Energy Technology for Environment

Research Center

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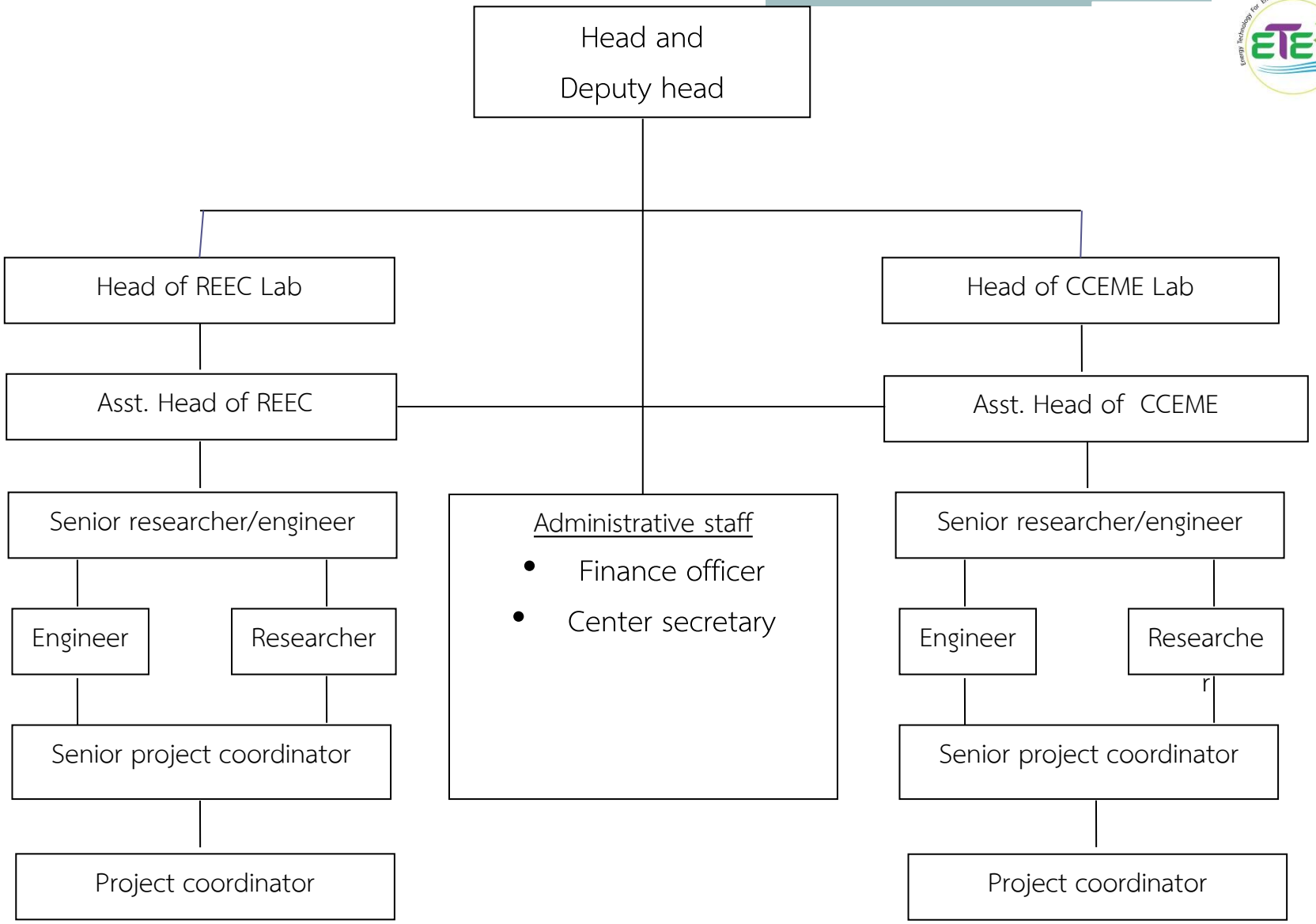
Who are we ?

- Established in 2011, as an energy/environment center under the Faculty of Engineering, CMU,
- Around 50 full-time staffs from two laboratories under the center,
  - **Renewable Energy and Energy Conservation Laboratory (REEC)**
  - **Climate Change Engineering and Management in Energy Sector Laboratory (CCEME)**
- Do researches and academic services in energy and energy related climate change issues,
- Non-profit organization and operates by center's own budget

Who are we ?

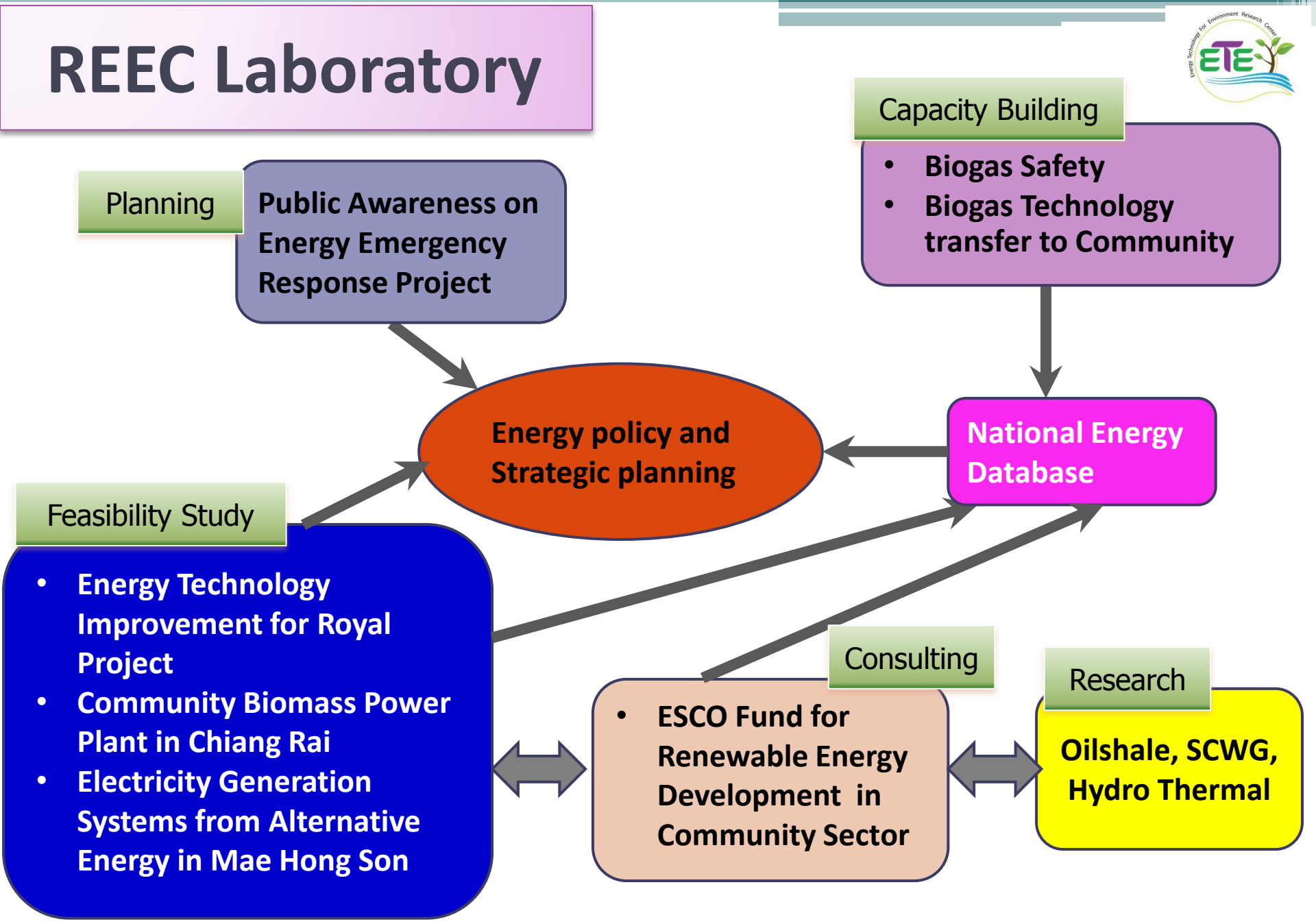
- **Emphasize in researches and academic services in 5 main issues**
  - ***Energy policy and planning***
  - ***Renewable energy technologies (mainly in biomass and biogas)***
  - ***Energy efficiency improvement***
  - ***GHG management from energy sector***
  - ***Training in energy and climate change***
- **Granted from Thai organizations (DEDE, EPPO, TGO, etc.) and international organizations (GEF project, World Bank project)**


