Thailand NAMA Roadmap
INDC and Peak CO_2 Scenarios in 2050

NIES

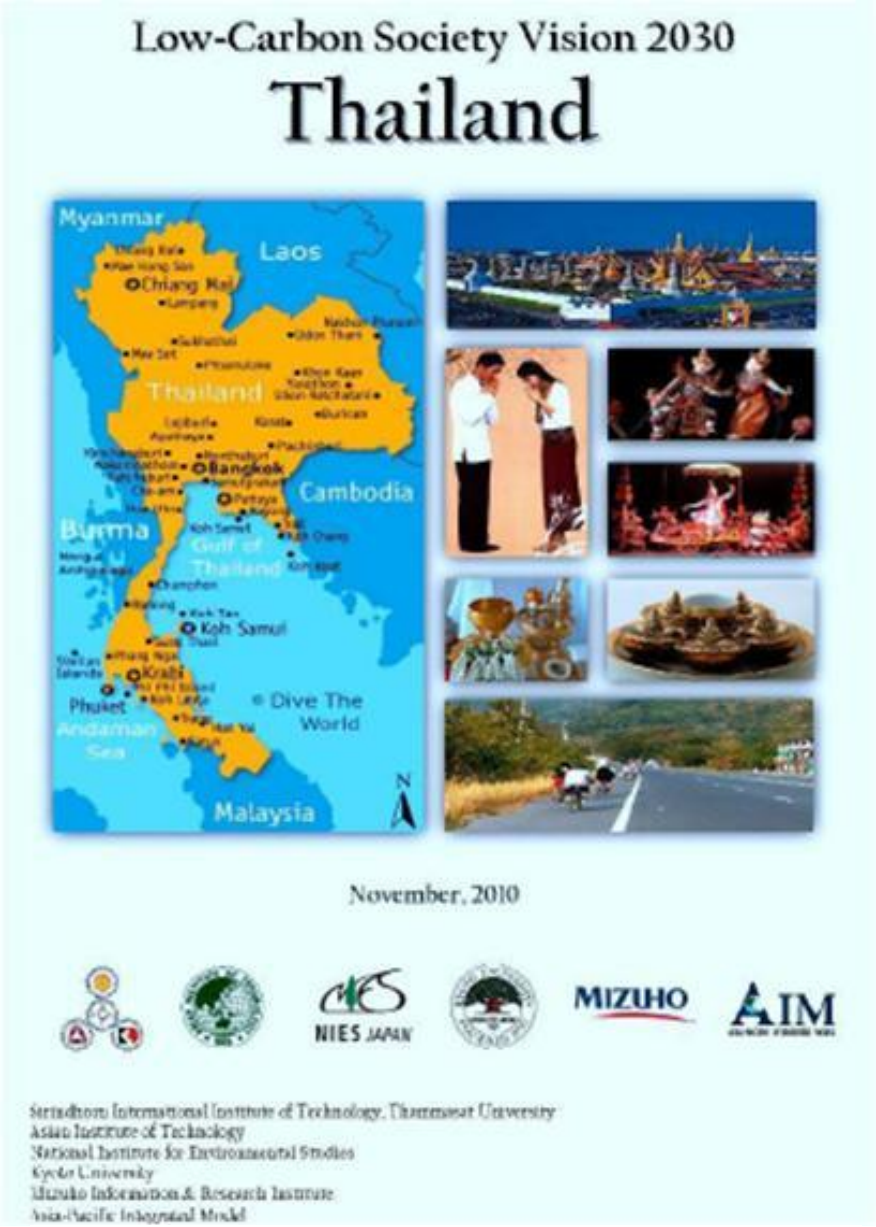
January 23, 2015

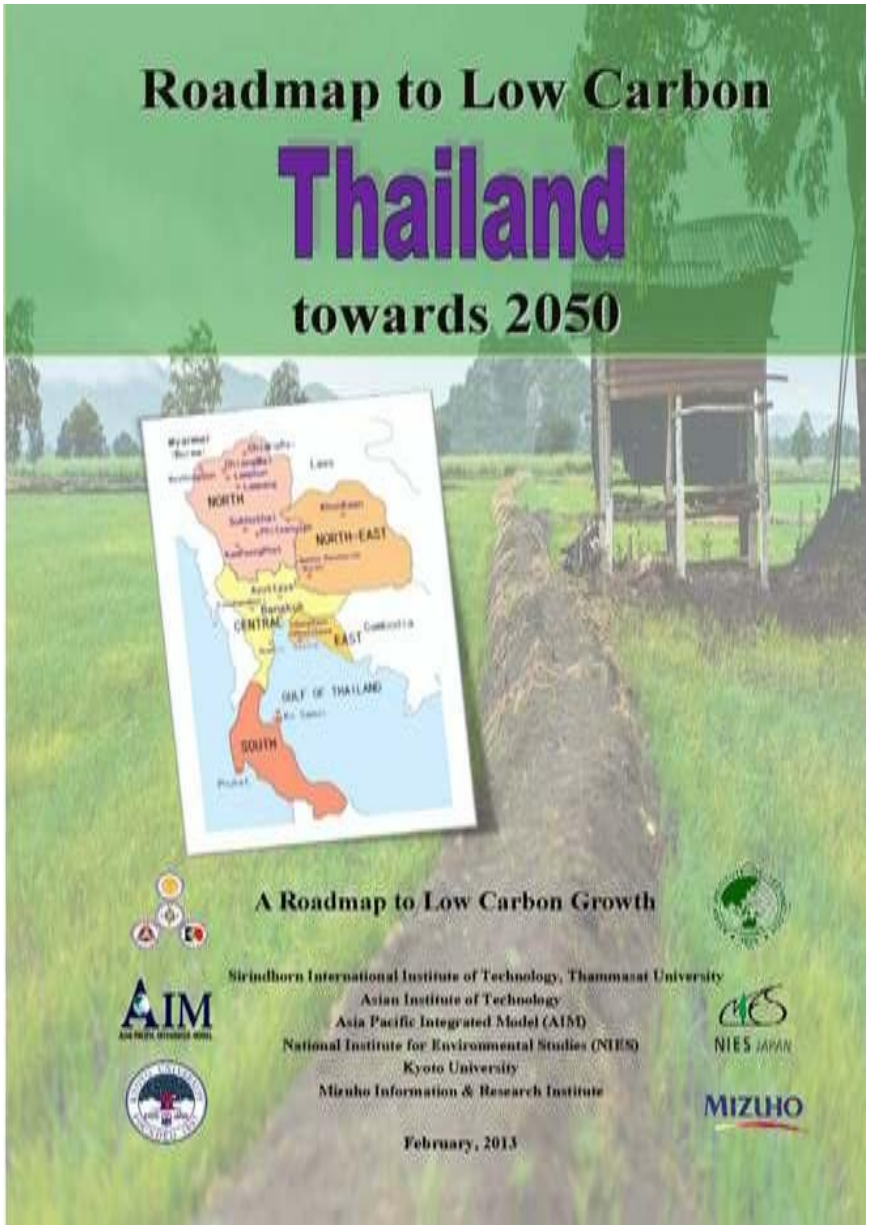
Bundit Limmeechokchai

Sujeetha Selvakkumaran & Chontichaprin Nithitsuttibuta

Sirindhorn International Institute of Technology

Thammasat University





1st LCS Scenario by AIM/ExSS, 2010

2nd LCS Roadmap by AIM/Enduse, 2013

Role of IAM
Thailand NAMA domestic discussion

I. Review, Analyze mitigation potentials Thailand's NAMA contributions

- Review of UNFCCC and Thailand CDM and Pre2020 Mitigation
- Status/Readiness of Thailand for NAMA contributions
- Countermeasures/Priority areas of NAMA Contributions

II. AIM/Enduse and Multi-benefit analyses

- AIM Modeling Energy → Result From Model (Energy Consumption, CO_2 Emission, Abatement Costs) → GHG Mitigation Potential
- Pre2020 Assessment (Cost Effectiveness, Co-benefit, Energy Security)

