



# National Summit

## Energy Efficiency in Micro, Small and Medium Enterprises (MSMEs)

30-31 July 2012 | New Delhi



## Summit Proceedings



Bureau of Energy Efficiency



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The Energy and Resources Institute

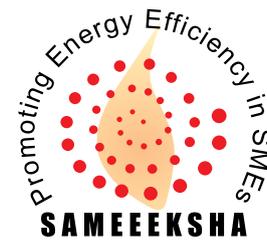


सत्यमेव जयते



सूक्ष्म, लघु एवं मध्यम उद्यम  
MICRO, SMALL & MEDIUM ENTERPRISES

# NATIONAL SUMMIT ENERGY EFFICIENCY IN MSMEs, 2012



30–31 July 2012, New Delhi

## Summit Proceedings

### *Editors*

Upinder Dhingra, R P Subramanian  
Girish Sethi, Veena Joshi



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## Acknowledgement

The editors are especially grateful to the entrepreneurs, cluster level industry association representatives, technologists, financiers, academicians, consultancy organizations, and other MSME sector stakeholders who journeyed from different parts of India and abroad to make the Summit a success; and to AfD, BEE, EESL, Embassy of Switzerland and GIZ for their invaluable support. Special thanks are also due to the SAMEEKSHA member organizations for their suggestions and guidance during the formulation stage of the summit

### **Suggested format for citation**

Dhingra, Upinder et al (editors). 2013. *Proceedings fo the National Summit on Energy Efficiency in MSMEs, 2012*. New Delhi: The Energy and Resources Institute.

### **Published by**

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IHC Complex, Lodhi Road  
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# Messages



The National Summit on Energy Efficiency in MSMEs, held in New Delhi from 30–31 July 2012, was organized under the aegis of SAMEEKSHA—a synergetic knowledge-sharing platform for stakeholders in the MSME sector, set up jointly by the Ministry of MSME (MoMSME), the Bureau of Energy Efficiency (BEE), the Swiss Agency for Development and Cooperation (SDC), and The Energy and Resources Institute (TERI). The outcomes of the Summit have resulted in a set of guidelines that will enable the development and widespread adoption of clean, energy-efficient technologies within the MSME sector in India. These guidelines straddle the three broad and interconnected realms of policy, technology, and finance; they have been evolved through a process of discussions and experience-sharing that was driven by the MSMEs themselves—

the ‘voices from the ground’—and sharpened by other stakeholders in the Indian MSME sector, ranging from government departments, donor agencies, financial institutions, to technology experts, R&D institutions, and academia. The Summit and its results are particularly relevant in the context of the critical role that energy plays in the overall economic development process, a role that has been recognized and emphasized by the ‘Rio+20’ United Nations Conference on Sustainable Development, held in Rio de Janeiro, Brazil, in June 2012.

It is hoped that the Summit’s deliberations and outcomes, as summarized in this document, will provide a key tool for governments, financial institutions, technology developers, and other stakeholders while framing policies and undertaking activities aimed at increasing the energy efficiency of MSMEs in India.

**R K Pachauri**

The Energy and Resources Institute (TERI)



Demand for energy is growing with the growth of the Indian economy, even as energy prices continue to rise. In such a scenario, it is vital for industry to make the best use of the available energy resources. This is particularly important for the MSME sector, where energy is a major cost and a large number of units continue to depend on low-efficiency technologies, reducing profitability and competitiveness.

In this context, BEE has implemented an SME Program that has helped improve the energy performance of units in 25 selected MSME clusters of 12 different sectors. For promotion of energy efficiency in MSMEs, numbers of initiatives/schemes have also been undertaken by government as well as other organizations. Given the size and spread of the Indian MSME sector, it is imperative for stakeholders to share the knowledge and experiences gained from the energy-efficiency initiatives that have already been undertaken. This would help generate wider awareness on energy efficiency and encourage and provide guidance for similar initiatives among other MSME clusters/sub-sectors. The SAMEEKSHA platform has been set up precisely to facilitate such knowledge sharing among MSME stakeholders. SAMEEKSHA will play a key role in consolidating the experiences and lessons from various energy efficiency implementations, reduce the need to 'reinvent the wheel', and lead to faster replications of energy-efficient technologies in the MSME sector.

The National Summit on Energy Efficiency in MSMEs, held in New Delhi from 30–31 July 2012, has helped in taking stock of the various energy efficiency initiatives undertaken in the MSME sector and provided valuable feedback and insights from the ground-level stakeholders. It is hoped that the outcomes and recommendations outlined in this report will provide direction for policy-makers to formulate enabling policies for promotion of energy efficiency in the MSME sector.

**Ajay Mathur**  
Bureau of Energy Efficiency



The National Summit is an important milestone in our association with the Micro, Small and Medium Enterprises sector in India where through our partnership with TERI and with active support of MSME agencies and the Government of India, significant reductions in the use of energy have been achieved with the introduction of clean and efficient technologies. In this journey, the participating entrepreneurs and enterprises have been the real stakeholders and have played an active and valuable role.

As early as 18 years ago, Switzerland started to work on energy efficiency in the MSME sector as part of the Global Environment Programme of the Swiss Agency for Development and Cooperation (SDC) and in the framework of Swiss cooperation in India. The decision to work with the sector was indeed strategic. As in many other countries MSMEs play a critical role in the Indian economy. They are the backbone of a successful economic model.

At the same time many of these MSME sectors are energy intensive. Promotion of energy efficient initiatives is a win-win situation for all - for climate in terms of reduced or avoided emissions, for development in terms of local jobs and energy security through a series of technology interventions.

Today our efforts have produced outstanding results in brick, foundry and glass sectors. It is indeed commendable that energy efficient technology initiatives that have been part of these efforts have been replicated by over 700 enterprises across India.

Switzerland is committed to support future initiatives on energy efficiency in India. We hope that the recommendations of this Summit contribute to the way forward to enhancing energy efficiency solutions and to reaching out to more stakeholders.

**Linus von Castelmur**  
Embassy of Switzerland

# In a Nutshell

The first-ever National Summit on Energy Efficiency in MSMEs was organized under the aegis of Small and Medium Enterprises Energy Efficiency Knowledge Sharing (SAMEEEKSHA) on 30–31 July 2012 in New Delhi. The Summit was supported by the Embassy of Switzerland in India, Energy Efficiency Services Limited (EESL), French Development Agency (Afd), and German Development Agency (GIZ). The two-day Summit drew more than 200 participants who represented 40 cluster-level industry associations from various MSME sub-sectors across India including brick, ceramics, chemicals, dairy, engineering, foundry, metallurgy, rice mills, tea, and textiles; 30 government departments; 16 bilateral/multilateral agencies; 7 financial institutions; 9 academic institutions; and 20 energy consulting firms.

The deliberations at the Summit focused on finding an answer to one key question: How can we enable MSMEs to become more energy efficient? In their efforts to find an answer and to define directions for further actions in the MSME sector, the MSME entrepreneurs and other stakeholders shared their knowledge, experiences, and ideas in a series of intense and interactive sessions that spanned three broad themes of policy, technology, and finance.

The Summit was structured in two phases that aimed to: (i) understand the MSMEs' perspectives on key issues related to energy efficiency and (ii) use these perspectives as the basis on which to strengthen supportive mechanisms for energy efficiency. The two phases comprised the following:

- Phase 1: Breakaway discussions that elicited the MSMEs' views and perspectives on energy efficiency under the three broad and interlinked themes of policy, technology, and finance.
- Phase 2: Plenary sessions on each of these

three themes. Each plenary session was anchored around the salient views and perspectives of MSMEs from the corresponding breakaway session. Together, the plenary sessions provided a set of guidelines and actions to promote energy efficiency in the MSME sector.

## Inaugural Session

The inaugural session of the Summit witnessed senior dignitaries who shared their views and vision for providing direction to further the cause of promoting energy efficiency in MSMEs. Eminent speakers included Mr R K Mathur, Secretary, Ministry of MSME; HE Dr Linus von Castelmur, Ambassador of Switzerland to India; Dr R K Pachauri, Director-General of TERI; Dr Ajay Mathur, Director-General of BEE; and Ms Abha Shukla, Secretary of BEE. The dignitaries acknowledged the significant contribution of the MSME sector to India's GDP and employment, stressed the importance of implementing Detailed Project Reports (DPRs) for energy efficient (EE) technologies prepared under different projects/programmes through strengthening of cluster-level support services, and highlighted the major challenge of replicating EE technologies. On the finance front, it was emphasized that the banking sector meets barely 10% of the credit needs of the MSME sector, an indication of the MSMEs' inability to access bank loans.

## Setting the Theme

To set the tone for deliberations at the Summit, the views and perspectives of MSME entrepreneurs and other 'voices from the ground' were captured and presented through a short video. Some of the major needs voiced by entrepreneurs were as follows: having visionary leaders to head industry associations; customized technology solutions; good quality power



and fuels at affordable prices; support to record energy data—a vital prerequisite for identifying energy conservation potential and options; and effective implementation of the many schemes for MSME development that are already in place.

Mr Prosanto Pal from TERI summarized the learnings from various energy efficiency initiatives in the MSME sector (see p.71). He highlighted the importance of understanding the MSMEs’ perspectives on the key issues related to energy efficiency, and to use these perspectives as the basis on which to strengthen supportive mechanisms for energy efficiency.

The discussions that followed brought out important underlying factors that impede replication of EE technologies; in particular, the lack of awareness among MSMEs on EE technologies, and the lack of benchmarks for energy consumption and best available technologies. The discussions also highlighted the need to improve bankers’ understanding of EE technologies, and to generate awareness regarding energy conservation measures and best operating practices at the supervisor and worker level.

### Hearing Voices and Perspectives from the Ground

The breakaway sessions that followed helped in sharpening awareness on the challenges faced by MSMEs at the unit and cluster levels in regard to EE technologies. The cluster-level industry stakeholders—entrepreneurs, office bearers of industry associations, technology suppliers, and local service providers (LSPs)—articulated their needs, concerns and suggestions. Some of the insights are summarized in Table I.

### Plenary Sessions

The insights and ideas captured during the breakaway sessions formed the bases for deliberation during the three Plenary Sessions—on the themes of Policy, Technology and Finance—that followed. Each session began with a summary of the key insights gathered on the respective theme from the ‘voices from the ground’. Thereafter, an expert made a background presentation to deepen understanding on relevant



Table 1 Some key insights provided by 'voices and perspectives from the ground'	
Theme	Key insights
Policy	<ul style="list-style-type: none"> <li>It is essential to collect credible and comprehensive energy data for establishing energy consumption benchmarks at the unit, cluster, and sub-sector levels. Energy data on clusters should be collected through associations, State Designated Agencies (SDAs), and energy suppliers</li> <li>Assured supply of quality power is a major issue</li> <li>Standards should be established for raw materials and fuels</li> <li>BEE should validate and provide accreditation to various EE technologies</li> </ul>
Technology	<ul style="list-style-type: none"> <li>Demonstrate model EE pilot projects at cluster level</li> <li>Strengthen knowledge platforms and industry-academia interface to spread awareness and information on success stories and standard operating procedures</li> <li>Developers of new/innovative technologies should build in flexibility in model solutions and provide a basket of EE solutions for entrepreneurs to choose from</li> <li>LSPs should be capacitated to provide long-term handholding at the cluster/unit level</li> </ul>
Finance	<ul style="list-style-type: none"> <li>Finance for EE technologies is not a major issue for MSMEs. The primary issue is lack of sufficient technical support for identification and implementation of EE technologies and practices</li> <li>Bankers view MSMEs as an unattractive sector for financing</li> <li>MSMEs could group together and aggregate their individual loan requirements for EE technologies; as a group, they could then approach the bank for finance</li> <li>There is need for a special agency to bridge the gap between MSME entrepreneurs and banks</li> <li>There is a need to formulate more special schemes for EE investments</li> </ul>

issues. A panel discussion followed in order to identify steps that could be taken to resolve the issues raised by the MSMEs and other cluster-level stakeholders. The Summit produced a set of actionable guidelines to upscale energy efficiency in the MSME sector; guidelines that captured and synthesized the outcomes of the Focus Group Discussions and the Plenary Sessions. These guidelines are set out in 'The Way Forward' section of this document.

The summit concluded with a valedictory address by Mr Ajay Shankar, Member Secretary, National Manufacturing Competitiveness Council (NMCC). He emphasized the importance of industry stakeholders being involved in the formulation of relevant policies for

MSME sector development. According to him, it is only through this that policies would have a positive impact at the ground level.



