

Implementation of Energy Conservation Act and BEE Action Plan

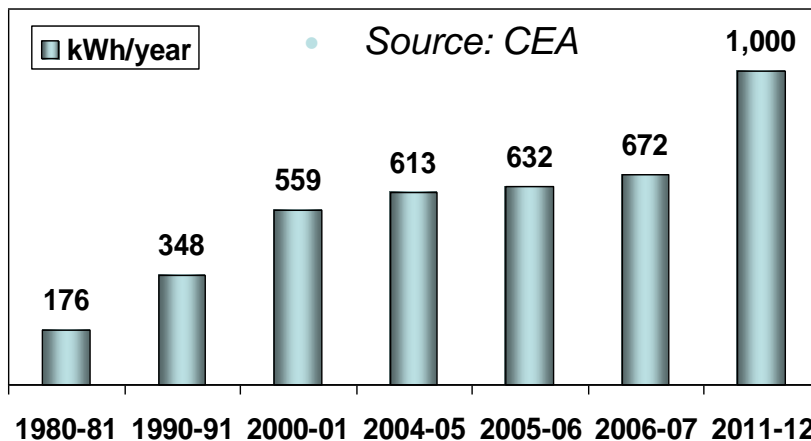


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Energy Use in India

- Total primary energy supply of India has increased from about 350 Mtoe in 1990 to about 580 Mtoe in 2004; an increase of about 2.2% per year
- Energy demand is increasing due to accelerated industrialization, urbanization and population growth
 - 2003-04 : 572 Mtoe
 - 2016-17 : 842-916 Mtoe
 - 2026-27 : 1406-1561 Mtoe
- With installed capacity of over 143 GW and annual generation of over 700 Bus; INDIA ranks sixth largest electricity market.
- With per capita consumption of 672 kWh against world average of 2600 kWh; INDIA ranks much lower than other developed countries

