MINISTRY OF POWER

# PERFORM, ACHIEVE & TRADE (PAT) SCHEME

## Status and Way Froward

9th May, 2016
The Grand, New Delhi

**Thirteenth annual conference on**
**Managing Cost of Energy**
*Improving Efficiency, Optimising Sourcing*

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# Floods in Mumbai, 2005

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# Cloudburst in Leh, Ladakh, 2010


Cloudburst in Uttarakhand, 2013

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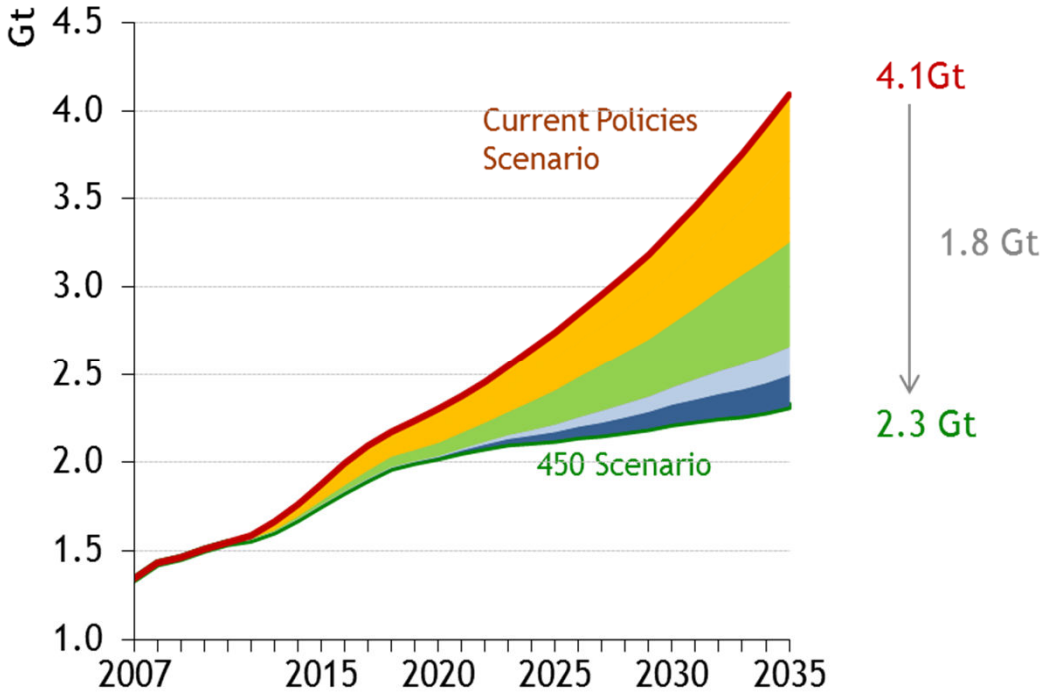
# Flooding in Chennai, 2015

# Indian GHG Scenario




| Share of cumulative abatement between 2010-2035 | |
|---|---|
| Efficiency | 51% |
| Renewables | 32% |
| Biofuels | 1% |
| Nuclear | 8% |
| CCS | 8% |

WEO, 2010

# Perform, Achieve and Trade (PAT) – WHY?

## National Action Plan on Climate Change (NAPCC)

- Nation Mission for Enhanced Energy Efficiency (NMEEE)
  - Perform Achieve and Trade (PAT)
  - Market Transformation for Energy Efficiency (MTEE)
  - Energy Efficiency Financing Platform (EEFP)
  - Framework for Energy Efficient Economic Development (FEEED)

# Intended Nationally Determined Contributions (INDCs)

- To put forward and further propagate a healthy and **sustainable way of living** based on traditions and values of **conservation and moderation.**

- To adopt a **climate friendly and a cleaner path** than the one followed hitherto by others at corresponding level of economic development.

- To reduce the emissions intensity of its GDP by **33 to 35** percent by **2030** from 2005 level.

- **Enhanced Energy Efficiency**
  - **Industry**
    - **Perform, Achieve and Trade**

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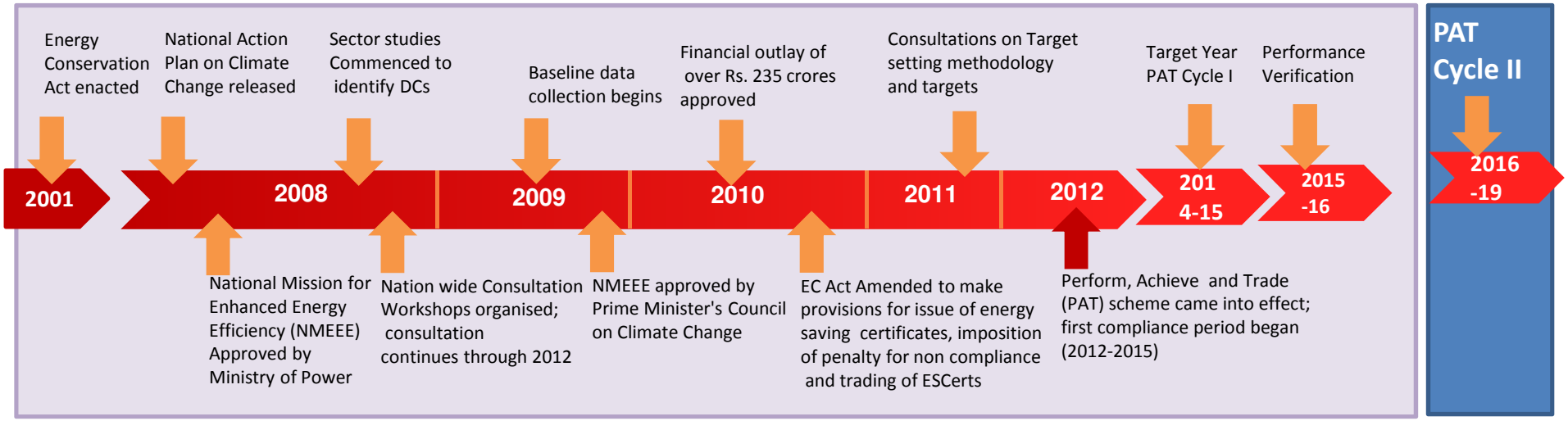
# Genesis of PAT

**Perform Achieve and Trade (PAT):** A regulatory instrument to reduce specific energy consumption in energy intensive industries, with an associated market based mechanism to enhance the cost effectiveness through certification of excess energy saving which can be traded.



