



INDIA
GHG
PROGRAM

Promoting profitable, sustainable
and competitive businesses.

YES BANK

REDUCING GREENHOUSE GAS EMISSIONS VIA CORPORATE SOCIAL RESPONSIBILITY INITIATIVES IN MICRO, SMALL AND MEDIUM ENTERPRISES

INTRODUCTION

The micro, small and medium enterprise (MSME) sector plays a vital role in India's economy. It contributes 45 percent of industrial output, 40 percent of total exports, and provides employment to over 100 million people. The *Say YES to Sustainable MSMEs in India* initiative aims to promote environmental sustainability and occupational health and safety (OHS) within this sector.

This initiative, launched by YES BANK in FY 2014-15, is a multi-faceted intervention to help the sector become globally competitive. The Bank identified sectors that have an energy intensive manufacturing process, and had a significant impact on the environment owing to the use of rudimentary technology and practices. The OHS conditions in these sectors were also not optimal and support was needed to bring them at par with acceptable standards. Based on an evaluation of these parameters and a needs assessment, the project was implemented with six sectors: foundry, dyeing, rubber, plastic, general engineering, and rice mills.

In FY 2015-16, the initiative supported 973 MSME units by enhancing their energy efficiency and improving their health and safety systems through sensitisation workshops, health camps, providing drinking water facilities, first aid kits and personal protective equipments. Under the initiative, OHS systems were strengthened in 627 MSME units benefitting 10,305 workers and energy efficiency projects were implemented in 71 MSME units, improving their energy efficiency in the range of 15-20%. The project resulted in a reduction of more than 6000 metric tons of CO₂ emission per annum. Additionally, 275 MSMEs benefited from energy efficiency sensitisation workshops.

The programme was implemented in MSME clusters in 18 locations across 9 states, based on the following criteria:

- Total population benefited
- Current awareness levels of unit owners and workers on energy efficiency and OHS

- Lack of developmental work underway in the region
- Project partners' linkages with local associations
- Current level of technology and skills

FOUNDRIES

There are more than 5000 foundry units in India, having an installed capacity of approximately 7.5 million tonnes per annum. The majority of these units – nearly 95 percent – fall under the category of small-scale industries. These foundries are largely family-owned and managed, with little knowledge of energy and resource efficiency.

Owing to the high polluting potential, and the generation of hazardous waste, foundries fall under the red category of industries. However, environmental sustainability through energy efficiency can be achieved for such units. The potential for energy saving ranges from 25 to 65 percent, which translates into emissions reduction, and lower energy costs.

In 2015-16, the programme was implemented in 26 foundry units in four clusters. Foundry-specific interventions were implemented in Punjab, Haryana, and West Bengal at six locations: Jalandhar, Ludhiana, Phagwara, Faridabad, Kaithal, and Howrah. The project is primarily aimed at increasing the energy efficiency of the MSME units, and thereby positively contributing to the overall emission reduction and resource efficiency. Through these interventions, YES BANK has helped address the growing issue of climate change and promotes responsible consumption of resources, thus aligning the project with the sustainable development goals (SDGs).

ENERGY EFFICIENCY

Energy efficiency is a key area where the Indian MSME sector can improve upon so as to increase productivity and efficiency. MSMEs are losing out due to high energy costs, including coal, coke, electricity, diesel, and steam,

as well as inefficiencies in the system. Due to the use of conventional technologies, units are forced to spend more for a given output than is needed. In order to reduce these costs, they have to either retrofit or upgrade to newer technologies. This would reduce their operational costs and enhance their overall competitiveness.

Foundries face challenges like excessive fuel and power consumption, lower coke to metal ratio, high melting costs, and high carbon emissions.

The methodology for energy efficiency intervention in the foundry sector included the following steps:

- i. *Mapping of the targeted cluster* in order to collect all the relevant information about the cluster, such as geographical spread, socio-economic conditions prevalent, total number of units, and number of units with potential for intervention.
- ii. *Collection of baseline information*, consent letters, and walk-through audits. This included information on annual production, types of raw materials used and their annual consumption, energy used, and problems related to energy consumption.

In the pre-intervention audit, a detailed study of all the energy intensive processes that were carried out in the selected units of the targeted clusters was done. The pre-intervention audit report of foundries contains details of raw materials consumed, blast pressure generated in the furnace, melting rate obtained during the cupola run, coke to metal ratio, etc.

