

Freshwater and AI:

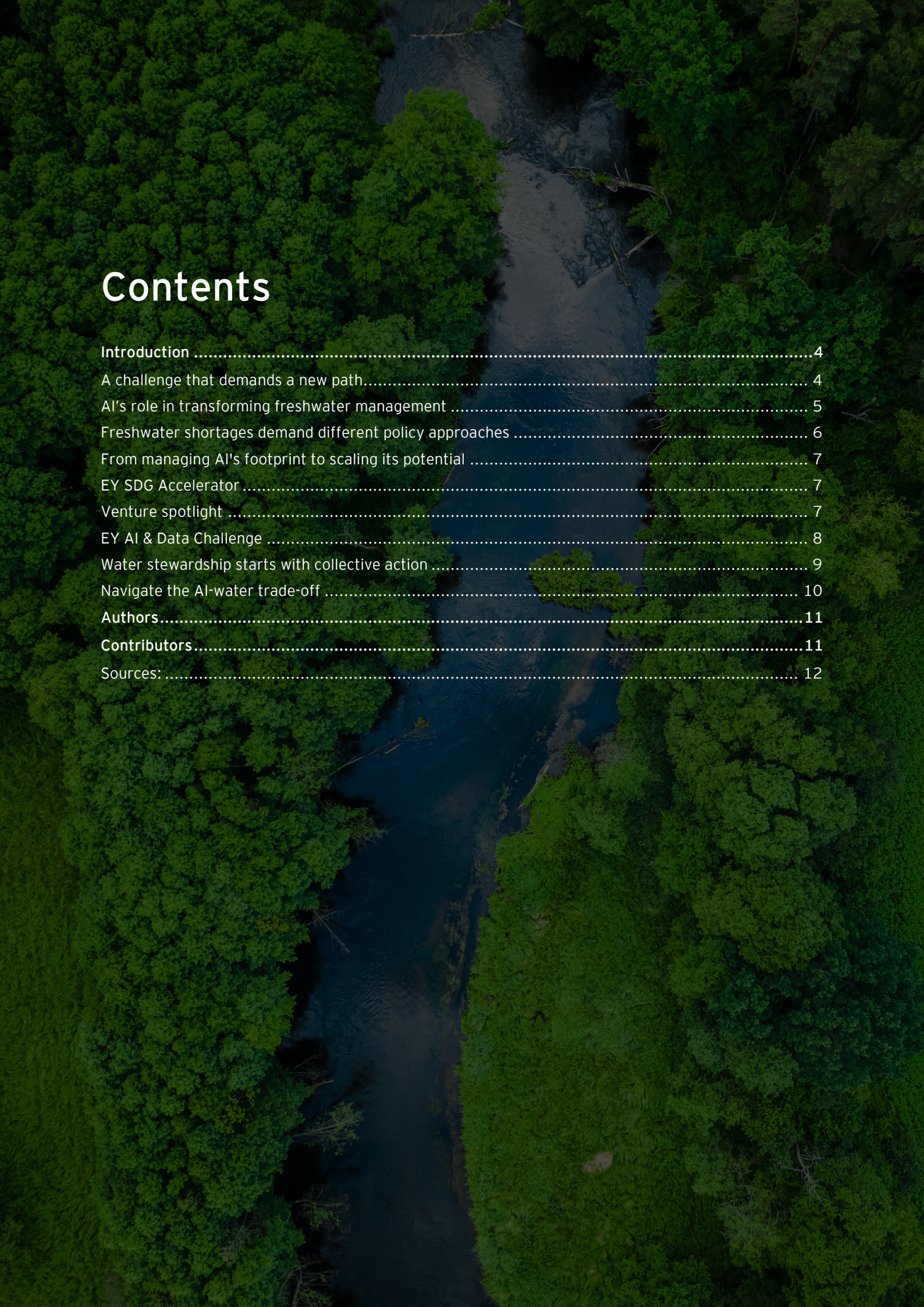
Innovation's promise to
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Contents

