



Energy Efficiency S &L Policy in India – current situation and challenges

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Outline

- Energy scenario in India
- National Action Plan on Climate Change-
 - National Mission on Enhanced Energy Efficiency
- India S & L Program
 - Current situation and challenges

Energy scenario in India

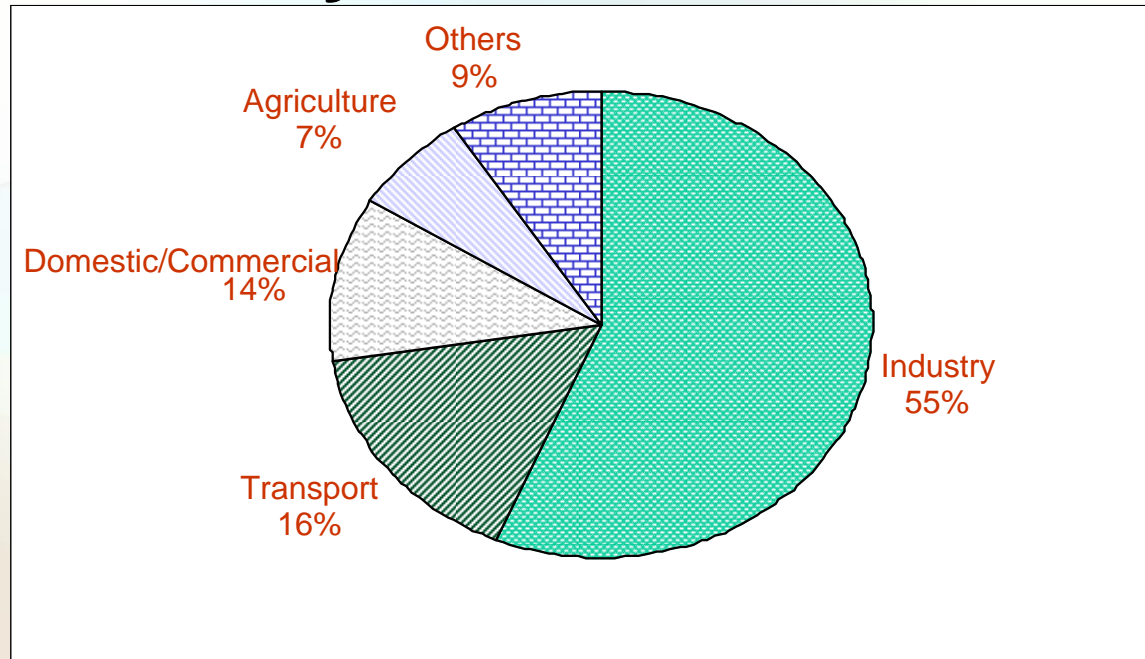


Energy Scenario - India

- India – fifth in the world in terms of primary energy consumption
 - Energy demand grew at an average 6% per year in the last 25 years
- Commercial energy supply: 418 mtoe (2007/08)
 - Coal (50%), Oil (37%), NG (9.5%), Hydro(2.5%), Nuclear(0.5%), Renewable (0.5%)
- Annual per capita energy consumption (2007)
 - 530 kgoe (world average: - 1820 kgoe)



