

ENERGY EFFICIENCY S & L POLICY DEVELOPMENT IN INDIA – CURRENT SITUATION AND CHALLENGES

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Outline

1 Background

2 Standard & Labeling Program in India

- a) Regulatory and Institutional Structure
- b) Existing products in S & L Program – current situation

3 Examples from TERI studies on S & L

- a) Agricultural pump sets study
- b) Promoting energy efficient appliances

4 Issues and challenges

BACKGROUND: SECTORAL ENERGY CONSUMPTION AND TRENDS

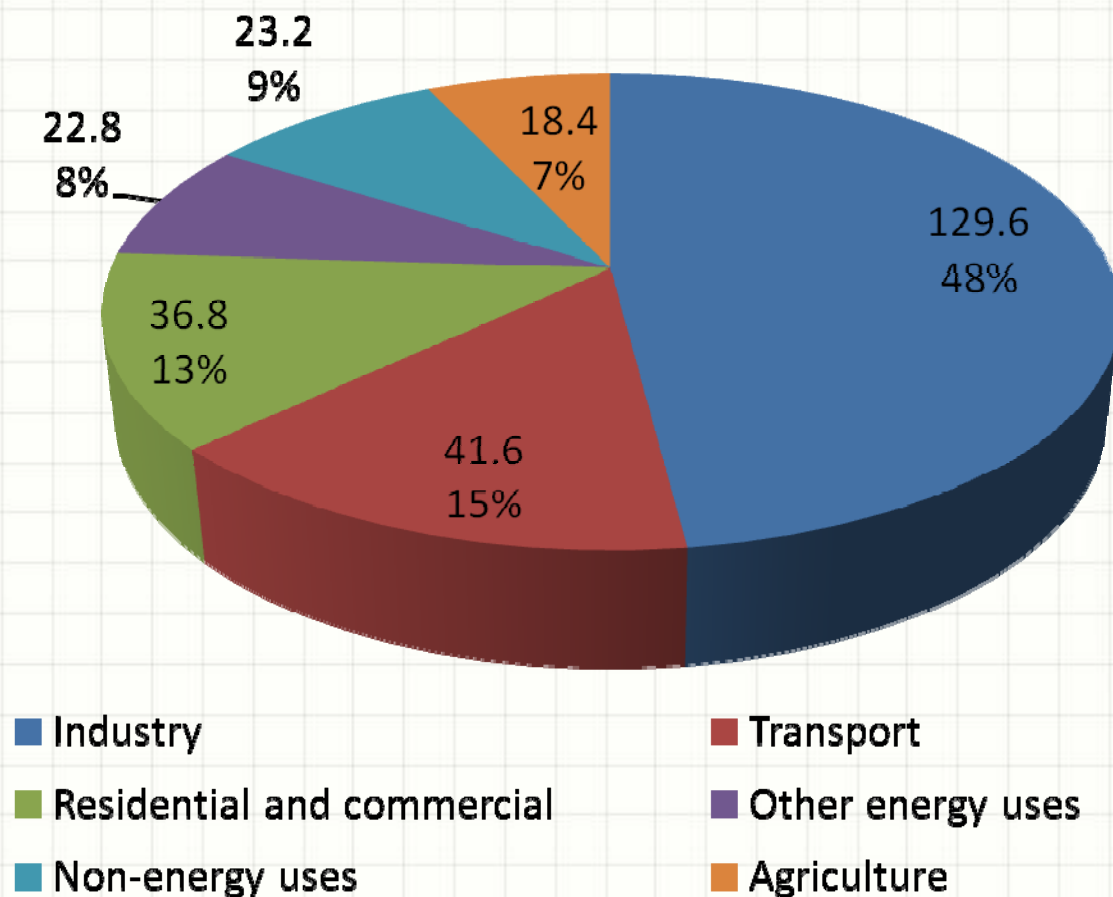
Energy scenario – India

- India- fourth 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 : 485 mtoe (2008/2009)
 - Coal (51%), Oil (39%), NG (9%), Hydro (2.4%), Nuclear (0.3%), Renewable (0.6%)
- Annual per capita energy consumption (2009)
 - 585 kgoe (world average: - 1802 kgoe)

