

# 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

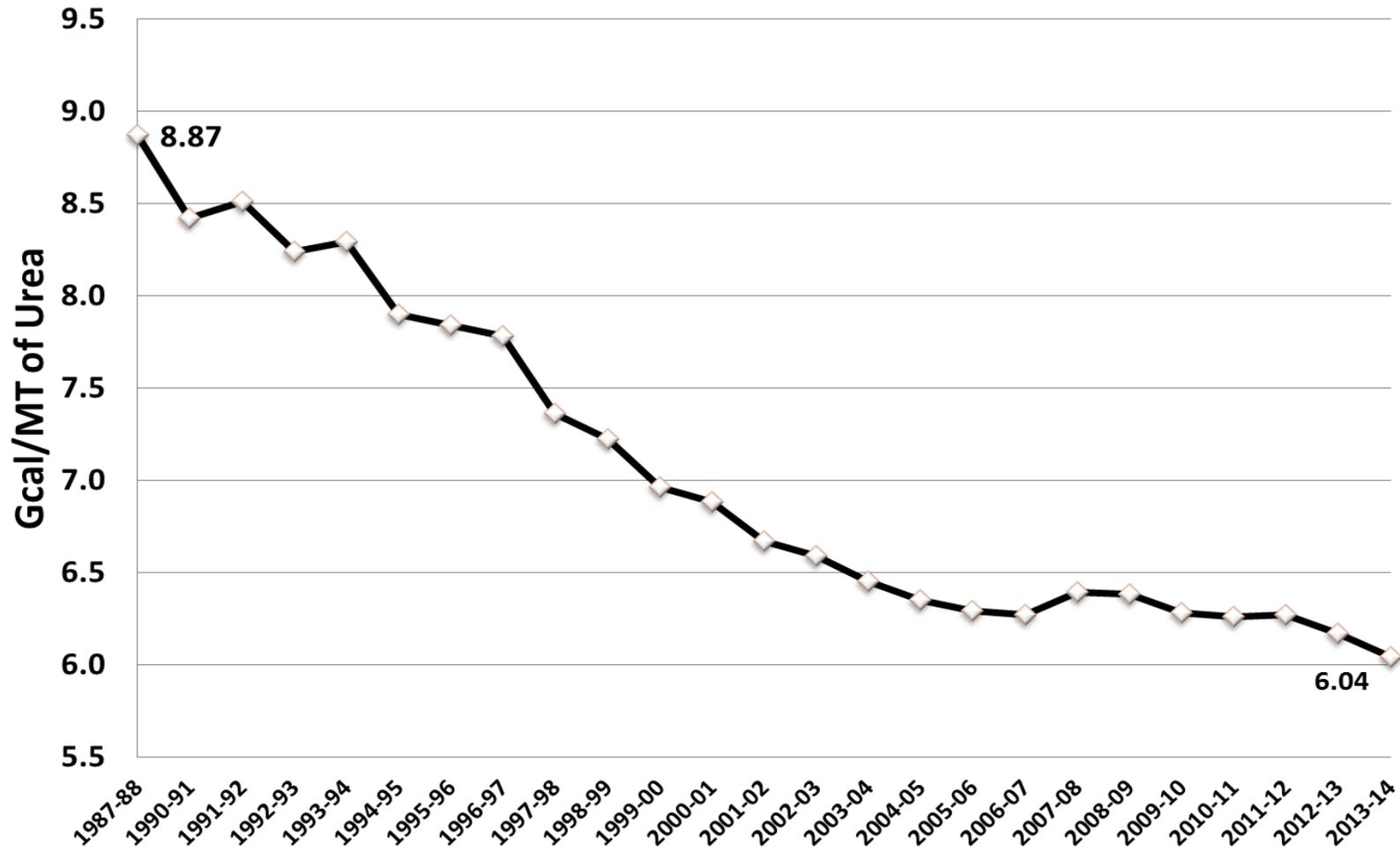
- ❑ Specific Energy Consumption (SEC) targets mandated for 1324 units in 13 energy intensive sectors (869 industries, 352 TPPs, 44 DISCOMs , 22 railway units and 37 commercial buildings)
- ❑ Energy Savings Certificates issued for excess savings; can be banked, or traded and used for compliance by other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



