SAMEEEKSHA

SMALL AND MEDIUM ENTERPRISES: ENERGY EFFICIENCY KNOWLEDGE SHARING

15TH MEETING

12 JANUARY 2019

THE ENERGY AND RESOURCES INSTITUTE (TERI)
NEW DELHI

SHAKTI
SUSTAINABLE ENERGY
FOUNDATION

SAMEEEKSHA

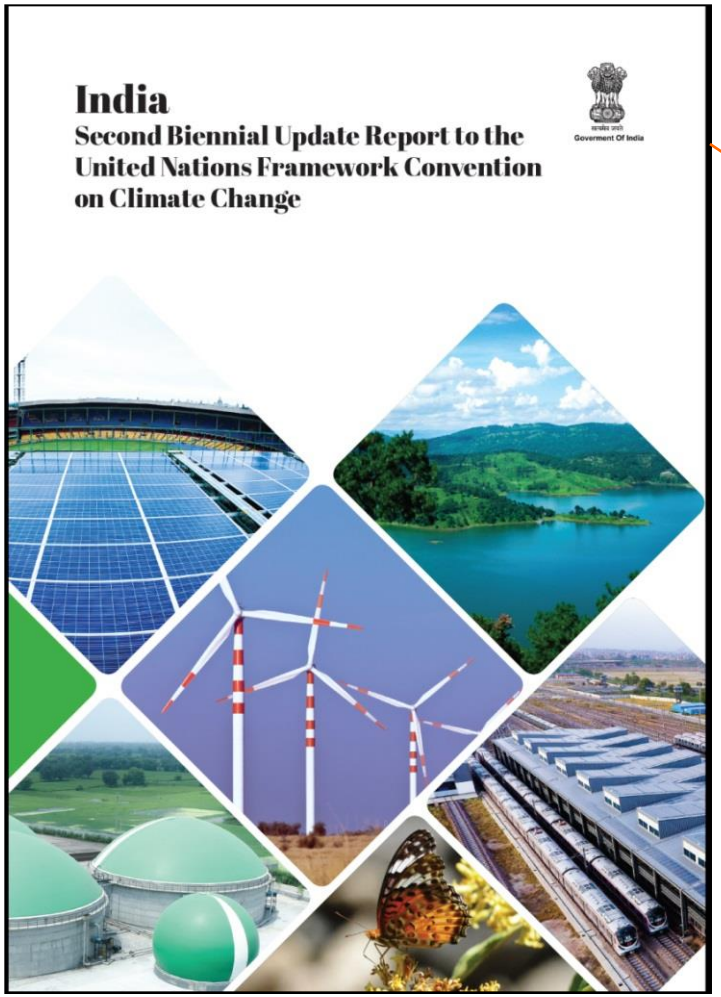
Small and Medium Enterprises: Energy Efficiency Knowledge Sharing

- Platform for pooling the knowledge and experiences of various organizations that are engaged with the Indian SME sector.
- Enables like-minded organizations to coordinate and increase the impact of their activities in different areas in the SME sector.

SAMEEEKSHA

- Provides a forum where representatives of small-scale industry interact with policy-makers, funding and development agencies, R&D institutions, academia, and others, in order to:
  - Highlight the needs of sector/cluster in regard to improving energy efficiency, reducing fuel costs, exploring alternate energy sources, and so on.
  - Point to possible options for exploring, developing, and introducing energy-efficient technologies and practices in the concerned industrial sector/cluster.
  - http://sameeeksha.org/

SAMEEEKSHA INCLUDED IN INDIA SECOND BIENNIAL UPDATE REPORT



reduction in the time taken for processing and granting approvals based on scientific and technical inputs. In this context, the Government of India launched *'PARIVESH'* (Pro Active and Responsive facilitation by Interactive and Virtuous Environmental Singlewindow Hub), a Single-Window Integrated Environmental Management System for expeditious and transparent clearances in environment, forest, wildlife and coastal regulatory zone. The Ministry is using EIA to promote climate-friendly sustainable infrastructure development. One such example is related to the building and construction sector. Under the EIA process, the Ministry gives higher priority for environmental clearance to construction projects which have obtained green building rating by integrating a high-level of environmental norms into their building plans.

