

Water Management in Industries – Lessons from the CII Awards for Excellence





Excellence in industries through water management awards of CII



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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**

Gist of water awards



Geographical spread of Questionnaires – Regions

	2009	2010	2011	%
South	24	35	37	39
West	30	19	14	15
North	18	23	32	34
East	5	6	12	12
Total	76	83	95	100%

Questionnaires - Sector wise

Sector	Nos
Automobile	9
Buildings	8
Cement	8
Chemical & Fertilizers	11
Engineering	7
Beverages	8
Non-ferrous	4

Sector	Nos
Pharma	2
Paper	16
Power plant	7
Steel	5
Printing & packaging	2
Tobacco	2
Others (sugar, tyre, glass, Textile & Pens)	6
Total	95

Water Consumption trends in Indian industry

- ❖ **Data of 95 industries which participated in CII National Water awards analysed for last 5 years**
 - **12 sectors – Power, Pulp & Paper, Engg, Petrochemical, Automobile, Iron & Steel, Non-ferrous metals, Beverages, Chemical, Pharma, Fertilizer, Cement**
- ❖ **Significant reduction in specific water consumption**
- ❖ **Significant increase in waste water recycled**

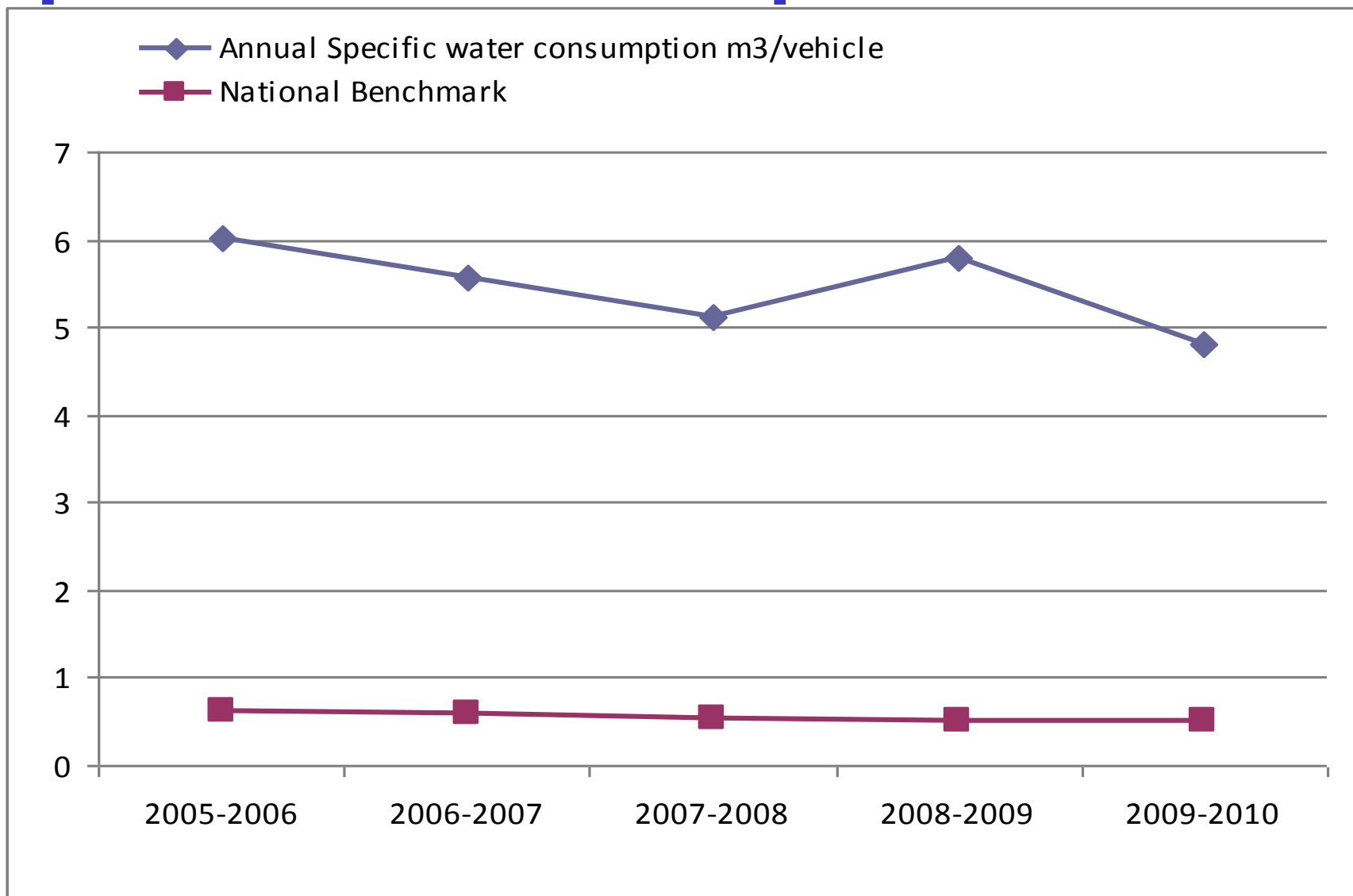
Water Consumption trends in Indian industry...

