ESCOs in India

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Image Source: Partha Chowdhury
Outline

- Legal Frameworks for ESCOs
- ESCO Licensing
- Drivers
- ESCO Markets: Trends and Challenges
Energy Efficiency in India

- **~150 billion USD** market opportunity
- **~184 billion kWh per year** energy savings potential
- **Energy consumers:** buildings (residential), transport, industry and agriculture
- **Legal Framework:** *Energy Conservation Act 2001* (amended in 2022)
ESCOs in India

- **~ 150 ESCOs** in India
- Mostly vendor ESCOs; owned by manufacturers
- National and multi-national entities
- Maxes at USD 300,000 ticket size
- Mostly smaller ESCOs (< 25 employees)
- Most avoid financing projects
- Client base: industries, buildings, IT, municipalities

Source: AEEE
What is an ESCO?

Energy Service Companies design and implement energy saving solutions, after identifying measures through energy audits.

ESCOs may finance the upfront cost of implementing energy efficiency measures, and recover the same from client through accrued energy savings.
Energy Conservation Act

- Introduced in 2001 (amended in 2022)
- Primary legal framework
  - mandates energy audits for “designated consumers” only by “accredited energy auditors”
  - Mandatory, for energy intensive users ~“Designated Consumers”
    - Energy audits and baseline
    - Energy use targets

Petrochemicals Refineries
Cement
Aluminum
Iron & Steel
Chemicals
Pulp & Paper
Textile
Thermal Power Plant
DISCOMs
Transport: Railways
Commercial: Hotels
ESCO Accreditation

- Launched in 2008 by Bureau of Energy Efficiency (BEE)
- EAC provision for BEE to
  - specify certification procedures
  - maintain registry of accredited auditors
- BEE accreditation and grading mandatory for ESCOs
- Managed by SEBI certified risk rating agencies (CRISIL, ICRA, CARE etc.)
- 5 scale grading system

<table>
<thead>
<tr>
<th>Grading</th>
<th>Definition</th>
<th>Score</th>
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<tbody>
<tr>
<td>Grade 1</td>
<td>Very High</td>
<td>85 and above</td>
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<tr>
<td>Grade 2</td>
<td>High</td>
<td>70-84</td>
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<tr>
<td>Grade 3</td>
<td>Good</td>
<td>55-69</td>
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<tr>
<td>Grade 4</td>
<td>Average</td>
<td>40-54</td>
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<tr>
<td>Grade 5</td>
<td>Poor</td>
<td>0-39</td>
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Source: Bureau of Energy Efficiency
ESCO Accreditation

- **Grading criteria**
  - **Business risk: track record | 40%**
    - Number of projects and industries served
    - Savings achieved
    - Project pipeline
  - **Financial solvency and flexibility | 35%**
    - Profits, cashflows and turnovers
    - Debt, accruals and receivables management
  - **Organizational stability | 25%**
    - BEE Accredited & Certified auditors
    - Ownership and management
    - Quality assurance systems

- Bi-annual national examinations
  - Certified energy managers & auditors
    - 13,700
  - BEE Accreditation Advisory Committee
  - BEE Accredited Auditors
    - ~200
Source: Bureau of Energy Efficiency
ESCO Drivers in India

- 2 big ESCO drivers
  - Perform, Achieve and Trade (PAT) Scheme
  - EESL Super-ESCO
  - Building Energy Star Rating Program
Perform, Achieve and Trade Scheme

- PAT~ Market oriented regulation
- **Mandatory EE regulation**
- BEE sets mandatory energy saving targets for DCs
- Tradeable Energy Saving Certificates (ESCerts)

Central Electricity Regulatory Commission
Regulator for ESCerts Trading
BEE Administrator

Specific Energy Consumption Norms and Standards by BEE

Designated Consumers

Trading Platforms
India Energy Exchange Limited
Power Exchange India Limited
Hindustan Power Exchange Limited

Surplus Savings

POSOCO
Registry and Bookkeeper for ESCerts & DCs

Designated Consumers

Audits and EE Measures by ESCOs for Designated Consumers

Sell ESCerts

Buy ESCerts

Designated Consumers
- 7 PAT cycles since 2012
- ~1,200 Designated Consumers
- 10 billion USD investment mobilization
- 24 Mtoe annual energy savings

**CYCLE I**
- 2012-2015
- ~475 DCs
- 8 sectors
- 8.7 Mtoe energy saved
- 3.8 million ESCerts

**CYCLE II**
- 2016-2019
- ~670 DCs
- 14 Mtoe energy savings
- 5.7 million ESCerts issued

**CYCLE III - VI**
- 2019- present
- 11 sectors
- New Sectors: DISCOMs, Indian Railways, Commercial Buildings

- Petrochemicals Refineries
- Cement
- Aluminum
- Iron & Steel
- Chemicals
- Pulp & Paper
- Textile
- Thermal Power Plant
- DISCOMs
- Transport: Railways
- Commercial: Hotels
ESCerts Trading 2023

Price ~ 22 USD/ ESCert
1 ESCert ~ 1 Mtoe

Source: Bureau of Energy Efficiency
Super ESCO: Energy Efficiency Services Limited

- Public sector company to develop ESCO markets
- Established by Ministry of Power
- Combines **bulk procurement** + **ESCO** models
- Investment from WB, ADB, GEF and other multilateral agencies
- Standardized EPCs

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<tr>
<th>Projects</th>
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<tbody>
<tr>
<td>Public buildings retrofit</td>
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<tr>
<td>Super-efficient cooling appliances</td>
</tr>
<tr>
<td>MSME efficiency</td>
</tr>
<tr>
<td>Agricultural pumpsets</td>
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<tr>
<td>Municipal streetlighting</td>
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<tr>
<td>Lighting</td>
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<td>Resilient buildings</td>
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Super ESCO: EESL

1. Building Energy Efficiency Program
   - Retrofit/ appliance replacement of nearly 10,000 public buildings
   - LEDs, 5 star ceiling fans, ACs
   - 3 or 5 year standard payback term
   - 42 million USD investment

2. EESL’s Super-efficient Airconditioning Program
   - Split and window inverter AC
   - New and replacement
   - Green ACs ~ low GWP refrigerant (<700)
   - Target: public buildings and banking sector
   - 22% price drop through demand aggregation
   - Created market entry for ~ 5.4 & 5.2 ISEER
Challenges

- **Investment Recovery**
  - Acceptable savings: accurate M&V
  - Complex contracts

- **Inadequate financing for smaller ESCOs**
  - Low confidence in cash flow based financing
  - Small project size
  - Inadequate risk guarantees

- **Inadequate demand:**
  - Mostly voluntary policies for commercial and residential
  - EE low priority
  - High payback expectation
Financing ESCOs

- **Partial Risk Sharing Facility (PRSF) for ESCOs**
  - World Bank, GEF
  - Managed by SIDBI, with a cohort of 10-12 commercial banks
  - Risk guarantees to banks ~ 75% of principal investment
  - Target ~ 100 million USD
Demand Drivers

- **Everything-as-a-service**
  - Cooling-as-a-service
  - Energy-as-a-service
- **New technologies**
  - Pilot net zero energy buildings on ESCO models
  - Heat pump deployment in colder regions (public buildings)
- **Star Labelling Program scale-up**
- **Growing adherence to ESG**
- **Green Credit Programme** (sustainable buildings)