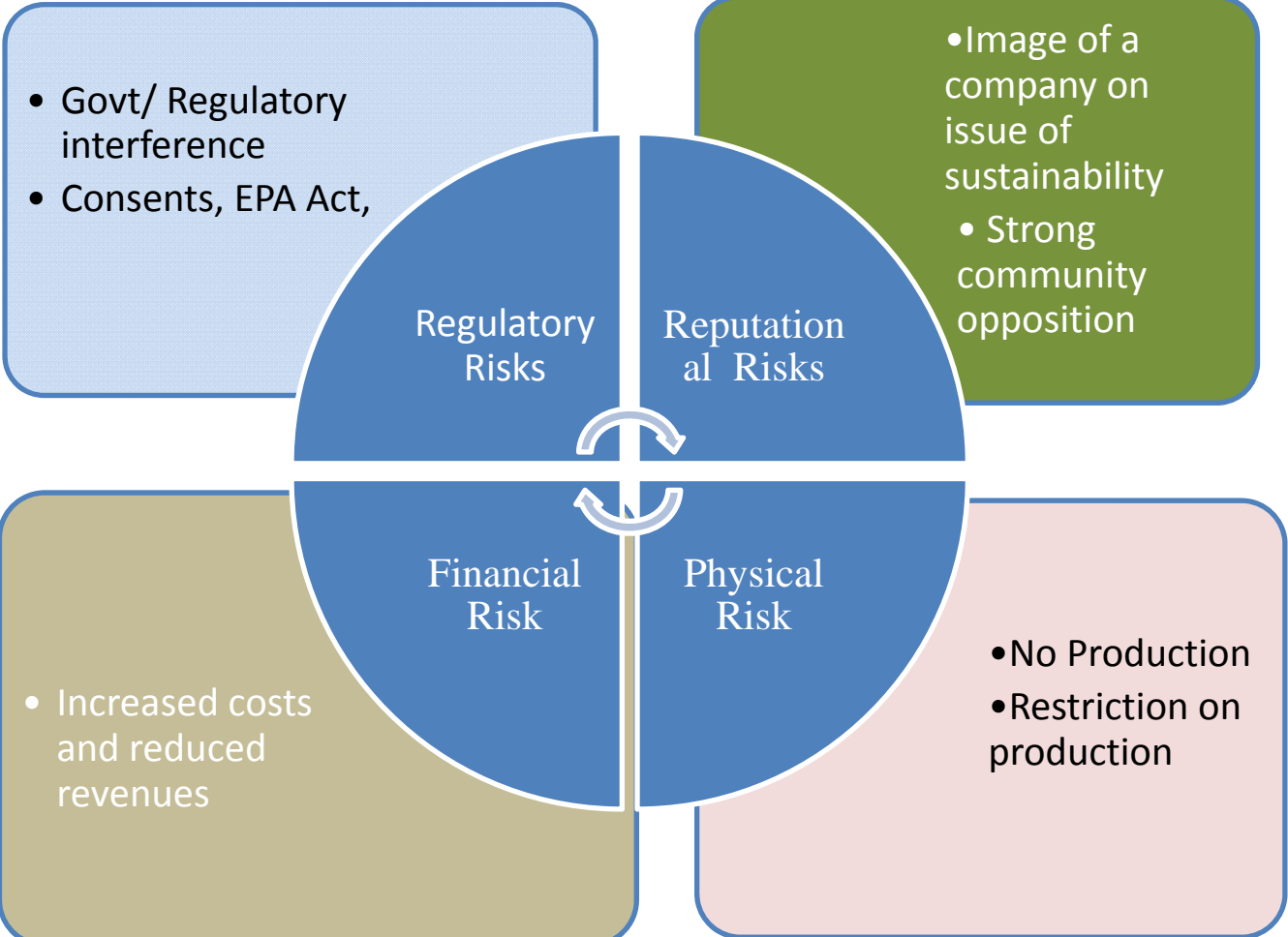


Integrated Industrial Waste Management - A Roadmap to Sustainable Development



Enterprise Risk Management Waste Management



Integration of Technology



Effective Waste Generation
and Management Strategy



Reduction in Waste due Technological interventions



Water current washings by or water recycle by intervention of UF / NF – 30% water savings (PET Chips processing, electroplating, Textile, Pulp and paper units)

Use of E-soft technology for softening of jeans*- Converts atmospheric air into nanobubbles that produce a smoothing effect - 98% savings in water; 78% reduction in energy; 80% reduction in chemical use

Enzymatic chemistry*- Enzymatic Bleach Clean-up* - 20,000 litres / T of textile/yarn (dry weight)

Dyeing Cycle of concentration increased from 5 to 8 by adding chemicals, New flocculants and flocculants

