Energy Efficiency and Technology Up-gradation in Small and Medium Enterprises (BEE-SME Program)

SME – Introduction & Importance

- 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

The major activities conducted in the 11th plan were:

Activity 1: Energy Use and Technology Analysis
Activity 2: Capacity Building.
Activity 4: Facilitation of Innovative Financing Mechanism

Identified Clusters – BEE SME Program

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Cluster Location</th>
<th>Product</th>
<th>Sr. No.</th>
<th>Cluster Location</th>
<th>Product</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Firozabad</td>
<td>Glass</td>
<td>21</td>
<td>Bhamavaram</td>
<td>Ice Making</td>
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<tr>
<td>2</td>
<td>Belgaum</td>
<td>Foundry</td>
<td>22</td>
<td>Bhubheshwar</td>
<td>Brass</td>
</tr>
<tr>
<td>3</td>
<td>Coimbatore</td>
<td>Foundry</td>
<td>23</td>
<td>E&amp;W Godavari</td>
<td>Refractories</td>
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<td>4</td>
<td>Rajkot</td>
<td>Foundry</td>
<td>24</td>
<td>Ganjam</td>
<td>Rice Milling</td>
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<td>5</td>
<td>Allepy</td>
<td>Coil</td>
<td>25</td>
<td>Gujarat</td>
<td>Dairy</td>
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<td>6</td>
<td>Dewas Ujjain</td>
<td>Oil Milling</td>
<td>26</td>
<td>Howrah</td>
<td>Galvanizing</td>
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<tr>
<td>7</td>
<td>Mangalore</td>
<td>Tiles</td>
<td>27</td>
<td>Jagadhni</td>
<td>Brass &amp; Aluminium</td>
</tr>
<tr>
<td>8</td>
<td>Meenad &amp; Bijnor</td>
<td>Khadtsari</td>
<td>28</td>
<td>Jodhpur</td>
<td>Limestone</td>
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<td>9</td>
<td>Ratnagiri</td>
<td>Food Processing</td>
<td>29</td>
<td>Jorhat</td>
<td>Tea</td>
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<tr>
<td>10</td>
<td>Tirupur</td>
<td>Textiles</td>
<td>30</td>
<td>Kochi</td>
<td>Sea Food Processing</td>
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<td>11</td>
<td>Ahmedabad</td>
<td>Chemicals &amp; Dyes</td>
<td>31</td>
<td>Muzaffarnagar</td>
<td>Paper</td>
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<td>12</td>
<td>Jamnagar</td>
<td>Brass</td>
<td>32</td>
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<td>Sponge Iron</td>
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<td>13</td>
<td>Morvi</td>
<td>Ceramics</td>
<td>33</td>
<td>Vapi</td>
<td>Chemicals &amp; Dyes</td>
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<td>14</td>
<td>Palni</td>
<td>Textiles</td>
<td>34</td>
<td>Varanasi</td>
<td>Brick</td>
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<td>15</td>
<td>Sundri</td>
<td>Textiles</td>
<td>35</td>
<td>Vellore</td>
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<td>Solapur</td>
<td>Textiles</td>
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<td>17</td>
<td>Warangal</td>
<td>Rice Milling</td>
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<td>18</td>
<td>Aher</td>
<td>Oil Milling</td>
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<td>19</td>
<td>Bangalore</td>
<td>Machine Tools</td>
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<tr>
<td>20</td>
<td>Batala, Jalandhar &amp; Ludhiana</td>
<td>Foundry</td>
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</tbody>
</table>
Achievements - XI Plan (2007-2012)

- 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.
- Saving reported from 650 EE projects implementation was 14300 toe out of which saving of 8309 toe in 13 clusters was verified till 31st December, 2011.

Major Barriers identified in XI Plan

- **Technical barrier**: The SMEs neither have technical manpower nor the technical expertise and knowledge on energy efficiency.

- **Financial Barrier**: The entrepreneurs in SMEs lack the finances required for change of technologies. Moreover, they are reluctant to undertake risk involved in the changes in technology and therefore not willing to invest because of un-certainty of savings.

- **Manpower Barrier**: There are no technical experts in the SMEs who can guide them to undertake energy efficiency projects.

- **Policy Barrier**: There is absence of macro level as well as micro level energy consumption data of SMEs. Due to lack of data of energy consumption, the SMEs are not aware of wastage of energy in their units.
BEE- SME Program for XII Plan (2012-2017)

1. Showcasing of the EE technologies (identified during XI plan period) through demonstrations
2. Technical Assistance & Capacity Building.
3. Aggressive awareness and outreach program across all stakeholder
4. Energy mapping on a Pan India basis.