Head and
Deputy head
Head of REEC Lab
Head of CCEME Lab
Asst. Head of REEC
Asst. Head of CCEME
Senior researcher/engineer
Administrative staff
• Finance officer
• Center secretary
Senior researcher/engineer
Engineer
Researcher
Engineer
Researche
r
Senior project coordinator
Senior project coordinator
Project coordinator
Project coordinator

Renewable Energy and Energy Conservation Laboratory

REEC Laboratory

REEC Laboratory



Project REEC-1:

Public Awareness on Energy Emergency Response Project

Objectives:

(1) To conduct the guideline and capacity building to public sector in energy conservation during the energy emergency response period,

(2) To prepare and practice the energy emergency response activities under Ministry of Energy's role

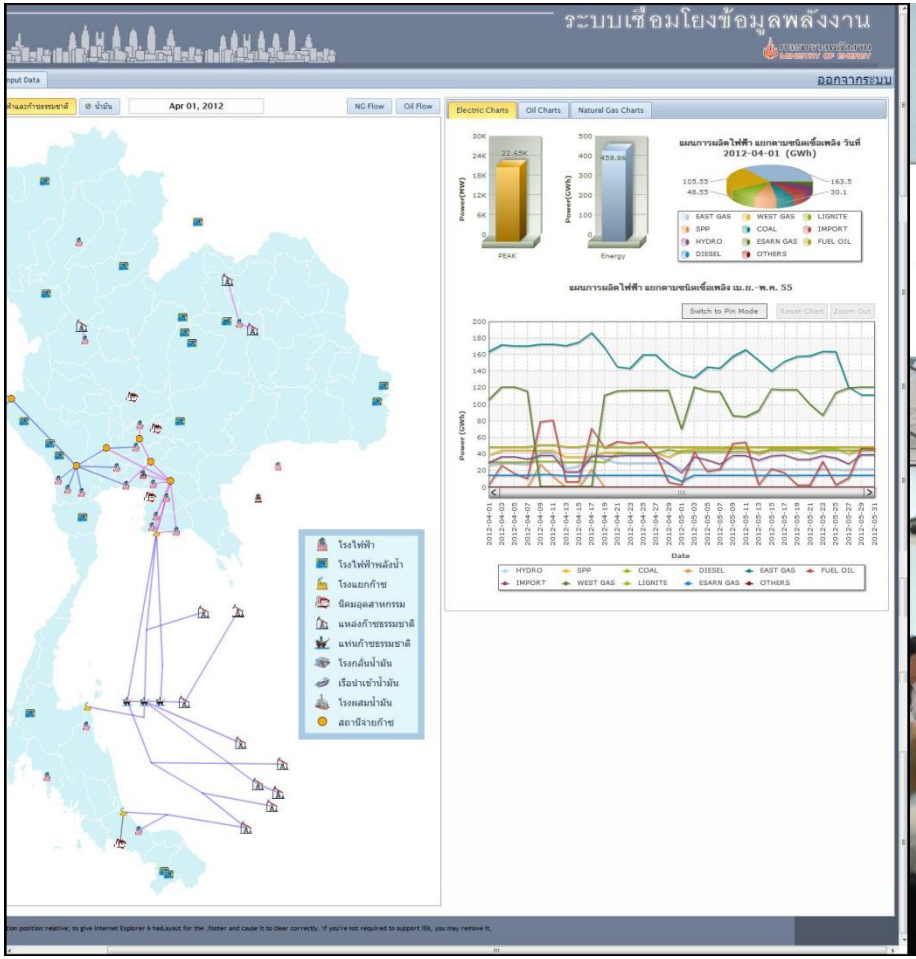
Project type: Academic services (energy policy and Strategic planning)

Period: One year (February 2013- February 2014)

Donor: Office of Permanent Secretary, Ministry of Energy

Project REEC-1:

Public Awareness on Energy Emergency Response Project



Project REEC-2:

Provincial Energy Database of Thailand Project

Objectives:

(1) To develop and improve the Thailand energy database system,

(2) To develop the provincial energy policy and planning by applying data from national energy database system ฯ

(3) To develop the national area-based greenhouse gases emission data emitted from energy sector.

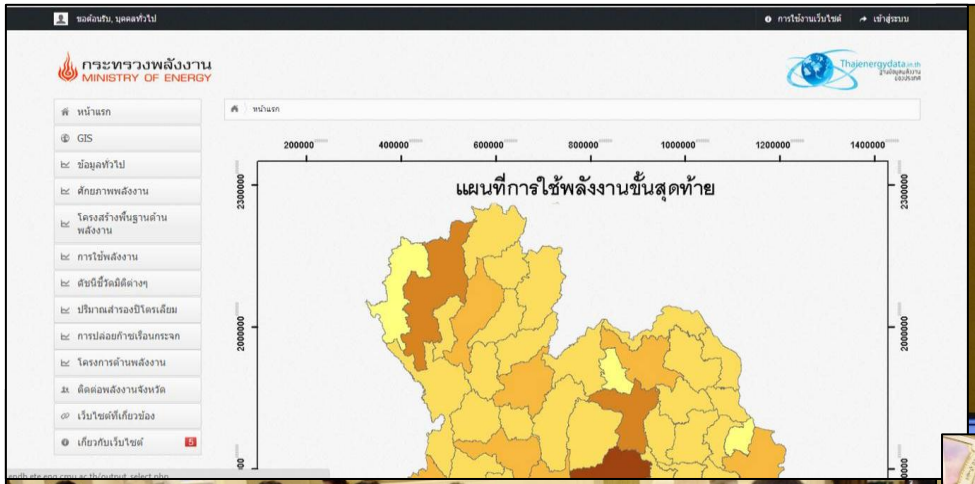
Project type: Research and academic services

Period: One year (August 2012-July 2013)

Donor: Office of Permanent Secretary, Ministry of Energy

Project REEC-2:

Provincial Energy Database of Thailand Project



Project REEC-3:

ESCO Fund for Renewable Energy Development in Community Sector

Objectives:

(1) To develop community scale renewable energy power plants for the total target of 300 kW capacity or 25 projects,

(2) To study the roadmap of stakeholder participation in developing renewable energy within the community.