Per Capita Consumption of India

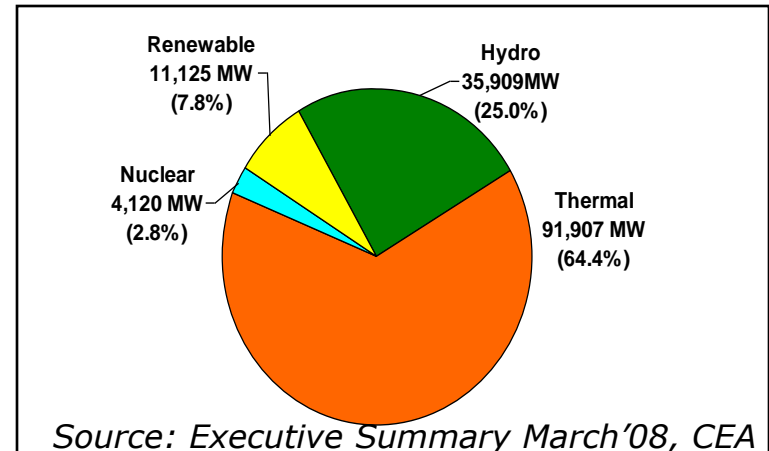


(Coal + Lignite – 76,049 MW,

Gas – 14,656 MW,

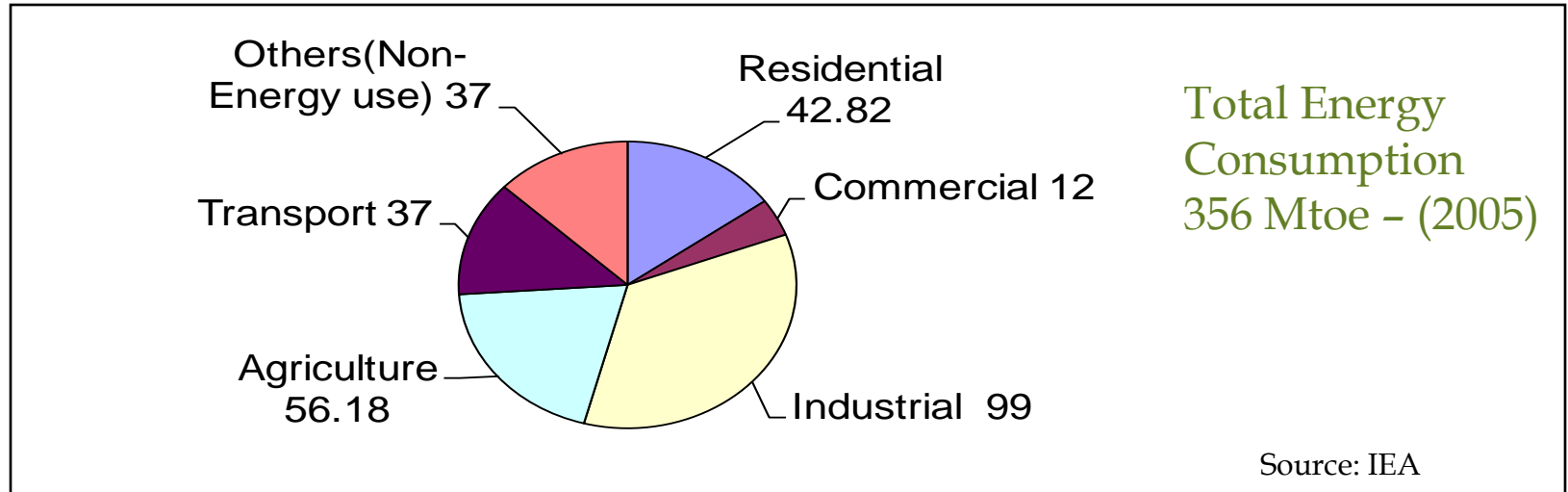
Diesel – 1,202 MW)

Generation Capacity of India Mar'08



Sectoral Energy Consumption

Sectoral Energy Consumption



Saving Potential in different Sectors

Sectoral Intervention	Potential Energy Savings
Agriculture	60 b KWh
Municipalities	3.7 b KWh
Buildings	3.52 b KWh
Industry	98 b KWh
Lighting	70 b KWh

Source: BEE

IMPORTANCE OF ENERGY CONSERVATION

- Energy efficiency/conservation measures can reduce peak and average demand.
-
- One unit saved avoids 2.5 to 3 times of fresh capacity.
- Also avoids investment in fuel, mining, transportation etc.
- Keeping the above factors in view and also to provide a policy guidance, Government of India enacted the Energy Conservation Act,2001

BEE - Scope of Activities

- The Bureau of Energy Efficiency (BEE) was established on 1st March 2002, under the Energy Conservation (EC) Act, 2001.
- BEE is responsible for spearheading the improvement of energy efficiency in the economy through various regulatory and promotional instruments
 - Plan, manage and implement provisions the EC Act
 - Appliance standards and labeling
 - Industrial energy benchmarks
 - Energy Conservation Building Codes
 - Monitor energy use in high energy-consumption units
 - Certify and accredit energy auditors and energy managers
 - Provide a policy framework and direction to national energy conservation activities
 - Disseminate information and knowledge, and facilitate pilot and demonstration projects
 - Take necessary measures to create awareness and disseminate information for efficient use of energy and its conservation.
 - Establish EE delivery systems through Public-Private Partnerships (PPP).

Designated Consumers

The central government, in consultation with the BEE, having regard to energy consumed, has specified industries in 9 sectors consuming energy above a certain threshold designated consumers

Among 15 Energy Intensive Industries, 9 industries have been notified as Energy Intensive Industries as specified in the Schedule to the Energy Conservation Act, 2001 (52 of 2001), having annual energy consumption as indicated against each industry, as Designated consumers for the purposes of the EC Act:-

**List of Energy Intensive Industries and other establishments
specified
as designated consumers**

- 1. Aluminium;
- 2. Fertilizers;
- 3. Iron and Steel;
- 4. Cement;
- 5. Pulp and paper;
- 6. Chlor Akali;
- 7. Railways
- 8. Textile;
- 9. Chemicals;

