POTENTIAL OF THAILAND'S NAMAS AND MRV

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Presentation Outline

Part I : Potential Thailand's NAMAs

Part II : Developing of Thailand's MRV

Part III : Challenge & Opportunity on NAMAs and MRV

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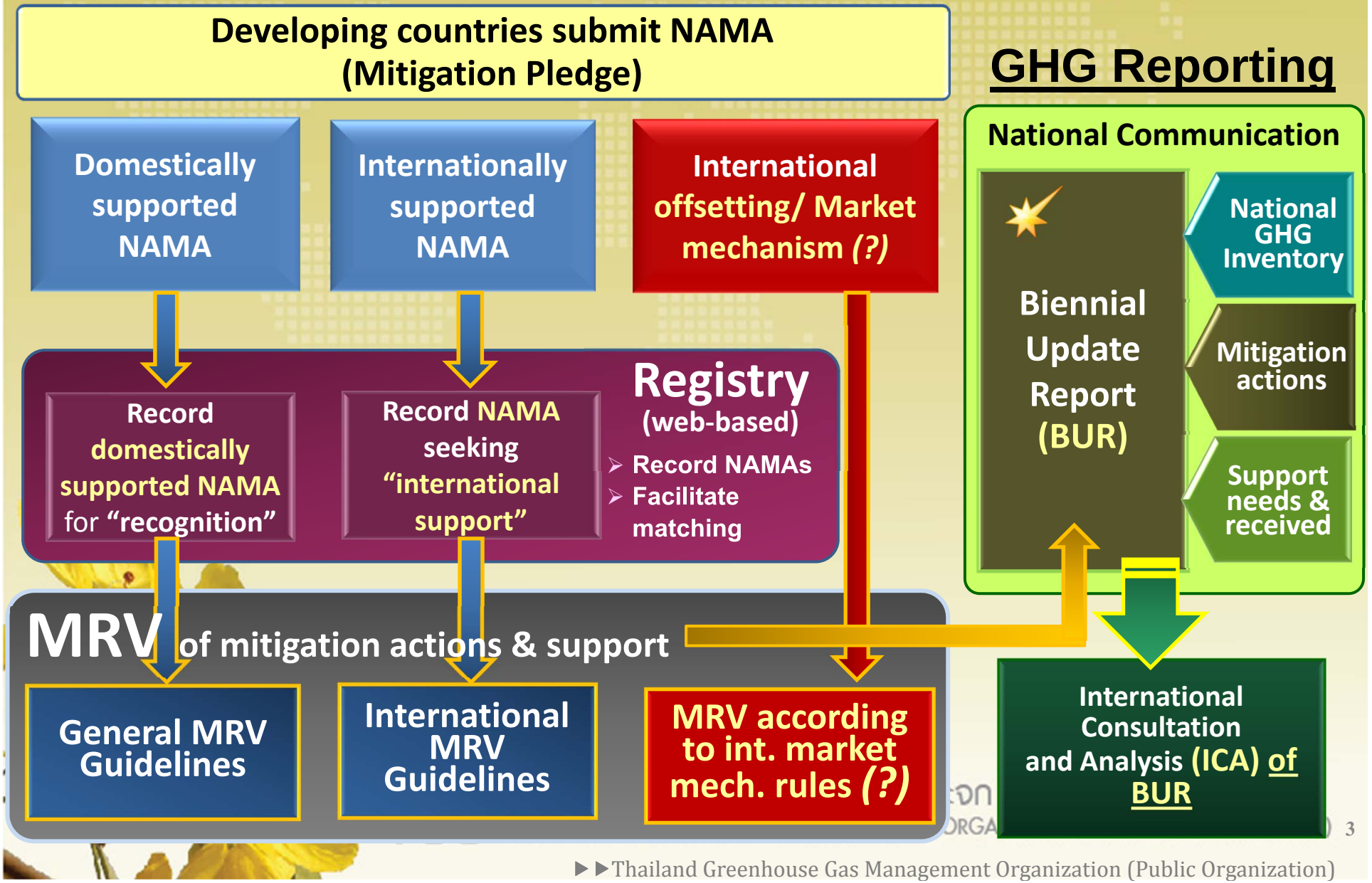
More missions for developing countries to enhance mitigation and greenhouse gas reporting



Part I : Potential of Thailand's NAMAs

What is NAMAs ?

N: Nationally

A: Appropriate

M: Mitigation

A: Actions

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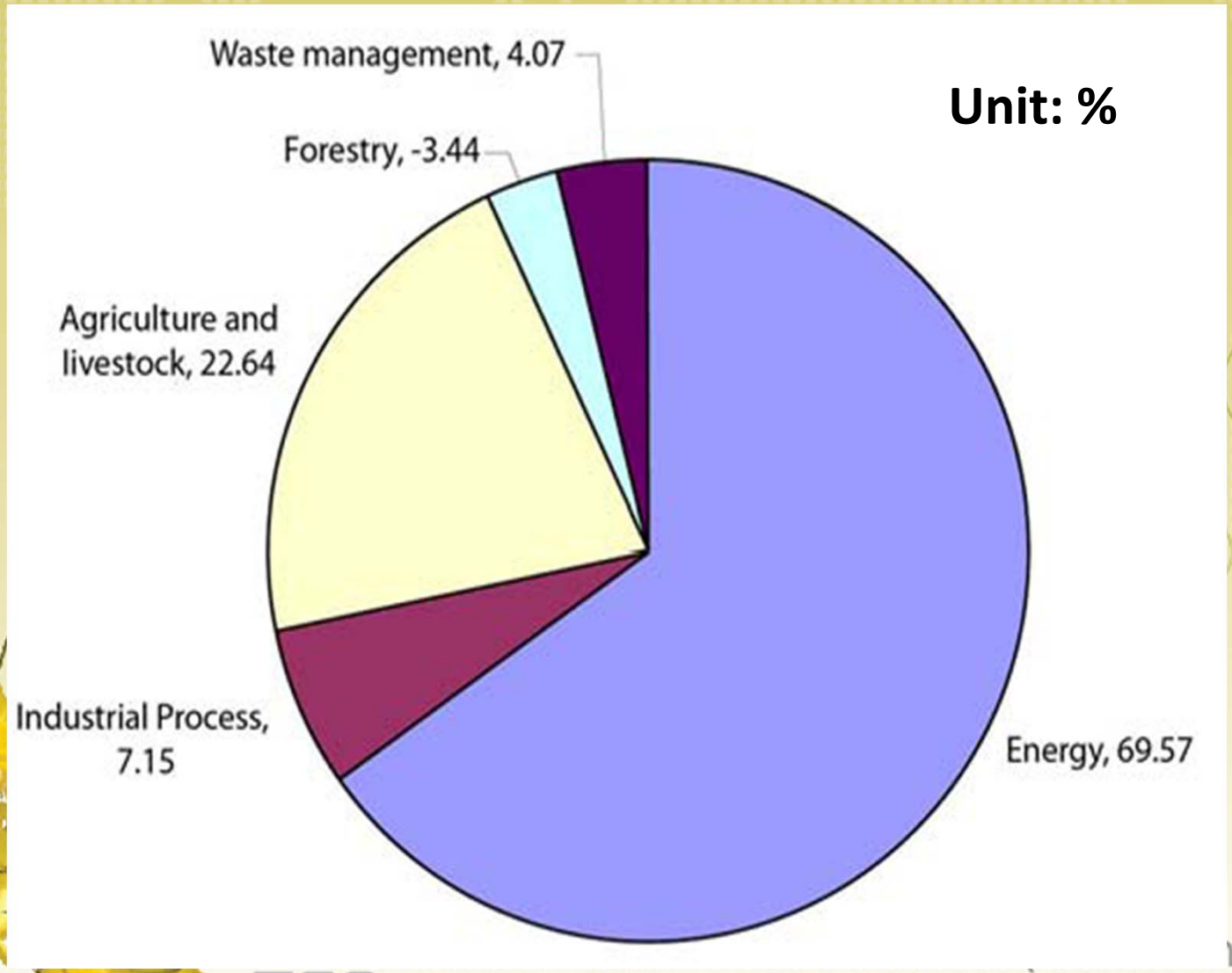
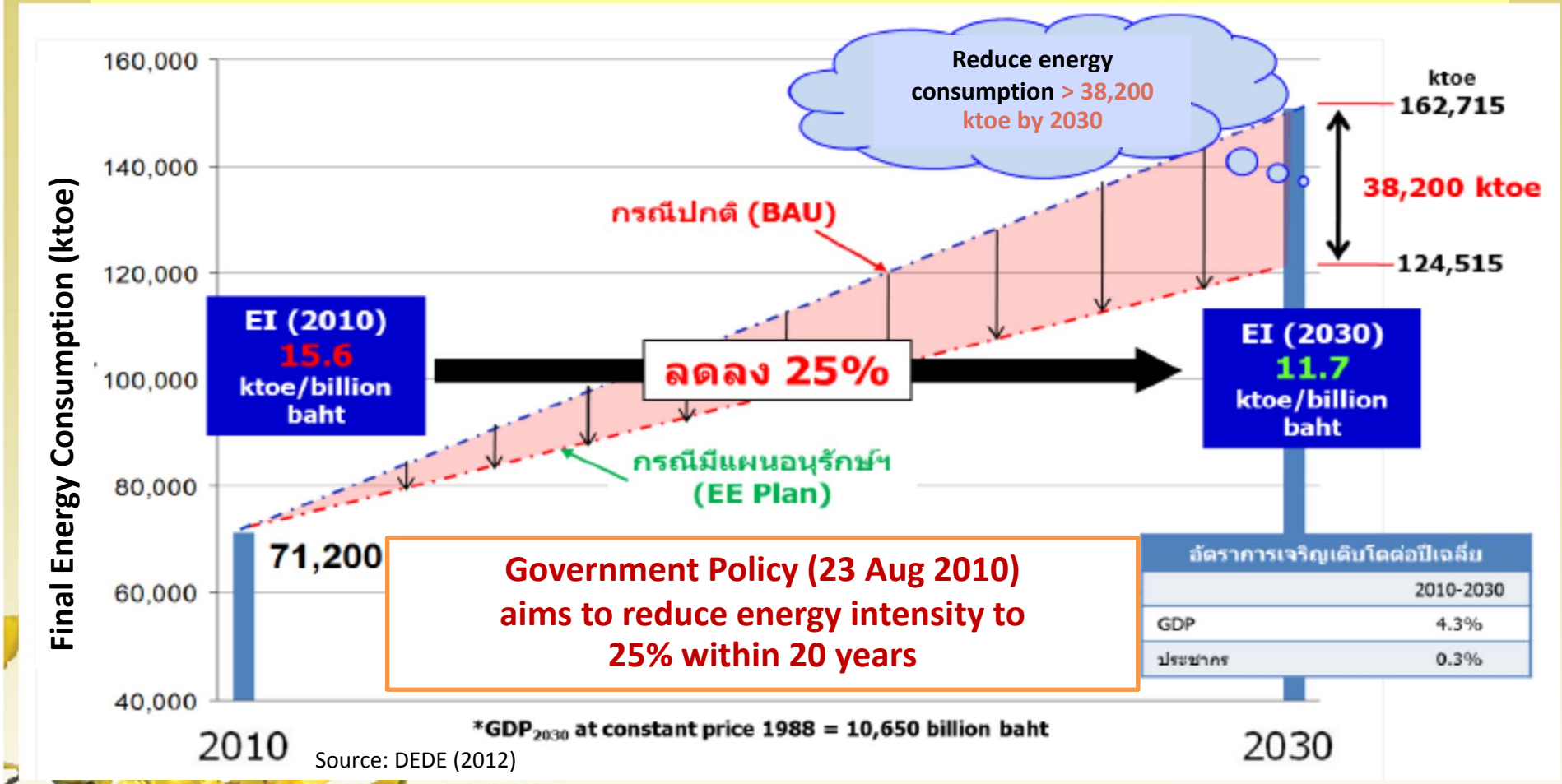
Thailand's GHG emissions by sources in 2000



