# Promoting cleaner technologies among SMEs and technology transfer: Experiences from India

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# Outline

- Background/context
- Genesis of the programme
- Objectives of the programme
- Approach
- Case study of technology transfer in one small-scale industry sector viz., foundry
- Key learning’s

# Background/context

- Small-scale industry (SSI) sector in India accounts for
  - One-third of total exports
  - Half of industrial output
  - 2nd largest employer after agriculture
- Salient features of the SSI sector
  - Inefficient resource use
  - Moderate to high pollution
  - Low level of awareness

# The genesis of programme

- SDC or the Swiss Agency for Development and Cooperation
  - Is part of the Swiss Federal Department of Foreign Affairs
  - In 1991, on Switzerland's 700th anniversary, the Swiss Parliament approved a special contribution to SDC to support developing countries to implement UN Conventions on global environment

- In 1994, SDC initiated an India programme in energy sector
  - Energy-intensive small-scale industries selected after a scoping exercise
  - A public-private partnership forged – SDC (international consultants) with Indian NGOs/research institutions

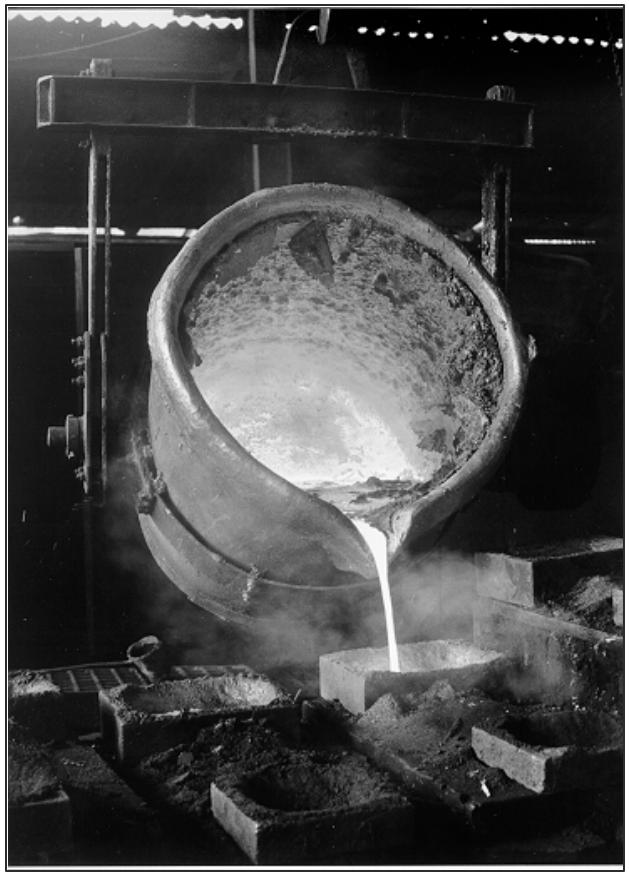
# Objectives of the programme among small-scale industries in India

- To address global environment concerns while meeting the immediate needs of the intervention sectors
- To achieve energy savings with consequent reduction in $CO_2$ emissions in selected small-scale industry sectors
  - foundry, glass, brick, efficient use of biomass

# Approach

- Identify areas to improve energy efficiency through energy process audits of processes (needs assessment)
- Develop energy efficient (EE) technological solutions in collaboration with
  - International experts (e.g. BCIRA, British Glass in glass sector)
  - Industry associations
  - Local experts
- Demonstrate the EE technology by unit-level demonstration/pilot projects
- Disseminate & mainstream the demonstrated technologies

# Example of technology transfer among small-scale foundry units



- Foundry is an important metallurgical industry
- No. of small-scale foundry units in India 6000 +
- Use conventional melting furnaces (cupolas)
- High energy (coke) consumption
- Large potential to reduce energy consumption/CO2 emissions through improvements in furnace design

# The technology transfer process

- Adaptation of the EE technology (divided blast cupola furnace) to local conditions
  - Size of plants
  - Local raw materials quality
  - Operating practices
- Technology demonstration & validation
  - Energy savings
  - Cost economics
- Long term capacity building (knowledge transfer) through continued partnership during initial replications
  - Indian NGO partner
  - Furnace fabricators
  - Furnace operators

# Results achieved in foundry intervention

- Energy savings in pilot plant 33%
- Capital cost of new plant $ 25,000
- Payback on investment 1.5 years
- No of replications in India 45 nos. + large number of self replications in past 8 years
- Cumulative energy savings 10,000 toe
- Cumulative $CO_2$ reduction 37,000 tonnes

# Key learning's

- Small-scale industries in developing countries offer enormous opportunities to reduce CO2 emissions at lower costs which cannot be addressed through existing financial mechanisms
- It is possible to reduce substantial quantities of anthropogenic emissions of CO2 through collaborative TT projects aimed at 'need based' and 'incremental' improvements
- Public (multilateral or bilateral) programmes on transfer of low carbon technologies must be long-term & should promote knowledge transfer, i.e., type C instead of traditional type A & B TT
- 'True' partnerships between industrialized & developing country organizations are a pre-requisite for development of indigenous knowledge & building local capacities to address climate change

# Thank you for your attention!

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