Energy Efficiency Programme for Small and Medium Enterprises (SMEs)

13th SAMEEEKSHA Meeting

Milind Deore, BEE

BEE's 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. 26 clusters
- **Building Capacity & Awareness**
- **Increased Investment in Energy Efficiency**
- **Knowledge Management**

BEE - SME Program

Project Deliverables

1. **Implementation of Technology demonstration projects**

- Demonstration of 10 best identified technologies of selected 5 energy intensive sectors
- 100 technology demonstration in 5 sectors.

2. **Technical Assistance and Capacity Building**

- Sharing of the BoP and BAT
- Development of case studies , print materials and audio visual of BATs & BOPs
- Capacity building in clusters through SDAs, National level workshops for stakeholders.

3. **Mapping of the SMEs on pan India basis.**

- Development of Pan India level Sector specific reports and policy plans .
- Launch of National Policy Document on Energy Efficiency in SMEs.

Synergies of BEE-SME Program MoMSME schemes

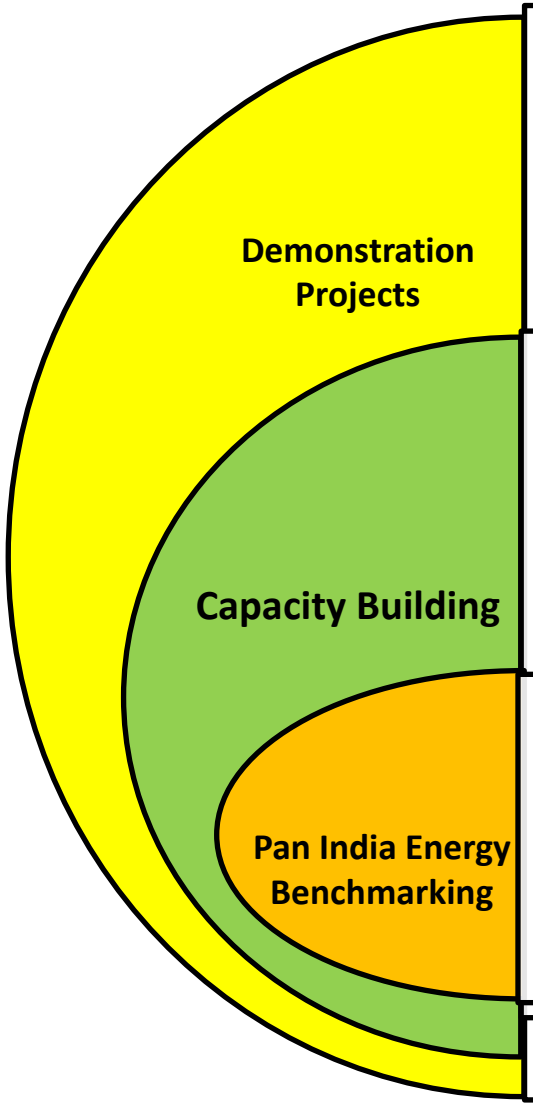
1. Committee Chaired by AS and DC, MoMSME to explore ways of aligning the activities of BEE with those of MoMSME in the XII plan under its SME scheme.

2. AS &DC suggested BEE to target following clusters :

    a. **Food (Indore) ,**
    b. **Kochi (Seafood, Kerala)**
    c. **Forging (Ludhiana, Punjab)**
    d. **Brick (Varanasi, UP)**
    e. **Textile (Pali, Rajasthan)**

3. MSME-DI to support BEE in its SME initiatives and BEE to promote the TEQUP scheme in its workshops

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 Rs10 Lakh.
- Partnering with the MSME-DI s of respective clusters.

- Workshops for unit owners on best practices and technologies.
- Appointment of Implementation Agency : Carry out pre-post energy audits and assist units with implementation .
- Appointment of Sector Expert
- Empanelment for Local service providers .
- 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 .

Implementation Framework

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

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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 .

Ludhiana - Forging Cluster

- More than 1500 Small and Medium Enterprise (SME) forging units operating in the various industrial pockets in and around Ludhiana, manufacturing products suitable for automotive, industrial and agricultural sector.
- Two technologies identified to enhance energy efficiency of forging units in the cluster – Induction Heating Furnace & Special Purpose Machines
- Baseline audits were completed in all the 20 forging units
- Seven units implemented the suggested technologies – realized energy savings 20 to 40%
- Post implementation audit completed in 7 units.
- Conducted 5 awareness workshops each in region of Moga, Phagwara, Jalandhar and Ludhiana.

