

Success stories & learnings - India Policy

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Energy Efficiency

- Several complementary policies & measures over the years
- Continuous progress & gradual improvements
- Further impetus on specific areas with PAT, LED programmes

Perform Achieve and Trade Scheme

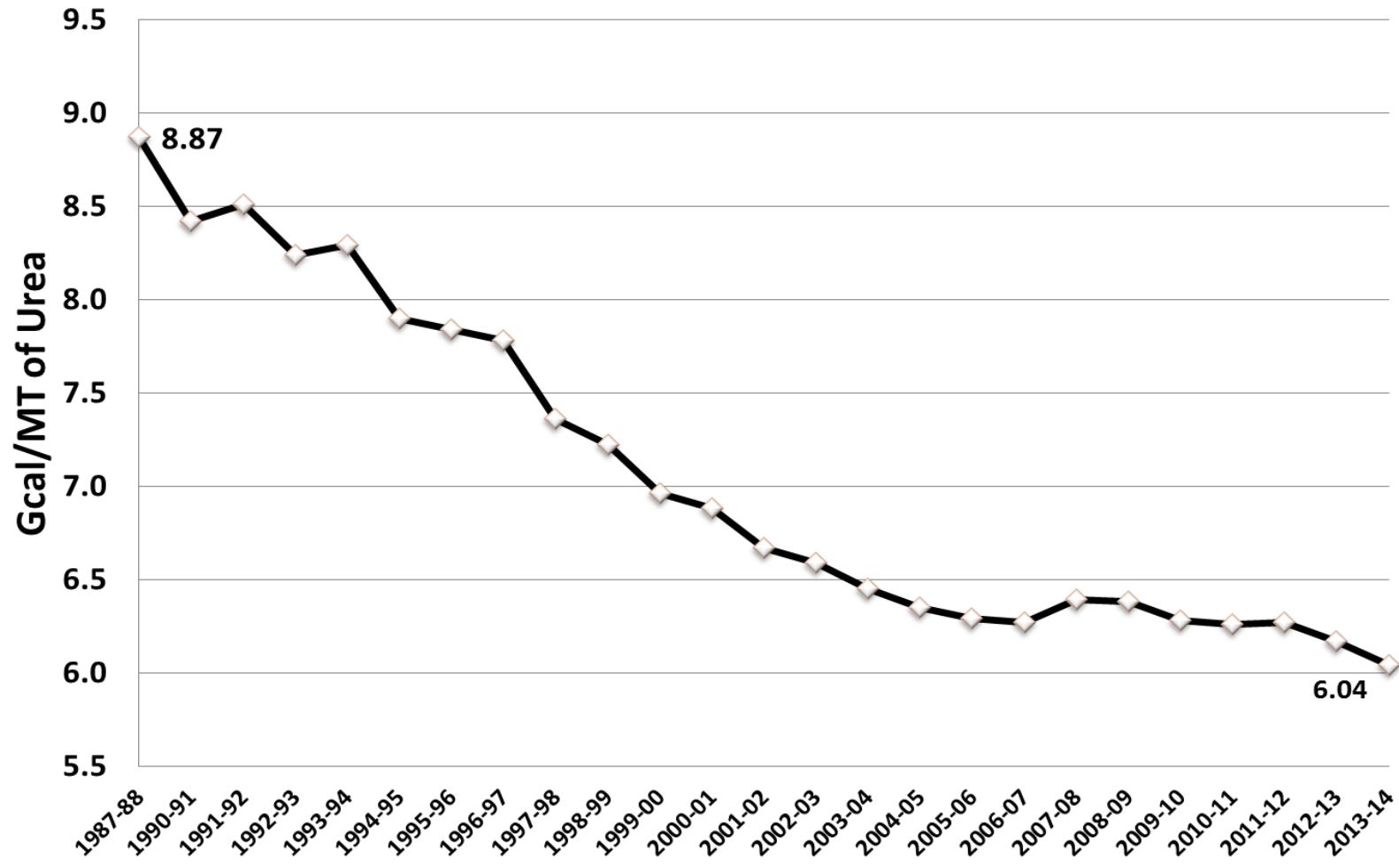
- ❑ Specific Energy Consumption (SEC) targets mandated for 1324 units in 13 energy intensive sectors (869 industries, 352 TPPs, 44 DISCOMs , 22 railway units and 37 commercial buildings)
- ❑ Energy Savings Certificates issued for excess savings; can be banked, or traded and used for compliance by other units; Financial penalties for non compliance
 - 3.825 million ECERTs issued to 306 DCs

