

# EVERY DROP MATTERS: TACKLING WATER LOSS

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treatment costs, lost revenue, increased energy consumption, and unnecessary strain on water sources. For utilities already operating under financial and resource constraints, unmanaged water loss can undermine long-term sustainability.

## Why Water Loss Management Matters

Water loss is a major global challenge in the water sector. A huge amount of treated water is lost or not billed due to leaks, theft, meter inaccuracies, or unaccounted usage. Estimates suggest nearly one-third of the world's drinking water never reaches users or generates revenue.

Approximately 126 billion cubic meters of water lost annually worldwide valued at USD 39-50 billion, with developing countries averaging 40-50% losses compared to 10-15% in developed nations. A Conservative estimates place water loss in Asian countries at 29 billion cubic meters annually costing nearly USD 9 billion. It is believed that cutting physical water losses by half could supply water to an additional 150 million people.

**Water loss occurs in every distribution system, but utilities that actively measure & manage it are better equipped to protect revenue, improve operational efficiency & plan infrastructure investments.**

In India's urban water supply systems, roughly 40% to 50% of treated water is lost through leaks or system inefficiencies, as reported by GWI earlier. The major cities including Delhi has over 50% losses in its water supply system due to aged pipelines and faulty meters. Cities like Delhi and Mumbai lose hundreds of millions of litres of potable water daily before it reaches



the consumers. These figures underscore the immense financial toll of water utilities worldwide. Reducing losses not only protects revenue but also enhances operational efficiency, safeguards water resources, and boosts resilience benefiting utilities, industries and communities.

## Measuring Water Loss

The first step in effective water loss management is accurate measurement. Utilities cannot control what they do not understand. This begins with establishing a water balance, which accounts for all water entering the system and categorizes how it is used or lost.

### A standard water balance identifies:

- System input volume
- Authorized billed consumption
- Authorized unbilled consumption
- Apparent losses
- Real losses

Based on this analysis, utilities track key indicators like Non-Revenue Water (NRW) levels and leakage performance. While no single measure gives a complete picture, regular monitoring helps utilities understand trends, compare performance, and focus on the areas that need attention.

With technologies such as Advanced Metering Infrastructure (AMI), District Metered Areas (DMAs), and pressure

**W**ater is one of the most vital resources for human survival, economic development, and environmental balance. Yet, across the world, billions of litres of treated water never reach consumers due to losses within distribution systems. As populations grow, climate change intensifies droughts and floods, and water supply infrastructure ages, the importance of managing water loss has never been so critical. **Every drop matters**, not just as a moral statement, but as an operational, financial, and environmental imperative for water utilities and communities a like.

Water losses are divided into two main types. Real losses are physical losses caused by leaks, bursts, and overflows from pipes, storage tanks, and service connections, while on the other hand, apparent losses occur when water is consumed but not measured or paid for, often due to faulty meters, data handling errors, or unauthorized consumption.

While some level of water loss is unavoidable in any complex distribution network, excessive losses represent wasted



monitoring systems, utilities can gather detailed data, allowing quicker and more accurate detection of water losses.

### Reactive to Proactive approach in tackling Real Losses

Indian utilities have traditionally been relying on reactive maintenance; repairing visible breaks after they occur. While necessary, this approach alone is costly and inefficient. Today, effective water loss management focuses on a proactive strategy that anticipates issues and minimizes losses before they escalate. Key measures include:

- Active leak detection using acoustic devices, correlators, and smart sensors
- Pressure management to reduce pipeline stress and lower burst frequency
- Faster, high-quality repairs to minimize leak duration and avoid repeat failures
- Asset management and renewal planning based on pipe age, material, and failure trends
- Deployment of IoT-based monitoring systems for real-time data on flow, pressure, and network performance
- Use of AI-driven analytics to predict leaks, prioritize interventions, and optimize maintenance planning

Reducing real losses is the most technically demanding part of water loss management, yet it yields the most direct and measurable water savings. It requires continuous monitoring, pressure management, and timely leak detection across the network. Several urban utilities in India have demonstrated strong progress in this regard. Cities like Bengaluru, Nagpur, Pune, and Hyderabad have implemented water loss management projects or district metered areas (DMAs) for smart monitoring and rehabilitation programs, achieving

noticeable reductions in losses and improvements in service efficiency.

### Addressing Losses-Recovering Revenue

Apparent losses may not involve physical leakage, but their financial impact can be substantial. Common causes include aging or inaccurate meters, incorrect billing data, and unauthorized connections.

Key strategies to reduce apparent losses include:

- Regular testing, calibration, and replacement of customer meters
- Deployment of smart meters to improve accuracy and detect anomalies
- Improved billing systems and data validation processes
- Field audits and customer engagement to address illegal connections

Unlike physical losses, cutting apparent losses can quickly improve revenue, making it an easy and effective early step for many water utilities in the country.

### Sahara Industry's Innovation for Water Loss Reduction

Sahara Industry is redefining water treatment through intelligent, integrated solutions that help utilities tackle one of the sector's most pressing challenges. By combining real-time monitoring, advanced leak detection, and optimized process control, the company delivers end-to-end visibility of water supply, enabling faster response, reduce wastage, and greater operational efficiency. Its systems are engineered to ensure consistent water quality, minimize both physical and commercial losses, and support long-term sustainable water management empowering utilities and commercial establishments to conserve resources, strengthen performance, and provide reliable water supply to the people and industries they serve.



### Turning Awareness into Action

Water loss quietly drains resources, revenue, and public trust, but it is also one of the most manageable challenges for water utilities today. With proper measurement, regular monitoring, the right technology, and strong institutional commitment, losses can be reduced to sustainable levels. By moving from awareness to action through better planning, skilled operations, and continuous improvement, utilities can conserve water, strengthen finances, and deliver more reliable services to communities.

**Water loss is a critical problem. Indian cities lose 40–60% of piped water through leakages, illegal connections, and metering errors, far above the acceptable limit of 15%.**

### About the Author

Abdul Rahman Mohammed is the founder & CEO of Sahara Industry, drives the company with a clear mission to deliver advanced, cost effective water and wastewater treatment solutions. With degree in marketing & finance, he blends innovation with sharp business strategy, steering Sahara Industry to the forefront of sustainable water technology & environmental solutions.

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