Source- TEDDY 2011/12, World Bank 2011



Sector-wise energy consumption in India



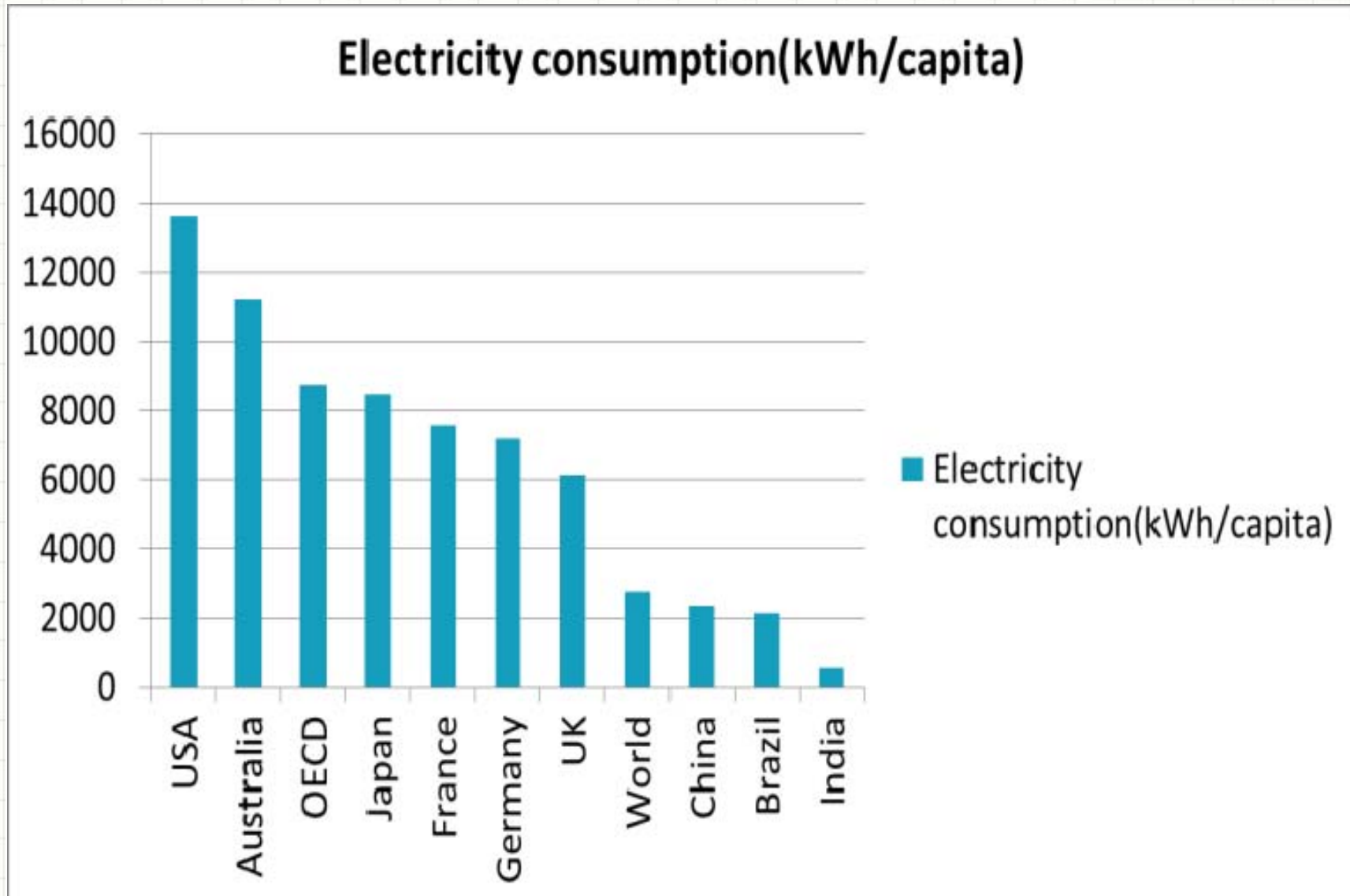
Unit : mtoe , Source: TEDDY 2010

Electrical Energy Consumption and Conservation Potential

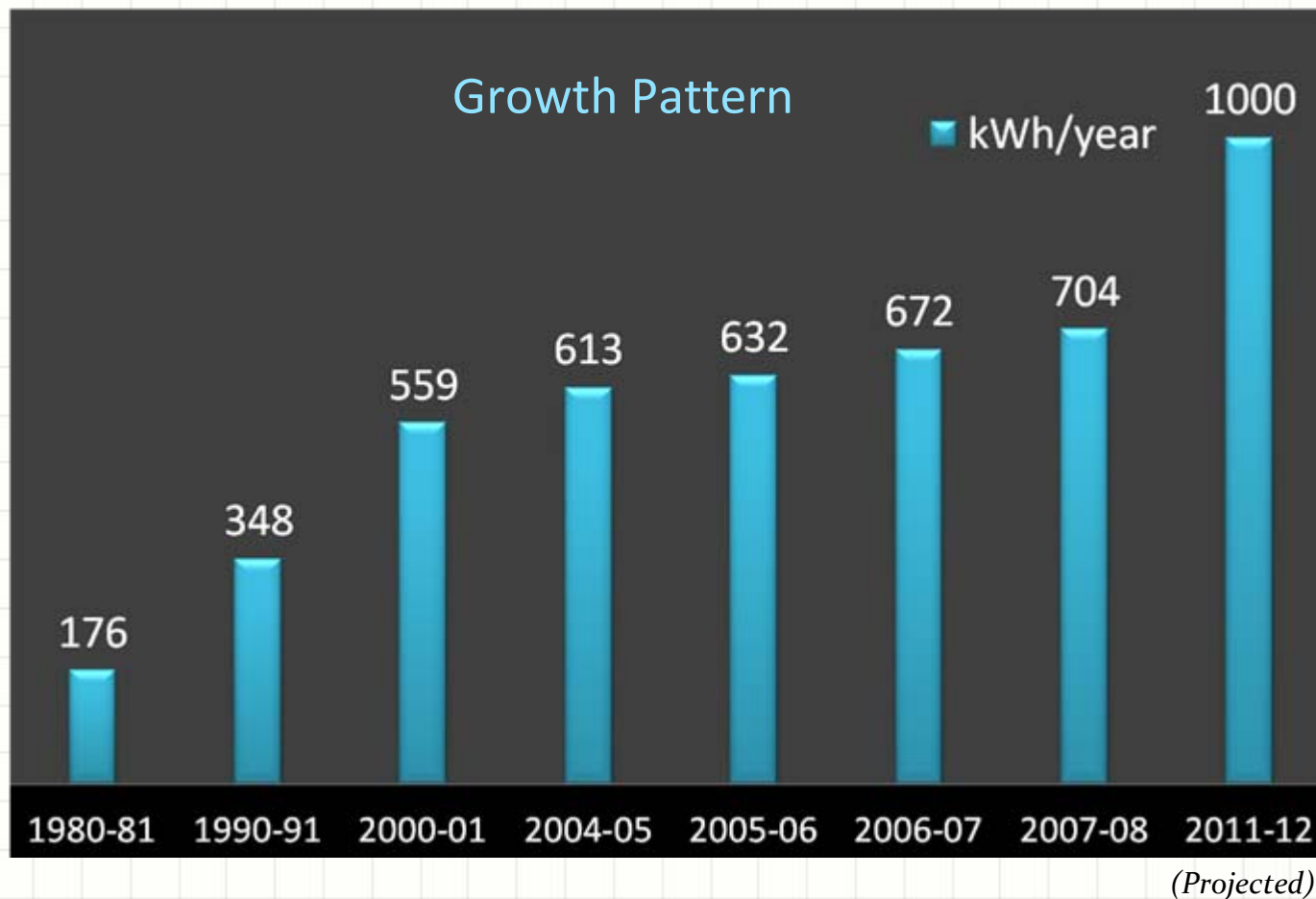
Sector	Consumption (Billion KWh)	Saving Potential (Billion KWh)	% Savings
Agriculture Pumping	92.33	27.79	30.09
Commercial Buildings/ Establishments with connected load > 500 KW	9.92	1.98	19.95
Municipalities	12.45	2.88	23.13
Domestic	120.92	24.16	19.98
Industry (Including SMEs)	265.38	18.57	6.99
Total	501.00	75.36	15.04

