Creation of a Domestic Carbon Market: ESCerts Trading Experience

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Enabling Framework

- Energy Conservation Act
  - Designated Consumers to comply with the specific energy consumption norms

- National Action Plan on Climate Change (NAPCC)
  - Nation Mission for Enhanced Energy Efficiency (NMEECE)
    - Perform Achieve and Trade (PAT)
    - Market Transformation for Energy Efficiency (MTEE)
    - Energy Efficiency Financing Platform (EEFP)
    - Framework for Energy Efficient Economic Development (FEEED)
  - Emission intensity reduction by 33 to 35% against 2005 level by 2030

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Perform Achieve & 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.

<table>
<thead>
<tr>
<th>Approach</th>
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<tbody>
<tr>
<td>Specification of specific energy consumption (SEC) norm for each designated consumer in the baseline year and in the target year.</td>
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<tr>
<td>Verification of the SEC of each designated consumer in the baseline year and in the target year by an accredited verification agency.</td>
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<tr>
<td>Issuance of Energy Savings Certificates (ESCerts) to those designated consumers who exceed their target SEC reduction.</td>
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<tr>
<td>Trading of ESCerts with designated consumers who are unable to meet their target SEC reduction after three years.</td>
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<tr>
<td>Checking of compliance, and reconciliation of ESCerts at the end of the 3-year period. In case of non-compliance, liable for financial penalty.</td>
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**PAT Mechanism**

**Trading Exchange**

**SEC (Specific Energy Consumption):** Energy Consumed per unit production

**Typical PAT Cycle**
- 11 Sectors notified so far
- 3 Year cycle for each PAT Cycle
  - PAT1: 2012-15
  - PAT2: 2016-19
  - PAT3: 2017-20
  - PAT 4: 2018-21
  - PAT 5: .............
Achievements from PAT-I (2012-2015)

- **Energy Saving**: 8.67 million tonnes of oil eq. (MTOE) ~1.25% of India’s total primary energy consumption
- **Emission Reduction**: 31 million tonnes of CO2 1.93% of India’s emissions
- **Skill Development**: 5000+ Engineers and operators, 14000+ Energy Auditors & Managers, 200+ Accreditations
- **Savings**: Rs 9,500 Crores (~ $1.46 Billion) from saved energy consumption
- **Investment**: Rs 26,517 Crore (~ $4.07 Billion) Invested

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Designated Consumers

Energy manager (EM)

Plant Head

Empaneled Accredited Energy Auditor

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Process Flow For Issuance of ESCerts

Designated Consumers

Yes

Empanneled Accredited Energy Auditor

No

Energy manager (EM)

State Designated Agency

Technical Officer

Nodal Officer

No Response

Plant Head

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Process Flow For Issuance of ESCerts

Designated Consumers

- Energy manager (EM)
  - Plant Head
    - Yes
    - No
  - Yes
  - No
  - Response

State Designated Agency

- Technical Officer
  - No Response
  - Yes
  - No
  - Response

Bureau of Energy Efficiency

- Sector Project Engineer
  - No Response
  - Yes
  - No Response

ESCerts In Charge

- DG/DDG
Process Flow For Issuance of ESCerts

Designated Consumers

Energy manager (EM)

No

Plant Head

Yes

Empanelled Accredited Energy Auditor

State Designated Agency

Technical Officer

Nodal Officer

Bureau of Energy Efficiency

Sector Project Engineer

No Response

Sector In-Charge

No Response

ESCerts In Charge

No Response

Yes

DG/DDG

No Response

Yes

No

Response

No

Response

No

Response

No

Response
Process Flow For Issuance of ESCerts

1. Designated Consumers
   - Energy manager (EM)
     - Plant Head
       - Yes: Empauned Accredited Energy Auditor
       - No:
         - Technical Officer
           - Nodal Officer
             - No Response
     - No:
       - Response

2. State Designated Agency
   - Designated Officer (Ministry of Power)

3. Bureau of Energy Efficiency
   - Sector Project Engineer
     - No: No Response
     - Yes: ESCerts In Charge
       - No: No Response
       - Yes: DG