# The Summit

## Background

The Micro, Small, and Medium Enterprises (MSME) sector contributes significantly to India's economy. There are an estimated 26 million MSME units providing employment to 70 million persons and accounting for about 45% of India's industrial production and 40% of exports. Over 6,000 products ranging from traditional to high-tech items are being manufactured by MSMEs in the country. Many of the MSME units producing similar products exist as clusters located within a small geographical region. There are more than 400 such manufacturing clusters across the country, of which nearly half comprise energy intensive sectors such as brass, brick, ceramics, chemicals, dairy, engineering, food processing, foundry, glass, metallurgy, paper, pumps, refractory, rice mills rubber, tea, and textiles, in which energy accounts for up to 40% of production costs.

The adoption of EE technology and best operating practices offers enormous potential for energy savings, reduction in CO<sub>2</sub> emissions as well as profitability enhancement among MSMEs in energy-intensive sectors. However, the challenges in promoting energy efficiency investments are many. The MSMEs are large in number and geographically dispersed, awareness about EE technologies and financing options is low among them, and there are few channels of communication among MSMEs, technology providers, and bank officials. MSMEs would seize any opportunity to adopt EE technologies, provided these are proven, cost-effective, and supported by good technical back-up and handholding. The need, therefore, is to get more and more professionals interested in working in the energy-efficiency field and to promote the uptake of EE technologies through support to technology

development, enabling policies, and easy-to-access financing mechanisms.

Against this backdrop, and to discuss and find solutions to various relevant issues, a first-of-its-kind 'National Summit on Energy Efficiency in MSMEs' was organized under the aegis of 'SAMEEEKSHA', a collaborative platform convened by the Bureau of Energy Efficiency (BEE) in association with the Embassy of Switzerland in India, Ministry of MSME (MoMSME), and TERI.

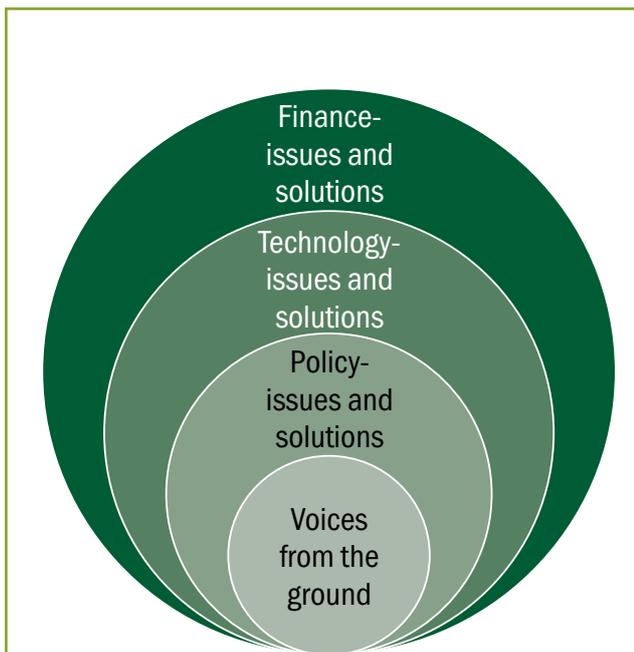
## Objectives

The specific objectives of the Summit were to:

- Seek the views of ground-level stakeholders on possible strategies to promote energy efficiency
- Encourage experience-sharing by the various stakeholders on current initiatives to improve energy efficiency in the MSME sector, and explore possibilities of synergizing actions
- Identify future opportunities and actions required for promoting energy efficiency in the MSME sector

## Structure of Summit

The Summit was structured in such a way that its deliberations were anchored around finding solutions to the concerns expressed by the 'voices from the ground', i.e., MSME entrepreneurs, office bearers of cluster/national level MSME associations, technology suppliers, local service providers, and other MSME stakeholders at the unit and cluster levels. These perspectives and insights from the ground provided orientation for the participants to identify ways to evolve suitable EE technological solutions for MSMEs, as well as guidelines for effective policies, implementation mechanisms, and financing schemes to enable their accelerated adoption (see Figure 1).



**FIGURE 1** Summit Structure

### *Voices from the ground*

In order to enable MSMEs and other ‘ground-level’ stakeholders to articulate their needs and concerns, the participants were divided into three breakaway groups to deliberate on the three broad themes that critically influence the uptake of energy efficiency in the MSME sector: (i) policy, (ii) technology, and (iii) finance. These breakaway sessions were conducted on the first day of the Summit, and the insights obtained from the ‘ground’ formed the basis for discussions during the plenary sessions on the second day. Each breakaway session focused on challenges and opportunities at the cluster and sector-specific levels. In each case, the salient points from the session were summarized by the group leader and presented at the start of the respective thematic (plenary) session that followed.

### *Plenary Sessions*

#### **Enabling policies and programmes to promote energy efficiency in MSMEs**

This session brought together policy makers, multilateral/bilateral donors, and industry

representatives to deliberate on what more needs to be done at the policy level to promote EE technologies in the MSME sector. The session focused on the existing policies, programs and schemes to promote energy efficiency in the MSME sector; the challenges, experiences and lessons gained during their implementation; and ways to improve their effectiveness based on industry perspectives. The session also had panellists deliberate on strengthening policies at central and state levels to increase the adoption of EE technologies in the MSME sector.

#### **Adoption of energy-efficient technologies: challenges and opportunities**

The fact that many MSMEs continue to use inefficient technologies is often due to the lack of availability of proven EE alternatives, or due to the slow rate of diffusion of available EE options. The panellists in this session focused on the challenges faced by MSMEs in adopting EE technologies, such as lack of awareness, non-availability of ready solutions, lack of implementation support, need for R&D, etc., and on evolving strategies at the technological level to overcome these challenges.

#### **Financing energy efficiency investments**

Access to credit is important for accelerating energy efficiency improvement among MSMEs. This session facilitated discussions on demand side barriers (awareness about schemes, bank documentation, book-keeping practices, etc.) and supply side barriers (size of units, collaterals, awareness about new technologies, etc.) faced by MSMEs in obtaining finance, and enabled the participants to identify ways to enhance financing of energy efficiency investments at the sector/cluster levels. It also underlined the need to quantify and evaluate the results of various financing mechanisms, such as lines of credit, offered by bilateral donors for adoption of EE technologies.

# Inaugural Session

## Welcome Address: Dr R K Pachauri

In his welcome address, Dr R K Pachauri, Director General, TERI expressed his delight at the organization of a Summit exclusively dedicated to the MSME sector, and pointed out that while the MSME sector offers enormous potential for initiatives aimed at improving energy efficiency and overall development, this potential has till recently been matched 'in the reverse' by the low levels of attention towards this important sector. He emphasized that energy efficiency forms a key component of the larger issue of efficient resources management, an issue that has now assumed global importance, in the context of ensuring a sustainable future and in mitigating emissions and the effects of climate change. In this context, it is 'critically important' to ensure changes at the grassroots level. Stressing the need to support MSMEs, he noted that the MSME sector may not contribute significantly to India's GDP in economic numbers, yet it contributes enormously in terms of employment. A look at the development trajectories of many advanced nations reveals that in the initial stages, their growth was driven by the growth of their MSMEs.

Acknowledging the efforts of MoMSME and BEE in facilitating growth of the Indian MSME sector, Dr Pachauri suggested that the Perform, Achieve and Trade (PAT) scheme, now being implemented in designated large-scale industries, could be extended in some form to the MSME sector for the creation of cluster-based benchmarks. This would, in turn, motivate healthy competition among MSMEs, not only in achieving energy efficiency but also in management of water, a vital resource that is also a primary topic in the climate change debate.

## Introductory Remarks: Dr Linus von Castelmur

In his introductory remarks, HE Dr Linus von Castelmur, Ambassador of Switzerland to India, observed that the Summit marks an important milestone in the Government of Switzerland's 18-year-long partnership with India—and with TERI in particular—in promoting clean EE technologies in the MSME sector. He highlighted the importance of the Indian MSME sector in terms of its 'staggering' numbers— 26 million enterprises, 69 million people employed — accounting for over 40% of India's exports.



Dr Castelmur expressed his delight at the ‘outstanding results’ from the interventions undertaken by the Climate Change and Development Division (CCD) of Embassy of Switzerland, New Delhi, in partnership with TERI and other experts. It is ‘commendable’ that these relatively small interventions have led to more than 700 replications in the selected MSME sub-sectors. He complimented the participating entrepreneurs, who were the ‘real stakeholders and active contributors’ to the success of the project. Pointing towards the need to increase these replications and thereby further increase the uptake of energy-efficiency measures in the MSME sector, he noted that this requires synergy among the various stakeholders that are working towards development of the MSME sector. An example of such synergy is the SAMEEKSHA knowledge-sharing platform. He reiterated the Government of Switzerland’s commitment to providing support for the development of the Indian MSME sector. In his closing remarks, he expressed hope that the voices and perspectives from the ground during the Summit would show the way to evolve energy-efficiency solutions and increase their uptake.

### **Keynote Address: Dr Ajay Mathur**

Delivering the keynote address, Dr Ajay Mathur, Director General, BEE, noted, ‘for MSMEs, energy efficiency is a matter of the bottom-line, of saving fuel costs and meeting emission norms, of survival’. Referring to the initiatives that have been undertaken by various agencies in promoting energy efficiency in the MSME sector (see p.71), he observed, ‘the challenge is replication...to do in thousands of clusters what we have done in a few’. He added that the only way to do this is to share knowledge and experiences, through platforms like

SAMEEKSHA which can spread the awareness that ‘what can be done in one cluster can also be done in others’.

Dr Mathur acknowledged the catalysing role played by MoMSME in the development of the sector, and stated that the ministry has enabled capacity building, creation of infrastructure, and adoption of EE technologies among MSMEs. Outlining the work done in 25 MSME clusters under the BEE-SME programme, he added that BEE sees the future challenge as ensuring that the ‘energy efficiency business’ takes off. In order to achieve this goal, preparation of DPRs in regard to EE technologies is not enough; implementation of the DPRs must be ensured, which in turn requires cluster-level support services. The BEE aims to accelerate the uptake of energy efficiency in the MSME sector through ‘newer’ technologies during the 12th Five Year Plan. The BEE will work with long-standing partners such as TERI, MoMSME, Ministry of New and Renewable Energy, the Government of Switzerland, UNIDO, and others in achieving this goal.

### **Inaugural Address: Mr R K Mathur**

Mr R K Mathur, Secretary, Ministry of MSME, stressed on the importance of the Summit in providing credible recommendations that would help in framing policies and programmes for MSME sector development. With the 12th Plan still in the process of finalization, he hoped that the insights captured from the Summit would contribute valuable ideas that would help the Ministry of MSME in policy formulation. He expressed his satisfaction at the sizeable participation by MSME representatives in the Summit.

Mr Mathur reiterated the importance of the MSME sector, with an estimated 4,000 clusters, 6,000 products, and about 100 billion USD drawn as credit as per Reserve Bank of India (RBI) estimates.



He elaborated on the challenges faced by MSMEs in accessing bank loans, and cited an assessment by CRISIL, a leading credit-rating agency, that the banking structure meets barely 10% of the credit needs of the Indian MSME sector— an indication of the sector’s ‘credit hungriness’. He then touched on some of the schemes of the Government of India to facilitate development of the MSME sector (see p.71). He also mentioned SIDBI’s financial schemes for ‘Green Loan’ and ‘Equity Assistance’, but noted that the funds under these schemes are not adequately utilized. The 12th Plan proposes around Rs 3,000 crore for supporting MSMEs in technology acquisition, but the effective utilization of these funds requires synergy among agencies such as TERI, BEE, MoMSME, donor organizations, and other stakeholders through initiatives like SAMEEEKSHA. In this regard, the MoMSME is trying to forge partnerships with major bilateral/multilateral agencies, in particular UNIDO, to upscale initiatives in the MSME sector.

**Vote of Thanks: Ms Abha Shukla**

The inaugural session ended with a vote of thanks by Ms Abha Shukla, Secretary, BEE. She reiterated that the primary objective of the Summit was to understand and take into account the views and perspectives of the ground-level stakeholders in order to find ways to promote energy efficiency in MSMEs. Expressing gratitude to the Embassy of Switzerland for its support in setting up of the SAMEEEKSHA platform, Ms Shukla said: ‘I hope the SAMEEEKSHA website becomes a repository of information and knowledge on various successful initiatives being undertaken by different agencies in the MSME sector.’ She highlighted BEEs role in conducting numerous studies for improving energy efficiency in MSMEs, and in identifying clean technologies for various clusters and sub-sectors.

She also thanked the office bearers of various industry associations, many of which have already initiated activities for energy conservation within their respective clusters. In her closing remarks, Ms Shukla expressed her hope that the recommendations from the Summit would lead to the formulation of enabling policies that would help in ‘creation of harmony between human beings and nature.’

