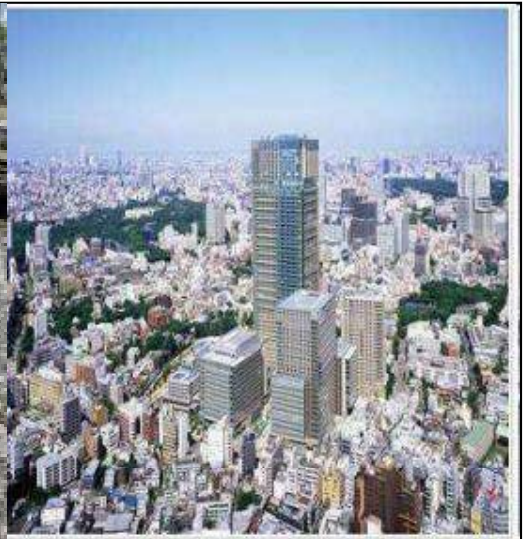




Best water reuse practices in industry



Critical factors in urban water sector

- ❖ Cities likely to house 40% of India's population by 2030
- ❖ Increase in service demand by 2.3 times by 2030
 - Water supply
 - Sewage generated

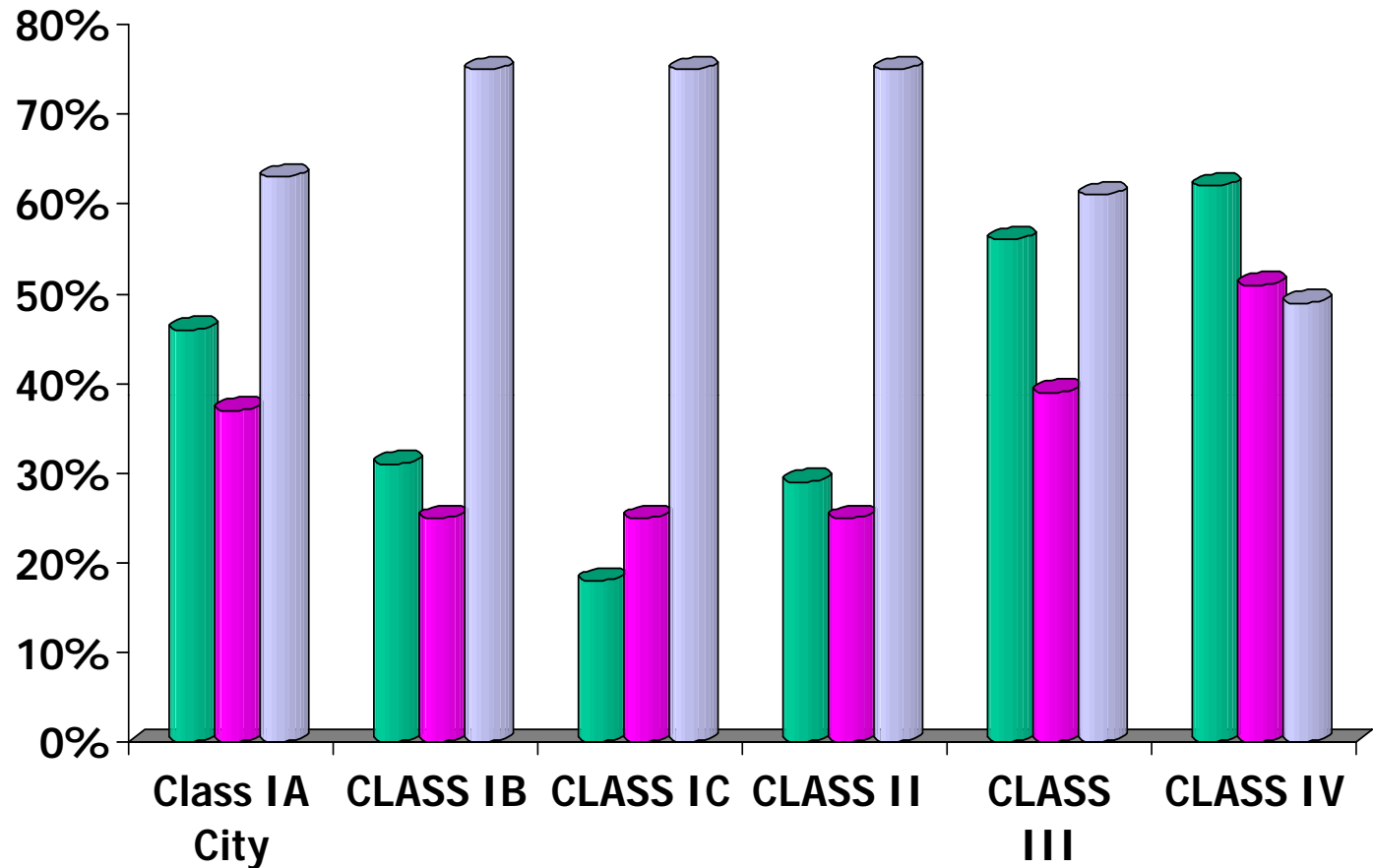