# PAT Cycle I- Notified Sectors

| S. NO. | Sectors | Annual Energy Consumption Norm to be DC (mtoe) | No. of Identified DCs | Annual Energy Consumption (Million toe) | Share Consumption (%) | Apportioned Energy Reduction For PAT Cycle-1 (Million toe) |
|---|---|---|---|---|---|---|
| 1 | Power (Thermal) | 30000 | 144 | 104.56 | 63.38% | 3.211 |
| 2 | Iron & Steel | 30000 | 67 | 25.32 | 15.35% | 1.486 |
| 3 | Cement | 30000 | 85 | 15.01 | 9.10% | 0.815 |
| 4 | Aluminium | 7500 | 10 | 7.71 | 4.67% | 0.456 |
| 5 | Fertilizer | 30000 | 29 | 8.20 | 4.97% | 0.478 |
| 6 | Paper & Pulp | 30000 | 31 | 2.09 | 1.27% | 0.119 |
| 7 | Textile | 3000 | 90 | 1.20 | 0.73% | 0.066 |
| 8 | Chlor- Alkali | 12000 | 22 | 0.88 | 0.53% | 0.054 |
| | Total | | 478 | 164.97 | 100% | 6.686 |

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# PAT Cycle I- Achievements

| S. NO. | Sectors | No. of DCs | Savings (Million toe) | % Increase in savings |
|---|---|---|---|---|
| 1 | Aluminium | 10 | 0.73 | 59% |
| 2 | Cement | 75 | 1.44 | 76% |
| 3 | Chlor- Alkali | 22 | 0.10 | 100% |
| 4 | Fertilizer | 29 | 0.83 | 73% |
| 5 | Iron & Steel | 60 | 2.10 | 41% |
| 6 | Paper & Pulp | 26 | 0.26 | 117% |
| 7 | Textile | 82 | 0.12 | 71% |
| 8 | Thermal Power Plant | 123 | 3.06 | (-)5% |
| | Total | 427 | 8.64 | 29% |

- Saving of about 8.67 Million TOE from verified 427 DCs (5.24%)
- $CO_2$ mitigation about 31 million tonnes

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# PAT Cycle II- Notified Sectors

| Sr. No | Sector | No. of DCs in PAT I | Additional DC in PAT Cycle-II | Total no. of DCs PAT -2 |
|---|---|---|---|---|
| 1 | **Aluminium** | 10 | 2 | 12 |
| 2 | **Chlor-Alkali** | 22 | 3 | 24 |
| 3 | **Textile** | 90 | 14 | 99 |
| 4 | **Pulp & Paper** | 31 | 4 | 29 |
| 5 | **Iron & Steel** | 67 | 9 | 71 |
| 6 | **Fertilizer** | 29 | 8 | 37 |
| 7 | **Cement** | 85 | 27 | 111 |
| 8 | **Thermal Power Plants** | 144 | 22 | 154 |
| 9 | **Refinery** | NA | 18 | 18 |
| 10 | **DISCOMS** | NA | 44 | 44 |
| 11 | **Railway** | NA | 22 | 22 |
| **Total** | | | | 621 |

PAT Cycle II
Baseline Year: 2014-2015
PAT Cycle II (2016-17 to 2018-2019)
Assessment Year: 2018-19
M&V period: Apr-2019 to 31st July2019

