Thailand’s GHG Activities and Future Plan

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Total Emission (included LULUCF) = 229.08 Mt CO$_2$ eq

- GHG emission in 2000 (Mt CO$_2$ eq, %) - by sector
- GHG emission in 2000 (Mt CO$_2$ eq, %) - by Gas Type
Emission in 2000 of **Energy Sector** (Mt CO₂ eq, %)

<table>
<thead>
<tr>
<th>Sector</th>
<th>Emission (Mt CO₂ eq)</th>
<th>% of Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Energy Industries</td>
<td>66.4</td>
<td>41.7%</td>
</tr>
<tr>
<td>Manufacturing industries &amp; construction</td>
<td>30.8</td>
<td></td>
</tr>
<tr>
<td>Transport</td>
<td>44.7</td>
<td>28.0%</td>
</tr>
<tr>
<td>Residential</td>
<td>5.6</td>
<td>3.5%</td>
</tr>
<tr>
<td>Agriculture/Forestry/Fishing</td>
<td>6.7</td>
<td>4.2%</td>
</tr>
<tr>
<td>Industrial processes</td>
<td>16.4</td>
<td>7.2%</td>
</tr>
<tr>
<td>Waste</td>
<td>9.3</td>
<td>4.1%</td>
</tr>
<tr>
<td>LULUCF</td>
<td>-7.9</td>
<td>-3.4%</td>
</tr>
</tbody>
</table>
| Total GHG Emission with LULUCF = 229.08 MtEq
Emission in 2000 of *Industrial Process* (Mt CO₂ eq, %)

- **Energy, 159.4, 69.6%**
- **Agriculture, 51.9, 22.6%**
- **LULUCF, -7.9, -3.4%**
- **Waste, 9.3, 4.1%**
- **2A Mineral products, 16.0, 97.9%**
- **2B Chemical industry, 0.3, 2.0%**
- **2C Metal production, 0.01, 0.0%**

Total GHG Emission with LULUCF = 229.08 MtEq
Emission in 2000 of *Agriculture* (Mt CO₂ eq, %)

**Emission in 2000 by 'Agriculture' (Mt CO₂ eq, %)**

- **Energy**: 159.4, 69.6%
- **Industrial processes**: 16.4, 7.2%
- **Waste**: 9.3, 4.1%
- **LULUCF**: -7.9, -3.4%
- **Rice cultivation**: 29.9, 57.5%
- **Manure management**: 5.1, 9.7%
- **Field burning of agricultural residues**: 1.0, 1.9%
- **Enteric fermentation**: 8.3, 15.9%
- **Agriculture**: 51.9, 22.6%

Total GHG Emission with LULUCF = 229.08 MtEq
Emission in 2000 of LULUCF (Mt CO₂ eq, %)

Total GHG Emission with LULUCF = 229.08 MtEq
Emission in 2000 of **Waste Sector** (Mt CO₂ eq, %)

<table>
<thead>
<tr>
<th>Sector</th>
<th>Emission (Mt CO₂ eq)</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agriculture</td>
<td>51.9</td>
<td>22.6%</td>
</tr>
<tr>
<td>LULUCF</td>
<td>-7.9</td>
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<td>69.6%</td>
</tr>
<tr>
<td>Waste</td>
<td>9.3</td>
<td>4.1%</td>
</tr>
<tr>
<td>6A Solid waste disposal on land</td>
<td>4.9</td>
<td>52.2%</td>
</tr>
<tr>
<td>6B Waste-water handling</td>
<td>4.4</td>
<td>47.5%</td>
</tr>
<tr>
<td>6C Waste incineration</td>
<td>0.02</td>
<td>0.2%</td>
</tr>
</tbody>
</table>

Total GHG Emission with LULUCF = 229.08 MtEq
National Emission in Time Series
2000 – 2004
Total GHG Emission (Mt CO2 eq)
with LULUCF / with F-gases