Source:

REPORT OF THE
SUB-COMMITTEE
ON FINANCING
URBAN
INFRASTRUCTURE
IN THE 12th PLAN



■ Water Production ■ Distribution Extension
■ Distribution Upgradation



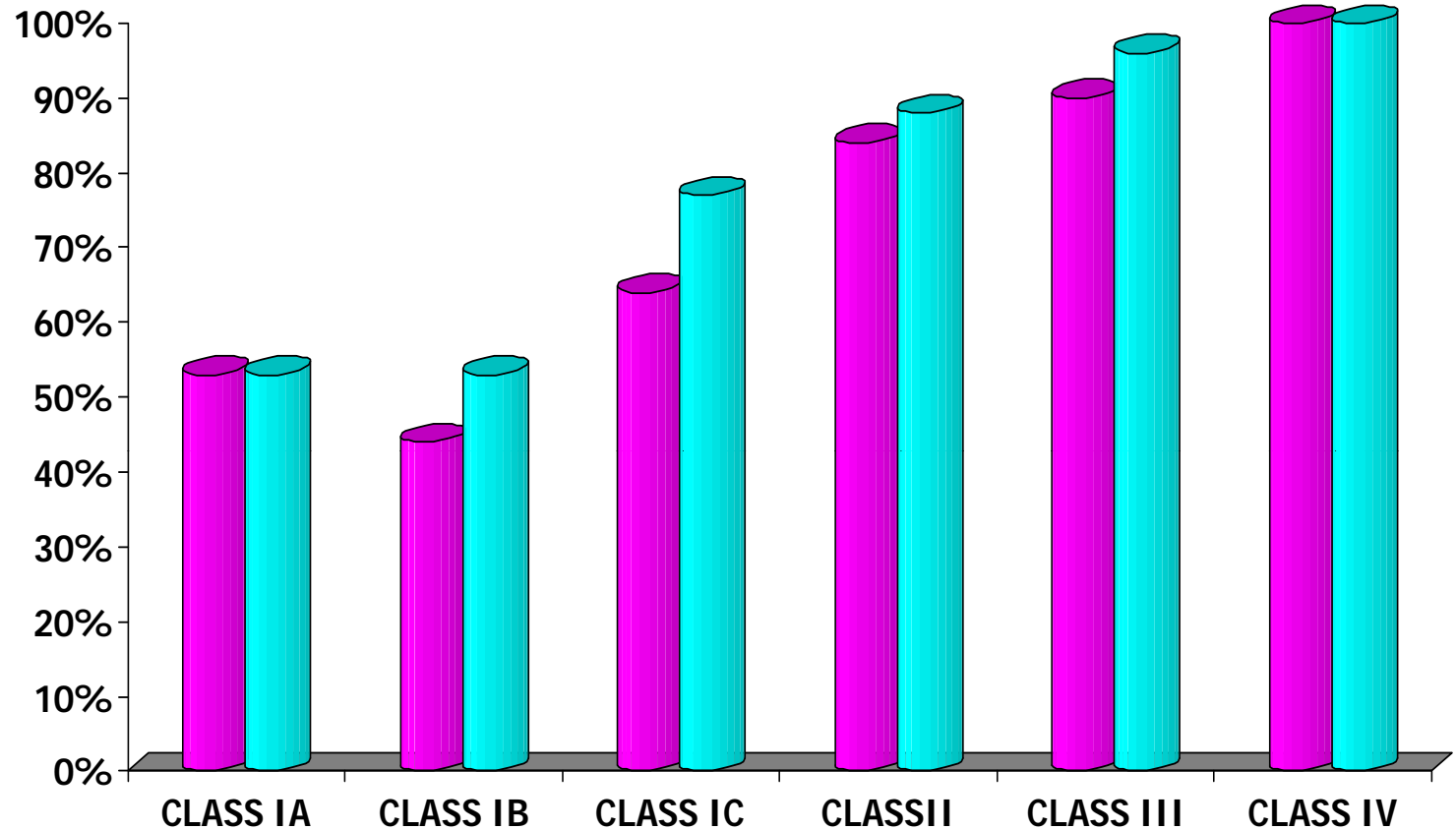
% of Service Backlog in Water Supply in various Categories of Cities – OPPORTUNITY EXISTS