6.4.2 *SAMEEEKSHA*

Sameeeksha is a e-platform providing comprehensive information as well as an opportunity to the representatives of Micro, Small & Medium Enterprises (MSME) sector for an interface with policymakers, funding and development agencies, R&D institutions and academia to promote energy efficiency and best operating practices in the sector. This platform is supported by the Ministry of MSME, Bureau of Energy Efficiency, Swiss Agency for Development and Cooperation and Shakti Sustainable Energy Foundation. The secretariat of *Sameeeksha* is housed at The Energy Resource Institute (TERI). A MSME Energy Map has been developed, which is a dynamic tool that provides insights into energy-intensive MSME clusters across the country, on which detailed energy-related information and data is available. So far, the *Sameeeksha* database accounts for about 27.3 Mtoe of energy consumption in 109 MSME clusters across the country (*sameeeksha*.org, 2018).

6.4.3 Super-efficient Equipment and Appliance Deployment (SEAD)

India is a member country of the Super-efficient Equipment and Appliance Deployment (SEAD) initiative, which is a voluntary collaboration among governments working to promote the manufacture, purchase, and use of energy-efficient appliances, lighting, and equipment worldwide. SEAD is an initiative under the Clean Energy Ministerial (CEM). The SEAD Initiative works with manufacturers, purchasers, purchase influencers, and policymakers to award feature-rich, energy-efficient products that provide top-quality services while reducing energy costs (CEM, 2016).

6.4.4 *PAHAL* – Mass Collaboration for Clean Cooking Fuel

The Ministry of Petroleum and Natural Gas (MoPNG), Government of India, launched a modified Direct Benefit Transfer of LPG (DBTL) scheme *'Pahal (Pratyaksh Hanstantrit Labh)'* in 54 districts on 15th November 2014, which was extended to the entire country on 1st January 2015.

Figure 6.13: *PAHAL* acknowledged by Guinness Book of World Records (2015)

Liquefied Petroleum Gas (LPG) is used in most urban and rural households and is subsidized. To reduce subsidies, a programme was launched to encourage well-to-do households to voluntarily give up their LPG subsidy so that it could be targeted to the poor who generally use fuelwood, cow dung, crop residue and coal as cooking fuel. Data from the MoPNG indicates that as of January 2018, more than 0.57 million households had voluntarily surrendered their LPG subsidy. The availability of subsidy encourages people to move away from fuelwood, cow dung and crop residue to LPG.

LPG consumers who join the *PAHAL* scheme will get LPG cylinders at market price and receive LPG subsidy (as per their entitlement) directly into their bank accounts.

In 2015, *PAHAL* was acknowledged by the Guinness Book of World Records for being the largest cash transfer programme, with 125.7 million households receiving cash transfer as of 30th June 2015 (PIB, 2015) (Figure 6.13).

As on 1st March 2018, around 198.8 million LPG consumers have joined the scheme and an amount of ₹6,80,203.5 million has been transferred to the bank accounts of LPG consumers since the inception of the scheme (PIB, 2018). Direct transfer modality under the scheme has ensured substantive savings on supply of LPG consumers to the households by replacing inactive accounts.

AN UPDATE FROM SAMEEEKSHA SECRETARIAT: (SEP 2018 – JAN 2019)

14TH MEETING - REGIONAL MEETING AT KOLKATA (AUGUST 2018)

Presentations

- SAMEEEKSHA Platform: an update—Mr Sachin Kumar, Secretary, SAMEEEKSHA

Technical Session-1: Scaling-up energy efficient technological solutions

- Factors influencing uptake of energy efficiency in Indian MSMEs— Mr Tirtha Biswas, CEEW
- Promoting EE technologies and best practices: TERI's intervention among the MSMEs in eastern region— Mr Prosanto Pal and Mr Pawan Kumar Tiwari, TERI

14TH MEETING - REGIONAL MEETING AT KOLKATA (AUGUST 2018)

Technical Session– 2: BEE and MoMSME initiatives in Eastern Region

- BEE's initiative in MSME sector - Mr. Milind Deore, Director, BEE

- Initiatives by MSME-DI Kolkata – Mr. Monojit Guha, Deputy Director, MSME-DI, Kolkata

SAMEEEKSHA NEWSLETTER


SMALL AND MEDIUM ENTERPRISES: ENERGY EFFICIENCY KNOWLEDGE SHARING

VOLUME 9 | ISSUE 3 | SEPTEMBER 2018

SAMEEEKSHA

www.sameeeksha.org

NEWSLETTER

Inside...

