

Session 3C: Dr. Paweena Panichayapichet

Presentation entitled: Overview of Greenhouse Gas Reduction in Thailand

Biographic Data of Speaker



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Education:

- 1993 B.Sc. (Industrial Chemistry), Faculty of Science,
King Mongkut's Institute of Technology Ladkrabang
- 1998 M.Sc. (Technology on Information System Management),
Faculty of Environment and Resource Studies, Mahidol University
Thesis on: *Qualitative Information Representation by Using Predicate Logic.*
- 2008 Ph.D. (Environmental Technology), The Joint Graduate School of Energy
and Environment, King Mongkut 's University of Technology Thonburi
Thesis on: *Contamination, Fate and Transport of Lead in Khli Ti Watershed*

Work Experience:


- 1993 Chemist (Research and development), Nippon Paint (Thailand) Co. Ltd.
- 1999 - 2001 Librarian (Information Specialist), The Joint Graduate School of Energy
and Environment, King Mongkut's University of Technology Thonburi
- 2001 - 2002 Assistant coordinator of the Program on Public Welfare (air quality project),
Thailand Research Fund (focus on multidisciplinary research in the
areas of natural resources and on solving environmental, energy,
social welfare, and health problems)
- 2003 Research assistant of the research project: Surveys and Risk Assessment of
Pb Contamination in the Upper Maeklong basin area, The Joint
Graduate School of Energy and Environment, King Mongkut's
University of Technology Thonburi.
- 2004 – 2007 Lab supervisor with report grading of the Environmental Technology
Laboratory, Sirindhorn International Institute of Technology,
Thammasat University.

2007 – 2008	Lab supervisor, Energy Department, The Joint Graduate School of Energy and Environment, King Mongkut’s University of Technology Thonburi
2008 – present	Assistant Senior Official, Thailand Greenhouse Gas Management Organization (Public Organization)

List of publications:

1. Panichayapichet, P., Nitisoravut, S., Simachaya W. and Wangkiat (2008). Source Identification and Speciation of Metals in the Topsoil of the Khli Ti Watershed, Thailand. [Water, Air, & Soil Pollution](#), 194: 259-273.
2. Panichayapichet, P., Nitisoravut, S. and Simachaya W. (2007). Spatial distribution and transport of heavy metals in soil, ponded-surface water and grass in a Pb-contaminated watershed as related to land-use practices, *Environmental Monitoring and Assessment*, 135 (1-3): 181-193.
3. Panichayapichet, P., Nitisoravut, S. and Simachaya, W. (2006), Impacts of nonpoint source Pb loading and sediment resuspension on Pb concentrations in water of Khli Ti creek, Thailand. Paper presented at the *International Conference on Environment 2006 (ICENV 2006)*, November 13-15, Penang, Malaysia.
4. Panichayapichet, P., Nitisoravut, S. and Wangkiat, A. (2006), Evaluation of ability of rock check dam to prevent the transportation of Pb-contaminated sediment in Khli Ti Creek, Thailand. *Chinese Journal of Geochemistry*, Vol. 25 (suppl.), 119-120. (abstract) Presented in the 7th International Symposium on Environmental Geochemistry, September 24-27, Beijing, China.
5. Lekphet, S., Panichayapichet, P., Chuersuwana, N., Simachaya, W. and Suwanchoojit, A., Decision Support Model from Integrated Water Resources Management: A Case Study from the Tha Chin River, Thailand, *2nd Asia Pacific Association of Hydrology and Water Resources Conference*, 5-8 July 2004, Singapore.
6. Panichayapichet, P. and Adsavakulchai, S., The Appropriate Approach for Lead Contamination Monitoring at Khli Ti Basin, *The 2nd Regional Conference on Energy towards a Clean Environment (RCETCE)*, 12-14 February 2003 in Phuket, Thailand.
7. Panichayapichet, P. (2001), Development of Qualitative Information Collection and Analysis Technique by Using Artificial Intelligence Technique, *Journal of Ecosystem Perspectives*, 28 (1): 24-34. (In Thai)

OVERVIEW OF GREENHOUSE GASS REDUCTION IN THAILAND




Overview of Greenhouse Gas Reduction in Thailand

4th ATRANS Symposium
Imperial Queen’s Park Hotel

Dr. Paweena Panichayapichet August 26, 2011




Presentation outline



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- 1 National plan & framework : GHG mitigation
- 2 Existing & proposed market instrument
- 3 GHG emission & proposed mitigation measures



