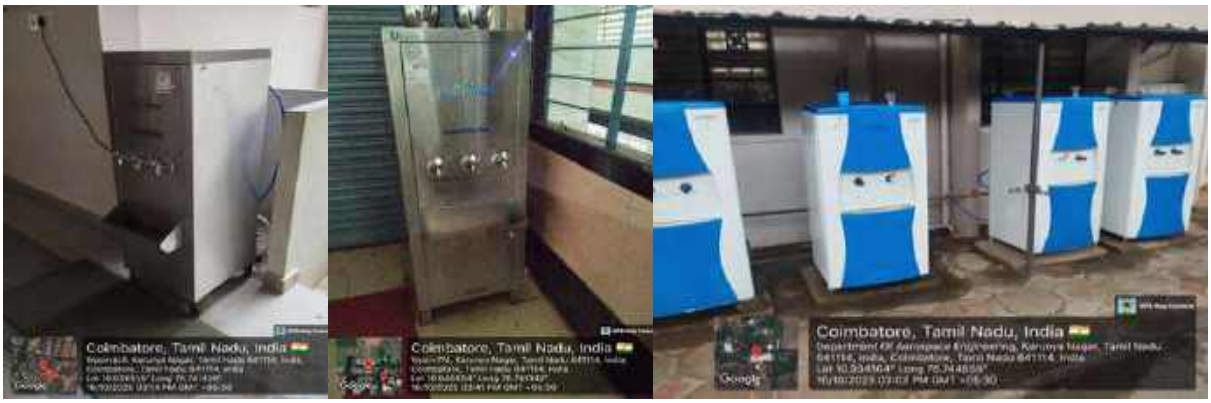
University : Karunya Institute of Technology and Sciences, Coimbatore- 641114
Country : India
Web Address : www.karunya.edu

[4] Water (WR)

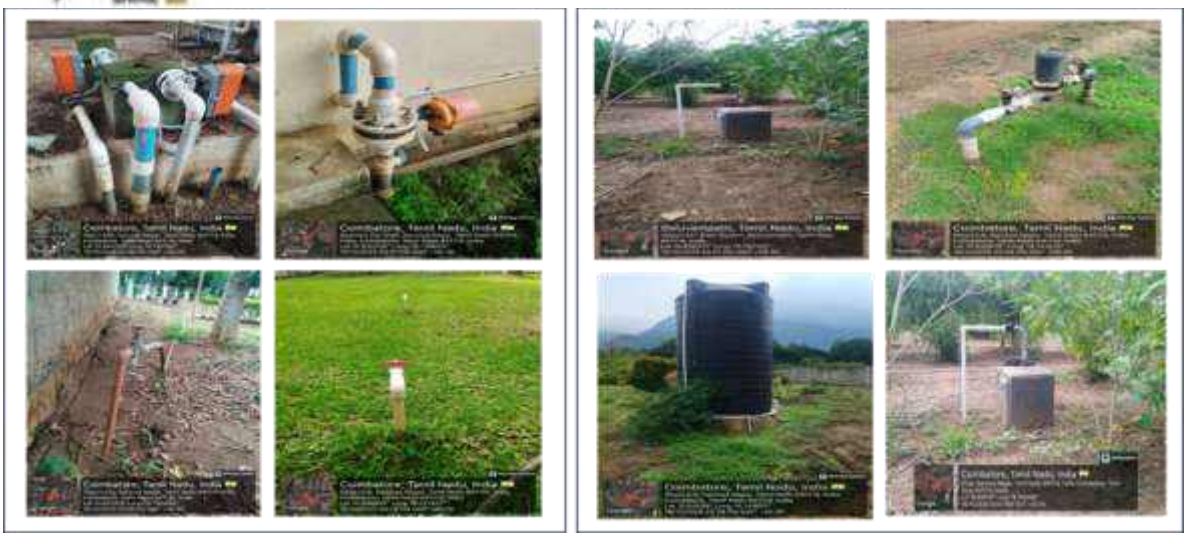
[4.4] Consumption of treated water (WR.4)

Consumption of treated water = 100%



RO-treated potable water at multiple points within the KITS campus, including hostels, canteens, and academic departments. A total of **86 purifiers** are operational across 37 building locations

Geo-tagged photographs of functional RO plants installed at Karunya Institute of Technology and Sciences (KITS).



KITS' campus-wide treated-water reuse network, linking STP-treated water to irrigation, garden, and plantation outlets.

Evidence:

- During FY 2024–25, Karunya Institute of Technology and Sciences (KITS) achieved a treated-water reuse rate of 100%, placing the institution in the highest UI GreenMetric performance band (>75%).
- Four on-campus Sewage Treatment Plants (STPs) and two Reverse Osmosis (RO) plants together produced and reused approximately 387,022 m³/year of treated water for irrigation, flushing, and potable uses.
- All treated water is utilized on-site, ensuring zero discharge outside the campus. Continuous IoT-based monitoring, 113 reuse outlets, and 3,436 self-closing taps promote efficiency and directly support SDG 6 (Clean Water and Sanitation) and SDG 12 (Responsible Consumption and Production).

1. Treated Water Reuse Calculation

Parameter	Basis / Source	Value (m³/year)
STP Treated Water	Annual Flow-meter Data	385,204
RO Treated Water	RO Log Register	1,818
Total Treated Water Consumed (numerator)	—	**387,022**
WR.4 (%)		**100%**

WR.4 = 100%

Represents efficient reuse and minimal freshwater dependence.