Total Energy Consumption from 11 sectors 227 mtoe

Energy Saving Target = 8.869 Mtoe

# PAT- Way forward (PAT Cycle II)

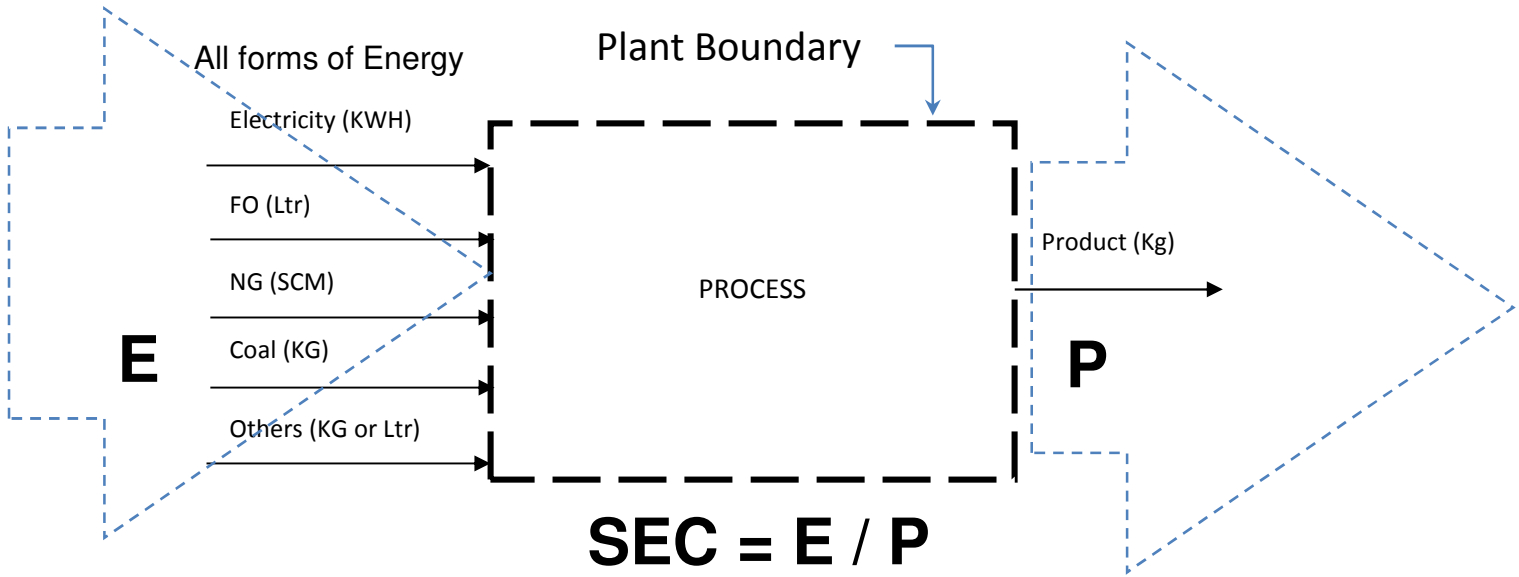
- Deepening of PAT (existing sectors): Inclusion of more units from existing sectors
  - 89 DCs from (I&S, P&P, Cement and Textiles, TPP, Chlor-Alkali, Fertilizer and Aluminum)
- Widening of PAT: Inclusion of more units from new sectors
  - New sectors: Refinery, Railways and Electricity DISCOMs
  - 84 new DCs

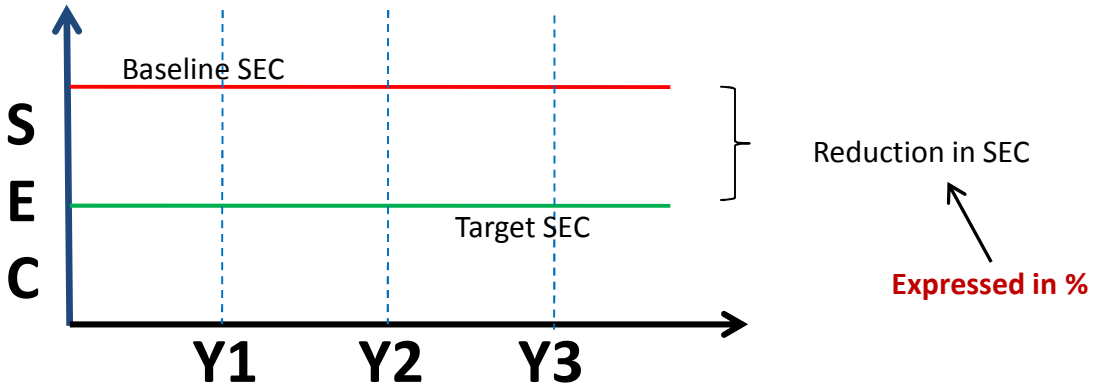
| PAT Cycles | No. of Units | Share of total energy consumption (2009-10 Level) | Sectors covered |
|---|---|---|---|
