



“ IMPROVING THE EFFICIENCY OF ENERGY USE ”

THEME LEADS

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INTRODUCTION

Energy efficiency (EE) plays a key role in decoupling energy use and the resultant emissions from economic growth. About 80 per cent of the world's primary energy consumption continues to be fossil fuel based. Thus, reducing fossil fuel use in different end-use sectors through EE can play a key role in reducing emissions.

Moreover, unlike many other options, EE measures are generally "win-win" in terms of paying off over the life cycle of the alternative option. In many cases, low-cost options exist with fairly quick payback periods. However, in many other cases, there are barriers relating to technology, finance, and institutional that hinder faster uptake of EE. At the same time, studies also indicate that improvement in EE has a multiplier effect

on the economy. As per International Energy Agency (IEA) estimates, total investment in EE globally almost equalled the magnitude of supply-side investment in renewable or fossil-based electricity generation in 2011, indicating the relevance that countries are ascribing to EE across countries globally. In case of India as well, TERI estimates indicate that EE has the potential to save anywhere between 15–25 per cent of the energy use across different end-use sectors. Some of the key areas where EE can play a major role include the following:

- Industries including Small and Medium Enterprises (SMEs)
- Efficiency improvements on the supply side primarily in the coal-based power plants
- Reducing transmission and distribution losses, including introduction of smart grids
- House-hold appliances like air-conditioners, refrigerators, geysers, etc.
- Efficiency in transport sector including introducing energy standards for motorized vehicles
- Commercial and residential buildings
- Efficiency improvements in the agriculture pumping sector
- Municipal services like street lighting and pumping

Information Technology (IT) can be applied as an effective cross-cutting tool across different end-use sectors for enhancing EE.

KEY QUESTIONS

- Which are the three key sectors where scope for action towards enhancing EE is largest?
- What actions and timelines can we visualize to tap the EE potential in these areas?
- What steps could the private sector take and how much reduction can be committed in these sectors?

SUPPORT FROM EXISTING GOVERNMENT AND CORPORATE SECTOR INITIATIVES

The corporate sector in the country, especially some of the large industries as well as new large corporate/commercial buildings, has been making efforts to introduce latest technologies and processes—thereby helping in reducing its energy consumption. Bureau of Energy Efficiency (BEE) has also played a key role in promoting EE across various sectors under the overall mandate of the Energy Conservation Act. However, there are still areas and initiatives where more focus is needed to push the agenda of EE across all sectors. A few of the areas are as follows:

- Perform Achieve and Trade (PAT) scheme in India is a market-based mechanism to enhance cost effectiveness of improvements in EE in energy intensive large industries and facilities, through certification on energy savings that could be traded. Seven industrial sub-sectors namely aluminium, cement, chlor-alkali, fertilizers, iron and steel, pulp and paper, and textile industries along with thermal power plants have been included under PAT programme with an aim to save 6.6 million tonnes of oil equivalent (mtoe) by 2014–15 (Press Information Bureau, Government of India 2012) from the identified industries. There are around 480 such large consumers of energy (termed Designated Consumers), which have been targeted in this first phase of the PAT cycle. The scheme has been working well in the first phase; the achievements and learning would help in further deepening and widening of the PAT scheme in the subsequent years.
- There is a need for SME focused programmes and schemes for improving EE in the SME sector. Large industries can work with SMEs in their supply chain and support them in introducing EE concepts in their plant operations.
- In case of the power generation sector, efficiency improvements of coal-based power plants by moving to “supercritical technology” would reduce coal requirements and emissions.
- On the T&D front, India has high losses which again are important to address. Electric utilities can play a major role in promoting EE through focused Demand Side Management (DSM) Programmes. Decentralized generation can also help rein in the level of such losses apart from providing access to remote areas.
- The buildings and appliances have significant scope for efficiency improvements. While promoting EE appliances, it is also important to find strategies to phase out inefficient appliances and equipment. Making Energy Conservation Building Code (ECBC) code mandatory and pushing for Green buildings in residential and commercial sectors can play a key role. Similarly, significant scope exists in various municipal services such as street lighting and water pumping.

- Efficiency in transport: Fleet efficiency needs to improve as well as shift to public transport can enhance efficiency of the sector.
- Rational pricing: Need to improve EE in the agriculture sector with rationalization of energy prices.

KEY CHALLENGES

The challenges to faster uptake of EE technologies and practices differ from sector to sector. Broadly, they can put under the following five heads:

- Financial (e.g., high upfront cost of efficient technologies, high interest costs, etc.)
- Technical (e.g., non-availability of customized localized solutions, sub-optimal indigenous R&D efforts and access to state-of-the-art technologies from developed countries)
- Institutional (e.g., implementing ECBC at local levels, bad financial health of electric utilities, monitoring and verification, etc.)
- Rational energy pricing (e.g., low electricity pricing in agriculture sector).
- Non-availability of skilled manpower across all levels.

INPUTS ON THE NAMES OF COMPANIES FOR DELIBERATION ON THE RESPECTIVE THEMES

This is a very broad theme covering all sectors. Some of the expected companies for the deliberation include ABB, ACC, Adani Power, Aditya Birla Group (Hindalco), Danfoss, GAIL, IFFCO, Ingersoll Rand, J K Paper, Johnson Control, NFL, NTPC, SAIL, Schneider Electric, Tata Power, Tata Steel, and United Technologies Corporation.