Learning and Future Challenges for Low Carbon Technology Transfer: A case of SMEs in India

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Outline

- SME sector in India
- About the project
- Major activities
- Conclusions
- Learning
- Challenges and key considerations
Contribution of SME sector to Indian economy

- Accounts for half of industrial production
- Responsible for one-third of India's total exports
- Provides jobs to millions of unskilled people
- Contributes to economic growth and development, particularly in rural areas and small towns

Salient features of the SME sector

- Resource inefficient technologies still in use
- High energy consumption and emissions of greenhouse gases (GHGs)
- Adoption of Energy Efficient technologies and practices among SMEs will significantly reduce GHG emission.
**Project Background**

- **Title**: Research Partnership for Application of Low Carbon Technologies in India
- **Goal**: To promote low carbon technologies and practices among Indian SMEs
- **Time period**: 4 years (May 2010 - March 2014)
- **Implementation partners**
  - Indian: TERI, SMEs
  - Japanese: IGES, Kyoto University, Japanese companies
- **Coordinating government agencies**
  - Indian: Ministry of Environment and Forests (MoEF)

**Major Activities**

- *Preliminary and detailed studies*
- *Pilot demonstrations*
  - Electric heat pump (EHP)
  - Gas heat pump (GHP)
- *Capacity building programs on best practices*
  - Electric induction melting furnace
  - Compressed air system
**Demonstration of Electric Heat Pump (EHP)**

- **Application**
  - Preheating of boiler feed water and precooling of process chilled water
  - Dairy, food processing, pharmaceutical, commercial buildings
  - Pilot plants installed in Chandigarh (Punjab) and Anand (Gujarat)
- **Benefits**
  - Reduction in fuel consumption in boiler and electricity in chiller
  - Energy savings 30-40%

**Demonstration of Gas Heat Pump (GHP)**

- **Application**
  - Room air conditioning with simultaneous generation of hot water
  - Space cooling applications in industry and commercial buildings
  - Two pilots installed in foundries in Rajkot (Gujarat)
- **Benefits**
  - Switch from electricity to clean fuel (NG)
  - Overall energy savings 40-50%
Monitoring, Reporting, and Verification (MRV) of impact of pilot projects

In order to MRV the impact of pilot projects, measurement devices were procured (from Japan) and installed at demonstration sites. Data was regularly collected and analyzed.

Capacity Building regarding measurement tools (use, data collection, data reporting, etc.)

Measurement tools installed at the pilot project sites

Capacity building and awareness raising

1. Targeting SME at unit level: Onsite capacity building of managers and workers during site visits

2. Targeting SME at cluster/segment level: Several cluster workshops to sensitize the SME entrepreneurs and industry associations

3. Targeting Indian experts: Training workshops for Indian experts (In India and in Japan)

IGES –TERI Joint Workshop
Jan. 2012, Chandigarh (India)
Conclusions

- Project has demonstrated that significant energy and GHG saving is possible through adoption of EE technologies and practices among SMEs.
- Seeded interest among stakeholders on the demonstrated new Japanese technologies.
- Generated awareness on best operating practices.
- Built local capacities through diagnostic studies by Japanese experts and pilot demonstrations.
- Serve as a model to promote cleaner technologies under bilateral/multilateral cooperation.

Learning

- Successful transfer and adoption of LCTs depends on collaborators.
- Adoption of LCT to local conditions.
- Hand-holding and Capacity building of plant operators after demonstration.
- Price of fuel an important factor.
- Implementation approach.
Essential knowledge flows

Technology suppliers

Flow A: Capital goods, services & designs
Flow B: Skills & know-how for operation & maintenance
Flow C: Knowledge & expertise behind technology

Technology transferred

Technology importers

New production capacity
Accumulation of technological capacity

Based on Bell (1990)

Challenges and key considerations

- High capital costs of Japanese/imported LCTs
- Support for replications of demonstrated technologies
- No “one policy fits all” solution
- Absorptive capacity of recipients
- National and international policy environment
- Linkages with local government schemes
- Assistance under CTCN, others
Thank you for your attention