Thermal Power Stations- 30,000 metric tonne of oil equivalent (MTOE) per year and above

Fertilizer- 30,000 metric tonne of oil equivalent (MTOE) per year and above

Cement- 30,000 metric tonne of oil equivalent (MTOE) per year and above

Iron & Steel- 30,000 metric tonne of oil equivalent (MTOE) per year and above

Chlor-Alkali- 12,000metric tonne of oil equivalent (MTOE) per year and above

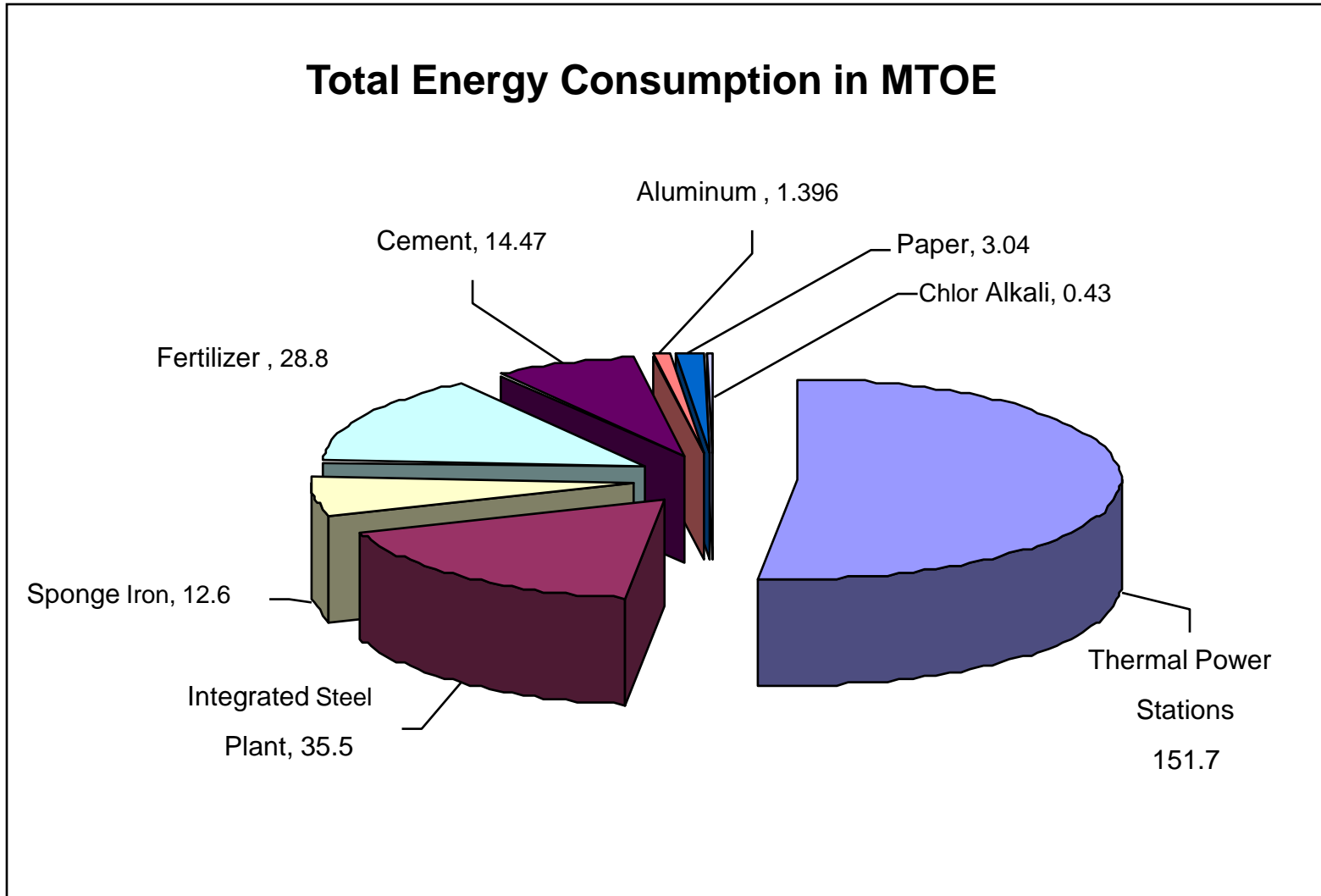
Aluminium- 7,500 metric tonne of oil equivalent (MTOE) per year and above