→ Policy measures for NAMA agreement

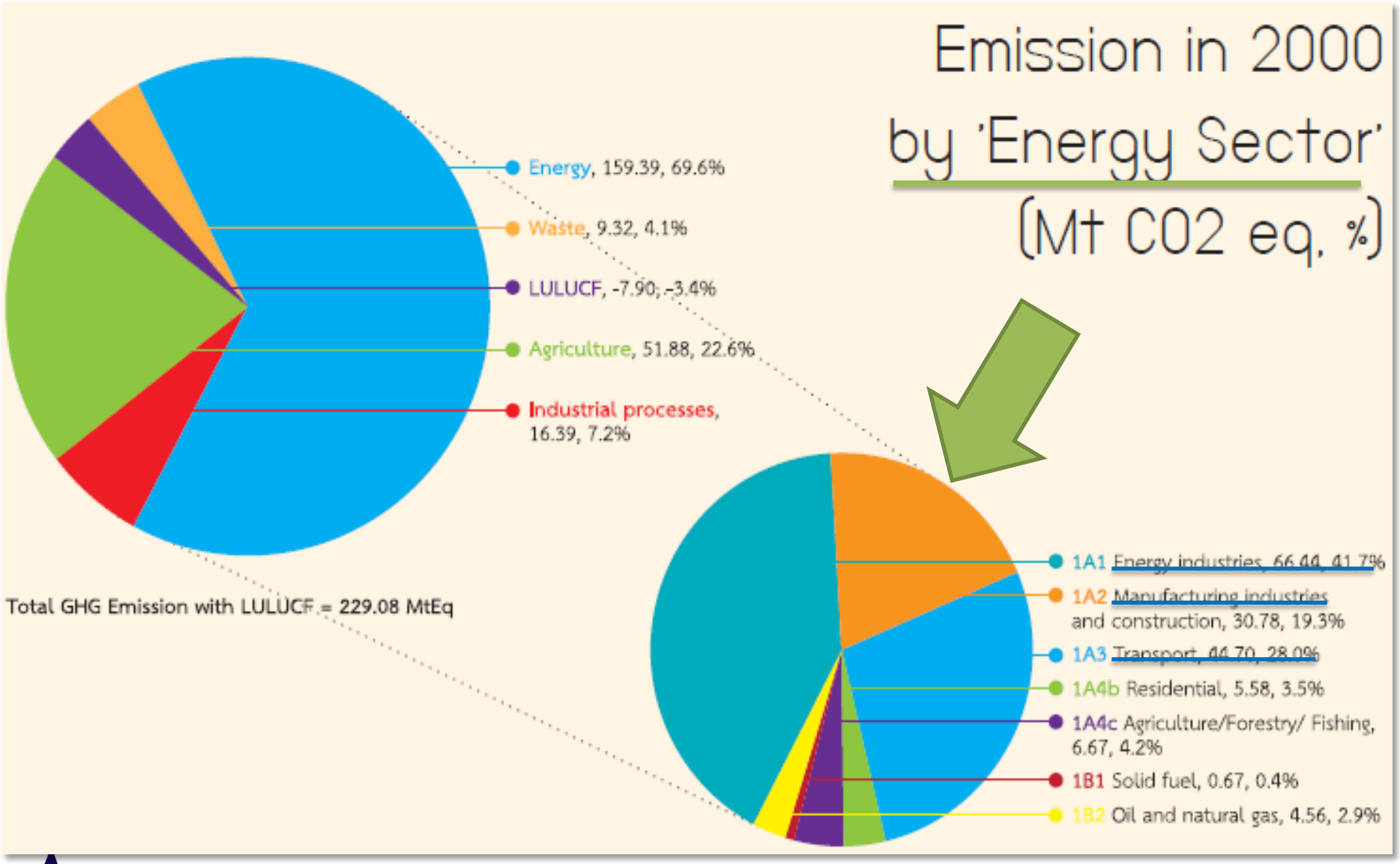
III. Consultation and NAMA preparation

- Stakeholders Involvement
- Thailand's NAMA Readiness and Contributions

NCCC & Gov't Decision

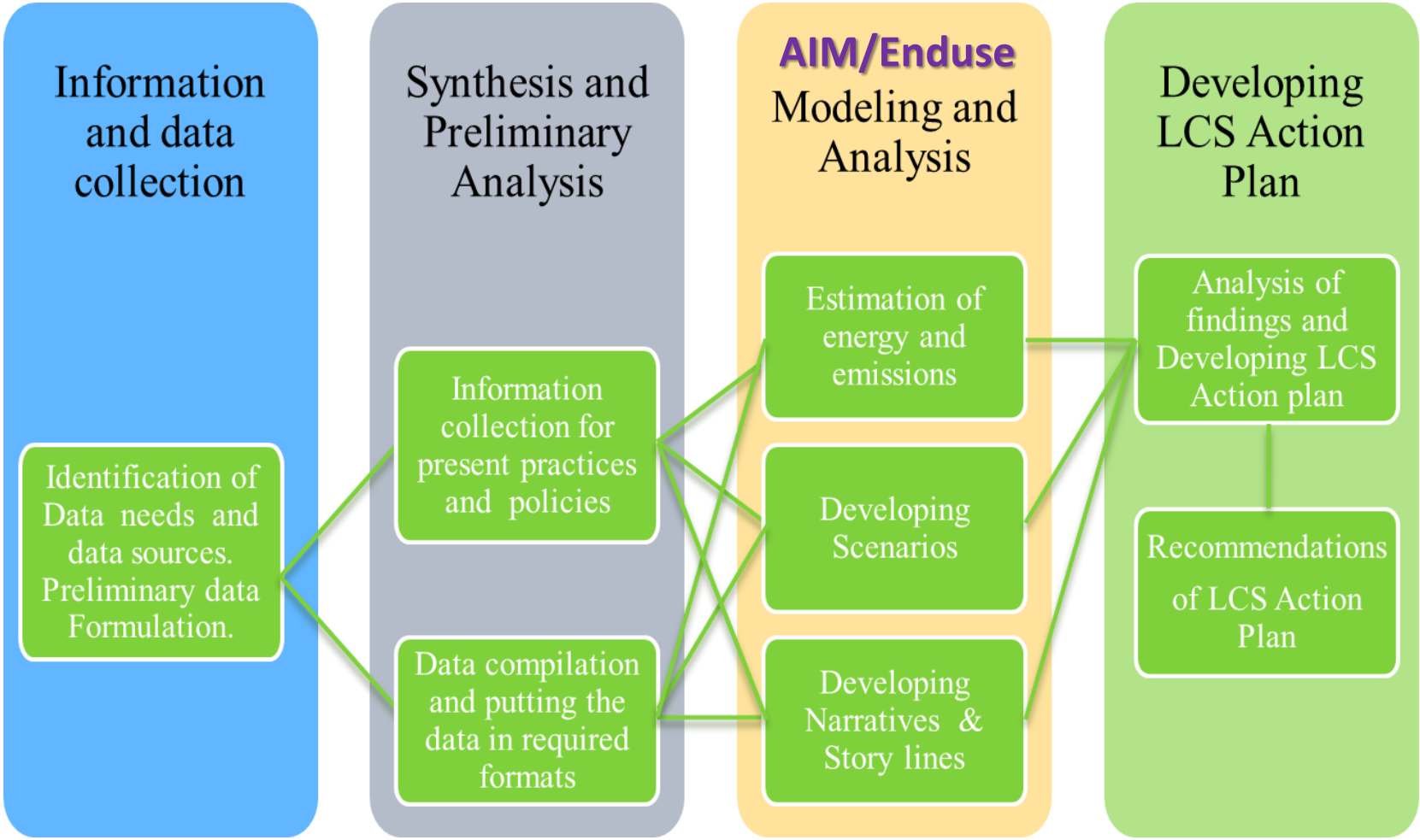
AIM ASIA-PACIFIC INTEGRATED MODEL

Thailand CO_2 emissions by sectors in 2000



Source: Thailand's Second National Communication, (ONEP, 2011)

Methodology (NAMA Roadmap)



National Circumstance 2005-2050

Population & GDP

	2005	2010	2020	2030	2050
Population (thousand person)	**62,418[1]**	**63,878**	**67,064**	**70,549[2]**	**70,062[3]**
GDP (million USD)[4]	**169,870**	**258,376**	**392,159**	**578,149**	**985,001**
Industry	60,094	94,750	143,810	212,016	361,215
Transportation	14,328	22,981	34,882	51,425	87,614
Commercial	76,297	113,569	172,372	254,122	432,950
Residential	198	258	391	576	980
Agriculture	13,785	18,430	27,973	41,240	70,264
Electricity	5,168	8,389	12,731	18,769	31,978

Remark: [1] The historical data retrieved from Office of the National Economic and Social Development Board (NESDB), Thailand with an annual average annual growth rate of 0.46% during 2005-2010.

[2] The population forecasted with an annual average growth rate of 0.5% during 2010-2030.

[3] World Population Prospects: The 2012 revision, United Nation. An annual average growth rate is -0.04% during 2030-2050.

[4] National Income of Thailand 2012, chain volume measure. Office of the National Economic and Social Development Board (NESDB), Thailand.

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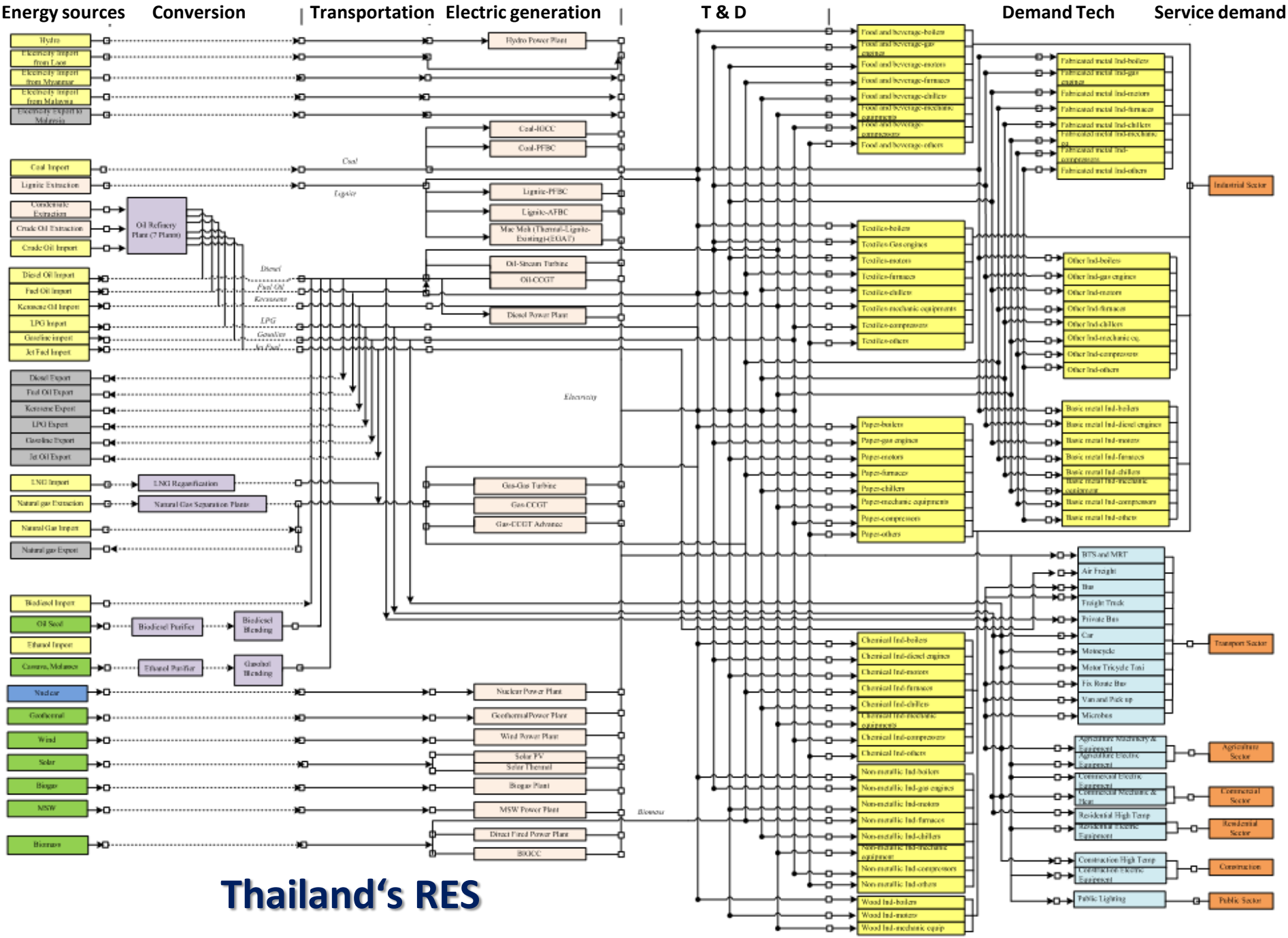