Source: BEE/ NPC Study 2009

Per capita consumption is very low



Per capita consumption is growing



As per UN Methodology (Gross Electrical Energy Availability/Population)

STANDARDS AND LABELING PROGRAM

Regulatory and institutional structure

- Energy Conservation Act 2001
- Key Nodal Agency – Bureau of Energy Efficiency
- State Designated Agencies at the state level created for implementation of the Act
- Act has the powers to
 - Set minimum energy standards for, and affixing energy – consumption labels on appliances and equipment
 - Prohibit manufacture or sale or import of equipment and appliances that do not meet standards
 - Ensure display of energy performance labels on equipment and appliances

Institutional structure – other important stakeholders

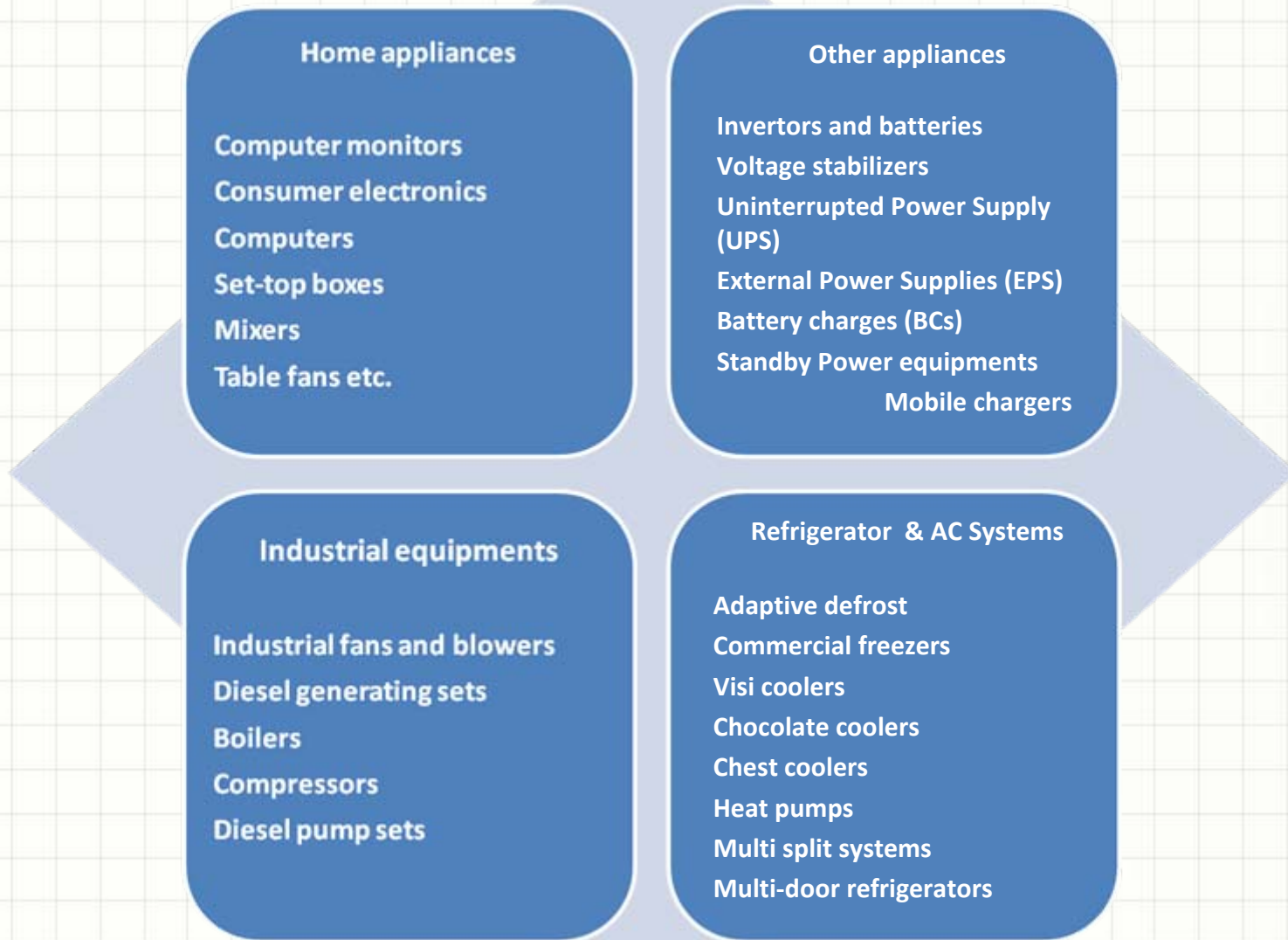
- BIS – National Standards Body
 - Formulation and Implementation of National Standards
 - Production certification, Quality system certification, EMS certification etc.
- Laboratories accredited by National Accreditation Board of Laboratories
- Educational institutions
- Manufacturers and manufacturing associations
- Consumer organizations
- Ministries and departments


