Success factors in achieving Energy Efficiency Goals and Targets

Energy Efficiency Strategy for Thailand for the next 20 years

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Ministry of Energy
Policy Formulation for Energy Efficiency in Thailand
EPPO, now under the Ministry of Energy, still serves as Secretariat to the NEPC, the CEPA and the ENCON Fund Committee.
To propose ENCON policies, goals, measures to the cabinet
To issue guidelines, criteria, conditions, priorities for the disbursement from the ENCON Fund
To determine remittance rates to be imposed on petroleum for the ENCON Fund
ENCON Fund Administration

**Cabinet**

- **National Energy Policy Council (NEPC)**
  - Prime Minister (EPPO)
  - Deputy Prime Minister (EPPO)

**ENCON Act**

- **ENCON Fund Committee**
  - Energy Minister (EPPO)

- **ENCON Fund Sub-Committee**
  - Energy Minister (EPPO)

- **ENCON Program Evaluation Sub-Committee**
  - Experts (EPPO) Appointed by the cabinet

**National Energy Policy Council Act**

- To propose ENCON policies, goals, measures to NEPC
- To propose to NEPC guidelines, criteria, conditions, priorities for the disbursement from the ENCON Fund
- To prescribe regulations on the criteria and procedures for applications, grant allocations or subsidies from the ENCON Fund
- To allocate appropriations from the ENCON Fund
- To propose to NEPC remittance rates to be imposed on petroleum for the ENCON Fund
1. Working capital, grants, or subsidies for investment in and operations of energy conservation programs, or for solving environmental impacts of energy conservation programs of the government agencies, state enterprises, or private sectors.

2. Grants or subsidies to government agencies, state enterprises, educational institutions or private organizations, to be used on
   1) Programs
   2) Study or research projects
   3) Demonstration projects or pilot projects
   4) Educational, training and conferences
   5) Public awareness works
   on topics relating to energy conservation.

3. Administrative cost of energy conservation promotion work in accordance with ENCON Act.
ENCON Program

**Policy and Strategy**

1. **Energy Efficiency Improvement Program**
   - Industrial and Commercial Sector
   - Government Sector
   - Transportation Sector
   - Energy Consumption Management
   - R&D and Demonstration

2. **Renewable Energy Development Program**
   - Biodiesel & Gasohol
   - Biomass
   - Biogas
   - Solar Energy
   - Wind Energy & Hydropower
   - R&D and Demonstration

3. **Supportive Program**
   - Human Resources Development
   - Public Relations
   - Administration and Management
ENCON Program

Phase 1
1995 - 1999

Phase 2
2000 - 2004

Phase 3
2005 - 2011

Phase 4
2012 - 2016
ENCON Program; Phase 4 (2012 - 2016)

**Energy Efficiency Improvement Program**
1.1 EE Projects Operating
1.2 Research & Development
1.3 Demonstration & Initiation
1.4 Public Relations
1.5 Human Resources Development
1.6 Environmental Problems Concerns

**Renewable Energy Development Program**
2.1 RE Projects Operating
2.2 Research & Development
2.3 Demonstration & Initiation
2.4 Public Relations
2.5 Human Resources Development
2.6 Environmental Problems Concerns

**Strategic Management Program**
3.1 Education Support
3.2 Research & Development
3.3 Training
3.4 Meeting & Conference
3.5 Advertising
3.6 Information Dissemination
3.7 Public Relations
3.8 Administration & Management

Department of Alternative Energy Development and Efficiency
MINISTRY OF ENERGY

Energy Policy and Planning Office
MINISTRY OF ENERGY
The Policy Statement delivered by PM to the National Assembly, 23 August 2011

Thailand’s Policy on Energy Efficiency

Promote and Drive Energy Conservation

-through reduction of energy intensity by 25% within the next 20 years as well as comprehensive development and improvement. The use of high energy-efficiency equipment and buildings will be promoted, while Clean Development Mechanism (CDM) will be used to reduce greenhouse gas emissions and to tackle global warming. Consumer awareness of economical and efficient use of energy will be raised systematically and continuously in order to save energy in the manufacturing, transport and household sectors.

EEP 2011

*Approved by NEPC on 8th February 2013*
EEP 2015

The EEP 2011 was revised to EEP 2015 in order to conform to the Thailand Power Development Plan (PDP 2015) and the GDP shown in the 11th National Economic and Social Development Plan (2012 - 2016).

*Approved by NEPC on 13th August 2015.
A Target to reduce Energy Intensity by **25%** in **2030**, in comparison with **2010**

A Target to reduce Energy Intensity by **30%** in **2036**, in comparison with **2010**

*EI target is reference from the Agreement reached by APEC Leaders in 2007.*
EEP 2015 Saving Target

Reduce Energy Intensity by 30% in 2036, compared with that in 2010

**Assumption:**
- GDP Growth 3.8%
- Population Growth 0.03%

<table>
<thead>
<tr>
<th>Year</th>
<th>Final Energy Consumption (ktoe)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>70,248 ktoe/billion baht</td>
</tr>
<tr>
<td>2013</td>
<td>14.93 ktoe/billion baht</td>
</tr>
<tr>
<td>2030</td>
<td>11.0 ktoe/billion baht</td>
</tr>
<tr>
<td>2036</td>
<td>10.7 ktoe/billion baht</td>
</tr>
</tbody>
</table>