Thailand's RES

Thailand's Low Emission Policy:
The Ambitious Target

1. **Renewable Electricity (AEDP, +25%RE in 2021)**

2. **Energy Efficiency (EEDP, -25%EI in 2030)**

3. **Environmental Sustainable Transport System**

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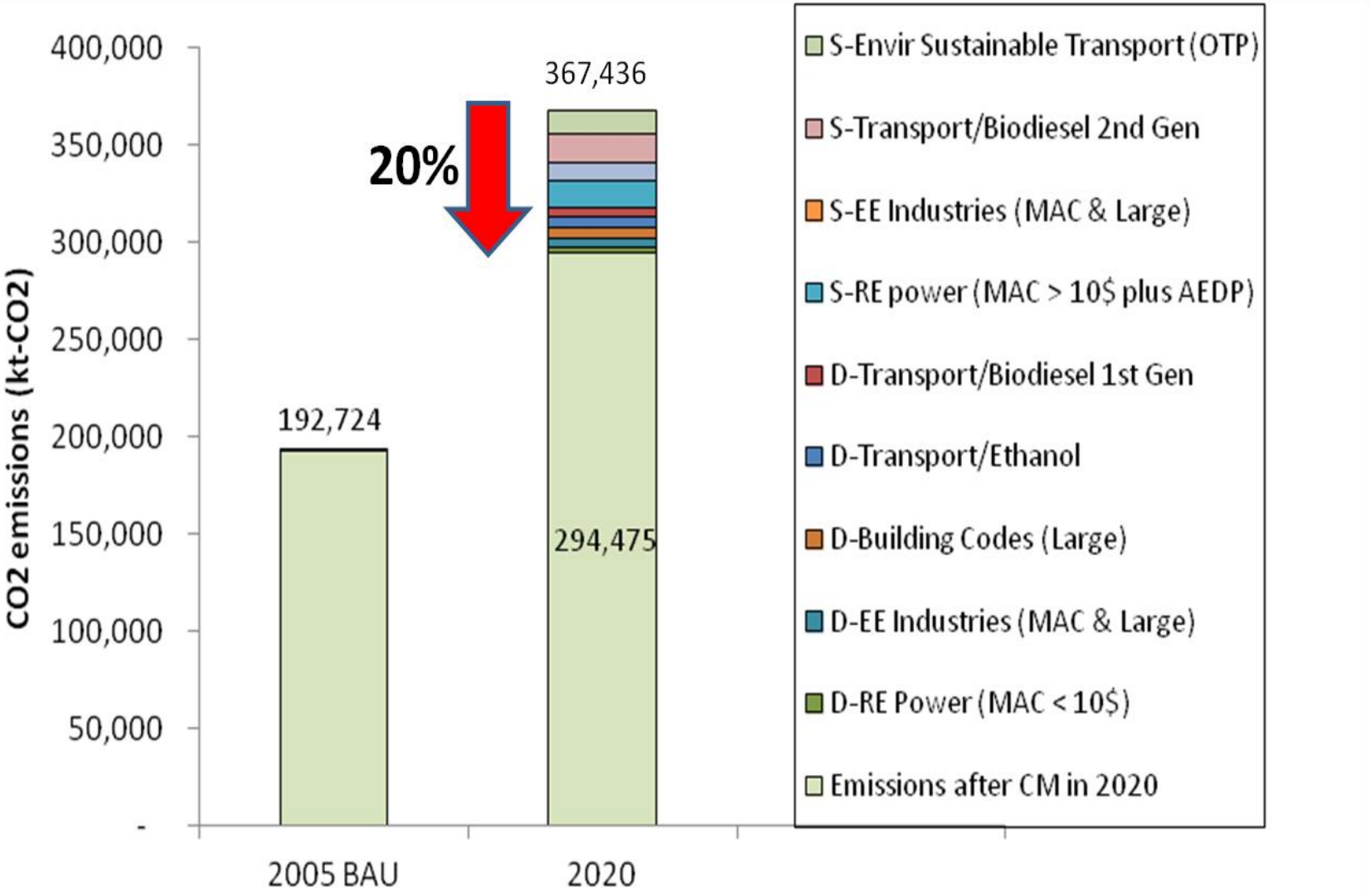
Potential of CO_2 Mitigation in Thailand NAMA 2020



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Workshop on THAILAND's NAMAs

Power, Industries & Wastes to energy (30 Jan 2012)

Mr Sirithan, TGO Director

Dr Chaiwat, TGO Deputy Director

Prof Ram M Shrestha, Dr Bundit Lim

Steak-holders, and Senate member

Thailand's Mitigation Pledge approved by NCCC (Dec, 2014)

Based on consensus building among stakeholders

In accordance with the provisions of Article 12 paragraph 1 (b), Article 12 paragraph 4 and Article 10 paragraph 2 (a), I have the honor to communicate to you the information on Thailand's Nationally Appropriate Mitigation Actions (NAMAs), for information to the UNFCCC Parties, as follows:

Thailand will, on a voluntary basis, ***reduce its GHG emissions in the range of 7%-20% below the business as usual (BAU) in 2020****, with subject to the level of international supports provided in the form of technology, finance, and capacity building for NAMAs preparation and implementation.*

The above-mentioned NAMAs will include counter-measures, as following:

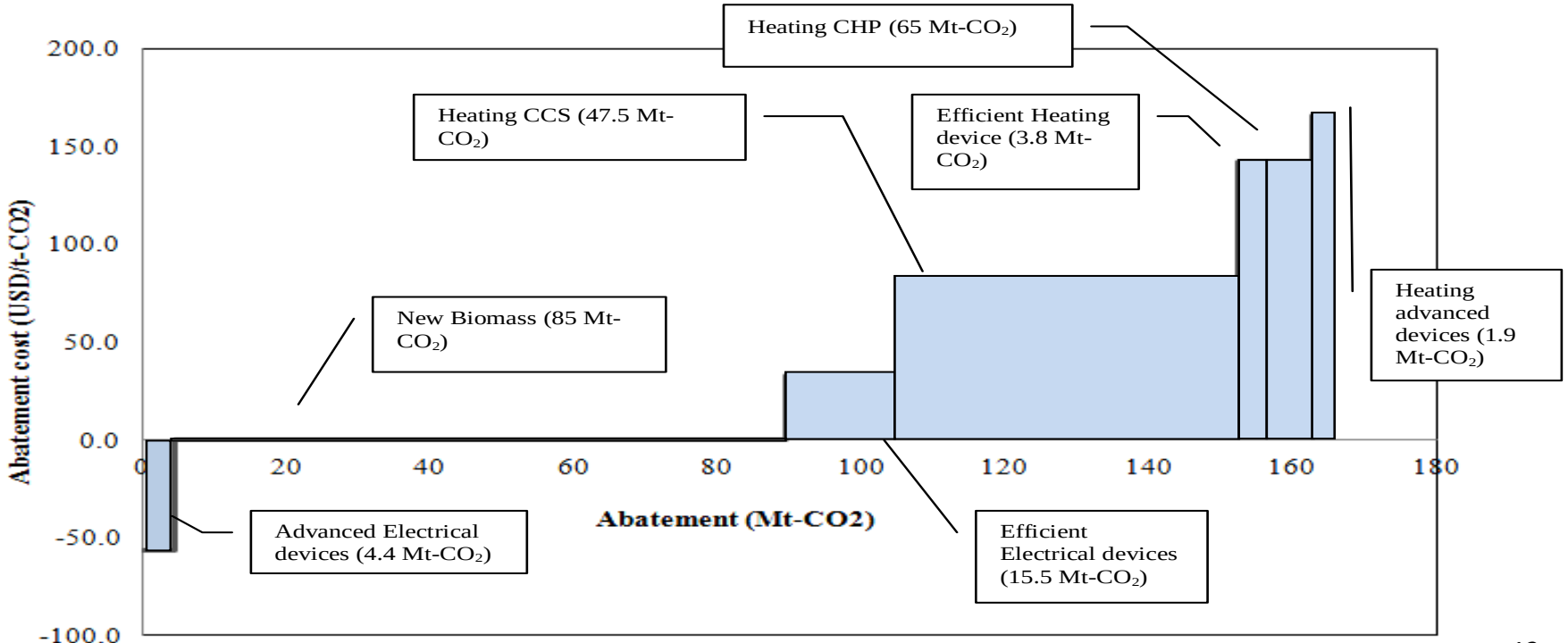
- ***Renewable energy***
- ***Energy efficiency improvement in industries, buildings and transportation;***
- ***Bio-fuels in transportation***
- ***Environmentally sustainable transport system.***

Please note that the communicated information on NAMAs as announced will not have a legally binding character, and will be implemented in accordance with the principles and provisions of the UNFCCC, in particular Article 4 paragraph 7, and taking into account the national circumstances.

AIM ASIA-PACIFIC INTEGRATED MODEL

Successful Application of IAM to Thailand NAMAs

- **Abatement costs** of actions are also identified across the sectors.
- **Co-benefits** of NAMAs are also assessed, and they reveal positive aspects of GHG mitigation under NAMA framework (TGO, 2012)
- The **MRV** process of these NAMAs needs cooperation among related ministries.



ASIA-PACIFIC INTEGRATED MODEL

Roadmap to Thailand NAMAs 2020 (8 Oct 2014)

AIM
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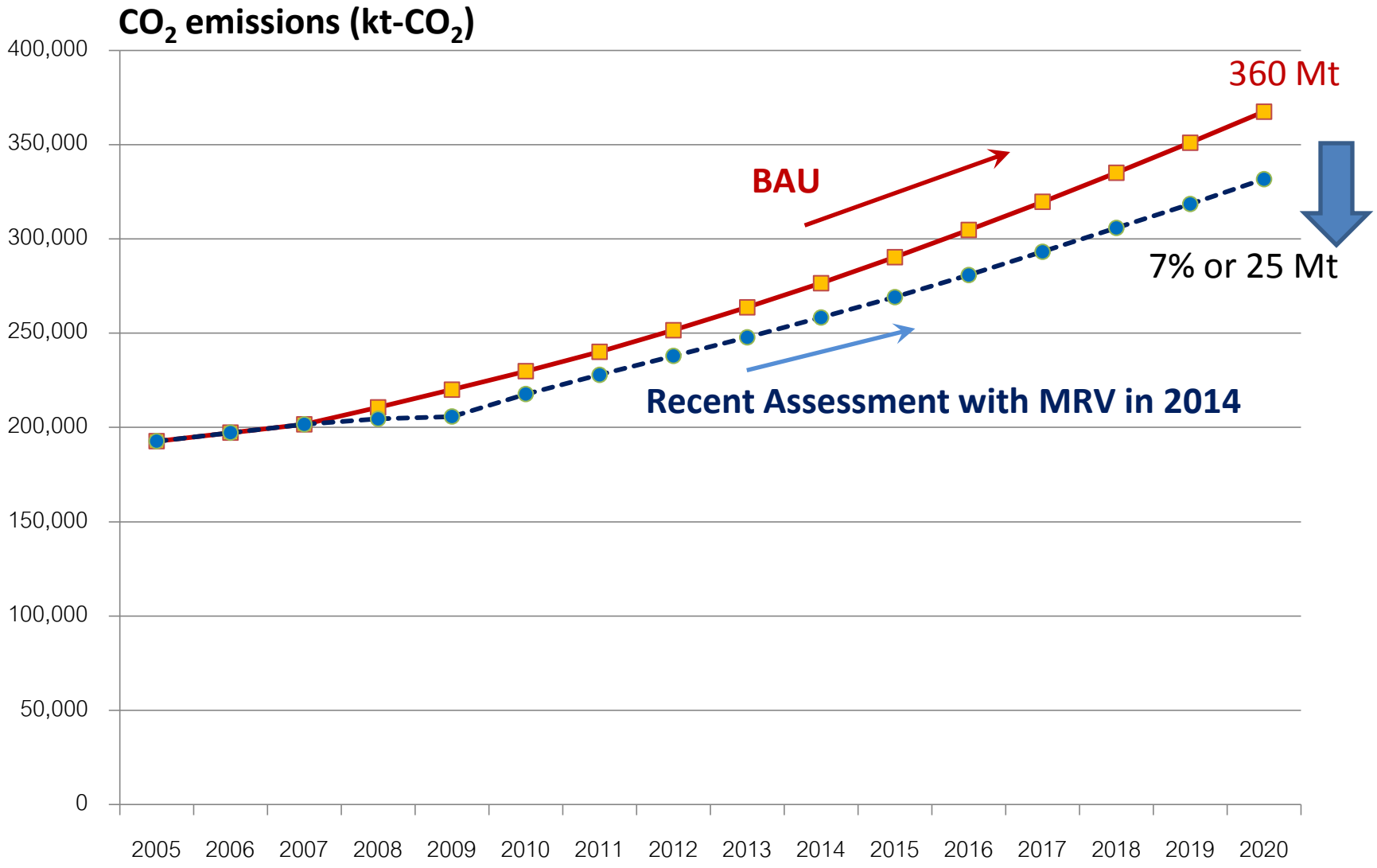
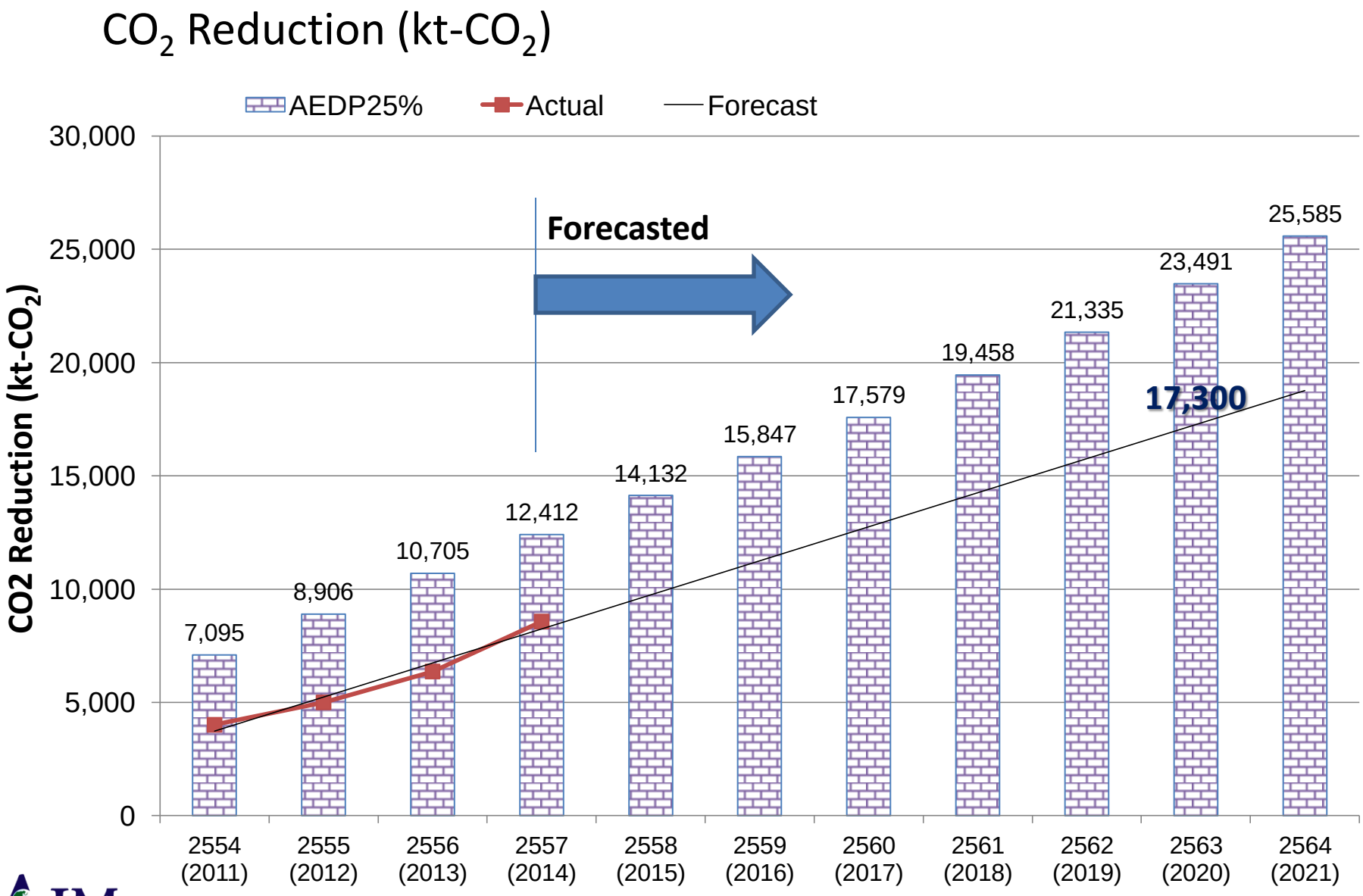
CO_2 Emissions in the BAU and Thailand NAMA7% in 2020