World Mitigation trend

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□ Long term goal

- Increase in global temperature should be below 2 °C

□ Mitigation target/actions by 2020

- Developed countries; mitigation target
- Developing countries; mitigation actions
- GHG emission shall be reported through national communication every 2 years with international consultation

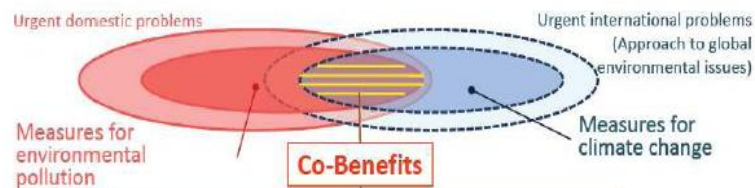


Benefit of GHG mitigation

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- Direct : national communication
- Co-benefit
 - environment
 - social
 - economic
 - energy security
 - technology development
 - institutional development



Air pollution:	Water pollution:	Waste management:
<ul style="list-style-type: none"> • Improvement in combustion efficiency at factories and power plants • Realisation of Environmentally Sustainable Transport Systems (ETS) 	<ul style="list-style-type: none"> • Use of the methane recovered from wastewater discharged from factories and business offices 	<ul style="list-style-type: none"> • Use of urban waste as compost • Conversion of landfill structures to aerobic or semi-aerobic systems

Source: Japan MOE's presentation in COP15



Legal framework on GHG Mitigation

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❑ The Energy Conservation Promotion Act (no.2) 2007

focused on promoting energy conservation and energy efficiency, mainly in industrial and building sectors.

- ❑ Energy management for designated buildings and factories under ECP Act
- ❑ Building energy codes for new constructed buildings
- ❑ Standard and labeling for equipments & material



Institutional framework on GHG Mitigation

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- ❑ Office of the Prime Minister's Regulation on Climate Change 2008 established the “**National Committee on Climate Change**”, chaired by the Prime Minister, to consider national agenda and issues in tackling climate change.
- ❑ The Royal Decree on Establishment of **Thailand Greenhouse Gas Management Organization (TGO)** 2008 established TGO that has been performing its role as the Thai DNA-CDM.



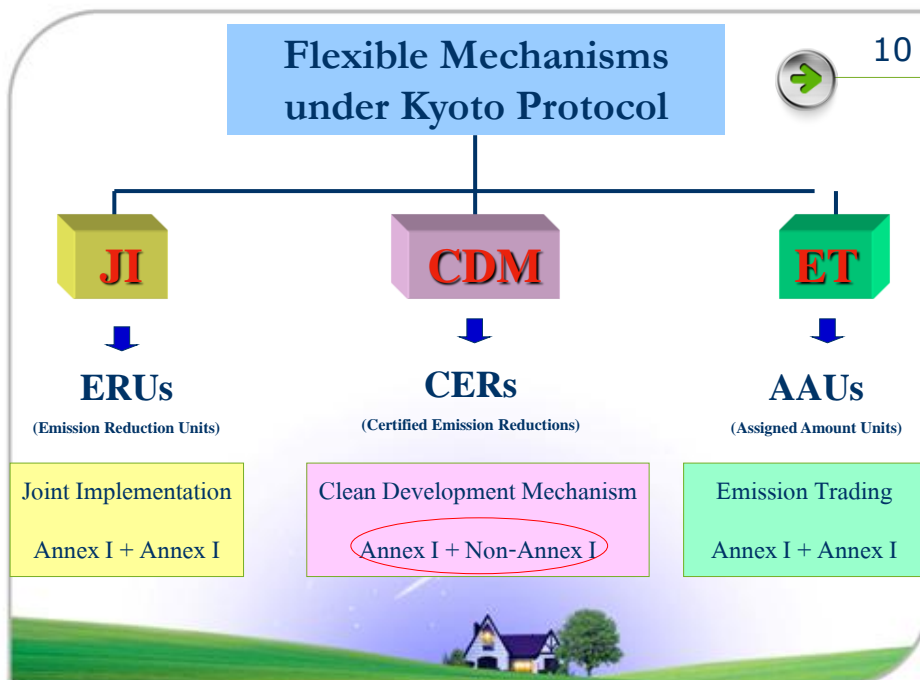
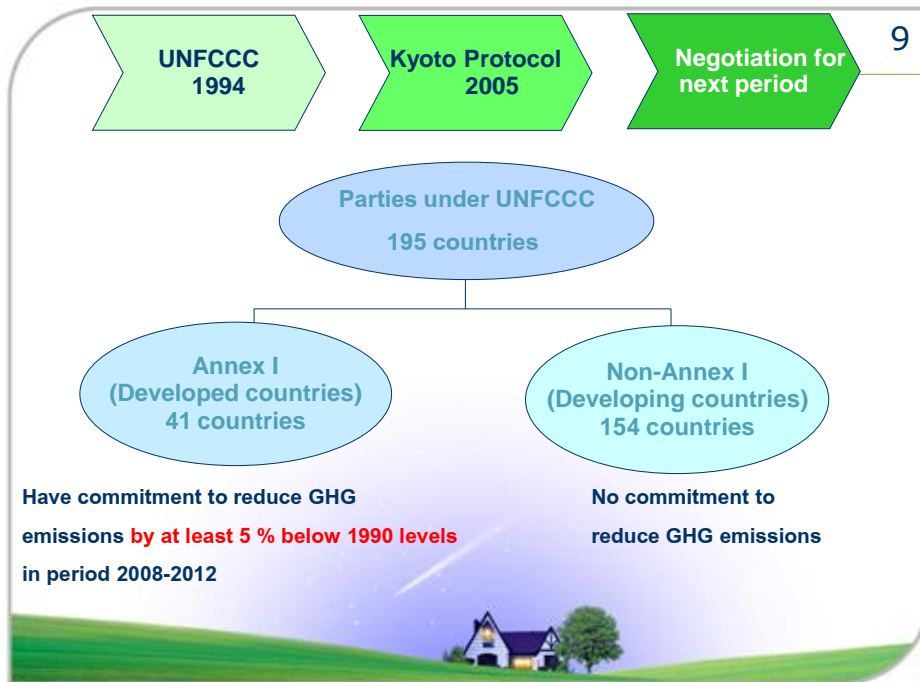
Thailand Greenhouse Gas Management Organization (TGO)