**Other Happenings on Day 1**

The opening day of the Summit also saw the launching of the official website of SAMEEEKSHA [www.sameeeksha.org](http://www.sameeeksha.org) by Dr Linus von Castelmur. Two books were also released during the Summit: (i) a report on benchmarking and mapping energy consumption in Indian MSMEs (a BEE–AfD–ADEME–TERI initiative), released by Mr R K Mathur and (ii) a book on DSM Action Plan for Tamil Nadu (a TERI–Shakti Foundation initiative), released by Dr Ajay Mathur.

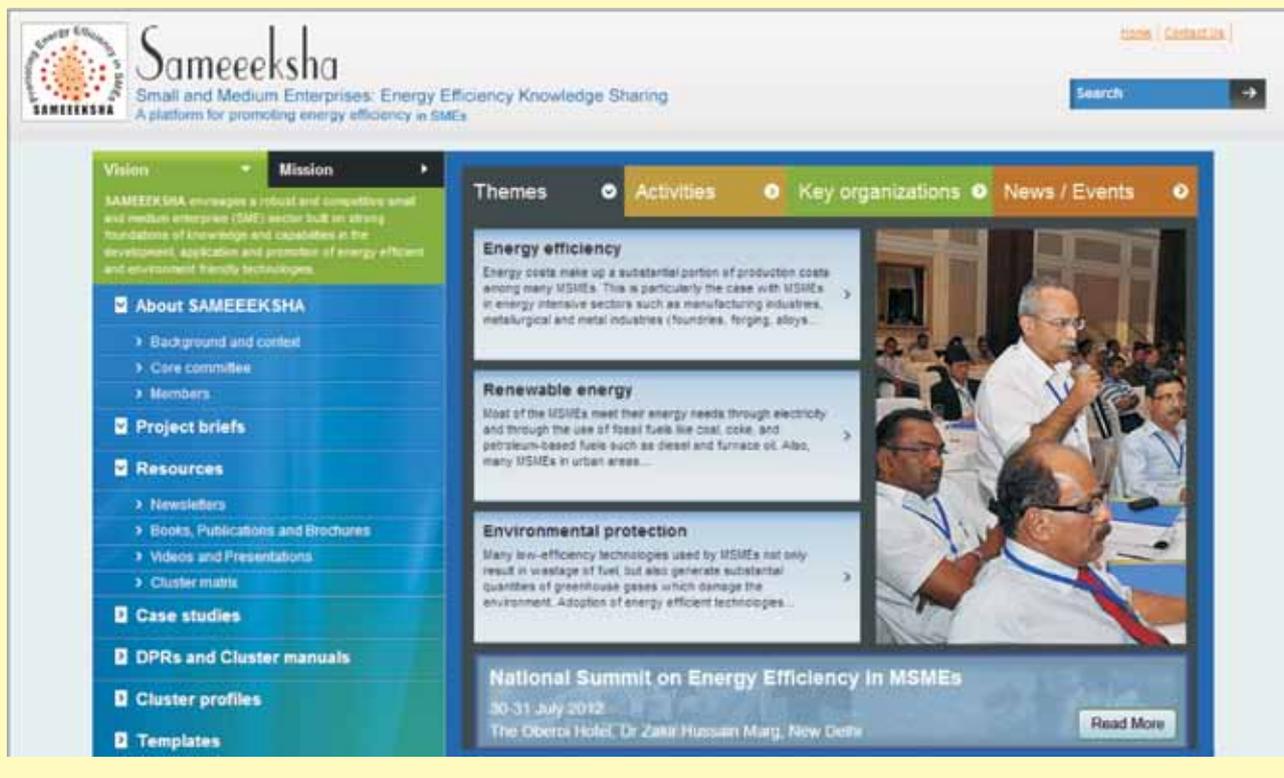




## Sharing Knowledge, Expanding Efforts: SAMEEEKSHA Website

Many initiatives have been and are being undertaken by different entities, to promote energy-efficiency measures in the MSME sector. In the process, these entities have accumulated a great deal of relevant and valuable knowledge (profiles of MSME clusters, technical information, project experiences, success stories, innovations, insights into barriers at cluster and policy levels, lessons, and so on); knowledge that would be of immense benefit to other stakeholders for planning and carrying out new energy efficiency initiatives in the sector. However, this knowledge has often remained with the entities concerned, making it difficult for others to access and use.

Now, SAMEEEKSHA has created a dynamic website, [www.sameeeksha.org](http://www.sameeeksha.org), to encourage knowledge-sharing among the different MSME sector stakeholders, and to provide them with a platform on which to do so. The website helps in creating and spreading knowledge on new EE projects, technologies, and operating practices. The website hosts a range of knowledge products such as energy-related data on MSME clusters, cluster profiles, case studies and success stories on implementation of EE technologies, DPRs, newsletters, and so on. It also lists and provides links to the key organizations working to promote energy efficiency in the MSME sector.



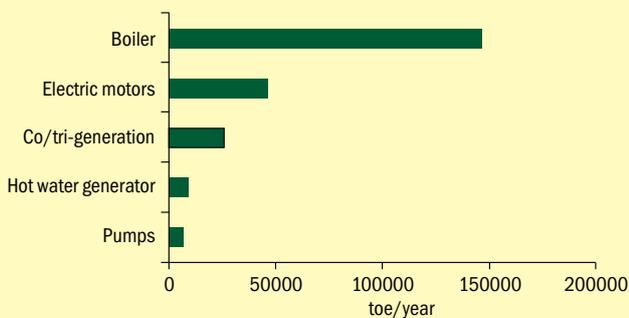
## Report on Benchmarking and Mapping Energy Consumption in Indian MSMEs:

A BEE–AfD–ADEME–TERI initiative

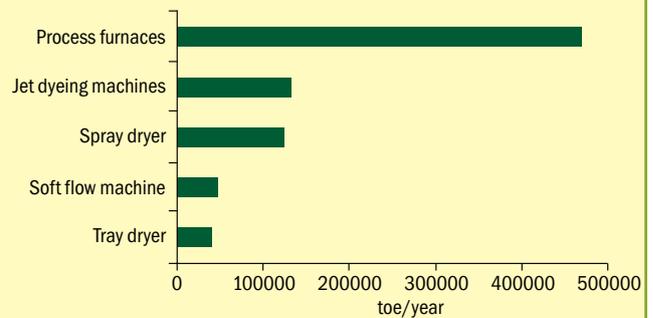
The study on 'Benchmarking and Mapping Indian MSMEs Energy Consumption' was conducted by TERI with support from AfD, BEE, and ADEME. The study analysed secondary energy consumption data from about 36 MSME clusters from the BEE–SME programme as well as other organizations. It estimated the total energy consumption of the 36 clusters, including 4 sub-sectors at national level—iron foundries, brick, dairy, and tobacco industries—at 19.9 million tonnes of oil equivalent



(Mtoe). Significantly, the study helped identify a set of sector-specific and cross-cutting EE technologies. If implemented, these technologies would yield an estimated energy saving of 1.14 Mtoe in the identified clusters.



Cross-cutting technologies

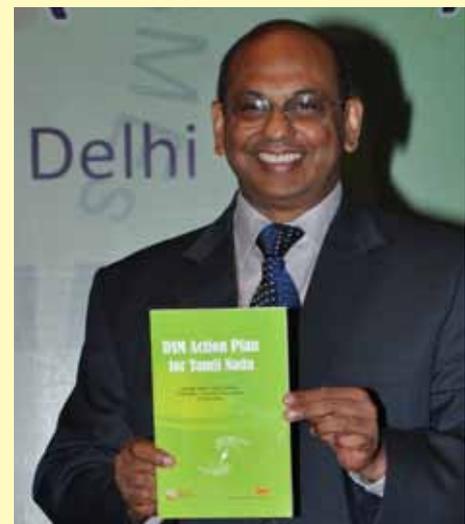


Sector-specific technologies

## DSM Action Plan for Tamil Nadu:

A TERI–Shakti Foundation Initiative

TERI has published the DSM Action Plan for Tamil Nadu based on a study conducted in association with Shakti Sustainable Energy Foundation. The study involved extensive research on electricity usage by different consumer categories in Tamil Nadu, and the factors affecting the electricity consumption patterns. The document includes a set of action points for implementation of Demand Side Management measures in the state. The successful implementation of the suggested measures requires the active involvement of the state utility, government, regulator, manufacturers, state designated agency, and financial institutions. The book will interest the various stakeholders in Tamil Nadu as well as other states in India.



# Setting the Theme

The session was chaired by Dr Ajay Mathur, and began with the screening of a short film prepared by TERI. The film captured the views and perspectives of entrepreneurs and other ‘voices from the ground’ on aspects of the MSME sector that must be considered while undertaking initiatives to promote energy efficiency. Some of the significant points and insights are outlined below:

- *Priorities of entrepreneur.* An MSME entrepreneur often has to play many roles. He is in charge of production as well as marketing; he is both proprietor and peon! In a fiercely competitive market environment and with limited time and financial resources, the entrepreneur’s main priority is just to keep his business going; he gives secondary importance to matters like improving production practices, maintaining books of accounts, and paying taxes.
- *Associations need leaders with vision.* Among micro units, there are a large number of small industry associations. Usually, the office bearers of these associations are themselves entrepreneurs, and any reform/innovative measure suggested by an office bearer is often resisted by other entrepreneurs. The need, therefore, is for office bearers with strong leadership capabilities and clear vision.
- *Help needed to record energy data, conduct energy audits.* MSME entrepreneurs themselves usually lack the capabilities to record data on energy use, or to conduct energy audits. Campaigns should be launched for these essential tasks through suitable policy-level initiatives.
- *EE technologies — one size can’t fit all.* The MSME sector is differentiated into micro, small, and medium units. The units in these different categories deploy technologies that are unique to their scale of operations, and hence require customized EE solutions.
- *Quality matters.* In clusters like Rajkot and Ahmedabad, MSMEs manufacture very good quality products that find international markets. However, many MSMEs cater to the local (Indian) markets where cost plays a big role. In order to satisfy local demands for low-cost products, MSMEs often compromise on the quality of materials used, affecting energy performance.
- *Need for good quality fuels.* MSMEs often have to depend on poor quality fuels like low-grade coal, which result in poor energy performance as well



as high levels of pollution. The government must ensure that MSMEs can obtain good quality fuels at affordable cost.

- *Schemes are in place; implementation is the issue.* The government has a lot of schemes for technology up gradation of MSMEs. Some examples are the Credit Linked Capital Subsidy Scheme (CLCSS) and the schemes under the National Manufacturing Competitiveness Program (NMCP). These schemes are to be implemented by local agencies such as the District Industries Centres (DICs), MSME Development Institutes (MSME-DIs), and so on. However, these agencies are usually not proactive in promoting the schemes. The result is that money for these schemes remains unutilized because of low awareness on the part of MSME entrepreneurs.
- *Credit rating a must for getting finance.* An MSME seeking a bank loan must obtain a good credit rating from a credit rating agency like SME Rating Agency of India (SMERA), as this is an important criterion for the bank while considering the loan application. In this regard, it is not enough for the MSME to perform well; it should show evidence of its profitability in its balance sheet and other financial statements.

In order to help identify key issues and facilitate meaningful discussions during the Summit, a Background Paper was presented by **Mr Prosanto Pal**, Senior Fellow, TERI. Prepared by TERI, the Background Paper outlined energy issues related to MSMEs, summarized the current initiatives to promote energy efficiency by government/other agencies, and then raised a few issues related to the

three broad themes of policy, technology, and finance. Thus, the Background Paper provided a context for the discussion and deliberations during the breakaway and plenary sessions that followed. The Background Paper was divided into three very brief sections:

1. *Contours of the MSME landscape in India:* This section provided a perspective on the importance of the Indian MSME sector in terms of its contribution to India's economic growth, employment generation and energy consumption; and the need for MSMEs to improve their energy efficiency in order to remain competitive.
2. *Initiatives for promoting energy efficiency in MSME sector:* This section listed a few existing policies and programs to promote energy efficiency in MSMEs, and outlined some of the initiatives undertaken by different organizations.
3. *Key issues and questions:* This section summarized the key issues to be addressed in order to promote, spread and sustain energy efficiency measures in the MSME sector. The issues were grouped under three broad categories—policy, technology and finance—and a number of relevant questions were posed in each case to provoke discussions and point towards possible solutions.

Mr Pal reiterated the need for measures to improve the energy efficiency of MSMEs—and thereby strengthen their competitiveness—considering the MSME sector's importance as a contributor to economic growth and employment in India. MSMEs are geographically dispersed over thousands of clusters, of which around 200 manufacturing clusters have been identified as energy intensive. These energy intensive clusters





cover various sub-sectors such as metallurgy, ceramics, chemicals, and food processing, etc. The majority of the units in these sub-sectors use resources, in particular energy, in an inefficient manner.