Induction heater installed at Global Exports India

Glimpses of technologies Implemented

Induction heater installed at C-Forge (India)

Induction heater installed at Global exports

SPM – turning installed at NN Products

Induction heater installed at Soga toka Industries

SPM – turning installed at Bharat International

SPM – turning installed at Khalon International

SPM – turning installed at Mehram Industries

SPM – drilling installed at Bharat International

Glimpses of technical workshop

Indore – Food Cluster

- More than 200 (Dal + Poha) processing units in Indore and Ujjain industrial area
- Baseline audits were completed in 14 units
- **Identified Technologies – (average energy saving potential is 25 to 30%)**
  - Replacing old and inefficient motors with EE motors
  - Installing Oxygen Sensor, fuel control and damper control
  - Installation of VFDs
  - Replacement of existing compressor with energy efficient compressor system
  - Substitution of fuel - saw dust based to gas based burner

- Seven units (6 Poha and 1 Dal Unit) have already implemented the suggested technologies – realized energy savings 15 to 30%
- Post implementation audit completed in 7units.

Glimpses of technologies Implemented

Pakka Counter motor at Nanak Overseas

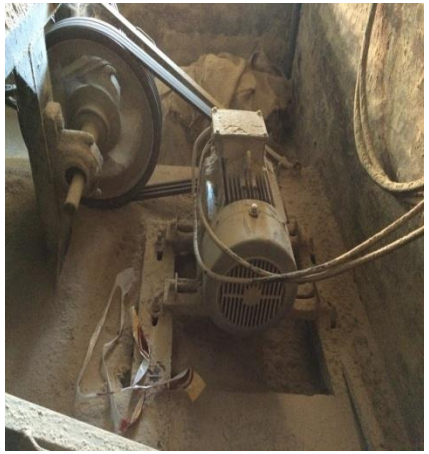
Emery Roll Motors at Nanak Overseas

Roaster Motor at J P Hansraj

Flacker Motor at Hira Industries

Poha Machine motor at Dharmesh Industries

Dhan Elevator motor at Dharmesh Industries



Flacker motor at Bindal Process

Poha Machine motor at Abhishek Industries

Varanasi – Brick Cluster

- About 300 brick manufacturing units in the cluster
- Zig-zag technology is one of the technology options identified to enhance energy efficiency of brick making units in the cluster
- Local industry association (Int Nirmata Parishad) and individual brick kiln entrepreneurs
- TERI, New Delhi is engaged to carry out various planned activities in the cluster
- ***Baseline audits were completed in all the brick kiln units***
- ***Two of the units have already converted their existing kilns into zig-zag design***

Pali – Textile Cluster

- More than 350 Textile Dyeing and Finishing units with production capacity of 5.5 million meter per day
- Local industrial bodies
  - District Industrial Center, Pali
  - Rajasthan Textile and Hand Processors Association (RTHPA), Pali
- Baseline audits were completed in 11 textile units
- Post implementation audit completed in 5 units of textile.
- **Identified Technologies**
  - Economizer in Thermic fluid heater,
  - Air-preheater (APH) in steam boiler,
  - Waste heat recovery (WHR) with kier boiling unit,
  - Temperature Monitoring & Control in Jigger Machines Advanced Float Trap systems
  - Condensate Recovery System (CRS) in Jet Dyeing Machine,
  - Oxygen based automation and control system in boiler,
  - Installation of VFD for blowers of thermopac & boiler
  - New energy efficient boiler

Kochi – Sea Food Cluster

- More than 65 units in Kochi sea food cluster
- Baseline audits were completed in 8 units
- **Identified Technologies – (average energy saving potential is 15 to 20%)**
  - Replacement of reciprocating compressor with Screw compressor with VFD
  - Replacement of water cooled condenser with Evaporative condenser
  - Installation of variable frequency drive for condenser water pumps
  - Installation of THERMOSHIPON SYSTEM (GAS COOLING) for Compressor.
  - Automation of refrigeration plant by using PLC controller

Key Achievements

- **Unleashing the Large Potential in SME sector**
- 63 units out of the 100 industry units agreed to implement the EE measures and adopt energy efficiency technologies.
- Post implementation audits at **7 units of Forging Cluster** in Ludhiana, **7 units of Food Cluster in Indore, 5 units of Pali Textile Cluster** and **2 unit of Brick Manufacturing cluster in Varanasi.**
- Post implementation audit of these 21 verified units has yielded **Energy Savings of about 569 toe per annum**, **Cost Savings of about INR 1.5 crore per annum** and **GHG reductions of about 2426 tCO2 per annum**.
- **Increased Awareness among the unit owners on the new EE technology**
- Five Workshops for replication of technologies at Forging Cluster.
- Five Workshops for replication to technologies is going to be held at Pali Textile cluster during 9th-11th January, 2018.
- **Identification of Local Service Providers and Suppliers**
- **70 local service providers** have been identified for offering services and supplies of various identifies EE technologies.