Share of commercial energy use by different sectors



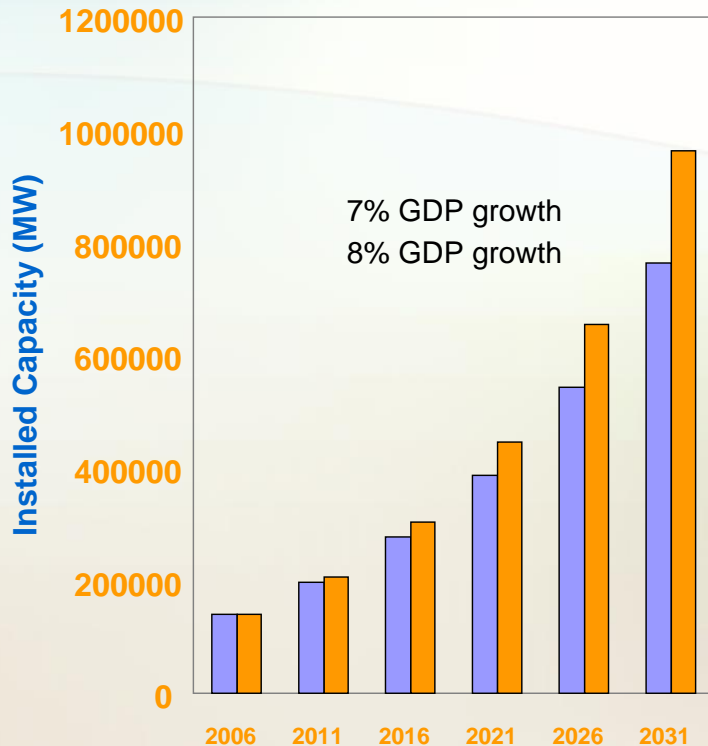
- 7 large industrial sectors account for 60% energy consumption
- Large number of energy-intensive SMEs where energy is used inefficiently



Projected demand for electricity

- 5-6 times increase in installed capacity over 25 years
- Investments in electricity generation to the tune of US \$ 600-800 billion

Need to focus on DSM and energy efficiency in various sectors of economy



National Action Plan on Climate Change (NAPCC)

Launched by PM of India in June 2008



Missions under NAPCC

- Eight National Missions established
 - Solar
 - Enhanced Energy Efficiency
 - Sustainable Habitat
 - Water
 - Sustaining the Himalayan Ecosystem
 - Green India
 - Sustainable Agriculture
 - Strategic Knowledge for Climate Change



National Mission for Enhanced Energy Efficiency

- Enhancing cost effectiveness of improvements in energy efficiency in energy-intensive large industries and facilities, through certification of energy savings that could be traded (PAT Scheme)
- Accelerating the shift to energy efficient appliances in designated sectors through innovative measures to make them affordable (Star labeling)
- Creation of mechanisms that would help finance demand side management programmes in all sectors by capturing future energy savings (ESCOs)
- Developing fiscal instruments to promote energy efficiency

NMEEE approved by Government in June, 2010



Mission Goals

- Market-based approaches to unlock energy efficiency opportunities:
 - estimated to be about USD 18 billion
- By 2014-15:
 - Annual fuel savings in excess of 23 million toe
 - Cumulative avoided electricity capacity addition of 19,000 MW
 - CO₂ emission mitigation of 98 million tons per year

Source: BEE



Standards and Labeling Program

- Launched in 2006 by Bureau of Energy Efficiency (BEE)
- Started for household refrigerators (frost-free), florescent tube lights (4'), room air conditioners, distribution transformers (now mandatory for these equipment)
- Other equipment in voluntary phase
 - Direct cool refrigerators, motors, agricultural pumps, CTVs, Electric geysers, domestic gas stoves, ceiling fans, washing machines, computers



Future - Equipments / appliances for S&L Programme

<h3>Home Appliances</h3> <ul style="list-style-type: none">✓ Electronic Ballast✓ Computer Monitors✓ Consumer Electronics<ul style="list-style-type: none">✓ Computers✓ Set-top boxes✓ Mixers, table fans etc	<h3>Other Appliances</h3> <ul style="list-style-type: none">✓ Invertors & Batteries✓ Voltage Stabilizers✓ Uninterrupted Power Supply (UPS)✓ External Power Supplies (EPS)✓ Battery Chargers (BCs)✓ Standby Power equipments<ul style="list-style-type: none">✓ Mobile Chargers
<h3>Industrial Equipments</h3> <ul style="list-style-type: none">✓ Industrial Fans & Blowers✓ Diesel Generating sets✓ Boilers✓ Compressors✓ Diesel pump sets	<h3>Refrigerator & AC Systems</h3> <ul style="list-style-type: none">✓ Adaptive Defrost✓ Commercial Freezers✓ Visi Coolers✓ Chocolate Coolers✓ Chest Coolers✓ Heat Pumps✓ Multi Split Systems✓ Multi-door Refrigerators

