Towards Implementing Energy Conservation

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Towards Implementing Energy Conservation

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1. Outline of J-POWER

2. Issues & countermeasures for energy conservation
   ➢ Demand side measures
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About J-POWER

60-year history as electric power utility since 1952

J-POWER is the largest power wholesaler in Japan

- Hydro power (59 plants): 8,560 MW (Second largest operator in Japan)
- Coal-fired thermal power (7 plants): 8,410 MW (Largest operator in Japan)

Total (67 plants): 16,990 MW

< Other activities >
- Wind power (18 plants): 350 MW (2nd largest operator in Japan)
- Co-generation (3 plants): 320 MW
- Waste-fueled power (1 plant): 21 MW
- IPP (3 plants): 520 MW

- Transmission lines: 2,400 km (includes 267 km DC lines)
- Energy sales: 66,080 GWh
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Overseas Business Development

• Overseas Power Generation Business Performance (in operation) : 6 countries/regions 29 projects
• Overseas consulting service projects : 63 countries/regions 312 projects (cumulative)

[Overseas Power Generation Business]
- In operation
- Under construction

Operating capacity of 16.50 GW, including owned capacity of 3.85 GW (as of August 2012)
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Demand v.s. Supply side measures focusing on electricity conservation

Energy conservation is equivalent to energy supply

In many cases, demand side measures are faster, less costly and more environment-friendly development
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**Issue 1: Many countries are facing high levels of electricity subsidies**

**Background:** Rising fuel prices and plant construction costs  
Growth in demand for power  
Public backlash against increasing electricity tariffs

Examples of countries with high levels of electricity subsidies:

<table>
<thead>
<tr>
<th>Subsidy rate</th>
<th>Countries</th>
</tr>
</thead>
<tbody>
<tr>
<td>Over 50%</td>
<td>Suriname</td>
</tr>
<tr>
<td>About 50%</td>
<td>Indonesia, Vietnam (Fuel subsidy)</td>
</tr>
<tr>
<td>About 20%</td>
<td>India, Sri Lanka, Dominican Republic, Ecuador</td>
</tr>
</tbody>
</table>

(Source: J-POWER consulting data)

➢ **Demand side measures (energy conservation) may contribute to subsidy reduction**

- by reducing energy consumption
- by increasing electricity tariffs, with public backlash mitigation measures
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Lead to an escape from a vicious circle

**Vicious circle**

In some cases, rich people enjoy subsidy

- Low tariff (with subsidy)
- Lack of EC incentive
- Energy consumption
- Subsidy $\uparrow$
- CO$_2$ Competitiveness $\downarrow$

**Target Model**

For the bottom of the pyramid, support/subsidy should be secured

- Tariff (without subsidy)
- EC incentive $\uparrow$
- Investment, Implementation
- Benefit
- Subsidy $\downarrow$
- CO$_2$ Competitiveness $\uparrow$
- Energy consumption
- Benefit
Example (EC incentive): JICA low interest loan mechanism for EC projects
(cases of India, Sri Lanka and Vietnam)

Eligible Equipments List can contribute to faster implementation of energy conservation
Issue 2: Many countries prioritize infrastructure development more than implementation of energy conservation

Energy conservation is equivalent to cost reduction and subsidy reduction for energy supply (national benefit). Savings through reduced national expenditure can be used for investments in other infrastructures.

(Source: MGMI)  
(Source: J-POWER)
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**Issue 3: Lack of support and/or guarantee mechanism to involve/utilize private companies for energy conservation business**

- Energy conservation business includes “B to C” model, with low credibility and high transaction costs. Some part of national benefit gained by energy conservation should be transferred to support/guarantee mechanism for this “B to C” model.

![Diagram showing the relationship between private company, consumers, EC business, and associated risks.]

- Private company
  - EC business
    - Consumer A
    - Consumer B
    - Consumer N
  - Credit risk
  - High transaction costs
Example: J-POWER once tried to establish an energy conservation company in Sri Lanka in collaboration with JICA low interest loan mechanism and the local utility companies.

GOSL appreciated the project’s benefits to the economy, however its priority was not considered as high as other socio-economic development projects.
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**Issue 4: Lack of a comprehensive policy package**

- A comprehensive policy package* is needed for promoting energy conservation.
  
  Collaboration of international development organizations is necessary.

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*Covering Industry, Commerce, Residence, Public and Transportation sectors*
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Examples: Cooperation of International Development Organizations

1) Sri Lanka (Lighting)
   - Pilot project & awareness programs
     Gov/Utilities/Manufacturers/JICA
   - Testing facilities & training program
     Gov/Utilities/USAID

(Source: SLSEA)
2) **Indonesia (Energy efficiency labeling)**

- Pilot project (Air conditioner & refrigerator)
  
  Gov/JICA

- Research of testing facilities & training program
  
  Gov/UNDP

- Technical meeting for energy efficiency labeling program
  
  Gov/Association/Manufacturers/JICA

(Source: JICA Study 2012)
3) Central America

- Preparation for co-finance with Inter American Development Bank (IDB)

‘Special Seminar on Energy Efficiency and Conservation Promotion in Collaboration with IDB’
• From 7th Nov 2010 to 18th Nov 2010
• Belize, Brazil, Colombia, Costa Rica, Dominican Republic, Ecuador, Guatemala, Honduras, Nicaragua, Panama, Peru, and Suriname

• Follow-up Seminar in Honduras and Guyana

‘Training Course for the Improvement of Energy Efficiency Policies in Central America and the Caribbean Region’
• From 4th Dec 2011 to 17th Dec 2011
• Costa Rica, Dominican Republic, El Salvador, Guatemala, Honduras, Nicaragua, and Suriname

• Follow-up Seminar in Suriname

(Source: JICA Study 2010-2012)
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4) Turkey (Government buildings)
- Pilot project (Air conditioning)
  University/JICA
- Mechanism to promote energy conservation
  JICA started discussions with KfW & AFD

Lack of insulation
Low energy-efficient equipments

(Source: JICA Study 2012)
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Example 1: High-efficient coal thermal PPP project in Indonesia
(Indonesia Central Jawa Coal Thermal Power Project)

Output: 1,000MW x 2
Efficiency: 42% (USC)
Commencement date: 2016 (No.1 Unit), 2017 (No.2 Unit)
BOT: 25 years

Project Location: 250 km east of Jakarta

PPP structure

Guarantee
Indonesia government
Investment
J-POWER, Adaro, Itochu
Finance
Project finance
Example 2: JICA’s support to figure out a roadmap to implement clean coal technology in Indonesia

(Source: JICA Study 2012)
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Towards Win-Win-Win EC business model

- **Trigger**: International Development Organizations
  - Low-interest loans, Credit guarantees, Investments, Technical assistance
  - Repayments, Reporting

- **Win-Win-Win EC business model**
  - **Energy conservation business**
    - **Reduction of national expenditures and energy subsidies**
    - **Investment for infrastructure**
    - **Support, Credit guarantees**
    - **Low-interest loans**
    - **Investments**
    - **Technical assistance**

- **Win-Win-Win benefits**
  - **Developing countries governments**
    - MOF involvement
    - Financial / Environmental benefit
    - Access
  - **Private companies, Utilities**
    - Investments, Engineering
    - Returns
  - **Consumers**
    - Financial benefit
    - Access

- **Win-Win-Win benefits**
  - **Reduction of energy consumption and power charges**
  - Repayments, Reporting
  - Support, Credit guarantees
Thank you for your kind attention!

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