Barriers towards adoption of EE in MSMEs

- **Lack of capacities among MSME unit owners and financial institutions (FIs)**
  - MSME unit owners lack technical expertise on energy efficient technologies
  - Financial Institutions and private investors perceive energy efficiency investments as **"high risk"** investments

- **Less priority of MSME unit owners towards energy efficiency**
  - Less awareness among the MSME unit owners on energy efficiency measures and technologies
  - Lack of knowledge on potential benefits of energy efficiency among unit owners
  - Lack of local EE experts to guide the unit owners in undertaking projects

- **Lack of institutional capacity towards fulfilment of documentation requirements for the program.**

Proposed Activities and Deliverables – Energy Efficiency and Technology Upgradation in SMEs (1/3)

Year Planned Activities along with Year wise Measureable Indicators	2017 – 2018	2018 – 2019	2019 – 2020
▪ Promoting Energy Efficiency and Technology Upgradation in SMEs through ESCO route • Engaging ESCO companies in 10 energy intensive clusters for identification of 20 EE technologies and implementation of demonstration projects • Procurement of Monitoring and Verification equipments for units implementing EE technologies • Conduct Monitoring and Verification (M&V) of demonstration projects	✓ No. of ESCO companies selected for technology identification and implementation ✓ No. of EE technologies identified in each cluster ✓ No. of local service providers identified for the technology ✓ Amount of fund utilized and it's percent share in total fund allocated	✓ No. of demonstration projects in each cluster ✓ No. of units with installation of M&V equipments ✓ No. of units that have completed M&V of demonstrated technologies ✓ Amount of fund utilized and it's percent share in total fund allocated	✓ No. of demonstration projects in each cluster ✓ No. of units with installation of M&V equipments ✓ No. of units that have completed M&V of demonstrated technologies ✓ Amount of fund utilized and it's percent share in total fund allocated
▪ Technical Assistance and Capacity Building • Conduction of awareness workshops and capacity building sessions for replication of identified technologies	✓ Collaboration with technical institutions and other countries for identification of best practices and opportunities	✓ No. of Dissemination workshops completed ✓ Amount of fund utilized and it's percent share in total fund allocated	✓ No. of Dissemination workshops completed ✓ Amount of fund utilized and it's percent share in total fund allocated

Proposed Activities and Deliverables – Energy Efficiency and Technology Upgradation in SMEs (2/3)

Year Planned Activities along with Year wise Measureable Indicators	2017 – 2018	2018 – 2019	2019 – 2020
▪ Constitution of technology specific forums • Engaging a consultant through competitive bidding for design and setting up Technology Specific Forum • Conducting 2 National level workshops to disseminate the purpose and objectives of the forum • Convening monthly meetings	✓ Hiring of consultant to develop a business model for the technology forum ✓ National workshop on dissemination information about the forum ✓ Amount of fund utilized and it's percent share in total fund allocated	✓ National workshop on dissemination information about the forum ✓ No. of meetings convened by the forum ✓ Amount of fund utilized and it's percent share in total fund allocated	✓ No. of meetings convened by the forum ✓ Amount of fund utilized and it's percent share in total fund allocated
▪ Promoting participation by financial institutions from project genesis • Capacity Building of bankers and other FIs in energy intensive clusters • Develop technology specific risk assessment studies in the 10 clusters		✓ No. of capacity building workshops conducted for bankers and FIs in clusters ✓ No. of risk studies completed in the cluster ✓ Amount of fund utilized and it's percent share in total fund allocated	✓ No. of capacity building workshops conducted for bankers and FIs in clusters ✓ No. of risk studies completed in the cluster ✓ Amount of fund utilized and it's percent share in total fund allocated

Proposed Activities and Deliverables – Energy Efficiency and Technology Upgradation in SMEs (3/3)

Year Planned Activities along with Year wise Measureable Indicators	2017 – 2018	2018 – 2019	2019 – 2020
▪ Development of a master database for energy intensive sectors • Development of a master database of all LSPs, technologies, best practices etc. for 10 energy intensive sectors • Development of a mobile App and web enabled version of master database	✓ Identification of 10 energy intensive sectors	✓ Hiring of agency for development of database in the identified sectors ✓ Hiring of software agency for development of mobile app and web enabled version of database ✓ Amount of fund utilized and it's percent share in total fund allocated	✓ Development of master database for all sectors ✓ Usage of the mobile app by MSME unit owners ✓ Amount of fund utilized and it's percent share in total fund allocated
▪ Energy mapping of the SMEs on Pan India basis • Selection of energy intensive sectors/Clusters which have high energy consumption • Development of pan India level Sector specific reports and policy plans for development of Sector • Launching of National Policy Document on energy efficiency in SMEs	✓ Selection of clusters to be covered under the project ✓ No. of units covered under the mapping	✓ No. of units covered under the mapping ✓ Database developed for collating all the data of SMEs ✓ Amount of fund utilized and it's percent share in total fund allocated	✓ No. of units covered under the mapping ✓ Database developed for collating all the data of SMEs ✓ Launch of national level policy document ✓ Amount of fund utilized and it's percent share in total fund allocated

Thank You