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Indian Power Scenario

Total Installed Capacity – 135 GW  (As on 31.08.2007)

- Hydro    34,130 MW (25%)
- Thermal  86,976 MW (64%)
- Nuclear  4,120 MW (3%)
- Renewable 10,175 MW (7.5%)

- 17th EPS Projections for Requirement of Power

<table>
<thead>
<tr>
<th>Year</th>
<th>Electrical Energy Requirement at Power Station Bus Bars (GWh)</th>
<th>Annual Peak Electric Load at Power Station Bus Bars (MW)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2011-12</td>
<td>968659</td>
<td>152746</td>
</tr>
<tr>
<td>2016-17</td>
<td>1392066</td>
<td>218209</td>
</tr>
<tr>
<td>2021-22</td>
<td>1914508</td>
<td>298253</td>
</tr>
</tbody>
</table>
Renewable Energy - Sources

- Renewable Energy derived from natural processes that are replenished constantly

- Sources of Renewable Energy
  - Hydro (Up to 25 MW)
  - Wind Energy
  - Bagasse / Biomass / Agri Residue
  - Solar
  - Municipal & Industrial Waste
  - Geothermal
  - Tidal Energy
## Renewable Energy Scenario

**Estimated Medium Term Potential (2032) & Achievements as on 30.06.2007**

<table>
<thead>
<tr>
<th>Sources / Systems</th>
<th>Estimated Potential (MW)</th>
<th>Cumulative Achievements (MW)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grid Interactive Solar Power</td>
<td>50,000</td>
<td>2.12</td>
</tr>
<tr>
<td>Bio Power (Agro residues &amp; Plantation)</td>
<td>16,881</td>
<td>543</td>
</tr>
<tr>
<td>Wind Power</td>
<td>45,195</td>
<td>7,231</td>
</tr>
<tr>
<td>Small Hydro Power (up to 25 MW)</td>
<td>15,000</td>
<td>2,013</td>
</tr>
<tr>
<td>Cogeneration – Bagasse</td>
<td>5,000</td>
<td>635</td>
</tr>
<tr>
<td>Waste to Energy</td>
<td>2,700</td>
<td>43</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>134,776</strong></td>
<td><strong>10,467</strong></td>
</tr>
</tbody>
</table>

*Source: MNRE*
Regulatory Framework

- Electricity Act 2003
  - Section 3 - National Electricity Policy and Plan for development of power system based on optimal utilization of resources including renewable sources of energy,
  - Section 4 - GoI to prepare a National Policy permitting stand alone systems (including those based on renewable sources of energy and non-conventional sources of energy) for rural areas.
  - Section 61(h) - Tariff Regulations by Regulatory Commission to be guided by promotion of generation of electricity from renewable energy sources in their area of jurisdiction.
  - Section 86(1)(e) - Regulatory Commission to specify purchase obligation for licensee from renewable energy
Regulatory Framework ...

- **National Tariff Policy:**
  - SERCs to fix minimum percentage for purchase of energy from Renewable Energy sources taking into account availability of such resources in the region and its impact on retail tariffs
  - National tariff policy prefers procurement of power from NCES based on preferential tariff
  - Future procurement of power from NCES through competitive bidding under section 63 within suppliers offering energy from same type of non-conventional sources
  - In the long-term, these technologies need to compete with other sources in terms of full costs
Policy Initiatives

- Independent Nodal Ministry
- Nodal Agencies in Each state
- Accelerated Tax Depreciation benefit
- Capital Subsidy
- Tax Holiday – Section 80 IA
- Mandatory Procurement of RE Power for Distribution Licensees
- Facilitation of Grid Connectivity
- Carbon Credits
Services by IL&FS - Activities

**Project Preparation**
- Conceptualization
- Identification of Sites
- Pre-feasibility Studies
- Statutory Clearances
- Regulatory Clearances
- Risk Management Framework

**Project Development**
- Project Structuring
- Detailed Studies
- Contractual Arrangements
- Marketing Strategies
- Business Plan & Modeling
- Financial Structuring

**Project Financing**
- Preparation of IM
- Debt & Equity Syndication
- Financing Agreements
- Security Agreements
- Financial Closure

**Project Execution**
- Engineering & Procurement
- Project Management
- Construction Supervision
- Operations Management
Experience in RE Sector

- **Wind Energy**
  - Owns 6.5 MW Wind Farm in Andhra Pradesh
  - Advisor for 50 MW ONGC Wind Farm in Karnataka

- **Municipal Waste to Energy Projects**
  - 16 MW Project in Delhi – First RE Project through Competitive Tariff Bidding Process
  - 10 MW Project at Ghazipur in Delhi
  - 6 MW Projects at Kanpur & Pune
Experience in RE Sector ... 2

- Co-Generation Projects
  - Urja Ankur Fund for development of Bagasse based Co-Generation Projects in Maharashtra
  - Sole Transaction Advisor & Fund Arranger for Integrated Cane Processing Project in Maharashtra
  - Represented Maharashtra sugar federation, SISMA, REDAM before MERC for fixing Tariff & creating Regulatory framework
Experience in RE Sector ... 3

- **Hydro Projects**
  - Identification and development of small hydro projects in Uttarakhand, Assam, Meghalaya, Arunachal Pradesh, Chhattisgarh & Sikkim
  - Joint Development of Hydro Projects in Nepal

- **Bio-Diesel**
  - Energy Plantations proposed in Western Maharastra on 4,500 Acres of Wasteland
Experience in RE Sector ... 4

- Solar Power & Geothermal
  - India receives solar energy equivalent to 5,000 trillion kWh/year – IL&FS has been working with MNRE & TERI to facilitate a few grid connected & roof top systems for tapping this resource
  - Geothermal is an upcoming area where the potential in India is estimated at 10,000 MW
  - IL&FS has initiated the discussions with state governments of Chhattisgarh and J&K for development of Geothermal projects
Experience in RE Sector ...

- Financing
  - Equity Fund
  - Managing Various Lines of Credits
  - Association with IIFSL & other funding sources
Institutional Frameworks

- Association with Technology Development Board (TDB), Department of Science & Technology (DST) for project development funding support
- Association with APTDC, a society set-up by CII, GoAP and DST, for technological support
- MoU with TERI for cooperation in facilitation for implementation of renewable energy projects
- Financial support from ADB
Case Study

- Timarpur Okhla Waste to Energy Projects
  - 16 MW Municipal waste to Energy Project
  - Project in association with New Delhi Municipal Corporation & Municipal Corporation of Delhi
  - Project would process 2,050 MT waste per day – 1/3rd Municipal Waste Generated in Delhi
  - Implementation through PPP structure
  - First Project in India in RE sector to implemented through Tariff Based Bidding
  - A Pioneering Project with immense potential for replication
Case Study ... 2

- Project preparation
  - All clearances incl. environmental clearance in place
  - All contractual agreements in place
  - Power Purchase Agreement draft approved by DERC
  - Competitive Bid Documents approved by DERC
  - Tariff arrived through would be accepted by DERC
  - Appraisal & in principal sanction for funding by REC, IREDA & HUDCO
  - Funding committed by ADB
  - Project registered with UNFCCC
IL&FS Competitive Advantage

- Leadership in Project Development
- Strong Domain Knowledge
- Extensive Networking & Relationships
- Strong Partnerships with State & Central Governments, PSU’s
- Geographic Spread
- Access to Financing
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Thank You