(3) to analyze the suitable process of establishing energy fund for the community.

Project type: Renewable Energy Developing ,Consulting

Period: One year (January 2013-April 2014)

Donor: Office of Permanent Secretary, Ministry of Energy

Project REEC-3:

ESCO Fund for Renewable Energy Development in Community Sector

Partially subsidization,
Renewable energy technologies in both power or heat,

Subsidy

Capital Investment

Cost

Project REEC-3:

ESCO Fund for Renewable Energy Development in Community Sector

Project REEC-4:

"Feasibility Study of Small and Very Small Electricity Generation Systems from Alternative Energy for On-grid and Off-Grid applications in Mae Hong Son - Phase 2"

Objectives:

To conduct a survey and to evaluate the potential of 4 alternative energy sources, which are hydro energy, biomass energy, solar energy, and waste. This project covers 16 specific areas, which compose of 9 grid-coneected areas and 7 no grid-connected areas. These areas are located in 6 Ampher of Mae Hong Son.

Project type: Academic services (Survey and to evaluate the potential)

Period: One year (July 2012-June 2013)

Donor: Thailand Environment Institute Foundation

Project REEC-4:

"Feasibility Study of Small and Very Small Electricity Generation Systems from Alternative Energy for On-grid and Off-Grid applications in Mae Hong Son - Phase 2"

Project REEC-5:

Feasibility Study of Energy Technology Improvement supporting for Royal Project

Objectives:

Support the Public agencies and Academic institutes to conduct the survey and developing the feasibility Study of the energy technology improvement project including the investment analysis, engineering potential, and environmental impact assessment .

Project type: Academic services (Survey and to evaluate the potential)

Period: Six month (September 2012-February 2013)

Donor: Department of Alternative Energy Development and Efficiency, Ministry of Energy

Project REEC-5:

Feasibility Study of Energy Technology Improvement supporting for Royal Project

Project REEC-6:

Feasibility Study of Distributed-Green-Generation: DGG (Community Biomass Power Plant at Chiang Rai Province)

Objectives:

Support, Conduct the survey the Feasibility Study of Distributed-Green-Generation: DGG (Community Biomass Power Plant at Chiang Rai Province)

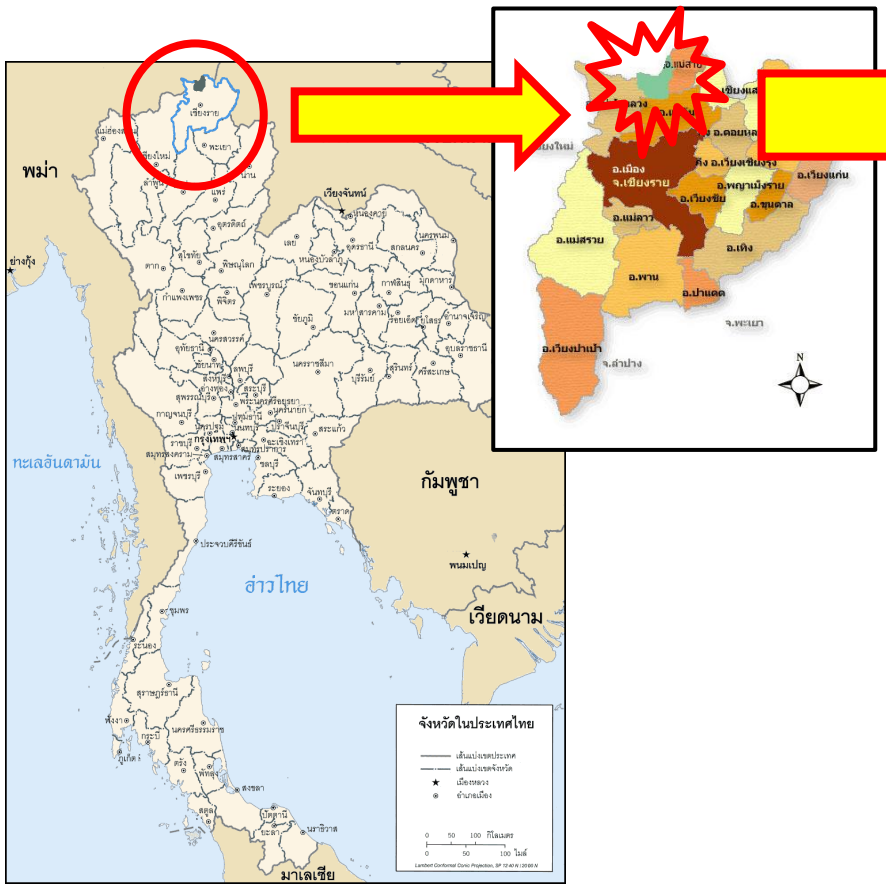
Project type: Academic services (Survey and to evaluate the potential)

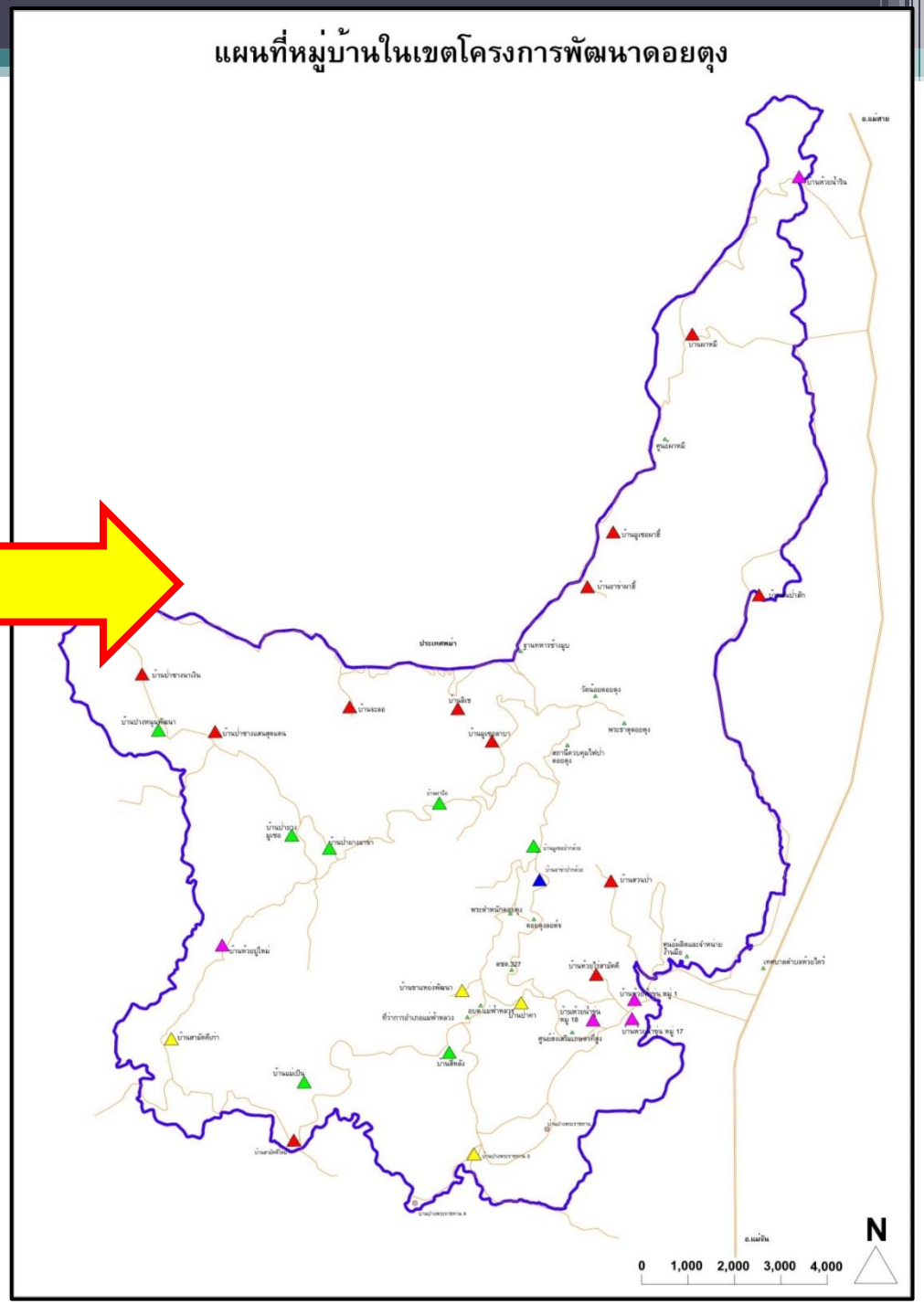
Period: One year (July 2012-June 2013)