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TGO is an autonomous implementing agency with its duties to:

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





CDM : Clean Development Mechanism 11

- ❑ Annex I countries invest in projects that can reduce GHGs emissions in Non-Annex I countries
- ❑ The resulting certified emission reductions (CERs) are counted toward Annex-I country’s own target

Source: Kyoto Mechanisms Information Platform
www.kyomecha.org/

Registered CDM projects by scope 12

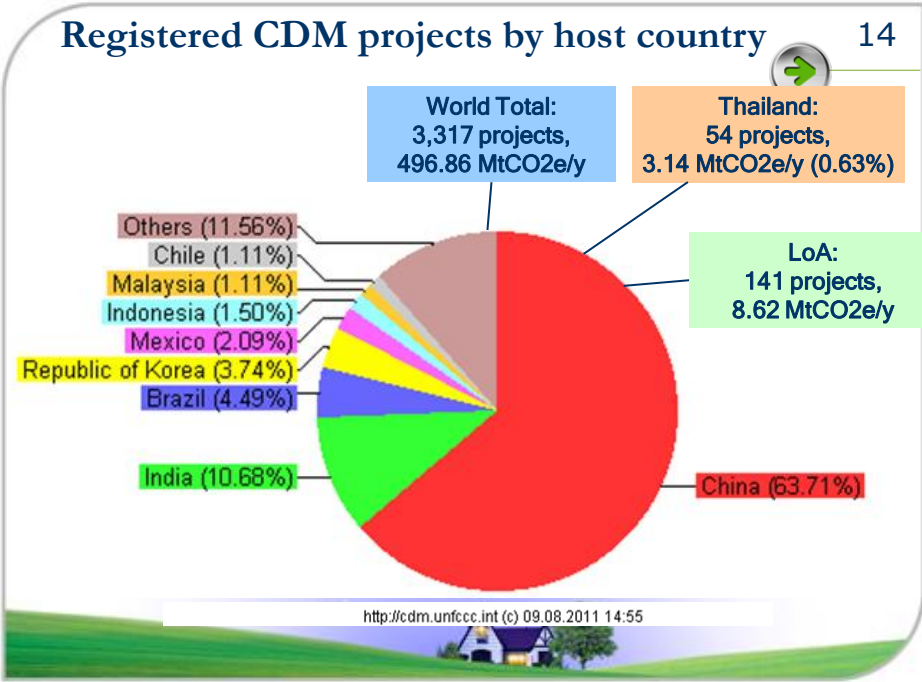
http://cdm.unfccc.int (c) 09.08.2011 14:55

Sectoral Scope	Registered Projects
1	2,633
2	0
3	42
4	191
5	71
6	0
7	6
8	47
9	9
10	164
11	29
12	0
13	564
14	28
15	143
Total	3,927