PAT cycle	No. of units	Sectors covered	Energy reduction
Cycle I (2012-13 to 2014-15)	478	8	Target: 6.68 MToE Achieved: 8.67 MToE
Cycle II (2016-17 to 2018-19)	621	11	Target: 8. 88 MToE
Cycle III (2017-18 to 2019-20)	116	11	Target: 1.06 MToE
Cycle III (2017-18 to 2019-20)	109	13	Target: 0.699 MToE

- ❑ Key industry sectors in terms of energy consumption under PAT scheme: Steel, cement and fertilizers
- ❑ DCs under industry sector account for around 50% of total industrial energy consumption

Fertiliser

Energy Consumption Trends in Urea Plants



PAT Mechanism

Overall structure

Market Based Mechanism

Reward
over -
achiever

Penalize
under -
performer

- Administrator
 - Set target and compliance period
- Designated Consumers
 - 8 sectors Thermal Power Plant, Steel, Cement, Fertilizer, Pulp & Paper, Textile, Aluminium, Chlor-alkali
- Auditing Agencies
 - Independent
 - Monitor, verify and certify
- Market Place
 - Transaction of energy efficiency instrument



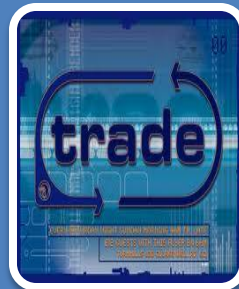
Set Targets

- Setting targets on the basis of current specific energy consumption
- Set compliance period
- May take into account Location, Vintage, Technology, raw materials, product mix etc.



Monitoring & verification of targets by Designated Energy Auditors (DENA)

- Check if designated consumer has achieved targets
- Underachievement: Obligations to buy ESCerts or pay penalty
- Overachievement: Issuance of ESCerts for banking for later use or trade