Energy policies in Thailand : EE

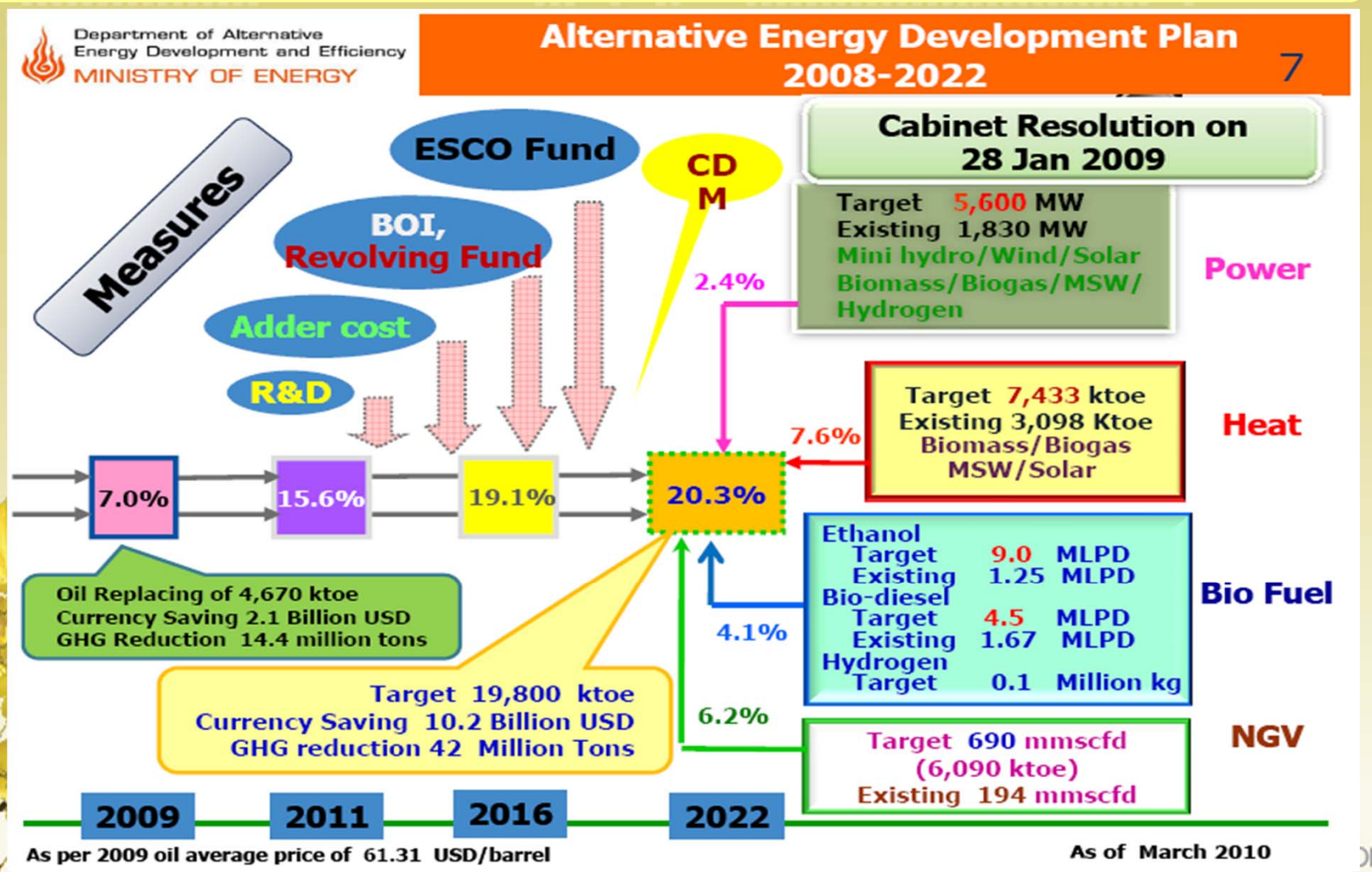
Energy Efficiency Plan 2010-2030 (20 Years Plan)



Source: DEDE (2012)

Energy policies in Thailand : RE

Renewable Energy Development Plan 2008-2022



Source : Department of Alternative Energy Development and Efficiency (DEDE) 2010

Adders for Renewable Power in Thailand (2012 Updated)

Renewable Energy	Adder price (Baht/kWh)*	20% target (2011)	25% new target 2012-2021
1.Biomass	0.3-0.5	3,700 MW →	**3,630 MW**
2.Biogas	0.3-0.5	120 MW →	**600 MW**
3. Waste	2.5-3.5	160 MW →	**160 MW**
4. Wind	3.5-4.5	800 MW →	**1200 MW**
5. Hydropower	0.8-1.5	324 MW →	**1,608 MW**
6. Solar	6.5	500 MW →	**2,000 MW**
7.Others	-	-	**3 MW**
Total Capacity		5,604 MW →	**9,201 MW**