Donor: Department of Alternative Energy Development and Efficiency, Ministry of Energy

Project REEC-6:

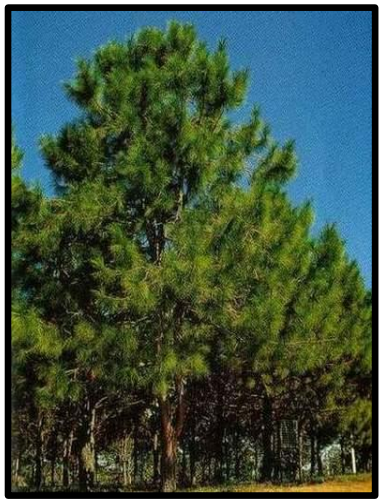
Feasibility Study of Distributed-Green-Generation: DGG (Community Biomass Power Plant at Chiang Rai Province)





Project REEC-6:

Feasibility Study of Distributed-Green-Generation: DGG
(Community Biomass Power Plant at Chiang Rai Province)



Project REEC-6:

Feasibility Study of Distributed-Green-Generation: DGG
(Community Biomass Power Plant at Chiang Rai Province)

Project REEC-7:

Technology transfer from Community scale biogas prototype to community project

Objectives:

1. **To provide knowledge and comprehension that bring about the use of biogas technology accurately in community potential target**
2. **To disseminate knowledge on community scale biogas prototype and biogas utilization**
3. **To create a good image in renewable energy development according to 15-year renewable energy development plan and encourage communities to produce renewable energy by themselves**

Project type: Academic services (Training)

Period: Six month (March 2013 -August 2013)

Donor: Ministry of Energy

Project REEC-7:

Technology transfer from Community scale biogas prototype to community project

Project REEC-8:

Capacity building to Community - "Biogas safety" – Phase 2

Objectives:

1. **To create appropriate public relation and media for biogas stakeholder**
2. **To develop public relation strategy of safety in production and using biogas that can reach to target**
3. **To publicize the media through appropriate strategies to the target**

Project type: Capacity building (Seminar and Training)

Period: One year (February 2013-Janury 2014)

Donor: Department of Alternative Energy Development and Efficiency, Ministry of Energy

Project REEC-8:

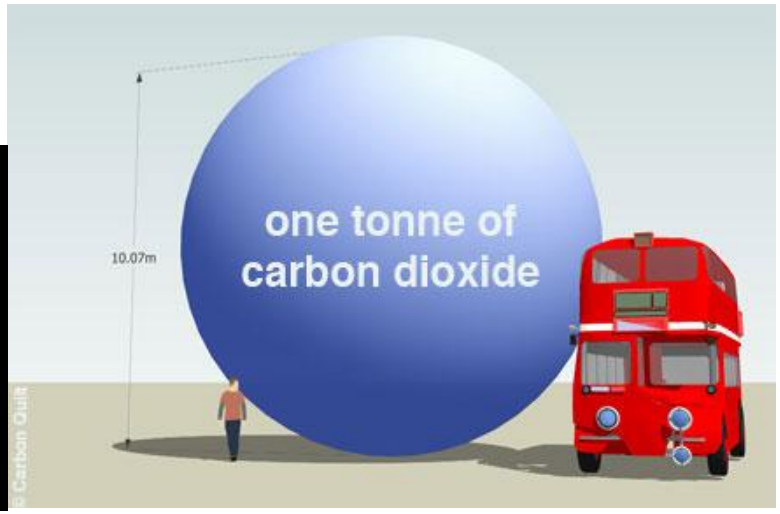
Capacity building to Community - "Biogas safety" – Phase 2

Project REEC-8:

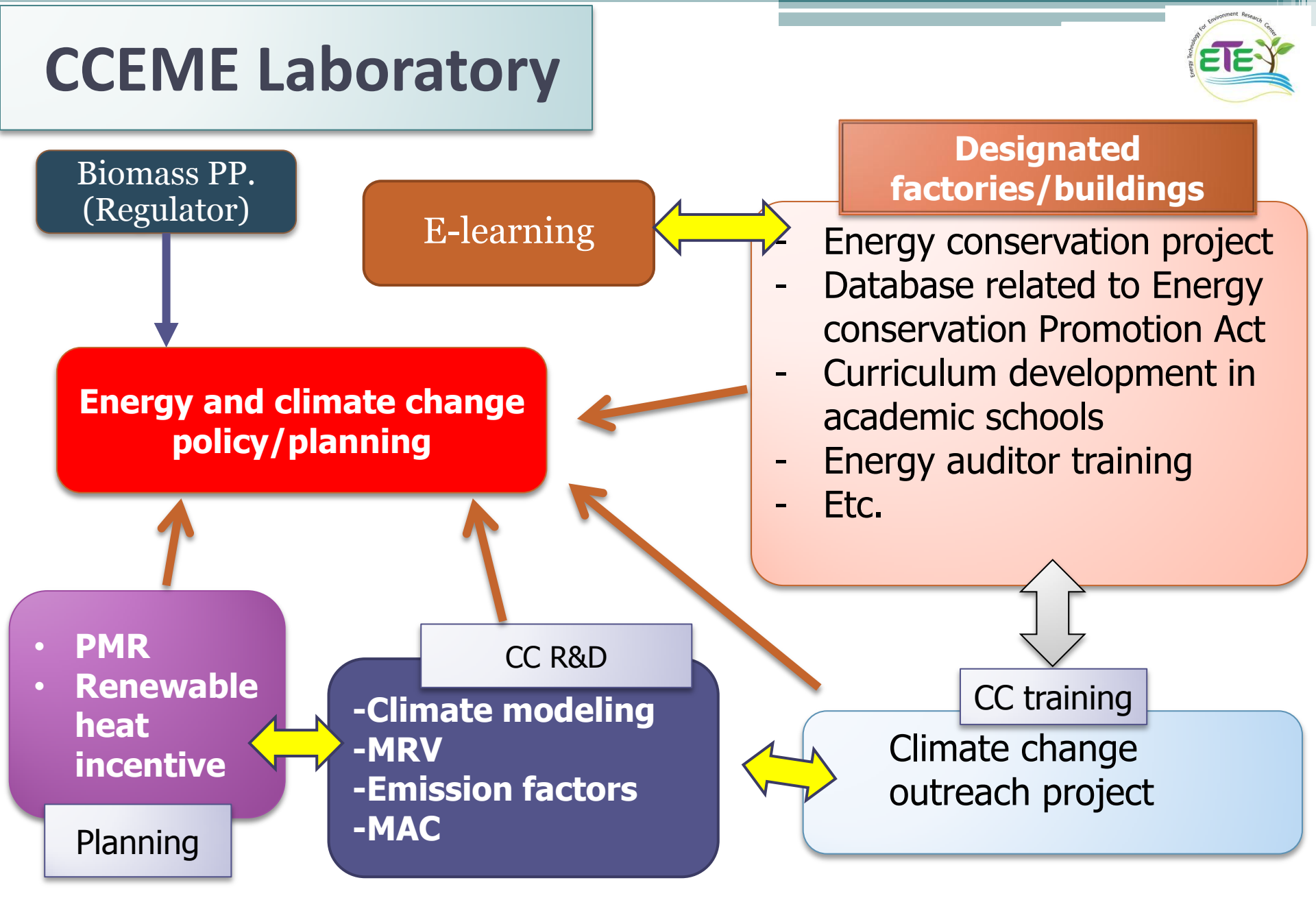
Capacity building to Community - "Biogas safety" – Phase 2