Motor Cleaning by water Jet cleaners

Recovery of Solvents from wastes in Pharma Industry- Aniline/ DMF

Use of dewatering equipment

Waste Management- Behavioral Issues



hasis :

end of pipe' treatment

imum:

onitoring/ measurements

egation

ted:

ource audits/ assessments

ste vendor audits

ning and capability development

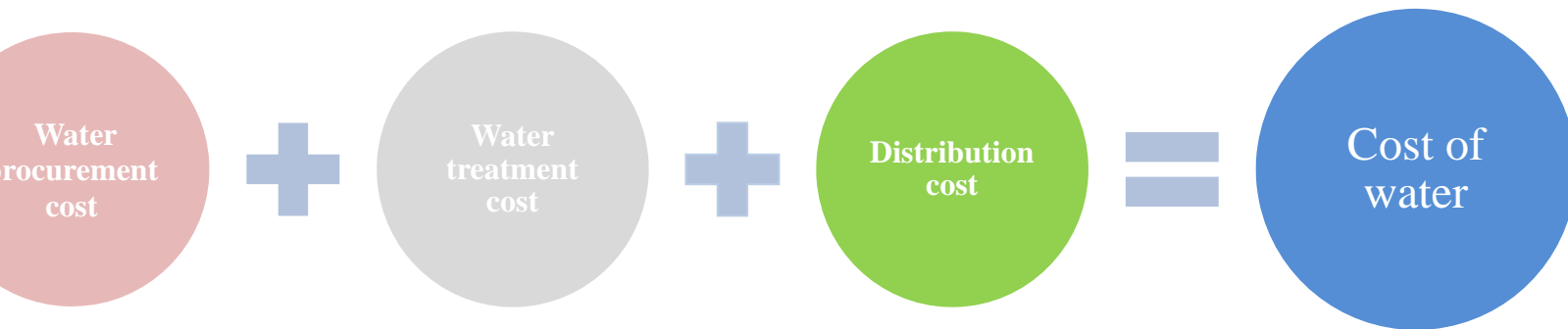
ing into payback period

wledge of operation and maintenance issues

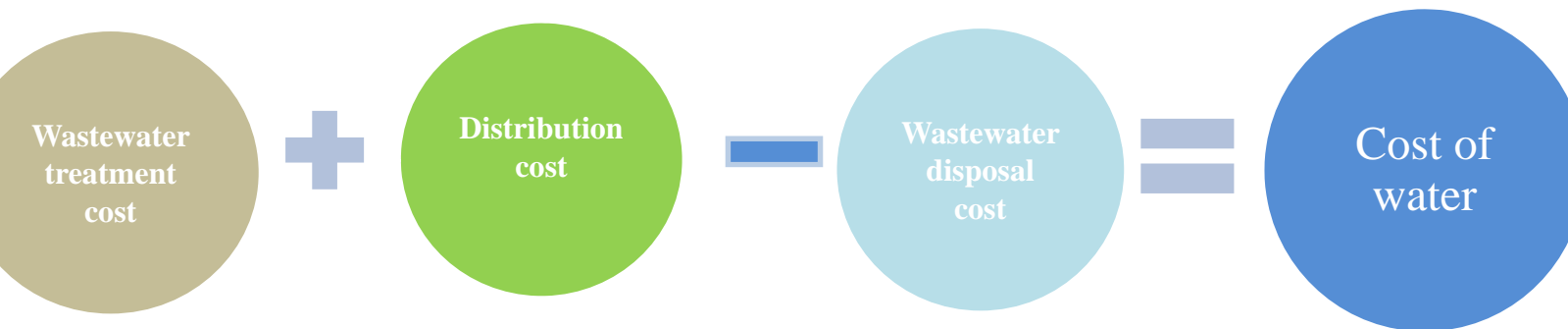
What is the cost of water?



water:



Recycled water:

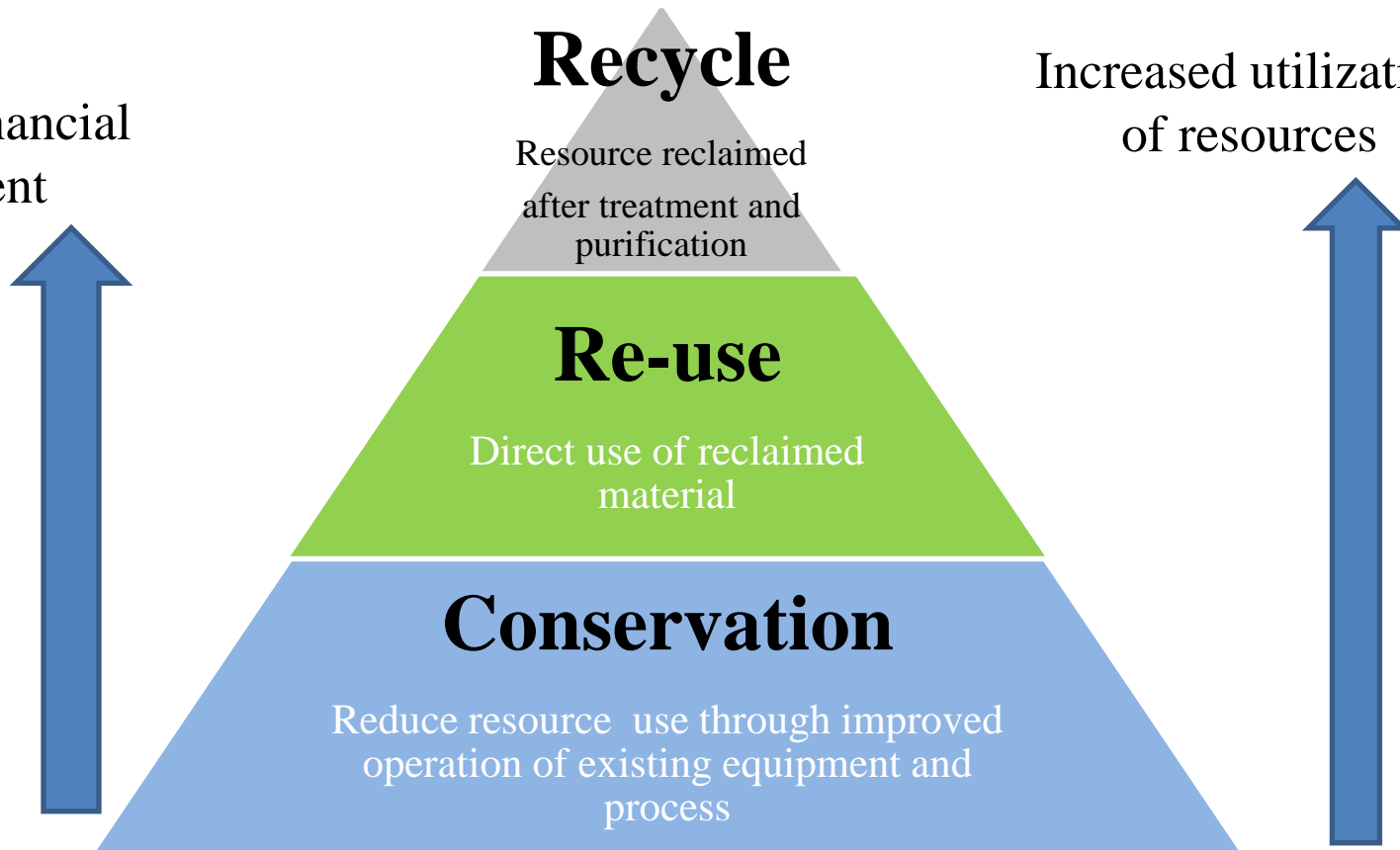


3 R principles in Resource Management



Increased financial investment

Increased utilization of resources



With 1 S – Segregation

1 M – Measurement



Financial Decisions

Water costs & Wastewater Recycle

Industrial Water
Procurement Cost

WSSB Aurangabad- 23
Rs/m³

WSSB Taloja – 30 Rs/m³

WSSB Vapi -23 Rs/m³

WSSB- 42 Rs/m³

Rainwater harvesting
costs

Treated waste water
disposal in CETP cost-
Rs. 23-30/ m³

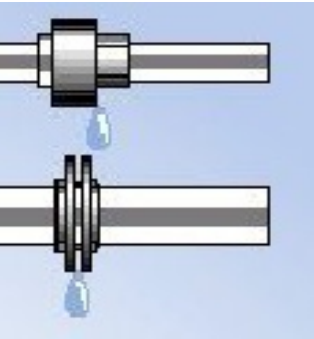
Industrial water treatment
cost
Rs. 25-30 /m³

Treated waste water recycle
cost- Rs. 55-60/ m³

Treated sewage recycle cost-
Rs. 12-15 / KL



Water Losses

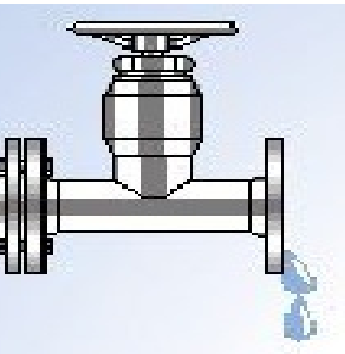


Leaking flanges/ joints

Water Loss- 0.5 litres/ Hour

Water Loss - 4.5 m³/ year

If prevented cost savings – Rs. 135/ year



Leaking valves

Water Loss - 0.1 liters/minute

Water Loss- 6 liters/ hour

Water Loss- 53 m³/ year

If prevented cost savings – Rs. 1600/ year



Leaking pump

Water Loss - 4 liters/minute

Water Loss- 240 liters/ hour

Water Loss - 2100 m³/year

Waste Management- Policy changes



Central/Common Effluent Treatment Plants (CETPs) in India are currently viewed as “central end-of-pipe (effluent) treatment plants” for industrial dischargers

Incentives for segregation,

Incentive to industries who conserve water/ adopt Green technology

Integrating Concept:

Should there be intelligent interlinking of production plants, material & energy flows and infrastructure? So that....

Save on raw materials and energy, minimize emissions, cut logistics costs and exploit synergies

By-products of one plant can be used as the starting materials of another, water cycle between industries within Industrial estates



THANK YOU