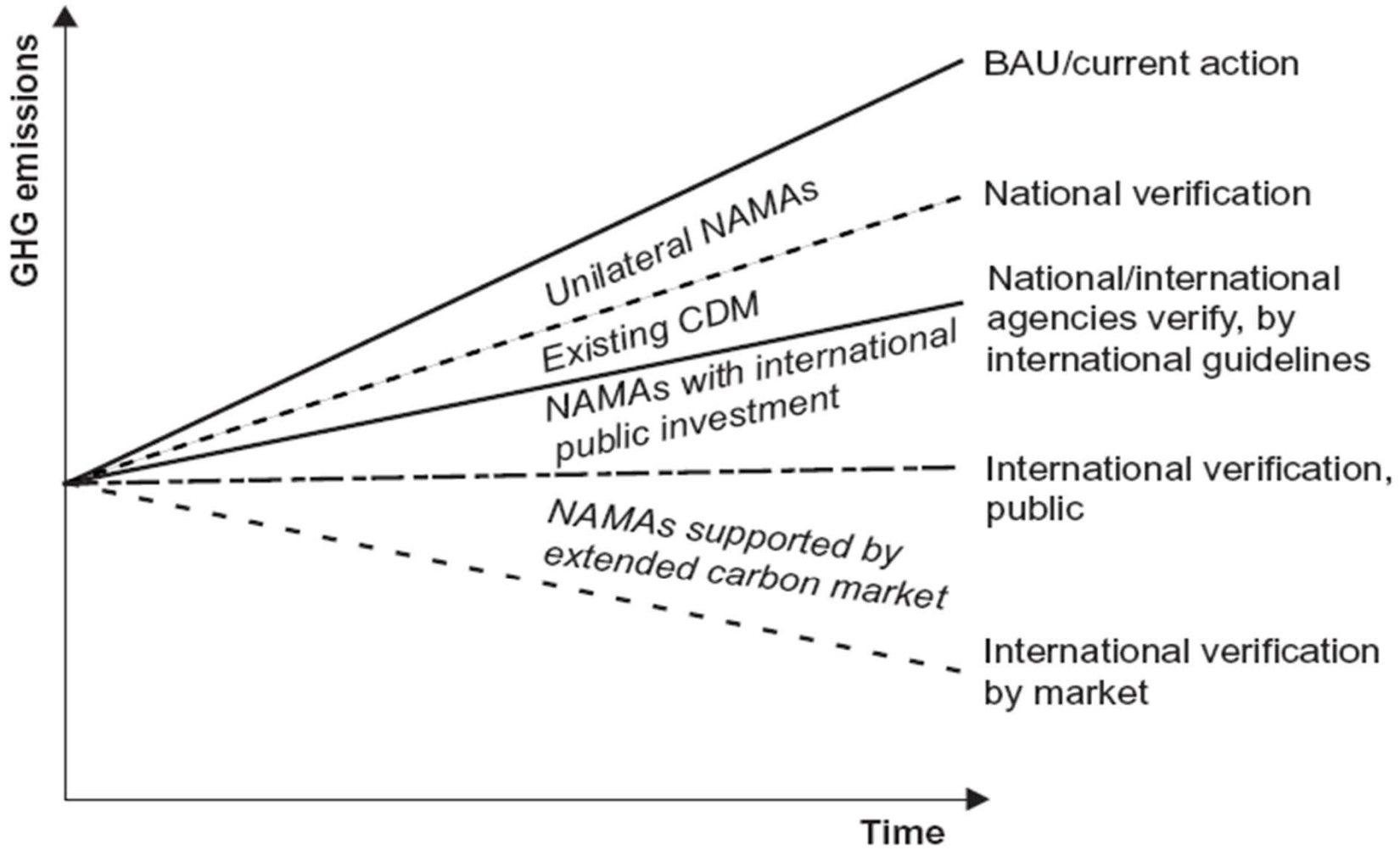
Source : Department of Alternative Energy Development and Efficiency (DEDE) 2012
* Adder price varies with RE installed capacity.

Electricity production from RE planning 25% in Thailand

Renewable Energy	Current capacity (MW) 2012	Accumulated capacity in 2021 (MW)	Electricity Generation (GWh/yr) in 2021
1.Biomass	1,751.86	3,630	14,008
2.Biogas	138	600	1,050
3. Waste	13.45	160	518
4. Wind	7.28	1200	1,283
5. Small-hydropower	86.39	1,608	5,604
6. Solar	75.48	2,000	2,484
7.Others (geothermal, wave energy)	0.350	3	10
Total	**2,072.81**	**9,201**	24,957

Source : Department of Alternative Energy Development and Efficiency (DEDE) 2012

CDM vs NAMAs in BAU

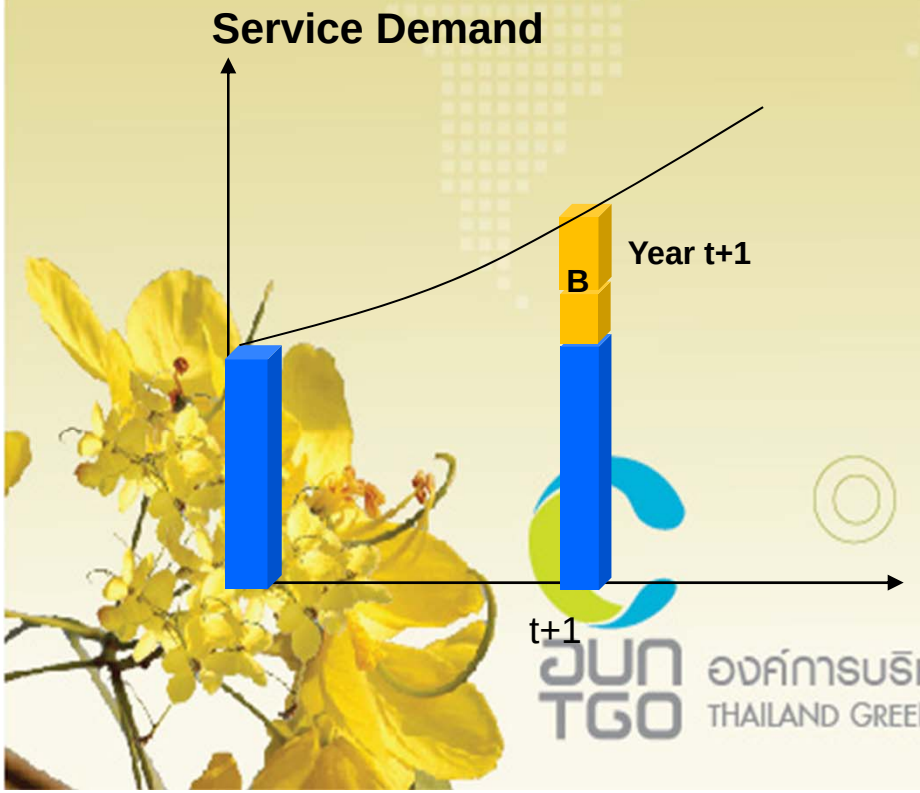


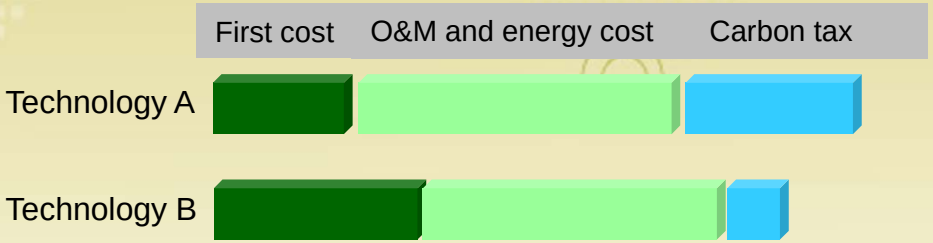
Sources: Ward et al., 2008

POTENTIAL CRITERIA TO COUNTERMEASURES

Technology selection

- The model selects **minimum total cost (discounted)**
- Total cost = initial investment cost + O&M cost + energy cost + tax + etc.
- Subject to: constraints such as electricity demand