Mr Pal sketched the major activities conducted and results achieved under several initiatives undertaken by government bodies/international organizations to improve the energy-efficiency scenario in the MSME sector (see p.71). These initiatives involve different activities such as conducting energy audits; preparation of DPRs; implementation support to units; technology development, demonstration, dissemination, and replications; financial support for EE technologies; and capacity building.

Mr Pal shared the key outcomes, experiences and lessons of the TERI-SDC partnership project with the participants. The project shows the success of the RDD&D approach in promoting EE technologies. He also outlined two other projects recently undertaken by TERI:

- A study supported by BEE, AfD, and ADEME on benchmarking energy use in 36 clusters reveals large variations in specific energy consumption (SEC) among units within the same cluster. The study points to the need for gathering comprehensive and reliable energy data from clusters in order to launch targeted energy-efficiency initiatives.
- A study conducted with Shakti Sustainable Energy Foundation reveals that there are many products like pumps that are manufactured primarily by MSMEs. RDD&D programs can be launched in this segment aimed at developing and promoting manufacture of pumps that are energy efficient.

Drawing on TERI's experiences in developing and promoting EE technologies in the MSME sector, Mr

Pal summarized a number of issues that hinder energy efficiency improvement in MSMEs. These issues can be classified under the broad heads of policy, technology, and finance.

### Policy Issues

Taking up the policy issues associated with energy efficiency, Mr Pal quoted Prof. Kaushik Basu, Chief Economic Advisor, Government of India: 'Good policy is made not by asking people to deliver but by designing the rules of the game so that they find it in their interest to deliver.' There is clear need to create a favourable policy environment for EE, one that will support the development and implementation of long-term cluster specific EE programmes with a focus on the RDD&D approach and innovative solutions. The major barriers that must be overcome are:

- Lack of data on energy usage patterns
- Lack of reliable power supply
- High costs of energy
- Large variation in the energy consumption levels across similar MSMEs

### Technology Issues

Moving on to technology-related issues, Mr Pal quoted Mr Azim Premji, Chairman, Wipro: 'In today's complex business environment, global corporations are increasingly investing in transformational technology initiatives to improve competitiveness.' While there is good scope for MSMEs to improve energy efficiency through the adoption of best practices and EE technologies, the following major barriers have to be addressed:

- Where EE technologies are available, MSMEs find it difficult to adopt them due to:
  - lack of awareness
  - financial hurdles



- lack of availability of local service providers (consultants/fabricators) for technical support/hand-holding
- EE technological solutions are not readily available for the scale of operation in Indian MSMEs, and/or they require customization to suit specific needs

### Financial Issues

“There is a mismatch between what the bankers want and what MSMEs need,” said Mr Pal while pointing to finance-related issues that pose a challenge to energy efficiency improvement in MSMEs. At present the majority of MSMEs in India do not access finance through the commercial/institutional route. In order to facilitate finance for EE technologies, the following major barriers must be addressed:

- There is need for specialized financing products that are geared to meet the needs of MSMEs
- Loans required for many energy efficiency measures are usually small, and carry almost the same transaction costs as large loans; hence, bankers find them unattractive
- Bankers often find it difficult to weigh/consider the benefits of energy efficiency measures under the existing evaluation criteria
- Entrepreneurs lack awareness about schemes for financing MSMEs
- MSMEs often do not follow basic book-keeping practices; in the absence of proper financial statements, records etc., they are unable to obtain finance from banks

### Discussion

The floor was opened for discussions, during which MSME entrepreneurs, industry association representatives and others came up with a number

of points for further deliberations during the breakaway sessions that followed. Among those who spoke were Mr K S Satyanarayana, ex-President, IIF; Mr Anurag Aggarwal, President, Mohali Industries Association; Mr Gautam Ray, Vice-President of Federation of Small and Medium Industries, West Bengal; Mr Rajaram Shetty, Joint Secretary, Karnataka Small Scale Industries Association; Mr Dhiraj Kakati, Secretary, Indian Tea Association, Assam; Mr Ravindra Sehgal, ex-President, IIF; and Mr O P Badlani, Vice-President, Int Nirmata Parishad, Varanasi. The salient points that emerged from the discussions are summarized below.

### Salient Points

#### Replications

Are replications of an EE technology slowed down because of the following:

- Lack of awareness (i.e., an information dissemination problem)
- The relatively higher cost of the EE technology
- The perception that the EE technology is costly

#### Benchmarking

- In order to quantify the benefits of an EE technology, it is necessary to benchmark the best available technologies
- The performance of a technology varies according to its application; hence, benchmarking should be carried out in relation to the application

#### Financing EE technology

- Bankers often do not understand the benefits offered by EE technology and entrepreneurs are unable to explain these benefits
- Loans to MSMEs attract higher interest rates than loans to large-scale enterprises. How can a

## Moving India's SMEs towards Energy Efficiency: A GIZ Initiative



Mr Jens Burgdorf, Director, Indo-German Energy Programme, GIZ, made a presentation that showcased the activities undertaken under the Indo-German programme to promote insulation in energy-intensive

industries. He mentioned that Germany, like India, relies a lot on SMEs and the success of its SMEs comes from their sincere commitment to quality and output. To demonstrate the various benefits of professional insulation, pilot projects have been conducted by GIZ in the pulp and paper industry of Muzaffarnagar, UP, and more are planned in the forging and glass industries. The pilot projects are showcasing huge cost-saving potential without the need for major process modifications and plant shutdown periods.

The project has also focused on raising awareness on insulation issues through an 'energy bus' initiative. The bus operates across energy-intensive industries in northern India and is equipped to conduct walk-through insulation energy audits, offer insulation improvement recommendations, and disseminate various information materials. This energy bus was displayed at the Summit venue and evoked considerable interest among the participants.



mechanism be found to reduce the difference in interest rates?

- Banks often do not accept remotely located land holdings as collateral security
- Adoption of EE technologies could be encouraged by the creation of a promotional 'energy efficiency fund', through which loans could be provided to MSMEs at minimal interest

### Awareness generation and capacity building

- It is necessary to create awareness at the supervisor level regarding energy conservation measures and best operating practices.
- Often, unit owners do not let their supervisors attend training and awareness programmes on energy conservation and improved operating

practices, as they fear losing the trained supervisors to competition. How to bring about an attitude shift among unit owners?





# Focus Group Discussions

## ‘Voices and Perspectives from the Ground’

With the general direction for the Summit having been set, special breakaway sessions were carried out that were anchored around finding solutions to the concerns/perspectives expressed by the voices from the ground, i.e., industry representatives, office bearers of cluster-level industry associations, technology suppliers, and local service providers (LSPs). In order to facilitate this process, the participants were divided into three groups in which they articulated their views on challenges and issues related to energy efficiency that need to be resolved at three levels: (i) policy, (ii) technology, and (iii) finance. The members in each group were selected based upon the nature of their association with industry, professional/business background, and area of expertise. In each group, three major questions related to the relevant theme were introduced in order to initiate the discussions, which were facilitated by professional moderators. The insights captured through these breakaway sessions fed into, and formed the basis for, the deliberations in the plenary sessions on Day 2.



# Group I: Voices from the ground on Policy

The objective of the discussions in this group was to capture insights from the ground-level stakeholders that could feed into the development of effective policies/programmes and local service mechanisms for promotion of energy efficiency in the MSME sector. The session was moderated by Mr Cherian Joseph, an HR Consultant. The discussants in this Group (about 70 in number) included office bearers from prominent cluster-level industry associations such as the Indian Tea Association, Varanasi Int Nirmata Parishad, Howrah Chamber of Commerce & Industry, Seafood Exporters Association of India, Karnataka Small Scale Industries Association, Institute of Indian Foundrymen, and Southern India Engineering Manufacturers Association (SIEMA); senior representatives from bilateral/multilateral agencies like UNIDO, DFID, GIZ, and CCD (Embassy of Switzerland); senior officers of State Designated Agencies and energy departments of Uttar Pradesh, Gujarat, Punjab, Bihar, Himachal Pradesh, Jharkhand, etc.; and senior representatives from government agencies such as Ministry of MSME, Ministry of New and Renewable Energy, BEE, PCRA, and SIDBI.

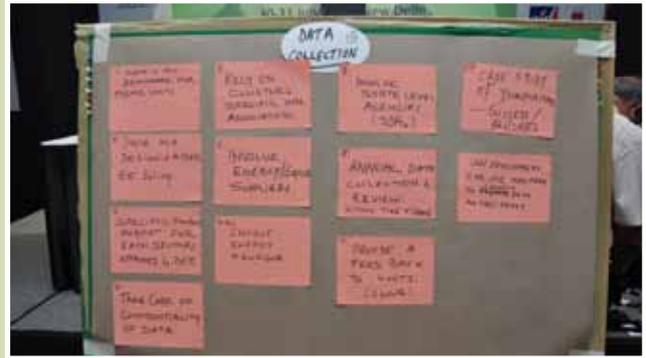
The three key policy-related questions introduced to initiate discussions among the participants were:

1. How do we establish a suitable mechanism for periodic data collection on MSME clusters?
2. What support inputs are required for improving the energy efficiency of the products manufactured?
3. What interventions are required at the policy level to support energy-efficient technologies? How do we ensure implementation?

During the discussions, there was broad agreement that the policy environment should be such that it encourages the development of supportive conditions, contribute to innovations, and provides new, cleaner technological solutions and easy-to-access financing mechanisms for EE technologies. The important points and recommendations that emerged from the discussions are summarized below:

- Studies conducted/data gathered under various programs should be analysed to establish benchmarks for specific energy consumption (SEC) and total energy consumption at the





unit, cluster and sub-sector level. Energy data on clusters should be collected through local institutions like cluster level industry associations, State Designated Agencies, DICs, MSME-DIs etc. Energy suppliers could also be involved in the process.

- Assured supply of quality power is a major issue. There should be a commitment from the government to ensure continuous supply of quality power for MSMEs. To maintain the quality parameters of the supplied power, MSMEs should adopt High Tension (HT) power supply, improve power factor and ensure proper capacity utilization
- Low quality raw materials and fuels affect the energy efficiency of MSMEs. Hence, standards should be established for raw materials and fuels
- BEE should validate and provide accreditation to various EE technologies. The SAMEEKSHA platform can be used to spread awareness on these accredited EE technologies
- The credit rating of MSME units should be linked to their energy efficiency. As credit rating is taken into account for financing EE projects, MSMEs that are ranked higher in terms of energy efficiency could obtain loans at lower interest rates. A higher credit rating will also yield brand benefits in the market.
- Risk assessment methodologies of banks should be revisited to include the impact of the implemented technology in terms of energy savings.
- The policy mechanism should encourage tax rebates instead of subsidies for MSMEs that adopt EE technologies.
- Enabling policies should be formulated to facilitate setting up of material/product testing laboratories and Research & Development (R&D) facilities in major clusters.
- The Energy Service Company (ESCO) mechanism, with specific focus on the MSME sector, should be promoted.

## Group 2: Voices from the ground on Technology

The objective of the discussions in this Group was to identify ground-level barriers to the adoption of EE technologies by MSMEs and identify potential solutions for the same. The session was moderated by Mr Shrashtant Patara, Vice President of Development Alternatives. The discussants in this Group (about 70 in number) included office bearers from prominent cluster level industry associations of India like Belgaum Foundry Cluster, Dyers Association of Tirupur, Mohali Industries Association, Rajkot Engineering Association, Vapi Industries Association, etc.; representatives from bilateral/multilateral agencies like ADEME, CCD (Embassy of Switzerland), GIZ, J Pal India, Shakti Sustainable Energy Foundation, and UNDP; senior representatives from government agencies like BEE, EESL, Ministry of MSME, Punjab State Council for Science & Technology, and SIDBI Energy Efficiency Centre; and representatives of academic institutes and leading consultancy and R&D organizations like Institute for Global Environmental Strategies (IGES, Japan), Indian Institute of Technology, Delhi, Feedback

Infrastructure Services Pvt Ltd, International Business Certifications, etc.

The three key technology-related questions introduced to initiate the discussions among the participants were:

1. How to enhance focus on development and demonstration of energy efficient technology?
2. How to accelerate the dissemination and adoption of energy efficient technologies?
3. How to promote the manufacture of energy efficient equipment/ eliminate inefficient equipment?

The important points and recommendations that emerged from the discussions are summarized below.