Railways-As per the details given in the subsequent slides

Textile-3,000 metric tonne of oil equivalent (MTOE) per year and above

Pulp & Paper-30,000 metric tonne of oil equivalent (MTOE) per year and above

ENERGY CONSUMPTION SHARE (MTOE)



Designated Consumers - Compliance

- 1 File Energy Consumption returns to Designated Agencies and BEE.
- 2 Designate or Appoint Energy Manager for their industry
- 3 Energy Audits on a regular / periodic basis by accredited energy auditor
- 4 Capture of information related to energy consumption across various processes
- 5 Adoption of best practices in different industries.
- 6 Specific energy consumption norms and standards for the industrial sectors
- 7 Continuous improvement in the specific energy consumption of industries thereby reducing the bandwidth (gap between the best performers and the low performers among the specific energy consumption)
- 8 There are 98 DC in Iron and Steel Sector

Certified Energy Managers and Energy Auditors

As per the Energy Conservation Act 2001, it is mandatory for all the **designated energy consumers** to get energy audit conducted by an **Accredited Energy Auditor** [under clause 14(h) and 14(i)] and to designate or appoint an **Energy Manager** [under clause 14(l)].

The Bureau has successfully conducted Nine National Certification Examinations since 2004.

- 5390 persons have been qualified as energy auditors
- and 2376 have qualified as energy managers only
- Over 3,000 energy audits have been carried out by the certified agencies over the past 3 years

Responsibilities and Duties of Energy Auditor

- Carry out a detailed energy audit
- Quantify energy consumption and establish base line energy information
- Perform efficiency evaluation of energy & utility systems
- Compare energy norms with existing energy consumption levels
- Identify and prioritization of energy saving measures
- Analyse technical and financial feasibility of energy saving measures
- Recommend energy efficient technologies and alternate energy sources
- Report writing, presentation and follow up for implementation

Responsibilities and Duties of Energy Manager

- Establish an energy conservation cell & prepare an annual activity plan
- Develop and manage training programme for energy efficiency at operating levels
- Develop integrated system of energy efficiency and environmental improvement
- Initiate activities to improve monitoring and process control to reduce energy costs
- Co-ordinate implementation of energy audit/efficiency improvement projects through external agencies
- Establish / participate in information exchange with other energy managers of the same sector through association
- Provide information to BEE and Designated Agency of the respective States as demanded in the Act

Qualification of Accreditation

- **has passed the examination in "Energy Performance Assessment for Equipment and Utility Systems" conducted by *the Bureau on the subject* specified in the Schedule**
- **has an experience of five years in energy audit out of which at least three years' shall be in any of the Energy Intensive Industries; and feed back on energy audit received from Energy Intensive Industries;**