<table>
<thead>
<tr>
<th>Year</th>
<th>Energy</th>
<th>Industrial proc.</th>
<th>Agriculture</th>
<th>Total National Emissions and Removals</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000</td>
<td>229.1</td>
<td>25.0</td>
<td>25.0</td>
<td>279.1</td>
</tr>
<tr>
<td>2001</td>
<td>225.0</td>
<td>25.0</td>
<td>25.0</td>
<td>275.0</td>
</tr>
<tr>
<td>2002</td>
<td>238.8</td>
<td>25.0</td>
<td>25.0</td>
<td>288.8</td>
</tr>
<tr>
<td>2003</td>
<td>251.8</td>
<td>25.0</td>
<td>25.0</td>
<td>281.8</td>
</tr>
<tr>
<td>2004</td>
<td>265.9</td>
<td>25.0</td>
<td>25.0</td>
<td>295.9</td>
</tr>
<tr>
<td></td>
<td>389.2</td>
<td>25.0</td>
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</tr>
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Supply Electricity

Policies, measures, capacity building, Finance, Technology
BAU Projection
From 2010 to 2050 (MtCO$_2$e)

Source: การศึกษาแนวทางการพัฒนาเพื่อจัดทำข้อมูลและแบบจำลองสำหรับ Emission Inventory ของประเทศไทย, 2553 (TGO)
Policy context: Domestic mitigation objectives and role of market instrument(s)

National Economic & Social Development Plan (NESDP)

The 10th NESDP 2007-2011
- Support CDM as “Market Instrument”
- Promote RE, EE and pollution control

(Draft) The 11th NESDP 2012-2016
Currently under national consultations with proactive discussion on setting up:
- GHG mitigation target
- “Carbon Market” & more instruments
- National Registry & MRV system

MITIGATION OBJECTIVES: to achieve green growth, low carbon development and low carbon society

Key national policies support:
- Mitigation
- Market Instruments & CDM
- Carbon Trading & Carbon Market

Specific Plan: National Strategic Plan on Climate Change 2008-2012

STRATEGY 2: Promote GHG Mitigation Activities based on Sustainable Development
- GHG mitigation in all sectors
- CDM as “Market Instrument”
- Carbon Trading process & rules set up


- Set targets to increase alternative energy to 25% of final energy consumption in 2021.
- Set targets to reduce Energy Intensity 25% from base year 2010 in 2030.
191 CDM Projects Received LoA

- **PoA: Electricity and/or Thermal from Biomass**
  - 1 Project
  - CERs 181,964 tCO₂e/year
  - 1.64%

- **PoA: Electricity from Biomass**
  - 33 Projects
  - CERs 1,822,942 tCO₂e/year
  - 16.78%

- **PoA: Electricity from Biogas**
  - 57 Projects
  - CERs 2,900,387 tCO₂e/year
  - 26.13%

- **PoA: Electricity from Renewable Energy**
  - 1 Project
  - CERs 4,107 tCO₂e/year
  - 0.04%

- **PoA: Electricity and/or Thermal from methane recovery and combustion (anaerobic digester) or Treatment of sludge under clearly aerobic conditions**
  - 1 Project
  - CERs 8,272 tCO₂e/year
  - 0.07%

- **Electricity and Thermal from Biogas**
  - 29 Projects
  - CERs 2,200,478 tCO₂e/year
  - 19.82%

- **Electricity and Thermal from Biomas**
  - 1 Project
  - CERs 18,160 tCO₂e/year
  - 0.16%

- **Electricity and Thermal from Natural Gas**
  - 2 Projects
  - CERs 452,872 tCO₂e/year
  - 4.08%

- **Electricity and Thermal from Biogas**
  - 29 Projects
  - CERs 2,200,478 tCO₂e/year
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  - 19.82%
73 CDM Projects Registered at CDM EB