2. Treated Water Utilization Summary (FY 2024–25)

Source	Annual Output (m^3)	Utilization	Monitoring
JMR STP	132,525	Irrigation & Gardening	Flow-Meter
FDR STP	79,729		Flow-Meter
Ladies Hostel STP	61,778		Flow-Meter
PR GARG STP	111,171		Flow-Meter
Total STP Reuse	**385,204**		
RO Plants	1,818	Drinking & Cooking	AMC / TDS Monitoring
Total Treated Water Used	**387,022**		—

3. Infrastructure Summary

Component	Unit	Quantity
Overhead Tanks	Nos	46
Water Sumps	Nos	8
Pump Motors (10–2 HP)	Nos	14
Bore & Well Pumps	Nos	6
Tank Control Valves	Nos	45
Total Water Infrastructure	—	**119 Units**

All components verified via geo-tagged images (Oct 2025).

4. Water Distribution and Reuse Zones

Zone	Main Locations	Annual Treated Water Use (KL)
Zone A	FDR / EGR / Hepzibah / Angelina Hostels	7,812
Zone B	College & Ladies Hostel Areas	16,149
Total (A + B)	—	**23,961 KL (23,961 m^3)**

Represents measured soft-water supply (STP reuse)- Nov 2024 – Sep 2025.

- *Zone A:* Meter replaced in Dec 2024; reset in May & Jun 2025.
- *Zone B:* Register reset in May 2025.
- All values verified as **(Closing – Opening)** readings.
- Soft-water supply is treated through STP systems and is **included** in the total STP reuse calculation.

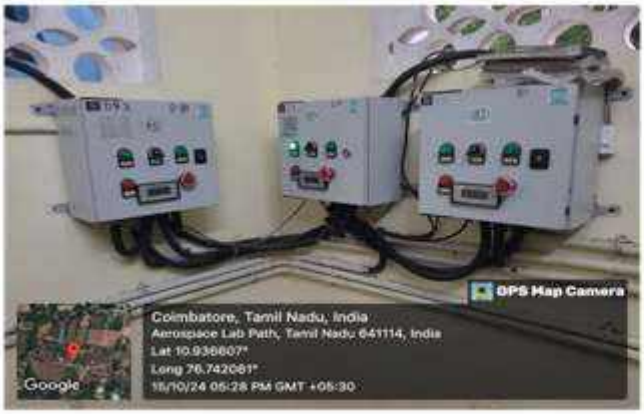
5. Monitoring and Verification

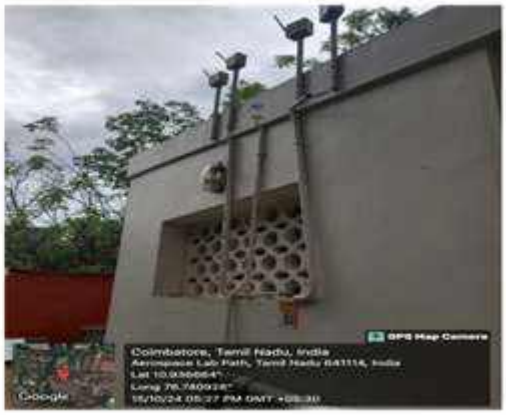
- **IoT-Based Control System:** Monitors water level, sump, and pump operations, reducing overflow losses (~10% water & energy saving).
- **Flow-Meters:** Digital transmitters installed at all STP outlets record daily inflow/outflow.
- **RO Systems:** Produce 1,818 m³/year of potable water (Gents Hostel & Staff Quarters).
- **Water Purifiers:** 86 units maintained under AMC, quality tested (IS 10500:2012).
- **Reuse Network:** 113 outlets ensure treated water is recycled for irrigation and sanitation

The above photographs provide visual verification of the **FREHNIG digital flow transmitter network** installed at KITS' STP outlets. Each unit records **real-time flow (in LPS)** and **cumulative treated-water discharge (in litres)**. The totalizer reading of **≈82.75 million L** in Figure corresponds to the annual treated-water volume of **≈385,204 m³/year** recorded in Section H. These systems are integrated with the IoT-based monitoring dashboard to ensure **continuous flow measurement, error detection, and zero discharge tracking**.

10. Governance and Monitoring Structure

- **Responsible Unit:** Department of Civil Engineering, in coordination with the Construction and Maintenance Division.
- **Oversight Authority:** Head, Construction and Maintenance Division
- **Audit and Review Mechanism:** Regular monitoring and periodic auditing (internal and external)
- **Calibration and Verification**
- **Monitoring and Reporting:** Daily readings from IoT flow meters and sump-level sensors are compiled into a monthly summary.
- **Compliance Reference:** All operations follow *IS 10500 : 2012* for potable-water quality and *CPCB / TNPCB* guidelines for treated-water reuse.





- The IoT-based Smart Water Control System regulates and monitors the water-level and pump operation in both sump and overhead tanks. Installed sensors and controllers (as shown above) prevent overflow and ensure optimal use of treated water for irrigation and flushing purposes. The system contributes to approximately 10% annual water and energy savings and is integrated into the institution's digital dashboard under the Construction and Maintenance Division.

Summary & Interpretation

Indicator	Value / Description
Total Treated Water Consumed	387,022 m^3/year
WR.4 Value	100%
Reuse Mode	Irrigation, Flushing, Cooking
Performance Band	>75% (Highest Category)
Data Sources	IoT Flow-meters, RO Logs, AMC Records

The reuse rate of **100%** demonstrates efficient, circular water utilization. KITS maintains **zero discharge**, continuous monitoring.

Annexure link :
https://docs.google.com/document/d/1Je5KohiD7mF9ui8AOTnxXECPLA5riKAY/edit?usp=sharing&ouid=100532321917928413713&rtpof=true&sd=true