

Research and References

Industrial Water Management & ESG Compliance Project

Key Research Findings

1. Scale of Industrial Water Challenge

- **U.S. industrial water consumption:** More than 18.2 billion gallons per day
- **Global industrial wastewater treatment:** Only 27% of industrial wastewater is safely treated (based on limited data from 22 countries)
- **Critical gap:** Industries worldwide lack adequate real-time monitoring systems for water consumption tracking

2. ESG Compliance & Water Management Requirements

- **ESG metric tracking:** Businesses must track ESG metrics and ensure good performance in water consumption, reuse, greenhouse gas emissions, and regulatory compliance
- **Certification compliance:** Implementation of water conservation technologies and compliance with ESG certifications (GRESB, BREEAM) require regular monitoring and reporting of water usage
- **Business impact:** Poor water management leads to reputational damage and delayed ESG goal achievement

3. Benefits of Real-time Water Monitoring

- **24/7 monitoring capabilities:** Real-time alerts help reduce water bills, avoid damage from leaks, and reduce environmental impact
- **Accurate data collection:** In-situ water quality monitoring provides real-time data directly at the source with continuous measurements
- **Efficiency gains:** Real-time systems eliminate need for manual sample collection and lab analysis delays

4. Market Need Validation

- **Technology gap:** Current industrial water management systems lack real-time tracking capabilities
- **Environmental urgency:** Inefficient water management threatens both business sustainability and global water security
- **Regulatory pressure:** Increasing ESG compliance requirements drive demand for better monitoring solutions

References & Sources

1. US Environmental Protection Agency (EPA)

Title: Lean Water Toolkit - Industrial Water Usage **Source:** US EPA Sustainability Program **URL:** <https://www.epa.gov/sustainability/lean-water-toolkit-chapter-2> **Key Data:** Industrial water consumption statistics and efficiency guidelines

2. UN-Water Global Database

Title: Water Quality and Wastewater - Global Data **Source:** United Nations Water **URL:** <https://www.unwater.org/water-facts/water-quality-and-wastewater> **Key Data:** Global industrial wastewater treatment statistics

3. Genesis Water Technologies

Title: ESG Metrics and Industrial Water Management **Source:** Genesis Water Technologies Blog **URL:** <https://genesiswatertech.com/blog-post/esg-metrics-and-industrial-water-what-should-corporate-leaders-focus-on/> **Key Focus:** Corporate ESG compliance and water sustainability

4. Smartvatten EU

Title: Sustainable Water Management and ESG Goals **Source:** Smartvatten European Initiative **URL:** <https://www.smartvatten.com/en/news/sustainable-water-management-esg> **Key Focus:** ESG certification requirements and water conservation technologies

5. Water & Wastewater Industry Journal

Title: In-Situ Monitoring: Real-Time Data Collection in Industrial Processes **Source:** Water & Wastewater Industry Publication **URL:** <https://www.waterandwastewater.com/in-situ-monitoring-advancing-real-time-data-collection-in-industrial-processes/> **Key Focus:** Real-time monitoring technologies and implementation

Research Summary for Hackathon Presentation

Problem Validation: Research confirms that industrial water management is a critical global challenge with significant environmental and business impacts.

Market Opportunity: The gap between current monitoring capabilities and ESG compliance requirements creates a clear market need for real-time water tracking solutions.

Solution Relevance: Your proposed solution directly addresses documented inefficiencies in industrial water management and aligns with current regulatory and sustainability trends.

Impact Potential: Real-time monitoring systems have proven benefits in reducing water waste, improving compliance, and supporting environmental sustainability goals.
