

# Pro-bono support Motivation and Lessons learned

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# 1. TA Project Outline in Thailand

## Benchmarking Energy Consumption & GHG Emissions of Iron & Steel Industries (July 2017 ~ January 2018)

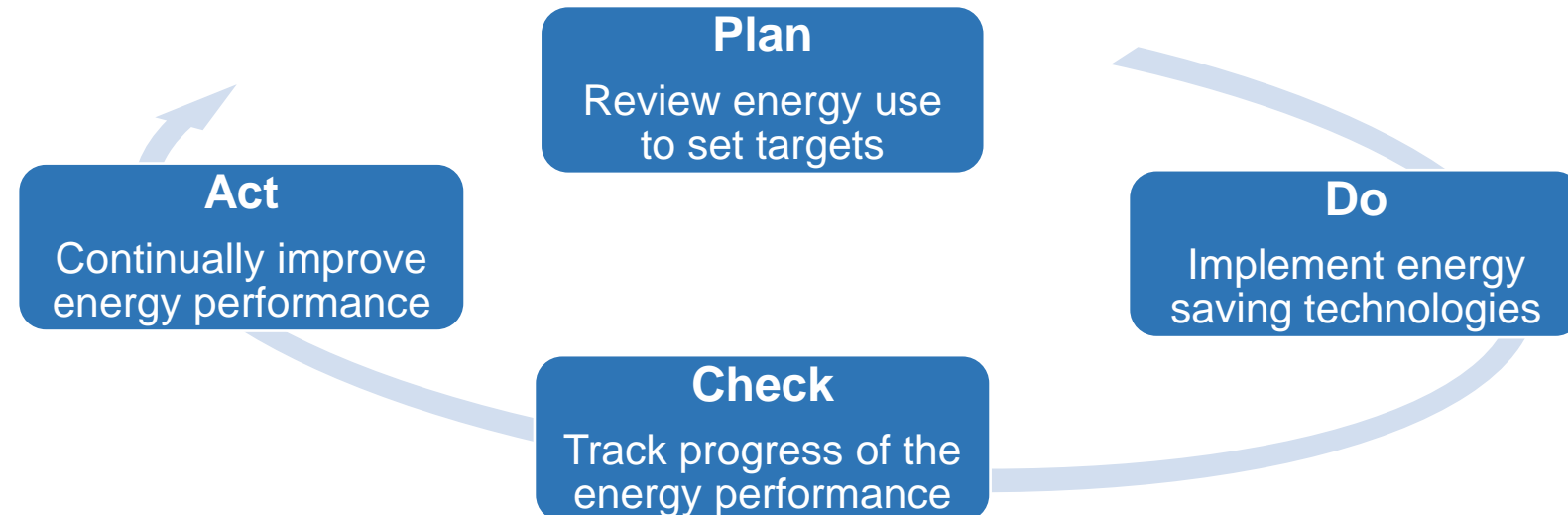
### Objectives

- The benchmarking would serve as an **indicator of present level of performance** and **energy saving potential** for improvement.

### Activity

- **Designing specific questionnaires** for different segments of industry
- **Field survey** (4 steel plants) & **Off-site survey** (29 furnaces) on energy consumption data
- **Benchmarking of energy consumption pattern**
- Development of “**Energy Reporting Guidelines**”
- Preparation of “**Energy Efficiency Manual**”
- Assessment of financing options

To enable  
PDCA cycle  
for energy  
performance  
improvement



## 2. TA Project Outline in South Africa

### Substantial GHG emissions reduction in the cement industry by using “Waste Heat Recovery (WHR)” combined with “Mineral Carbon Capture and Utilization (MCC&U)” (December 2016 ~ December 2017)

#### Objectives

To examine the technical and financial feasibility of the technology,  
to determine the GHG emission reduction potential,  
to assess the cost efficiency of the hybrid system, including net marginal abatement costs,  
to design a business plan for the project implementation which will include a bench-scale project followed by a demonstration project.

#### Activity

- Chemical components analysis of exhaust gas from cement kilns & by-products
- Develop of collection scheme of alkali-rich industrial wastes
- Financial assessment & market survey of the bi-products from cement production
- Business plan, including cost estimation of pilot & demonstration scale plant

#### CO<sub>2</sub> reduction & Resource efficiency

##### Waste Heat Recovery (WHR)

Energy Efficiency  
→ CO<sub>2</sub> reduction

##### Mineral Carbon Capture & Utilization (MCC&U)

CO<sub>2</sub> captured & transformed to CaCO<sub>3</sub>  
→ CO<sub>2</sub> reduction & reuse resource  
※ CaCO<sub>3</sub> & other by-products can be used for commercial products(e.g. glass, rubber, food)



### 3. Stakeholder of TA Projects

stakeholder	TA in Thailand	TA in South Africa
Japan's NDE	Ministry of Economy, Trade and Industry (METI)	
Network member	New Energy and Industrial Technology Development Organization (NEDO) ※ Government Agency for R&D	Research Institute of Innovative Technology for the Earth (RITE) ※ Non-profit research institute (168 staff)
	<i>Incentive of network members "to gain experience of CTCN project as a mean to promote climate technologies internationally"</i>	
Japanese experts	<ul style="list-style-type: none"> <li>• The Japan Iron &amp; Steel Federation (JIST)</li> <li>• Nippon Steel &amp; Sumikin Research Institute</li> <li>• JFE Techno-Research Corporation</li> </ul>	<ul style="list-style-type: none"> <li>• Taiheiyo Engineering Corporation</li> <li>• Nippon Concrete Industries Co.. Ltd.</li> <li>• Mitsubishi UFJ Morgan Stanley Securities</li> <li>• Tohoku University</li> </ul>
	<i>Incentive of industries "to contribute to technology transfer in line with the commitment to a low carbon society – industries' initiative followed up by the government every year –"</i>	
Stakeholder in partner country	<ul style="list-style-type: none"> <li>• National Science &amp; Technology Innovation Policy Office (NDE)</li> <li>• Iron &amp; Steel Institute of Thailand (ISIT) and its member companies</li> </ul>	<ul style="list-style-type: none"> <li>• Department of Environmental Affairs (NDE)</li> <li>• South Africa National Energy Department Institute (SANEDI)</li> <li>• Association of Cementitious Material Producers (ACMP) and its member companies</li> </ul>

## 4. Lessons learned

### Benefit

- Pro-bono contribution allowed Japan's expert **to develop network with local stakeholders** and to involve various specialists outside existing institution  
→ Long-term industry-to industry / person-to-person network will give more chance to find a seed of technology transfer

### Challenge

- Burdensome transaction cost (e.g. document preparation)
- Difficulty in recovering the cost of TA due to its small scale

### Issues for consideration

- **Alignment with existing initiatives** helps to elicit a support
- **Possibility of scaling-up & cost recovery** as an incentive for support  
→ **Enhanced communication** among NDEs, Network members & CTC **on needs of developing countries will be useful** to find a seed of pro-bono supports
- Pro-bono support will be one-time only, if the results do not lead to deployment projects, particularly because **feasibility study has no real impact without technology deployment**
- Link to finance for larger projects (e.g. GCF) depends on external factors (e.g. coordination between NDE and NDA)  
→ **Enhanced coordination**, in particular NDE & finance focal points (e.g. NDA), **will help to realize technology transfer projects with impacts**