- **Electricity and Thermal from Biogas**: 13 Projects, CERs 839,327 tCO₂e/year, 22.76%
- **Thermal from Biogas**: 4 Projects, CERs 226,042 tCO₂e/year, 6.13%
- **Nitrous Oxide Reduction**: 1 Project, CERs 142,402 tCO₂e/year, 3.86%
- **Electricity from Biomass**: 36 Projects, CERs 1,605,163 tCO₂e/year, 43.52%
- **Electricity from Wind Power**: 1 Projects, CERs 55,834 tCO₂e/year, 1.51%
- **Electricity from Solar Energy**: 4 Projects, CERs 727,151 tCO₂e/year, 1.97%
- **Electricity from Waste Heat**: 3 Projects, CERs 102,029 tCO₂e/year, 2.77%
Future trend of climate change in international agreement
Institutional Framework for Flexible Market Mechanisms

1. Baseline
2. Emission/Monitoring Report
3. Validation/Verification Report
4. Apply
5. Verification Report
6. Issuance Credit

Inventory

GHG Emission Data

DNE

Designated National Entity

National Registry

Bilateral Mechanism

TVER

Trading Mechanism

Market Mechanism

MRV

CIE

Certified Independent Entity

Emission Reduction Data

GHG Emission Data

2. Emission/Monitoring Report

3. Validation/Verification Report

4. Apply

5. Verification Report

6. Issuance Credit
Institutional Framework

- National registry
  - National based
  - Economic-sector based
  - Sub-Sectoral-based
  - Area-based
- Regional Office
- Department level
- Ministry level
- Local government
- QA by Academics/Experts
- QC by DNE
- Verified by third party
- Designated National Entity
  - Ministry level
  - Department level
  - Regional Office
  - Local government
  - National registry
From Project based → Sector → National MRV

**LEVEL 3**
- 1. Energy
  - International Energy Agency (IEA): Economic sector
- 2. GHGs
  - IPCC Sector
  - A1A
  - A1B
  - A1C
  - ...

**LEVEL 2**
- Economic based
  - TSIC: 1972
  - ISIC: 2009

- Area based
  - Northern region
  - Central region
  - North-eastern region
  - Southern region

**LEVEL 1**
- Project Based Level
  - Renewable Energy
    - 1
    - 2
    - 3
  - Energy Efficiency
    - 1
    - 2
    - 3
  - Transport
    - 1
    - 2
    - 3
Establishment of national registry

CDM Registry

Pending Account of the CDM Registry

CERs

Permanent Holding Account
Company Z
(Non-Annex I)

Temporary Holding Account
Company C
(Annex I)

2%

SOP Adaptation

ITL (UNFCCC)

National Registry
UK
(Annex I)

Holding account
British Company B

National Registry
Country B
(Annex I)

National Registry
Country C
(Annex I)

National Registry
Country ...
(Annex I)

CITL (EU)
Crown Standard

- Crown Standard indicates high quality of Thai CDM Projects.
- Value added for Thai CERs.
- Criteria:
  - Total Score > 50%
  - Public participation (level of participation)
  - Public contribution (from CER income)
- The project will be annually monitored by TGO’s monitoring network.
- Collaboration with VCS and Gold Standard
Information

- National Registry
- **Monitoring System and Monitoring Network**
- GHG database
- Business Intelligence Tools
- New TGO website
- National Grid Emission Factor, Standardized Baseline, Benchmarking
- Mitigation Policy and Modeling
Promotion

- Carbon Market Forum
- Carbon Footprint and labeling
- Cool Mode
- Set up of Thailand Carbon Fund
- Energy Efficiency Standard and Labeling
- Tax incentive and other measures
- Pilot project on Low carbon city
- Pilot project on A/R CDM
Capacity Building and Outreach

- Climate Change International Training Center
- **Training for Thai DOE candidates**
- Training for other stakeholders
- Climate Thailand Conference
- Training material, media, news letter
Contact Detail

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