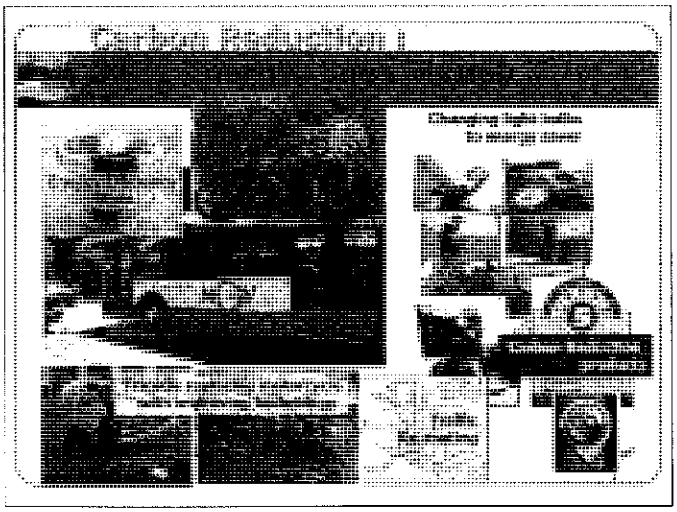
Low Carbon City:
Carbon Reduction
National Co-Benefit:

Better Life in Low Carbon City

Low Carbon City :
What the City can do for the better !

- Energy Saving:
  - Household activities
  - Fuel saving in Traffic and non-car transport
  - Renewable Energy
- Waste management:
  - Solid waste and night-soil
  - Waste recycle
- Urban Forest:
  - Public area
  - Household area

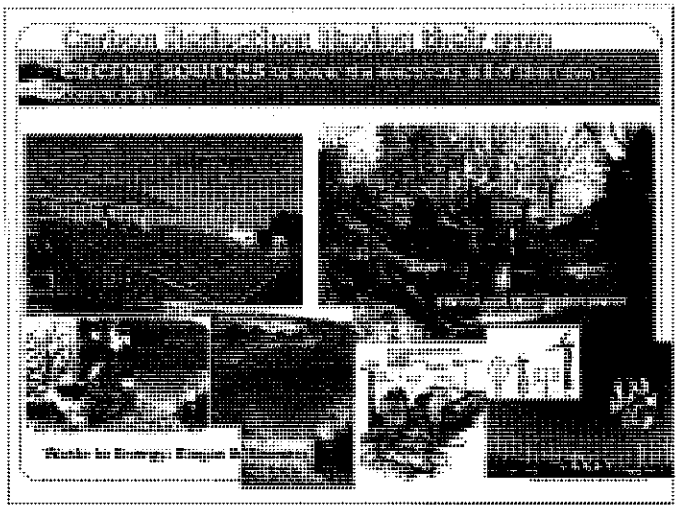




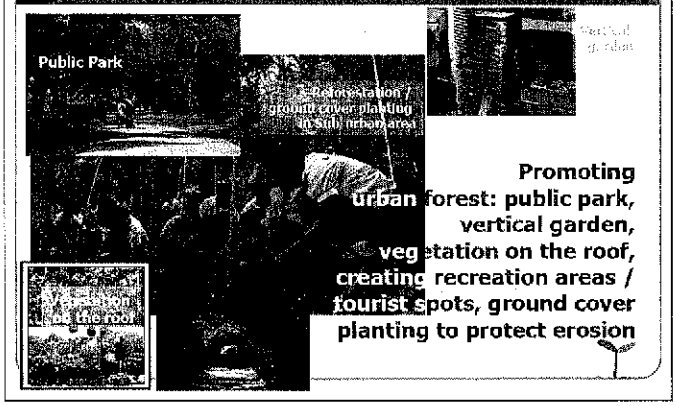
Carbon Reduction :
non-car transport to Save Energy, Save Money

Bike lanes: to schools, govt. offices, parks, recreation / tourist spots, others
Bicycles: available for free or rental services