CDM : Clean Development Mechanism 13

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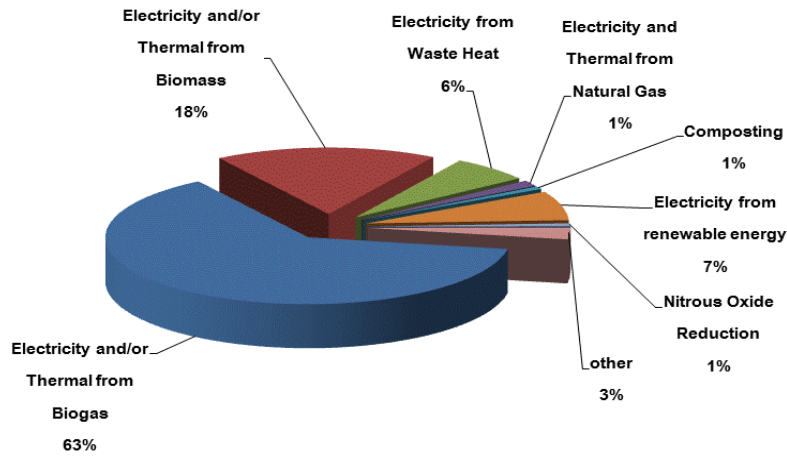
Source: Kyoto Mechanisms Information Platform
www.kyomecha.org/



LoA issuance by TGO

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141 CDM Projects Received LoA

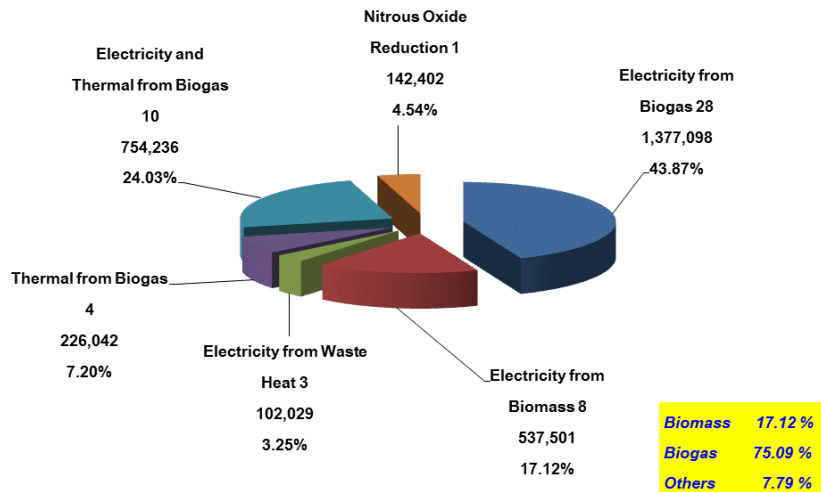


Expected Certified Emission Reduction 8.62 MtCO₂e/year

Registered at CDM EB

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54 CDM Projects Registered at CDM EB

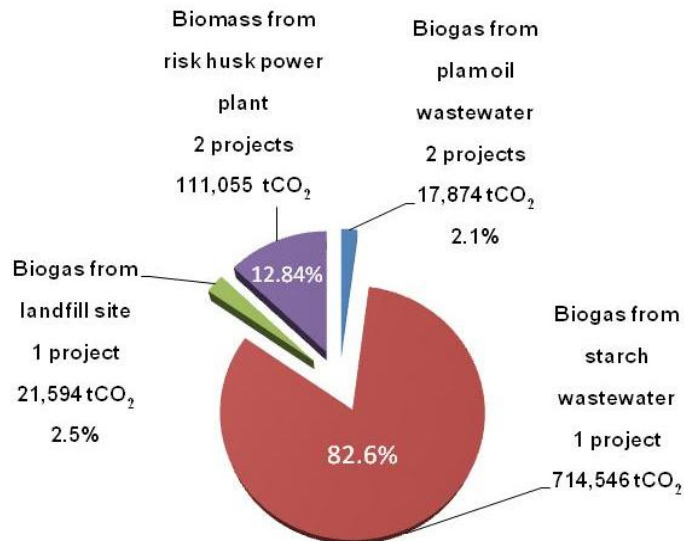


Expected Certified Emission Reduction 3.14 MtCO₂e/year

Biomass	17.12 %
Biogas	75.09 %
Others	7.79 %

Issuance of CER for CDM projects in Thailand

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GHG Mitigation by proposed market instrument: Thailand Voluntary Emission Reduction : TVER