4. Ministry of Power
   - Designated Officer (Ministry of Power)

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ESCerts Trading was launched by Hon’ble Minister of State (Independent Charge) for Power and New & Renewable Energy Shri R K Singh On 26th September, 2017 at New Delhi
Process flow for ESCerts trading

Buy Bid (13:00-15:00)

Sell Bid (13:00-15:00)

DC Buyer

Power Exchange

DC Seller
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DC Buyer
DC Seller
Buy Bid (13:00-15:00)
Sell Bid (13:00-15:00)
Sell and Buy Bids for Verification by 15:30
Confirmation & Shortages, if any (by 16:00)

Process flow for ESCerts trading

Bureau of Energy Efficiency
PATNET

Main Data Depository

Registry

Power Exchange

Sell Bid (13:00-15:00)

Buy Bid (13:00-15:00)

DC Buyer
DC Seller

Ministry of Environment, Forest and Climate Change
Government of India
Process flow for ESCerts trading

1. **Registry**
   - Bureau of Energy Efficiency
   - PATNET

2. **Main Data Depository**
   - Confirmation & Shortages, if any (by 16:00)
   - Sell and Buy Bids for Verification by 15:30

3. **Power Exchange**
   - Reports

4. **DC Buyer**
   - Sell Bid (13:00-15:00)

5. **DC Seller**
   - Buy Bid (13:00-15:00)
Process flow for ESCerts trading

Bureau of Energy Efficiency
PATNET

Registry

Main Data Depository

Power Exchange

Reports

DC Buyer

DC Seller

Sell and Buy Bids for Verification by 15:30

Confirmation & Shortages, if any (by 16:00)

Sell Bid (13:00-15:00)

Buy Bid (13:00-15:00)

Market Clearance (Volume & Price) by 17:00

Sell and Buy Bids for Verification by 17:15
Process flow for ESCerts trading

Bureau of Energy Efficiency
PATNET

Main Data Depository

Registry

Power Exchange

Reports

DC Buyer

DC Seller

Sell and Buy Bids for Verification by 15:30

Transaction Approval by 17:30

Market Clearance(Volume & Price) by 17:00

Sell Bid (13:00-15:00)

Buy Bid (13:00-15:00)

Confirmation & Shortages, if any (by 16:00)

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Ministry of Environment, Forest and Climate Change
Government of India
Process flow for ESCerts trading

- **Registry**
  - A/C Update of concerned eligible entity which DCs can see through PATNet

- **Main Data Depository**
  - Transaction Approval by 17:30
  - Confirmation & Shortages, if any (by 16:00)

- **Power Exchange**
  - Market Clearance (Volume & Price) by 17:00
  - Sell and Buy Bids for Verification by 15:30

- **Reports**
  - Sell Bid (13:00-15:00)
  - Buy Bid (13:00-15:00)

- **DC Buyer**

- **DC Seller**

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Process flow for ESCerts trading

Bureau of Energy Efficiency
PATNET

Main Data Depository

Reports

Transaction confirmation report by 17:30

Sell Bid (13:00-15:00)

DC Buyer

Power Exchange

Market Clearance (Volume & Price) by 17:00

DC Seller

Buy Bid (13:00-15:00)

Transaction confirmation report by 17:30

Registry

A/C Update of concerned eligible entity which DCs can see through PATNet

Sell and Buy Bids for Verification by 15:30

Sell and Buy Bids for Verification by 15:30

Confirmation & Shortages, if any (by 16:00)

Transaction Approval by 17:30
Achievements & Targets

Till now 7 trading sessions has been completed since 26th September, 2017.

More than 180,000 Volume of ESCerts have been traded.

PAT cycle I has achieved an energy saving of 8.67 mtoe against the targeted energy saving of 6.686 mtoe which is about 30% over achievement.

PAT cycle II, 621 DCs from 11 sectors are included in the scheme.

Projected savings of 18.06 mtoe in 2020, which accounts for avoiding emission of about 62 Million Tonnes of CO2.
Thank You!

For more information:
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