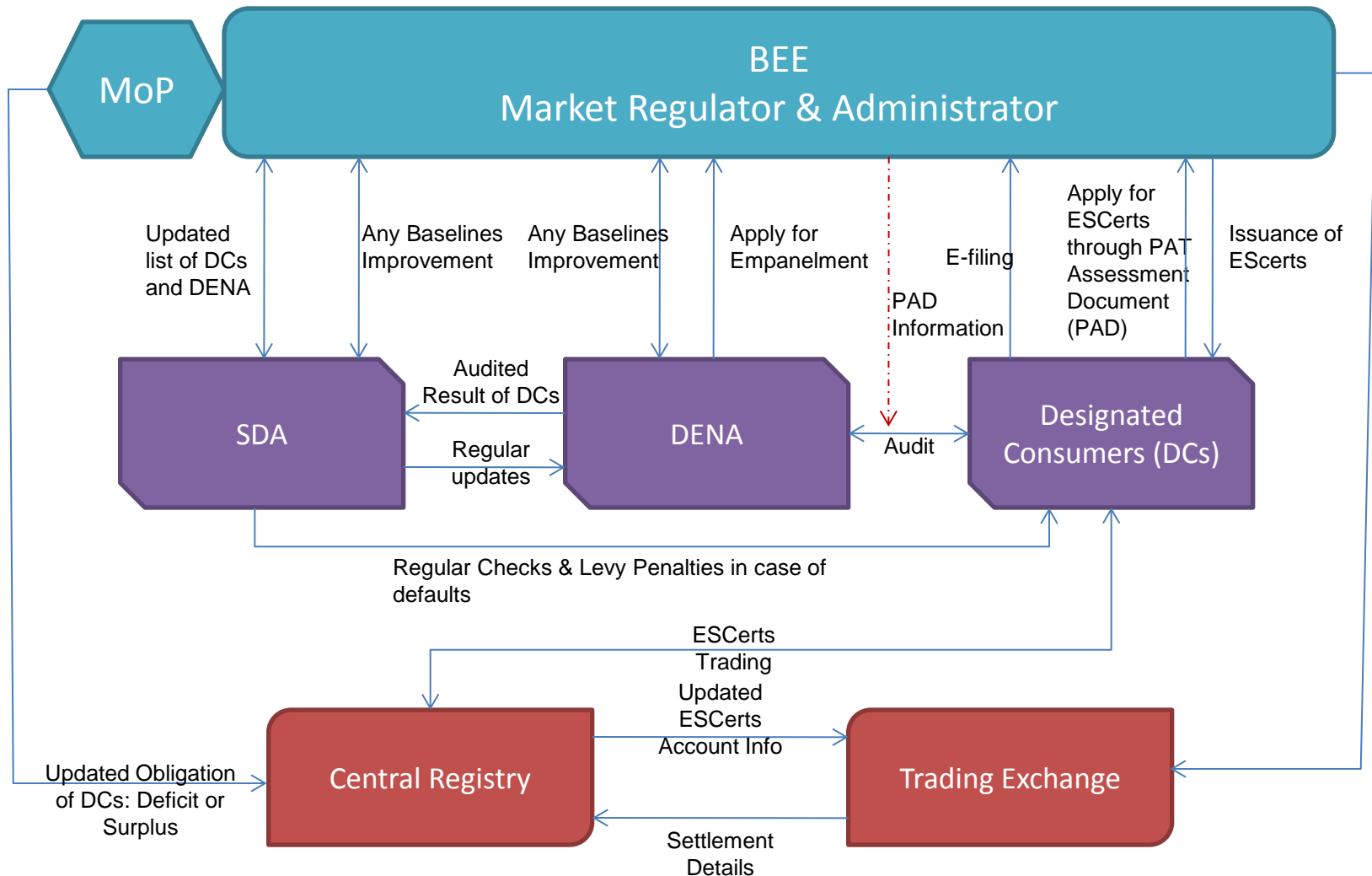


Trading of ESCerts

- Participation by Designated consumers on platform provided by Power Exchanges
- Symmetrical flow of information

Broad Institutional Design

Schematic



Small and Medium Enterprises

- ❑ Around 63 million units employing 120 million people
- ❑ Contributes significantly to GDP, manufacturing output and exports
- ❑ Manufacturing over 6000 products
- ❑ Many energy intensive sectors such as foundry and forgings, glass and ceramics, brick, textiles, dairy and food processing and so on
- ❑ Clustering of industry: over 200 energy intensive manufacturing clusters exist
- ❑ Deploy obsolete technologies and unskilled manpower
- ❑ Scope to save energy by adoption of Energy Efficient Technologies (EETs), Renewable Energy Technologies (RETs) and Best Operating Practices (BOPs)
- ❑ Scale of challenge much larger than large industry sectors

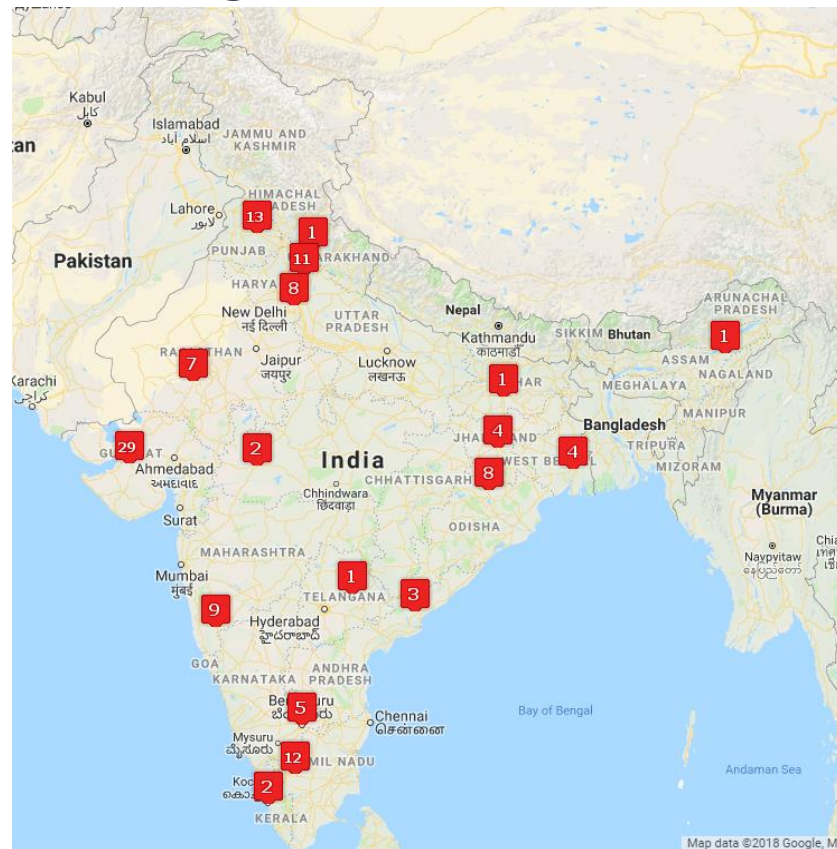




SAMEEEKSHA

Small and Medium Enterprises: Energy Efficiency Knowledge Sharing)