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- ❑ Development of Domestic Methodologies following
 - CDM methodologies,
 - KVER's methodologies
- ❑ Development of Domestic MRV (Measuring, Reporting and Verifying)
 - CDM MRV
 - KVER's MRV
 - ISO 14064-65
- ❑ Development of Registration and Transaction Log System at TGO



**GHG Mitigation by proposed market instrument:
Thailand Voluntary Emission Reduction : TVER**

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TVER Methodologies

- **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

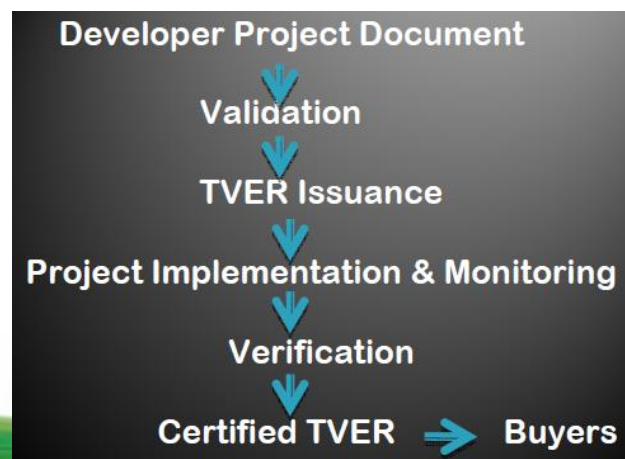


**GHG Mitigation by proposed market instrument:
Thailand Voluntary Emission Reduction : TVER**

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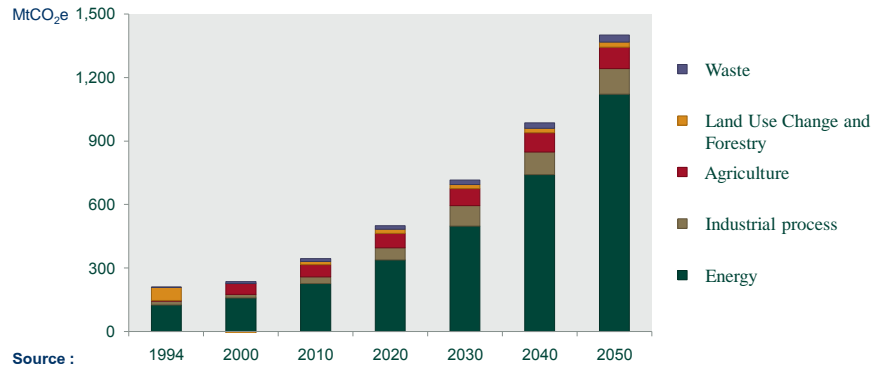
TVER development process



Overview of Thailand’s GHG emissions

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Past and Future trends of Emission in Thailand during 1994 - 2050



Source :

- 1 Office of Environmental Policy and Planning, Ministry of Science Technology and Environment, 2000, Thailand's Initial National Communication under the United Nations Framework Convention on Climate Change, Bangkok, Thailand.
- 2 Office of Natural Resources and Environmental Policy and Planning, 2010, Ministry of Natural Resources and Environment, The Second National Communication (SNC) of Thailand, Bangkok, Thailand.
- 3 Thailand Greenhouse Gas Management Organization (Public Organization), 2010, Thailand Directive on Development of Emission Inventory Data and Model, Bangkok, Thailand.

Proposed mitigation measures and GHG emission

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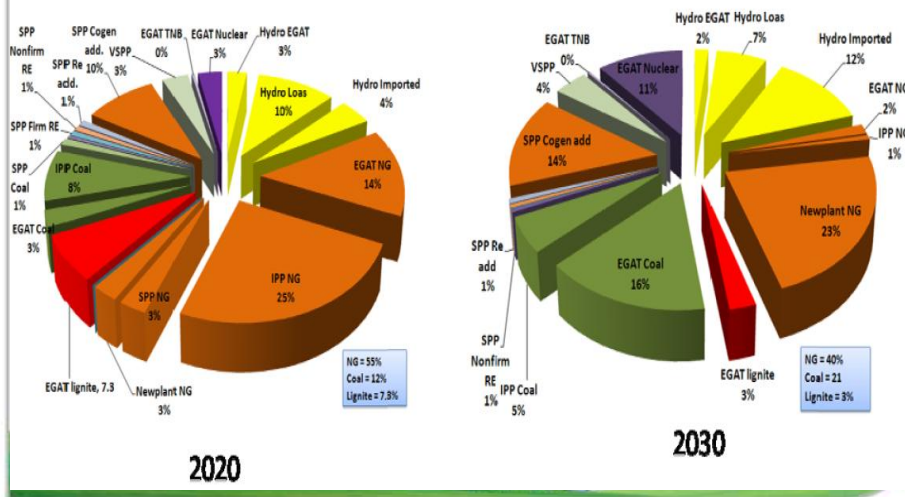
Research study conducted in 2010 simulated GHG emission in year 2009-2050 under 3 scenarios including