- ❖ **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**

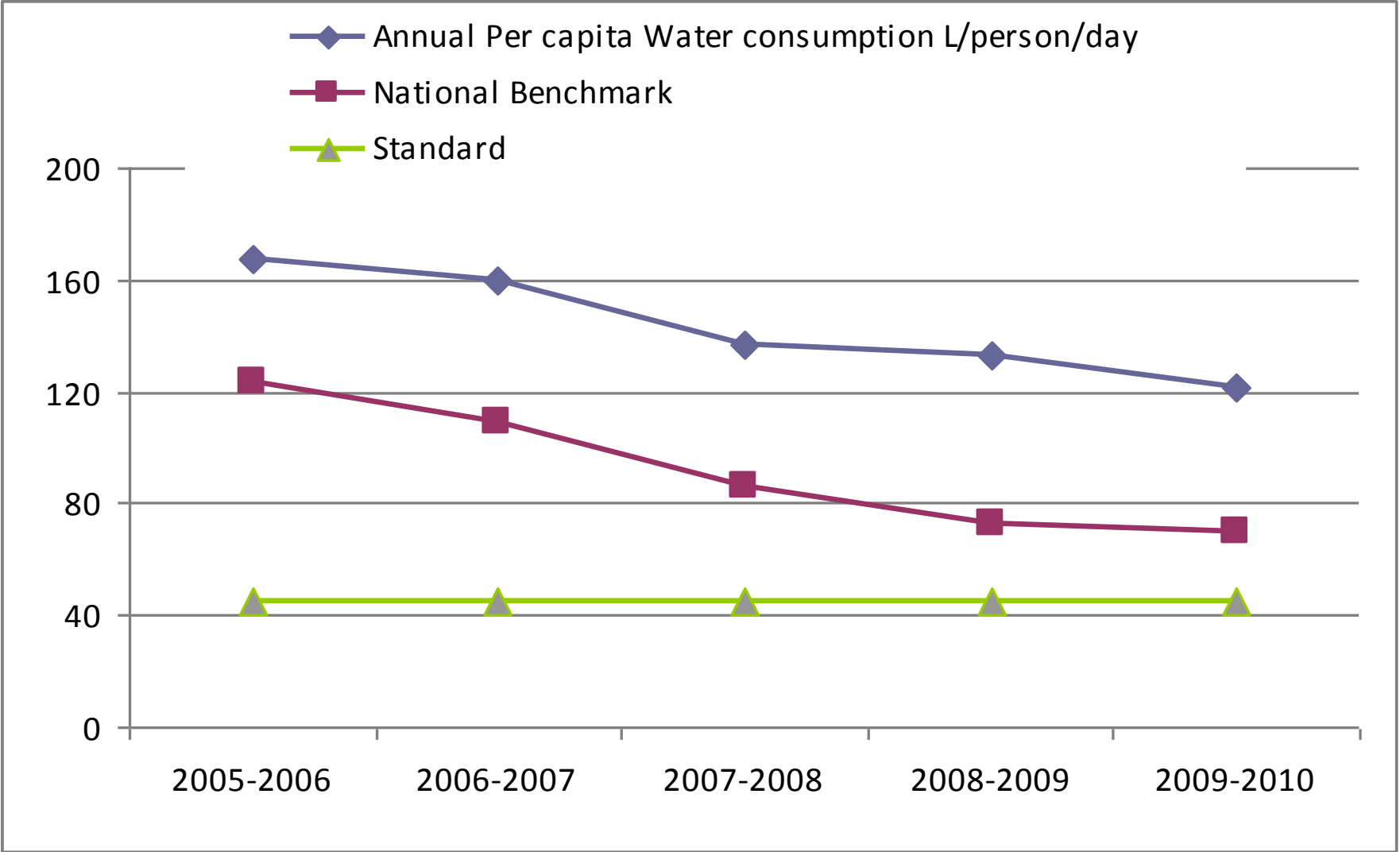
Analysis of sector wise / year wise achievement