INTERVENTION | Based on the report from the pre-intervention audits, recommendations were given to the units in order to improve their energy efficiency. These recommendations were mostly multi-pronged approaches, which included using the right capacitor to achieve a higher power factor, regulation of the sanctioned load as per requirement of the unit, replacement of motors with more efficiency and specialized motors, improved welding techniques, reduction of health loss by way of recycling and refractory lining of the furnace. Pressure regulators and pressure monitoring devices were also installed to ensure the system pressure is maintained at the optimum level in order to ensure higher efficiency. Blowers used in the furnace were retrofitted with fan speed controllers and timers to increase practical efficiency. Overall efficiency was also improved through waste minimization and periodic servicing of the system.

POST-INTERVENTION AUDIT | The post intervention audit was conducted in those units where the recommendations made by the expert team were fully

7000 MT of CO₂ emissions reduced via interventions of this project

or partially implemented. During the post-intervention audit, the effect of the implemented energy efficiency measures was analysed. The level of energy efficiency obtained in the selected unit on each of the systems where the recommendations have been implemented was measured and documented. For each unit, a report was created with detailed information on each stage of the project including, systems studied, observations and recommendations made, and annualized results achieved post-implementation, and time period of return on the investment.

MONITORING AND EVALUATION | The monitoring framework for the project is divided into a six stage integrated process starting with project initiation and strategy, partner selection and evaluation, initiation, launch and operation, technical target or outcome monitoring, budget utilisation and expenditure monitoring, and impact or social return on investment (SROI) assessment. The project is monitored and evaluated monthly with the help of ground implementation partners and the YES BANK team. There are project specific periodic review mechanisms in place, with quarterly third part assessments leading to annual assurance and reporting of the numbers.

SUSTAINABILITY OF THE PROJECT | Say YES to Sustainable MSMEs in India has proactively incorporated changes in its approach to bring in more inclusivity and participation from the stakeholders. The project in its first phase began with interventions at a unit level, and since then, has evolved into a cluster-based approach. In phase three of project, which will be launched this year, the aim is to create model clusters under each MSME

$$\text{SROI} = \frac{\text{Social Impact Value} - \text{Initial Investment}}{\text{Initial Investment}}$$

The SROI score for this project was calculated to be 2.87, which depicts that for every one rupee invested by YES BANK, there is a social return of 2.87 rupees. The parameters considered were units of fuel saved, metric tonnes of carbon emissions reduced, reduction in energy efficiency consultation charges, increase in productivity, and attribution factors.

association, that would ensure long-term shared value. In this phase, groups of 8-10 MSME units will be identified and targeted to develop model clusters. YES BANK has been consistently increasing the financial participation of the beneficiaries of the project. While the first year was entirely funded by the Bank, phases two and three has a part-funding model. This is to ensure that the Bank can exit once sufficient participation from individual units and MSME associations are built up. The project depends heavily on implementation and coordination, and the Bank has strategically tried to source expertise locally, wherever possible. For example, in Rajkot, the energy audits are carried out by an expert team, headed by a professor from a local engineering college. This adds value in multiple ways, including region-specific solutions, leveraging local networks, and cost optimisation.