- Skilling shop floor technicians to catalyse energy efficiency in Faridabad cluster
- 14th meeting of SAMEEEKSHA

VISION

SAMEEEKSHA envisages a robust and competitive SME sector built on strong foundations of knowledge and capabilities in the development, application, and promotion of energy-efficient and environment-friendly technologies.

A PLATFORM FOR PROMOTING ENERGY EFFICIENCY IN SMEs

IN THIS ISSUE...

This issue focuses on an innovative strategy to promote energy efficiency sustainably and on a wide scale across industrial clusters, through strengthening the technical capacities of shop floor level personnel in train-the-trainer (TOT) mode. The theme article describes such an initiative implemented by TERI in the Faridabad engineering cluster, with the support of Shakti Sustainable Energy Foundation (SSEF) and in close partnership with the local industry association, IamSMEofIndia. Faridabad is a large and industrially diverse cluster with over 12,000 industrial units. TERI first conducted baseline surveys on a number of industrial units. Besides helping to estimate the potential for energy savings in different process areas and identify possible energy conservation measures for each sub-sector, the surveys enabled TERI to interact with machinery operators, supervisors and other shop floor technicians and understand the important technological and process areas in which they needed strengthening of their knowledge and skills. Based on this 'needs analysis', TERI developed a training curriculum and training resources customized to meet the needs of the shop floor personnel and be easily comprehensible to them. Finally, TERI trained a select group of shop floor personnel on energy efficient technologies and practices in TOT mode. With this, a core group of 'animators' has been created among the shop floor technicians in the Faridabad cluster; a group empowered with some basic knowledge and expertise on energy efficiency and best operating practices (BOP), as well as the training abilities and resources to impart their knowledge and skills to other shop floor level technicians in the cluster.

The issue also features highlights of two events: the 14th SAMEEEKSHA Platform meeting held in Kolkata—the first such meeting to be organized at regional level—and an awareness workshop in Ankleshwar on disseminating Japanese low carbon technologies (LCTs) in India, organized under the Japan–India Technology Matchmaking Platform (JITMAP).

SAMEEEKSHA Secretariat


INTERVENTION

Energy saving potential identified for different sub-sectors

Five broad topics were identified for the TOT program:

- Furnace systems
- Electrical systems
- Compressed air systems
- Cooling water systems
- Lighting systems

for middle/senior level industry personnel—who typically possess theoretical knowledge in science or engineering. In sharp contrast, the shop floor technicians had little or no theoretical knowledge of sciences or engineering disciplines. TERI therefore customized its existing training modules for the shop floor technicians, to make the content easy to understand yet comprehensive, with less emphasis on theory and much greater stress on practical/hands-on training and BOP.

Detailed training modules were prepared for each of the five topics. Particular care was taken to keep the content simple and practical so as to match the needs and capacities of the trainees. The training modules were enriched with visual content such as photographs, diagrams, graphs, flow-sheets and tables for easy comprehension and enhanced retention by the participants. A number of case studies were included to highlight the benefits of EE technologies and practices, in terms of energy and monetary savings and the payback periods on investments in ECMs.

The TOT programs were carried out in two sessions at the office of IamSMEofIndia. The first session was held on 15th March 2018 for about 20 shop

1st TOT session

Sep' 18 Issue

- Focus on strengthening the technical capacities of shop floor level personnel in train-the-trainer (TOT) mode.

SMALL AND MEDIUM ENTERPRISES: ENERGY EFFICIENCY KNOWLEDGE SHARING VOLUME 9 | ISSUE 4 | DECEMBER 2018

SAMEEEKSHA NEWSLETTER

www.sameeeksha.org

Inside...