Source:

REPORT OF THE
SUB-COMMITTEE
ON FINANCING
URBAN
INFRASTRUCTURE
IN THE 12th PLAN



■ Network ■ Treatment



% of Service Backlog in Sewage Management in various Categories of Cities – OPPORTUNITY EXISTS

Major water consumers



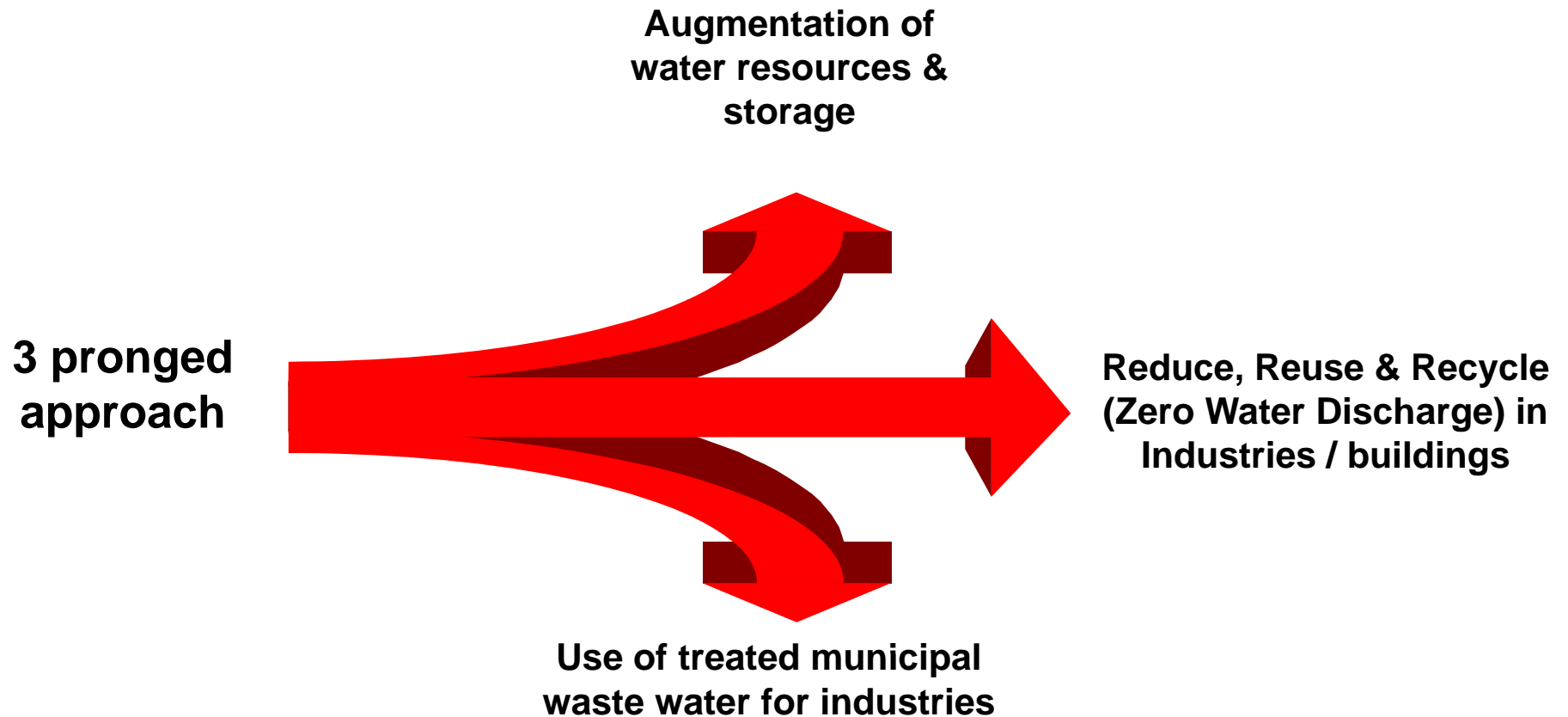
❖ Domestic

- Residential & Commercial buildings

❖ Water intensive industries

- Power, Petrochemical, Iron & steel, Engineering & Automobile
- SME's

Approach to Water management



Focus-Industry, Municipality & building interface

Promoting Water Use Efficiency in Urban Sector



- ❖ Objective: Focus on industry, building and municipality interface
- ❖ CII-USAID-DAI joint initiative
- ❖ Components of the project
 - City based 'Water Management Plan'
 - ❑ Water saving opportunities in three cities Jaipur, Pune & Faridabad
 - Recycle of City Wastewater in industry
 - ❑ A pre-feasibility report for each city
 - Promoting water use efficiency in industry
 - ❑ Preparation of a handbook on water management
 - Water efficiency in buildings
 - ❑ To establish guidelines for water conservation in buildings



Water management- industry

❖ Potential areas

- Utilities
- Process
- Domestic
- Zero Water Discharge

30% average reduction potential

Water saving opportunities in Buildings



Dual Flush Water Closet



Sensor Faucet & Showers



Rainwater Harvesting



Drip Irrigation Systems



On-site Waste Water Treatment Plant



Root Zone Treatment System



Treated Waste Water for Cooling Towers



Water Meters

Water Saving Potential : 40% – 50%

