

SMALL AND MEDIUM ENTERPRISES: ENERGY EFFICIENCY KNOWLEDGE SHARING **VOLUME 6 | ISSUE 3 | SEPTEMBER 2015**

SAMEEEKSHA

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NEWSLETTER

Inside...

CONVERSATIONS: Elements of Technology Cooperation

- RDD&D, Capacity Building and Long-Term Partnerships
- Establishing business models to overcome policy, financial and capacity barriers
- Crafting innovative, end-to-end financial solutions for promoting energy efficiency



VISION

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



A PLATFORM FOR PROMOTING ENERGY EFFICIENCY IN SMEs

IN THIS ISSUE...

Industrial energy efficiency is of particular relevance to India ahead of the Conference of Parties (COP21), to be held in Paris at the end of this year. India has already announced its 'Intended Nationally Determined Contribution' (INDC) towards climate action, offering a deep cut in its emissions intensity by 2030 (to the extent of 33–35% below 2005 levels) even as it remains focused on achieving developmental goals that require an increase in energy use. In order to achieve this ambitious emissions reduction target, it needs to be ensured that the carbon intensity of the industrial sector reduces, even as industrial output increases.

In recent years, many bilateral, multilateral and government organizations have been implementing projects to reduce energy consumption in the Indian MSME sector. The key approaches that have been adopted include technology development and demonstration; energy audits and implementation; capacity building at the local level; and concessional loans for clean technologies. This issue presents insights and experiences in promoting energy efficiency in the Indian MSME sector from three different perspectives: a bilateral organization (SDC), a multilateral organization (UNIDO), and a financial institution (SIDBI).

It is hoped that these perspectives will deepen understanding on the different models that have been tried so far to promote energy efficiency in the MSME sector; underline the challenges that lie ahead; and point towards the strategies and steps that can be taken to stimulate the pace of energy efficiency improvement in this key sector of the economy.

SAMEEEKSHA Secretariat



ELEMENTS OF TECHNOLOGY COOPERATION

RDD&D, Capacity Building and Long-Term Partnerships



The TERI–SDC partnership (TSP), which began in 1993, has achieved significant success in promoting the use of clean, energy efficient technologies in a number of energy intensive MSME clusters.

Mr Daniel Ziegerer, Director of Cooperation, SDC shares his thoughts with SAMEEESHKA on the project’s strategy in technology cooperation and on the road ahead.

To what extent and in what ways can ‘bottom-up initiatives’ to cut GHG emissions under development cooperation contribute towards the multilateral climate change negotiations?

In many ways, bottom-up initiatives play a key role in preparing the ground for the multilateral negotiations. If such an initiative can show what is possible in a particular sector or area, it could build the confidence of the particular country to make that GHG-cutting potential part of its national targets as well as part of its position or commitments in international negotiations. In that sense, there is a link between bottom-up initiatives and multilateral negotiations.

Perhaps nothing in the field of development is as popular to promote and as difficult to accomplish as capacity building. What has been SDC’s approach in this regard, in the context of solving environmental problems?

For us, building capacities has meant building long-term partnerships. We engage with a partner beyond a targeted, specific activity; we also build up an institutional relationship and maintain that relationship of funding and cooperation over time. The cooperation between SDC and TERI is a good

example of such an institutional relationship. Our capacity building strategy is two-fold. We help develop capacities in partners like TERI, by bringing in some international expertise. Our partners then become the agents for capacity building within the country.

SDC was one of the few donors to support technology development in the MSME sector. What were the key elements in the technology development and dissemination process, and how were the challenges overcome?

We have realized that the challenge is not merely a matter of transferring technology that might already be available in some part of the world, one to one, to another location. The real challenge is to adapt the technology; customize it to local needs through innovation; make it affordable; work with local materials and partners. We have addressed this challenge by the process known as research, development, demonstration, and

TERI’S CREDIBILITY HAS BEEN CRUCIAL IN PERSUADING PEOPLE TO INVEST IN THE ENERGY EFFICIENT TECHNOLOGIES PROMOTED BY THE PROJECT



INNOVATION AND CUSTOMIZATION TO SUIT LOCAL CONDITIONS AND NEEDS IS VERY IMPORTANT

dissemination (RDD&D). From SDC’s perspective as a donor, one major challenge is to reach the ‘tipping point’ of the technology, when widespread replications begin. This means to remain engaged; to continue to believe that this is the right technology and that we are working with the right set of partners before the replications happen. Attaining this critical moment needs some stamina, because there is always pressure to show quick results.

