Energy Efficiency Training Week

Select energy efficiency programme measures

Industry Stream
Patrick Crittenden, Energy Efficiency in Emerging Economies, IEA
Bangkok, 2 April 2019

IEA #energyefficientworld
South East Asia
Industrial Energy Efficiency Programme

Bangkok
2 April 2019

By
Uma Wirutskulshai, PhD
If I ask you to implement EE in your workplace, what’s your first thought?
If the factory can reduce 10% of their energy every year, why do they still have to pay the bill?

<table>
<thead>
<tr>
<th>year</th>
<th>Energy bill</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>100</td>
</tr>
<tr>
<td>2</td>
<td>90</td>
</tr>
<tr>
<td>3</td>
<td>81</td>
</tr>
<tr>
<td>4</td>
<td>73</td>
</tr>
<tr>
<td>5</td>
<td>66</td>
</tr>
<tr>
<td>6</td>
<td>59</td>
</tr>
<tr>
<td>7</td>
<td>53</td>
</tr>
<tr>
<td>8</td>
<td>48</td>
</tr>
<tr>
<td>9</td>
<td>43</td>
</tr>
<tr>
<td>10</td>
<td>39</td>
</tr>
</tbody>
</table>
Despite the very tangible and proven benefits brought about by pursuing industrial energy efficiency through strategic energy management, measures to integrate energy efficiency into the daily management and operations of industry are still not common practice in much of the world.
Welcome to the behind-the-scenes of UNIDO’s IEE Programme

About UNIDO

Concept Formulation

Project Implementation

Resources

Project Development

Sustainability
About UNIDO
UNIDO is the specialized agency of the United Nations.

- Creating shared prosperity
- Advancing economic competitiveness
- Safeguarding the environment
- Strengthening knowledge and institutions
UNIDO’s mandate is reflected in all the SDGs, particularly in SDG 9.
Concept Formulation
UNIDO’s approach combines the use of Energy Management System and System Optimization.
Energy Management System (EnMS)

- Management Commitment
- Management Review
- Policy
- Checking
- Planning
- Implementation & Operation

Link to SO
System Optimization (SO)
Let me explain ‘System Optimization’ in a simple way.

Pump Efficiency = 90%

System Efficiency = 50%
Capacity Building
Comprehensive training modules

- Expert Training
- Intensive training
- User Training
- CB Training
- Operator Training
- Management Workshop
Implementation
With the longer project time and equipment, we can do more...

- Measurement
- Support from international experts
- Verification of savings
Project Development
Where are our projects in Southeast Asia?

Thailand
Indonesia
Malaysia
Myanmar
Philippines
Vietnam
UNIDO’s IEE Projects are designed to respond to stakeholders’ needs.

By taking into account the country’s

Context  Priorities  Industrial Structure
## Example: IEE Project in Thailand – Project’s components

<table>
<thead>
<tr>
<th>Component 1</th>
<th>Component 2</th>
<th>Component 3</th>
<th>Component 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capacity building on EnMS</td>
<td>Capacity building on SO</td>
<td>Capacity building on financial evaluation of EE projects</td>
<td>Assessment and improvement project implementation</td>
</tr>
</tbody>
</table>
Example: IEE Project in Thailand – Target sectors

- Food & beverage
- Chemicals
- Basic metal
- Pulp and paper
- Textiles
- Rubber & plastics
- Non-metallic
Example: Improvement of IEE in Myanmar – Project’s components

<table>
<thead>
<tr>
<th>Component 1</th>
<th>Component 2</th>
<th>Component 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Improvement of policy and regulatory frameworks, incentive schemes, support programmes</td>
<td>Capacity building</td>
<td>Demonstration and up-scaling</td>
</tr>
</tbody>
</table>
Example: Improvement of IEE in Myanmar – Target sectors

No specific sector
The involvement of the project partners during planning phase is important.

What should be considered?