Total Discounted Cost

Technology A > Technology B

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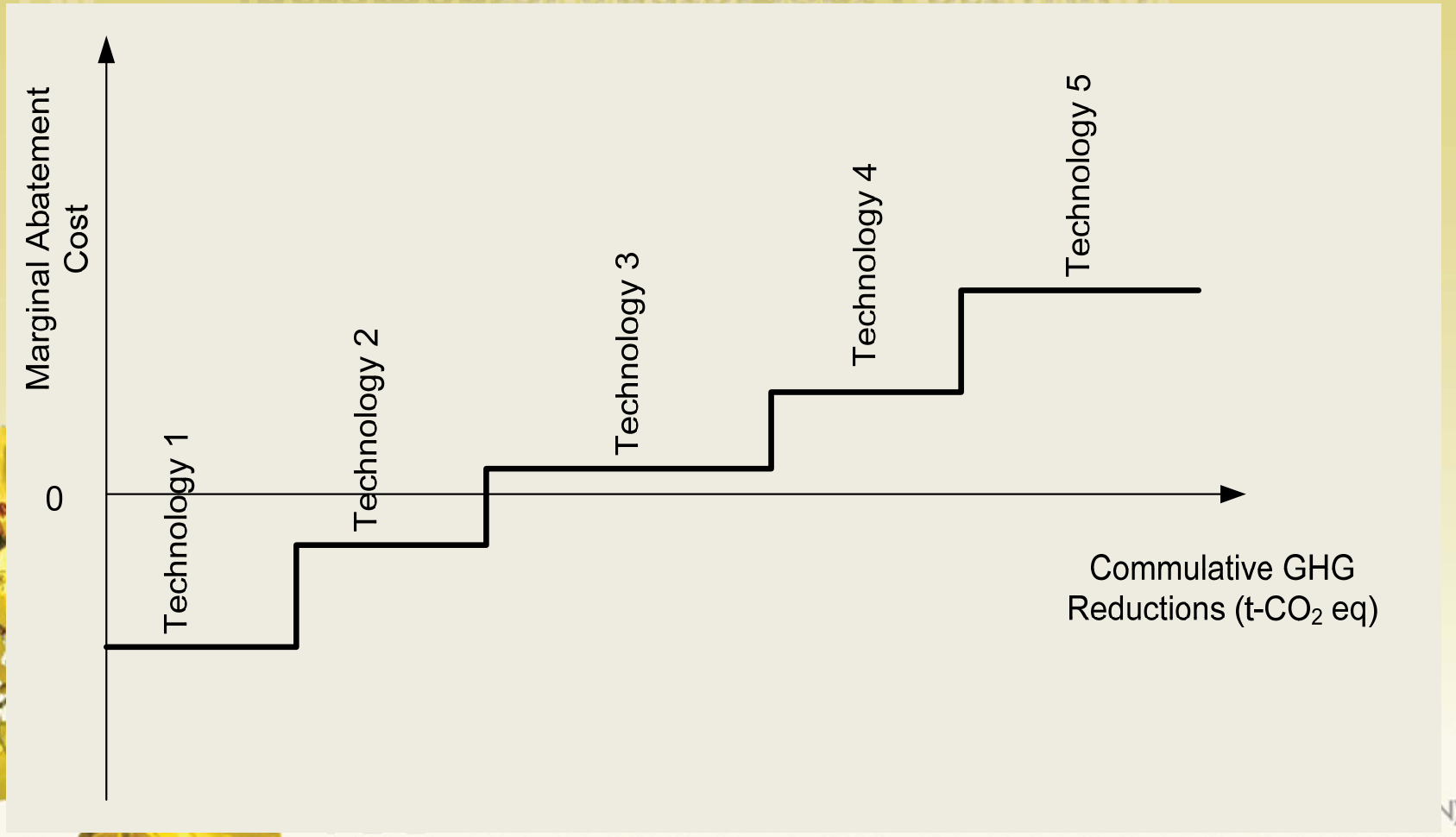
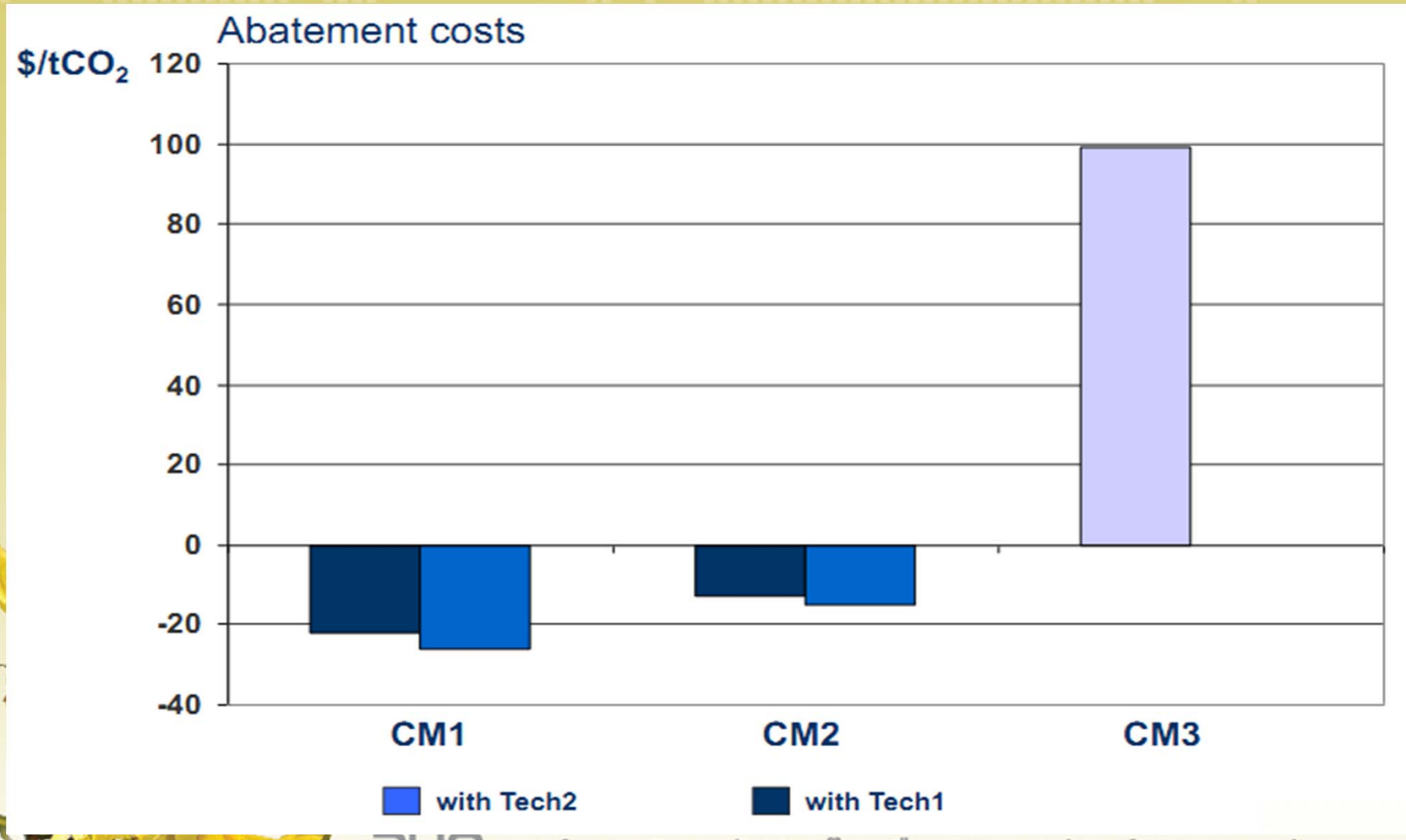
POTENTIAL CRITERIA TO COUNTERMEASURES

Marginal Abatement Cost (MAC)
or
Incremental Abatement Cost (IAC)



POTENTIAL CRITERIA TO COUNTERMEASURES



Potential of Thailand's NAMAs

1. Energy

1.1 Power Generation

1.2 Waste to Energy

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Potential of Thailand's NAMAs

2. Industry

2.1 Energy Saving & Energy Efficiency Improvement : Motor, Cooling, Lighting and Boiler

2.2 New Technology : Boiler, Furnace and Kiln

2.3 Fuel Switching : Coal, Oil Renewable Energy

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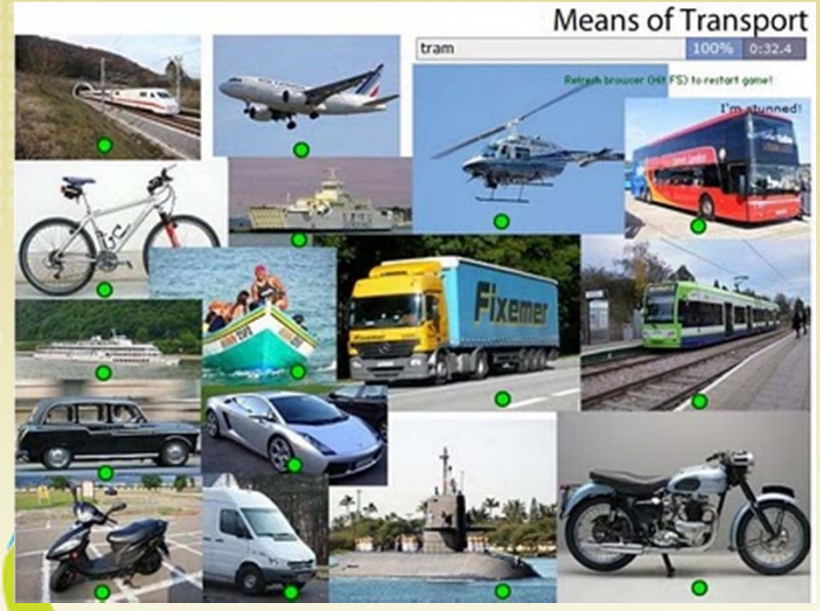
Potential of Thailand's NAMAs

3. Transport Sector

CO_2 Reduction in Transport Sector
(Ethanol ; Biodiesel & NGV policy)