Credibility of partners is an important issue. In the TSP project it is TERI that is perceived by the entrepreneur to be the ‘face’ of the project; and TERI’s credibility has been crucial in persuading people to invest in the energy efficient technologies promoted by the project.

Another challenge is to ensure that the design and quality standards of the new/improved technology are retained throughout the replication process. Sometimes, when technologies are adopted or replicated by entrepreneurs, the designs of the technologies (materials, quality, specifications and so on) are ‘tampered’ with to save costs. Inevitably, people will be disappointed with the results, creating the misconception that the technology is not worth adopting.

Cost is a major challenge—particularly in the Indian context, where the initial cost of technology is emphasized more than in other countries. In general, for a variety of reasons, the ability and readiness of entrepreneurs to take risks is relatively low. Therefore, technology development has to factor in



costs and paybacks. In this context, innovation and customization to suit local conditions and needs is very important, through the use of locally available materials, the involvement of LSPs, and so on. We need to find ways to produce locally and cheaply, thus reducing the cost of the products. This principle applies to all sectors, to all technologies.

Carrying forward your thoughts on technology transfer—that it is important not only to import the technology but to customize it locally—what needs to be done to convince large technology manufacturers to establish plants in India?

Several steps need to be taken, in phases. Start by making the case for a particular technology or solution that is already there in another country. Next, identify something that has worked successfully in a particular niche or industry. Then, transfer its main features to India. Innovation follows: to adapt it, make it suitable and affordable to the local Indian markets. Here, our approach is to try and bring in international experts who know the technology and can tell you what needs to be incorporated. Other partners then identify local entities that have the R&D and manufacturing capacities to produce it locally.

To encourage this process, we can provide targeted support for these steps. Cooperation with the private sector is interesting, both for the international partners (where expertise might come from private firms) and for the local manufacturers who might have an interest in exploring the technology from a commercial angle.



Many of these technologies have patents on them, which are held primarily by private companies. What role can the Indian government play in this? Can they, for instance, actually buy patents and then have companies set up manufacturing plants?

The patents issue is complex. Much depends on what exactly the patent is. There are patents for specific markets; for particular specifications of technology but not the technology as such, so if you then produce the technology on a smaller scale or bring in your own innovation to it, then it may no longer be covered by the existing patent. So, even if there is a patent, there might be room to further develop and customize the technology in mutual interest. An example is the two-stage gasifier on which we are working under the TSP project. The patent for the technology is held by Denmark Technological University (DTU), which developed the system on a large scale; a megawatt (MW) scale. We have now been able to facilitate an agreement between DTU and TERI to give licences for developing and innovating customized small-capacity (40 kW–50 kW) systems.

What are your views on the current technology environment in the MSME sector?

The Indian technology environment is highly diverse. There are global players with modern, highly efficient technologies; there are very local players with traditional, low efficiency technologies; and the markets that they are catering to are changing at different speeds.

Many EET markets are 'moving targets'; they are not constant. For instance, the market for pumps is changing very quickly, with the groundwater levels dropping everywhere; customers are demanding products very different from what they sought, say, two years ago. The pump manufacturers realize that their markets are dynamic; that they need to react to changing demands, to innovate. Perhaps

this opens the window for changing technology to meet demands of customers, to introduce energy efficiency aspects.

A major challenge in introducing energy efficient technologies (EETs) in the MSME sector is the lack of data on energy consumption patterns in different sub-sectors. To bridge this data gap, cluster profiles for 100 energy intensive MSME clusters are being prepared under the ongoing phase of the project.

What lessons can be drawn by the larger multilateral processes from SDC's approach to technology cooperation?

If you are going into this sector, you must have a long term vision—that the technology can be reproduced by the local partners for local conditions. It is not a sector that brings you quick results/numbers; you need to invest in it, to build up credibility; you need to do that till the 'tipping point' is reached, after which it develops its own dynamic and takes off by itself. Innovation is needed, to make the technology work and also make it affordable in the local context.