- Demonstrate model EE pilot projects at the cluster level through the RDD&D approach
- Developers of new/innovative technologies should build in flexibility in model solutions so as to ensure their compatibility with different scales, processes, and products. A basket of EE solutions could be provided for entrepreneurs to choose





- from. Handholding support should be provided to workers and supervisors of the units.
- Strengthen knowledge platforms and the industry–academia interface to spread awareness and information on EE technologies, manuals on Standard Operating Procedures (SOP), and success stories. The information should cover life cycle and cost-benefit analyses of new technologies, their user-friendliness, and so on, and be made available in regional languages. The SAMEEEKSHA platform can facilitate this process
- LSPs should be capacitated to provide long-term handholding at the cluster/unit level and thereby ensure sustainable adoption of EE technologies
- Technically capable cluster-level entities can play an important role in identifying and implementing EE projects in MSMEs. Their tasks would include data monitoring on energy usage at process and unit levels
- Fabricators must be incentivized to develop and provide EE machinery/equipment tailored to meet the requirements of the local industries
- Create certified CFCs for testing and certification of raw materials and products. The quality certification of raw materials at the cluster level would help save costs at unit level. A mechanism for capacity building and skills development could also be institutionalized through these CFCs.

## Group 3: Voices from the ground on Finance

The objective of the discussions in this Group was to identify financing barriers to the adoption of EE technologies by MSMEs, and to find possible solutions to address these barriers. The session was moderated by Ms Anita Sharma, Programme Manager with GIZ India. The discussants in this session (about 60 in number) included office bearers from major cluster-level industry associations of India such as the All India Brick and Tile Manufacturers Federation, Federation of Ceramic Industries (Thangadh), Industries Association of Chandigarh, Peenya Industries Association (Bangalore), Textile Development Foundation (Solapur), and Marudhara Industries Association (Jodhpur), representatives from bilateral/multilateral agencies such as the AFD, CCD (Embassy of Switzerland), DFID, GIZ, Japan International Cooperation Agency (JICA), and KfW; senior representatives from government agencies such as BEE, EESL, Indian Renewable Energy Development Agency Limited, and Ministry of MSME; representatives of leading banks and financial institutions such as the State Bank of India (SBI), SIDBI, YES Bank, Citi Foundation, etc.; and senior managers of leading business associations and consultancy organizations such as

the Confederation of Indian Industry (CII), India SME Technology Services Ltd, PricewaterhouseCoopers Pvt. Ltd, Tata Consultancy Services, etc.

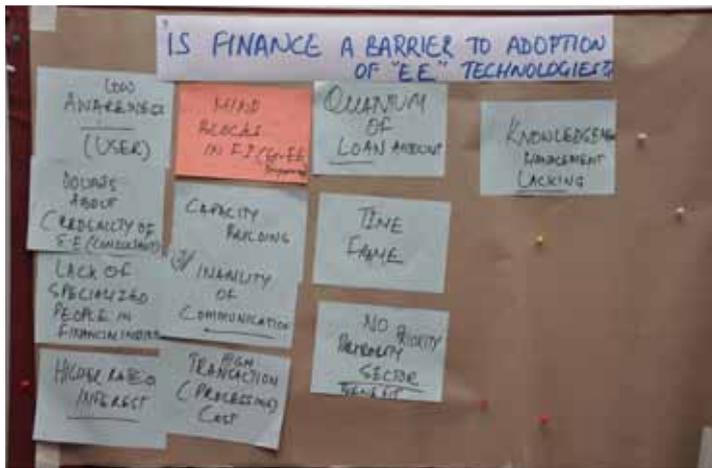
The three key finance-related questions introduced to initiate discussions among the participants are highlighted below:

- What are the ways in which finance proves a barrier to adoption of energy-efficient technology, and how do we address them?
- How can procedures for small loans be simplified?
- What kind of support is required for the formulation and evaluation of energy efficiency projects?

The important points and recommendations that emerged from the discussions are summarized below:

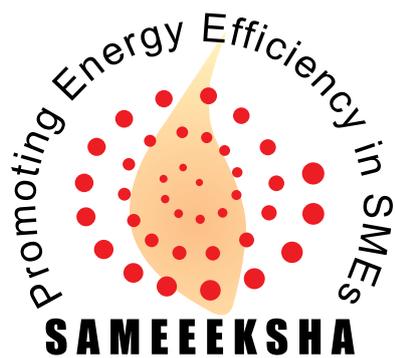
- For MSMEs, the issue of finance for adoption of EE technologies is of secondary importance. The primary issue is low awareness about EE technologies and their suppliers. Also, entrepreneurs often doubt the credibility of claims related to EE technologies.
- Bankers often view MSME finance as involving low-value loans that carry as much processing





costs as those incurred on high-value loans (i.e., the transaction costs are nearly the same for both low-value and high-value loans). Hence, banks are often reluctant to finance MSMEs.

- MSMEs could group together and aggregate their individual loan requirements for EE technologies; as a group, they could then approach the bank for finance.
- The MSME sector is termed as 'priority sector'. However, in actual practice it is not, as the rates of interest charged on loans to MSMEs are much higher than those charged on loans to large industries/businesses. This discourages entrepreneurs from availing loans for the adoption of EE technologies even when such loans are available.
- Customized EE technologies often require the fabrication of machinery/equipment by local fabricators. However, banks often do not provide loans for fabricated equipment as they lack the capabilities to understand and assess EE technologies and their benefits. To address this barrier, awareness/capacity building of bankers is required.
- There is need to formulate special schemes for EE investments



# Plenary Sessions



The focus group discussions that were held on the first day of the Summit helped the MSME entrepreneurs and the other ground-level stakeholders in bringing out points, ideas, and suggestions relevant to the development and adoption of EE technologies by MSMEs at three levels: policy, technology, and finance. These insights and ideas formed the bases for deliberation during the three Plenary Sessions—on the themes of Policy, Technology, and Finance—that were held on the second day of the Summit. Each Plenary Session began with a summary—by a focus group leader—of that group’s perceptions and suggestions on the relevant theme. Thereafter, an expert made a presentation to deepen understanding on the relevant issues. Finally, a panel of experts chaired by an eminent specialist initiated and guided the discussions in order to identify strategies and actions, at the relevant level, that would spur energy efficiency improvement in the MSME sector.

## PLENARY SESSION 1

### Enabling Policies and Programmes to Promote Energy Efficiency in MSMEs

#### Chair

Mr Abhay Bakre, Executive Director, Petroleum Conservation Research Association (PCRA)

#### Background Presentation

Mr Jitendra Sood, Energy Economist, BEE

#### Panellists

Dr Veena Joshi, Senior Advisor-Energy, CCD, Embassy of Switzerland

Mr K L Das, General Manager, State Designated Agency, Tripura

Mr Anil Bhardwaj, Secretary General, Federation of Indian Micro and Small and Medium Enterprises (FISME)

Mr V Krishna Kumar, Vice President, The Southern India Engineering Manufacturers' Association (SIEMA), Coimbatore

Mr Ravindra Sehgal, Past- President, The Institute of Indian Foundrymen (IIF)

In this session, the participants deliberated on strengthening policies at central and state levels to increase the adoption of EE technologies in the MSME sector. The session focused on the existing policies, programmes, and schemes to promote energy efficiency; the challenges, experiences and lessons gained during their implementation; and ways to improve their effectiveness based on industry perspectives.

The session was chaired by Mr Abhay Bakre, Executive Director, Petroleum Conservation Research Association (PCRA). The background presentation was given by Mr Jitendra Sood, Energy Economist, BEE.

At the start of the session, Mr A Raha, Addl. Secretary, Indian Tea Association, summarized the discussions of the breakaway session on Policy. He highlighted the major barriers to the promotion of

EE technologies that needed to be addressed through policy-level interventions.

A background presentation was made by Mr Jitendra Sood, who provided a snapshot of the MSME sector (see Table 2). He then provided an overview of the activities and outcomes of the BEE

**Table 2** Snapshot of MSME Sector

Total energy consumption	49.25 Mtoe (25% of total energy consumed by industrial sector)
Dispersion	26 million units (95% micro, 4.7% small, 0.3% medium) in clusters across the country. About 200 clusters are highly energy intensive
Employment	About 70 million people
Contribution to economy	About 45% of manufacturing output; 40% of exports; 8–9% of GDP





SME Programme, under which 1,250 energy audits were performed, 375 bankable DPRs were prepared, and 15% energy saving potential was estimated. He also outlined other major EE initiatives in the MSME sector (see p.71).

Speaking on policy issues, Mr Sood mentioned that a policy push is needed for cross-cutting and retrofit technologies. Various new clusters and Special Economic Zones (SEZs) are emerging and energy efficiency can be incorporated in the design of such initiatives. Voluntary targets for reduction of energy consumption and green rating for MSMEs are other possible policy instruments. Common infrastructure and financial instruments such as revolving funds are also important. Facilitation support to MSMEs for producing star-rated products is already planned under the 12th BEE Plan. Pointing to the way forward, he mentioned the need for setting up a common EE programme with one nodal agency and other government and international organizations working in tandem. Capitalization of existing DPRs, mapping

of energy consumption, creation of revolving funds, promotion and motivation of ESCOs, enhancement of testing laboratories, and development of LSPs were other major steps highlighted in the way forward.

**Dr Veena Joshi** stressed the fact that collection of good data and development of cluster- and sector-specific projects and schemes are important requirements to address barriers and find solutions at the policy level. The energy-intensive cluster-based approach should be followed for formulation and implementation of supportive policies. The principle of designated consumer as in PAT scheme could be extended to MSMEs as designated clusters for mass impact. The benchmarking of clusters could be the first step for this approach. She also highlighted the importance of institutional networks that have the involvement and support of state agencies, industry associations, as well as cluster-level stakeholders. She suggested that the SAMEEKSHA platform could be used as a vehicle to consolidate the recommendations from the ground.





**Mr K L Das** brought up the issue of the poor quality of power available to MSMEs. He pointed out that reliable and quality power supply is a vital factor for efficient and competitive manufacturing, and provided some ideas on how industry could ensure quality supply. It is important for the unit to be located close to the distribution station. Greater distance can result in poor quality supply, as the overhead conductor systems would be more susceptible to faults. It is important to have good equipment and a dedicated source with a dedicated line. The higher the supply voltage, the more stable and reliable is the power. The MSME unit should select high supply voltage and then use a step-down transformer to reduce the voltage according to its requirements, rather than using low-supply voltage. Finally, he mentioned that whenever an inductive load is used, the load connection must be in parallel to a capacitor bank and operating load must not be less than 30% of the rated capacity.

**Mr Anil Bhardwaj**, while narrating an example from the World Bank, stressed that energy efficiency should become the initiative of industry itself, and not have to be promoted through schemes and incentives. He emphasized the constraints that prevent this from happening. He cited path dependency in technology as a key barrier. MSMEs adopt technology from suppliers or peers, who in turn have adopted it from other suppliers or peers, and this trend results in circulation of the same technology for decades. This scenario becomes worse in the poorer regions, in which industries employ even more obsolete technologies than units in more prosperous regions. In order to break this cycle, it is important to have strong linkages

between industry and scientific institutes. These linkages remain weak in India. He also highlighted the importance of greater flow of capital for promoting technology upgradation. Access to finance is another key barrier, with around 95% of MSMEs lacking access to institutional sources of finance like banks. Furthermore, he stressed that effective governance is crucial. If MSMEs have to rely on diesel generators, it contributes to their production costs and is highly inefficient. It is, therefore, necessary to bring reforms in the power sector as well as in the financial sector. Finally, he mentioned that MSMEs should become active contributors in the development of enabling policies, rather than being mere 'beneficiaries'. The SAMEEKSHA platform should bring on board a large number of industry associations and facilitate their engagement with policy makers.

**Mr Krishna Kumar** observed that certain incentives should be available for industries that make efforts towards improving the quality of power, such as power factor improvements. He mentioned that there are some incentives for power factor improvements in certain states. However, these incentives are negligible and penalties for non-compliance are heavy. It is important to have clearer policies on this issue. He added that the concept of green buildings needs to be promoted among MSMEs, where large energy-saving potential exists, especially in lighting and air conditioning. Mr Kumar expressed disagreement with free power to certain sectors and pointed that while it is free for some users, others have to bear the brunt. The free power also takes away the incentive of maintaining data, as was seen in the case where old pumps were replaced by star-rated systems.



Policy-makers need to have different guidelines for different industries. Incentives such as concessional loans or technical assistance should be provided to industries that are interested in improving their energy efficiency. The ESCO model should be promoted for encouraging MSMEs to replace inefficient technologies. Awareness campaigns on energy efficiency should be extended to reach clusters across the country.

**Mr Ravi Prakash Sehgal**, speaking from the perspective of a manufacturer, pointed out that an understanding of cost savings holds the key to removing inertia towards EE investments. He mentioned the importance of the cluster-based approach and highlighted the need for establishing pilot plants, which the cluster could use not only for understanding the best practices, but also as a site for training factory workers. EE ratings are also important and MSMEs need to be convinced that ratings can be used by them to market their products better and sell them at a premium. In addition, it would be useful to have

in-house training programmes on energy efficiency. In fact, such training can also be incorporated into the academic curriculum for fresh graduates. Another crucial factor is the quality of raw material. Citing the example of the foundry sector, he mentioned that separate alloys need to be added to pig iron to attain the required balance levels of different metals. Large savings could be achieved if such deficiencies are minimized in the raw materials.