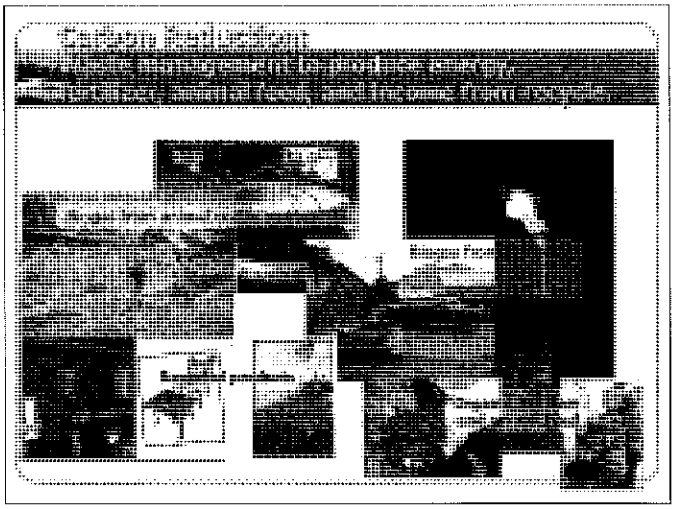
Walk If You Can: Non-car transportation,
a city for walking about



Carbon sequestration :
Planting tree helps reducing dust and shading the environment in town



Promoting urban forest: public park, vertical garden, vegetation on the roof, creating recreation areas / tourist spots, ground cover planting to protect erosion



Carbon Reduction:
The city can provide and promote Vocational training on low carbon products.

- **Organic Food**
- **Garden design, plant nursing organic fertilizer**
- **Design and making recycling furnitures and products**
- **Electrical goods repairing technician**
- **Design and construction of green-building**
- **Making energy-saving stoves**
- **Others**

Co-benefits of Low Carbon City Program

- Save Energy
- Having their own energy sources to lower the electricity bill of their own community
- Better Environment
- Less traffic congestion
- Better Air Quality
- Others many more

27

Overview of GHG inventory development

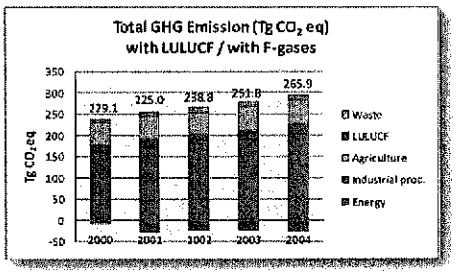
28

1. Present status and future prospect of national communications

- Thailand submitted its initial national communication (INC) to the UNFCCC in 2000.
- The second national communication (SNC) has recently submitted the 2nd Communications in 2011 using the UNFCCC reporting guidelines and the IPCC technical guidelines, including the good practice guidelines and uncertainty management.
- The implementation of 3rd NC which will have the similarity of structure of SNC is currently under consideration.

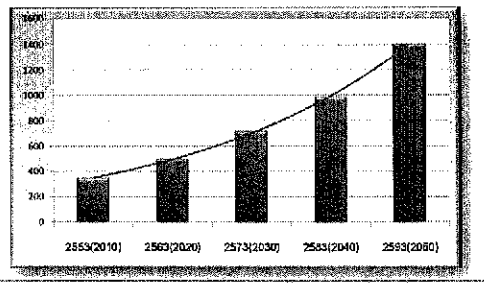
2. Present status and future prospect of GHG inventories (emission and sink)

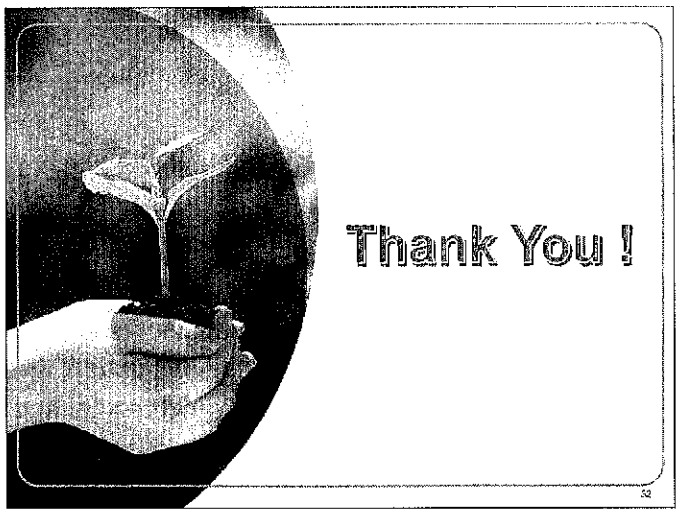
- Thailand's National GHG inventories in 2nd National Communications (Present)



3. The projection of Thailand's GHG inventories for 2050

- The future trend of GHG inventory for Thailand will increase gradually from 2010 to 2050





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Vietnam

Dr. Huynh Thi Lan Huong

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

Work experience:

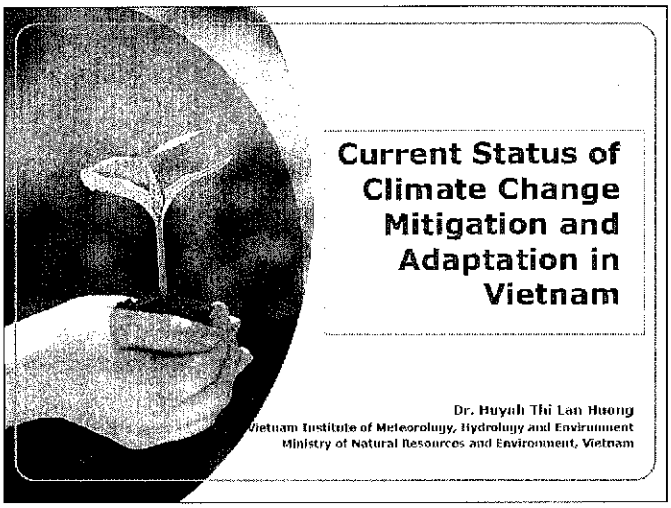
Over 17 years of professional experience in science research:

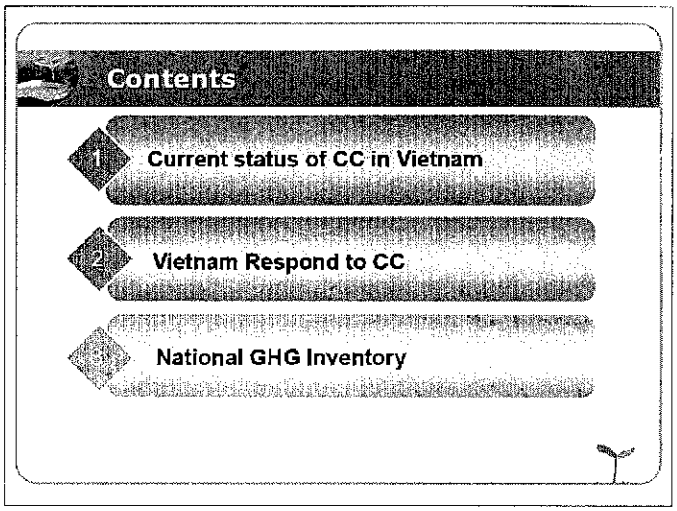
- Natural and water resources assessment, analysis and integrated management
- Surface water resources assessment and management;
- Water quality and pollution source monitoring and assessment, including pollution control;
- River, lake and reservoir management and institutional development in temperate/ tropical regions;
- Special fields:
- Water balance, hydrodynamics of surface water resources; water resources conservation and protection;
- Rural development: water resources, water supply and sanitation;
- Hydrological and water resources prediction;
- Climate Change adaptation
- Experience in field of study concerned:
- Head of working group, Project "Developing the Decision Support Framework in water sharing in Ba river system" (Ministry level), 2007- 2008.
- Member of working group, Project "Benefits of climate change adaptation from small and medium scale hydropower plants, synergies and tradeoffs with rural development", 2009.
- Member of working group, Project "Impacts of Climate Change on Water Resources and Adaptation Measures", Head of working group, sub-project "Impacts of Climate Change on Water Resources in Ba river Basin and Adaptation Measures, sponsored by Denmark Government, 2008-2010.
- Member of working group, Project "Climate change impacts in Huong River Basin and Adaption in its coastal district Phu Vang (Thua Thien Hue province); (2009)
- Member of working group, Project "Develop a policy guidance for Vietnam on integrating climate change into strategies, plannings and plans at national, sectoral and local level" (2010)
- Member of working group, Projects: "Low-Carbon Society analyzing for Vietnam", (2011)

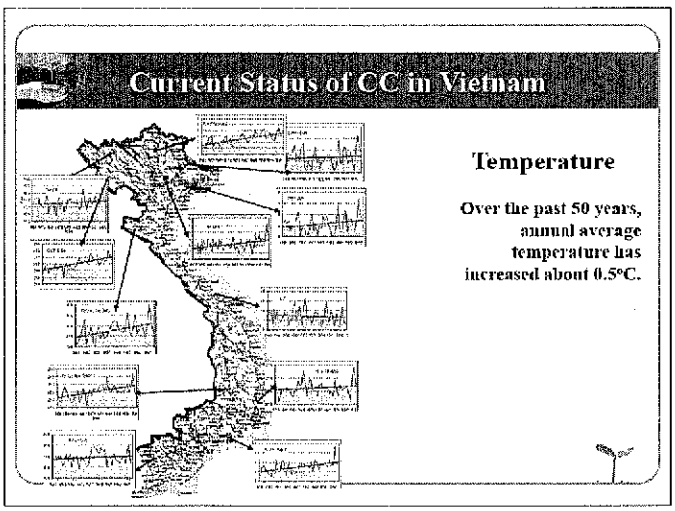
Current responsibilities:

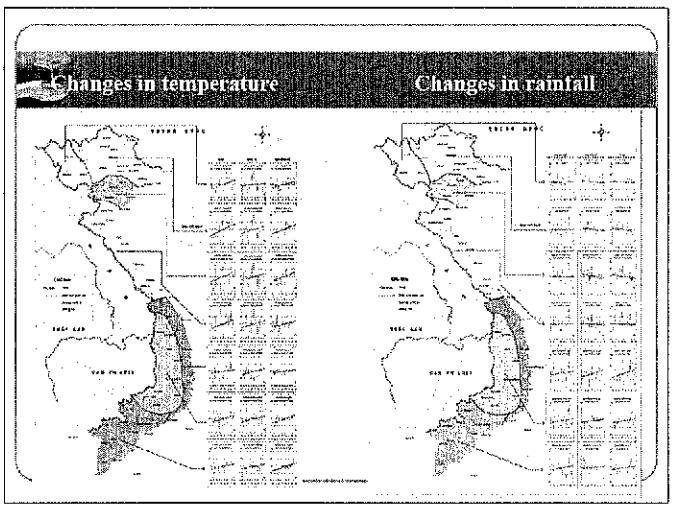
- Research on the current status and trend of climate change; assess the impacts, risks and vulnerability due to climate change and research on adaptive measures to climate change;
- Research on mitigation alternatives in Vietnam from the perspective of low-carbon economy development, including: policies and mechanisms, technological innovation, environmental services and products, opportunities in greenhouse gases reduction, and capacity building for industrial firms, small and medium enterprises in order to develop the green technology;
- Research on climate change mainstreaming into strategies, planning, plans and program on socio-economic development at national, sectoral and local level;
- Research and cost-benefit analysis on the adaptive and mitigation activities in Vietnam;

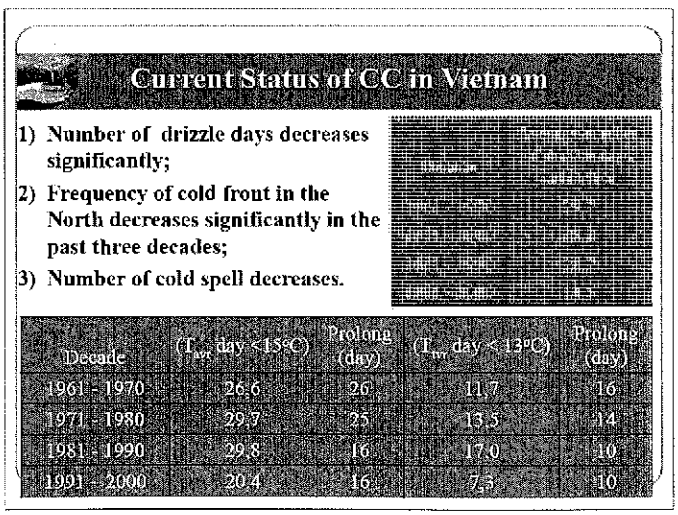
Powerpoint presentation:



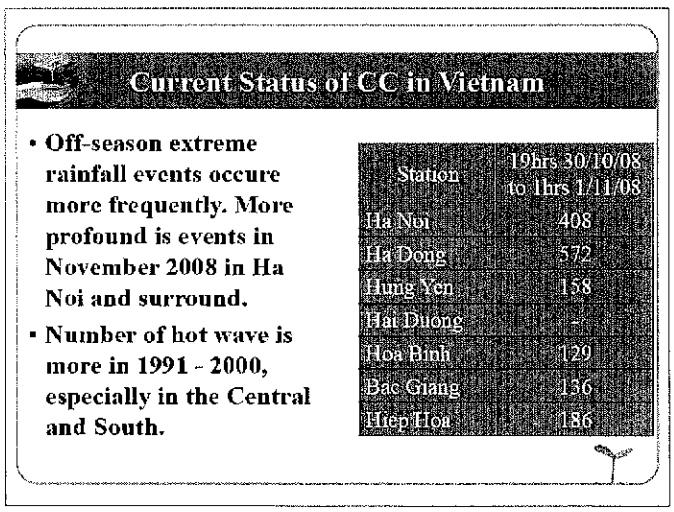






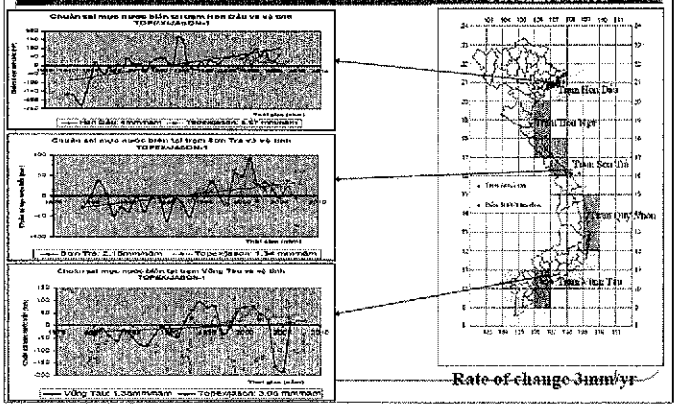


Decade	(T_{max} day < 15°C)	Prolong (day)	(T_{min} day < 13°C)	Prolong (day)
1961 - 1970	26.6	26	11.7	16
1971 - 1980	29.7	25	13.5	14
1981 - 1990	29.8	16	17.0	10
1991 - 2000	20.4	16	7.5	10



Station	19hrs 30/10/08 to 1hrs 1/11/08
Ha Noi	408
Ha Dong	372
Hung Yen	158
Hai Duong	
Hoa Binh	129
Bac Giang	136
Hiep Hoa	186

Gauged data and Satellite data

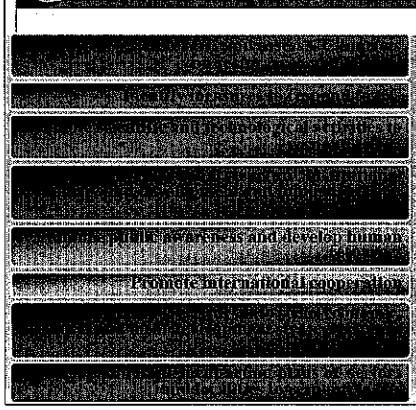


CLIMATE CHANGE IMPACTS

Viet Nam is particularly vulnerable to climate change impacts (UNFCCC)... has about 3,200 km coastline, with a total area of about 332,000 km².
Major CC impacts: inundation, climatic extremes, climatic stresses on resources and communities, rural and urban,...

1. **Mekong Delta: 1 of 3 global hotspots with respect to its population displacement and global food security;**
2. **Social groups: poor, ethnic minorities, women, children, elderly, migrants,...;**
3. **Sectors: water, agriculture, transport, trade, health and education,...**

National Target Program to Respond to CC



Strategic objectives:
Assess CC impacts on sectors and regions and develop feasible action plans to effectively respond to CC in the short and long-term to ensure sustainable development of VN.
To take opportunities to develop towards a low-carbon economy, and to join the international community's efforts in mitigating CC.

Implementing Progress of NTP

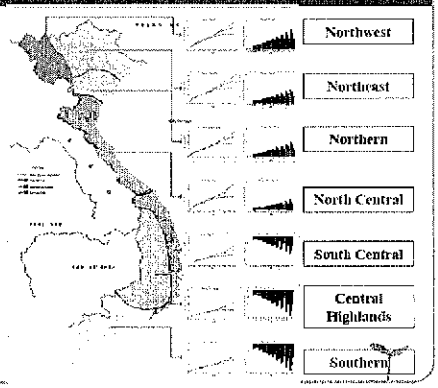
1) Disclosure of climate change scenarios;
2) Guidelines developed and implemented action plans to respond to climate change;
3) Assess of climate change impacts and identify adaptation options;
4) International negotiations;
5) Ministries and Provinces Action Plan to response to climate change;
6) Pilot projects to analyze and propoae adaptation meaaurea to climate change;
7) Guideline for integrated CC in national, sectoral and provincial development strategies;
8) Updated climate change scenarios;
9) Developing a national strategy on climate change.

The Government has made drastic action to cope with climate change. Initially, there were a certain number of results and has received much international support.