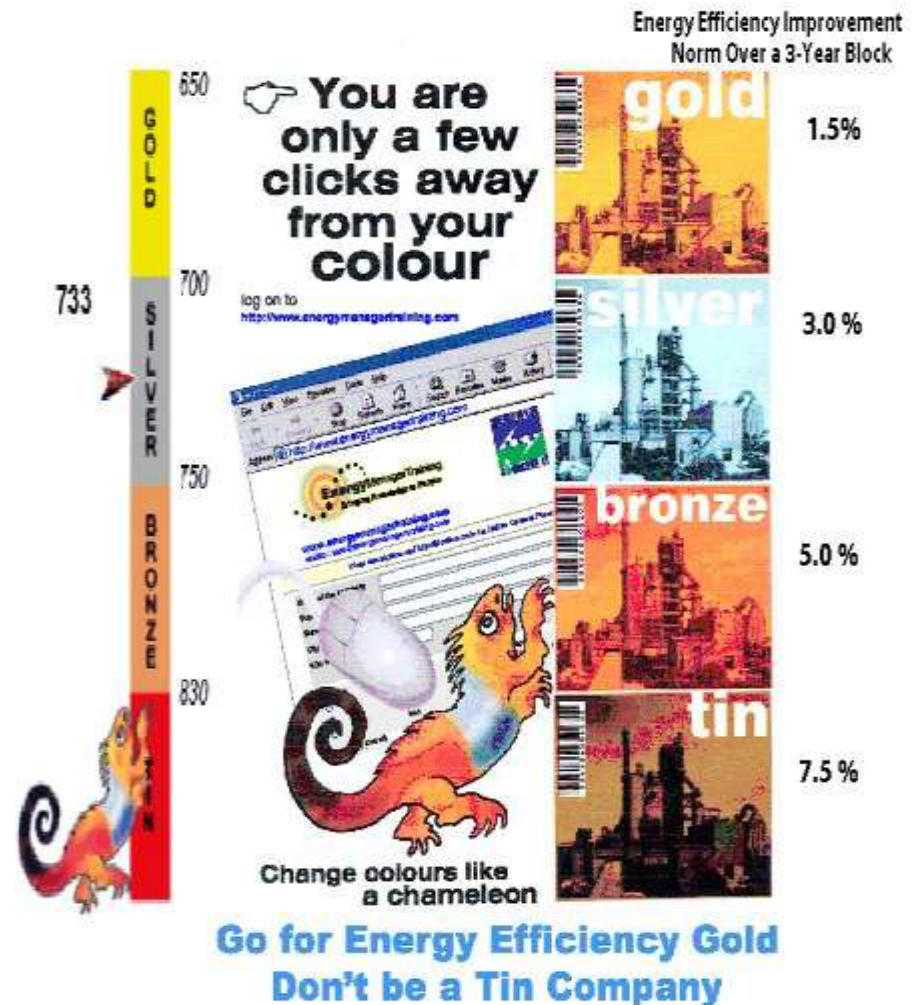
Accreditation Process

- **five detailed energy audit reports in any of the Energy Intensive Industries undertaken by the energy auditor in an individual capacity or as a leader or associate or active team member of the energy audit team;**
- **b) feed back on energy audit received from Energy Intensive Industries;**
- **c) fee of rupees one thousand payable by demand draft drawn in favour of**

Perform, Achieve and Trade Mechanism

Market-based mechanism to enhance energy-efficiency in industry

- This creates a differentiated potential for energy savings
- Trading of savings allows maximum cost-effective savings as plants with “low-cost savings” exceed their “mandated “ savings for trade



PAT - Approach

- Specification of specific energy consumption (SEC) norm for each designated consumer in the baseline year and in the target year- *Statutory requirement for designated consumers under EC Act (section 14 (g) read with section 56(2)(g))*
- Verification of the SEC of each designated consumer in the baseline year and in the target year by an accredited verification agency
- Issuance of Energy Savings Certificates (ESCerts) to those designated consumers who exceed their target SEC reduction
- Trading of ESCerts with designated consumers who are unable to meet their target SEC reduction
- Checking of compliance, and reconciliation of ESCerts

PAT – Institutional Framework

- Creation of demand for the commodity e.g. compliance requirement for energy savings ESCerts over a pre-specified period (**Regulatory Framework**)
 - MOP, in consultation with BEE to set individual targets
 - Penalty for non-achievement under EC Act to be increased (section 26 – Maximum of Rs. 10,000 and Rs. 1,000 for every additional day of default)
 - Fiscal incentives for ESCerts- IT Exemption, pass-through in tariff
 - BEE/ EESL to take up capacity building
- Ensuring supply of the commodity (ESCert) (**Issuance of ESCerts**)
 - EESL to be the nodal agency for issuance
 - Synergise the activity with BEE-net- Standard forms, electronic submission, etc.
 - Proper authentication of claim by EM of DC
 - Independent authentication by certified agencies like CEAs