Also, for the technology to really take off, several factors have to come together. Firozabad provides a good example: we developed a good technology through R&D, and successfully demonstrated its benefits. But this was not enough to spur its large-scale replication. The energy crisis; the political and legal factors, the Supreme Court verdict (in the Taj Trapezium case), the environmental regulations and their enforcement; these together pressurized the entrepreneurs to seek alternatives to their low efficiency (coal-based) technologies. Then there were the economic factors. The positive results in Firozabad, where over 90% of entrepreneurs have adopted the improved technology developed and promoted by the project, are due to all these diverse factors coming together. ●●●

IF YOU ARE GOING INTO THIS SECTOR, YOU MUST HAVE A LONG TERM VISION



ELEMENTS OF TECHNOLOGY COOPERATION

Establishing business models to overcome policy, financial and capacity barriers



UNIDO has been supporting the adoption of energy efficiency and renewable energy technologies in the Indian MSME sector, through establishing business models to overcome policy, financial and capacity barriers. **Ms Ayumi Fujino**, UNIDO Representative for India and Regional Director for South Asia, shares her thoughts and views with SAMEEEKSHA on UNIDO's strategy in technology cooperation and on the road ahead.

UNIDO has been supporting technology cooperation activities in developing countries for a number of years. How has this approach changed over time, especially in the context of climate change?

UNIDO's interventions have always aimed at building the capacities of Member States so that they are able to carry out their own programs in the field of industrial development. We provide country-specific tailored assistance to developing countries. Our new initiative, Inclusive and Sustainable Industrial Development (ISID), aims at providing the host country with the opportunity to improve its productive sector, increase its participation in international trade, and safeguard the environment.

In recent years, India has emerged as one of the fastest growing economies in the world with industry playing an important role in this achievement. India's manufacturing sector has gradually transitioned from a traditional agro-industrial base to more technologically intensive sectors, with significant progress made in gaining higher productivity as well as efficiency in the use of materials and energy. Within this context, our counterpart ministries in

India are interested not only in technical assistance (TA) that provides capacity building in industrial competitiveness, but also in our sharing knowledge and information to bring in 'state of art and innovative technology'. Envisioning a global scale of sustainable development of which 'Green Industry' is an integral part, we work in close cooperation with the Indian government to support the industrial sector in strengthening the knowledge base towards low-carbon and resource-efficient production patterns, and the adoption and deployment of best available techniques and best environmental practices (BAT and BEP).

What are the priority projects/programs of UNIDO in promoting energy efficiency in India?

The thematic priority of Energy and Environment makes up a significant portion of UNIDO's portfolio in India at present; this trend is expected to continue in the coming years.

Our focus is on: (i) energy management systems and standards; (ii) energy audit and energy system optimization; (iii) low-carbon and advanced process technologies; and (iv) bench-marking, monitoring



and verification. UNIDO projects for the promotion of industrial energy efficiency (EE) and renewable energy (RE) for SMEs could augment India's commitment to reduce the emissions intensity of its GDP and subsequent implementation of the National Action Plan on Climate Change (NAPCC).

UNIDO has initiated a new GEF project for promoting EE and RE in the MSME sector. Could you elaborate on its objectives, key focus areas and implementation approach?

Our ongoing five-year project, titled 'Promoting Energy Efficiency and Renewable energy in Selected MSME clusters in India', is a joint effort with BEE, Ministry of New and Renewable Energy (MNRE), Government of India and Ministry of Micro, Small and Medium Enterprises (MSME), Government of India with funding from GEF. As part of UNIDO's overall strategy to promote Green Industry, the project aims to develop and encourage a market environment for enhanced adoption of EE and RE technologies in 12 selected energy intensive MSME clusters covering five sectors: ceramic, dairy, brass, foundry and hand tools.

Also, we will soon start another project, 'Promoting Market Transformation for Energy Efficiency in Micro, Small and Medium Enterprises', whose objectives will be to: (i) create and sustain a revolving fund mechanism to ensure replication of EE activities and (ii) address the identified barriers for scaling up EE activities, and consequently promote a cleaner and more competitive MSME industry in India. These two projects will complement each other well. Capacity building, energy audits, technology



demonstration, and establishment of business models to support replications are important components of these GEF-funded projects.