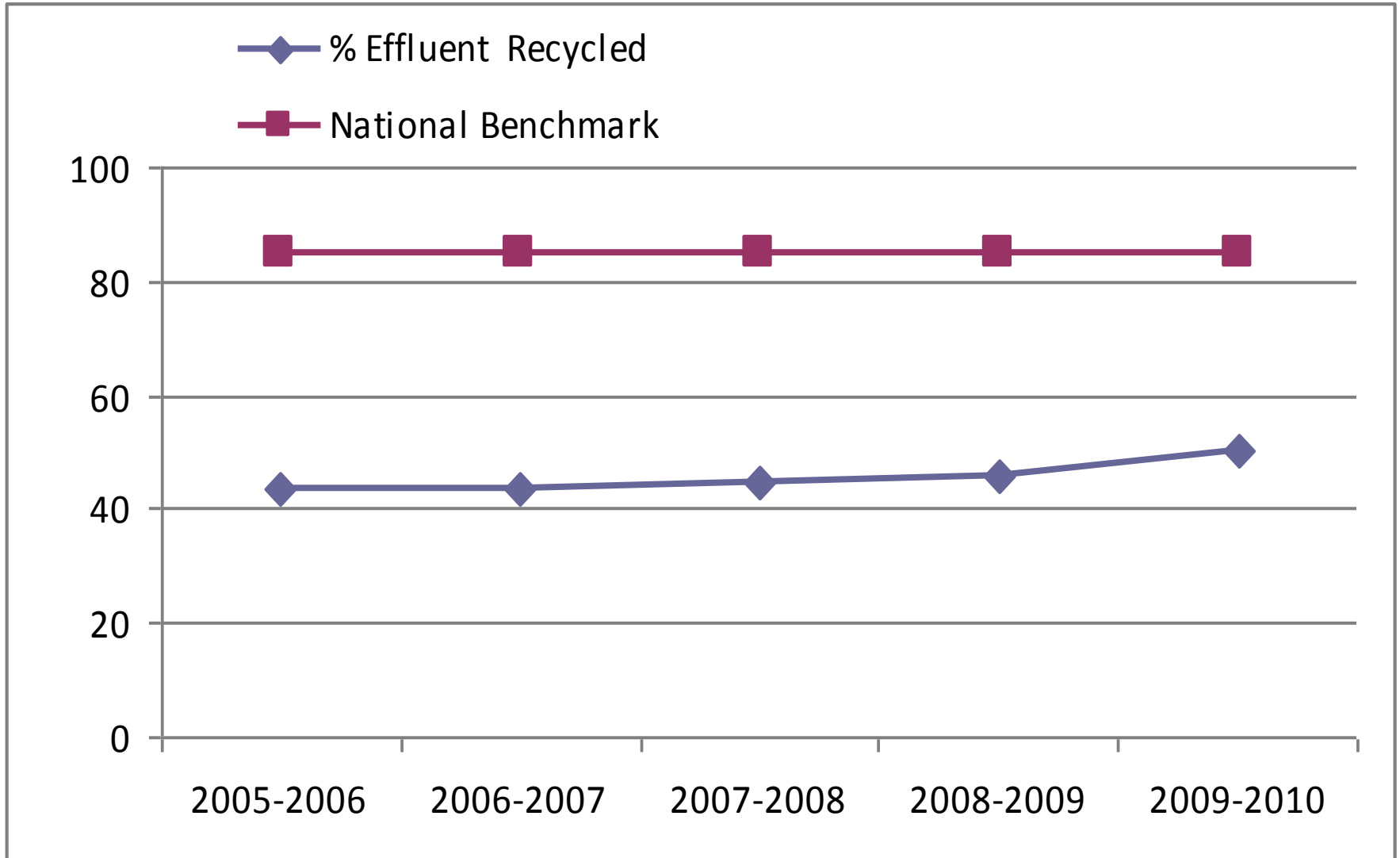
Specific Water consumption-Automobile



Per capita Water consumption- Automobile



Percentage Effluent recycled- Automobile



Sectorwise water cost as percentage cost of manufacturing

S.No	Sector	Water cost as percentage cost of manufacturing
01	Cement	0.775
02	Beverages	0.19
03	Automobile	0.26
04	Pulp and paper	0.57
05	Power	0.278
06	Engineering	0.15
07	Chemicals & fertilizers	0.37
08	Non-ferrous	1.33