Commitment  Mandate  Project  Resources  Network
Example: IEE Project in Thailand – Project’s partners

Ministry of Industry

Ministry of Energy

Financial Institutes

Private Sector

The Federation of Thai Industries
Example: Promoting IEE through SO and EnMS in Indonesia – Project’s partners

Ministry of Energy and Mineral Resources

Directorate of Energy Conservation

Ministry of Industry

Center of Development for Green Industry and Environment

Ministry of Finance

PIP Government Investment Unit

National Standardization Body
Project Implementation
Data collection and analysis

Log Frame is used to identify the indicators and targets reflecting the planned outputs and outcomes.

<table>
<thead>
<tr>
<th>Output</th>
<th>Indicators</th>
<th>Target</th>
<th>Achievement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Component 4: Implementation of energy management and systems optimization projects</td>
<td>Number of factories with energy management plans implemented</td>
<td>200 factories adopted energy management plans and completed operational improvement projects</td>
<td>100% (200 factories)</td>
</tr>
<tr>
<td>Output 4.1: Energy management systems implemented</td>
<td>Number of case studies</td>
<td>50 factories adopted and implemented ISO 50001</td>
<td>100%</td>
</tr>
</tbody>
</table>
What did we do with the data?
PDCA is also used for the project management and programme planning.
Example: IEE Project Thailand

Gap in the EnMS implementation was identified.

- Strengthen the energy efficiency knowledge for the ISO 50001 auditors
- Harmonize the energy efficiency perspectives among the auditors
- Support TISI (Accreditation Body) to launch the accreditation system of ISO 50001

CB Training

AB Training
Key challenges are different among countries.

- Absence of energy management legislation
- Low priority of energy issue – industry’s perception
- Quality of national experts?
- Energy cost?
Example: IEE Project in Thailand

Achievements

<table>
<thead>
<tr>
<th></th>
<th>Target</th>
<th>Achieved</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Electricity</strong></td>
<td>83,712 MWh</td>
<td>111,307 MWh</td>
</tr>
<tr>
<td><strong>Energy</strong></td>
<td>1,914,142 GJ</td>
<td>2,713,001 GJ</td>
</tr>
<tr>
<td><strong>CO₂</strong></td>
<td>196,756 tCO₂</td>
<td>247,047 tCO₂</td>
</tr>
</tbody>
</table>

1,048 target factories
Example: Promoting IEE through SO and EnMS in Vietnam

Achievements

- **Target** 34,422 MWh
  - Achieved: 56,034 MWh
- **Target** 4,088 TOE
  - Achieved: 21,735 TOE
- **Target** 34,856 tCO₂
  - Achieved: 106,394 tCO₂
Discussion:

What’s the experience of introducing EnMS in your country from the perspective of the absence/availability of legislation?
Discussion:

What’s the affect of energy cost to the implementation of EE in your country?
Sustainability
Government agencies have to take actions to sustain the impacts.

- Provide the necessary legislations (e.g. the issuance of Energy Efficiency and Conservation Act in Philippines)
- Support the establishment of market-driven mechanism (e.g. the establishment of expert organization in Indonesia to provide EE services)
National experts is one of the key mechanisms to support the industry.

Training Services

Consultancy Services
Case studies, fact sheets and other media are available for industry.
Self-learning material

Training Courses for

Evaluation of Industrial Energy Efficiency Project

The Training courses on the Financial Evaluation of Industrial Energy Efficiency Projects was developed by the United Nations Industrial Development Organization (UNIDO) in partnership with the Department of Industrial Promotion (DIP), the Department of Industrial Works (DIW) and the Thai Industrial Standards Institute under the Ministry of Industry, as well as the Department of Alternative Energy Development and Efficiency (DEDE) under the Ministry of Energy.

The objective of the training courses is to provide managers and staff of industrial factories with knowledge about the principles and guidelines for assessing the suitability of an investment in energy efficiency projects, with a view to facilitating the process of obtaining investment support from financial institutions.
What’re the next challenges?

Integration of ISO 50001 and EnMS by law

Institutionalize EnMs in the academic world
Discussion:

What’s the next challenge to upscale the EnMS implementation in your country?
What have we learned from the design of IEE project?

Concept Formulation

Project Implementation

Project Development

Sustainability
If you want to learn more about Energy Efficiency, you can download case studies from the link below.