



Current status of Thailand in the Relationships between Inventory and Mitigation Measures

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- Thailand Case: mitigation measure and data reporting
 - Incentive Program for Renewable energy project
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History of GHG Inventory in Thailand

Initial National Communication (INC)

- The 1st NI estimated the emission of 1994 as a part of Thailand's Initial National Communication (INC) under the UNCFE
- Using the 1996 IPCC Revised Guidelines
- Prepared by Office of Environmental Policy and Planning (OEPP), Ministry of Science and Technology

Second National Communication (SNC)

- The 2nd NI estimated the emission of 2000 – 2004 as a part of the Second National Communication (SNC)
- Followed guidelines below;
 - Revised 1996 [IPCC](#) Guidelines for National Greenhouse Gas Inventories
 - 2000 [IPCC](#) Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories
 - 2003 Good Practice Guidance for Land Use, Land-Use Change and Forestry
- Prepared by Office of Natural Resources and Environmental Policy and Planning (ONEP), Ministry of Natural Resources and Environment

The 3rd National GHG Inventory



Current Preparation

Priority

- Setting up national system

Key points

- Data completeness
- Reporting data in more disaggregate level
- Country specific EF/data

Limitation

1. Using Tier 1 method cannot reflex the mitigation outcome
2. Current published national data are not cover all of mitigation action
3. Reporting data in upper aggregate level cannot serve the mitigation planning

Reporting data in upper aggregate level

Using bulk
import/bulk export
data

Cannot share to
sub-categories
or sub-
application level

2F Product Uses as Substitutes for Ozone Depleting Substances

2F1 Refrigeration
and Air Conditioning

2F1a Refrigeration and
Stationary Air Conditioning

2F1b Mobile Air Conditioning

2F2 Foam Blowing Agents

2F3 Fire Protection

2F4 Aerosols

2F5 Solvents

2F6 Other Applications (please specify)

THAILAND CASE: MITIGATION MEASURE AND DATA REPORTING

Incentive Program

Electricity Purchasing from Renewable Energy



Adder Program

- To promote the development of RE projects
- Adder from base price for RE-electricity

Fuel	Adder (THB/kWh)	Supportive Period (yrs)
Biomass	0.30	7
Biogas	0.30	7
Waste-to-Energy		
Land Filled	2.50	7
Thermal Process	3.50	10
Wind	3.50	10
Solar	8.00	10

Outcome

Reduce electricity generation from conventional fuel



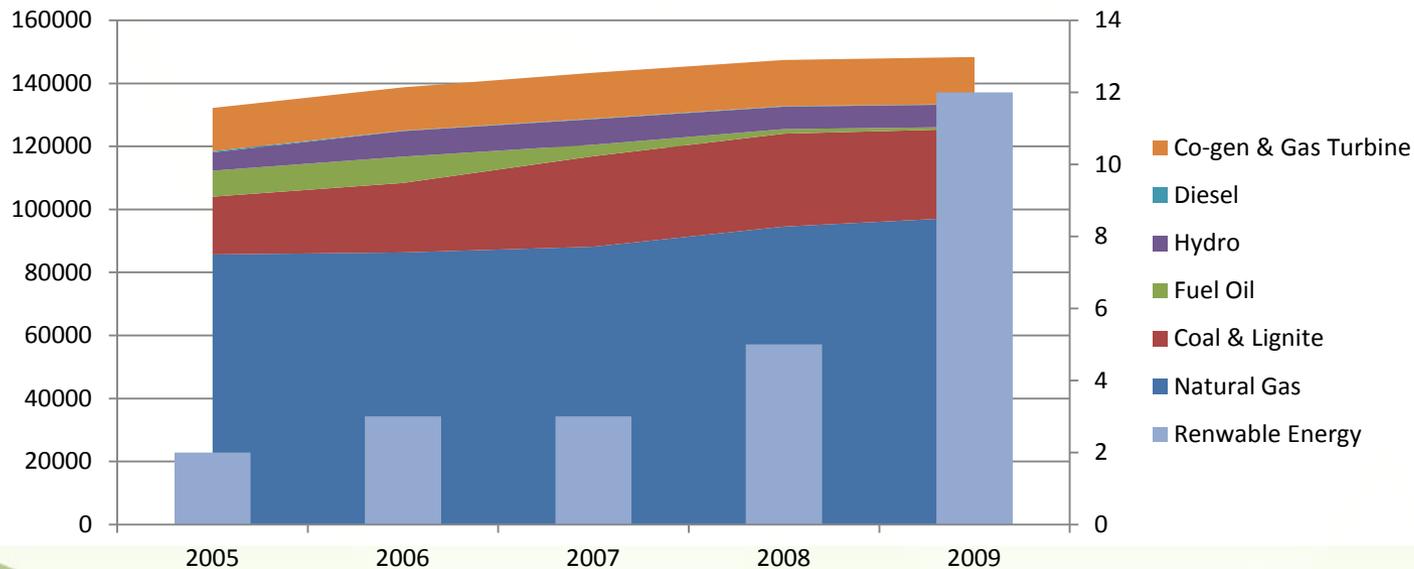
Reduce GHG emission from fossil fuel combustion

