Energy Efficiency and Behaviour in India

Regulatory Framework for energy efficiency in India

The **Energy Conservation (EC) Act 2001 provides the legal framework for promoting energy conservation and energy efficiency activities which include**:

- Standards and Labels for appliances & equipment
- Energy Conservation Building Code (ECBC) for commercial buildings.
- Energy Consumption norms for energy intensive industries
- Demand Side Management (DSM) programme for existing building, streetlights, agricultural pumping and SMEs.
- Certification of Energy Auditors and Managers

Energy Conservation Act was amended in 2010 on the recommendations of the Committee on Sub-ordinate Legislation

Standards & Labeling of Appliances

Goal : Market transformation towards energy efficient appliances

Approach : Voluntary regime → Mandatory regime, Progressive tightening of regulations.

Present Status :

➢ Standards and labeling – 16 appliances – 4 mandatory – tubular fluorescent lamp, room air conditioner, frost free refrigerator, distribution transformers .

- Average efficiency increases:

	2007	2013
Air - conditioner (EER)*	***2.3***	***3***
Refrigerator (kWh/l/year)#	***1.93***	***1.28***

➢ Avoided power generation of 8558 MW till 2013 :

- 11th Plan: Achieved avoided power generation of 7766 MW
- 12th Plan: Achieved avoided power generation of 792 MW in the first 2 years of 12th Plan

* EER – Energy Efficiency Ratio

#(kWh/l/yr) - units per litre per year

Energy Conservation in Buildings

Goal : Reduction in intensity of energy use in commercial buildings

Approach : Integration of Energy Conservation Building Code (ECBC) in state/municipal bye-laws for construction of new commercial buildings, and retrofits in existing buildings

Present Status :

➢ Enabling framework to support wide scale implementation of ECBC

- Training of architects
- Demonstration projects

➢ 8 states have notified ECBC, 15 are in process and remaining are in initial stages.

- Model building bye-laws incorporating energy efficiency parameters developed
- ECBC harmonized with NBC.
- Capacity building in states through creation of ECBC cells initiated.

➢ Guidelines to facilitate energy efficiency upgrades in public buildings developed.

Demand Side Management : Lighting

Goal : Facilitate market transformation towards energy efficient lighting

- Lighting sector accounts for about 20% of the total electricity consumption in India.
- Estimated 30 million street lights in the country can annually save 5 billion KWh (2000 MW) and cost savings of USD 500 million to Municipalities and Urban Local Bodies.
- Estimated 770 million incandescent bulbs for household replaced by LEDs, would yeild annual savings of 25 billion KWh (20,000 MW) .

Approach : Business model based on initial investment by EESL, and monthly repayments by utilities

Present Status :

- Project pipelines for 100 cities for domestic energy-efficient lighting, and 100 cities for street lighting
- Bulk procurement of LED bulbs by EESL has led to price reduction of 7W LED bulb from about USD 7 per bulb in 2013 to USD 3 per bulb

Hon'ble Prime Minister launched LED based efficient lighting for households and street lights on 5th January 2015

Energy efficiency in street lighting

- EESL identified 9 states for street lighting projects till date.
- Replacement of old inefficient street lights by LED based efficient street lighting system
- Estimated reduction of 1400 MW avoided capacity by these projects
- Estimated energy savings of 5000 MUs
- Target for LED street light replacements:
  - 6 million street lights in 8 municipalities in 2015.
  - 15 million streetlights in 100 cities in 2016.
  - 30 million streetlights in 2017-2020 period.

80,000 LED street lights installed in Vishakhapatnam within 6 weeks after Hud-Hud cyclone

Energy efficiency in Home lighting

Domestic Efficient Lighting Programme (DELP) taken up in Puducherry, Delhi

- 2 LED bulbs provided to each household at the cost of incandescent bulb
- Additional costs recovered through energy savings from utility bills
- Bulk procurement of LED bulbs under DELP led to cost reduction from USD 7 to USD 3.
- Replacement of 770 million incandescent bulbs will save 20,000 MW.

- **Target for LED bulb replacement is:**
  - 30 million for 2015
  - 150 million for 2016
  - 500 million for 2017-2020 period.

Energy Conservation in Industry

Goal : **Improvement of energy efficiency in energy intensive industry**

Approach : **NMEEE (one of the 8 missions under the NAPCC)** mandates reduction in specific energy consumption (SEC) of Designated Consumers through Perform, Achieve & Trade (PAT) scheme by 5% in 2014-15 over 2010.

Cluster-specific energy-efficiency promotion in SMEs.

Present Status :

- 478 units in 8 sectors; each assigned a target specific energy consumption to be achieved in 2014-15
- National Target : 6.686 million tonnes of oil equivalent (mtoe) in 1st PAT Cycle (by 2014-15)
  - Achievement > Target ESCerts to be issued which can be traded.
  - Achievement < Target Purchase of ESCerts / Penalty to be paid
- Next cycle to include more sectors, and would also include more units in existing sectors
- Develop cluster specific energy efficiency manuals, Detailed Project Reports (DPRs) on energy efficient technologies, capacity building & knowledge enhancement of manpower in SMEs.

Outreach

- **National Energy Conservation Awards:**

  Recognizing improvements in energy efficiency in industries, buildings, appliances since 1999.

- **National children's Painting competition on energy Conservation:**

  Children of classes 4 to 7 in schools across the country participate to illustrate their ideas on energy conservation since 2005.

- **Advertisements on electronic and print media to promote information about BEE energy star labels.**

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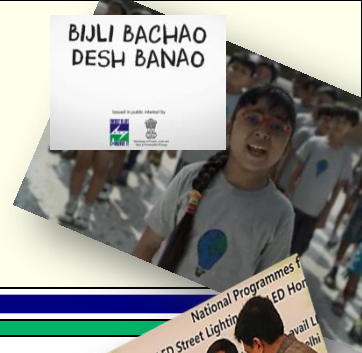
New Outreach initiatives



➢Launch of efficient household lighting program by Hon'ble Prime Minister on 5 January 2015

➢ Weekly 15 minute Radio programme highlighting benefits of star labelling and energy efficiency portfolio for consumers

➢ TV advertisements advocating day-to-day energy conservation practices in workplaces, schools and households

➢ Hon'ble Minister of State (I/C) for Power, Coal and New & Renewable Energy launched the following at the National Energy Conservation Day, 14 December 2014:

- Energy Savers Portal for schools.
- Consumer awareness campaign for energy efficiency
- Interactive session with students from schools across the country through video conference

➢Print media advertisements on energy efficiency and conservation.

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Thank You