| Cycle I (2012-13 to 2014-15) | 478 DCs | 36% | 8 |
| Cycle II (2016-17 to 2018-19) | 621 DCs | 50% | 11 |

# PAT- Retained Salient features

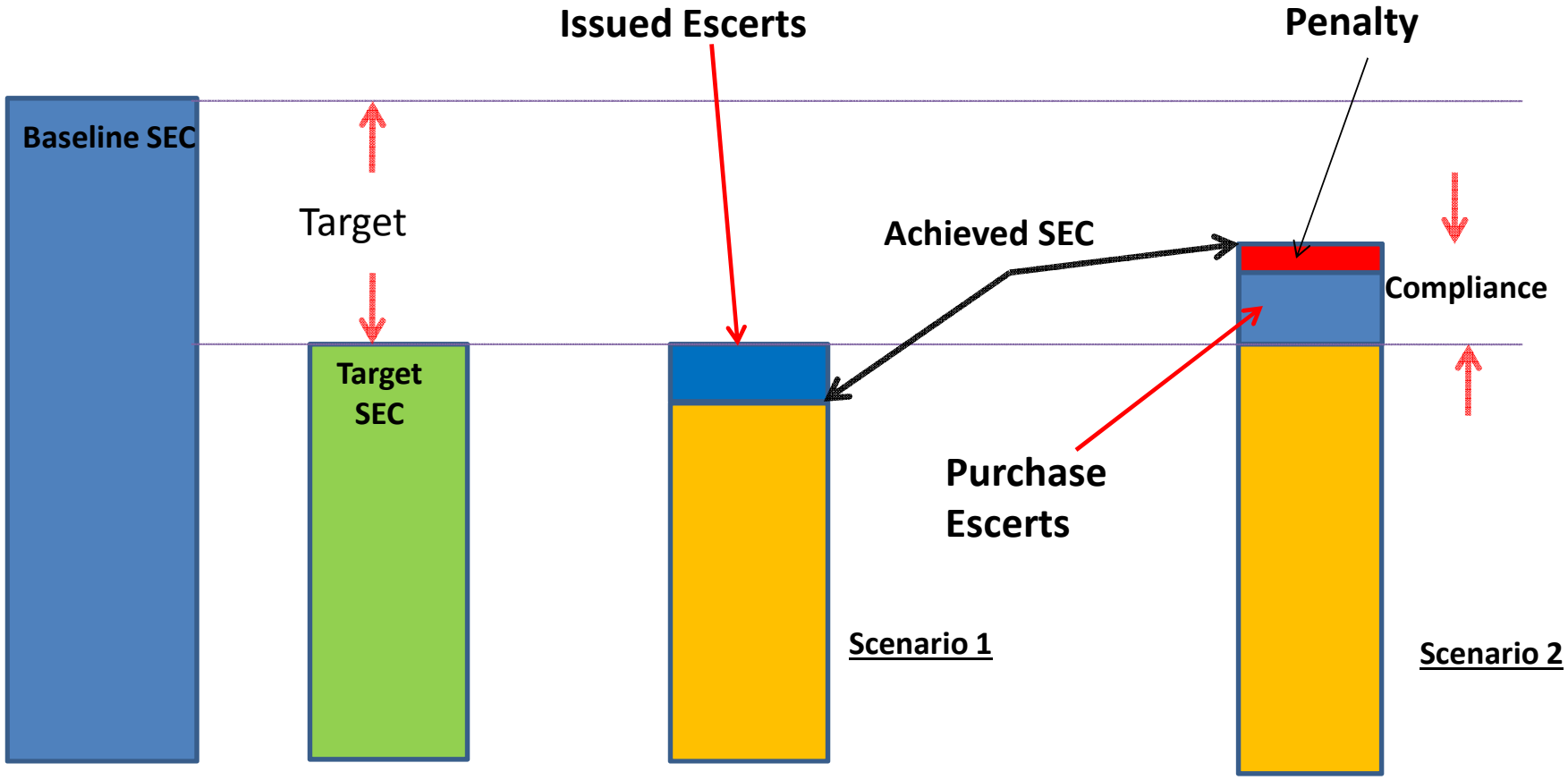
- Regulatory instrument linked with market mechanism
  - Certification of energy saving
- Consultative approach
  - Ministries/DCs/Associations/FIs/Research Organizations
- Outreach/ Capacity Development
  - Workshops/Seminars/ Visits
- "Self – competing"
  - Unit specific targets
- Relative responsibility
  - Less target for more efficient and more for less efficient
- Supports improvement in energy management system
  - measurement, recording and reporting