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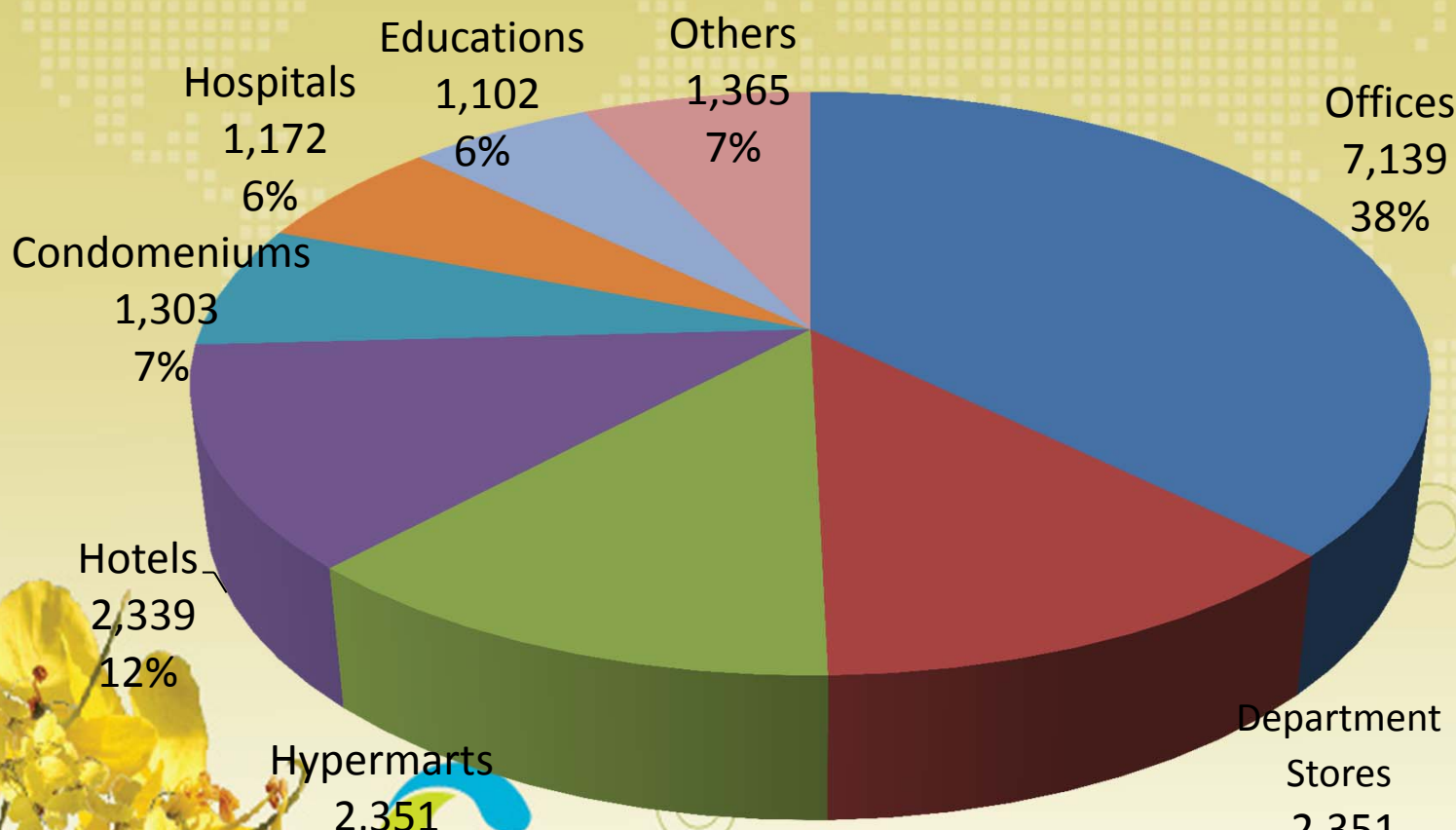
Potential of Thailand's NAMAs

4. Commercial Sector



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Part II : Developing of Thailand's MRV in Energy Sector

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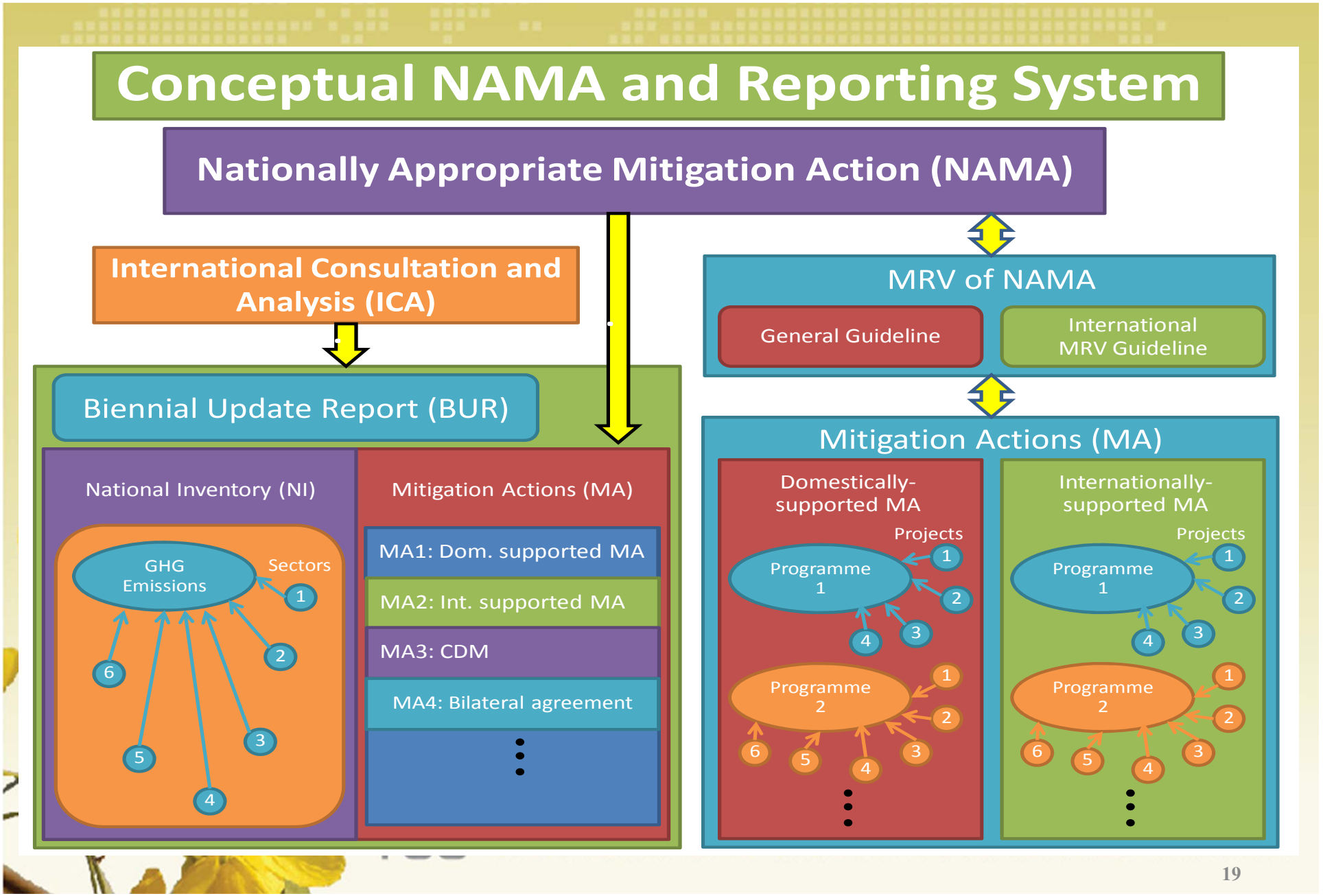
Part II : Developing of Thailand's MRV



(1) MRV: in general

- *Definitions*
- *International agreement on MRV and NAMAs*

(2) MRV: Sector based

- Principles

-The baseline concept

- Sector categorize; in details

(3) MRV: Projected based

- *Principles and Standard comparison*
- *Renewable energy project*
- *Energy efficiency project*

(4) Conclusions

1 MRV- in general

- International agreement on MRV and NAMAs
- Definitions and level
- Elements and Governance of MRV
  - ❑ Law & Regulation
  - ❑ Institutional Framework
  - ❑ Thai situation & Related Plan

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Why Energy sector ?

69.57%	22.64%	7.15 %	-3.44%	4.07%
Energy	Agriculture and livestock	Industrial Processes	Forestry	Waste

The Second National Communication (year 2000)

The preparation of the policy and MRV in

Energy Sector

is very important, especially for policy decision-making in climate change in the future.

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What's MRV?

M — **Measurable**

→ to correctly measure the required data input, both qualitative and quantitative, that is recognized internationally.

R — **Reportable**

→ To display collected information to related person in both within and outside the project. Can be Direct and Indirect emission reporting.

V — **Verifiable**

→ To verify (or ensure) that the data and results can reduce the amount of greenhouse gas emissions.