- Promoting energy efficiency and renewable energy in selected MSME clusters: a GEF–UNIDO–BEE project
- Clean, energy efficient technologies introduced in Thangadh ceramic cluster

SAMEEEKSHA

VISION

SAMEEEKSHA envisages a robust and competitive SME sector built on strong foundations of knowledge and capabilities in the development, application, and promotion of energy-efficient and environmentally-friendly technologies.

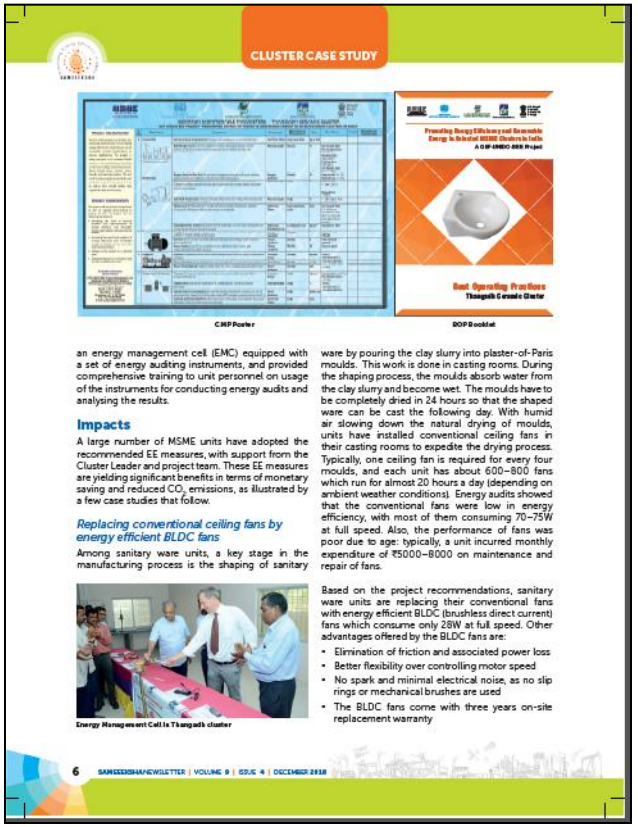
A PLATFORM FOR PROMOTING ENERGY EFFICIENCY IN SMEs

IN THIS ISSUE...

This issue has, as its focus, the GEF-funded national project being executed by UNIDO in collaboration with BEE titled 'Promoting energy efficiency and renewable energy in selected micro, small and medium enterprises (MSME) clusters in India'. The aim of the project is to develop and promote energy efficient technologies (EETs) and to enhance the use of renewable energy technologies (RETs) in process applications in energy intensive MSME clusters representing five industrial sub-sectors: brass, ceramics, dairy, foundry, and hand tools. Thereby, the project improves the productivity and competitiveness of units; reduces CO_2 emissions and improves the local environment; and lays the foundations for introduction and scaling up of EETs and RETs in other MSME clusters. At present, the project is being executed in 12 MSME clusters across India.

The first article outlines the project strategy, activities and outcomes. The activities follow a holistic, iterative path in which the key elements include: energy audits and technology identification; capacity building and implementation assistance; training of vendors and technology demonstrations; documentation, dissemination and follow-up; and demand aggregation, price reduction and large-scale deployment of the improved technologies. In each cluster, experienced and dedicated 'Cluster Leaders' have been identified and provided with responsibility for implementation of project activities in consultation with the local industry association, consultants, and project team. Also, the project has established 'Energy Management Cells' (EMCs) within the respective industry associations in order to strengthen the ability of the cluster-level MSME owners/operators to undertake energy audits and identify energy saving measures on their own. The second article presents a few case studies on implementation of EETs/RETs from the Thangadh ceramic cluster, one of the clusters covered by the project, to showcase the benefits being brought about in terms of increased energy efficiency, improved productivity, and reductions in carbon emissions.

SAMEEEKSHA Secretariat



CLUSTER CASE STUDY

CMP Poster

DOP Booklet

an energy management cell (EMC) equipped with a set of energy auditing instruments, and provided comprehensive training to unit personnel on usage of the instruments for conducting energy audits and analysing the results.