Climate Change Scenarios for Viet Nam

Changes scenarios were developed for:

1) **Low emission scenario (B1)**
2) **Medium emission scenario (B2)**
3) **High emission scenario (A2)**



Sea Level Rise Scenarios

By mid of the 21st century sea level is expected to increase about 30cm.
Sea level would rise about 75cm by the end of 21st century compared to the period of 1980 - 1999.

SLR Scenario	Decades in the 21 Century								
	2020	2030	2040	2050	2060	2070	2080	2090	2100
Low (B1)	11	17	23	28	35	42	50	57	65
Medium (B2)	12	17	23	30	37	46	54	64	75
High (A1FI)	12	17	24	33	44	57	71	86	100

Other National Programs

1) National Scientific Program on Climate Change: will be developed and implemented to provide scientific basis for the development of policy, institution and action plans to respond to climate change.
2) National Strategy on Climate Change: Strengthening the adaptive capacity of human and natural systems, development of low-carbon economy to protect and improve the quality of life, security and sustainable development of countries in the context global climate change and actively with the international community to protect the climate system.
2) Action Plan to Respond to Climate Change of Ministry of Natural Resources and Environment, Ministry of Agriculture and Rural Development, Ministry of Industry and Trade and Ministry of Transport, ... and provinces

Adaptation

Overall objective of CC adaptation: strengthen resilience of men, women, children, communities, regions and sectors;

- **Raising public awareness is an urgent task.**
- **Vulnerability and adaptation assessments at sectoral, regional and community levels, and social groups.**
- **Enhancing resilience of people, geographic areas and sectors through creation of livelihood opportunities.**
- **Strong coordination between sectors and effective oversight of policy implementation.**

Major projects on Impacts Assessment and Adaptation

- **Vulnerability assessment for Vietnam coastal zone;**
- **Impact of CC on water resources and Adaptation measures;**
- **Asian Cities Climate change resilience Network;**
- **Developing and implementing CC adaptation measures to increase resilience of national development;**
- **Reforestation for Adaptation to CC (in Quang Binh province);**
- **Supporting Program to Respond to CC;**
- **CC Adaptation and Mitigation Program – Vietnam (in Quang Nam and Ben Tre Province);**

Mitigation

- Legal documents
  - Law on Environmental Protection No. 52/2005/QH11 dated 29th November 2005 (replaces the 1993 Law on Environmental Protection).
  - Water Resources Law No. 08/1998/QH10 dated 20th May 1998. Petroleum Law (1993) No. 10/2008/QH12 dated 6th July 1993 (amended twice on 9th June 2000 and 3rd June 2008).
  - Law on Minerals No. 2/1996/QH9 dated 1st September 1996 (amended on 27th June 2005).
  - Law on Forest Protection and Development No. 29/2004/QH11 dated 3rd December 2004 (replaces the 1991 Law on Forest Protection and Development).
  - Law of Electricity No. 28/2004/QH11 dated 3rd December 2004.
  - Law on Energy Efficiency No. 50/2010/QH12 dated 28th June 2010.
- Government-issued legal documents
  - In 2003, the National Environment Protection Strategy by 2010 and vision until 2020;
  - In 2006, the Government established the National Target Program on Energy Efficiency
  - In 2008, the Government approved the National Target Program to Respond to Climate Change.

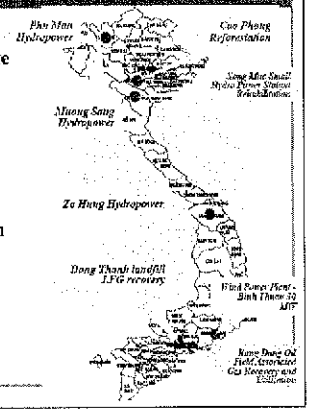
Major projects on GHG Mitigation

- **Vietnam National Strategy on CDM;**
- **Promotion of Renewable Energy, Energy Efficiency and GHG Abatment;**
- **Livestock Waste Management in East Asia;**
- **Vietnam Energy Efficiency Public Lighting;**
- **Energy Conservation and Efficiency in Small and Medium Scale Enterprises;**
- **Sustainable Land and Forest Management;**

Clean Development Mechanism (CDM)

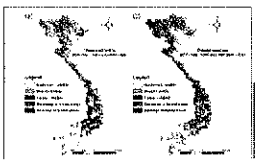
Vietnam has received and applied a number of new technologies to mitigate GHG emissions:

+ **As of October 2010, Vietnam has 34CDM projects registered by the EB;**
+ **Vietnam ranks 11th globally in registered CDM quantity and 8th in issued Certified Emission Reduction (CERs) amount.**



UN REDD VIETNAM

Overall Objectives:



- Support the Government of Vietnam to effectively implement the scheme of REDD, contributing to reducing greenhouse gas emissions and responding to climate change;
- Contribute to the goal that "by 2012 Vietnam will be ready for REDD implementation, and positively contribute to efforts to reduce deforestation and forest degradation at the national level as well as the regional scale";
- Support relevant programs and strategies of the Government.

