Country Report for SE4ALL Workshop
14-16 February 2017 in Tokyo, Japan

The Status and Potential Issues of the Mandatory EE & C Building Code in Thailand

Department of Alternative Energy Development and Efficiency
Ministry of Energy
Thailand
Content:

1. Status and Future Plan
2. Barriers
3. Countermeasures
4. Request of support by ECCJ and SE4All
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1. Status and Future Plan

Department of Alternative Energy Development and Efficiency
Ministry of Energy
Thailand
Thailand Integrated Energy Blueprint (TIEB)

EEP = Energy Efficiency Plan
PDP = Power Development Plan
AEDP = Alternative Energy Development Plan

EE2; Building Energy Code (BEC)

- 1 GWh = 0.08521 ktoe
- 1 MW = 8.76 GWh

<table>
<thead>
<tr>
<th>Expected Energy Saving by Economic sector</th>
<th>Total (ktoe)</th>
<th>(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>EE1 Enforcement of energy conservation standard in designated factory/building</td>
<td>5,156</td>
<td>10%</td>
</tr>
<tr>
<td>EE2 Building Energy Code (BEC) for the new buildings</td>
<td>1,166</td>
<td>2%</td>
</tr>
<tr>
<td>EE5 Financial Incentives and support for energy performance achievement</td>
<td>991</td>
<td>2%</td>
</tr>
<tr>
<td>EE6 Promoting greater use of LED</td>
<td>500</td>
<td>1%</td>
</tr>
<tr>
<td>EE7 Energy saving measures in transport sector</td>
<td>30,213</td>
<td>58%</td>
</tr>
<tr>
<td><strong>Total (ktoe)</strong></td>
<td><strong>51,700</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>
BEC Standard

Group 1
Education Office
- 8 Hours/day
- OTTV ≤ 50 W/m²
- RTTV ≤ 15 W/m²
- LPD ≤ 14 W/m²

Group 2
Theater
Convection Hall
Entertainment
Department Store
- 12 Hours/day
- OTTV ≤ 40 W/m²
- RTTV ≤ 12 W/m²
- LPD ≤ 18 W/m²

Group 3
Hotel
Hospital
Condominium
- 24 Hours/day
- OTTV ≤ 30 W/m²
- RTTV ≤ 10 W/m²
- LPD ≤ 12 W/m²

Department of Alternative Energy Development and Efficiency
MINISTRY OF ENERGY
BEC Standard

Standard for building design

1. System compliance
   - Envelop System
   - Lighting System
   - Air conditioning System
   - Water heating appliance

2. Whole building compliance
   - Designed Building \( \leq \) Reference Building
   - Water heating appliance

PASSED

PASSED

FAIL
Road Map according to BEC

1. Enforcement of the Ministerial Regulation
   • Enforcement BEC standard
   • Development of BEC auditor training
   • Tightening BEC standard

2. Supporting new energy conservation building
   • Energy building labels
   • Financial incentives, for example government funds or low interest personal loans

3. Zero Energy Building
   • Study green building design, economic value and the climate change of Thailand
   • Zero Energy Building Plan

Target: Government and private new building total area ≥ 2,000 m²

- Envelop system
- Lighting system
- Air conditioning
- Hot water system
- Renewable energy
Energy Saving Target according to EE2, EEP 2015

- **Ref.** Reference Building
- **BEC** Building Energy Code
- **HEPS** High Performance Standards
- **ECON** Economic Building
- **ZEB** Zero Energy Building

- 2015: Reference 2558
- 2019: BEC 2561
- 2025: HEPS 2567
- 2031: ECON 2579

- 2015: 0 ktoe
- 2019: 21 ktoe
- 2025: 186 ktoe
- 2031: 1,166 ktoe

- 1,890 Buildings by 2031

- 546 ktoe by 2031

- 1,166 ktoe by 2031

- 3,658 Buildings by 2031
Energy Saving

BEC Implementation

Energy Saving
2009 - 2015

- Energy Saving: 219.43 GWh/yr
- Oil Equivalent: 18.77 ktoe/yr
- Cost Value: 767.99 Baht/yr
- CO₂ Emissions: 127.27 tons/yr
BEC Implementation

