Energy Efficiency Programme for Small and Medium Enterprises (SMEs)

Bureau of Energy Efficiency
India’s MSME Sector: Context

있는 PSME Sector Contribution to Indian Economy
- 45% of Industrial Production
- 35% share in exports
- >8000 Products

Second largest sector after agriculture
- >26 million units
- Provides employment to >59 millions

Accelerates the growth of Economy
- MSME growth higher than GDP & Industrial growth

Energy Consumption was 50.5 Mtoe in 2012
- Energy saving potential of 15%
- Expected growth rate is > 6%

- Very small in size (majority are MSME units)
- Majority of units are proprietorship / family owned concern
- Very limited professional management
- Obsolete technology/ production process
- Low capital investment & labour intensive
- High energy consumption in many sectors
- Lack of Knowledge about energy efficient production options / technology
SME– Achievements (XI Plan)

• Situation analysis completed in selected 35 SME clusters.
• 25 SMEs clusters (18 Sector Type) undertaken for further interventions.
• Comprehensive energy audit and technology gap assessment completed in 1250 SME Units belonging to 25 SMEs clusters.
• 375 DPRs on energy efficient technologies prepared and peer-reviewed.
• Cluster specific manuals on energy conservation prepared for 25 clusters and 5 Awareness workshops organized.
• Implementation of Small Group Activities focused on improving energy efficiency in 9 units of 3 clusters with the help of ECCJ, Japan.
• Capacity building of Local Service Providers/Technology Providers in 25 SMEs clusters.
• Energy saving potential of 0.66 MTOE in 25 SMEs clusters which is 15% of the total energy consumption in these clusters.
Inherent Barriers

- **Lack of Information on EE Performance**
- **Capital Cost**
  - Lack of Capital to invest upfront
- **Perceived Risks**
  - New Technology Adoption and change in Production Line
- **Lack of Trained Manpower**
  - Local Service Providers, Local Sector Experts
- **Transaction Cost**
  - Shifting to EE technology/Process
Current BEE initiatives in SME sector

BEE-SME program
- EE Technology Demonstration through direct back ended subsidies to units
  - Capacity Building Workshops
  - Energy Mapping Performance Banchmarks

GEF-UNIDO-BEE
- Promoting energy efficiency and renewable energy in selected MSME clusters in India (12 SME Clusters)
  - Increase capacity & Demand of EE –Product and Services
  - Strengthening policy, institutional and decision making frameworks in the country

GEF-WB –BEE
- Increase demand for EE investment in targeted clusters , Build their capacity to access commercial finance.
  - 5 Clusters
    - Building Capacity & Awareness
    - Increased Investment in Energy Efficiency
    - Knowledge Management
BEE SME Program

Demonstration Projects

- Ludhiana: Forging Sector (Auto Parts Clusters)
- Indore: Food Sector (Dal, Wheat, Poha clusters)
- Pali: Textile Cluster (Dying and Printing)
- Kochi: Sea Food Cluster
- Varanasi: Brick Cluster (INP, Zig-Zag Kilns)
- Incentive of 50% cost of the technology or a ceiling amount of Rs 5 Lakh.
- Partnering with the MSME-DIs of respective clusters.

Capacity Building

- Workshops for unit owners on best practices and technologies.
- Empanelment for Local service providers.
- Development of BOP & BAT and sharing through workshops and program
- Development of case studies, print materials and audio visual of BATs & BOPs
- Seek assistance of multi and bilateral programs in sharing experiences

Pan India Energy Benchmarking

- Identify the Energy Intensive clusters in the country
- Benchmark the performance of Energy Intensive clusters in the country.
- Prepare a document on policy/Technology interventions for enhancing EE in these clusters.
Step 1
Constitution of cluster level steering committee
a) Director, MSME-DI of the cluster,
b) BEE is (convener)
c) President, cluster Association

Shortlisting of units and oversee implementation of EE Demos

Step 2
Open invite for participation to SME units for the implementation of Demonstration projects + Invitation for empanelment of LSP and Technology Providers

Step 3
Physical verification of units by BEE agency to select 20 units on the recommendation of committee

Step 4
Signing of MoU with each of the twenty units of the cluster.

Step 5
Base line audits in the selected 20 units of the cluster by BEE-IA

Step 6
1. Implement Demos in the 20 units.
2. Preparation of DPRs and audio visual recordings, Case

Step 7
Post Audits steering committee approves release of subsidy to units upon satisfaction of completion

Step 8
Direct release of subsidy through e-transfer in the account of unit owner on the receipt of original bills from the units and proformas indicating completion of demos from IA.
# Indian Brick Industry