UN REDD VIETNAM

Achievements in 2010: Viet Nam's National REDD+ Strategy is developed with support from the UN-REDD National Programme, and currently under full-scale national level consultation. Once being finalised it will form a legal context for the National REDD+ Programme and define the roles and responsibilities of state and non-state actors in the implementation of REDD+ in the country.

In order to improve the management capacity of REDD+ at district level, a provincial REDD+ working group has been established and presently working in Lam Dong Province.

UN REDD VIETNAM

Objectives of the Second Phase:

- Overall Objectives: Contribute to the sustainable forest management and mitigation of greenhouse gases emissions in Vietnam and effective response to climate change in the region.
- Specific Objectives: reduce emissions and increase the absorption of greenhouse gases in the pilot provinces as the basis to expand the implementation of REDD + over the country and the region.

National GHG Inventory

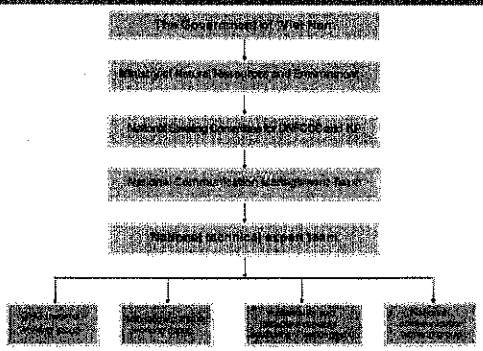


Figure 2.1. Institutional arrangement for national GHG inventory

National GHG Inventory in 1994 and 2000

Year	1994		2000	
Sector	Emissions	%	Emissions	%
Energy	25,637	24.7	52,773	35
Ind. processes	3,807	3.7	10,006	6.6
Agriculture	52,450	50.5	65,091	43
LULUCF	19,380	18.6	15,105	10
Waste	2,565	2.5	7,925	5.3
Total	103,839	100	150,899	100

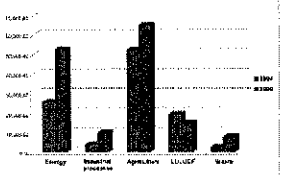
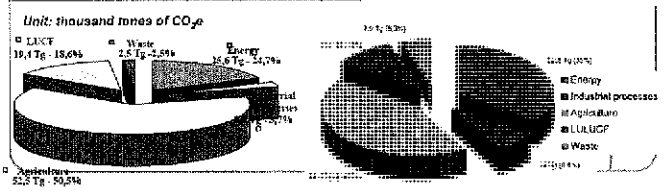


Figure 2.9. GHG emissions by sector, in 1994 and 2000

Unit: thousand tones of CO_2e

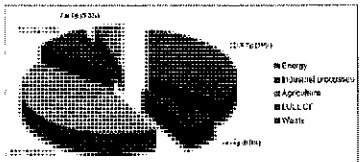


National GHG Inventory in 2000

Table 2.17. National GHG inventory by sector in 2000

Unit: thousand tonnes

Sector	CO_2	CH_4	N_2O	CO_2e	Percentage
Energy	45,900.00	308.56	1.27	52,773.06	35.0
Industrial processes	10,003.72	0	0	10,006.72	6.6
Agriculture	0	2,383.75	48.45	65,090.65	43.1
LULUCF	11,860.19	143.53	0.96	15,104.72	10.0
Waste	0	331.58	3.11	7,923.18	5.3
Total	67,763.91	3,164.12	53.83	150,899.73	100



National GHG Inventory in 2000

- The 14 main sources and sinks of emission in Vietnam's National GHG inventory in 2000 were determined as follows:
  - Energy: manufacturing industries and construction, transportations, energy, industries, oil and natural gas extraction.
  - Industrial processes: Cement production, steel production;
  - Agriculture: wet rice cultivation, enteric fermentation, agricultural soils.
  - LULUCF: changes in forest and other woody biomass stocks, land conversion, abandonment of managed land;
  - Waste: Solid waste.