- **Electricity (15%)**
  - Saving form EEDP
  - 4,442 GWh
  - 7,641 ktoe

- **Heat (85%)**
  - Saving from past & recent measures (EI 15.28 → 14.93)
  - 51,700 ktoe
  - 44,059 ktoe

**Target**
- 56,142 ktoe
Strategies to achieve the target

(1) Compulsory Program
- Enforcement of ENCON Act 1992 on energy conservation standards for designated factories and buildings
- Building Energy Code (BEC) on the new buildings
- Energy labeling on equipment/appliances
- Enforcing Energy Efficiency Resource Standard (EERS) - a measure to oblige utilities to help end-users to save energy

(2) Voluntary Program
- Supporting financial tools to hasten the equipment changing
- Promoting revolving fund for low interest loans and driving LED by price mechanism
- Energy saving measures in transport sector
- Supporting the energy efficiency technology research & development

(3) Complementary Program
- Supporting the human resource development on energy conservation
- Supporting the creation of public awareness and behavioral change
EEP 2015 Target by Measures & in Economic Sectors

Expected Energy Saving by Measures

<table>
<thead>
<tr>
<th>Measure</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>EE3 Energy Labeling (HEPs &amp; MEPs)</td>
<td>4,149</td>
<td>8%</td>
</tr>
<tr>
<td>EE4 Energy Efficiency Resource Standard (EERS) for large energy producers and distributors</td>
<td>9,524</td>
<td>18%</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>Total</td>
<td>51,700</td>
<td>100%</td>
</tr>
</tbody>
</table>

Assumption:
- GDP Growth 3.8%
- Population Growth 0.03%

Industrial sector: 22%
Commercial and governmental sector: 34%
Residential sector: 8%
Transport sector: 46%
## Expected benefit on Energy saving by Fuel types

<table>
<thead>
<tr>
<th>Fuel Type</th>
<th>Saving</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Electricity</td>
<td>89,672</td>
<td>GWh/year</td>
</tr>
<tr>
<td>2. Gasoline</td>
<td>11,302</td>
<td>M. Litres/year</td>
</tr>
<tr>
<td>3. Diesel</td>
<td>18,048</td>
<td>M. Litres/year</td>
</tr>
<tr>
<td>4. Fuel Oil</td>
<td>343</td>
<td>M. Litres/year</td>
</tr>
<tr>
<td>5. LPG</td>
<td>5,187</td>
<td>kTons/year</td>
</tr>
<tr>
<td>6. Coal</td>
<td>5,548</td>
<td>kTons/year</td>
</tr>
<tr>
<td>7. Natural Gas</td>
<td>331,892</td>
<td>mmscf/year</td>
</tr>
<tr>
<td>8. Renewable Energy (Biomass)</td>
<td>12</td>
<td>kTons/year</td>
</tr>
<tr>
<td><strong>Total Energy Saving</strong></td>
<td><strong>56,142</strong></td>
<td>ktoe/year</td>
</tr>
<tr>
<td>or Percentage of EI (Base 2010)</td>
<td><strong>30</strong></td>
<td>%</td>
</tr>
<tr>
<td><strong>Total Energy Saving Value</strong></td>
<td><strong>1,403,550</strong></td>
<td>Million Baht/year</td>
</tr>
<tr>
<td><strong>Total Avoided GHG Emission</strong></td>
<td><strong>177</strong></td>
<td>M. Tons CO₂</td>
</tr>
</tbody>
</table>

### Remark
Oil crude price 1 ktoe = 700,000 USD
EEP 2015 Action Plan; Guideline

2015

1. ภาคปัจจุบัน (Compulsory Program)
   10,972 ktoe
   มาตรการ

Energy Efficiency Resource Standards (EERS)
   EGAT, PEA, MEA

2. ภาคความร่วมมือ (Voluntary Program)
   40,728 ktoe
   มาตรการ

   Standard Offer Program, DSM Bidding, Soft loan, ESCOs, Tax Incentive,
   LED

3. ภาคสนับสนุน (Complementary Program)
   มาตรการ

   หุ้นรัฐวลัยศิริ
   หุ้นบริษัทฯ ดร. ไท เอก
   ผู้บริหารของพันธมิตร อาวิช สำนัก
   ผู้ตรวจสอบและรับรองการจัดการพลังงาน

4. มาตรการ

   PA+ PR

5. แผนผังการพัฒนา
   พ.ศ. 2558 – 2579
   Energy Efficiency Plan EEP 2015
   51,700 ktoe

www.EbookGraphics.co  ·  5440
Key Success Factors
6 Success Factors

1. **Management system development**
   - An energy consumption database
   - The reporting, verification and assessment systems
   - A dedicated independent body with flexibility

2. **Adequate and continuous budget** to support work plans and activities under the plans --> *a rolling plan every 3-5 years*

3. **Continuous development of human resources and institutional capability** of concerned organizations to become professional, especially to build up personnel with understanding the business practices of the private sector.
4. Public agencies should take a lead role and set a good example
   - setting a policy requiring procurement of EE goods/services
   - implementing energy-saving measures in government buildings

5. The determination of energy prices reflecting actual costs as a tool to promote energy conservation and to reduce GHG emissions via awareness raising and behavioral changes.

6. Concerned agencies should explicitly formulate policies and long-term development plans, which will have impact on energy consumption, taking into consideration the impact of future industrial or the transportation restructuring.
Thank you for your kind attention

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