Climate Change Engineering and Management in Energy Sector Laboratory

CCEME Laboratory



CCEME Laboratory



Project CCEME-1:

Energy Database Improvement in Designated Factories and Building

Objectives:

(1) To improvement and increase the efficiency of the database performance on energy conservation overall of DEDE for supporting the performing carious tasks which related well.

(2) To develop the system of received – sent electronic information (e-form) associated with the operation of energy conservation designated building / factory for preparing the operation in the future

(3) To develop the potential of staff who overseeing the energy conservation of DEDE in the information systems used in the operation effectively.

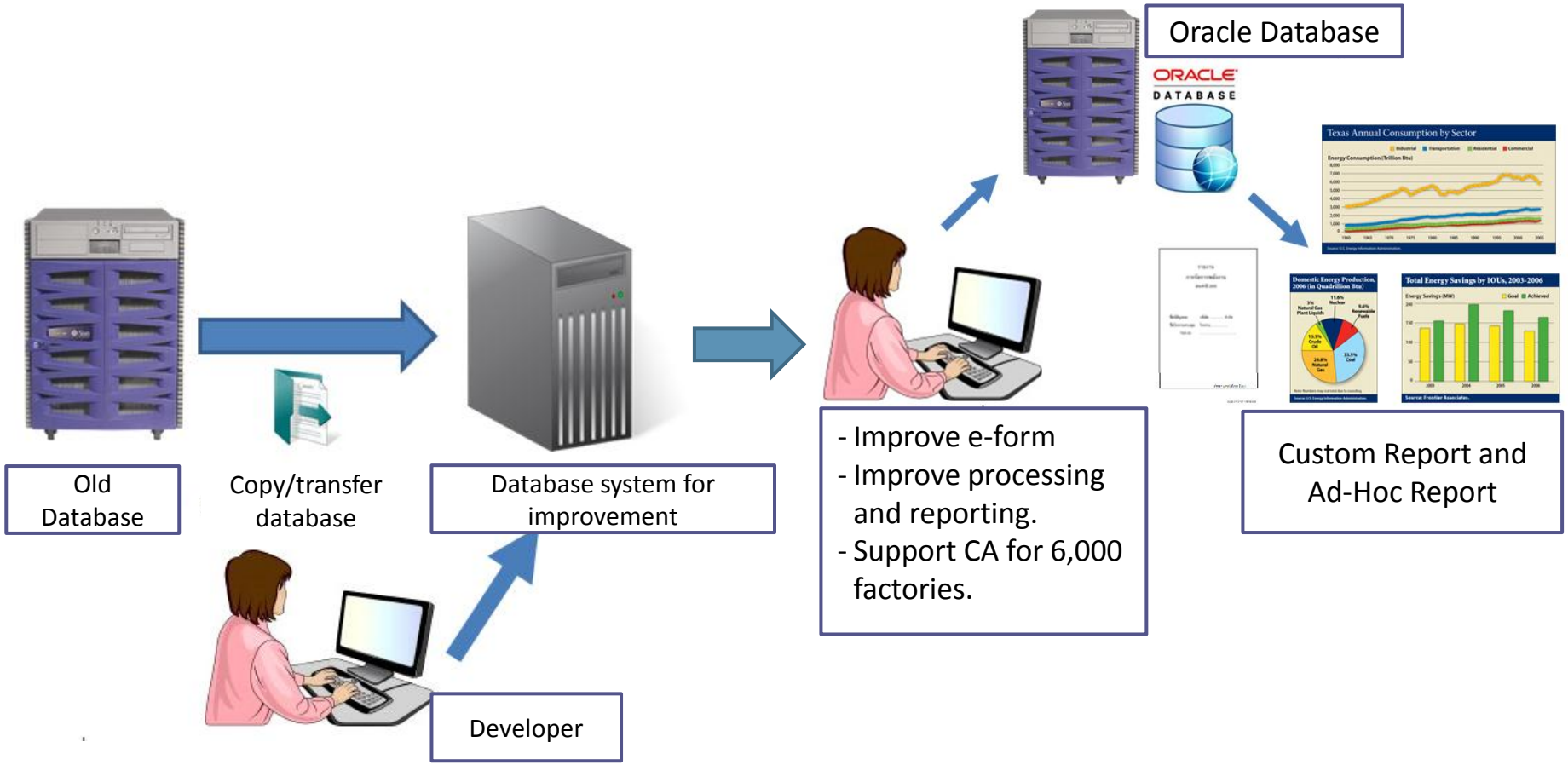
Project type: Research and academic services

Period: One year (February 2013-January 2014)

Donor: DEDE

Project CCEME-1:

Energy Database Improvement in Designated Factories and Building



Project CCEME-2:

Measuring, Reporting and Verifying (MRV) of GHG in Energy sector

Objectives:

(1) To determine and establish the MRV in energy sector especially, in renewable energy and energy efficiency projects,

(2) To suggest the legal and institutional framework in Thai MRV,

(3) To suggest the policy based MRV in energy sector.

