Energy Efficiency Programme for Small and Medium Enterprises (SMEs)

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INTRODUCTION

- India has made rapid strides towards economic self-reliance over the last few decades.
- Impressive progress has been made in all sectors of economy necessitating growing consumption of energy.
- Conventional source of energy such as coal, oil and gas are scarce and exhaustible.
- Consumption of fossil fuel resources also leads to Global warming and climate change.
- Hence, all initiatives needs to be undertaken to ensure the efficient use of the available energy resources to manage energy supply and minimize the impact of energy use on environment.
- This has led the Government of India through the Energy Conservation Act and the Bureau of Energy Efficiency to launch several energy efficiency improvement initiatives.
THE ENERGY CONSERVATION ACT

- EC Act enacted in October 2001
- Became effective from 1st March 2002
- Bureau of Energy Efficiency (BEE) operationalized from 1st March 2002 and State Designated Agencies established in 32 States/Union Territories

- Strategic framework for the formulation and development of energy conservation policies
- Balance between regulatory enforcement & voluntary participation and between market driven methods & governmental mandates
THE ENERGY CONSERVATION ACT

- The **five major provisions** of EC Act relate to:
  - **Designated Consumers** (mainly energy intensive industries and buildings) to comply with the specific energy consumption norms for the manufactured products and services and establishment of energy management system,
  - **Standards and Labeling** of energy consuming appliances, gadgets and equipment to ensure promotion of energy efficiency of the new stocks entering the market
  - **Energy Conservation Building Code** ensuring that new commercial buildings constructed in the country have less electricity consumption
  - Creation of **Institutional Set up** (Bureau of Energy Efficiency at the Federal level and State Designated Agencies at the State level) for effective coordination of the energy conservation efforts in the country and
  - **Establishment of Energy Conservation Fund** at Centre and States to provide necessary financial support for energy efficiency initiatives in the country.
Programs & Schemes

The important programs & initiatives
- Standard & Labeling (S &L)
- Energy Conservation Building Codes (ECBC)
- Bachat Lamp Yojana (BLY)
- Strengthening of State Designated Agencies (SDA)
- Designated Consumers and Small & Medium Enterprises
- Agriculture DSM & Municipal DSM
- Energy Manager & Auditor’s Examinations
- National Energy Conservation Awards (NECA)
- National Mission on Enhanced Energy Efficiency (NMEEE)
  - Perform Achieve and Trade (PAT)
  - Market Transformation for Energy Efficiency (MTEE)
  - Energy Efficiency Financing Platform (EEFP)
  - Framework for Energy Efficient Economic Development (FEEED)
India’s MSME Sector: Context

- **MSME 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

Transaction Cost
Shifting to EE technology/Process

Lack of Trained Manpower
Local Service Providers, Local Sector Experts

Perceived Risks
New Technology Adoption and change in Production Line

Capital Cost
Lack of Capital to invest upfront

Lack of Information
on EE Performance

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**

- 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 10 Lakh.
- Partnering with the MSME-DSIs of respective clusters.
- Workshops for unit owners on best practices and technologies.
- Empanelment for Local service providers.
- Development of BOP & BAT and sharing through workshops and programs.
- Development of case studies, print materials, and audiovisual of BATs & BOPs.
- Seek assistance of multi and bilateral programs in sharing experiences.
- 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.
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>
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</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