PAT – Institutional Framework (2)

- **MNV for ESCerts (Resp.- BEE and EESL)**

- Energy use and production verification protocol for each DC
- Verification agencies which could be accredited energy auditors under the EC Act to assume liability for verification alongwith other credible certification agencies
- Utilisation of services of certified agencies, CEAs by DCs

- **Trading of ESCerts (Resp. EESL)**

- Maintain compliance with set energy efficiency benchmark by the DCs
- Create efficient and transparent market for trading by the exchanges by taking measures to safeguard market integrity and enhance transparency in operations and also maintain data of traded prices, traded volumes and trends.
- The Transfer Agents/ Depositories must hold the ESCerts under each industry in electronic form and provide client services in relation to ESCerts.

THANK YOU

QUERIES

Queries may please be sent to

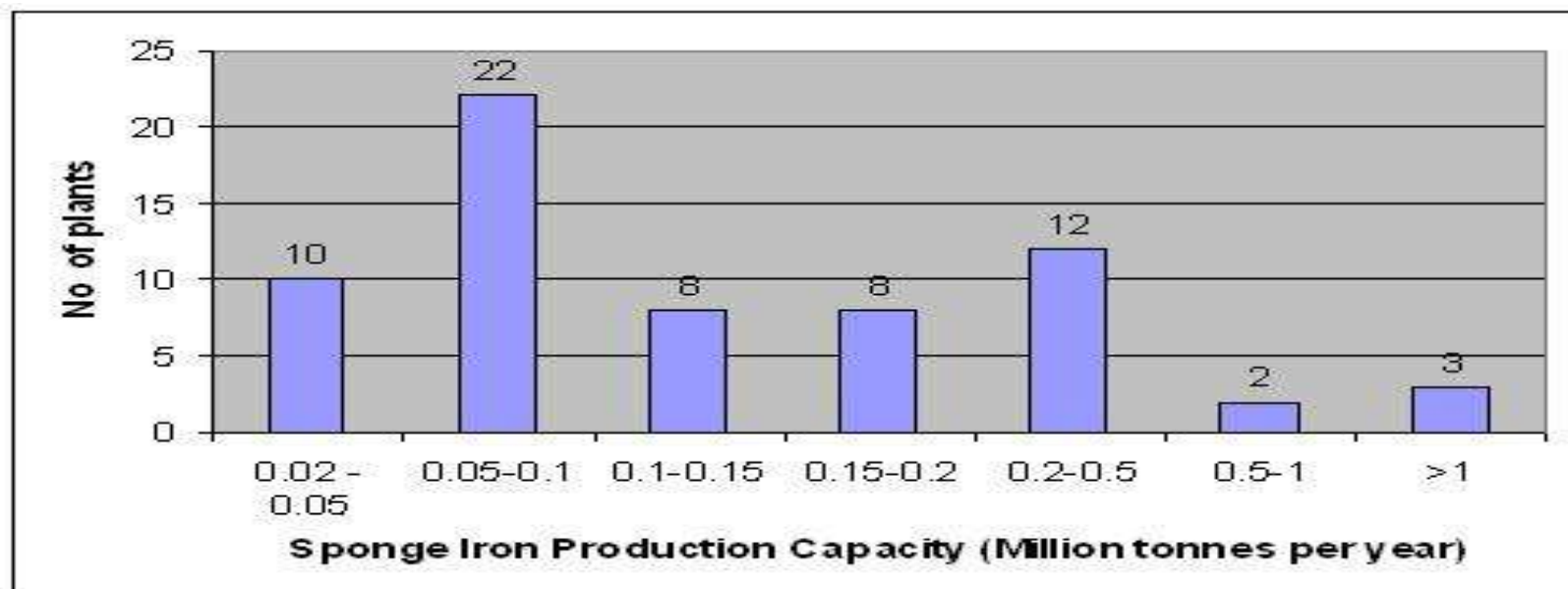
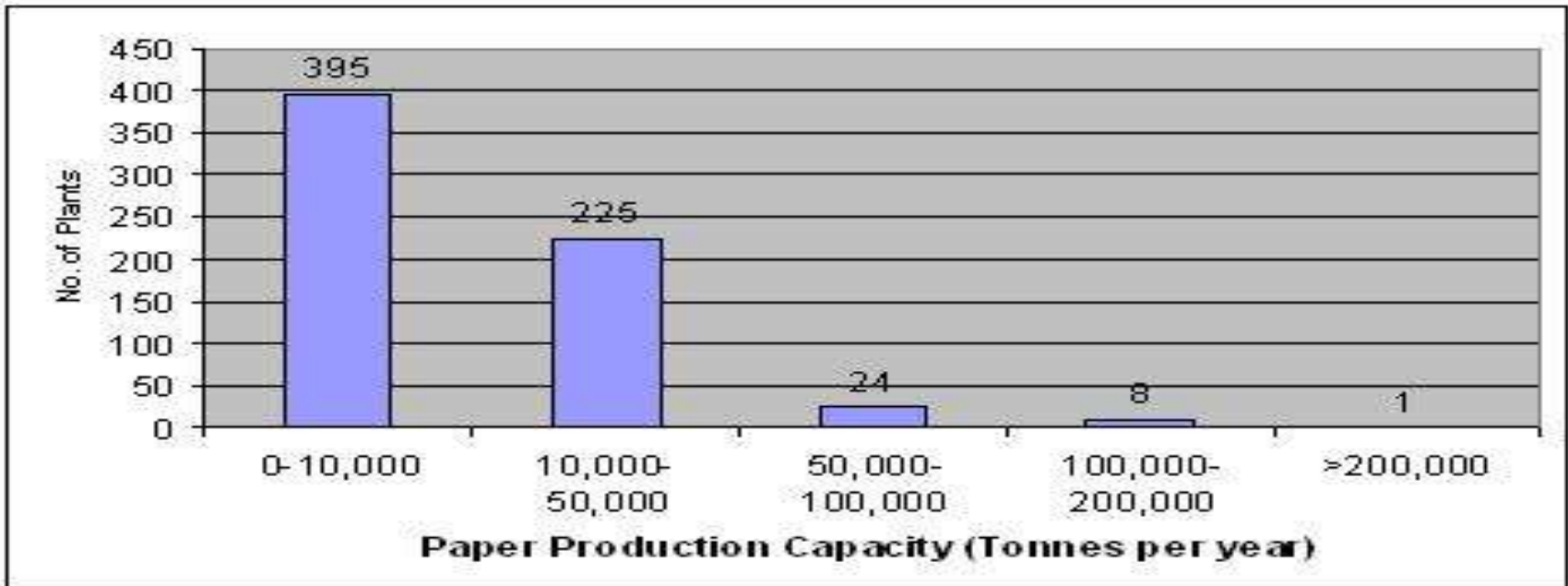
ndhingra@beenet.in