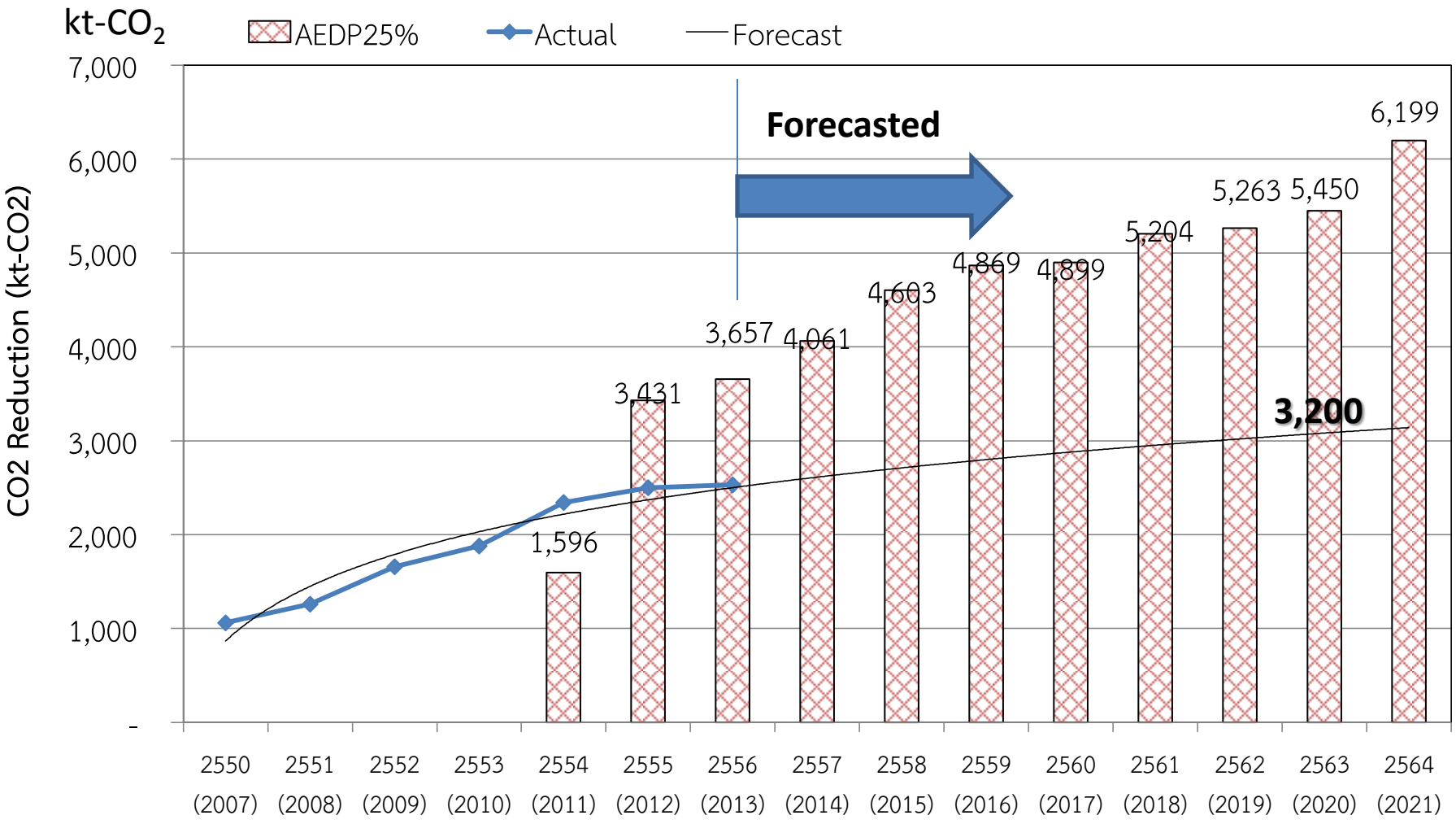
Source: ONEP (2014)

Estimated CO_2 Reduction by RE Electricity in RE Plan



Source: ONEP (2014)

Estimated CO_2 Reduction by Bio-oil in RE Plan



Source: ONEP (2014)

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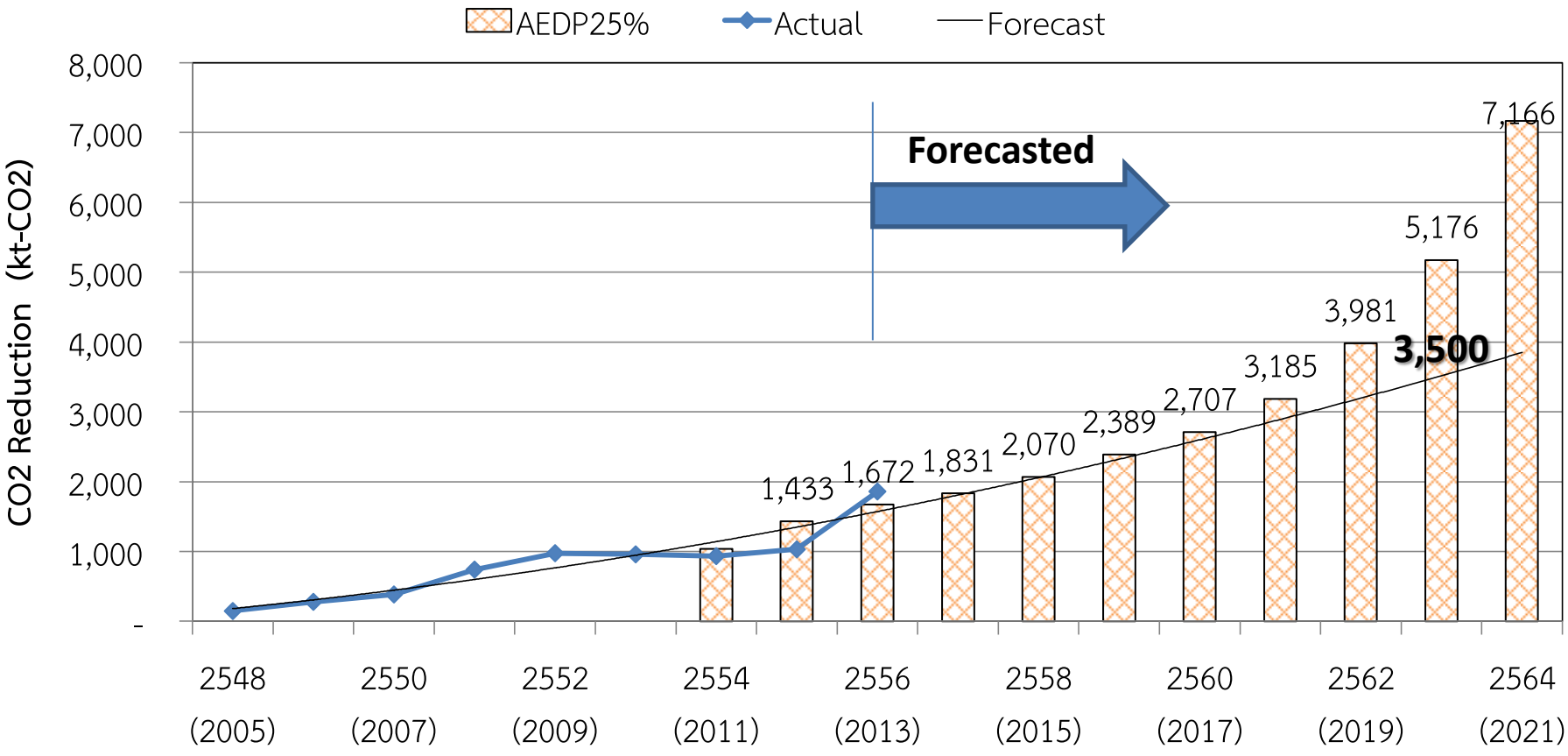
Estimated CO_2 Reduction by Ethanol in RE Plan