- ❑ Business as usual : key data
 - GDP growth data in year 2010 (4.1%)
 - Share of fuel using for electricity generation in year 2008 (Natural gas 71% coal 20%)
- ❑ Power Development Plan (PDP) 2010 : key data
 - Share of fuel using for electricity generation
 - 2010-2030 follows PDP 2010
 - After 2030 (Natural gas 40% coal 21%)
- ❑ Climate Plan : mitigation measures for each sector



Power Development Plan (PDP) 2010 : Share of electricity Generation

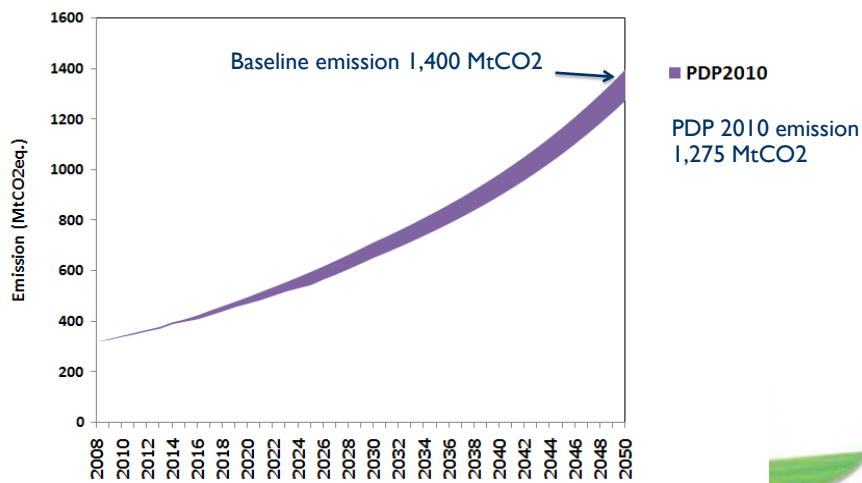
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Contribution of Emission Reduction : Power Development Plan (PDP) 2010 Scenario

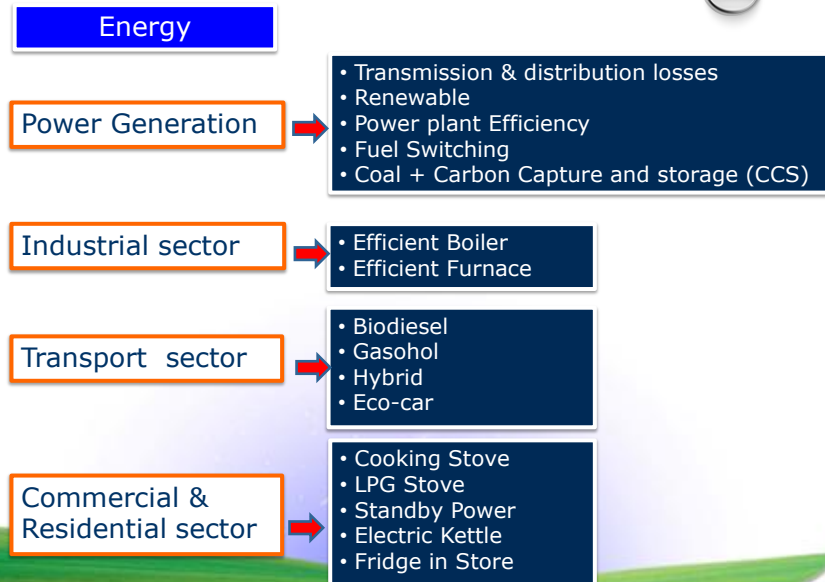
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Contribution of Emission Reduction of PDP Scenario 2009-2050