Source: BEE



Institutional frame work for S & L regulation

- **BIS – National Standards Body**
 - Formulation & Implementation of National Standards
 - Production certification, Quality system certification, EMS certification etc.
- **Bureau of Energy Efficiency (BEE)**
 - BEE is established to implement & monitor the Energy Conservation Act, 2001
 - One of the key thrust areas of EC Act, 2001 is Standards & Labeling Programme
 - Formulation of Energy Efficiency Standards.
- **Laboratories accredited by National Accreditation Board of Laboratories**
- **Educational Institutions.**
- **Manufacturers and Manufacturing Associations**
- **Consumer Organizations**
- **Ministries and key stakeholders.**



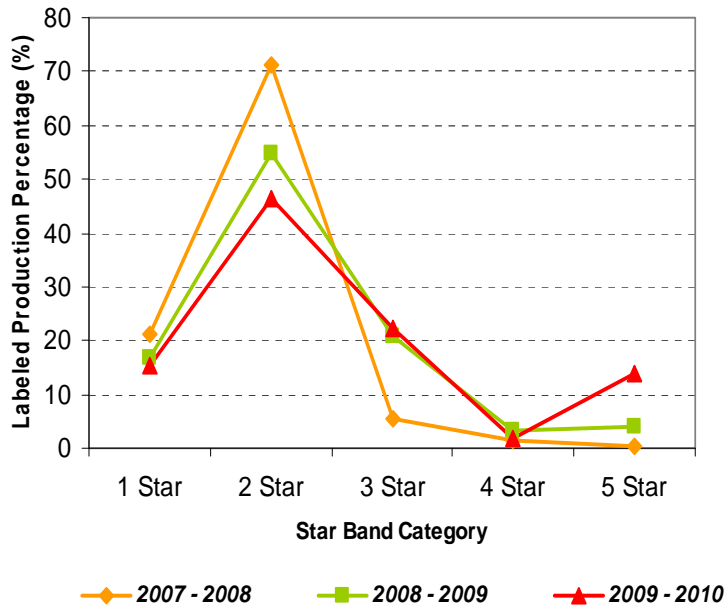
Models and Manufacturers

- Number of models approved by BEE till June 2011: approx. 11000
 - Agricultural pumps sets ~ 5500
 - Transformers ~ 1000
 - AC ~ 2000
 - Frost free refrigerators ~ 700
 - Color Televisions ~ 300
- Number of manufacturers :
 - Maximum for distribution transformers (~ 200), pump sets (~100), electric water heaters (~ 50)