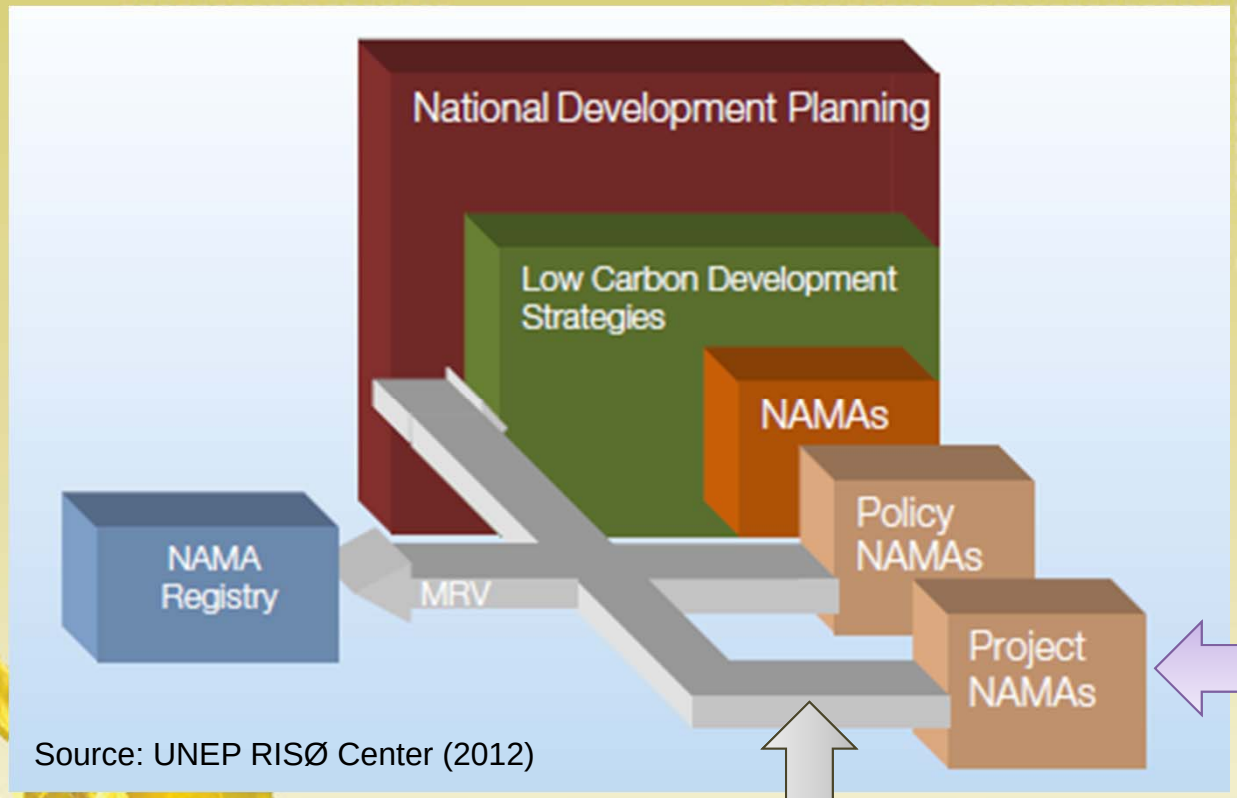
<u>The objective of the MRV</u>.

To determine and establish credibility with the relevant processes, especially, the GHG emissions reduction

Level of MRV

TGO is now developing 2 levels of MRV :

1. **Project level; and**
2. **Sector level**



Source: UNEP RISØ Center (2012)

1. Project MRV

Renew Energy
- *Solar*
- *Wind*
- *Hydro*
- *Biomass*
- *Biogas*

Energy Efficiency
- *Electricity*
- *Thermal heat*

Transport
- *Mass transit*

2. Sector MRV

TSIC sector ISIC sector
IPCC sector IEA sector
Provincial sector

Level of MRV

- MRV at National Level

MRV to the GHG Inventory, or MRV to the national plan (e.g. National energy efficiency plan) which may directly impact to legal and institutional framework structure.

- MRV at Sector level (Sector-based MRV)

Sector based MRV is very important and directly related to GHG emission reduction in sector. Baseline and sectoral data gathering would be key issue in sectoral level (e.g. MRV in cement industry sector, transport sector)

- MRV at project level (Project-Based MRV)

To measure, report and verify the GHG emission reduction in each individual project;

- Renewable energy project; e.g. biomass power plant
- Energy efficiency improvement project; e.g. retrofit the lighting system.

Elements and governance of MRV

Existing Institutional Framework

Issues	Questions	Existing institution
(1) Authorities	• Which organization is the NAMA and MRV (energy sector) authority ? • Which organization in Thailand regulate in energy related GHG emission reduction ?	• ONEP as National focal point • TGO as Thai DNA CDM • ERC → regulate in Power and gas industry DEDE → small power producer under 1,000kVA
(2) Responsibilities	• Which organization is responsible for implementing which parts of the energy program and its related MRV ?	• DEDE and EPPO as voluntary program for industry and commercial sector
(3) Accreditation	• Which organization awards the verification/certification ? • Which organization awards accreditation to third parties ? • Criteria for award the accreditation ? • Any Thai system can be applied for MRV accreditation body ?	• Not available now • Not available now • Not available now • Accredited consultants (ACs) system under DEDE

Elements and governance of MRV

Existing Institutional Framework

Issues	Questions	Solutions
(4) Compliance	• Which organization will endorse the energy related GHG compliance with the requirements ? • In what context ?	• Should be DEDE or ERC, but require new decree/regulation • In safety or environmental context
(5) Reporting timetable	• At what date or which frequency does the report have to be submitted or verified ? • How about MRV report timetable for sector based	• Not available • Not available
(6) Issuance	• Which organization issues proof of compliance or allowances or credits ?	• Not available
(7) Penalties	• Any penalties should be applied	?

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Thai situation of GHG and MRV related in energy sector

- Related institutional framework
  - ❑ Ministry of Natural Resources and Environment (MNRE)
  - ❑ Ministry of Energy
  - ❑ Others
- Current policy related to climate change
- Current national plan
  - ❑ Climate change plan
  - ❑ Energy plan

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Elements and governance of MRV

Authorization of Ministry of Natural Resources and Environment (MNRE)

Ministry of Natural Resources and Environment

Office of Natural Resources and Environmental Policy and Planning (ONEP)

Office of Climate Change Coordination

- ONEP has been appointed as the national focal point for UNFCCC and the Kyoto Protocol

Thailand Greenhouse gas Management Organization (Public organization) (TGO)

DNA-CDM office

- Analyzing and screening the CDM projects for issuance of the Letter of Approval and monitoring the projects;
- Promoting CDM projects and the CER Market;
- Greenhouse Gas Information Centre;
- Managing information regarding the approved CDM projects;
- Providing capacity building for government and private sectors on GHG management;
- Promoting and supporting all activities related to climate change mitigation.

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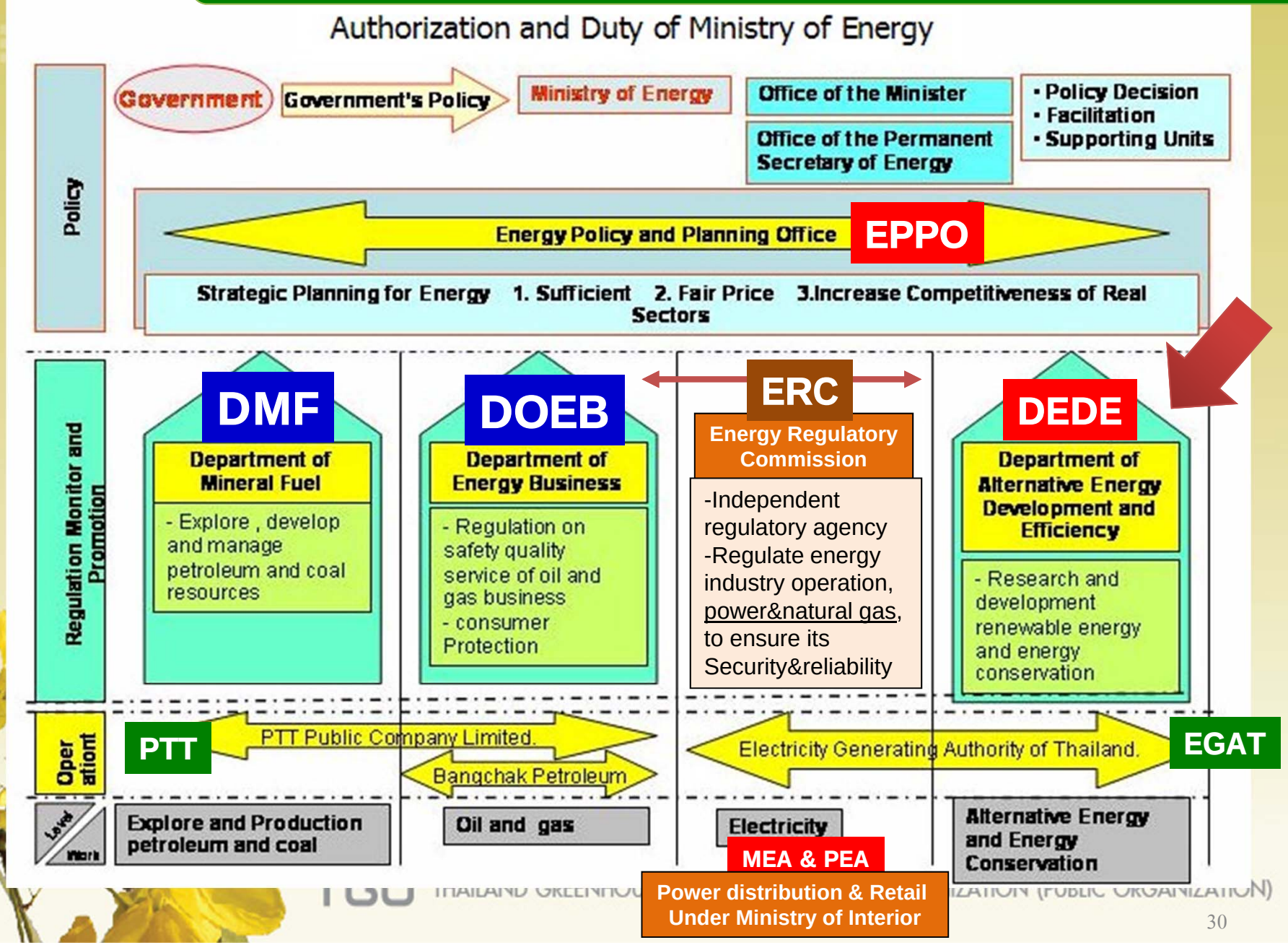
Authorization and duty of Ministry of Energy