Ultra Low Flow fixtures

❖ Water less urinals

- No plumbing line for flushing
- Uses a sealant liquid instead of water to maintain sanitary condition



Waterless Urinal

➤ Market Transformation:

	2003	2010
Usage	Unknown	Millions of Installations
Cost	INR 15,000	INR 6,000

Zero Water Requirement



Best practices in water management

Case study-1
Sewage reclamation plant,
CPCL, Chennai

Sewage reclamation plant-CPCL, Chennai



- ❖ Total city sewage reclaimed for treatment – 20,000 m³ /day
- ❖ Benefits
 - Used for DM plant feed & cooling tower make-up
 - Availability of equivalent fresh water for city for domestic consumption
- ❖ Cost of treated water Rs.40/ m³ less than fresh water

Case study-2
Recycle of secondary treated sewage in industry
ITC Bengaluru

ITC Bengaluru



- ❖ 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
Commercial building
TCS, Siruseri, Chennai

Features

Annual Rainfall (mm)	Total catchment area (m ²)	Water harvesting potential m ³	Percentage harvested	Application
1266	202327	197140	100%	Recharge-55% Industrial- 45%



88953 m3 capacity storage pond



Surface & Road Rain water collection

Benefits

- ❖ 25% reduction in fresh water consumption
- ❖ 50% of fresh water brought through tankers were reduced
- ❖ Flooding avoided both inside and outside the campus
- ❖ Reduction in garden water requirement
 - Recharge pits



Treatment plant for pond water

Case study-4
Improvement of ground water table
De-silting of water bodies &
Road side rain water harvesting
Coimbatore district