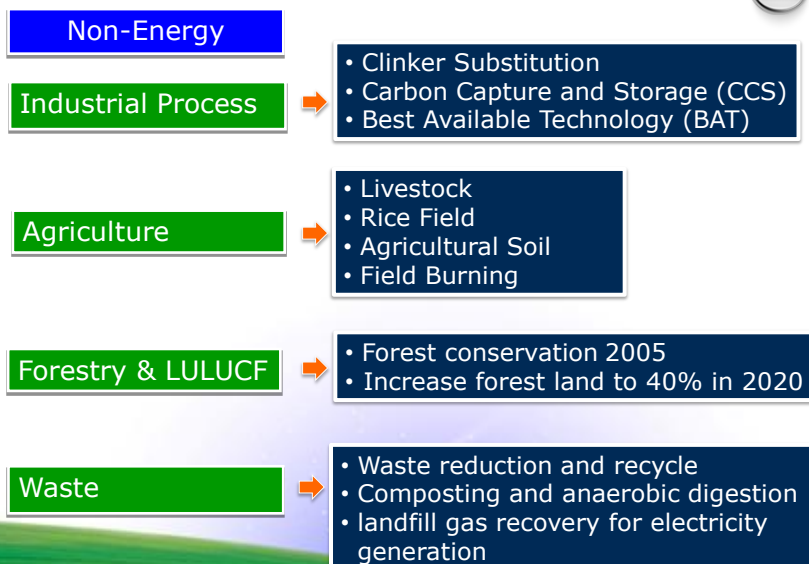
Climate Plan Scenario: mitigation option

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Climate Plan Scenario: mitigation option

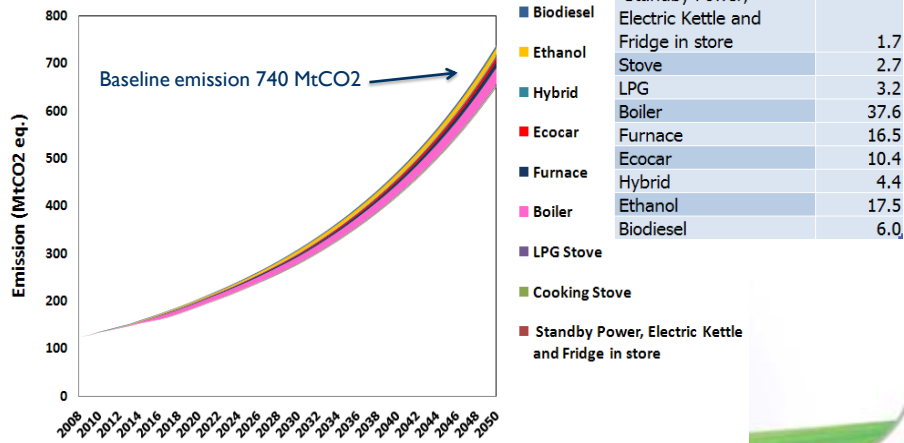
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Climate Plan Scenario: Energy sector

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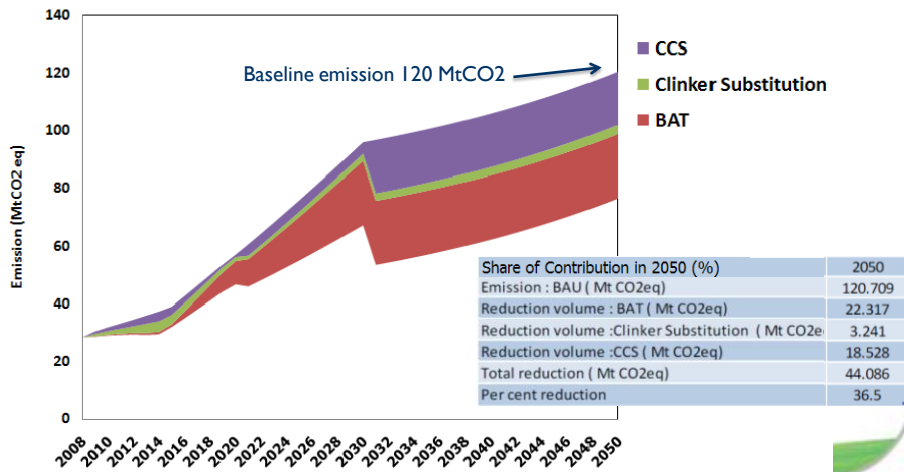
Contribution of Emission Reduction
for Energy Sector 2009-2050