Source: ONEP (2014)

AIM ASIA-PACIFIC INTEGRATED MODEL

Roadmap to Thailand NAMAs 2020

PLAN	Action	Potential of CO_2 Reduction ($kt\text{-}CO_2$)	NAMAs Roadmap 2020	
			7%	20%
Plan 1	Renewable electricity	17,266	✓	✓
	Ethanol in Gasohol	3,517	✓	✓
	Bio-oil in Biodiesel	3,194	✓	✓
	Repowering (EGAT)	960	✓	✓
Plan 2	Industry	26,006		○
	Buildings	14,474		○
	Household	8,800		○
	Transport	7,529		○
	Power Sector	35,716		○
Plan 3	Transportation (Rail system)	12,000		✓
Total Estimated CO_2 Reduction ($Mt\text{-}CO_2$)			→ 25	→ 75

Source: ONEP (2014)

✓ = CO_2 countermeasures with high quality MRV (confirmed)

○ = Proposed CO_2 countermeasures in the Lists by ONEP

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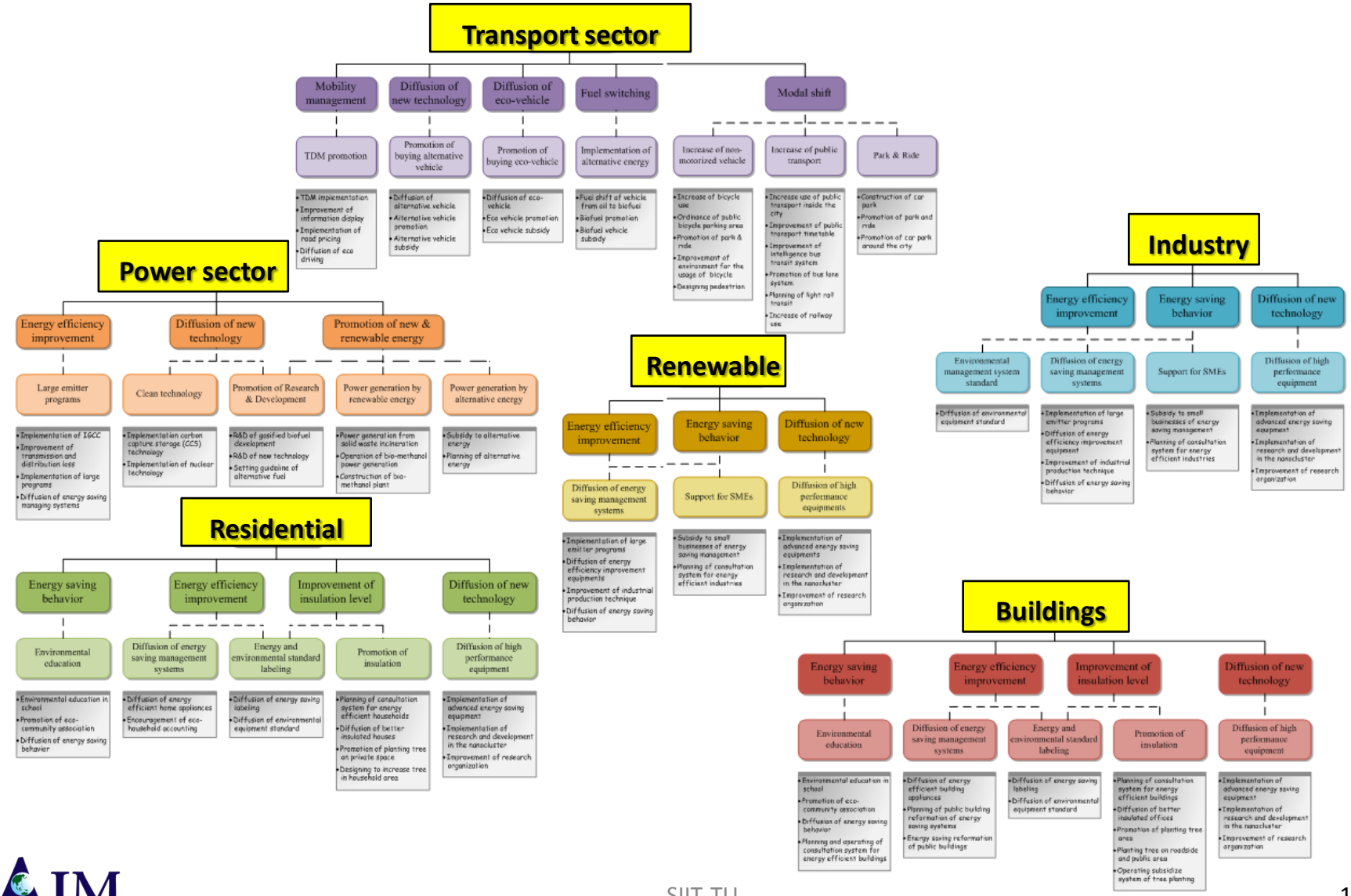
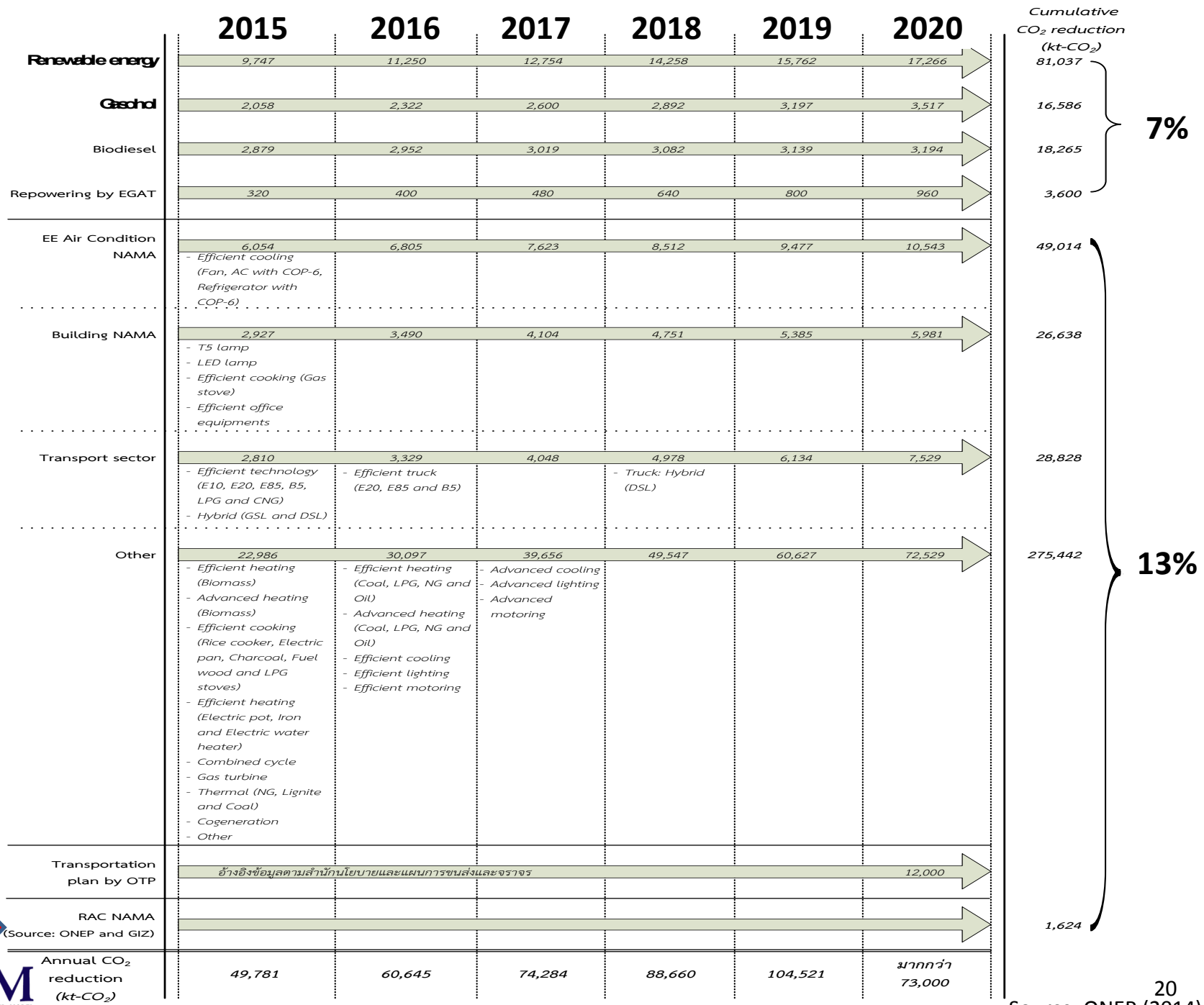
Robust Roadmap to Thailand NAMAs 2020



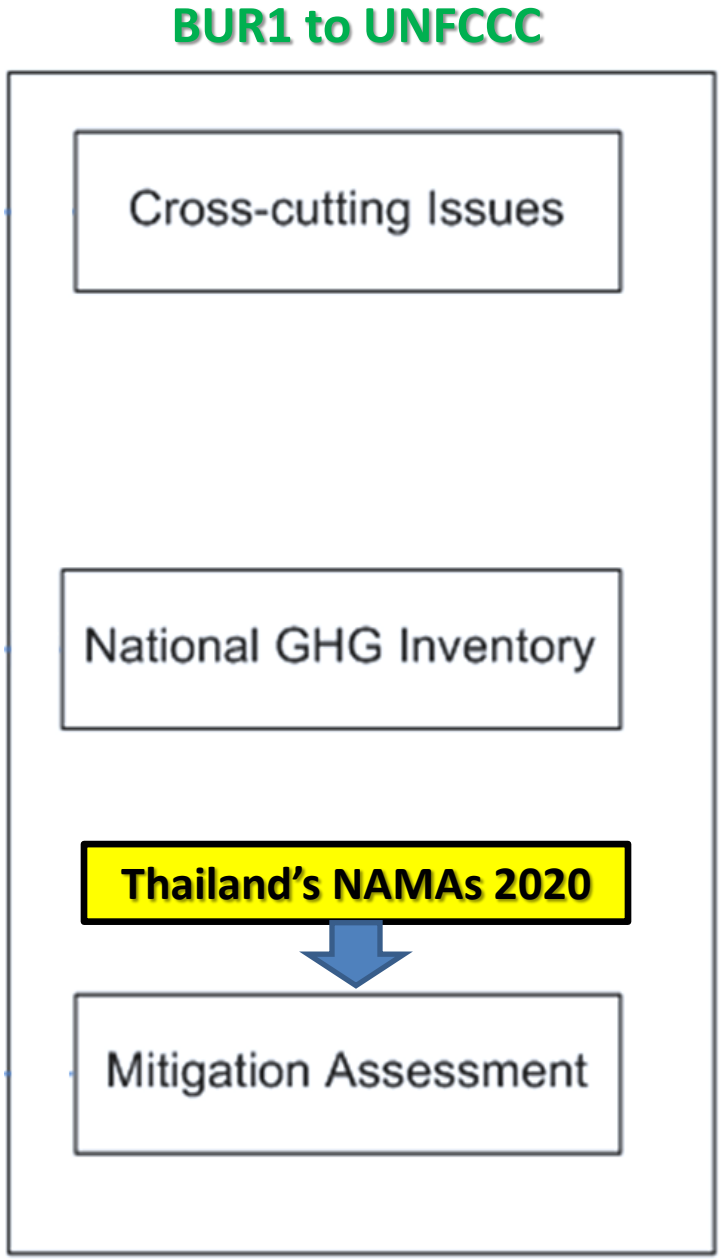


RAC

AIM ASIA-PACIFIC INTEGRATED MODEL

Source: ONEP (2014)

NAMAs in Thailand Biennial Updated Report (BUR1)



Source: ONEP (2014)

Barriers in Energy Efficiency (EE Building NAMA)

Barriers to overcome EE in buildings (Asayama,2014):

1. *No enforcement* of implementation to achieve the target under ECP Act and EEDP.
2. *No minimum energy performance standards* for both new and existing buildings.
3. *BEC has not been implemented yet* due to the technical and institutional barriers.
4. *No inspection system* during/after construction.
5. *No benchmark of energy consumption in buildings.*
6. *Limited information on EE technologies.*
7. *Limited human resources and capacity* in MRV.
8. *Limited incentives* to EE.