Coimbatore district



- ❖ During 1970s Coimbatore district was declared as “Drought prone district”.
- ❖ During 1980s UNDP warned that Coimbatore District had the record of fastest depleting ground water level in the world.
- ❖ One of the districts in Tamilnadu with highest number of borewells
- ❖ Issues and challenges
 - Encroachments over water bodies.
 - Blocked or Diverted water ways.
 - Dumping of Solid Wastes.
 - Sewage mixing with potable water
- ❖ Steep decrease in average rainfall per annum
- ❖ Siruvani dam reaching dead storage levels

Ground water table improvement-approach



- ❖ **“Siruthuli”- An NGO comprising of Corporates**
 - Sri Bannari Amman Group of Companies
 - Pricol Limited
 - Lakshmi Machine Works Limited
 - Elgi Group of Companies
- ❖ **Desilting of Water bodies**
- ❖ **Encroachment Removal**
- ❖ **Construction of Check Dam**
- ❖ **River restoration through watershed concepts**
- ❖ **Roadside Rainwater Harvesting**

Benefits obtained



- ❖ 600 open wells/bore wells were recharged.
- ❖ Positive change in ground water table

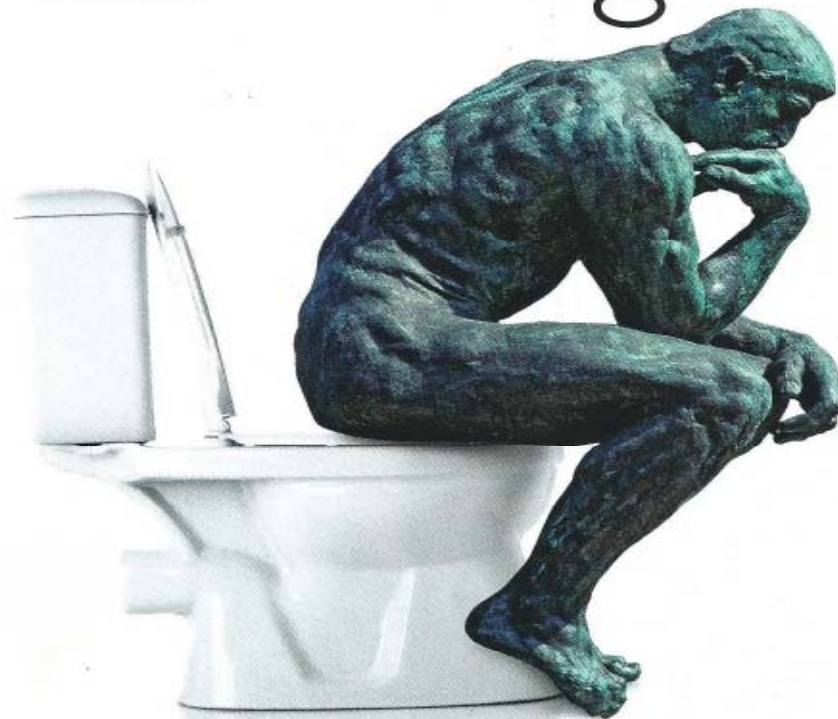
Zone	Depth of water (in mts) during may 05	Depth of water (in mts) during may 08
West	73.17	9.86
South	68.6	9.55
East	76.22	6.59
North	74.7	8.47

Sum up

- ❖ **Water conservation and management**
 - **Critical for urban sustenance**
- ❖ **Major sectors**
 - **Domestic**
 - ❑ **Commercial & Industrial buildings**
 - **Industry**
 - ❑ **Water intensive & SME's**
- ❖ **Opportunities**
 - **30% water saving potential in industry**
 - **40-50% saving potential in buildings**
 - **Augmentation of water resources**
 - **Recycle & reuse of municipal water in industry**

The Root Cause of The Great Urban Headache!

**Will we ever
invent anything this
useful again?**



© Confederation of Indian Industry



❖ **Thank You**

❖ **Ramani Iyer**

❖ **Forbes Marshall, Pune**

❖ **CII Water**