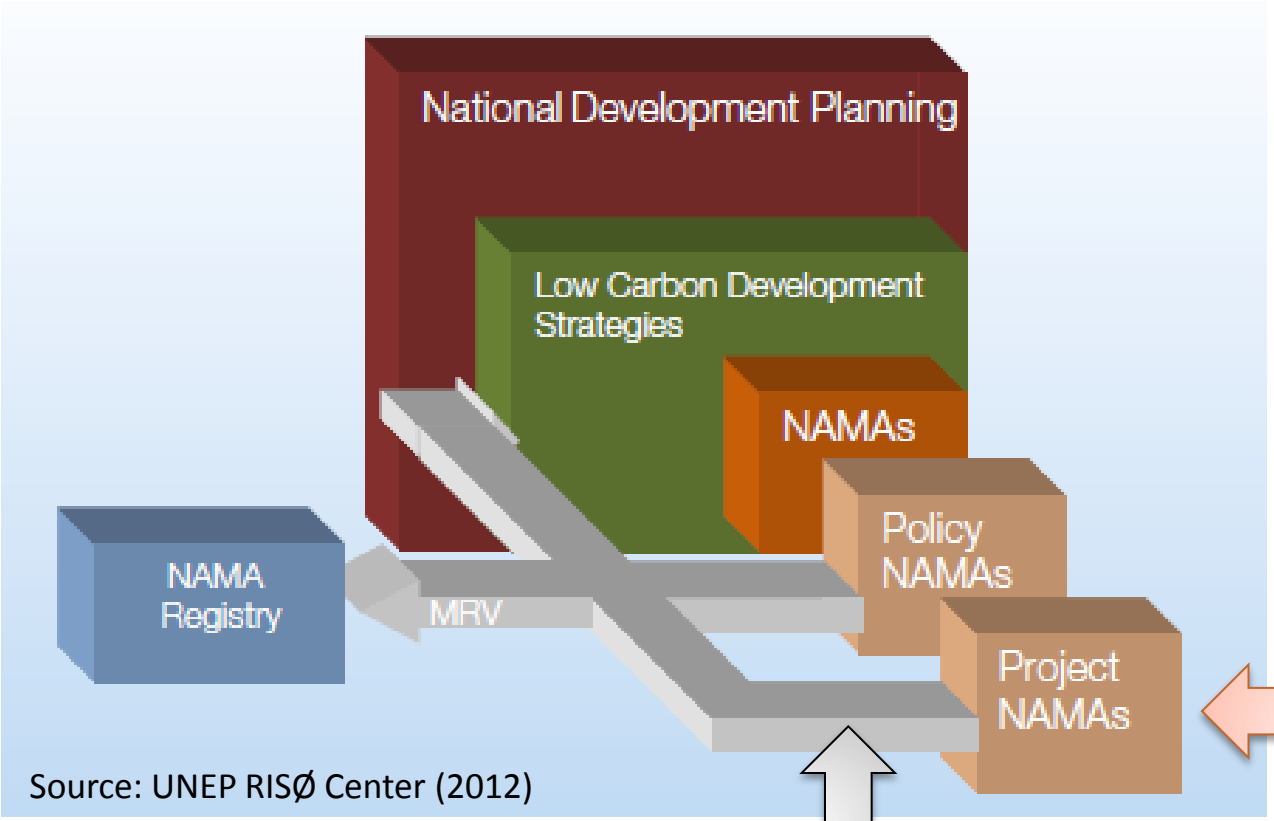
Project type: Research

Period: 8 months (May 2012-December 2012)

Donor: Thailand Greenhouse gas Management Organization (TGO)

Project CCEME-2:

Measuring, Reporting and Verifying (MRV) of GHG in Energy sector



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

Project CCEME-3:

Partnership for Market Readiness Project

General objective:

to prepare readiness of Thailand in developing Voluntary Mitigation Market Mechanism

Specific objectives:

- To design Market Mechanism to reduce energy consumption and GHG in Energy sector with the view to transform to Emission Trading if required
- To design new methodology and standard to assist local municipalities and communities to implement GHG mitigation actions in achieving sustainable development and low carbon society goals .
- To develop MRV and registry system for Market Mechanism proposed
- To implement PILOT Market Mechanism proposed

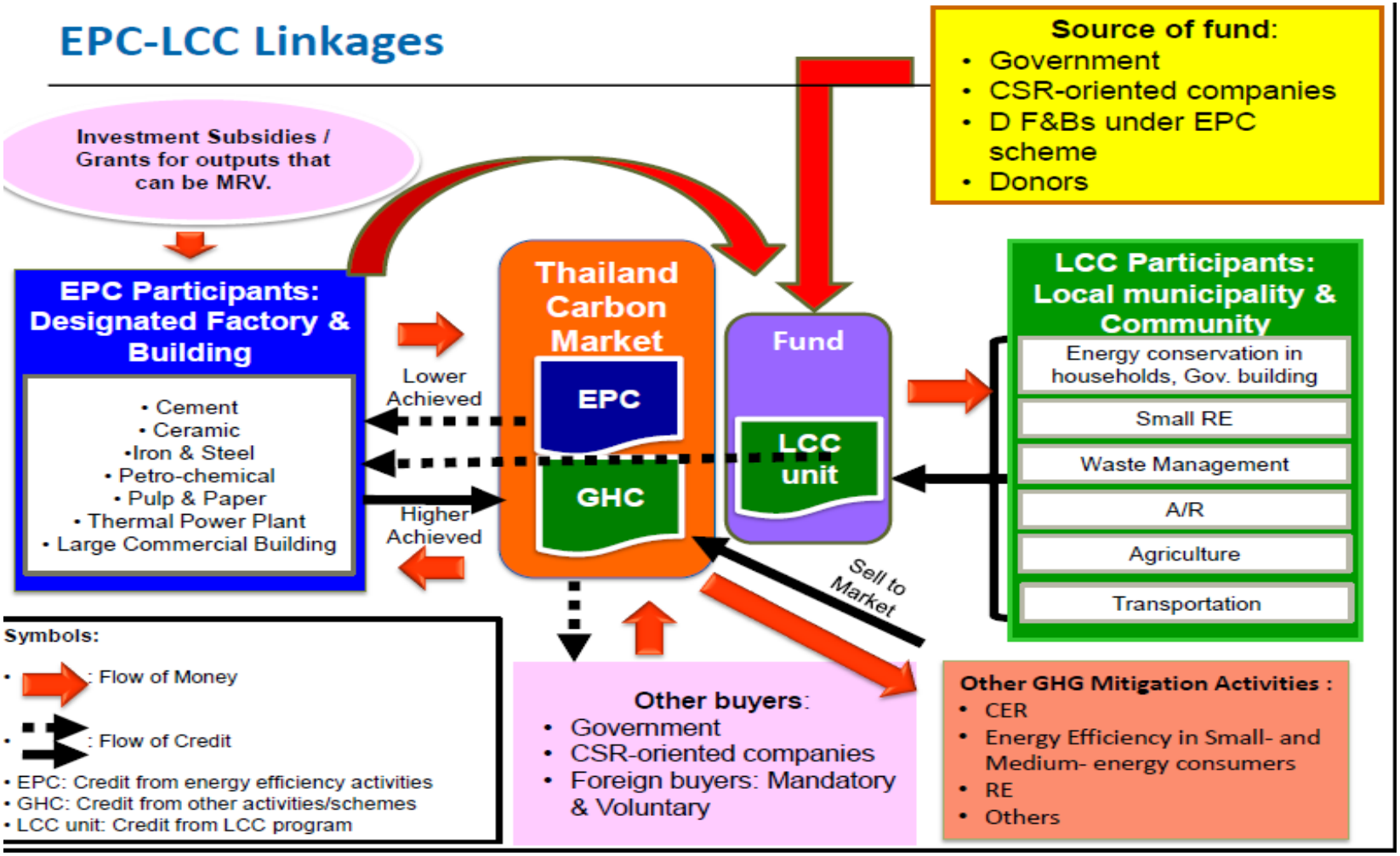
Project type: Research

Period: 10 months (August 2012- May 2013)

Donor: Thailand Greenhouse gas Management Organization (TGO) under the World Bank PMR project

Project CCEME-3:

Partnership for Market Readiness Project



Project CCEME-3:

Study the impact of climate change policies on energy sector in Thailand.