Existing products covered in S&L Program

– Current situation

- 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 pump sets, CTVs, Electric geysers, celling fans, washing machines, computers, electronic ballasts

Future – equipment/appliances for S&L programme





TERI STUDY 1

PROMOTING ENERGY EFFICIENCY IN PUMP INDUSTRY IN INDIA

Pump industry in India

- *Production ~ 4.5 million pumps/year*
- *Use of submersible pumps in agriculture sector is growing sharply*
- *Agriculture sector is the third largest consumer of electricity (~ 21% of electricity sold)*
- **Others sectors: Industry, Domestic and Municipalities (large sized pumps)**
- **Industry characteristics:**
 - Large number of small & medium sized industries (~2000)
 - Very few large established players
- **Energy saving in pumping is of great national importance**

BEE Star Labeling for pump 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	up to 5% higher
2	5 – 10 % higher
3	10 – 15 % higher
4	15 – 20 % higher
5	20 – 25 % higher

Barriers to promoting EE pump sets

- Power to agriculture sector is free or highly subsidized
 - No incentive to end user to install efficient pumps
- Present public procurements schemes do not consider operating costs/LCA
- Limited capacities of SMEs to manufacture efficient pumps
- Existing BIS certification inadequate both in terms of standards and testing
- No incentive in BEE labeling program for higher efficient pumps (25% and above)
- Poor field installation practices

Recommendations of TERI Study

- Encourage manufacture of EE pumps by suitable public procurement schemes
 - Promotion of Agricultural DSM programs by electricity utilities
- Encourage establishment of innovation centers at cluster level to design, develop and promote efficient designs.
 - Technology transfer and RDD&D programs to promote manufacture of efficient designs
- Review BIS and BEE standards to make them more stringent
 - International comparisons will be extremely useful
- Increase testing laboratories
- Educate consumers (especially farmers) on selection and installation of pumps