# Gate-to-Gate concept

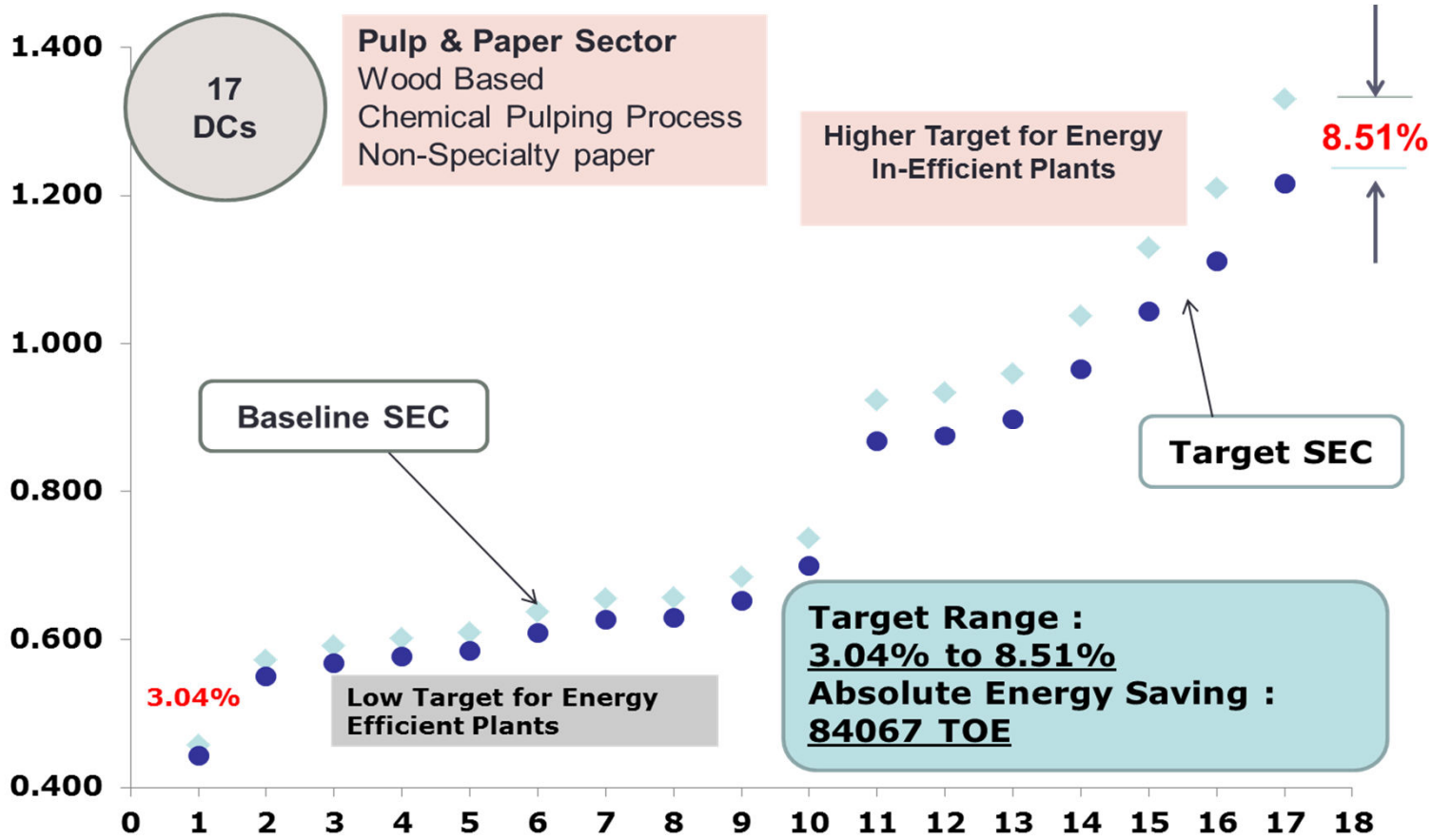


# Concept of Target, Compliance, ESCerts & Penalty

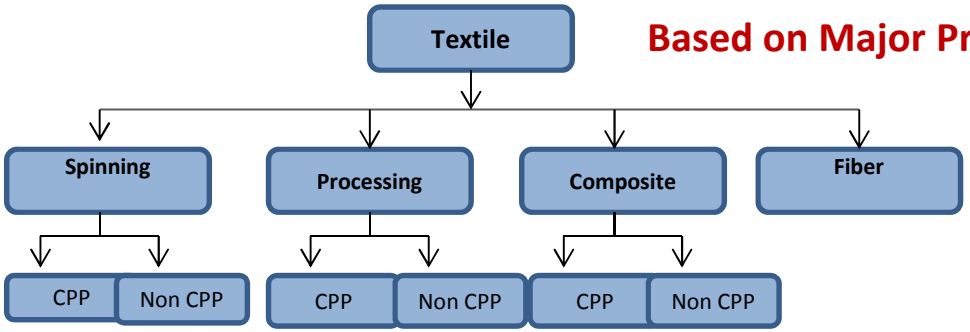


# Bandwidth in SEC within sectors

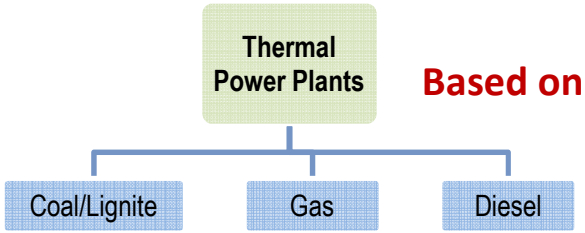



**Target is Plant Specific …… Less for Energy Efficient and more for Inefficient Plants**

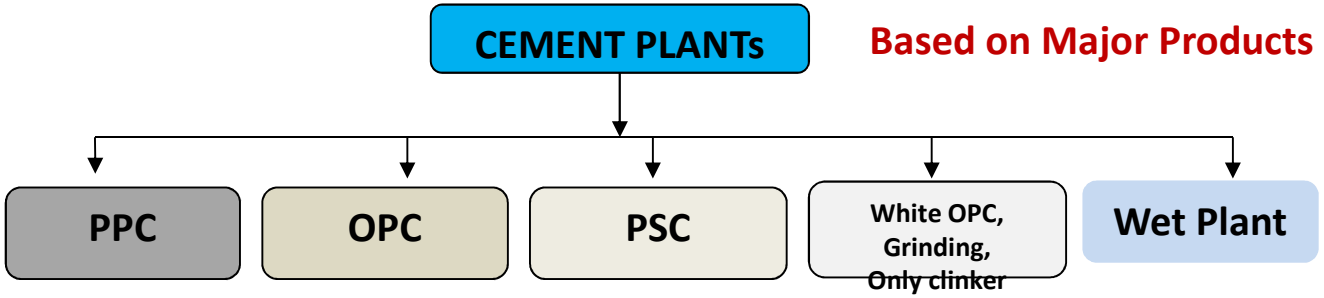
# Grouping of DCs




**Based on Major Processes**




**Based on Fuel used**