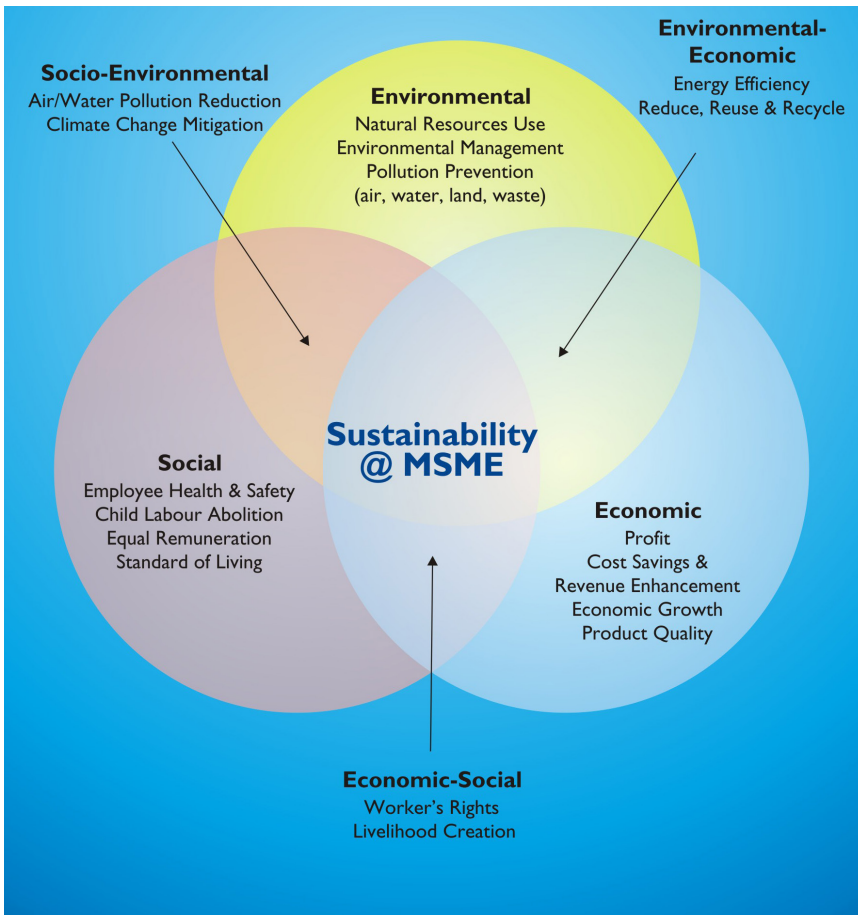
In the last two years, *Say YES to Sustainable MSMEs in India* has been scaled-up manifold and replicated across the country. In the first year, the project was implemented in three locations in Punjab. In the second year, the project was scaled up to 9 states and 18 locations, and in the third phase, the project being implemented in 11 states – Gujarat, Tamil Nadu, Telangana, Punjab, Rajasthan, Haryana, Delhi, Madhya Pradesh, West Bengal, and Karnataka. The project was also scaled-up in terms of its reach to more sectors within the MSME space. While the project focused only on foundries in the first year, the scope extends to more than 12 other sectors, including dyeing, rubber, plastic, general engineering, textile, rice mills, auto ancillaries, industrial tools and pumps, sports goods, handicrafts, railway vendors, and others.

TABLE: Case Example

In Punjab, 26 foundry units were part of the cluster. The pre-intervention audit and impact for two units are highlighted below. This cluster has seen an overall reduction of 809.7 metric tonnes of coke, with emissions savings of 2458.66 tCO₂.

UNIT 1: LUDHIANA	UNIT 2: JALANDHAR
INTERVENTION CYCLE	
Installation of air pressure gauges to maintain optimum air pressure in the furnace Increase size of coke used in the furnace Establish standard operating procedures for furnace operation	Replacement of fuel intensive rotary furnace with efficient divided blast cupola furnace
PRE-INTERVENTION SCENARIO	
Coke Consumption/Run: 2,880 kg Coke to Metal Ratio: 1: 6.84 Approx. CO ₂ Emission/Run: 7,900 kg	Rotary Furnace Furnace Capacity: 200-250 kg/hr Duration of run: 8-10 hours Melting Cost/kg: Rs.7-8/kg
POST-INTERVENTION STATUS	
Coke Consumption/Run: 2,200 kg Coke to Metal Ratio: 1:8.96 Approx. CO ₂ Emission/Run: 6,500 kg	Divided Blast Cupola Furnace Furnace Capacity: 1000-1200 kg/hr Duration of run: 4-5 hours Melting Cost/Kg: Rs.2-2.5/kg
RESULTS	
680 kg coke saved per run CO ₂ emissions reduced by 1400 kg per run	Cost of melting reduced by Rs.5.5-6 per kg Furnace capacity increased by 800kg/hr, due to which the furnace is now operated in 2-3 days
RETURN ON INVESTMENT	
Air Pressure Gauge: Rs.500 Training workers on SOP: Rs.1,000 Saving of 680 kg of coke per run results in direct saving of Rs. 10,000 per run	Cost incurred in erection of Divided Blast Cupola: Rs.6 lakh Castings produced/run: 4,000 kg Reduction in melting cost/kg: Rs.5 Savings/run: Rs. 20,000 (4000*5) The investment can be recovered in approximately 30 runs

FIGURE: The Three Spheres of Sustainable MSMEs



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