Incentive program can help data acquiring process

Electricity Statistic

Mitigation Outcome

Fuel / Year	2005	2006	2007	2008	2009	
Natural Gas	85703	86339	88166	94549	97575	GWh
Coal & Lignite	18334	22051	28716	29480	28020	GWh
Fuel Oil	8244	8350	3646	1454	604	GWh
Hydro	5798	8125	8114	7113	7148	GWh
Diesel	414	143	174	180	79	GWh
Co-gen & Gas Turbine	13700	13731	14559	14646	14932	GWh
Renewable Energy	2	3	3	5	12	GWh
Total	132195	138742	143378	147427	148370	GWh



Case study: Methane recovery from solid waste disposal (1)



IPCC Methodology

- The default value for CH₄ recovery (R) is zero. -> Eq3.1
- CH₄ recovery should be reported only **when references documenting the amount of CH₄ recovery are available.**
- Reporting based on metering of all gas **recovered for energy and flaring**, or reporting of gas recovery based on the **monitoring of produced amount of electricity from the gas**

How can we get the data of CH₄ recovery?

EQUATION 3.1
CH₄ EMISSION FROM SWDS

$$CH_4 \text{ Emissions} = \left[\sum_x CH_4 \text{ generated}_{x,T} - R_T \right] \cdot (1 - OX_T)$$

Where:

CH ₄ Emissions	=	CH ₄ emitted in year T, Gg
T	=	inventory year
x	=	waste category or type/material
R _T	=	recovered CH ₄ in year T, Gg
OX _T	=	oxidation factor in year T, (fraction)

The CH₄ recovered must be subtracted from the amount CH₄ generated. Only the fraction of CH₄ that is not recovered will be subject to oxidation in the SWDS cover layer.

Case study: Methane recovery from solid waste disposal (2)



Monitoring Report of CDM Projects

- TGO has mandatory to monitor the CDM project. (in term of sustainable development criteria, not the amount of emission reduction)
- The project proponent usually submit monitoring report for carbon credit issuance.

Information

- Mass balance of the waste which sent to SWD site
- Methane recovery data
- Disposal technology

Use in Inventory preparation

TGO Monitoring System for CDM Project



The screenshot displays the TGO Monitoring System interface for the Bangkok Kamphaeng Saen East Landfill Gas to Electricity Project. The main content area shows the project title and a 'SUBMIT' button. Below this, there is a section for 'หมวดหมู่' (Category) with a dropdown menu set to 'โครงการใหม่ (2)'. A sidebar on the left contains navigation options like 'Prev', '1.1', '1.2', '1.3', and '1.4'. The bottom part of the interface features a map of the landfill site with several key components labeled in Thai: 'ระบบเก็บก๊าซจากหลุมฝังกลบ' (Landfill Gas Collection System), 'เครื่องกำเนิดไฟฟ้า' (Generator), 'ถังบำบัดน้ำเสีย' (Pre-treatment), 'ปล่องเผือก๊าซ' (Flare Stack), and 'บ่อบำบัดน้ำเสีย' (Wastewater Treatment Pond). The map is viewed through a Google Earth window titled 'MNTIMG_0660867.jpg (1364x658) - Google Chrome'. The browser's address bar shows the URL 'monitor.tgo.or.th/monitor/resources/mntProjectRes/P_80/images/MNTIMG_0660867.jpg'. The browser's taskbar at the bottom shows several open files, including 'TS3-1V.xls', 'TS1-4Y.xls', and 'TS1-1Y.xls'.

Improvement of the Data Reporting System



- DEDE
 - Plan on energy usage survey in industries
 - Improve energy reporting form and database system
- EPPO
 - Start report GHG emission in power sector
 - Plan on report GHG in E&P (oil and gas)
- DMF
 - Setup GHG reporting system in E&P processes

Improvement of data reporting will assist Min. of Energy to report on GHG mitigation.

Mitigation Measure and GHG Inventory



Key factor for data gathering

- The efficiency of data reporting system
- If mitigation measure link to an incentive program, it'll be enhance mechanism for data reporting.
- GHG Inventory can be improved and reflex the outcome of mitigation measure base on the succession of reporting system.

Thailand Status

- Our reporting system still not cover all of mitigation measures
- There are difficulty to do the data reconciliation from different data sources
- To distinctive the mitigation outcome in GHG inventory will be our next step of the GHG inventory improvement



Thank you for your kind attention

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