**Based on Major Products**

# Stakeholders

| Regulator | Administrator | Implementer | State Nodal Agency / Adjudicator | Verifier | Trading Regulator, Registry |
|---|---|---|---|---|---|
| MoP | Bureau of Energy Efficiency | Designated Consumer | State Designated Agency/ SERC | Empanelled Accredited Energy Auditor | CERC/ POSOCO |

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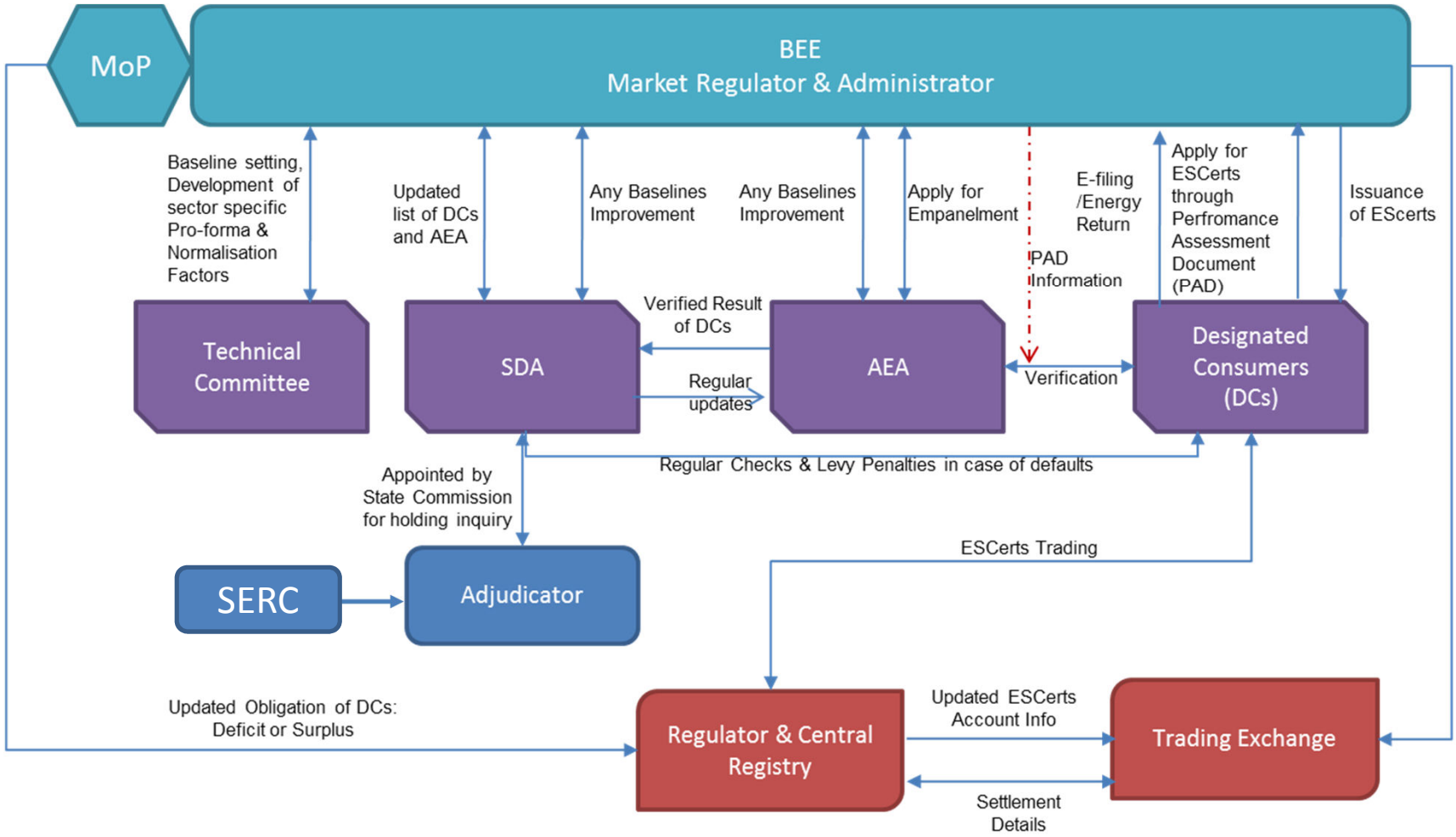
# Institutional Structure