Important gains

❖ 7 years of water awards competition

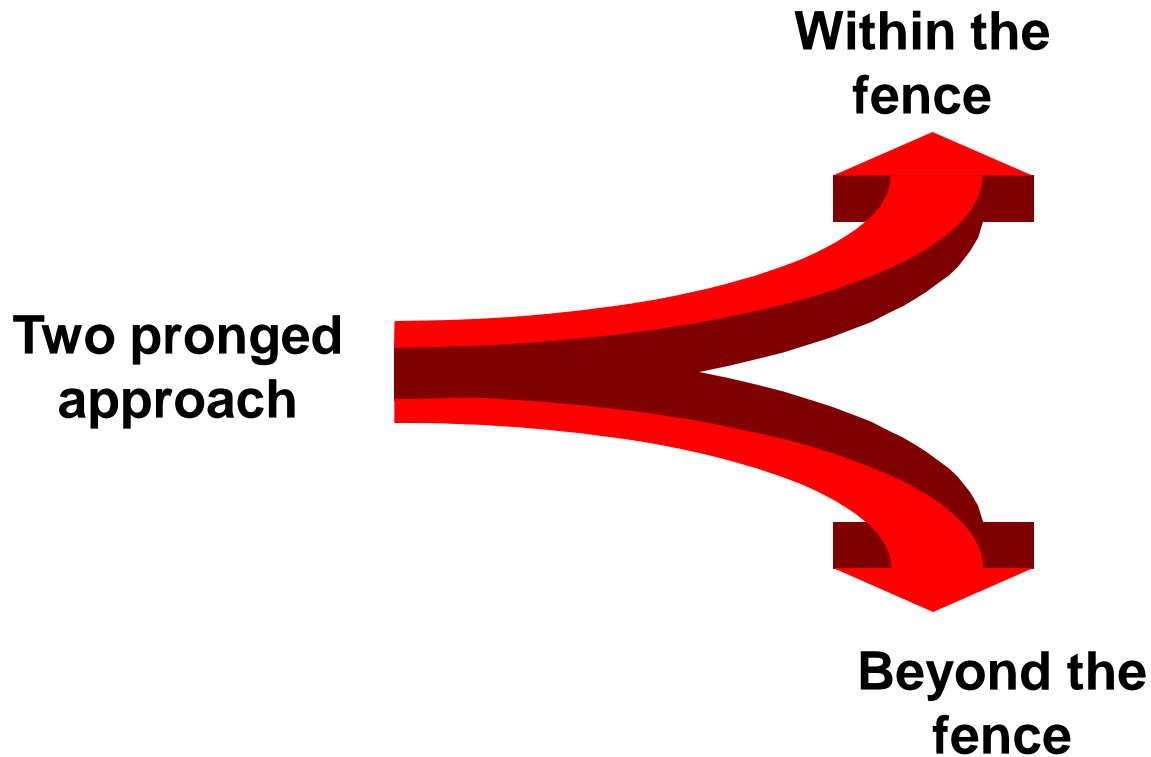
➤ Tangible benefits

- ❑ 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

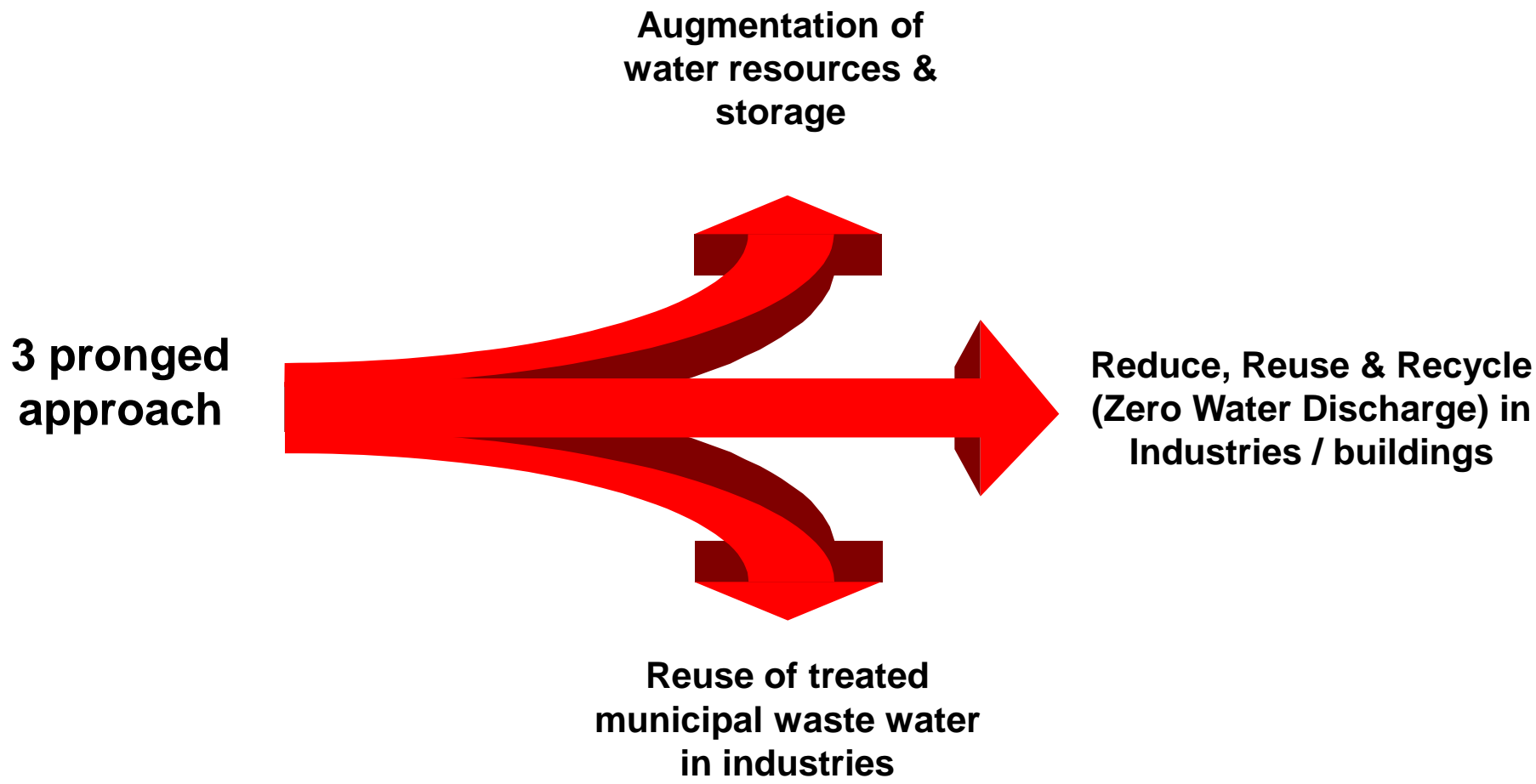
Approach to water management



Approach to water management -Within the fence



Approach to Water management-Within the fence



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 m³ /year of fresh water saved**
- ❖ **14.6 million m³ / 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 m³ /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 73000m³ /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**



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 150,000m³/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