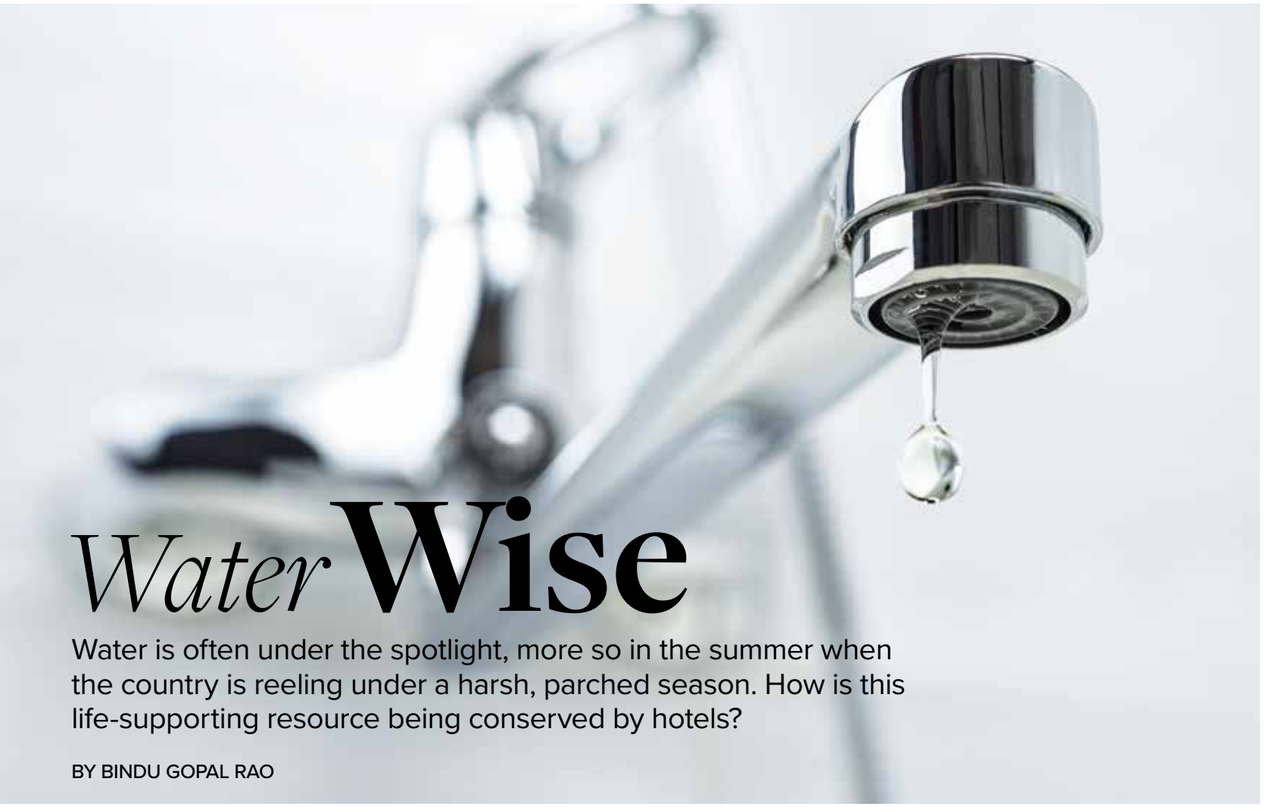


Water Wise

Water is often under the spotlight, more so in the summer when the country is reeling under a harsh, parched season. How is this life-supporting resource being conserved by hotels?

BY BINDU GOPAL RAO

Water recycling is an important part of running a hotel, and hoteliers are very conscious about water conservation. We speak to industry experts on how hotels are working on the recycling, up-cycling, and judicious use of water.

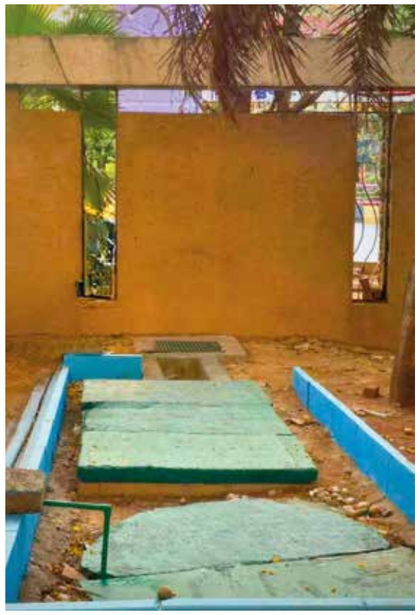
SOLUTIONS GALORE

Among the many ways water is being conserved in hotels is by using reclaimed water from the sewage treatment plant (STP) for cooling towers, flushing, and gardening. Water-saving gadgets and effective sanitary fixtures are also installed to control water consumption. Using a water cistern instead of flush valves, low-flow shower heads and aerators for faucets to reduce water consumption across the hotel are also common practices. Wastewater from the water bottling plants is also used for flushing purposes.