# Market Design

- **ESCerts are issued**
  - When energy efficiency improvements surpass targets
  - With 1 mToE = 1 ESCert
- **Banking of ESCerts allowed during each cycle**
  - 1st cycle ESCerts to 2nd cycle
  - 2nd cycle ESCerts to 3rd cycle

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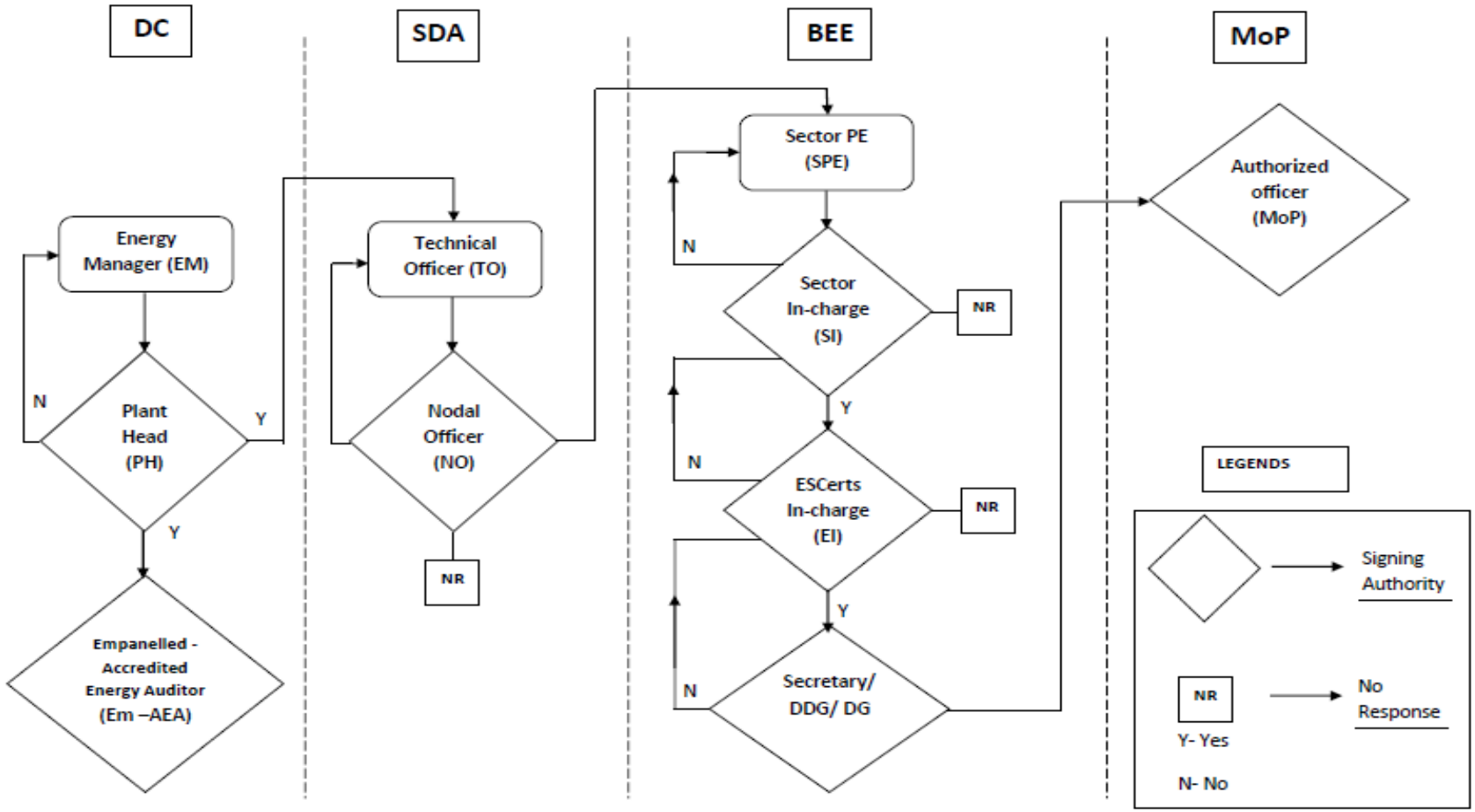
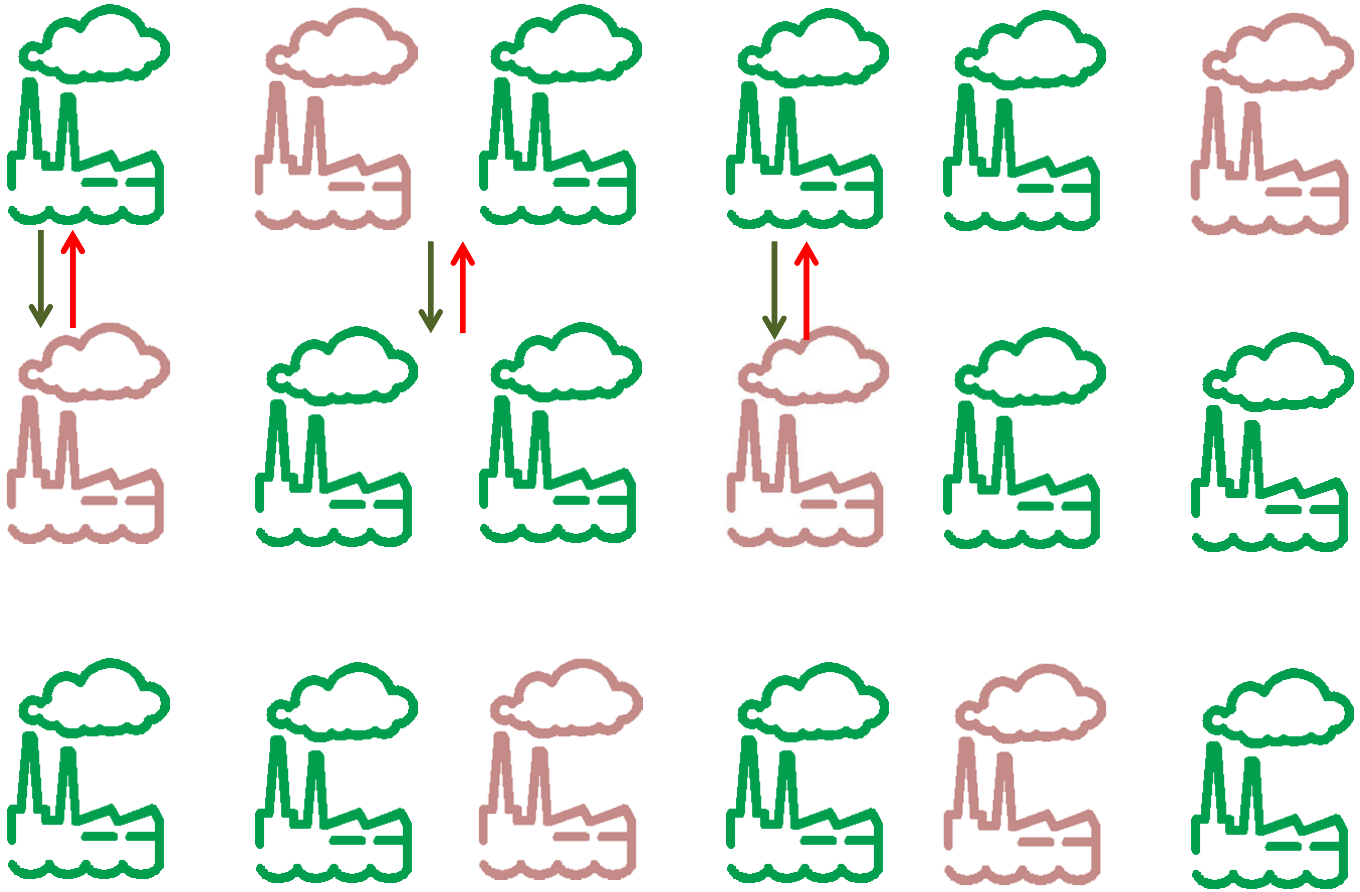
# Process Flow for Issuance of ESCerts




NR: No Response – Notification is issued to the head of the department and to the next officer in the channel.