### Discussion

A question-and-answer session was held after the speakers had finished their presentations.

- A participant expressed concern about the quality of power, especially in the context of contaminated furnace oil and coal. Impurities in the fuels reduce energy efficiency by more than 25%.
- Referring to the comments made by Mr Das, a participant expressed the view that distribution sub-stations should be located nearer to the



cluster. Furthermore, there should be automatic systems that restore power from other feeders, in case one feeder goes off. This is being done in Bangalore and should be done across all regions.

- Another recommendation was made in regard to the improvement of power factor through installation of a capacitor bank. It was suggested that installing capacitors alone will not result in complete energy savings, and therefore automatic power factor control systems (APFCS) should be promoted.



## PLENARY SESSION 2

### Adoption of Energy-efficient Technologies: Challenges and Opportunities

#### Chair

Dr Gerolf Weigel, Counsellor and Head, CCD, Embassy of Switzerland  
Mr Sunil Mallan, International Business Certification, Chandigarh

#### Background Presentation

Mr Franck Daganand, International Expert, Energy Efficiency

#### Panellists

Prof. Yukuta Suzuki, Director General, Kansai Research Centre, Institute for Global Environmental Strategies (IGES), Japan  
Mr Srinivasan Iyer, Assistant Country Director, UNDP  
Mr Girish Sethi, Director, Industrial Energy Efficiency, TERI  
Mr S C Dugar, Chairman, Pollution Control Committee, Indian Foundry Association, Kolkata  
Mr Srinarayan Perival, President, South Gujarat Textile Processors Association, Surat

This session saw the participants deliberate on the challenges and barriers that have to be tackled in order to facilitate the adoption of EE technologies by MSMEs. The discussions drew on the experiences and lessons learned from successful technological interventions in the MSME sector, and covered issues and opportunities related to the implementation of EE technologies.

The session was chaired by Dr Gerolf Weigel, Counsellor and Head, CCD, Embassy of Switzerland. Mr Sunil Mallan, International Business Certification, Chandigarh, provided a summary of the points and recommendations that emerged from the Focus Group Session on Technology. A background presentation was made by Mr Franck Daganand, International Expert,

Energy Efficiency. A panel discussion followed, which enabled the participants to clarify and sharpen the suggestions and recommendations that would help in promoting the large-scale adoption of EE technologies.

Mr Sunil Mallan, in his summary of the breakaway session on technology, noted the effectiveness of demonstrating model energy efficiency projects at the cluster level. He also pointed to the need and potential for strengthening mutual knowledge exchange between MSMEs on the one hand, and 'knowledge banks' such as universities, R&D organizations, and research scholars on the other. Through such dynamic knowledge interactions, MSMEs would benefit by way of energy efficiency improvement, while the



knowledge banks would deepen their understanding of technologies related to the MSME sector and also find new areas in which to explore, develop, and apply innovative technological ideas.

**Mr Franck Dagnaud**, in his background presentation, focused on reinforcing the capabilities of MSMEs to introduce EE solutions. Drawing on his vast experience as an on-site trainer in the MSME sector in France, he emphasized the key role of an 'energy manager' in enhancing the energy efficiency of an MSME. In essence, the energy manager monitors energy consumption and energy costs, and identifies and implements EE actions. He must be well informed of up-to-date national and international experiences in energy efficiency, and be capable of identifying EE solutions that could be applicable to his factory. He must have good contacts with manufacturers, and with potential donors and financing institutions for EE projects. While identifying EE solutions and developing plans of action for implementing them, the energy manager must have the ability to distinguish among (i) short-term actions that involve low or no investment like best operating practices (BOP); (ii) medium-term actions with payback period from a few months to a few years; and (iii) long-term actions, which are usually to be introduced in new projects. Mr Dagnaud provided examples of short-, medium-, and long-term EE solutions by summarizing the main features of actual EE projects implemented in steam systems and tunnel driers and furnaces.

In general, specific energy consumption (SEC) increases when the load decreases, i.e., when the furnace is operated below optimum capacity. Hence, furnaces and other systems/equipment should be operated as close as possible to the optimum capacity.

Proper instrumentation and detailed measuring campaigns must be undertaken to establish the energy distribution in different processes and equipment/machinery. Production should be streamlined so as to reduce idling time, part load operation, and start and stop phases. Energy savings can be achieved through reducing the amount of air and related energy losses in fans, blowers, etc., and through the use of waste heat recovery systems. In conclusion, Mr Dagnaud stressed that proper energy management by a competent energy manager holds the key for MSMEs to improve energy efficiency.

**Prof. Yugata Suzuki** spoke on the on-going partnership programme between the Institute for Global Environmental Strategies (IGES) and TERI that uses pilot projects as a strategy to promote EE technologies. Supported by JICA and Japanese Science and Technology Agency (JST), the programme focuses on transferring low-carbon technologies from Japanese manufacturers for adoption by SMEs in India. Pilot EE projects are being identified and implemented at the unit level in select clusters. The technologies chosen for implementation include heat pump applications for foundries and dairies (Rajkot, Ahmedabad and Chandigarh), and compressed air systems for machining units (Rajkot and Chandigarh). The activities include monitoring of on-site installation work, conducting baseline and post-demonstration measurements in order to assess the impact of the project, and capacity building of factory personnel, managers, and other cluster-level stakeholders.

**Mr Srinivasan Iyer** shared the results of two major EE projects supported by UNDP. One project, in partnership with the Ministry of Steel, aimed at





promoting energy efficiency in small-scale steel re-rolling mills. EE projects were implemented in 29 re-rolling units, 21 more units were in the process of commissioning EE technologies, and another 100 units had adopted EE technology on their own. Third-party post-commissioning studies report that the EE technologies have brought energy savings of 20–30 per cent, representing a payback period of 3–4 years. The other project, in partnership with the Tea Board, aimed at promoting energy efficiency in the small-scale tea processing sector. The project focused its activities on 100 small ‘bought leaf’ tea factories in south India. Many of them have adopted energy conservation measures as well as switched to cleaner fuels. Furthermore, the project impact has spread beyond the 100 targeted units; as of July 2012, about 214 small-scale tea processing units in the Nilgiris had adopted energy conservation measures, with energy savings ranging from 9% to 30%.

Interestingly, in both projects, the units themselves invested in the EE technology in over 90% of the cases. This belies the general perception that finance proves a barrier to the adoption of EE technologies. The question, therefore, is: what is stopping small-scale industry across the country from adopting improved technology? Mr Iyer summarized four important issues that influence the decision of MSME entrepreneurs when they consider adopting new/improved technology.

1. Will the new technology enable the MSME to maintain the same product range and flexibility in product lines? (Small-scale industries are known for product flexibility and for maintaining a certain range of quality parameters.)
2. Does the new/improved technology require major changes in workforce skills?

3. In case problems arise with the new/improved technology, do they have access to experts’ advice for troubleshooting?
4. Will introduction of the new/improved technology increase ‘down time’ (i.e., interrupt the regular production process)?

The UNDP-sponsored projects tackled these issues through the following approaches:

1. Providing a range of EE options for the MSMEs to choose from
2. Taking small steps to improve energy efficiency (incremental approach)
3. Hand-holding support

**Mr Girish Sethi** elaborated on four important aspects of promoting energy efficiency in the MSME sector. The first is the availability of technology. This refers to not just the low-cost options (‘low-hanging fruit’) but also the ‘transformational’ technologies that had been referred to by Mr Azim Premji (as quoted earlier by Mr Prosanto Pal). Such transformational technologies could bring about major improvements in terms of energy savings, energy efficiency, and product quality, but these are usually not readily available for MSMEs. Even when a technological option is available off the shelf, it has to be customized to suit local conditions and requirements. Mr Sethi cited, as example, the JICA-supported project under which electric and gas heat pumps supplied by Japanese manufacturers are being promoted among MSMEs in Chandigarh and Gujarat. On the face of it, adoption of this EE technology would seem to be a simple case of procuring the electric heat pump from Japan and installing it in the unit. However, there are crucial differences in conditions between Chandigarh



and Gujarat. To name just one, the temperature of the water used for heating and cooling varies greatly between the two locations, as does the temperature of water during different seasons. Hence, even in a seemingly simple case like this, the technology requires customization.

The second aspect is the importance of handholding in order to ensure sustainable dissemination of EE technology. Mr Sethi gave the example of the EE glass melting technology that was developed and promoted in the Firozabad glass industry cluster under the TERI–SDC partnership project. Earlier project expectations were that the successful demonstration of the EE technology at an MSME unit would lead to its spontaneous adoption by other MSME units in the cluster. However, this did not happen. It was only through sustained engagement with the MSME units and other cluster-level stakeholders that the project was able to encourage and support replications of the EE technology.

Third, Mr Sethi mentioned the importance of technology transfer (TT) as a mechanism through which EE technological capacities can be built in developing countries. For TT to be effective, it is not only ‘hardware’ like equipment and machinery that must be transferred, but also ‘software’ which essentially means the knowledge and skills required to adapt the technology to suit the local requirements, and to enable the recipients to adopt and innovate on the technology in the long term without depending on external agencies. The international collaborative RDD&D approach adopted by the TERI–SDC project provides a good model of how the TT process can be made effective.

Fourth, in order to ensure sustainable dissemination of EE technologies, special emphasis must be given

to capacity building and skills development of MSME operators and LSPs. In this regard, simple classroom training sessions may not be enough; they should be accompanied by hands-on training sessions. These capacity-building programmes must go hand-in-hand with the technology dissemination efforts.

**Mr S C Dugar** spoke on the successful development and demonstration of an EE melting technology—the divided blast cupola (DBC)—which was commissioned in his own foundry unit in Howrah during 1998 along with a highly efficient pollution control system (venturi scrubber) under the TERI–SDC partnership project. He reiterated the uniqueness and effectiveness of the project approach in involving and pooling the competencies of international experts for technology development and demonstration. The DBC yielded coke savings of 40 per cent, and a payback period of barely two years.

Touching on the issue of finance for EE technologies, Mr Dugar observed that while the government makes available sufficient funds for the promotion of EE technologies, often these funds are not fully utilized. He suggested that some mechanism could be evolved whereby these funds were routed through institutions like TERI and industry associations.

**Mr Srinarayan Periwal** began by observing that the use of EE technologies would reduce environmental impacts in the form of CO<sub>2</sub> emissions and water pollution, as well as help conserve water. In India, the textile industry—with hundreds of units in clusters like Surat, Ahmedabad, Bhivandi, Bhilwara, and Tarapur—mainly uses low-efficiency coal-based technologies and consumes huge quantities of water. There are textile processing technologies available

in Germany, France, Korea, and Japan that are more energy efficient and consume less water. However, the cost of these technologies is very high, with long payback periods. This acts as a barrier to their adoption by Indian textile processing units. He felt that there should be some incentives from the government or from the machinery manufacturers to facilitate adoption of these EE technologies.

### Discussion

The discussions brought forth the following salient points:

- It is important for MSMEs to cultivate the habit of 'budgeting energy'. In essence, factory floor supervisors and other personnel should be made aware and capable of discerning and quantifying the quantum of energy — in real terms like kilowatt hours — that are consumed at every stage of the manufacturing process, and the potential to reduce energy losses. Once this awareness spreads, the attitudes of the personnel at all levels will change towards enhancing energy efficiency.
- Under the UNDP-supported project among the bought tea leaf factories, small interventions have been undertaken to identify and introduce energy saving measures in the units section by section (not just unit by unit); for instance, methods to store firewood so as to reduce moisture content; firewood splitters; variable frequency drives for flue gas fans; hot water generators; automatic power factor controllers; EE lamps; and section-wise energy metres to enable monitoring and control of energy consumption. Overall, this was a comprehensive assessment of energy consumption and identification of opportunities and interventions. In all, there were about 457 interventions.
- In the Tirupur cluster, Canadian and Swedish experts have helped reduce the MSMEs' impact on the water resources. With around 300 days of bright sunlight each year, the cluster also offers considerable potential for tapping solar power.
- Textile mills use a large number of low-efficiency electric motors. Replacement of these motors by EE electric motors would enable considerable energy savings. Awareness on this issue has increased, and a number of textile units have already switched over to EE motors.

### Remarks by Chairperson

It is noteworthy that 90% of investments in EE technologies are done by MSME units themselves. Also, by budgeting energy much more systematically, MSMEs can find innovations and move ahead towards more energy-efficient systems. The message that emerges most clearly from this discussion is that EE technology should be user-driven, and MSMEs must be provided with easier, faster access to EE solutions. One challenge, always faced in promoting EE technologies, is that a successful entrepreneur with a competitive edge (derived from adopting an EE solution), often does not like to share his knowledge with others. Efforts are required to change this mindset.