- Collaborative platform to promote energy efficiency (EE) in the energy intensive MSME sector in India through the pooling of knowledge and experiences by different stakeholders
- Reduces the need to 'reinvent the wheel', and encourages faster replications of EE technologies in the MSME sector
- Partners: BEE, MoMSME, SSEF SDC and TERI



MSME Energy Map

MSME Energy Map. Comprehensive energy data on energy intensive MSME clusters are being compiled and updated on this interactive Map, providing access to energy consumption details at unit and cluster levels, as well as on opportunities and potential for energy saving

LED Programme

- Unnat Jyoti by Affordable LEDs for All (UJALA)
 - Demand side management
- Implemented by Energy Efficiency Services Limited (EESL)
 - an Energy Service Company (ESCO) set up as a Joint Venture under the Ministry of Power, Government of India.
- EESL distributes energy efficient LED lamps at one-third the market price through an innovative business model.
- UJALA has delivered tangible multiple benefits like energy savings, avoided carbon emissions, reduced consumer bills and stimulated the LED bulb manufacturing in India.
 - addresses multiple considerations simultaneously to align with socio-economic, equity and environmental dimensions

Tracking success of UJALA

- UJALA is saving scarce energy resources and reducing India's carbon emissions by around 3 million tonnes of CO₂ per year.
- Reducing annual household electricity bills by about 15%, saving consumers over 16 billion INR every year.
- Empowering households since they can now use the money saved to improve their quality of life (spending more time reading, studying and even working at night) - promotes productivity and prosperity in local communities and in expanding energy access to all.
- EESL's requirements are stimulating the development of a high quality Indian LED lamp manufacturing industry.
- India is now the 2nd largest LED market in the world, worth 21.4 billion INR in revenues/year
- Helping India realize it's Make in India dream
- Resulted in full supply-demand chain reaction which is quickly delivering favorable economies of scale to a range of manufacturers, helping grow and strengthen the domestic LED market with high quality products and enabling LED manufacturers to set up internationally competitive businesses
- EESL's LED bulk procurement led to reduction in LED retail market prices from approximately 800 INR per LED bulb in 2012 to 200 INR per LED bulb in 2016
 - helped improve acceptance and availability of LEDs in the Indian market
 - EESL's specifications, including the three year warranty requirement, have ensured that the LED bulbs procured meet high quality standards with current failures at only 0.3%. - helped build market confidence

Pradhan Mantri Sahaj Bijli Har Ghar Yojana “Saubhagya” Scheme

- Household electrification scheme launched in 2017
- Aim is to provide free electricity connections to all households (both APL and poor families) in rural areas and poor families in urban areas
- Target is to provide electricity connection to each and every household by 2019-20.
- As of date 99.99% of rural households have been electrified.
- 99.92% of villages and 99.37% of districts have received electrification status.

Does that mean all households have 24X7 electricity supply?

Pradhan Mantri Ujjwala Yojana

- Launched in 2016, the scheme aims to upgrade cooking techniques used by the rural households.
- Objective is to shift households from use of biomass fuel to efficient LPG connections
- The target is to provide 8 crore LPG connections to be provided to BPL families by 2019.

Development/welfare objective vs emission reduction

Atal Jyoti Yojana (AJAY)

- Under this scheme launched in 2018 by MNRE, rural, semi-urban and urban areas that face less than 50% grid connectivity in Uttar Pradesh, Assam, Bihar, Jharkhand, and Odisha will be illuminated with solar LED street lights.
- These solar lights will be installed on major roads, markets, and public conveniences in remote areas.

Observe differential success in different states

Factors for success

- Detailed planning before rollout
- Level of affordability /income levels
- Preferences due to cultural/social factors
- Complementary development of infrastructure & supporting schemes
 - Solar street lights; Swachh Bharat
- Measuring actual progress (internalising in assessments)
 - Access vs utilization; capacity vs generation
- Specific country/regional perspectives need to be addressed for ensuring success

Thank you!