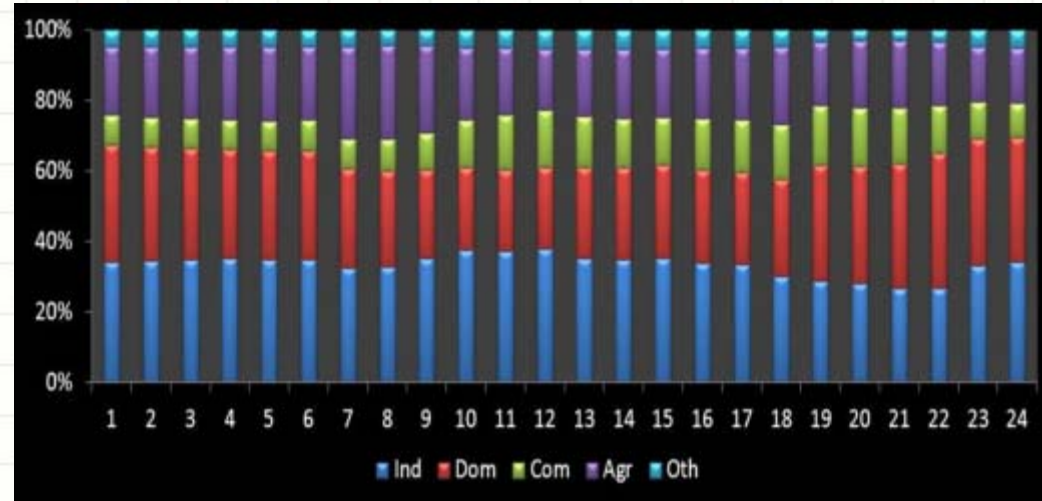
TERI STUDY 2

PILOT PROJECT ON PROMOTION OF ENERGY EFFICIENT APPLIANCES IN CHENNAI

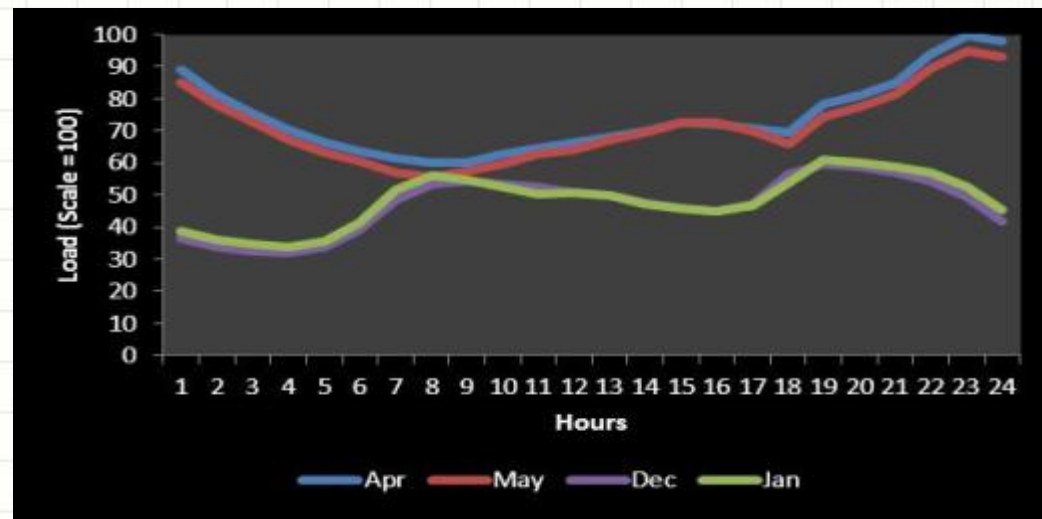
Key findings of TERI study

- Domestic category has maximum share during peak hours in summers
- Pattern of load curve in Chennai different from other cities in Tamil Nadu
 - Chennai: During summers, sharp rise in load and demand peaks around late evening hours (22:00 hours)
 - Attributed to high level of urbanization in Chennai as compared to other cities in Tamil Nadu
 - Chennai has the deepest penetration for key domestic appliances (AC, Fan and refrigerator)

Share in load of different consumer categories (Apr-May,10)