National GHG Emission Projections

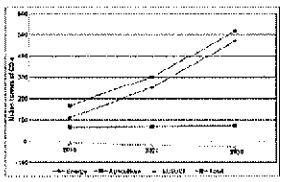


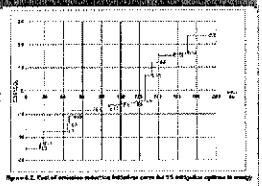
Table 2.28. GHG emission projections for 2010, 2020 and 2030

Unit: million tonnes of CO_2e

Sector	2010	2020	2030
Energy	113.1	251.0	470.8
Agriculture	66.6	69.5	72.9
LULUCF	-9.7	-20.1	-27.9
Total	165.2	300.4	515.8

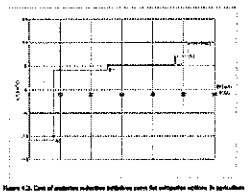
GHG mitigation options in Energy

- Option E1: Innovative coal stoves
- Option E2: Replacing coal with LPG in household cooking
- Option E3: High-efficiency refrigerators
- Option E4: Energy-saving compact fluorescent light bulbs
- Option E5: High-efficiency air conditioner
- Option E6: Solar water-heating appliances
- Option E7: High-efficiency electric motors
- Option E8: Innovative brick kilns
- Option E9: Switching from DO to CNG in transportation
- Option E10: LPG-fuelled cabs
- Option E11: Using high-press sodium lamps in public lighting
- Option E12: Switching from coal-fired to LNG thermal power
- Option E13: Small-scale hydropower replacing coal thermal power
- Option E14: Wind power replacing coal-fired thermal power
- Option E15: Rice husk power replacing coal thermal power



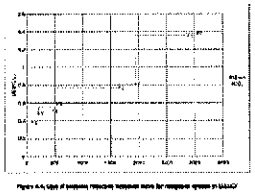
GHG mitigation options in Agriculture

- Option A1: Biogas replacing cooking coal in lowlands
- Option A2: Biogas replacing cooking coal in mountain areas
- Option A3: Rice paddy field water drainage in the Red River Delta
- Option A4: Rice paddy field water drainage in the South Central Coast
- Option A5: MUB cattle feeds



GHG mitigation options in LULUCF

- Option F1: Protection and sustainable management of existing production forest areas
- Option F2: Conservation of existing protection forests
- Option F3: Reforestation of large timber forests in conjunction with natural regeneration
- Option F4: Planting long-rotation large timber trees
- Option F5: Planting fast-growing trees for lumber
- Option F6: Planting short-rotation pulpwood forest
- Option F7: Growing long-rotation non-timber product forest
- Option F8: Planting melaleuca forest on alkaline wetlands

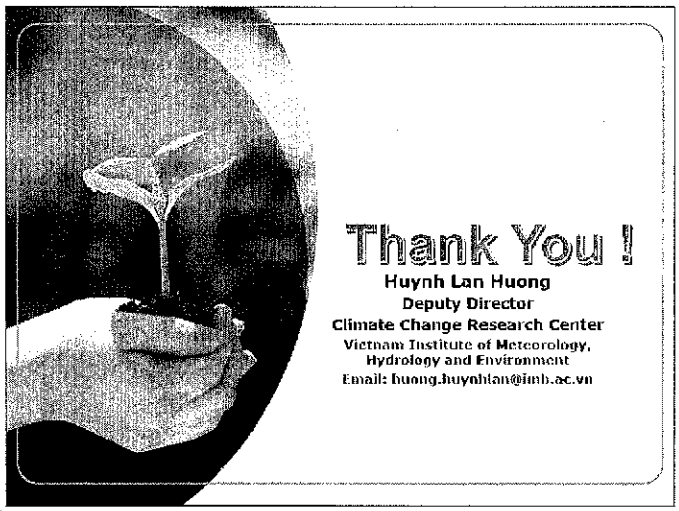


Other issues

Low-Carbon Society Vision 2030

Vietnam

Abstract: Supporting the development of Green Growth Strategy in Viet Nam, a study on a Low-Carbon Society has been implemented to provide a general view on a Low-Carbon Society Vision 2030 in Viet Nam.
The GHG emission in 2030 could be approximately decreased by 49.3% due to application of proposed GHG emission mitigation activities.
To achieve the reduction of GHG emission, a package of Green Growth policies is designed for sectors of residence, commerce, industry and transportation.


Thank You !
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Email: huong.huynhlan@imh.ac.vn