Practical Issues

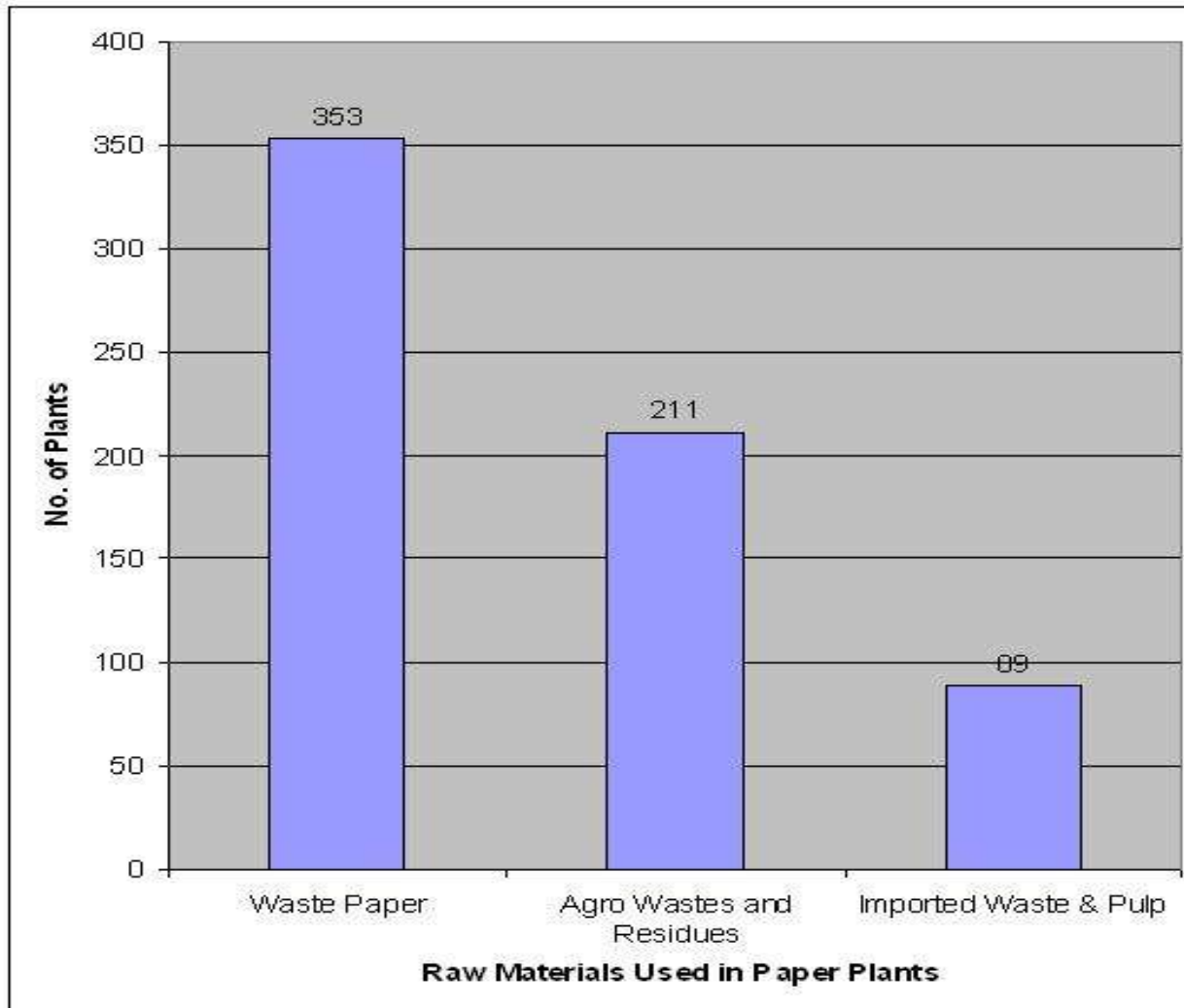
- “Sectors” (e.g. steel, cement, paper) are everywhere characterized by great diversity in terms of:
 - Scale
 - Technology pathways
 - Technology vintages
 - Project boundaries
 - Type and quality of inputs/resource endowment
 - Product diversity

Diversity within Sectors in India - Capacity

Large variation in scale of production capacities



Diversity in raw material used



Practical Issues...

- There is diversity within sector in India
 - There is a variation in SEC also.
 - Such diversity renders each plant in each country unique!
 - Not feasible to define a single norm/standard unless there is significant homogeneity amongst plants in a sector
- ***THIS IMPLIES THAT ENERGY EFFICIENCY IMPROVEMENT TARGETS WOULD BE ALMOST "PLANT SPECIFIC"***

Energy efficiency potential, using best available technology