What have been the major challenges in implementing the GEF project? How have these been overcome?

At the project design stage, a key challenge is to clearly identify the right stakeholders. Sometimes this is not easy, because there are so many actors who are involved in similar areas of interventions with overlapping responsibilities and roles. Also, GEF requires co-financing even at the very initial stage of project development. This poses a big challenge for us to conclude agreements with stakeholders. While we usually work through the government (ministries), we also try to identify suitable organizations and institutions from private sector. In the implementation phase, a major challenge is coordination and bringing all the stakeholders on the same platform to act towards achieving the project objective within the given timeframe. To have a smooth and long-term collaboration with all stakeholders, we try and ensure that there is a clear understanding on the roles and responsibilities of each agency; for, this increases the sense of ownership among those engaged in the project. Continuity of engagement is vital for the project to succeed. However, because of the

THERE MUST BE STRONG FOCUS ON IMPLEMENTING NEW AGE TECHNOLOGY, DEVELOPING INDIGENOUS TECHNOLOGY



long time required for the GEF project formulation and approval, it often happens that those involved in the design stage are transferred, rotated and moved, and the momentum and continuity could be lost in the middle.

What are your thoughts on the future technology environment in the MSME sector? What are the possibilities of implementing solar and biomass-based technologies?

For Indian MSMEs to develop a competitive advantage to operate in the global market, there must be strong focus on implementing new age technology, developing indigenous technology, as well as technology collaboration with global partners. Both domestic and foreign companies will invest in the 'Make in India' initiative, which could make significant impact in the area of indigenization. The aim of government should be to develop a business-oriented ecosystem that supports businesses to deliver the right product, the right quality, and the right service at a competitive price, both in domestic and international markets.

RE can provide a low-cost and reliable resource for many MSMEs. For several industrial applications, more than 50% of energy consumption can be provided through a portfolio of RE technologies including biomass, solar thermal systems, and geothermal. This is particularly the case in energy intensive industries such as brick kilns, small paper

mills, textile factories, foundries, and food processing plants. With RE technologies, MSMEs could also reduce their dependency on fossil fuels.

India is blessed with more than nine months' sunshine and availability of huge biomass resources. We see great potential for the use of solar energy technologies in the MSME sector, as it can be used



for heating, cooling and electricity generation. It is encouraging that the unit cost of solar energy has come down to ₹5.25/ kWh, which is comparable to the cost of electricity produced from conventional sources. In particular, solar thermal systems have a large technical and economic potential to be promoted in small-scale plants and less energy-intensive

industries like the textile and food sectors. However, it is necessary to find the means to break the vicious circle of high initial capital costs and low deployment rates. Among the RE technology options, biomass-based technology has the largest substitution potential in the manufacturing industry. As there are not many success stories (viable and proven business models) in this domain, financial institutions and banks are reluctant to provide the required capital and loans. However, with new technological developments and business models, we are sure that this sector will also prosper—especially for providing electricity in remote locations through off-grid method. Also, an urgent coordinated action is required, both domestically and internationally, to alleviate the serious supply constraint of sustainably sourced and low-cost biomass resources, and to deploy the most resource-efficient biomass-based applications. ●●●

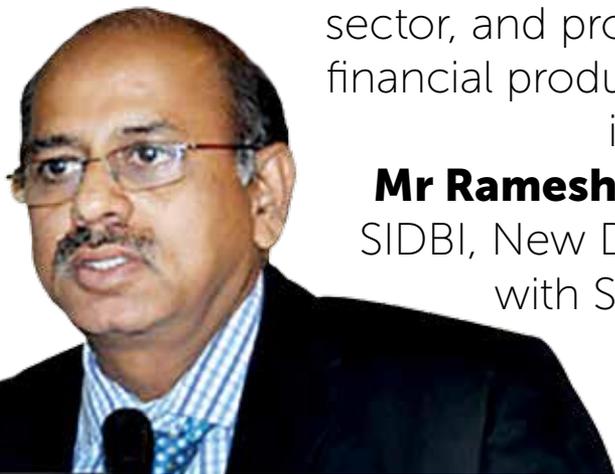
FOR SEVERAL INDUSTRIAL APPLICATIONS, MORE THAN 50% OF ENERGY CONSUMPTION CAN BE PROVIDED THROUGH A PORTFOLIO OF RE TECHNOLOGIES