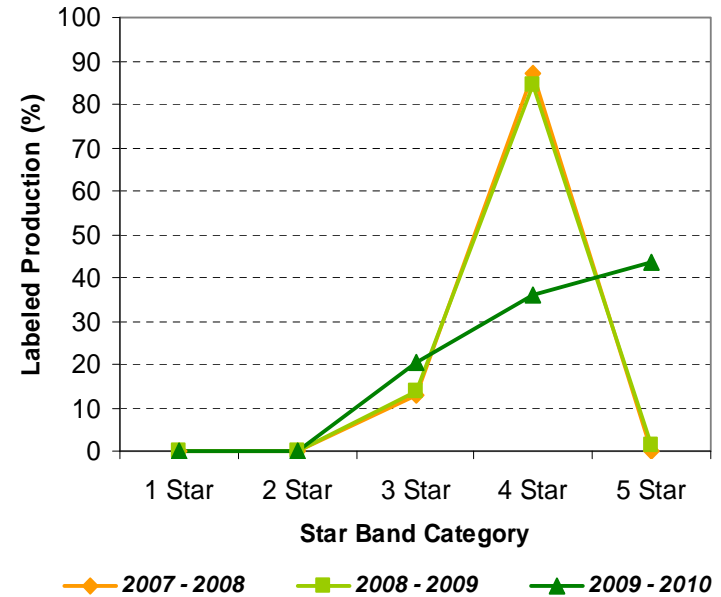


Impact of SLP in overcoming market barriers

Market Transformation in ACs

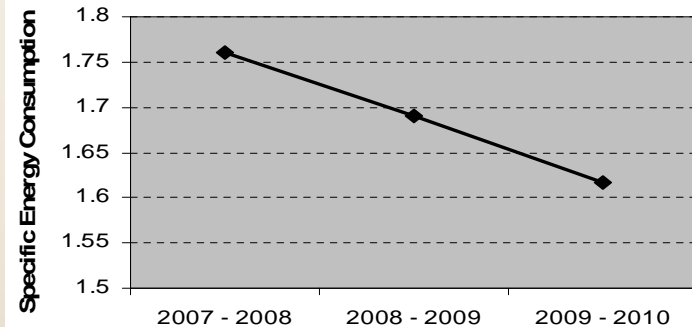


Market Transformation in Refrigerators



Period	Weighted Avg. EER
07 - 08	2.61
08 - 09	▲ 2.66
09 - 10	▲ 2.72

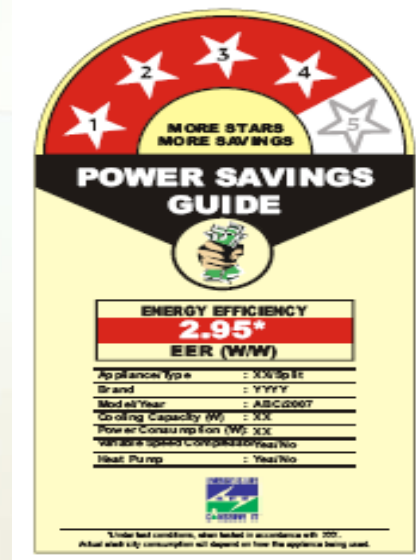
Source: BEE





Example 1 : Air Conditioners

Star Rating	Energy efficiency ratio (Watts/Watts)	
	Min	Max
1 Star *	2.7	2.9
2 Star **	2.9	3.1
3 Star ***	3.1	3.3
4 Star ****	3.3	3.5
5 Star *****	3.5	-



- Being implemented by BEE, Government of India
- Started as a voluntary labeling program, mandatory for A/C and refrigerators since 2010
- Up to 11 kW (3 TR) rated cooling capacity of room A/Cs considered



Example 2: Agricultural pumps sets

- Voluntary scheme
- Applicable for 3 phase pumps between
(1.1 kW) 1.5 HP to
(15 kW) 20 HP

Number of Stars	Energy efficiency above BIS norm
1	upto 5% higher
2	5 – 10 % higher
3	10 – 15 % higher
4	15 – 20 % higher
5	20 – 25 % higher





Issues and Challenges

- High price of efficient products
 - Need for fiscal incentives
 - Expanding market through public procurement
- Manufacturing of efficient products and appliances
 - Technology development and innovation
 - Capacity of manufacturers to absorb new technologies
 - Major issue for SMEs (e.g. pump manufacturing industry, transformers ..)
 - Focus on R, D and D at regional level
 - Triple helix models involving industry, academia and government
- Limited number of national testing laboratories for various appliances/equipment
 - Only six labs and testing few products each