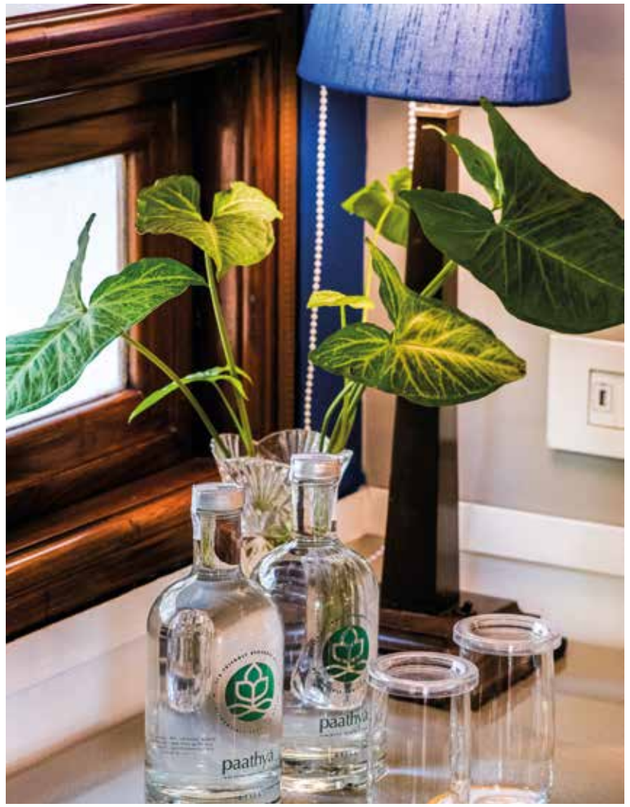
"We harvest rainwater to reduce fresh water demand. We have sensor-based urinals installed in public areas. We have a hydro-pneumatic system to control and regulate the water supply across the hotel. We have also initiated the building of smart water management systems that monitor water usage in real time, detect leaks, and optimize water distribution, helping to minimize waste and reduce operational costs. These measures have significantly contributed to water conservation efforts. Through their implementation, we managed to recycle and reuse approximately 41,855 kilolitres of water within our property in 2023," says Girish Pawan Kumar Agoor, Director, Engineering, Bengaluru Marriott Hotel Whitefield.

Girish Pawan Kumar Agoor, Director, Engineering, Bengaluru Marriott Hotel Whitefield

Sonale Zagade, General Manager, Hyatt Regency, Gurgaon



Rain water harvesting at Marriott Whitefield



In-house water bottling plant at Fort Aguada

NUMBER CRUNCHING

The STP installed at JW Marriott Mumbai Sahar efficiently processes 3,00,000 litres of wastewater every day. This treated water serves multiple purposes, contributing to environmental sustainability and resource conservation.

"Approximately 1,20,000 litres of recycled water are directed to cooling towers, significantly decreasing the hotel's dependency on freshwater for regulating building temperatures. Around 50,000 litres of treated water are utilized in flushing systems, diminishing the usage of potable water in toilets, and promoting water conservation. Approximately 60,000 litres of recycled water are utilized for horticultural purposes, such as landscape irrigation. This practice alleviates pressure on municipal water supplies while maintaining lush landscaping," says Makarand Walawalkar, Director of Engineering, JW Marriott Mumbai Sahar.

Rupam Dutta, General Manager, Radisson Blu Outer Ring Road, Bangalore, adds, "While dual flushing saves 40% of water, flow restrictor saves 50% on shower (12 LPM to 6 LPM) and 80% on washbasin taps (6 LM to 2 LPM). Sensor-based faucets are saving 80% of water and foot pedals are saving 80% of water."

CONTROLLING WASTE

In the realm of water sustainability, a comprehensive approach involves adopting the principles of reduce, reuse, recycle, monitoring, and rectification. Sarfaraz Alam, Chief Engineer at The Orchid Hotel, Pune, says, "In our commitment to water conservation, we have implemented a range of thoughtful measures across our facilities. One such measure involves outfitting all washbasin taps with aerators, devices designed to optimize water usage by mixing air with the flow. Additionally, we have integrated sensor technology into our washbasin taps, ensuring water is only dispensed when necessary, thus minimizing waste. To further reduce water consumption, we have installed dual flushing systems in our toilets, enabling users to choose between different water volumes for flushing. Similarly, flow restrictors have been installed in shower heads and health faucets, regulating water flow to prevent excess usage without compromising functionality." Sonale Zagade, General Manager, Hyatt Regency, Gurgaon, adds, "At our hotel, we maintain a policy of zero water wastage to the drainage system. We have 12 water harvesting plants to recharge groundwater in the rainy season. This helps us collect a lot of water for usage during the dry summer and thereafter. Water recycling through STP and ETP is used to water the lush landscaping of the hotel. We use aerator PRV (pressure-releasing valves) to control water usage throughout our property. Sensor-based water tap systems are used in kitchen sinks and washbasins to avoid wastage of extra water."