Objectives:

(1) To study and analyze the impact of global climate change policy for the energy sector in Thailand.

(2) To study and support preparation for the comparative analysis of climate change policies on energy, national and enterprise level.

(3) To make suggestions, support arrangements, strategies of the various economic sectors and energy sectors in Thailand and the impact is expected to occur in the short term to long term.

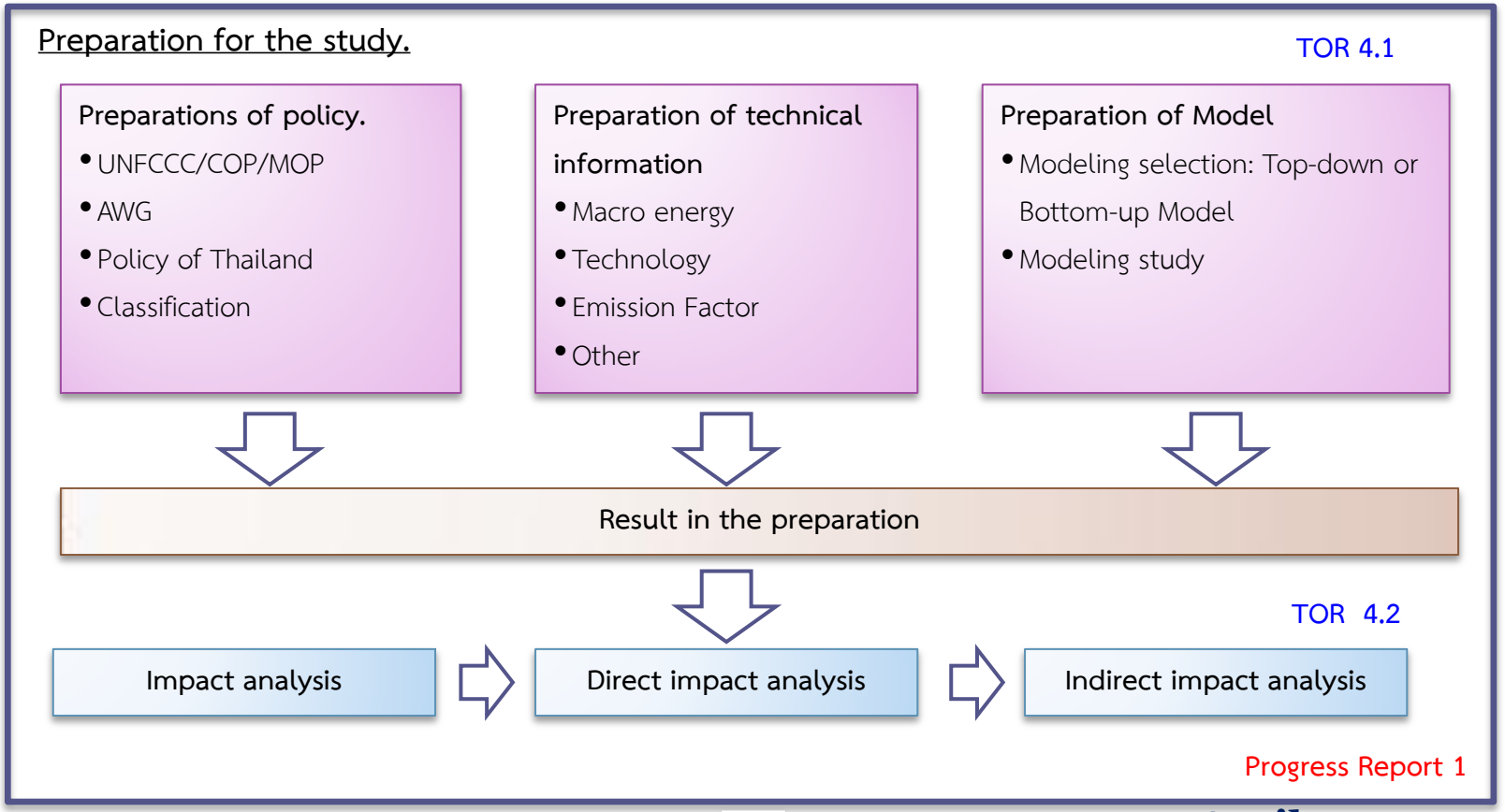
Project type: Research

Period: Ten months (January-November 2013)

Donor: DEDE

Project CCEME-3:

Study the impact of climate change policies on energy sector in Thailand.



April 29, 2013

Project CCEME-3:

Study the impact of climate change policies on energy sector in Thailand.

2

The comparative analysis.

TOR 4.3

SWOT Analysis

- Guidelines / policies / terms of international
- Preparation of case studies to support both national and international organizations.

TOR 4.4

Energy policy framework related to climate change

- Consider qualitative framework.
- Consider quantitative framework.
- The model is applied to the framework and assumptions.

Progress Report 2

(July 29, 2013)

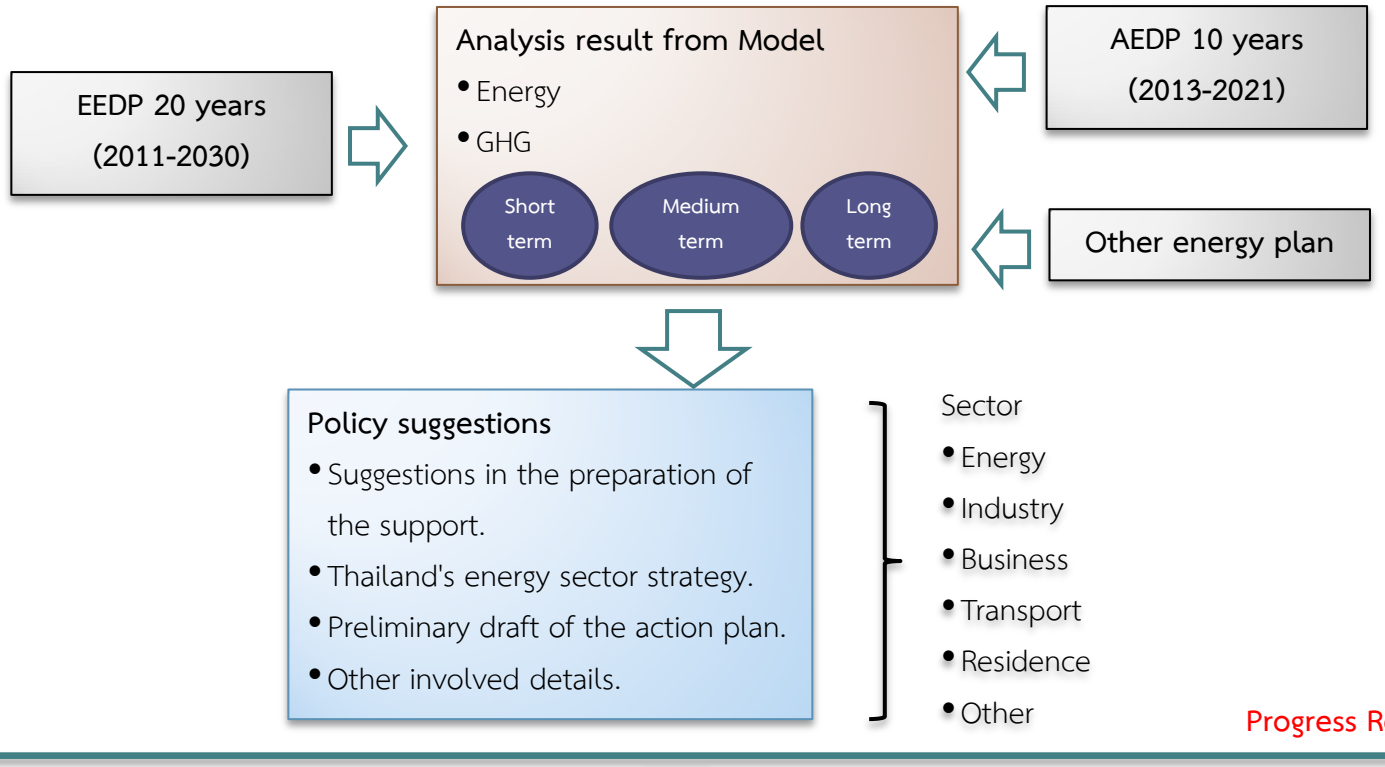
Project CCEME-3:

Study the impact of climate change policies on energy sector in Thailand.

3

Analysis and preparation of policy suggestions.

TOR 4.5



Progress Report 3

(September 27, 2013)

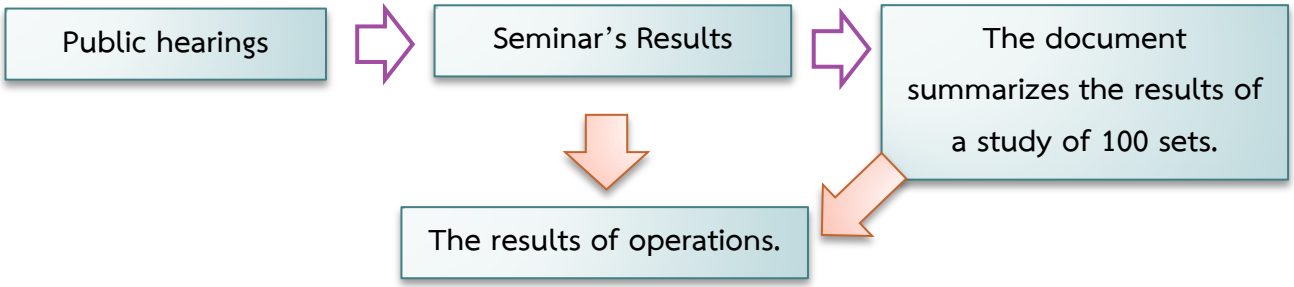
Project CCEME-3:

Study the impact of climate change policies on energy sector in Thailand.

4

Hearing comments and conclusions.

TOR 4.6 - 4.7



Final Report

(November 29, 2013)

Project CCEME-4:

Development course and capacity building for preparedness to greenhouse gases management project.

Objectives:

(1) To disseminate knowledge on the greenhouse gas management.

(2) Preparation of relevant on greenhouse gases management after the first commitment of the Kyoto Protocol (2012).

(3) Development course and capacity building and to advise the government and private agencies concerned with the greenhouse gases management through the training for the target group.

Project type: Academic services

Period: Ten months (February-December 2012)

Donor: TGO

Project CCEME-4:

Development course and capacity building for preparedness to greenhouse gases management project.

- 10 courses
- 603 trainees from 231 organizations

Project CCEME-5:

Energy conservation curriculum development for Vocational education project.

Objectives:

(1) To improve study book and other media of energy conservation curriculum for Vocational education.

(2) To train 400 teachers who responsible for energy course in vocational education

Project type: Academic services

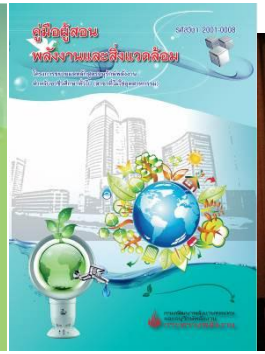
Period: 12 months (July 2012-July 2013)

Donor: DEDE

Project CCEME-5:

Energy conservation curriculum development for Vocational education.

- 3 days seminar (2 days for theory, 1 day for workshop)
- 400 trainees from 246 institutions



Project CCEME-6:

Development renewable energy course for factories and building.

Objectives:

(1) To disseminate knowledge on renewable energy.
(2) To achieve understand and bring renewable energy to apply.

Project type: Academic services
Period: 9 months (December 2012 – September 2013)
Donor: DEDE

Project CCEME-6 :

Development renewable energy course for factories and building.

Information

- **Solar**
- **Biogas**
- **Biodiesel**
- **Biomass**
- **Wind**
- **Hydro**
- **Ethanol**
- **Others renewable energy**

Project CCEME-6 :

Development renewable energy course for factories and building.

- 4 days seminar (3 days for theory, 1 day for excursion)

Project CCEME-7:

Study for Renewable heat incentive to encourage renewable energy.

Objectives:

Find ways to encourage and support the renewable heat production.

Project type: Research.

Period: 8 months (January- August 2013)

Donor: DEDE

Project CCEME-7:

Study for Renewable heat incentive to encourage renewable energy.

1

Collect and study the relevant information.

- Industrial heat using.
- Renewable heat technology.

Study the measures to encourage renewable heat production.

- In Thailand
- Foreign countries

Progress Report 1

March, 2013



Project CCEME-7:

Study for Renewable heat incentive to encourage renewable energy.

2

- Cost Analysis
  - Modification of fossil fuels as a renewable fuel to produce heat.
  - Renewable heat production technology.
- Cost Analysis Evaluation
  - Estimate RHI support rate.
  - support period evaluation.
  - RHI support measures evaluation model.

Progress Report 2 | June, 2013

3

Study of RHI Support measures effects → Study of measure and verify the energy amount → Stakeholders brainstorming conference → Conference published

Final Report | August, 2013

Project CCEME-8:

The Implementation of Energy conservation E-learning programs for Thailand

Objectives:

(1) To expand the result for the target group in the course of energy conservation to be able to access information easily and knowledge more widely.

(2) To reinforce the knowledge and understanding of the energy management techniques and equipment for energy conservation for the industry, buildings businesses and government agencies.

(3) To create and develop a network of Course participants in the learning and teaching through e-learning.

(4) To reduce training costs for the long term, such as the cost for the instructor or lecturer , the cost of travel, accommodation and costs in preparing the document, or rent a training place.

Project type: Research and academic services

Period: One year (July 2012-May 2013)

Donor: DEDE

Project CCEME-8:

The Implementation of Energy conservation E-learning programs for Thailand

Develop LMS (Learning Management System)

– Multimedia (video, Slide present with audio, case study)

Develop Courseware

- 3 courses
- 2,035 trainees

http://elearning-bhrd.dede.go.th/

Thank you

Energy Technology For Environment Research Center

ETE