Photo © UNDP

Energy-Efficient Steel Industry

Project Title
Energy Efficiency in Steel Re-rolling Mills

Budget
Total: USD31 million
Global Environment Facility (GEF): USD7 million; Government of India (Steel Development Fund): USD7.3 million; Private Sector: USD5.5 million; and Others: USD11.3 million

Duration
September 2004 – December 2010

Partners
Ministry of Steel, Government of India; Steel re-rolling mills technology suppliers; and Small Industries Development Bank of India

Project Location
Thirteen states in India

Challenges
Steel production is an energy-intensive process and generates large amounts of waste. In India, the production of one tonne of crude steel from iron ore generates about 1.2 tonne of solid waste and approximately 2.5 tonne of carbon dioxide, a greenhouse gas, and other pollutants. Within India's small and medium enterprises (SMEs), there are more than 1,200 steel re-rolling mills (SRRM). Nearly 75 percent of these are small-scale units. The SMEs engaged in steel re-rolling constitute an important link in the overall supply chain of steel: they contribute more than 57 percent of steel produced in the country.

But these mills have grown haphazardly, utilising technologies that are now outdated and have low investment and high production costs. The direct energy use in this sector includes fossil fuels (furnace oil, natural gas and coal) and electricity. The specific energy use ranges from 56 to 66 litres of furnace oil (or 226 to 269 kg of coal) and 165 to 192 kilowatt hour (kWh) of electricity to produce one tonne of steel. The direct energy cost in SME mills is estimated at 25-30 percent of the overall production cost.

The perceived barriers for adopting energy-efficient and environment-friendly technologies are information and knowledge barriers; combined with uncertainty on the part of a conservative but competitive business sector. A study of 90 units from six geographical clusters revealed that the sector has the potential to reduce 36 million tonnes of carbon dioxide emissions over a period of 20 years.

Response

The United Nations Development Programme (UNDP), along with the Steel Development Fund of the Ministry of Steel, Government of India, and the Global Environment Facility has initiated a project for increasing end-use energy efficiency of the SRRM sector and reducing associated emissions of greenhouse gases. The project enables the penetration of energy-efficient technologies by affirmative action to remove barriers, which would ultimately lead to large-scale commercialisation of energy-efficient technologies in the sector.

The SRRMs receive packages that consist of energy-efficient technology as well as technical assistance and training to utilise the same. Selected units will also receive financial assistance through partnership with the Small Industries Development Bank of India. The project helps counter investment risk. The endeavour is to provide technology packages in about 50 units and further replications in other units as well.

Impact

Nine different technology packages for the steel re-rolling mill units have been finalised. Technology packages have been implemented in about five re-rolling mills and another 25 have been identified where these packages can be rolled-out. To provide support and facilitate close interaction with these units, six local resident missions in key SRRM clusters have been set up. So far, 69 training programmes have been completed and over 1,000 personnel from SRRM units across the country have got training.

Awareness workshops are underway to facilitate sharing of knowledge and information among steel units throughout the country. Additionally, a visit to China was undertaken to locate suitable technology suppliers and relevant technologies for the SRRM sector in the country.