G20 Energy End-Use Data and Energy Efficiency Metrics Workshop

Arijit Sengupta, Director
Bureau Of Energy Efficiency

Date: 29 October, 2020
Time: 16:30 IST
## Energy Savings in India in 2018-19 - Highlights

<table>
<thead>
<tr>
<th>Savings</th>
<th>Electrical</th>
<th>Thermal</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Energy</td>
<td>136.37 BU</td>
<td>12 Million Toe</td>
<td>23.73 Million Toe</td>
</tr>
<tr>
<td>Monetary (USD Billion)</td>
<td>9.57</td>
<td>3.15</td>
<td>12.75</td>
</tr>
<tr>
<td>Emissions</td>
<td>111.83 Mt CO2</td>
<td>39.91 Mt CO2</td>
<td>151.74 Mt CO2</td>
</tr>
</tbody>
</table>

- Total energy savings is **2.7%** of total primary energy supply of the country
Energy savings vis-à-vis Energy Consumption

<table>
<thead>
<tr>
<th>Year</th>
<th>Energy Savings (Mtoe)</th>
<th>Energy Consumption (Mtoe)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2011-12</td>
<td>1.68</td>
<td>280.93</td>
</tr>
<tr>
<td>2012-13</td>
<td>2.46</td>
<td>332.93</td>
</tr>
<tr>
<td>2013-14</td>
<td>3.02</td>
<td>424.5</td>
</tr>
<tr>
<td>2014-15</td>
<td>12.04</td>
<td>427.52</td>
</tr>
<tr>
<td>2015-16</td>
<td>12.10</td>
<td>483.95</td>
</tr>
<tr>
<td>2016-17</td>
<td>12.90</td>
<td>519.28</td>
</tr>
<tr>
<td>2017-18</td>
<td>16.87</td>
<td>553.80</td>
</tr>
<tr>
<td>2018-19</td>
<td>23.80</td>
<td>605.40</td>
</tr>
</tbody>
</table>

Energy Savings (Mtoe) | Business as Usual (Mtoe) | Actual Consumption (Mtoe)
Declining Energy Intensity - INDIA

Energy Intensity of India at 2011-12 prices in Mega Joule / rupee

This decline may be due to:

- Faster growth of GDP than energy demand
- The services sector having a growing share of the economy
- Effective implementation of energy efficiency programmes

Source: Energy Statistics 2020
List of schemes/programmes considered

Sectors

Industry
- Large
  - PAT Scheme
  - BEE - SME
  - BEE - UNIDO-GEF
  - BEE-WB-GEF
- MSME

Domestic
- Appliances
  - S&L
  - UJALA
- Buildings
  - Residential labeling
  - EcoNiwas Samhita

Agriculture
- AgDSM
  - Star Rated Pumps

Transport
- Road Transport
  - CAFE
  - Traction & Non Traction
  - FAME

Railways

Commercial
- Buildings

Municipality
- MuDSM
  - ECBC
  - SLNP
  - MEEP
  - Star Rated Buildings
  - BEEP
  - Green Building Programs

Bureau of Energy Efficiency, Ministry of Power, Government of India
# Data Collection Approach

## Stakeholder Consultation
- BEE
- EESL
- WB/SIDBI & UNIDO
- ICAT
- DHI
- Ministry of Railways
- CII
- GBCI
- TERI-GRIHA

## Scheme Specific Data Collection

### Energy Efficiency in MSME Clusters
- PAT, S&L, ECBC, Star Rated Buildings, CAFÉ Norms, BEE SME Programme
- UJALA, AgDSM, MuDSM (SLNP), BEEP, National EV mission

### CAFÉ Norms for Vehicles
- FAME Scheme for EV adoption
- EE in Traction and Non-traction
- Green Building IGBC
- Green Building LEED
- Green Building GRIHA

## Data Analyzed

- **Electricity saved in terms of Billion Unit**
  - (1 BU = 1 TWh = $10^9$ kWh)
- **Energy saved in terms of MTOE**
  - (1 TOE = 11,630 kWh)
- **Monetary savings by adapting Energy savings measures**
  - (Cost/toe = INR 18,402 & Cost/kWh = INR 5.00)
- **Reduction in CO2 emissions**
  - (1 kWh saving = 0.82 kg of CO2 emission reduction)
Data Collection Approach

**BEE Data**

- Appliances - S&L Portal
- Industry - PAT Net Portal
- SME- Energy Mapping Study (in progress)
- Buildings - EMIS (under development)
Impact of Covid-19 on Data Collection Approach

Impact in Industry Sector

• Due to COVID-19 pandemic, data submission deadline (Form-1) for 1073 Designated Consumers (DCs) under Perform, Achieve and Trade(PAT) Scheme was extended by Two Months.

• The Monitoring and Verification of DCs under PAT Cycle-3 was also extended by Two Months.

Impact in Appliances Sector

• Due to COVID-19 pandemic, the quarterly data updation by the manufacturers of 26 appliances covered under Standards & Labeling Scheme on the Star Label Portal of BEE was extended on case to case basis.
Urja Dakshata Information Tool: Initiative by BEE and WRI to facilitate a database to monitor EE

India's Energy Intensity Has Improved By More Than 15% From 2011-12

Energy Efficiency Achievements Of India
YEAR 2018-19

23.72 MTOE
(MTOE = Million tonnes of oil equivalent)

151.74 MTCO₂E
(MTCO₂E = Million tonnes of Carbon Dioxide)

INR 89122 CRORE
(1 Crore = 10 Million)

Energy Savings
Reduction in CO₂ Emissions
Monetary Savings

Bureau of Energy Efficiency, Ministry of Power, Government of India
## Sector-wise Savings Potential

### EXPECTED OUTCOME – 2017-31

<table>
<thead>
<tr>
<th>Sector</th>
<th>Energy Consumption in 2031 (BAU)</th>
<th>Savings by 2031</th>
<th>Emission Reduction by 2031 (MtCO2)</th>
<th>Investment Potential (USD Billion)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agriculture</td>
<td>64.4</td>
<td>5.7</td>
<td>14</td>
<td>7.35</td>
</tr>
<tr>
<td>Commercial</td>
<td>29.5</td>
<td>4.9</td>
<td>34</td>
<td>11.59</td>
</tr>
<tr>
<td>Domestic</td>
<td>98.6</td>
<td>12.1</td>
<td>101</td>
<td>17.18</td>
</tr>
<tr>
<td>Municipal</td>
<td>8.0</td>
<td>0.9</td>
<td>7</td>
<td>1.19</td>
</tr>
<tr>
<td>Industrial</td>
<td>443.4</td>
<td>47.5</td>
<td>185</td>
<td>73.59</td>
</tr>
<tr>
<td>Transport</td>
<td>232.9</td>
<td>15.8</td>
<td>97</td>
<td>32.29</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>876.8</strong></td>
<td><strong>86.9</strong></td>
<td><strong>438</strong></td>
<td><strong>143.19</strong></td>
</tr>
</tbody>
</table>

*Energy Efficiency is likely to contribute 45% - 50% towards India’s NDC Commitments*
Economic Recovery Options

- Promoting Indigenous component manufacturing.
- Cover new appliances to promote energy efficiency.
- Increasing acceptability of BEE star labelled products abroad.

- Technology replacement
  - Accelerated Deployment of Energy Efficient technologies to stimulate MSME sectors
  - Enhancing MSME Technology Services

- Promoting Cold-chain sector
- Create skilled technical manpower and job opportunities
- Accelerating adoption of clean technologies

- EE measures through deep-retrofitting in Hospital & govt. buildings
- Supporting construction through manufacturing of EE Glass
Thank you