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MRV- Sector based

- *Principles*
- *The baseline concept*
- *Sector categorize; in details*
- *Legal & Institutional framework*

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Principles of MRV-Sector based

M

Measure method

R

Reporting method and approach

V

Verification process (including frequency and methodology)

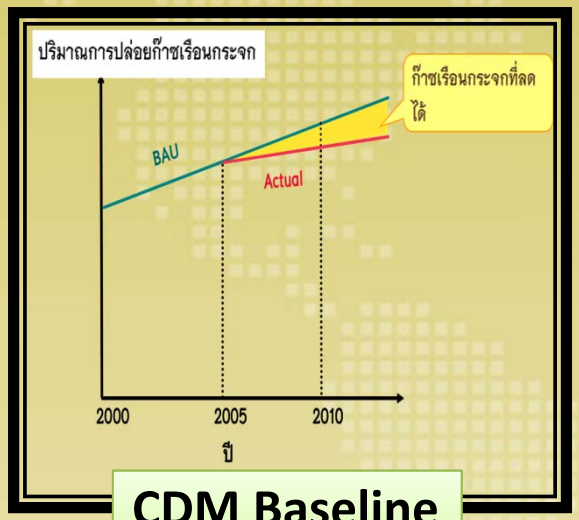
MRV Platform

- **Not complicated**
- **Flexible, easy to access and understand**
- **Support various data types**

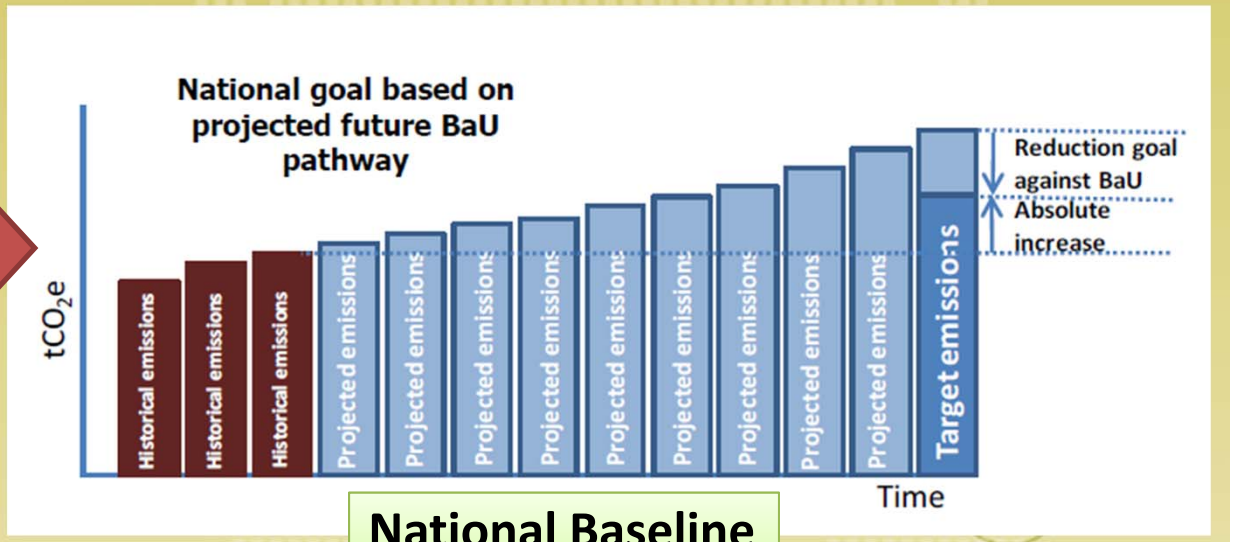
MRV concept

- **Clear sector baseline**
- **Apply “Matric” system in baseline determination**
- **Should be consistent with existing legal and institutional framework**

Principles of Baseline Determination



CDM Baseline



National Baseline

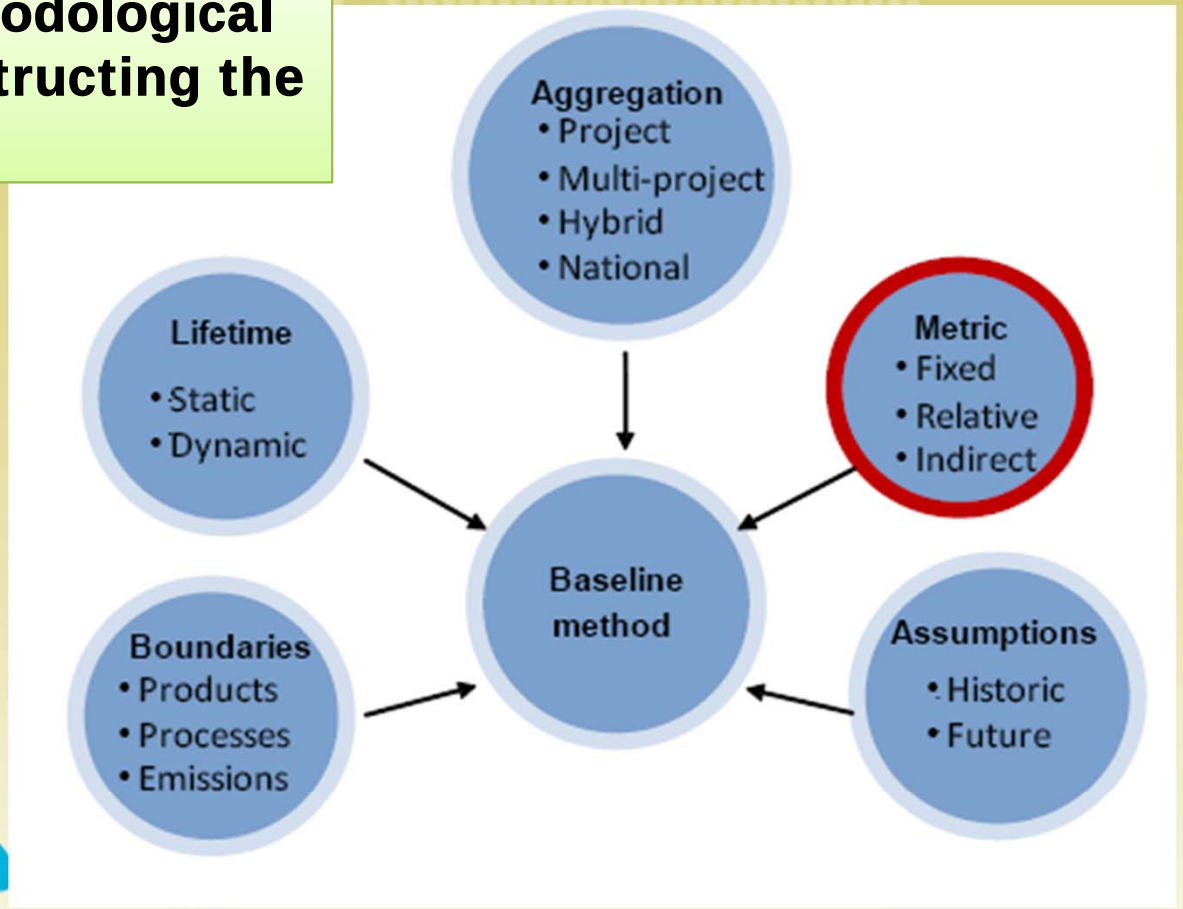
Baseline Matric

- GHG target and baseline setting is very important
- Baselines are integral to measure performance
- Metrics will describe how baseline is calculated and how actions are measured against it
- Important for national Pledge (on GHG mitigation figures)

Adapted from Choosing metrics for national and sectoral emissions baselines , IEA, September 2011

Baseline Method Consideration

Consists of 5 key methodological considerations in constructing the good baselines