Impacts

A large number of MSME units have adopted the recommended EE measures, with support from the Cluster Leader and project team. These EE measures are yielding significant benefits in terms of monetary saving and reduced CO_2 emissions, as illustrated by a few case studies that follow.

Replacing conventional ceiling fans by energy efficient BLDC fans

Among sanitary ware units, a key stage in the manufacturing process is the shaping of sanitary ware by pouring the clay slurry into plaster-of-Paris moulds. This work is done in casting rooms. During the shaping process, the moulds absorb water from the clay slurry and become wet. The moulds have to be completely dried in 24 hours so that the shaped ware can be cast the following day. With humid air slowing down the natural drying of moulds, units have installed conventional ceiling fans in their casting rooms to expedite the drying process. Typically, one ceiling fan is required for every four moulds, and each unit has about 600–800 fans which run for almost 20 hours a day (depending on ambient weather conditions). Energy audits showed that the conventional fans were low in energy efficiency, with most of them consuming 70–75W at full speed. Also, the performance of fans was poor due to age: typically, a unit incurred monthly expenditure of ₹5000–8000 on maintenance and repair of fans.

Energy Management Cell in Thangadh cluster

Based on the project recommendations, sanitary ware units are replacing their conventional fans with energy efficient BLDC (brushless direct current) fans which consume only 28W at full speed. Other advantages offered by the BLDC fans are:

- Elimination of friction and associated power loss
- Better flexibility over controlling motor speed
- No spark and minimal electrical noise, as no slip rings or mechanical brushes are used
- The BLDC fans come with three years on-site replacement warranty

6 SAMEEEKSHANEWSLETTER | VOLUME 9 | ISSUE 4 | DECEMBER 2018

Dec' 18 Issue

Focus on GEF-BEE-UNIDO project 'Promoting energy efficiency and renewable energy in selected micro, small and medium enterprises (MSME) clusters in India'

Discussions during the last meeting: Action points for the Secretariat

- Need to deep-dive intervention in cold storage sector in Jharkhand
- Need to organize sector-specific intervention and awareness program for Refractory sector
  - Interactive session will be organized in March/April 2019
- Specific program to be organized for brick kiln units to understand their concerns
- Creating more awareness about Government schemes by advertisement in newspaper/linking MSME-DI's web-site with SAMEEEKSHA web-site