AMONG THE RE TECHNOLOGY OPTIONS, BIOMASS-BASED TECHNOLOGY HAS THE LARGEST SUBSTITUTION POTENTIAL IN THE MANUFACTURING INDUSTRY

ELEMENTS OF TECHNOLOGY COOPERATION

Crafting innovative, end-to-end financial solutions for promoting energy efficiency

The Small Industries Development Bank of India (SIDBI) is the principal financial institution for the development of the MSME sector, and provides a range of uniquely designed financial products and services to support MSMEs in improving their energy efficiency.



Mr Ramesh Dharmaji, Chief General Manager, SIDBI, New Delhi, shares his thoughts and views with SAMEEEKSHA on SIDBI's initiatives to facilitate energy efficiency improvement in the MSME sector.

Tell us about ISTSL and its new '4E' product?

India SME Technology Services Ltd (ISTSL), launched in 2005, is a joint venture of SIDBI and four public sector banks: State Bank of India (SBI), Oriental Bank of Commerce (OBC), Indian Overseas Bank (IOB) and Indian Bank. Its mission is: (i) to enhance the market competitiveness of MSMEs by rendering professional services for technology transfer and attendant support services and (ii) to undertake activities to support energy efficiency, renewable energy and other sustainable development projects which will enhance competitiveness of the MSMEs. ISTSL's emphasis is on networking to pool resources. Its objectives are to help MSMEs in technology upgradation; provide latest technology information to MSMEs and help them collaborate with technology suppliers, research institutions, etc.; and provide financial syndication through banks and financial institutions.

Among ISTSL's products, 'End to End Energy Efficiency Solutions' (4E) aims at helping MSMEs in improving their energy efficiency (EE) by offering fee-based consulting services. In essence, 4E

provides end-to-end support to MSMEs for availing the services of a technical consultant/ESCO at a reasonable cost, with assurance on the quality of services as well as the results/benefits. The 4E product is targeted at MSMEs in manufacturing as well as services sectors including hotels, hospitals, shopping malls, commercial buildings, etc.

What are SIDBI's other programs to improve competitiveness of the Indian MSME sector?

SIDBI has various instruments and products to meet MSMEs' requirements of capital, receivable finance, reduced energy consumption, cluster infrastructure, etc. Our thrust or niche business areas are:

- EE, clean technologies and sustainable financing; equity products like risk capital (including structured debt), contribution to funds, etc.; service sector; receivable finance and factoring services; and indirect lending, that is, refinance to banks/financial institutions (FIs), resources support to public financial institutions (PFIs) and public sector undertakings (PSUs) benefiting the MSME sector.





- MSME- linked infrastructure finance
- Loan facilitation and syndication

The business of the bank has been divided into broad products/ business streams on the above lines. While the bank will maintain its emphasis on financing niche areas, it shall continue to provide financial assistance to all eligible MSMEs to meet their various other needs including term lending, working capital financing (both fund based and non-fund based) and other fund requirements.

The latest and most efficient technologies are usually more expensive; hence, financial assistance to developing countries is a major negotiations plank in climate conferences. How can financial institutions like SIDBI and research/consultancy organizations like TERI collaborate in promoting state-of-the-art technologies among Indian MSMEs?

The growth of the MSME sector has been constrained by lack of access to finance. Financial institutions have limited their exposure to the sector due to a higher risk perception, information asymmetry, high transaction costs and the lack of collateral. Thus, MSMEs face a vicious cycle in accessing funding.

SIDBI and TERI have already worked together under the WB-GEF project aimed at increasing the demand for EE investment in five MSME clusters. Besides TERI, SIDBI is already working with other financial institutions, non-banking financial companies (NBFCs), energy service providers/vendors, and ESCOs to promote sustainable development in the MSME sector.

Recently, SIDBI signed an agreement with the World Bank for a project titled 'Partial Risk Sharing Facility for Energy Efficiency' (PRSF). The objective

of the project is to support the government's efforts to transform the EE market in India by promoting increased level of EE investments, particularly through energy service performance contracting (ESPC) delivered through ESCOs. By providing partial risk coverage of loans by banks/FIs to ESCOs and ESCO-implemented projects, it will address the barriers faced by ESCOs in availing finance, and the risks perceived by the banks/FIs in providing financial assistance to ESCOs or MSMEs for implementing EE projects. The PRSF project aims at scaling up implementation of EE projects in MSMEs, large industries, municipalities, and the buildings sector. Thus, TERI as an ESCO can work with SIDBI under the PRSF project.