## PLENARY SESSION 3

### Financing Energy Efficiency Investments

#### Chair

Mr Ajay Kapur, Chief General Manager, Small Industries Development Bank of India (SIDBI)

#### Background Presentation

Mr Sonalal Datta, Ex- AGM, Consultancy Services Cell, State Bank of India (SBI)

#### Panellists

Mr Shinya Ejima, Chief Representative, Japan International Cooperation Agency, India

Mr Jens Burgtorf, Director-IGEN Indo-German Energy Programme, GIZ

Mr Xavier Echassieriau, Project Officer for South Asia, AfD (French Development Agency)

Mr Rajnesh Trivedi, Senior Director, Socially Responsible Investing, YES BANK Limited

Mr Arvinder Singh Chamak, President, All India Brick and Tile Manufacturers Federation

Access to credit is important to upscale adoption of EE technologies by MSMEs. The session had representatives from bilateral donors, banks, and industry to deliberate about demand-side issues (awareness about schemes, bank documentation, book-keeping practices etc.) and supply-side issues (size of units, collaterals, awareness about new technologies etc.) that are relevant to the financing of energy efficiency investments at the sector/cluster level, and identify possible solutions to overcome these barriers.

The session was chaired by Mr Ajay Kapur, Chief General Manager, Small Industries Development Bank of India (SIDBI). The background presentation was given by Mr Sonalal Datta, Ex- AGM, Consultancy Services Cell, State Bank of India (SBI).

Mr Shyam Arjunwadkar, Chairman, IIF, Pune, commenced the session with a summary of the

discussions of the breakaway session on Finance. He highlighted the major barriers to financing EE investments and outlined some of the identified measures and approaches to address these barriers. This was followed by a background presentation by **Mr Sonalal Datta**. Highlighting the importance of energy efficiency, he remarked, "One unit less consumed is equal to 1.3 units less generated." He explained that EE technology projects are of three types: (i) negligible investment projects, (ii) low to moderate investment projects, (iii) and high investment projects. Mr Datta stated that each project involves three stakeholders: (i) the 'Host' unit, where the technology would be implemented; (ii) the 'Facilitator' (technology providers, ESCO, etc.); and (iii) the 'Lender' (bank, financial institutions). The most important stakeholder is the borrower, as he has to repay the loan. Mr Datta stressed that it is very crucial for the bank to analyse





the credentials, capabilities, and credit-worthiness of the borrower. He added that financing an ESCO is perceived as risky, as the underlying assets are not in the ESCO's control.

Mr Datta further clarified the approach followed by the banks while assessing requests for financial assistance. The banker will analyse the background of the borrower, securities held by existing bankers, current financial position, and credibility of borrower. He stressed the importance of preparing a comprehensive DPR of the EE project. A well-documented DPR should cover all costs associated with implementation of EE technology, including soft costs like the cost of preparing DPR, transportation, insurance and installation of equipment, etc. Most of the DPRs submitted to banks lack such information and do not evidence proper financial analyses. Often, energy auditors submit DPRs that reflect only simple payback period, whereas a banker wants to understand and satisfy himself on the complete technical and financial viability of the project. According to him, the lack of such vital analyses in DPRs sometimes results in their rejection by banks.

Elaborating further on the contents of a comprehensive DPR, he said that each DPR should highlight and rationalize the investment decision by the entrepreneur and financing decision by the banker, and should also show debt service coverage ratio (DSCR), internal rate of return (IRR), debt equity ratio, etc.

**Mr Shinya Ejima** started by explaining that JICA is the executing body of the Japanese government and India has been its largest beneficiary for the last six years. This reflects the fact that India has huge capacity to implement various projects—especially energy efficiency projects—in the MSME sector. He mentioned that JICA has twice provided lines of credit to SIDBI for projects which have been successfully implemented.

Emphasizing the importance of energy efficiency, he mentioned that energy saving is like a religion in Japan. The genesis of this lies in the oil crisis of the 1970s. He said that adoption of EE technology depends critically on bridging the gap between information on EE technology and actual demand for such technology by MSMEs. JICA has come up with a list of EE technologies and their analyses, which helps MSMEs in making informed decisions on their adoption. Once an MSME has decided on which EE technology option to adopt, financing is simple. He recommended that a strong campaign should be implemented to raise awareness about energy efficiency among MSMEs. Mr Ejima concluded by stating that technology is being improved constantly, and it is important to update MSMEs regularly on these improvements, in order to accelerate demand for EE investments.

**Mr Jens Burgtorf** underlined the enormous financial benefits of energy efficiency by referring to a study conducted by McKinsey in Germany during 2009, which estimated a savings potential of 40 billion Euros through industrial energy efficiency. He noted that while making an investment decision, entrepreneurs often consider resource efficiency instead of energy efficiency, and that they are influenced by an urge towards product diversification rather than moving towards energy efficiency. Mr Burgtorf emphasized the role of specialized banks such as SIDBI in setting up special financial schemes to tap energy savings potential in the MSME sector. He threw light on the on-going initiatives of GIZ to promote energy efficiency in the paper industry through improved insulation.

**Mr Xavier Echasseriau** outlined the profile of AfD, which is both a bilateral development agency and a financial institution with an annual commitment



of about USD 10 billion globally, of which more than half is committed to deal with climate change related issues in over 70 countries. He emphasized the importance of identifying ‘low-hanging fruits’, i.e., EE technologies that require little or no financial assistance. He suggested the development of ‘blended EE packages’ combining short payback options (low-hanging fruit) with long payback options requiring high investments, as bankers would be more amenable to consider financing such packages.

Mr Echasseriau underlined the fact that for most Indian MSMEs, the key barrier to adoption of EE technologies is not finance, but awareness about EE technologies and their benefits. He shared examples from France where ‘management centres’ have been established to generate awareness and help farmers in availing financial assistance through a single window system. The same model could be replicated to assist MSMEs in India. He stressed the importance of blending different financial tools in order to trigger EE investments by MSMEs. Schemes such as the CGTMSE should be scaled up to aid MSMEs in arranging for guarantees for their loans. He concluded his remarks by underlining the need to build capacities of loan officers to assess and appraise EE projects.

**Mr Rajnesh Trivedi** expressed his happiness at the discussions that have started taking place on the EE paradigm, which would encourage the adoption of new EE technologies that financiers and investors are comfortable with. He noted that energy efficiency is a very critical component in the entire value chain of ‘clean technology’ investments. Presenting a banker’s perspective, he pointed out that a banker primarily looks at financing, rather than the technology. If an EE implementation results in actual cash flows and

increased bottom line for the company, it would get a go-ahead from the banker.

Mr Trivedi highlighted the need for a common nodal agency that could vet EE technologies based on their actual performances, and that could work with the bankers, entrepreneurs, and LSPs. He informed the participants that YES Bank was one of the first banks to finance renewable energy (wind) solutions. In order to understand renewables, the bank worked with technology providers, promoters, and various academic and R&D institutions. Now, wind energy financing is well established. He concluded by underlining the importance for an investor to understand the EE technology.

**Mr Arvinder Singh Chamak** started by noting that the brick industry is a ‘forgotten’ sector in the government’s scheme of things. Highlighting the discrepancies between financing of MSMEs and loans to other sectors, he pointed out that a car loan gets sanctioned in a minute with almost no paperwork, whereas an MSME has to go through rigorous paperwork and numerous procedures in order to avail a loan. This underlines the fact that the basic environment for the holistic development of the MSME sector is not in place. A healthy environment needs to be created for MSMEs to prosper before formulation of enabling policies. He emphasized the need for putting in place nodal agencies such as TERI and the Punjab State Council for Science and Technology (PSCST) in every region to promote energy efficiency through accelerated adoption of EE technologies. These agencies could also be instrumental in bridging the gap between the bankers/financial institutions and the MSMEs. He also spoke in favour of cutting down the subsidies for industries including MSMEs. He also



recommended the setting up of regional training centres to build the capacities of unit owners and managers, who in turn would build the capacities of supervisors and workers.

In his concluding remarks, Mr Chamak stated that energy costs account for a significant portion (about 50%) of production costs in the brick sector, and so it is inevitable for the units in the sector to move towards energy efficiency. He said, “The brick sector is on the verge of technology transformation and a lot of units are looking for technology upgradation, so my humble submission to the government is to put in place mechanisms that facilitate technology transfers in the brick sector so that the units can exploit the enormous potential for energy conservation.”

### **Remarks by the Chairperson**

Mr Ajay Kapur, the chairperson, building on the remarks made by the panellists, mentioned that the spin-off benefits of energy efficiency are not well understood. Under the circumstances it is vital for MSMEs to look inward and implement measures such as lean manufacturing techniques to improve productivity through efficient use of existing machines, and only then look for energy efficiency through technology intervention. He pointed to the fact that energy pricing also exercises a major influence on the decision to adopt EE technologies, as well as on financing EE investments. Touching on the issue of risks faced by MSMEs, Mr Kapur said, “Risk does not come merely from small profits, but environmental

factors can sometimes lead to large scale losses by lenders, as experienced in Tirupur cluster.”

He stated that SIDBI is keen on encouraging group lending to MSMEs by its branches. He also highlighted the need to create clusters as role models. Towards this, SIDBI along with BEE has introduced a flagship project promoting energy efficiency in five selected clusters with support from the World Bank. The executing agencies will work closely with individual units, carry out assessments in order to identify appropriate solutions, convert these solutions into bankable DPRs, and provide implementation support for the DPRs.

Referring to the need for a ‘special agency’ to bridge the gap between MSMEs and banks, he mentioned that SIDBI is in the process of creating a cadre of retired bankers who could function as advisors to MSMEs in availing loans for EE technologies. To realize this initiative, Credit Facilitation Centres are being established in 100 clusters in collaboration with the local industry associations.

### **Discussion**

The discussions brought out the following salient points:

- MSMEs should be provided an environment wherein they can operate in a free and fair manner
- Bankers should incorporate a framework covering environmental and social risks in their lending strategy
- There is an urgent need to create awareness and understanding of EE technologies on both demand side and supply side of financing
- The system for disbursement of funds under various government schemes should be streamlined so that the funds are released in a stipulated time period
- It is necessary to quantify the benefits/results, in terms of energy savings, from all interventions aimed at promoting EE in the MSME sector



# Valedictory Session

Dr Ajay Mathur chaired the valedictory session. Mr Girish Sethi provided a brief summary of the discussions at the Summit. He appreciated the presence of participants from different corners of the country, and expressed his gratitude to the Ambassador of Switzerland in India for launching the SAMEEEKSHA website. He noted that the focus group discussions on financing, technology, and policy issues led to interesting perspectives and insights which could help overcome some of the barriers to the adoption of EE technologies in the MSME sector.

Mr Ajay Shankar, Member Secretary, National Manufacturing Competitiveness Council, delivered the valedictory address. He stated that the Summit provided a remarkable example of how developed societies should face challenges and handle difficult issues related to energy efficiency and MSMEs. He also expressed his appreciation regarding the manner in which the energy efficiency movement is spearheaded in India by agencies such as the BEE. The MSME sector is at an early stage of development and might be a relatively 'weak' sector; yet, it has a rightful share in

economic activities in manufacturing and other related areas. He emphasized that though the Indian economy is today dominated by the services sector and the manufacturing sector contributes a smaller share, this share has to go up, for which MSMEs have to play a vital role. If we want to achieve inclusive growth of the nation, we have to ensure that the manufacturing sector prospers. He added that MSMEs will be instrumental in eradicating poverty and that they will minimize pressure on the agriculture sector by creating employment opportunities in the future.

Mr Shankar emphasized the importance of close involvement of industry stakeholders in the formulation of relevant policies for enhancing impact at the ground level. He pointed out that according to the global indicators, India has a great success story in achieving energy efficiency in large enterprises, but in the MSME sector there is lot to be done. We must view this as an opportunity to leapfrog and to be the best in the world. Commenting on the issues related to cost of finance, he proposed the aggregation of service providers based on their size and credit-

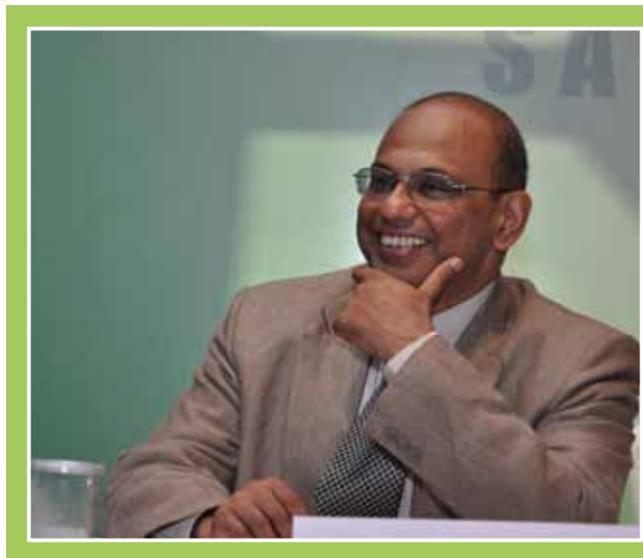


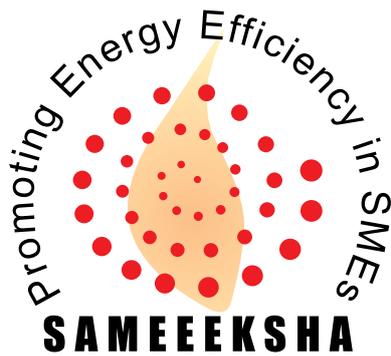


worthiness. This would help the financial institutions to reduce the risk and provide cheap credit. He also advocated tax incentives for units that invest in energy efficiency projects. Considering the fact that MSMEs are often constrained by lack of time and resources, units should be encouraged to implement retrofitting EE projects with the help of local service providers. Implementing EE projects through the ESCO model would also be beneficial for MSMEs as it reduces their cost of capital and provides a package solution. He concluded his address by quoting: “In the era of globalization and the globalized economy, we will not succeed in the development of MSMEs unless we succeed in energy efficiency aspects.”