Result of the Evaluation of Energy Conservation Building Design

Only 19.5% of Private Building in Cooperation with the Promotion of BEC from 2009 to 2015

2009 - 2015
426 Building plans
Governemnt sector 355 Building plans
Private sector 71 Building plans

Condominium
15.02% (64 Building plans)

Hospital
11.74% (50 Building plans)

Hotel
3.29% (14 Building plans)

Department Store
1.17% (5 Building plans)

Convention Hall
9.39% (40 Building plans)

Education
43.43% (185 Building plans)

Office
15.96% (68 Building Plans)
2. Barriers

Department of Alternative Energy Development and Efficiency
Ministry of Energy
Thailand
Legal Framework


Decree on designated building
  Effective from 12/12/1995

Decree on designated factory
  Effective from 17/07/1997

Ministerial Regulations

Energy Management in designated buildings and factories
  Effective from 20/11/2009

Persons Responsible for Energy (PRE)
  Effective from 31/07/2009

Energy Management Auditors
  Effective from 11/05/2012

Building Energy Code
  Effective from 20/06/2009

High Energy Efficiency Standard for Equipments and Machinery
  Effective from 08/04/2009
1st Barrier: The Ministerial Regulation of DEDE not connect with the Law of Building Control from Department of Public Works and Town & Country Planning (DPT)

BEC-Ministerial Regulation by DEDE (Promotion Act)

Law of Building Control by DPT (Enforce Act)
2nd Barrier: Lacking of Cooperation with the Private Sector

The Circle 2 (Condominium)

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<th>Design</th>
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<td>30</td>
</tr>
<tr>
<td>RTTV (W/m²)</td>
<td>10</td>
</tr>
<tr>
<td>LPD (W/m²)</td>
<td>12</td>
</tr>
<tr>
<td>SEC(kWh/y-m²)</td>
<td>292</td>
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Siam@Pattaya (Hotel)

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3. Countermeasures

Department of Alternative Energy Development and Efficiency
Ministry of Energy
Thailand
Establishment of DEDE & DPT Subcommittee for the Draft of the New BEC-Ministerial 2017 which cooperative with the Law of Building Control. Under the Directed from the Prime Minister.
The meeting for the Draft of New BEC Regulation
**Old standard**  
Enforcement new or retrofitted buildings of 9 buildings types which have total area \( \geq 2,000 \text{ m}^2 \)

- Define OTTV, RTTV, Lighting system and Hot water system standard in Ministry's regulation of Ministry of Energy, 2009

**New standard**  
Enforcement new or retrofitted buildings of 9 buildings types which have total area \( \geq 2,000 \text{ m}^2 \). Starting enforce with new buildings area \( \geq 10,000 \text{ m}^2 \) and down to small size in 5 years

- Update defining of “retrofitted buildings”
- Define all standard (OTTV, RTTV etc.) in Ministry's Announcement Ministry of Energy, 2017
BEC Center

Since 2010

“Coordinating Center of Energy Conservation Building Design”

- To provide information to any government sectors, state enterprises, or project stakeholders regarding the evaluation procedures of building plans for energy conservation as required by the Ministerial Regulation
- To create collaborative networks between the government and private sectors in order to lay the foundation of energy conservation building design

Evaluation of energy conservation building
(2009 – 2015 = 426 building drawing plans)

BEC’s auditor training 1,800 persons
(Architect, Engineer and Building Owner etc.)

MOU municipalities and universities
(Bangkok, Chiangmai, Pattaya etc.) (KU, TU, CMU, KMITL etc.)

Private network and professional associations
(Engineering institute, Siamese Architects) (SCG, SANSIRI, LPN)

Develop of prototypes for standard government conservation building drawing plans
4. Request of support by ECCJ and SE4All

1. BEC Implementation Technology and Experience Sharing between ACE Members
2. Advices and Information on Best Available Technics for Implement the Financial Subsidy or Tax Concession Measure for BEC
3. Any Support will be found upon the Idea from this workshop!
THANK YOU
For your attention

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