SIDBI has several credit lines to provide financial assistance for EE technologies. What is the rationale behind providing concessional loans for EE?

Across the world, MSMEs are the vehicle for faster, sustainable and more inclusive growth. In India, the MSME sector manufactures over 6000 products ranging from traditional to high-tech items. Its 45 million enterprises generate more than 100 million jobs; it contributes 45 per cent of total industrial manufacturing output and 40 per cent of India's total exports (directly and indirectly). MSMEs are also regarded as the cradle for the government's recently formulated 'Make in India' vision; under the 'Zero Effect, ZeroDefect' (ZED) model, the idea is to handhold one million MSMEs over the next 3-5 years to deliver top quality products using clean technology.

Despite its vital role in the economy, the MSME sector is beset with challenges such as lack of access to adequate and timely credit; high cost of credit; limited access to equity capital; delayed payments of receivables; difficulty in procuring raw materials at a competitive cost; lack of access to global markets; inadequate infrastructure facilities; low

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levels of technology modernization; lack of skilled manpower; and so on.

SIDBI recognizes the importance of the MSME sector and the need to support its survival and growth in the long run, and realizes that at present there is no visible focus of the banking sector on providing green/EE finance to MSMEs. It thus behooves SIDBI to initiate green/EE finance, not only to encourage the MSMEs to adopt EE measures by providing concessional lending but also to showcase to the banks that green/EE financing can be a profitable proposition. SIDBI plays a dual role in this context, both complementing banks and catalysing private sector players.

Since 2008, SIDBI has been operating focused concessional lending schemes for EE out of Lines of Credit (LoC) from various bilateral agencies, namely, JICA in three phases of JPY 30 billion each; Agence Française de Développement (AfD)—EUR 50 million; and KfW— EUR 50 million. These initiatives have resulted in a total investment of around 5,900 crore (59 billion) rupees, and benefited more than 6800 MSMEs with an estimated annual electricity savings of 1043 million kWh and a reduction of 909 kilo tons of CO₂ annually. Green Climate Fund is being mobilized to support developing countries to limit or reduce their GHG emissions and to adapt to the impacts of climate change. Ministry of Environment, Forests and Climate Change (MoEFCC), Government of India has nominated SIDBI as National Implementing Entity (NIE) for accreditation with GCF. Upon accreditation, SIDBI proposes to upscale its existing sustainable development operations with the support of funds from GCF.

SIDBI is the implementing agency for the WB-GEF project, which has adopted a different approach to promoting EE, i.e., through energy audits and preparation of detailed project reports. How does this strategy compare with the concessional credit lines approach?

As already mentioned, SIDBI launched its first concessional lending scheme for EE with JICA in 2008. Recognizing that there are numerous barriers to implementing EE measures in the MSME sector, the bank started with a simplified lending approach (i.e., a list-based approach) to finance EE projects at concessional terms. Thereafter, SIDBI joined

hands with KfW, Germany for its second EE LoC, with a tool-based lending approach (slightly more complicated than the list-based approach) wherein the loan eligibility has been assessed based on an energy saving and CO₂ reduction assessment tool.

Besides credit, SIDBI has also engaged in capacity building of the MSME sector with various awareness programmes

on the benefits of adopting EE measures, identifying and documenting EE machineries, EE technology transfers and various EE advisory services. SIDBI along with seven other nation's development banks constituted a Montreal Group. Under the group, SIDBI has regular interaction with the member institutions and fosters peer group exchanges to identify best practices and innovative solutions for financing and development of MSMEs. Further, SIDBI is a member of prestigious 'International Development Finance Club' having around 23 financial institutions/development banks with considerable exposure and experience in sustainable financing as its members.

With the above initiatives, the Bank has created awareness on EE and a market for EE in the MSME sector. SIDBI has reached more than 100 industrial clusters and over 2500 MSME units, and awareness on EE has been generated among more than 4000 participants from MSMEs.

