Investment Opportunities in Bagasse Cogeneration in India

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Agenda

• Cogeneration: A Golden Opportunity
• Bagasse Cogeneration Potential in India
• Investment Opportunity
• Salient features
Sindicatum Sustainable Resources

- Established in 2005
  - Over 300 affiliated professionals in 10 countries
  - Strong Asia focus; headquartered in Singapore

- Principal investor, developer, owner and operator of renewable energy projects worldwide
  - Projects in China, India, Thailand, Indonesia, Philippines and the United States

- Leading climate change regulatory expertise

- Largest investor in bagasse based cogeneration assets in India

- Widely recognized with industry awards
Co-Generation : A Golden Opportunity

Cogeneration in the Indian Sugar Industry: USD 10 billion investment opportunity in next 5 years

Raw sugarcane transported to the sugar mill

Milling process to produce sugar

Mill produces sugar, and other by-products including bagasse

Power plant produces power and steam, for use in sugar mill

Surplus power exported to the grid

Bagasse utilised in cogeneration process
Co-Generation: A Golden Opportunity

India’s Cogeneration Market
- World’s Second largest Sugar producer
- Industry in existence for more than 100 years
- Cogeneration is expected to be a major driver of the Indian sugar industry in the future

Progressive Policy
- Renewable Energy a priority
- Guaranteed off take and attractive Preferential Tariffs
- Tax holidays for renewable power
- Renewable Energy Certificates
- 10 year Tax Holiday (80 IA) & accelerated depreciation

Progressive technology
- All sugar mills moving towards integrated and sugar mills
- Significant improvement in sugar mill and cogeneration technology in the last decade - Multi-fuel and high pressure boilers (125 kg/cm²) and turbines
- Mill modernization such as steam saving leading to increased in house fuel
Cogeneration Potential in India

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
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</thead>
<tbody>
<tr>
<td>Total Operating Sugar Mills in India</td>
<td>526</td>
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<tr>
<td>Total Cane Crushed</td>
<td>~354 million MT</td>
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<tr>
<td>Sugar Mills without Cogeneration (exportable power)</td>
<td>315</td>
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<tr>
<td>Installed Capacity - Cogeneration</td>
<td>2,800 MW</td>
</tr>
<tr>
<td>Untapped Potential</td>
<td>~5600 MW</td>
</tr>
<tr>
<td>Up gradation of existing plants</td>
<td>~2400 MW</td>
</tr>
<tr>
<td>Total Cogeneration Potential</td>
<td>~8000 MW</td>
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Key Sugar Producing States

- Maharashtra, 35%
- Uttar Pradesh, 26%
- Tamil Nadu, 6%
- Gujarat, 5%
- Others, 14%
Investment Opportunity

Opportunity –

*Shift from Incidental Power Export to Power Export as a Core Business*

<table>
<thead>
<tr>
<th>Opportunity</th>
<th>Investment</th>
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<tbody>
<tr>
<td>New Installations - Untapped Potential</td>
<td>USD 7 billion</td>
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<tr>
<td>Upgradation/Modernization of existing cogeneration plants</td>
<td>USD 3 billion</td>
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Ticket Size of typical Investment - USD 15 - 25 million
## Salient Feature of Bagasse Cogeneration

### Technology
- Proven technology with high efficiency (125 kg/cm²)
- Indigenous technology – Support’s PM ‘Make in India’
- Multi-fuel utilization
- Existing evacuation infrastructure

### Financial Attractiveness
- Comparatively better returns than other RE projects
- High PLF among all RE technologies
- High degree of fuel security (70% - 80%)
- Banks willing to finance

### Other Features
- Policy Support
- Inclusive growth – Biomass collected from local community
- No land purchase required
- Only RE technology in India currently that can supply electricity 24 * 7