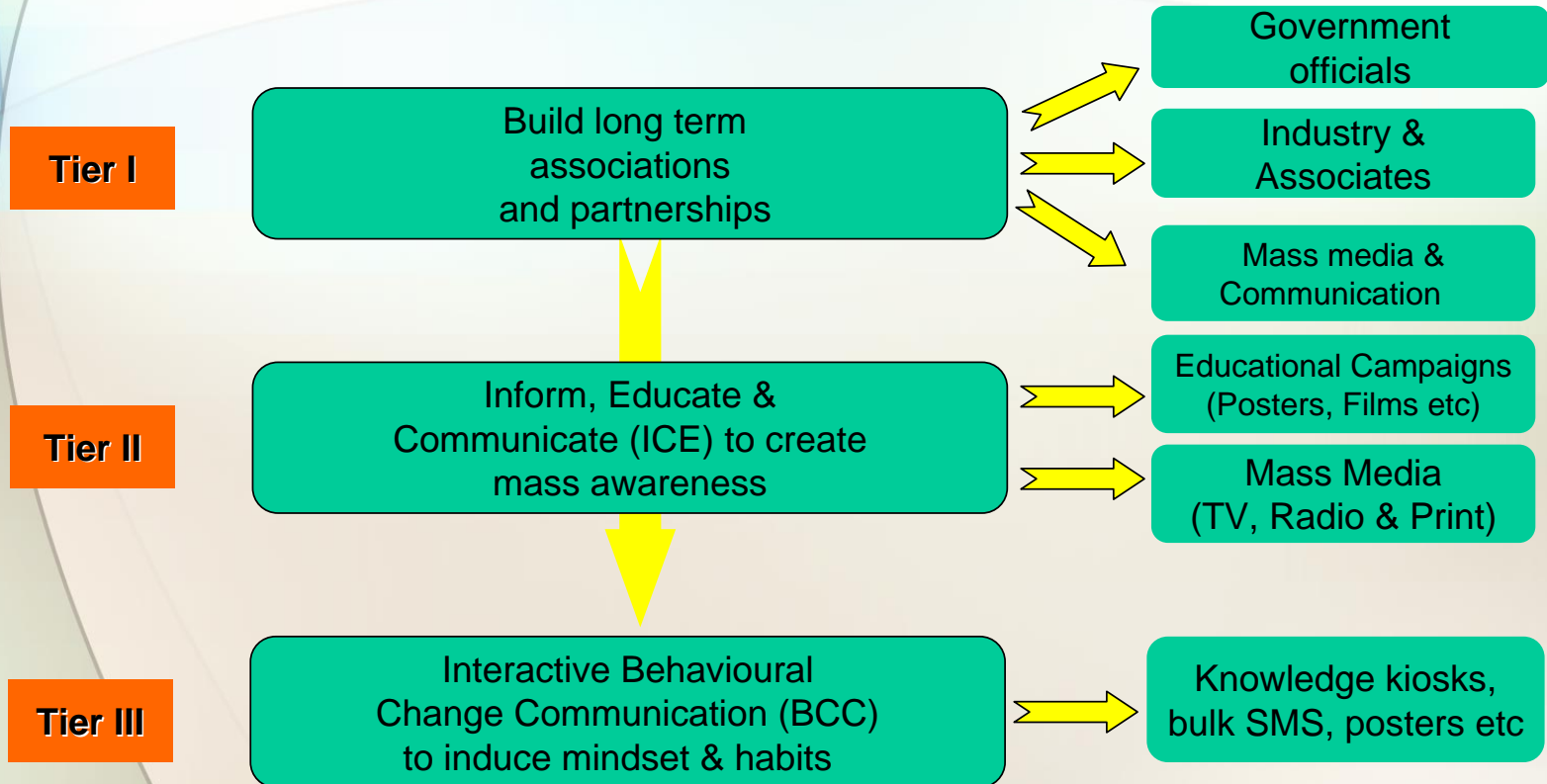
Issues and Challenges ...contd

- Need to increase the number of products under mandatory labeling and adding more products
- Minimum energy efficiency standards – tightening the standards
- Super Efficient Equipment Program of BEE (e.g. Ceiling fans)
- Increasing level of awareness
 - Recent survey on consumer behavior towards energy efficient appliances shows that 43 % of respondents consider energy efficiency as an important criteria while purchasing
 - Varies across appliances/equipment, rural vs urban, regional imbalances, income levels, etc
 - Need to continue focus on mass awareness and developing long term strategies to influence consumer behavior



Mass awareness and outreach strategy

- Need for a 3 tier long term approach



Thank you !

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