To have a more focused approach and to spur MSMEs to undergo actual energy audits and implement the recommended EE measures, SIDBI along with GEF and WB has been implementing the project titled 'Financing EE at MSMEs in India'. Building on the considerable experience gained in implementing the WB-GEF Project, and with a view to create a platform for retrofit-based EE financing approach, as well as to enhance SIDBI's image as a Credit+ (credit plus) institution, SIDBI launched its new 4E Solutions product. Thus, SIDBI has transformed its strategy in lending approach from EE equipment-based financing to entire EE project-based financing and technical solutions. ●●●

THUS, SIDBI HAS TRANSFORMED ITS STRATEGY IN LENDING APPROACH FROM EE EQUIPMENT-BASED FINANCING TO ENTIRE EE PROJECT-BASED FINANCING AND TECHNICAL SOLUTIONS.



TRAINING WORKSHOP ON 'ENERGY AUDIT SERVICES AND DISSEMINATION PROGRAMS'

UNIDO is implementing a GEF-funded project titled 'Promoting Energy Efficiency and Renewable Energy in selected MSME Clusters in India', with BEE as the project management agency. This project aims to develop and promote a market environment for introducing energy-efficient technologies (EETs) and enhanced use of renewable energy technologies (RETs) in process applications in 12 selected energy-intensive MSME clusters in India covering five sub-sectors: ceramics, hand tools, foundries, brass, and dairy.

BEE had engaged TERI to undertake a component of the project—energy audit and dissemination activities—in Belgaum and Coimbatore foundry clusters. TERI conducted energy audits in six foundry units in each cluster and also developed cluster-specific documents on best operating practices (BOP). In order to disseminate the results of the project and provide knowledge on energy audit instruments, energy savings measures, new EETs/ RETs and pollution control in foundry units, TERI, in collaboration with local industry associations, organized six training programs (three each in Coimbatore and Belgaum) for participants from local foundry units during July 2015. Separate programs were organized based on the melting technologies (induction furnace



or cupola) deployed by the units. In all, about 250 participants attended the training programs.

Experts from TERI threw light on the major energy consuming areas in a foundry unit; analysis of energy bills; methodology of energy audits; common monitoring parameters; and the various energy audit instruments that are used for performance assessment of equipment. They emphasized the potential for energy conservation through adopting BOPs, noting that in a typical induction furnace-based foundry unit, the melting furnace accounts for around 60–80% of total energy consumption. They also presented case studies on implementation of BOPs by foundry units in Kolhapur. Highlighting the importance of pollution control in foundry units, the TERI experts outlined the Indian emission standards for foundry units and explained the workings of several pollution control systems such as cyclone systems, venturi scrubber systems, etc. On the RE front, the participants were informed about the application of gasifier systems (a cost-effective as well as carbon neutral technology) for foundry units.

The training programs were followed by visits to foundry units that had undertaken energy efficiency improvements including implementation of BOPs, and to a unit where a gasifier has been installed. ●●●





ABOUT TERI

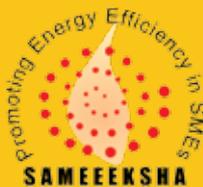


The Energy and Resources Institute

A dynamic and flexible not-for-profit organization with a global vision and a local focus, TERI is deeply committed to every aspect of sustainable development. From providing environment-friendly solutions to rural energy problems to tackling issues of global climate change across many continents and advancing solutions to growing urban transport and air pollution problems, TERI's activities range from formulating local and national level strategies to suggesting global solutions to critical energy and environmental issues.

With staff of over 900 employees drawn from diverse disciplines, the institute's work is supported by ministries and departments of the government, various bilateral and multilateral organizations, and corporations of repute.

ABOUT SAMEEEKSHA



SAMEEEKSHA is a collaborative platform aimed at pooling the knowledge and synergizing the efforts of various organizations and institutions—Indian and international, public and private—that are working towards the common goal of facilitating the development of the Small and Medium Enterprise (SME) sector in India, through promotion and adoption of clean, energy-efficient technologies, and practices.

SAMEEEKSHA provides a unique forum where industry may interface with funding agencies, research and development (R&D) institutions, technology development specialists, government bodies, training institutes, and academia to facilitate this process.

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