Source: Setting Emissions Baselines: Choosing Metrics for National and Sectoral Baselines – Draft discussion document for comments, September 2011

Baseline Method Consideration in sector based MRV

1

Assumption

1. History
2. Future

2

Aggregation

1. Project Baseline
   - ❑Renewable Energy
   - ❑Energy Efficiency
   - ❑Transport
   - ❑Multi-Project
2. Sector Baseline
   - ❑Economic (IEA)
   - ❑TSIC Sector
   - ❑Area based
3. National Baseline
   - ❑IPCC Sector (GHG)
   - ❑Energy Sector
4. Hybrid Baseline

Baseline Method Consideration in sector based MRV

3 Boundaries

1. Product
2. Processes
3. Emission types

4 Matrics

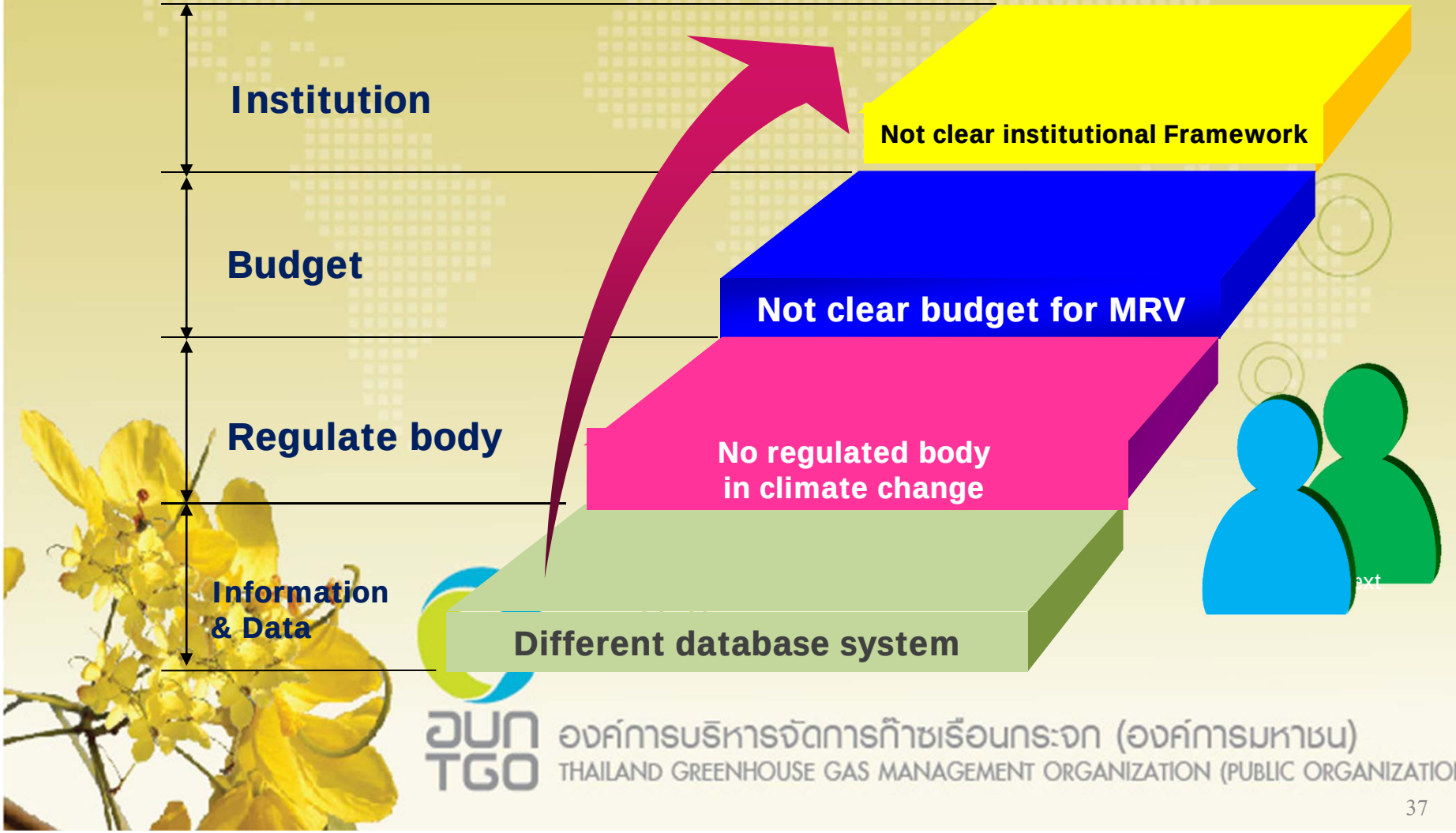
- *Purpose of baseline*
- *Data availability*
- *Technical expertize*
- *Stakeholder interest*

1. Fixed/Absolute — Unit in tCO2-e
2. Relative/Intensity Metrics — tCO2 per unit of output
3. Indirect metrics — Quantifiable metric that impact GHG emissions but is measured in different unit quantity Ex : penetration of techology

5 Lifetime

1. Static
2. Dynamic

Problems for Sector-based MRV



3 MRV- Project based

- Principles
- Comparison of International Standards
- Guidelines for MRV
  - Renewable energy projects
  - Energy efficiency project
  - Transport project

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Basic Concept of Project based MRV

Developing the project based MRV has main steps as follows:

1. Review and analyze Thailand and International experiences in MRV system in energy sector,
2. Study and compare major international measuring and verification standard,
3. Define the principles and draft the national MRV guidelines, consists of two main parts as follows; *(i)* Measuring and Reporting part, and *(ii)* Verification part

Developing Project based MRV must considers in these following issues.

System / Technology	• Understand system and energy technology which would be under MRV activities,
Accuracy	• Each energy project type may differs in confidential level and accuracy setting, but can still rely on the results,
MRV Cost	• MRV cost (in energy project) depends on accurate level of the result,
Instrument	• Measuring devices are main key in MRV activities.

Guidelines to Project based MRV

In this study, five main principles/concept of MRV was implemented

Transparency	Accuracy	Comparability	Consistency	Completeness
• Adequate and appropriate information, • Ensures sufficient and clear documentation of the methods, and others data used in the project	• Reduce the uncertainty during the MRV processes • Maintain high accuracy.	• Estimate of project is reported in such a way that it allows to be compared with estimate of other countries • Reflects the amount of GHG sources.	• Consistency is essential if the estimates for different years, gases and categories reflect the real differences in emissions.	• All sources in the boundary with complete information • Estimates of emissions and removals are reported for all relevant categories of sources and sinks, and gases

Conclusions on developing MRV

- TGO is now studying on the MRV in energy sector, in both sector based and project based,
- Renewable energy technologies and energy efficiency projects would be considered,
- There still have many unclear issues in internationally supported MRV and still have no “General MRV Guidelines”,
- The sector based MRV in energy context are now in developing phase,
- MRV finance for energy activities in Thailand is still in question.

Part III : Barriers/Challenge & Opportunity on NAMAs and MRV and Expectations for International Supports

3.1 Identify barriers/challenges

Lack of clarity and common procedure for developing NAMA and its MRV makes developing countries struggling in learning to design NAMA and MRV system from scratch - under limited resources, data and knowledge.

Lack of clarity on financial/technology/capacity building supports available and its deployment rule for implementation, in conjunction with the missing of MRV Guidelines, have placed a limitation to the progress in NAMA development & Supporting figure in developing countries.

Developing MRV system for Sectoral MA requires strong cooperation and supportive data supply from private sector – who highly concerns on the confidentiality and business sensitivity of the their information given.

3.1 Identify barriers/challenges (continued)

In most developing countries, **the majority of GHG-related data scatters among relevant authorities, while a GHG reporting system may not exist within those authorities**

Knowledge and understanding of stakeholders on NAMA, MRV and Reporting **are limited**.

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3.2 Identify opportunities

Missing of a common procedure leaves rooms for developing countries to design NAMA that enhances the context of their national circumstances (however the process may be time consuming regarding many constraints).

It is an opportunity for **developing countries to seek cooperation and support from developed country Parties** in order to enhance needed capacities assisting them to design, develop, prepare and implement NAMA & MRV.

Significant rooms are available for **advancing in knowledge and experience on GHG reporting system and institutional arrangement.**

NAMA does its part in stimulating developing countries to **focus on developing a Roadmap of mitigation actions** more thoroughly.

3.3 Expectations for International Supports

International supports on technology and financing – These supports should lead to an increase in investment, development and transfer of low carbon technology in developing countries, and result in the technology becoming common practice due to reduced abatement costs which allows wide domestic investment by private sector with less government subsidies.

International supports on capacity building – Capacity building can enhance performance in many areas including *(1)* Preparation & implementation of NAMA; *(2)* Development of MRV system; and *(3)* Biennial Update Report.

Flexibility in the process – Supports to be provided for developing countries should be flexible, less complicated and delivered within reasonable timeline, while maintaining transparency and equality.

Thank you

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