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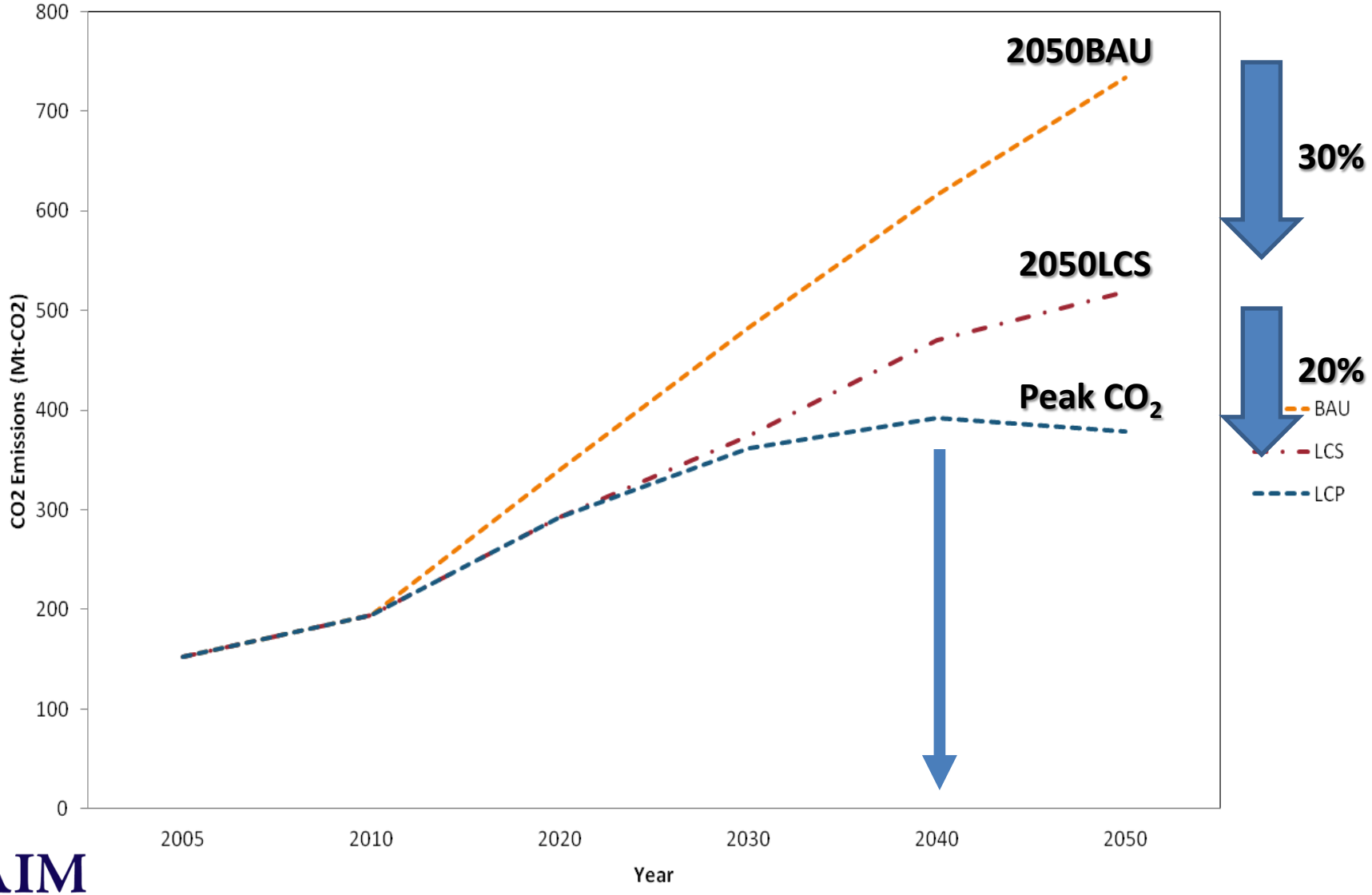
Thailand's Post2020 Scenarios

Low Emission Pathway and Peak Emission Scenarios



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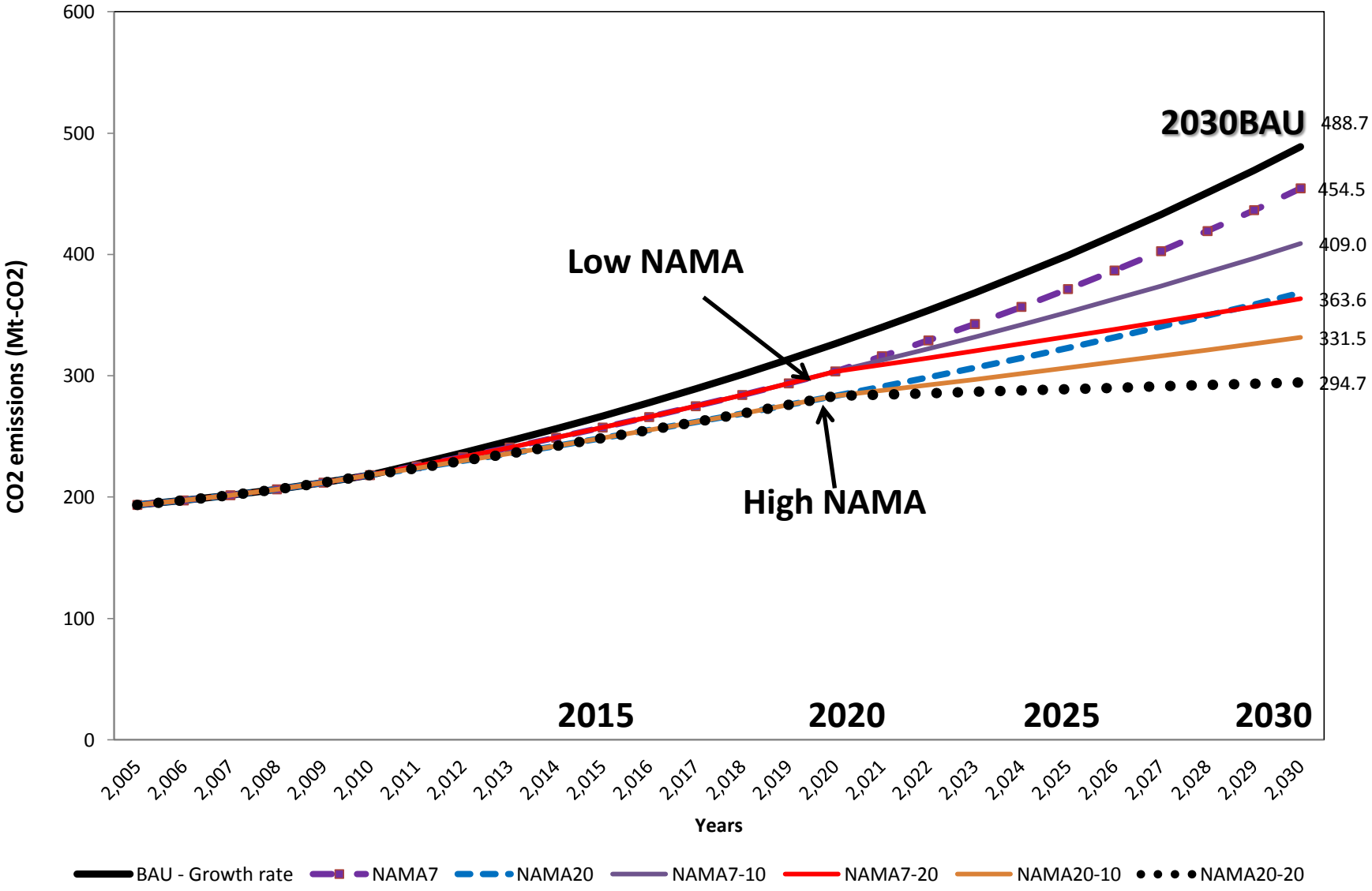
Thailand's Post2020 Scenarios



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Institutional Framework for Climate Change Policy in Thailand

Source: ONEP (2014)

Chair

Prime Minister

Vice-Chair

Minister of Natural Resources and Environment

National Committee on Climate Change Policy (NCCC)

Sub-committees

NCCC members:

1. Prime Minister's Office
2. Ministry of Finance
3. Ministry of Agriculture and Cooperatives
4. Ministry of Transport and Communications
5. Ministry of Information and Communication Technology
6. Ministry of Energy
7. Ministry of Commerce
8. Ministry of Interior
9. Ministry of Science and Technology
10. Ministry of Education
11. Ministry of Public Health
12. Ministry of Industry
13. Bangkok Metropolitan Administration
14. Office of the National Economics and Social Development Board
15. Bureau of Budget
16. **Experts**

Secretariat

Ministry of Natural Resources and Environment

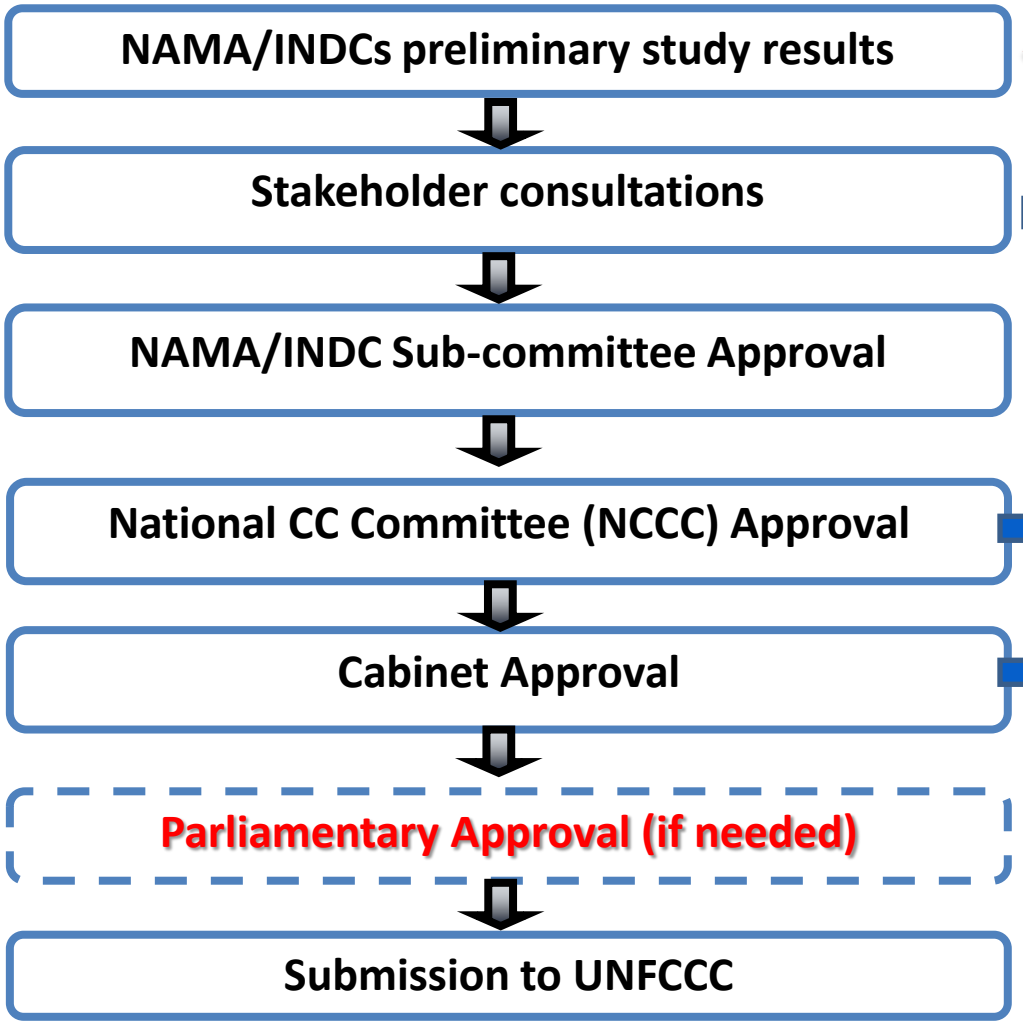
ONEP/CCMC

(**Policy formulation and National Focal Point**)

