



WATER: The catalyst for a developed India

THE WATER CHALLENGE: A DEFINING CRISIS OF THE 21ST CENTURY

India has 18% of world's population by only 4% of its water. Is water going to write the history of 21st century? With only 3% of the world's water classified as freshwater and nearly 90% of that locked away in glaciers or underground - the volume available for human consumption is critically low. As India accelerates toward becoming the world's third-largest economy and a developed nation (Viksit Bharat) by 2047, water security becomes not just an environmental issue but a strategic imperative. The need to ensure clean, reliable water sources is tied intrinsically to public health, social equity, industrial productivity, and climate resilience.

With the global shift toward renewables, water has become even more vital - especially in green hydrogen production and thermal energy systems. Our net-zero ambitions and industrial growth cannot progress without a parallel transformation in water availability and governance. Clean water is not a luxury; it is the foundation of life. While people may endure limited resources or freedoms, no one can survive without water. From global river disputes to domestic inter-state tensions, the

political and economic future of nations is increasingly being shaped by their approach to water.

THE SOLUTION STATEMENT: TOO LITTLE, TOO MUCH, TOO DIRTY

The world's water problems can be summed up in six words: too little, too much, too dirty as per WRI, a think tank. While India has begun addressing the issue of "too much" through interventions like river interlinking and flood management, the solutions for "too little" and "too dirty" lie in how we manage and reuse the water we already have. We cannot manufacture freshwater. But what we can do is reduce wastage and reuse treated water effectively. A substantial share of the freshwater that is withdrawn each year eventually finds its way back to the oceans, largely untreated and unused - an unsustainable loss.

The only viable way forward is twofold. First, maximize the reuse of used water, both through direct and indirect reuse models. Second, tap into our largest water reserve - the oceans - through scalable and energy-efficient desalination technologies. Population growth and urbanization are inevitable, and poverty

eradication demands economic development. Water must not become the limiting factor in this journey. At WABAG, our work aligns with both directions: enabling large-scale reuse and advancing desalination, helping build a future-ready water-secure India.

OUR RECOMMENDATION: MAKING REUSE WORK - THROUGH POLICY, PRIORITIES, AND PURPOSE

Of the total global water stock, just 3% is freshwater, with nearly 69% of it frozen in glaciers and about 30% stored underground. That leaves less than 0.4% on the surface for human use. From this limited volume, a staggering 70–80% flows back into oceans without being reused. In such a scenario, reuse is not just a sustainability metric - it is a survival strategy. While India is still in the early stages of adopting potable reuse, the potential for industrial reuse is enormous and immediate.

There are two broad models of reuse. In direct potable reuse, highly treated wastewater is supplied directly for human consumption, as practiced in Windhoek, Namibia. In indirect reuse, treated water is released into natural water bodies and re-extracted downstream for various applications - a model already in play under India's Namami Gange programme. Cities like Ghaziabad, Chennai and Bangalore have started to tap into reuse for industrial and agriculture applications, and even marginal reductions in freshwater dependence through reuse are now yielding visible benefits.

QUANTIFYING THE SCALE: WHY INDUSTRY MUST LEAD THE WAY

While water reclamation for domestic use is imperative, industry reuse can't wait further and its urgent necessity. According to one estimate, only 11% of industrial consumption is reused.

These figures expose a stark gap. The industrial sector, despite its high-water consumption, is only scratching the surface when it comes to reuse. The opportunity is massive—and immediate. Reclaiming even a portion of the water that is currently discharged untreated can dramatically reduce industrial dependence on freshwater. That's why the industrial sector must emerge as the torchbearer of water reuse in the global sustainability movement.

A POLICY BLUEPRINT: REUSE BEGINS WITH REGULATION

Unlocking the full potential of reuse begins with enabling policy. First, Common Effluent Treatment Plants (CETPs) must be made mandatory for industrial clusters. Just as water supply is managed as a utility, CETPs must also be granted utility status. CETPs offer an efficient, scalable solution to process wastewater and prepare it for reuse. Second, dual metering—measuring both water intake and discharge—should be implemented and enforced. While industries are already charged for their water intake, pricing wastewater discharge will incentivize reduction, recycling, and accountability.

By charging for both consumption and contamination, dual metering can encourage industries to become more efficient and responsible. All industrial discharge must be routed through monitored treatment systems, enabling regulatory oversight and pollution control. Moreover, India's overdependence on groundwater - which exceeds the combined extraction by the US and China - needs urgent redressal. Unregulated exploitation of aquifers is depleting our water reserves at unsustainable rates. Robust regulation and enforcement are essential for long-term water security.

Industry must shoulder the responsibility to lead India's water reuse transformation. The industrial sector is already equipped with better infrastructure, monitoring systems, and operational efficiency. Moreover, water reuse contributes directly to a company's ESG goals, sustainability metrics, and compliance frameworks. With the right regulatory incentives, industries can emerge as early adopters and long-term champions of responsible water management.

MEDIUM TERM PERSPECTIVE TO SOLUTION - OVERCOMING PUBLIC STIGMA: AWARENESS IS THE REAL BARRIER

The biggest barrier to water reuse isn't technology—it's perception. Public stigma around using treated wastewater, especially for drinking, still prevails. Yet countries like Namibia and Singapore have proven that acceptance is possible with science, transparency, and communication. In Singapore, the NEWater programme



succeeded by reframing the narrative: water is not “wastewater,” it is “used water.” Nature recycles water through evaporation and condensation. So, can we—with even higher quality and safety standards.

Cities like San Diego and Tampa abandoned reuse projects due to public opposition, not technological failure. India must not repeat this mistake. Public awareness campaigns, backed by science and leadership, are essential to normalise the conversation around reuse.

THE INDIAN CONTEXT: TIME TO LAUNCH A UNIFIED PUBLIC CAMPAIGN

India must now launch a national movement to shift public attitudes towards reused water. Policymakers, citizen groups, the media, and corporate leaders must come together to build trust, address misconceptions, and educate the public on the safety, affordability, and sustainability of reused water. This is not just about water—it is about mindset. Reuse must become a mainstream solution, not a last resort. And trust will be key to enabling scale.

DESALINATION: SCALING THE OCEAN OPPORTUNITY

The cost of desalinated water has dropped significantly over the past decade—from over \$9 to as low as \$2-5 per 1,000 gallons. With more than 20,000 desalination plants operating globally, producing over 100 million cubic meters per day, desalination has become a scalable and indispensable tool for water-scarce regions.

Gulf nations are proof of its power. Kuwait meets 90% of its drinking water needs through desalination, Oman 86%, Saudi Arabia 70%, and the UAE 42%, with daily production exceeding 7 million cubic meters. This transformation demonstrates how innovation and investment in desalination can secure the future of water for millions. Some Indian states like Tamil Nadu and Gujarat have taken the initiative to tap the ocean for its water security and efforts have come to fruition. Coastal states have this opportunity to create water security. WABAG has been at the forefront of integrating technologies and catalysing development of technologies to make desalinated water affordable and viable alternative to our water stress.

WABAG’S ROLE: PURPOSE IN ACTION

Our global track record—from Windhoek’s direct potable reuse to large-scale desalination in the Middle East and India—reinforces our purpose: Sustainable Solutions for a Better Life.

This purpose is not just a slogan; it drives our innovation, partnerships, and long-term strategy. We are committed to making water security a reality—not just through engineering excellence, but through environmental and social value creation. ■



Shailesh Kumar
Chief Executive Officer - India Cluster,
VA Tech Wabag Ltd