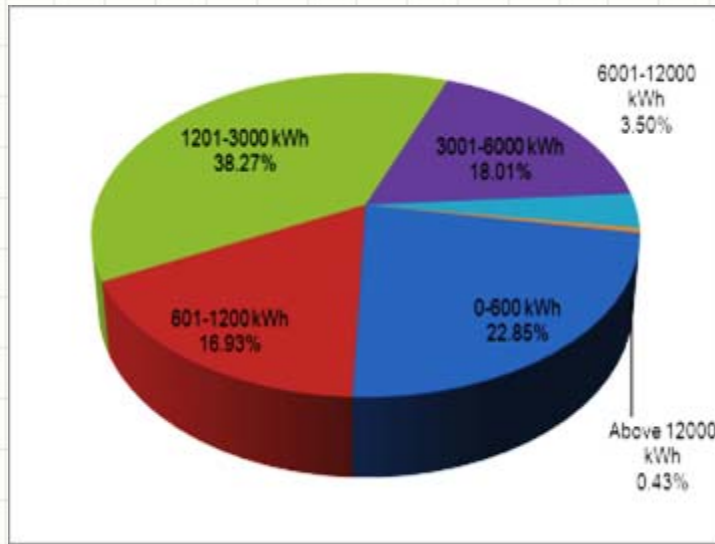


Chennai load curve

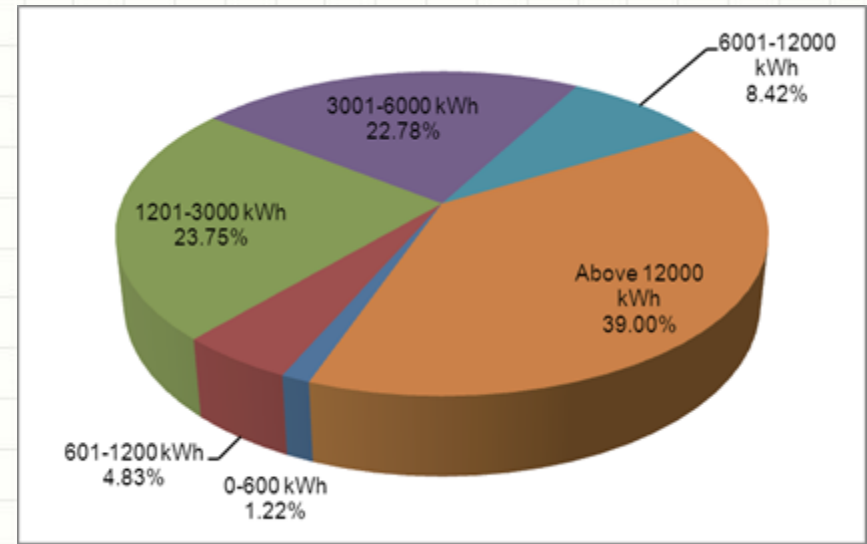


Consumption profile of domestic consumers in Chennai

Slab-wise % of consumers – FY 2011-12



Slab-wise % consumption – FY 2011-12



- 4 % of domestic consumers consume 47 % of total electricity consumption in domestic sector
- Of total 2.3 million domestic consumers, 92000 consumers accounts for 47% of energy consumption (>500 units/month)

Pilot survey of consumers in Chennai

Key findings – Air Conditioners

High penetration of star rated 3 star ACs (34%)

Average usage of ACs during peak is 2.9 hrs.

65% of respondents purchased AC on EMI basis

Major barriers to penetration of 5 star AC includes high initial cost

19% of respondents (with AC) are willing to replace their AC in a scheme

Present status

- TERI working with the state electricity utility to design a pilot scheme for promoting energy efficient AC and refrigerators in Chennai
- Need to closely involve the state regulator, DISCOM, manufacturers of efficient appliances and consumer organizations in developing an acceptable program for accelerated adoption of star rated appliance
- Based on pilot survey and collected data, huge potential to save electricity through market transformation towards higher star rated appliances:
 - Equivalent to reduction of 20-30 MW load
 - Estimated financial savings: 4-6 million USD (in Chennai alone)

Issues and challenges

- High price of efficient products
 - Need for fiscal incentives
 - Expanding market through public procurement
 - Developing acceptable schemes involving DISCOMs and regulators for promoting efficient appliances
- Manufacturing of efficient products and appliances
 - Support technology development and innovation
 - Capacity of manufacturers to absorb new technologies
 - Major issue for SMEs (e.g. pump manufacturers, transformers...)
- Minimum energy efficiency standards – tightening the standards
 - Need for undertaking international comparisons on energy standards for different products
- International experience sharing on DSM options to design and promote implementation of S&L programs
- Raising level of awareness amongst consumers

THANK YOU FOR YOUR ATTENTION

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