ENERGY INTENSIVE MSME CLUSTERS IN TAMIL NADU

FOUNDRY CLUSTER

1. Coimbatore

CERAMIC CLUSTER

1. Virudhachalam

AUTO COMPONENT CLUSTER

1. Chennai
2. Thiruvallur
3. Hosur

PHARMACEUTICAL CLUSTER

1. Chennai
2. Alathur

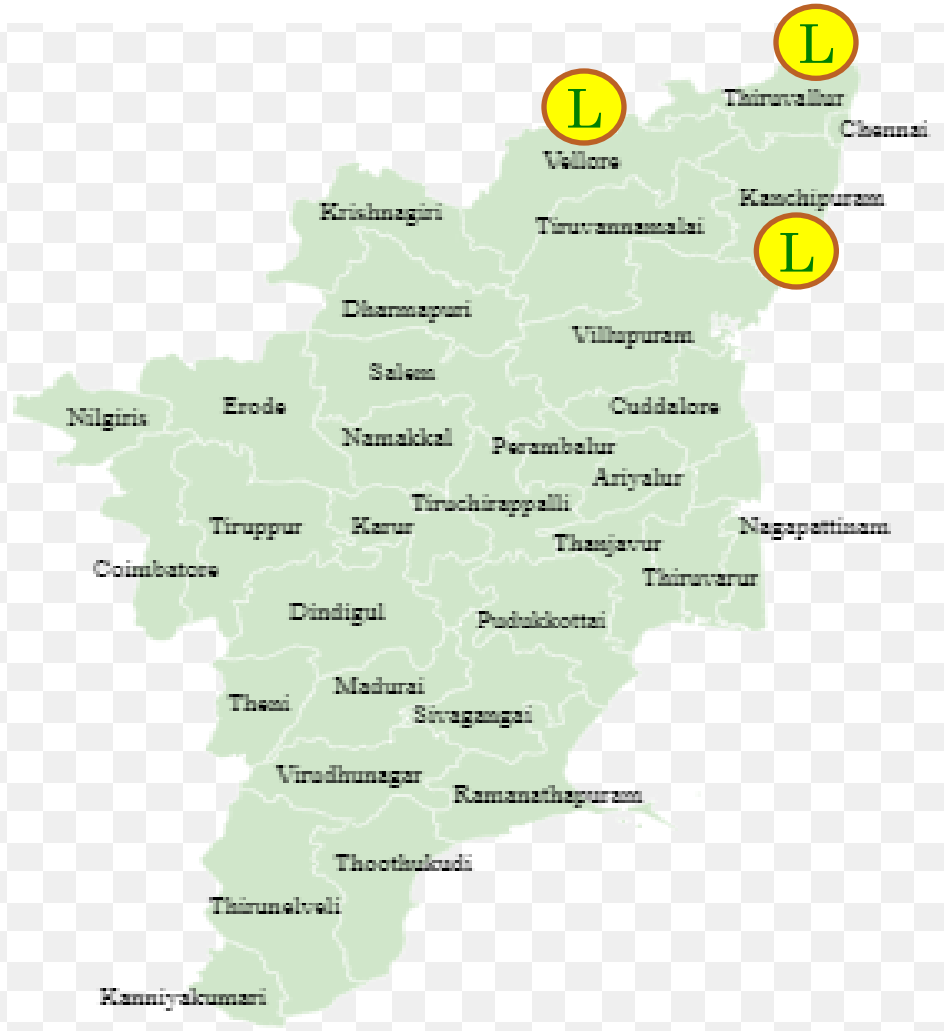
TEXTILE AND HOSIERY CLUSTER

1. Coimbatore
2. Karur
3. Thiruchengode
4. Kumarapalayam
5. Pallipalayam
6. Tiruppur

PLASTIC CLUSTER

1. Ekkaduthangal
2. Guindy
3. Ambathur
4. Madurai

LEATHER CLUSTER



1. Ambur
2. Vaniambadi
3. Pernambur
4. Ranipet
5. Madhavaram
6. Chrompet
7. Pallavaram

RICE MILL CLUSTER

1. Thanjavur
2. Dindigul
3. Madurai
4. Kangeyam
5. Puduvayal
6. Pallathur
7. Kancheepuram
8. Walajabath
9. Madhranthakam
10. Alangalur
11. Red Hills
12. Vellore

PUMP CLUSTER

Coimbatore

BRASS CLUSTER

1. Nachiarkoil
2. Swamimalai

BAKERY CLUSTER

1. Coimbatore

ENERGY CONSUMPTION AND SAVING POTENTIAL IN MSMEs

S No	Sector	States	Clusters	Energy (toe)
1	Foundry	Tamil Nadu, Karnataka	3	98,526
2	Pump set	Tamil Nadu	1	3,070
3	Forging	Tamil Nadu	1	9,440
4	Aluminium	Tamil Nadu	1	12,340
5	Refractory	East West Godavari, Tamil Nadu	2	30,298
6	Textile	Tamil Nadu	1	8,17,965
7	Rice mill	Tamil Nadu, Telengana	4	1,65,621
8	Seafood	Kerala	1	2,574
9	Ice making	Kerala	1	3,978
10	Machine tools	Karnataka	1	1,962
11	Bakery	Tamiil Nadu	1	5,798
12	Coir	Kerala	1	6,168
13	Brick	Tamil Nadu and Andhra Pradesh		28,70,000
	Total		**19**	**4,027,740**

- **Estimated energy saving: 400 –600 kilo toe considering a potential of 10-15%**

THANK YOU

SAMEEEKSHA SECRETARIAT

WAY FORWARD

- A number of energy intensive MSME clusters exist in Southern India accounting for significant energy consumption and GHG emissions
- Cluster and unit level analysis indicate significant energy saving potential through:
  - Best operating practices
  - Equipment retrofits, and
  - Technology modernisation or upgradation
- Need for more in-depth studies in select clusters and initiate 'cluster energy performance enhancement programs'