Water Management in Industries – Lessons from the CII Awards for Excellence
Excellence in industries through water management awards of CII
Contents of the presentation

- CII-Godrej GBC
- Gist of water awards
- Analysis of region wise / year wise achievement
- Important gains
- Within the fence and beyond the fence concept
- Major highlights
- Case Studies
CII – Sohrabji Godrej Green Business Centre, Hyderabad

A unique Public – Private Partnership
( CII, Govt of Andhra Pradesh, USAID and Pirojsha Godrej Foundation )

Centre of “Excellence” for Energy, Environment, Green Buildings, Renewable energy, Water & Climate change activities in India

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Gist of water awards
Geographical spread of Questionnaires – Regions

<table>
<thead>
<tr>
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<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>%</th>
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<tr>
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<td>24</td>
<td>35</td>
<td>37</td>
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<tr>
<td>West</td>
<td>30</td>
<td>19</td>
<td>14</td>
<td>15</td>
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<tr>
<td>North</td>
<td>18</td>
<td>23</td>
<td>32</td>
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<tr>
<td>East</td>
<td>5</td>
<td>6</td>
<td>12</td>
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<td>76</td>
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© Confederation of Indian Industry
<table>
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<th>Sector</th>
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<tr>
<td>Automobile</td>
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<td>Pharma</td>
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<td>Buildings</td>
<td>8</td>
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<td>16</td>
</tr>
<tr>
<td>Cement</td>
<td>8</td>
<td>Power plant</td>
<td>7</td>
</tr>
<tr>
<td>Chemical &amp; Fertilizers</td>
<td>11</td>
<td>Steel</td>
<td>5</td>
</tr>
<tr>
<td>Engineering</td>
<td>7</td>
<td>Printing &amp; packaging</td>
<td>2</td>
</tr>
<tr>
<td>Beverages</td>
<td>8</td>
<td>Tobacco</td>
<td>2</td>
</tr>
<tr>
<td>Non-ferrous</td>
<td>4</td>
<td>Others (sugar, tyre, glass,</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Textile &amp; Pens)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Total</strong></td>
<td><strong>95</strong></td>
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Water Consumption trends in Indian industry

- Data of 95 industries which participated in CII National Water awards analysed for last 5 years

- Significant reduction in specific water consumption

- Significant increase in waste water recycled
Water Consumption trends in Indian industry...

- Reduction in Specific water consumption - 14 % in last 5 years
- Reduction in effluent discharge
  - Presently - 65 % of effluent recycled
  - 11 % increase in last 5 years
Analysis of sector wise / year wise achievement
Specific Water consumption-Automobile

Annual Specific water consumption m3/vehicle
National Benchmark

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Per capita Water consumption - Automobile

Annual Per capita Water consumption L/person/day

National Benchmark

Standard

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Percentage Effluent recycled - Automobile

- % Effluent Recycled
- National Benchmark

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## Sectorwise water cost as percentage cost of manufacturing

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<th>S.No</th>
<th>Sector</th>
<th>Water cost as percentage cost of manufacturing</th>
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<tbody>
<tr>
<td>01</td>
<td>Cement</td>
<td>0.775</td>
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<td>02</td>
<td>Beverages</td>
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<td>03</td>
<td>Automobile</td>
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<td>04</td>
<td>Pulp and paper</td>
<td>0.57</td>
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<td>05</td>
<td>Power</td>
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<td>06</td>
<td>Engineering</td>
<td>0.15</td>
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<td>07</td>
<td>Chemicals &amp; fertilizers</td>
<td>0.37</td>
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<tr>
<td>08</td>
<td>Non-ferrous</td>
<td>1.33</td>
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Important gains

- 7 years of water awards competition
  - **Tangible benefits**
    - Rapid reduction in specific water consumption
    - Saving of fresh water
    - Low cost of productivity
    - Reduction in effluent generation and associated energy saving
    - Reduction in chemical consumption for treatment
  - **Intangible benefits**
    - Mutual benefits to all stakeholders
    - Opportunity to create livelihood
    - Significantly increase value chain and product eco-efficiency
    - Enhanced Corporate image
Approach to water management

Two pronged approach

Within the fence

Beyond the fence

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Approach to water management
-Within the fence
Approach to Water management-Within the fence

3 pronged approach

Augmentation of water resources & storage

Reduce, Reuse & Recycle (Zero Water Discharge) in Industries / buildings

Reuse of treated municipal waste water in industries
Approach to water management
-Beyond the fence
What are implications for Business?

- Water – not under direct sphere of corporate control
- But can affect companies in different ways
  - External changes can result in steep increase in water costs
  - Production delays
  - Limits on production
  - Strong community opposition to company activities
How is water management beyond the fence useful?

Benefits

- Identification of partnerships with local communities, water authorities, NGO’s and other organizations
- Water related projects that could support local communities
  - By improving water quality for drinking and sanitation
  - For use in agriculture
  - In local industry or recreation
Strategies

❖ What can Businesses do?

➢ Innovating to significantly increase value chain and product eco-efficiency

➢ Investing in the restoration of ecological systems that affect water flow

➢ Engaging in collaborative strategies for maintaining water resources over time
Best practices in Water management
Case study-1
Zero water discharge
Industry
Zero liquid discharge in petroleum refinery

- Varying effluent characteristics
- Segregation of effluent streams
- Installed RO & UF combination for treating waste water
- 1.4 million $m^3$/year of fresh water saved
- 14.6 million $m^3$/year could be saved in 18 refineries across the country
- 100% zero liquid discharge

Zero liquid discharge set up at CPCL refinery Chennai
Case study-2

Reuse of treated municipal waste water in industry, ITC-Bengaluru
Reuse of treated municipal waste water in industry

- Towards conservation of fresh ground water
- Reuse of 200 m$^3$/day of secondary treated waste water
  - Installed full fledged tertiary treated water system using submerged UF-RO membrane
  - Utilized for non-potable purposes
- Fresh water saving of 73000 m$^3$/year
Case study-3

Reduce fresh water consumption in the metal treatment section
Thyssenkrupp Electrical Steel Pvt.Ltd., Nashik, Maharashtra
Reduce fresh water consumption in the metal treatment section

- Saving of 65,000 m³/year of fresh water consumption
- Cost savings of Rs. 2,50,000/year
- Alkaline wastewater treated
  - Neutralisation, addition of settling agent, clariflocculation & passing through a sand and carbon filter and softener

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Case study-4
Reuse of rinse water for glass bottle washing
Pepsico India Ltd.
Reuse of Rinse Water for Glass Bottle Washing

- 0.2 million m³/year of water savings
- 0.6 million/year of cost savings
- 60 - 70% rinse water collected and sent to recovery plant
- Fresh water make up reduced to 65 m³/day
- Investment: Rs. 0.2 million for online UV treatment
- Payback period: 4 months

*Rinse water treated using weak acid cation combined with activated carbon filter sand filter, polishing unit and online UV and reused*
Case study-5
Roof top rain water harvesting
Industry-Saint Gobain Glass, Chennai
Roof top rain water harvesting in industry

- Average rainfall 1200 mm per year - Chennai
- Water harvested 150,000 m³/year
- Fresh water cost saving of Rs. 5 million/year
- Annual Recharge to Ground Water through Rainwater Harvesting
  - More than Annual Withdrawal of Ground Water
  - Water Table in the Open Wells has been maintained

Saint Gobain Glass, Chennai
Thank You