Sarfaraz Alam, Chief Engineer at The Orchid Hotel, Pune

Sayan Chatterjee, Director of Engineering, JW Marriott Kolkata

Chandran Venkatesan, Chief Engineer, ITC Grand Central

"High-efficiency washing machines, dishwashers, and other water-using appliances incorporate advanced technologies such as sensor-based load detection, variable-speed motors, and water-saving cycle options to minimize water consumption while maintaining performance." - Chandran Venkatesan

Reverse osmosis plant at ITC Grand Central

TECH TALK

Water conservation is getting a fillip with technology as well. "High-efficiency washing machines, dishwashers, and other water-using appliances incorporate advanced technologies such as sensor-based load detection, variable-speed motors, and water-saving cycle options to minimize water consumption while maintaining performance. Advanced water treatment technologies such as membrane filtration, reverse osmosis, and ultraviolet (UV) disinfection can improve the quality of water for reuse purposes, including greywater recycling, rainwater harvesting, and potable water production from alternative water sources," says Chandran Venkatesan, Chief Engineer, ITC Grand Central.

Advancements in desalination technologies are improving access to fresh water in water-scarce regions. This includes innovations in reverse osmosis, solar desalination, and other techniques that make desalination more energy-efficient and cost-effective. "Modular systems allow for more flexible and scalable water treatment solutions, particularly in decentralized settings or areas with limited infrastructure. These systems can be customized and easily expanded to meet changing water treatment needs.

"While dual flushing saves 40% of water, flow restrictor saves 50% on shower (12 LPM to 6 LPM) and 80% on washbasin taps (6 LM to 2 LPM). Sensor-based faucets are saving 80% of water and foot pedals are saving 80% of water." – Rupam Dutta

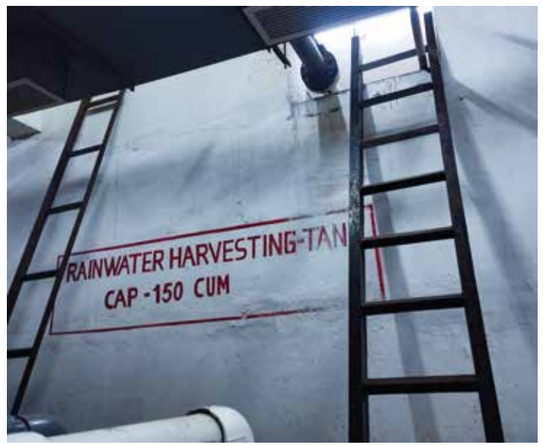
Water bottling at ITC Grand Central

Nano filtration is a membrane-based filtration technology that enhances the efficiency of water treatment processes by selectively removing particles, ions, and organic molecules. It is increasingly being used for water purification, wastewater treatment, and desalination, offering higher flux rates and improved water quality compared to traditional filtration methods," says Sayan Chatterjee, Director of Engineering, JW Marriott Kolkata.

SAVING IT ALL

The integration of Internet of Things (IoT) technology with water quality monitoring systems enables real-time monitoring and data analysis of water parameters such as pH, turbidity, dissolved oxygen, and contaminants. This data-driven approach allows for proactive management of water resources, early detection of water quality issues, and optimization of water treatment processes for energy efficiency and cost savings.

"Various energy monitoring systems and smart meters can track energy consumption in water-related processes such as pumping, heating, and treatment. This allows for optimization of energy usage, reduction of wastage, and identification of areas for efficiency improvements. Pneumatic systems can be employed to achieve desired



Rain water harvest tank at JW Marriott Mumbai Sahar

Sewage treatment plant (STP) at JW Marriott Mumbai Sahar

pressure and flow rates in water distribution systems with reduced water consumption. By controlling air pressure, pneumatic technology can regulate water flow more efficiently, minimizing losses and optimizing usage. Advanced wastewater treatment technologies such as membrane filtration, activated sludge processes, biological nutrient removal, and anaerobic digestion can treat wastewater to high standards, allowing for safe discharge or reuse. These technologies help mitigate environmental pollution and conserve water resources by recycling treated wastewater for various non-potable purposes," adds Chatterjee.

Sewerage treatment plant at Fort Aguada

TREND CHECK

Hotels in arid regions of India are adopting xeriscaping techniques and landscaping with native plants that require less water, reducing the need for irrigation and promoting biodiversity.

"Beyond traditional treatment methods, advanced techniques such as biofiltration and adsorption facilitate the reuse of wastewater for irrigation, industrial processes, and toilet flushing. This reduces reliance on freshwater and is currently being implemented at various stages within the hotel. Sustainable desalination, powered by renewable energy sources such as solar, is reducing environmental impact. Furthermore, biomimicry-inspired techniques mimicking how fish extract water and aquaporin-based technology for targeted desalination show promising advancements," says Walawalkar. Innovative materials such as modular filters, electrode reactors, and specialized nanoparticles are revolutionizing water treatment. These materials offer enhanced selectivity, require less energy, and can integrate multiple functionalities, making water treatment more efficient and compact. These kind of measures can help hotels contribute to water conservation efforts while also demonstrating a commitment to environmental sustainability.