Climate Plan Scenario: Industrial Process Sector

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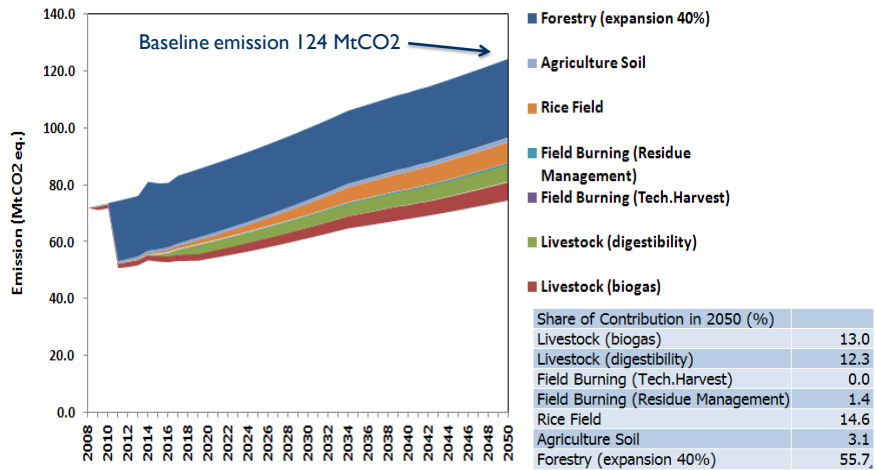
Contribution of Emission Reduction
for Industrial Process Sector 2009-2050



Climate Plan Scenario: Agriculture & Forestry Sector

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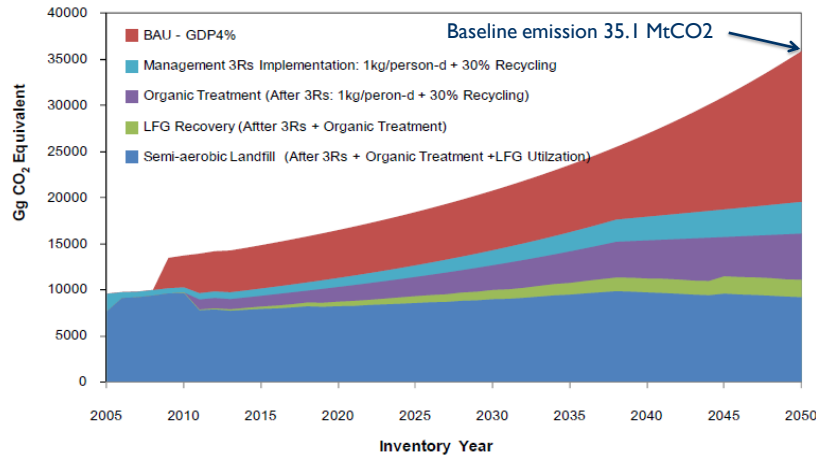
Contribution of Emission Reduction
for Agriculture and Forestry Sector 2009-2050



Climate Plan Scenario: Waste Management Sector

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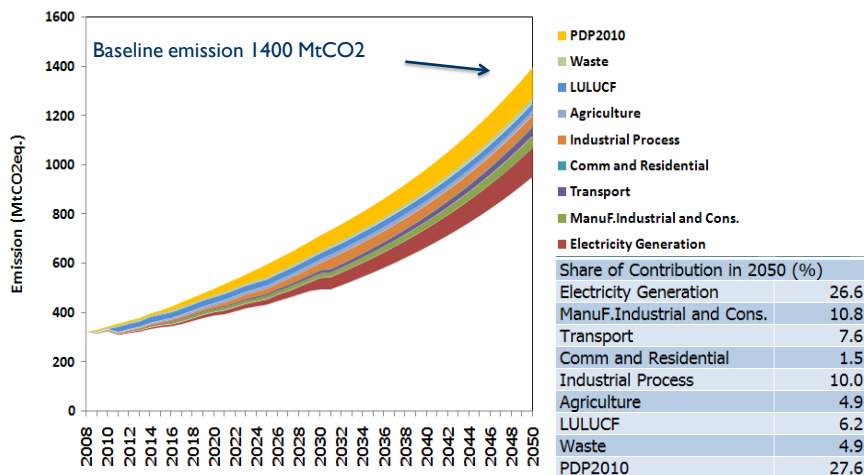
Environmental Results: Global Warming Potential
Combined Mitigation: Management (3Rs) with Technology
(Semi-aerobic Landfill + Organic Treatment + LFG Recovery)



Contribution of Emission Reduction: BAU, PDP 2010 and Climate Plan Scenario

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Contribution of Emission Reduction of BAU, PDP and Climate Plan Scenario 2009-2050



Thank you

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