# Trading for Compliance



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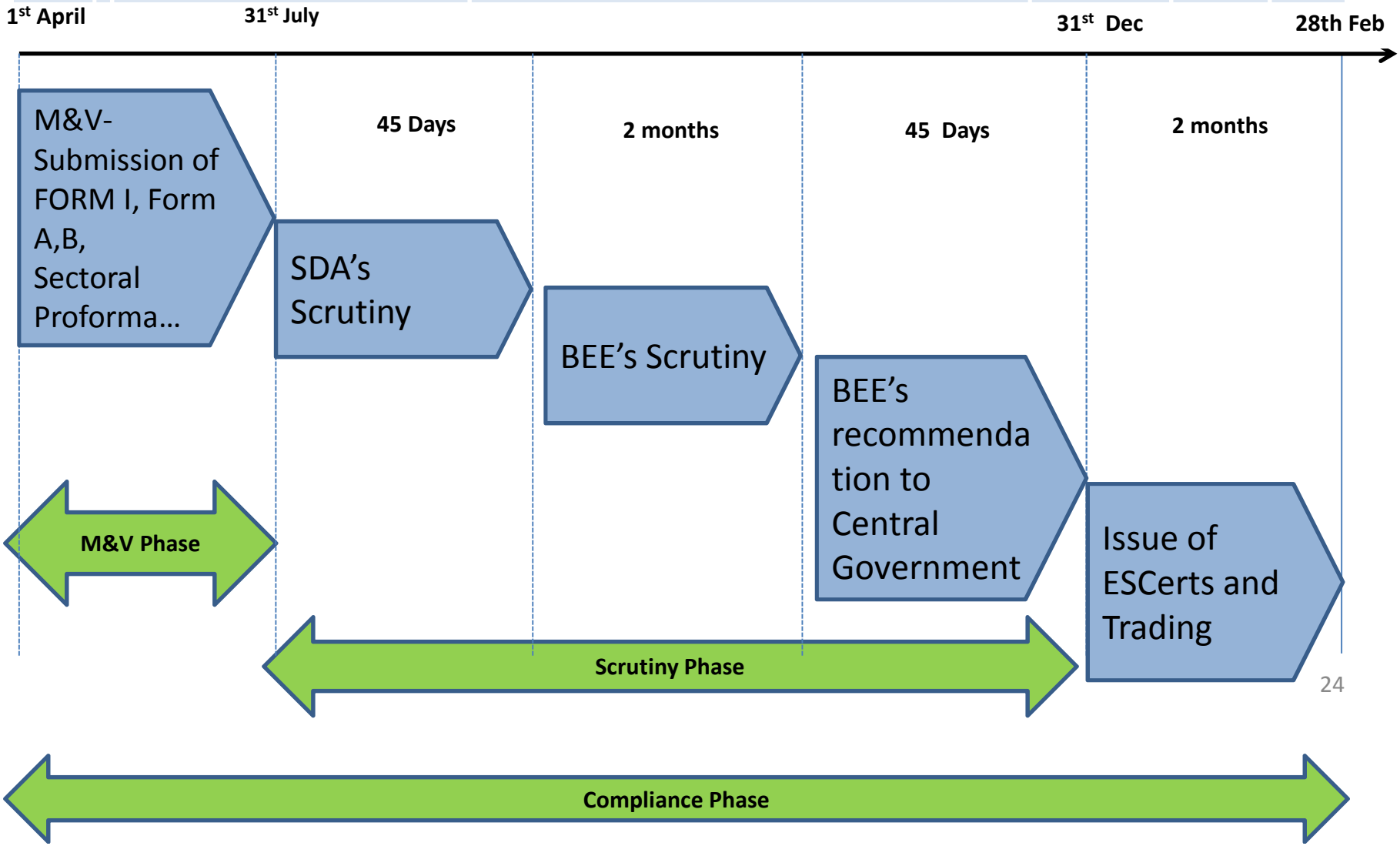
# Key Timelines



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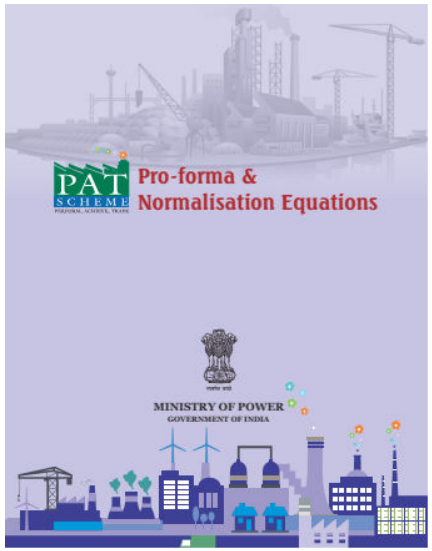
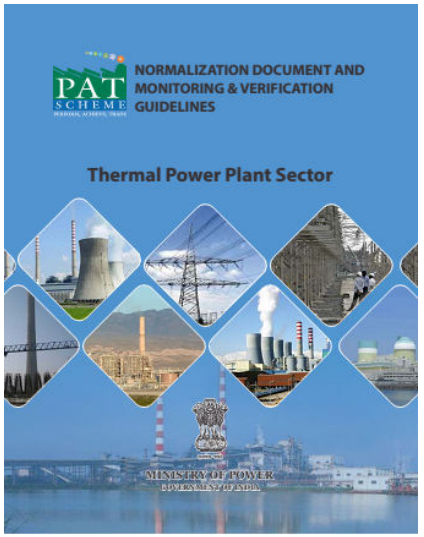
# PAT- Evolution

- Reporting Formats: Pro-forma
- Normalization
- Integration
- Documentation
- Communication
- Adoption
- Evaluation



# PAT Cycle I Experience

- Amendments in the EC Act
- Requires changes in the timelines (PAT Rules)
  - Notified timeline for comprehensive monitoring, reporting and verification was extended
    - Deadline for submission of Performance Assessment Document extended by 45 days
- Need to link Inspection Rules, 2010 with Check verification under PAT to increase the domain of SDAs in the process of check verification
- Capacity of stakeholders
  - Need for building of Capacity of AEAs/SDAs/BEE desired

# PAT Cycle I Experience

- Removal of rules related to early issuance of ESCerts
  - No DCs applied for early issuance
  - Proposal for rolling cycle
- Changes in the target setting methodology
  - To factorize the historical trend of sectoral efficiency improvement
  - National Policy objectives
  - Recognition of Global best sector/DC
- Changes in the baseline setting methodology
  - To accommodate the variations in capacity utilization
  - Single year based baseline fixation
- Normalization factors
  - Need to provide legal sanctity to normalization factors

# PAT- Way forward (PAT Cycle II +)

- Introduction of Rolling cycle:
  - New DCs identified from the notified 11 sectors
  - New sectors identified
    - Petrochemicals and 24 hour usage buildings

- 8 Orientation workshops at 8 SDAs for introduction of PAT and hand holding for data reporting and compliance activities for new DCs

- About 20 Regional workshops at four regions on PAT rules and Targets for PAT cycle II.

# Thank you