TGO

DNA (for CDM)/Technical support to project developers

Thailand's NAMA/INDC Approval Process



Now Preparing for INDC**

Dept. of Treaties and Legal Affairs to determine if parliamentary approval is required

Internal Processes

NAMA: Approved on 20 Nov 14

NAMA: Approved on 25 Nov 14

- Thailand are now preparing for INDCs ; **public opinion, condition and decision** will be decided according to the processes

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COP20 Lima, 9 December 2014

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Thailand communicated NAMA to UNFCCC in COP20

No 1006.4/ 3061

Ministry of Natural Resources and Environment

29 December B.E. 2557 (2014)

Dear Executive Secretary,

Subject: Communication on Thailand's Nationally Appropriate Mitigation Actions (NAMAs)

In accordance with the provisions of Article 12 paragraph 1(b), Article 12 paragraph 4 and Article 10 paragraph 2(a), I have the honor to communicate to you the information on Thailand's Nationally Appropriate Mitigation Actions (NAMAs), for information to the UNFCCC Parties, as follows:

Thailand will endeavor, on a voluntary basis, to reduce its GHG emissions in the range of 7 to 20 percent below the Business as usual (BAU) in energy and transportation sectors in 2020, subject to the level of international supports provided in the forms of technology development and transfer, finance, and capacity building for NAMAs preparation and implementation.

The above-mentioned NAMAs will include counter-measures, as following:

- Development of renewable and alternative energy sources;
- Energy efficiency improvement in industries, buildings, transportation and power generation;
- Bio-fuels in transportation; and
- Environmentally sustainable transport system.

Please note that the communicated information on NAMAs as announced will not have a legally binding character, and will be implemented in accordance with the principles and provisions of the UNFCCC, in particular Article 4 paragraph 7, and taking into account the national circumstances.

Yours sincerely,

General Dapong Ratanasuwan

Minister of Natural Resources and Environment

AIM ASIA-PACIFIC INTEGRATED MOD

United Nations
Framework Convention on
Climate Change

UN Climate Change
NEWSROOM

http://newsroom.unfccc.int/unfccc-newsroom/thailand-submits-nama/

Thailand Submits Emission Reduction Plan:
NAMAs Gaining Momentum

INITIATIVE / 19. JAN, 2015

Thailand Targets Energy and Transport

Thailand is the 58th developing country to voluntarily submit its National NAMA through a formal letter declaring its intent to achieve ambitious mitigation in line with national development plans. NAMAs are unique in that they aim to lower emissions based on the countries' unique characteristics while also stimulating economic growth.

The NAMA model is proven to prompt transformational social, environmental and economic change and deliver critical co-benefits for enhanced food security, improved public health, and more.

Thailand's National NAMA proposes action in the energy and transportation sectors to reduce emissions between 7 to 20 percent below projections for 2020. The named measures include renewable and alternative energy sources, energy efficiency improvements, bio-fuels in transportation, and a sustainable transit system.

Following submission of its National NAMA, Thailand will design specific actions aimed at local, regional, and sectoral greenhouse gas mitigation as noted in its National NAMA, pending global support for their preparation and implementation.

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Thailand's INDCs

List	Input Information
1. Reference Point (as appropriate, a base year)	Base Year: 2005 (The same as NAMAs)
2. Time frames and/or Periods for Implementation	2030
3. Scope and Coverage	(>80% of emissions); Energy Sectors, IPPU and Wastes
4. Planning processes	PDP, EEDP, Transport and Traffic Master Plan (from OTP), etc.
5. Assumptions and Methodological approaches	Enduse approach (AIM/Enduse) IPCC Guidelines, & Co-benefit approach

Source: ONEP (2014)

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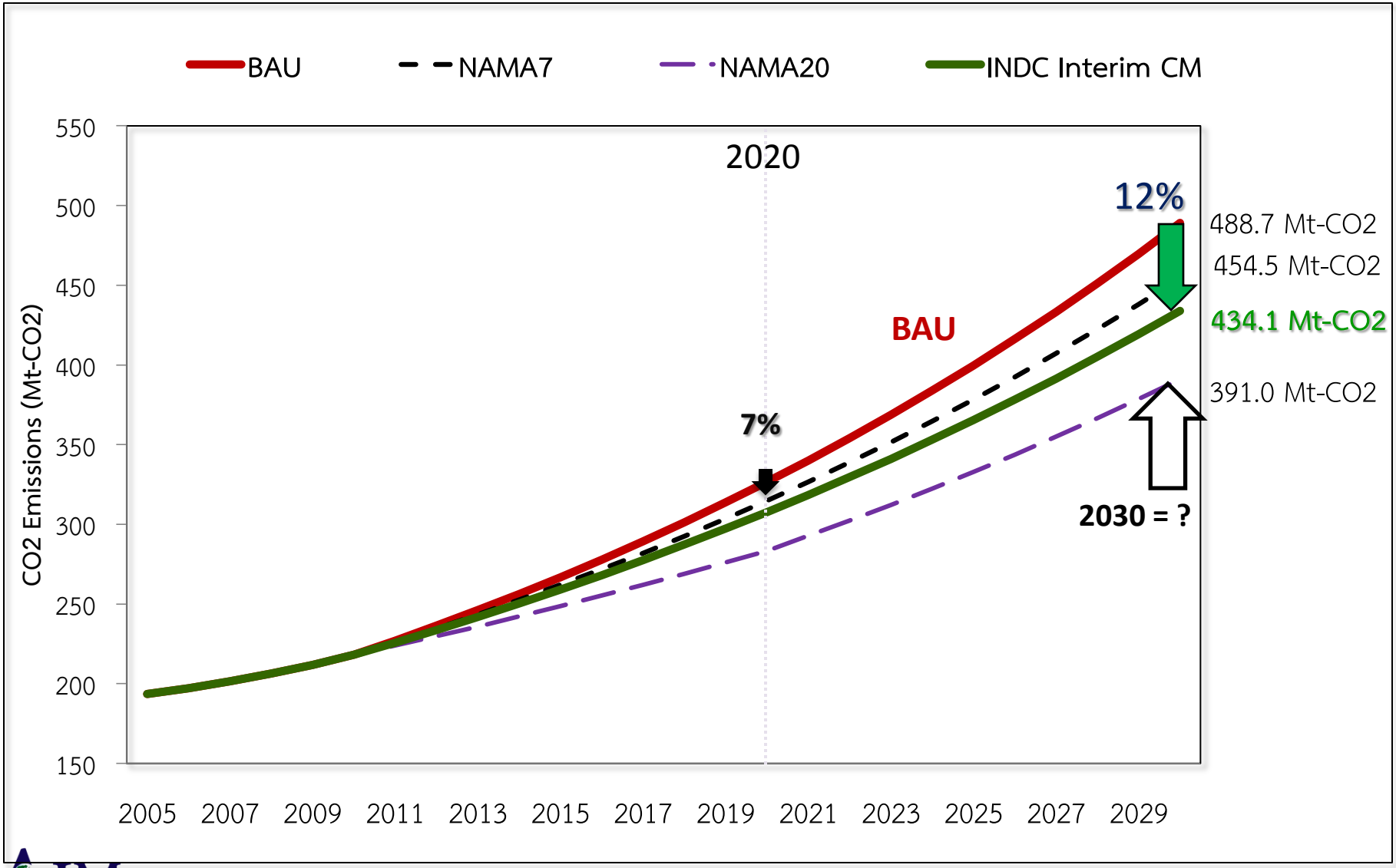
Comparison of GHG emissions in NAMAs and INDCs



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Decision -/CP.20 Lima call for climate action, COP 20 Lima

Para 14; *Agrees* that the information to be provided by Parties communicating their INDCs, in order to **facilitate clarity**, **transparency** and **understanding**, **MAY INCLUDE**, as appropriate, inter alia,

- quantifiable information on the **reference point** (including, as appropriate, a base year),
- **time frames** and/or **periods for implementation**,
- **scope and coverage**,
- **planning processes**,
- **assumptions and methodological approaches** including those for estimating and accounting for anthropogenic greenhouse gas emissions and, as appropriate, removals,
- **how the Party considers that its INDCs is fair and ambitious**, in light of its national circumstances,
- **how it contributes towards achieving the objective of the Convention as set out in its Article 2**;

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UNFCCC Negotiation

1-12 Dec COP20 Peru

ADP identify the information -INDCs, hi-level Ministerial, **draft TEXT for 2015 Agreement**

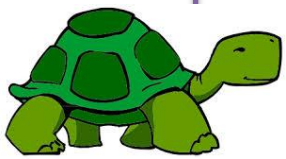
30 Nov-11Dec 15

COP21 Paris

Adoption of 2015 Agreement

23 Sep
UNSG climate summit in NY

31 Mar 15
INDCs are to be communicated
(by parties ready to do so)



Thailand INDC 2030 before COP21

2014 | Jul'14 | Aug'14 | Oct'14 | Dec'14 | Feb'15 | Apr'15 | Jun'15 | Aug'15 | Oct'15 | 2015

2-14 Jun
ADP 2-5, SB40 Ministerial Meeting, Bonn, Germany

15-18 Oct
Pre COP Ministerial

20-25 Oct
ADP 2-6, additional session, draft negotiation TEXTs
Bonn, Germany

31 OCT 15
Possible all parties to be communicated INDCs

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Conclusions

- Thailand INDCs will result in **transformational changes** in both supply and demand sides.
- To achieve **Peak target**, Thailand needs, i) **Capacity Building**, ii) sustainable **incentives** for renewable energy, iii) enforcement of **Energy Efficiency laws in buildings and industries,** iv) **co-funding** of the LCS actions in both **demand side** and **clean supply side**.
- The **Peak target/2DS objective** will not be achieved **if LCS actions are not planned & implemented in the early stage**.
- In addition, **M R V** of LCS actions are of necessity.