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Parameter</th>
<th>2013–15 study*</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Number of brick kilns**</td>
<td>190,000– 280,000</td>
</tr>
<tr>
<td></td>
<td>Clamp kiln</td>
<td>147,000 – 232,000</td>
</tr>
<tr>
<td></td>
<td>BTK</td>
<td>42,000 – 47,000</td>
</tr>
<tr>
<td></td>
<td>Others</td>
<td>500 – 1000</td>
</tr>
<tr>
<td>2</td>
<td>Annual brick production (billion)</td>
<td>220 – 280</td>
</tr>
<tr>
<td>3</td>
<td>Annual coal consumption (million tonnes)</td>
<td>29 – 35</td>
</tr>
<tr>
<td>4</td>
<td>Annual biomass consumption (million tonnes)</td>
<td>12 – 16</td>
</tr>
<tr>
<td>5</td>
<td>Annual top soil consumption (million m³)</td>
<td>400 – 500</td>
</tr>
<tr>
<td>6</td>
<td>Annual water consumption (million m³)</td>
<td>200 – 235</td>
</tr>
</tbody>
</table>

*The estimate of number of clamp kilns in operation can vary significantly depending upon the market demand. Clamp kilns are not registered and are not members of any industry associations.

Source: Joint analysis by TERI and PSCST
Technologies used in brick making

- Clamp
- Hoffmann
- Downdraft
- VSBK
- BTK
Varanasi Brick: Cluster Profile

- No. of brick kilns: Around 300
- Existing firing technology: Bulls Trench kiln
- Green brick molding process: Hand molding
- Type of fuel used: Coal
- EE Technology Identified: Zig-zag firing technology
- No. of kilns participating in the project: 10
- Local Industry Association: Int Nirmata Parishad (INP)

**Project Initiation:** August 2014

**Scheduled Completion:** July 2016
## Kilns Participating in the Project

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Name of the brick kiln</th>
<th>Contact Person</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>M/s Singh Int Bhatta, village Kharupur, Varanasi</td>
<td>Mr. Parikshit Singh</td>
</tr>
<tr>
<td>2</td>
<td>M/s R.B. Company, village Bandaha, Varanasi</td>
<td>Mr. Ramashraya Singh</td>
</tr>
<tr>
<td>3</td>
<td>M/s Khiladi IntBhatta, village ShainaKalan, Varanasi</td>
<td>Mr. MotiYadav</td>
</tr>
<tr>
<td>4</td>
<td>M/s Swarup Int Udyog, village Cholapur, Varanasi</td>
<td>Mr. Rajesh Singh</td>
</tr>
<tr>
<td>5</td>
<td>M/s Asim brick field, village Undi, Varanasi</td>
<td>Mr. Kamlesh Narayan Singh</td>
</tr>
<tr>
<td>6</td>
<td>M/s Shyam Int Udyog, village Jaipar, Varanasi</td>
<td>Mr. Inder Pal Singh</td>
</tr>
<tr>
<td>7</td>
<td>M/s Shail Int Bhatta, village Raichandpur, Varanasi</td>
<td>Mr. Chandershekhar Singh</td>
</tr>
<tr>
<td>8</td>
<td>M/s Sahara Brick Industry, village Sultanpur, Varanasi</td>
<td>Mr. VirenderTiwari</td>
</tr>
<tr>
<td>9</td>
<td>M/s Dilip Kumar, village Todarpur, Mohan sarai, Varanasi</td>
<td>Mr. Dilip Kumar Jethani</td>
</tr>
<tr>
<td>10</td>
<td>M/s B.S. Enterprises, village GosainpurMahauan, Cholapur, Varanasi</td>
<td>Mr. AkshyawarYadav</td>
</tr>
</tbody>
</table>
## Outcome of Baseline Audit

<table>
<thead>
<tr>
<th>S.No.</th>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Production capacity per circuit</td>
<td>5.0 – 9.5 lakhs</td>
</tr>
<tr>
<td>2</td>
<td>Av size of fired brick</td>
<td>231 x 110 x 72 mm</td>
</tr>
<tr>
<td>3</td>
<td>Av weight of green brick</td>
<td>3.0 kg</td>
</tr>
<tr>
<td>4</td>
<td>Av weight of fired brick</td>
<td>2.9 kg</td>
</tr>
<tr>
<td>5</td>
<td>Firing temp (°C)</td>
<td>920 - 1069</td>
</tr>
<tr>
<td>6</td>
<td>Energy Consumption (MJ/ton of fired clay)</td>
<td>1360 - 1674</td>
</tr>
<tr>
<td>7</td>
<td>Specific Energy Consumption</td>
<td>1.33 – 1.67 MJ/kg – fired brick</td>
</tr>
</tbody>
</table>
Status of Activities

Implementing Agency: TERI, New Delhi

Main Activities:

• Carry out pre and post energy audits
• Verify and authenticate successful completion and commissioning of demonstration projects in 10 units
• Prepare DPR for each unit along with case study and video clipping for demonstration purpose

Activities status:

• Baseline energy audit: Completed in all 10 kilns
• Adoption of zig-zag technology: Under process in 2 kilns, about to start in 1 kiln
• Reason for delay: Strike called by brick kiln owners association
Thank You