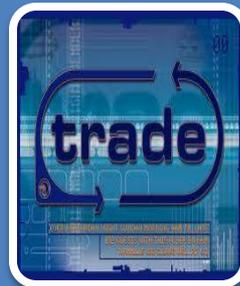
### Set Targets

- 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

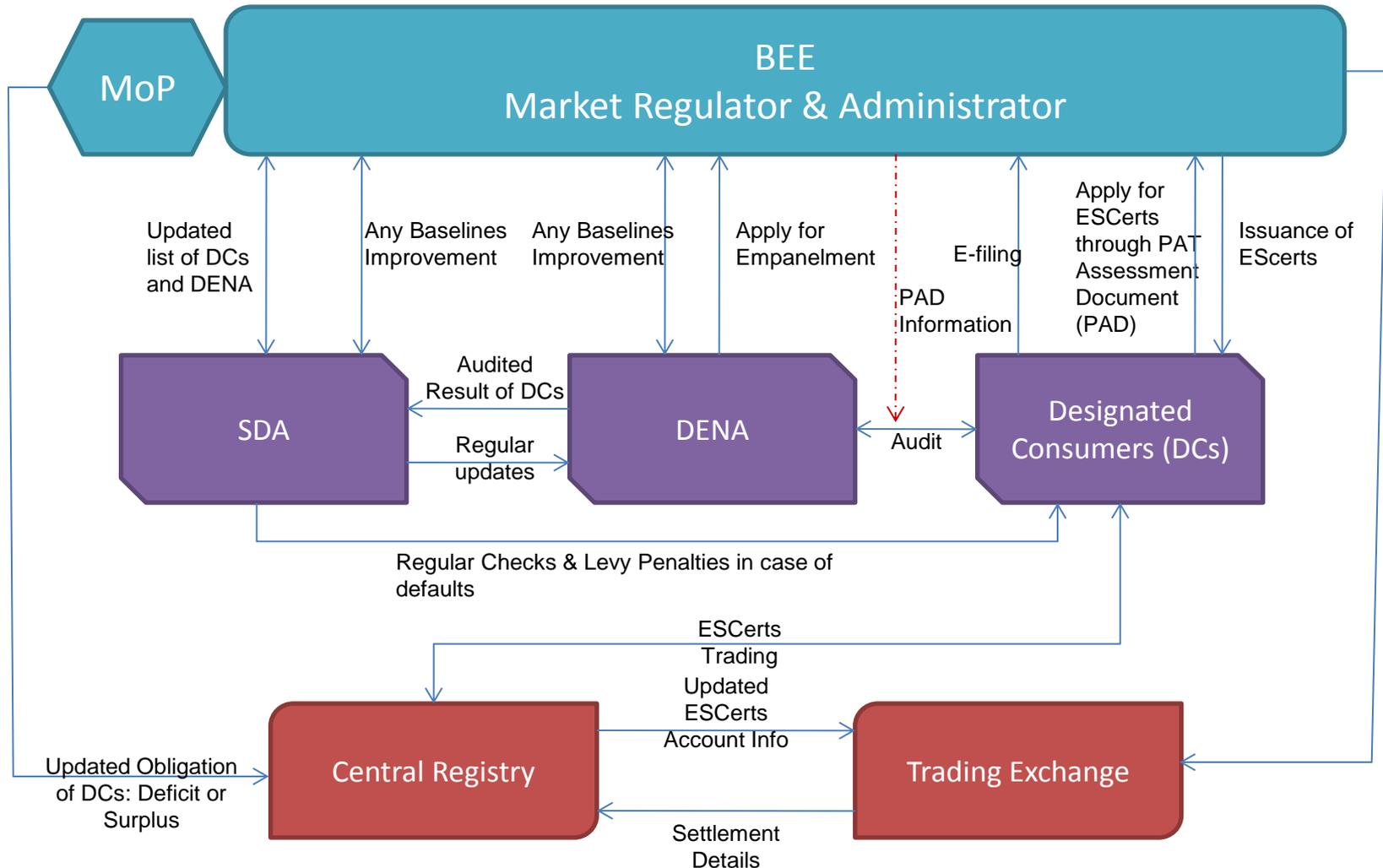


### Trading of ESCerts

- 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





# 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 CO<sub>2</sub> 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 2<sup>nd</sup> 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!