The Summit concluded with a formal vote of thanks by Dr Ajay Mathur. He thanked all the supporters of the Summit, the eminent speakers including the chairpersons, background presenters, and the panellists for their valuable contributions on various topics and issues under the three broad themes of policy, technology, and finance. He said the deliberations at the Summit have led to identifying key

areas where policy interventions can lead to increased adoption of EE technologies. He emphasized that the SAMEEKSHA platform has to play a key role in consolidating the experiences and lessons from various EE implementations. This would reduce the need to reinvent the wheel and will lead to faster replications.





# Way Forward

The Summit has helped in identifying the following set of actions that should be taken in order to accelerate the adoption of EE technologies in the MSME sector:



# Way Forward

## Policy ▶▶▶

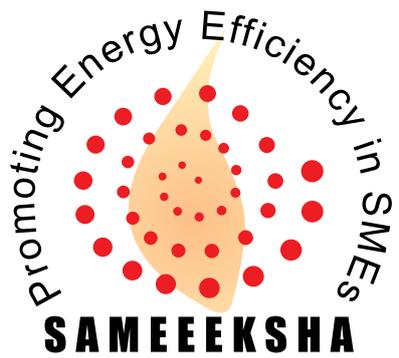
- Credible and comprehensive energy data is a must for establishing energy consumption benchmarks at the unit, cluster, and sub-sector levels. Such data should be collected through local institutions such as cluster-level industry associations, State Designated Agencies, District Industries Centres, MSME-Development Institutes, etc. Energy suppliers could also be involved.
- Follow an energy-intensive cluster-based approach for formulation and implementation of supportive policies. The concept of Designated Consumer as defined under the Perform, Achieve and Trade (PAT) scheme may be extended to MSMEs as Designated Clusters for mass impact.
- Launch an intensive and widespread campaign to raise awareness about energy efficiency among MSMEs down to the unit level, in order to accelerate demand for EE technologies.
- Quantify the benefits/results, in terms of energy savings, from all interventions aimed at promoting EE in the MSME sector.
- Energy efficiency hinges on the assured supply of quality power. Hence, the government should put in place proper infrastructure for supply of steady and uninterrupted power.
- The quality of raw materials and fuels also has a direct bearing on energy efficiency. Hence, quality standards should be set and implemented for raw materials and fuels.
- BEE should validate and provide accreditation to various EE technologies. Use platforms such as SAMEEEKSHA to spread awareness on these accredited EE technologies.
- Rate MSMEs based on their energy efficiency; this rating should be taken into account while financing EE projects.
- Revisit risk assessment methodologies of banks to include the impact of the implemented technology in terms of energy savings.
- The policy mechanism should encourage tax rebates instead of subsidies for MSMEs that adopt EE technologies.
- Formulate policies to incentivize local fabricators to develop EE machinery/equipment tailored to meet the requirements of the local industries.

## Technology ▶▶▶

- Demonstrate model EE pilot projects at the cluster level through the Research, Development, Demonstration and Dissemination (RDD&D) approach.
- Developers of new/innovative technologies should build in flexibility so as to ensure compatibility with different scales, processes, and products. They should provide a basket of EE solutions to choose from.
- Strengthen knowledge platforms and the industry–academia interface to spread awareness and information on EE technologies, manuals on Standard Operating Procedures (SOP), and success stories. The information should be made available in regional languages.
- Identify and capacitate cluster-level agencies such as LSPs to provide long-term handholding for adoption of EE technologies.
- Institutionalize capacity building and training, and create common facility centres for R&D and testing of raw materials and products.

## Finance ▶▶▶

- MSMEs could group together and aggregate their individual loan requirements for EE technologies; as a group, they could then approach the bank for finance. Suitable schemes could be formulated for the purpose.
- Establish management centres to help small-scale entrepreneurs avail financial assistance through a single-window system.
- Build the capacities of bankers to enhance their understanding of EE technologies as well as their ability to assess the credit-worthiness of EE projects.
- Develop ‘blended EE packages’ combining short payback options (low-hanging fruit) with long payback options requiring high investments, as bankers would be more amenable to consider financing such packages.
- Formulate special schemes for cluster-specific EE financing.
- Put in place a special agency to bridge the gap between MSMEs and banks.



# Resources

## Abbreviations

Major energy efficiency initiatives in the MSME sector



## ABBREVIATIONS

ADEME	French Environment and Energy Management Agency
AfD	French Development Agency
BOP	Best Operating Practices
BEE	Bureau of Energy Efficiency
CO <sub>2</sub>	Carbon Dioxide
CCD	Climate Change and Development Division
CFC	Common Facility Centre
CLCSS	Credit Linked Capital Subsidy Scheme
CRISIL	Credit Rating Information Services of India Limited
CII	Confederation of Indian Industry
CGTMSE	Credit Guarantee Fund Trust for Micro and Small Enterprises
DSCR	Debt Service Coverage Ratio
DSM	Demand Side Management
DFID	Department for International Development
DPR	Detailed Project Report
GIZ	German Development Agency
DIC	District Industries Centre
DBC	Divided Blast Cupola
EE	Energy Efficiency
EESL	Energy Efficiency Services Limited
ESCO	Energy Service Company
FISME	Federation of Indian Micro and Small and Medium Enterprises
FI	Financial Institution
GEF	Global Environment Facility
GoI	Government of India
GDP	Gross Domestic Product
HT	High Tension
HR	Human Resources
IGEN	Indo-German Energy Programme
IIF	Institute of Indian Foundrymen
IGES	Institute for Global Environmental Strategies
IRR	Internal Rate of Return
ISO	International Standards Organization
JICA	Japan International Cooperation Agency
JST	Japanese Science and Technology Agency
J-PAL	Abdul Latif Jameel Poverty Action Lab
LSP	Local Service Provider



MSME	Micro Small and Medium Enterprises
MSME-DIs	MSME Development Institutes
Mtoe	Million Tonnes of Oil Equivalent
MoEF	Ministry of Environment and Forests
MoMSME	Ministry of MSME
NMCC	National Manufacturing Competitiveness Council
NMCP	National Manufacturing Competitiveness Program
PAT	Perform, Achieve and Trade
PCRA	Petroleum Conservation Research Association
PSCST	Punjab State Council for Science and Technology
R&D	Research and Development
RDD&D	Research, Development, Demonstration, and Dissemination
RBI	Reserve Bank of India
SEC	Specific Energy Consumption
SAMEEEKSHA	Small and Medium Enterprises Energy Efficiency Knowledge Sharing
SMERA	SME Rating Agency of India
SIDBI	Small Industries Development Bank of India
SIEMA	Southern India Engineering Manufacturers Association
SEZ	Special Economic Zone
SOP	Standard Operating Procedures
SBI	State Bank of India
SDA	State Designated Agency
SDC	Swiss Agency for Development and Cooperation
TT	Technology Transfer
TERI	The Energy and Resources Institute
toe	Tonnes of Oil Equivalent
UNDP	United Nations Development Programme
UNIDO	United Nations Industrial Development Organization
USD	United States Dollar
UP	Uttar Pradesh
WB	World Bank

## MAJOR EE INITIATIVES IN THE MSME SECTOR

Title	Main features
BEE–SME Programme	<ul style="list-style-type: none"> <li>• Initiated by BEE in strategic partnership with TERI</li> <li>• Covers 29 MSME clusters across India</li> <li>• Comprehensive energy audits and cluster-specific energy conservation manuals</li> <li>• DPRs on EE technologies</li> </ul>
Ministry of MSME: Technology and Quality Up-gradation (TEQUP) support scheme	<ul style="list-style-type: none"> <li>• One of 10 schemes for MSME development under the National Manufacturing Competitiveness Programme</li> <li>• Awareness generation</li> <li>• Support for preparation of DPRs</li> <li>• Financial assistance for adoption of EE technologies and product quality certification</li> <li>• Provides mechanism for carbon credit trade</li> </ul>
TERI–SDC Partnership project in the foundry, glass, and brick sectors	<ul style="list-style-type: none"> <li>• EE technology development, demonstration, and dissemination</li> <li>• Unit/cluster level capacity building; development of knowledge products</li> <li>• Collaborative partnerships with other institutions</li> <li>• Advisory support for policy formulation</li> <li>• Development and support for SAMEEKSHA knowledge sharing platform</li> </ul>
World Bank–GEF Project: Financing energy Efficiency at MSMEs	<ul style="list-style-type: none"> <li>• Targeted at five selected energy intensive clusters</li> <li>• Capacity and awareness building</li> <li>• Support for walk-through/detailed energy audits and preparation of Investment Grade DPRs</li> <li>• Performance-linked grants to early adopters</li> <li>• Knowledge management and sharing</li> </ul>
TERI–IGES Research Partnership for application of low-carbon technologies	<ul style="list-style-type: none"> <li>• Focus on transfer of low-carbon technologies from Japanese manufacturers for adoption and dissemination among MSMEs in India</li> <li>• Supported by JICA and Japan Science and Technology Agency (JST)</li> <li>• Pilot EE projects being identified and implemented at the unit level in select MSME clusters</li> <li>• Technologies include heat pump applications for foundries and dairies (Rajkot, Ahmedabad, and Chandigarh)</li> </ul>
JICA–SIDBI Financing Scheme for Energy Saving Projects in MSME Sector	<ul style="list-style-type: none"> <li>• Line of credit from JICA for financing EE projects</li> <li>• Financial assistance to MSMEs through SIDBI, as well as through refinance to banks and other financial institutions</li> <li>• Provides list of EE equipment eligible for financing</li> </ul>
KfW–SIDBI Scheme: Financing Energy Efficiency Projects in the MSME Sector	<ul style="list-style-type: none"> <li>• Line of credit from KfW Development Bank for financing EE projects</li> <li>• Financial assistance to MSMEs through SIDBI</li> <li>• Provides list of EE equipment and measures eligible for financing</li> </ul>
GIZ: Indo German Energy Programme (IGEN)	<ul style="list-style-type: none"> <li>• Support for EE through insulation solutions; collaboration with KAEFER, one of the world's largest provider of complete insulation solutions, under the PPP project 'Moving India's SMEs towards Energy Efficiency' (MovIEE)</li> <li>• Providing access to advisory services, training, and credit schemes; awareness generation through 'Energy Bus' initiative</li> <li>• Pilot projects in different clusters</li> </ul>



# SAMEEEKSHA

A PLATFORM FOR KNOWLEDGE SHARING IN THE MSME SECTOR

SAMEEEKSHA is a collaborative platform set up with the aim of pooling knowledge and synergizing the efforts of various organizations and institutions—Indian and international, public and private—that are working towards the development of the MSME sector in India through the promotion and adoption of clean, energy-efficient technologies and practices. SAMEEEKSHA provides a unique forum where MSME entrepreneurs and other cluster-level stakeholders may interface with funding agencies, R&D institutions, technology development specialists, government bodies, training institutes and academia, so as to facilitate cross-learning and increase the efficacy of the energy efficiency initiatives taken in the MSME sector.

The plans and activities of SAMEEEKSHA are administered by a Core Committee comprising the following:

- Bureau of Energy Efficiency (BEE)
- Climate Change and Development Division, Embassy of Switzerland, India
- Ministry of MSME, Government of India
- The Energy and Resources Institute (TERI)

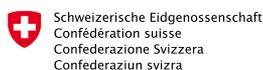
## National Summit

Energy Efficiency in Micro, Small and Medium Enterprises (MSMEs)

*Organised & Supported by*



Bureau of Energy Efficiency



Embassy of Switzerland in India



The Energy and Resources Institute