Selected AIM Publications (FY2014)

Energy and Buildings 80 (2014) 631–639

Contents lists available at ScienceDirect

Energy and Buildings

journal homepage: www.elsevier.com/locate/enbuild

CO_2 mitigation potential and marginal abatement costs in Thai residential and building sectors

Kamphol Promjiraprawat[a], Pornphimol Winyuchakrit[a,1], Bundit Limmeechokchai[a,*], Toshihiko Masui[b], Tatsuya Hanaoka[b], Yuzuru Matsuoka[c]

[a] Sirindhorn International Institute of Technology, Thammasat University, Pathumthani, Thailand
[b] National Institute of Environmental Studies, Tsukuba, Japan
[c] Graduate School of Engineering, Kyoto University, Kyoto, Japan

http://www.sciencedirect.com/science/article/pii/S0378778814001649

Highlights

- Proposed countermeasures contribute to energy savings up to 43% by the year 2050.
- Advanced cooling technologies provide the negative marginal abatement cost.
- Thai residential and building sectors are achieved for 35.0% of CO_2 mitigation.
- AIM/Enduse estimates energy use and CO_2 emission in Thai households and buildings.
- Efficiency improvement is the cost-effective option for building development.

Renewable and Sustainable Energy Reviews 43 (2015) 178–195

Contents lists available at ScienceDirect

Renewable and Sustainable Energy Reviews

journal homepage: www.elsevier.com/locate/rser

A quantitative analysis of Low Carbon Society (LCS) measures in Thai industrial sector

Sujeetha Selvakkumaran [a], Bundit Limmeechokchai [a,*], Toshihiko Masui [b], Tatsuya Hanaoka [b], Yuzuru Matsuoka [c]

[a] Sirindhorn International Institute of Technology, Thammasat University, Pathum Thani 12121, Thailand
[b] National Institute of Environmental Studies, Tsukuba, Japan
[c] Graduate School of Engineering, Kyoto University, Kyoto, Japan

http://www.sciencedirect.com/science/article/pii/S1364032114009575

Highlights

- Thai industrial sector has been modeled using AIM/Enduse model.
- Potential mitigation of CO_2 for 2050 is approximately 35% from the BAU case.
- Emission tax of 500 USD/t-CO_2 leads to 55% reduction compared to the BAU case.
- Energy security is enhanced due to CO_2 mitigation in the LCS scenarios.

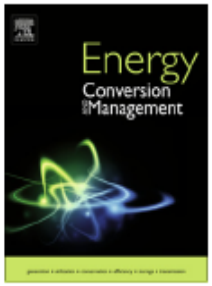
AIM ASIA-PACIFIC INTEGRATED MODEL

Energy Conversion and Management 85 (2014) 663–674

Contents lists available at ScienceDirect

Energy Conversion and Management

journal homepage: www.elsevier.com/locate/enconman



Low carbon society scenario 2050 in Thai industrial sector

Sujeetha Selvakkumaran [a], Bundit Limmeechokchai [a,*], Toshihiko Masui [b], Tatsuya Hanaoka [b], Yuzuru Matsuoka [c]

[a] Sirindhorn International Institute of Technology, Thammasat University, Pathum Thani, Thailand
[b] National Institute of Environmental Studies, Tsukuba, Japan
[c] Graduate School of Engineering, Kyoto University, Kyoto, Japan

http://www.sciencedirect.com/science/article/pii/S0196890414002325

Highlights

- Thai industrial sector has been modelled using AIM/Enduse model.
- Potential mitigation of CO_2 for 2050 is approximately 20% from Baseline scenario.
- Abatement cost curves show that varied counter measures are practical in the industrial sector.
- Energy security is enhanced due to CO_2 mitigation in the LCS scenario.

AIM
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ARTICLE IN PRESS

Energy Policy ∎ (∎∎∎∎) ∎∎∎–∎∎∎

Contents lists available at ScienceDirect

Energy Policy

journal homepage: www.elsevier.com/locate/enpol

Low carbon society scenario analysis of transport sector of an emerging economy—The AIM/Enduse modelling approach

Sujeetha Selvakkumaran, Bundit Limmeechokchai*

Sirindhorn International Institute of Technology, Thammasat University, Pathum Thani, Thailand

HIGHLIGHTS

- Thailand transport sector has been modelled using AIM/Enduse model.
- Potential cumulative mitigation of CO_2 during 2010–2050 is approximately 30% when compared the BAU scenario.
- Abatement cost curves show that various counter measures are practical in the transport sector.
- Energy security is enhanced due to CO_2 mitigation in the LCS scenario.

http://www.sciencedirect.com/science/article/pii/S0301421514005497

Available online at www.sciencedirect.com

ScienceDirect

Energy Procedia 52 (2014) 260 – 270

Energy Procedia

2013 International Conference on Alternative Energy in Developing Countries and Emerging Economies

An explorative analysis of CO_2 emissions in Thai Industry sector under Low Carbon Scenario towards 2050

S. Selvakkumaran[a], B. Limmeechokchai [a*], T. Masui[b], T. Hanaoka[b]
Y. Matsuoka[c]

[a]*Sirindhorn International Institute of Technology, Thammasat University, Pathum Thani, Thailand*
[b]*National Institute of Environmental Studies, Tsukuba, Japan*
[c]*Graduate School of Engineering, Kyoto University, Kyoto, Japan*

http://www.sciencedirect.com/science/article/pii/S1876610214009394

Highlights

- Thailand industry sector has been modelled using AIM/Enduse model.
- Potential cumulative mitigation of CO_2 during 2010–2050 is approximately 34% when compared the BAU scenario in LCS1 scenario and 24% in LCS2 scenario.
- Both scenarios have positive impacts on energy security
- These scenarios contribute to the mitigation of air pollutant.

AIM ASIA-PACIFIC INTEGRATED MODEL

Available online at www.sciencedirect.com

ScienceDirect

Energy Procedia 52 (2014) 77 – 84

Energy Procedia

2013 International Conference on Alternative Energy in Developing Countries and Emerging Economies

Quantitative Analysis of CO_2 Mitigation in Thai Low Carbon Power Sector towards 2050

P. Chunark[a], K. Promjiraprawat[a], P. Winyuchakrit[a], B. Limmeechokchai[a*]
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Highlights

- Thailand power sector has been modelled using AIM/Enduse model.
- The LCS scenario can mitigate CO_2 emissions by 58,098 $ktCO_2$ in 2050 when compared to BAU scenario.
- The fossil fuel based technology would be replaced by clean technologies
- Coal-fired power plant with CCS technology and renewable energies play an important role in the LCS scenario.

AIM ASIA-PACIFIC INTEGRATED MODEL

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Impacts of CO_2 Reduction Target and Taxation on Thailand's Power System Planning towards 2030

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Highlights

- Thailand power sector has been modelled using AIM/Enduse model.
- Clean coal technologies together with CCS technology would play a significant role in 2050 under LCP scenario.
- LCP scenario mitigate the CO_2 emission 55% comparing with BAU scenario in 2050.

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Policies and Measures to Remove Energy Efficiency Barriers in Thai Buildings toward NAMAs

Yumiko Asayama and Bundit Limmeechokchai

***Abstract*-- This study analyzed policies and countermeasures to remove barriers hindering the improvement of energy efficiency in designated buildings under the framework of Thailand's Nationally Appropriate Mitigation Actions (NAMAs). The study was conducted by means of literature reviews and interviews with relevant Thai officials. It was found that while Thailand has addressed energy efficiency in the designated buildings through ministerial regulations together with voluntary programs and financial instruments, the strength of the regulations is insufficient to enhance the compliance of dispersed energy end-users due to limitations in the monitoring mechanism. A number of barriers are interrelated, making them difficult to conduct stringent measurement, reporting, and verification (MRV), monitoring of the implementation measures. The establishment of a precise institutional management mechanism for MRV is required to collect the necessary baseline information, formulate policies, and disseminate them with a view to positively influencing the implementation of countermeasures to facilitate the NAMAs toward 2020.**

***Index Terms*—Barriers, Buildings, Countermeasures, Energy efficiency, MRV, NAMAs, Policy studies, Thailand**

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Development of Thailand's Nationally Appropriate Mitigation Actions (NAMAs) for Low Carbon Society: Energy Security and Co-Benefit Aspects

Bundit Limmeechokchai and Pornphimol Winyuchakrit[1]

***Abstract*--NAMAs is proposed to be the way for reducing greenhouse gases emission in the developing countries under "Low Carbon Society" concept. In this study, the proposed three CO_2 countermeasures under the three national energy strategies: the Alternative Energy Development Plan (AEDP), the 20-Year Energy Efficiency Development Plan 2011–2030 (EEDP), and the Building Energy Code (BEC) are investigated. Additionally, this study considers changes of energy security and co-benefits from these proposed mitigation countermeasures. Results indicate that these three countermeasures could reduce CO_2 emissions by 13,239 kt-CO_2 in the 2020NAMA scenario, compared to the 2020BAU scenario. Moreover, results of energy security as well as co-benefit analyses show that the proposed CO_2 countermeasures in Thailand's NAMAs will not only reduce CO_2 emissions but also improve energy security and contribute to several co-benefits, which enhance sustainable energy and environment development.**

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Analysis of Low Carbon Society in Thai Transport Sector – The AIM/Enduse Modeling Approach

S. Selvakkumaran, B. Limmeechokchai*, T. Masui, T. Hanaoka and Y. Matsuoka

***Abstract*—Thailand's road transportation sector has been modeled using AIM/Enduse, for the BAU case and LCS, Emission Tax (ET) and Emission Reduction Target (ERT) scenarios. The counter-measures modeled are modal shift, travel demand management (TDM), advanced technologies such as hybrid vehicles and fuel switching to biofuels. Results of analyses show that the LCS scenario has the highest mitigation, with a cumulative mitigation of 28% from the BAU scenario. Whilst ET and ERT scenarios show considerable mitigation, they do not lead to a change in the sustainability of the transport system in Thailand. The LCS scenario achieves this mitigation through a change in the way the population meets the travel demand, where as in the ET and ERT scenarios, most of the mitigation is through fuel switching and TDM. In the LCS scenario, in 2050 the majority of the passenger transport is provided for by public transport modes, unlike in the ET and ERT scenarios.**

***Index Terms*-- AIM Enduse, CO_2 mitigation, Low carbon society, Thailand, Transport sector**

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Comparative Analyses of Low Carbon Measures in the Transport Sector: The Cases of Thailand and Sri Lanka

S. Selvakkumaran[1] and B. Limmeechokchai[1]

***Abstract*—The transport sectors of Thailand and Sri Lanka are analysed in terms of their characteristics and low carbon measures possible. The low carbon society (LCS) scenario of Thailand includes fuel efficiency improvement, modal shift and advanced technologies such as hybrid, in its counter-measures (CMs), and LCS achieves a cumulative mitigation of 21.8% from 2010 to 2050. The Sri Lankan transport sector is a very simple one, which is dominated by motorcycles and three-wheelers in its active fleet. The total expected energy consumption in the 2050 BAU is 5,404 ktoe and the corresponding emissions are 16,600 kton-CO_2. Unlike the Thai transport sector, the Sri Lankan transport sector depends only on gasoline, diesel and very little amount of LPG and also faces heavy taxation in personal passenger vehicle purchases. Thus, the stage of evolution of the transport landscape is much less, thus leading to many challenges in its design of CMs.**

***Index Terms*--CO_2 mitigation, Low carbon society, Sri Lanka Thailand, transport sector**

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JCM, MOE Japan

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Thank You