BEE-SME Program (2012-2017)

- Sector specific approach for energy efficiency and technology upgradation through facilitation of implementation of DPRs
  1. Identification of 10 best technologies in 5 energy intensive sectors
  2. Preparation/conversion of technology specific DPRs to unit specific DPRs for demonstration projects of 10 best technologies in 5 energy intensive sectors
  3. Implementation of Demo Projects (100 Demo)

- Technical assistance and capacity building
  1. Dissemination of information on demonstrated technologies through workshops
  2. Collaboration with technical institutions (National/International) for sharing of best operating practices (BOP) & best available technologies (BAT)
  3. Development of print material & audio visuals for technologies demonstrated & BOPs for operators & supervisors
  4. Capacity building in clusters through SDAs
  5. National level workshop including all stakeholders
BEE- SME Program for XII Plan (2012-2017)

- Project management through knowledge sharing & coordination
  1. Project Management by BEE PMU
  2. Monitoring and Verification / Impact Assessment of the EE measures implemented through intervention
  3. Coordination and collation of energy savings at National level in SMEs through implementation of Energy efficiency measures by all agencies

- Energy mapping of the targeted SME Sector on pan India basis
  1. Selection of energy intensive sectors/clusters which have high energy consumption
  2. Development of pan India level sector specific reports and policy plans for development of Sector
  3. Launching of National Policy Document on energy mapping in SMEs

### Activities Proposed

<table>
<thead>
<tr>
<th>S.N.</th>
<th>Activities Proposed</th>
<th>Sub –Activities</th>
<th>Proposed Funds</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Sector specific approach to implement EE technologies</td>
<td>• Conversion of technology specific DPRs to unit specific DPRs and implementation of 100 Demo projects in five energy intensive sectors.</td>
<td>15.0</td>
</tr>
<tr>
<td>2.</td>
<td>Technical assistance and capacity building</td>
<td>• Development and dissemination of BAT &amp; BOPs.</td>
<td>8.0</td>
</tr>
<tr>
<td>3.</td>
<td>Project management</td>
<td>• Project Management/Retainer Consultancy</td>
<td>5.0</td>
</tr>
<tr>
<td>4.</td>
<td>Monitoring and Measurement (M&amp;V)</td>
<td>• M&amp;V of the EE measures implemented through intervention of all agencies working in SMEs.</td>
<td>2.0</td>
</tr>
<tr>
<td>5.</td>
<td>Energy mapping pan India basis</td>
<td>• Development of pan India level Sector specific reports and policy plans in selected energy intensive sectors/clusters.</td>
<td>10.0</td>
</tr>
</tbody>
</table>

### Targets

<table>
<thead>
<tr>
<th>S.No</th>
<th>Targets</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Proposed budget of SME Scheme during the XII plan period</td>
<td>40 Cr</td>
</tr>
<tr>
<td>2.</td>
<td>Estimated energy savings in toe</td>
<td>99000 toe</td>
</tr>
</tbody>
</table>
Characteristics

- Higher growth rate
- Tradition driven
- Mostly family owned
- Older technologies
- Labour intensive
- Very small units
- High energy consumption
- Located in unplanned clusters
- Environmental problems
Strengths

- Ability to produce customized and labour intensive products
- Quick decision making
- Flexibility
- Both traditional markets (like brass utensils, tea) and developing markets (castings)

Challenges

- Technological
  - Lack of off the shelf technological solutions
  - Underdeveloped technology/services market
  - Environment protection issues leading to closure of units

- Capacity Building
  - Lack of scientific approach, measured data and hence the awareness of energy performance status
  - Continued dependence on ‘experienced person’ rather than a scientific designing
  - Low level of knowledge exchange

- Economic/financial –
  - Increasing worldwide competition
  - Scale of operation
  - Access to institutional finance
Weaknesses

- Use of old/obsolete/inefficient technologies.
- Low energy productivity.
- Low technical or managerial expertise.
- Lack of awareness/access of on Energy Efficient or new products/technology.
- Lack of access to institutional finance.
- Lack of Common Infrastructure.
- High inertia to change.

Identified Clusters – BEE SME Program

- Ahmadabad (Chemicals)
- Alwar (Oil Mills)
- Bangalore (Machine Tools)
- Batala, Jalandhar, Ludhiana (Foundries)
- Bhimavaram (Ice Making)
- Bhubaneswar (Brass)
- E&W Godavari (Refactories)
- Ganjam (Rice Milling)
- Gujarat (Dairy)
- Howrah (Galvanizing)
- Jagadhari (Brass & Aluminum Utensils)
- Jamnagar (Brass)
- Tirupur (Textile)
- Mangalore (Tiles)
- Jodhpur (Lime Kilns)
- Jorhat (Tea)
- Kochi (Sea Food processing)
- Morbi (Ceramics)
- Muzaffarnagar (Paper)
- Orissa (Sponge Iron)
- Pali (Textiles)
- Sholapur (Textiles)
- Surat (Textiles)
- Vapi (Chemicals)
- Varanasi (Bricks)
- Vellore (Rice Milling)
- Warangal (Rice Milling)
- Allepe (Coir)
- Firozabad (Glass)
- All India Brick Cluster