Introduction	4
A challenge that demands a new path.....	4
AI's role in transforming freshwater management	5
Freshwater shortages demand different policy approaches	6
From managing AI's footprint to scaling its potential	7
EY SDG Accelerator	7
Venture spotlight	7
EY AI & Data Challenge	8
Water stewardship starts with collective action	9
Navigate the AI-water trade-off	10
Authors.....	11
Contributors.....	11
Sources:	12



Introduction

AI has the potential to transform how we manage freshwater resources, helping to better control the drivers of water scarcity and foster more sustainable practices. Effective water management depends on understanding where water is available, how it is being used and where losses are occurring. In today's world, with the crisis we are facing, leveraging AI to manage water may be critical in managing dwindling watersheds.

A challenge that demands a new path

Each year, the world loses 324 billion cubic meters of freshwater¹ – one of our most critical forms of natural capital. This essential input to human life and the natural ecosystems on which we depend is under extreme pressure. The challenges extend beyond global warming, worsening droughts and unsustainable land use. The infrastructure powering the rise of artificial intelligence (AI) requires significant amounts of water – and its expansion is further depleting already strained freshwater supplies.

Already, billions of people face water insecurity, with nearly three-quarters of the global population living in areas classified as water insecure or critically water insecure.² But now, activities underpinning AI, including mining and processing critical minerals, semiconductor manufacturing, and data center cooling, are competing with human communities for freshwater. Data center expansion is expected to prompt greater water withdrawals to support cooling and operations.³ In 2027, water use associated with AI could rise to 4.2-6.6 billion cubic meters.⁴ Forecasts of the impact of the AI-powered revolution project water demand to more than double by 2050.⁵

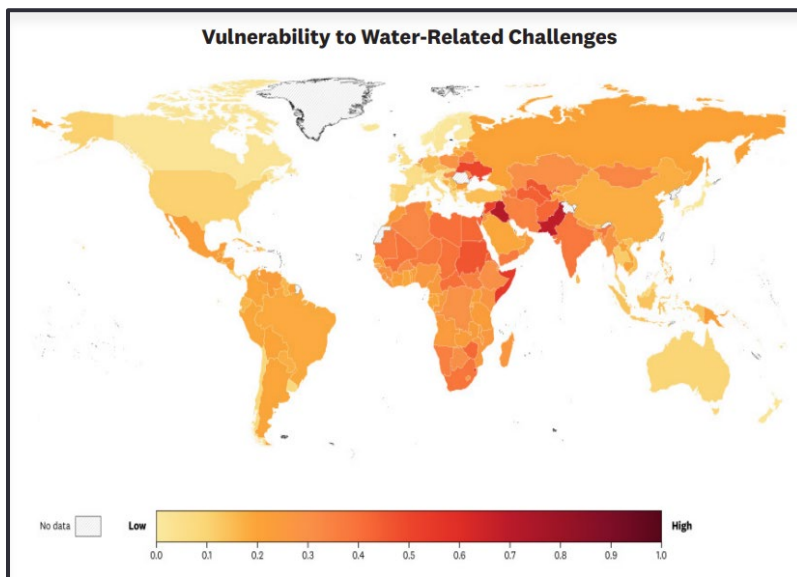


Figure 1. Baseline water vulnerability across countries, showing how susceptible each region is to water-related challenges based on environmental, social, and economic factors. Map produced based on data from Water Resources Vulnerability Monitor²

Even before AI-driven water use increased, the World Economic Forum was predicting the world could face a 40% freshwater shortfall by 2030.⁶ Today, United Nations research describes the shifting baseline in global water availability as already being “beyond a global crisis.” We are transitioning into ‘water bankruptcy’, impacting ecosystems and economies, and threatening community resilience, public health and equity.⁷

As water demand continues to grow and resources become more strained, competition over access and use is increasingly likely to fuel conflict. In 2026, disputes over water rights and allocation both caused and exacerbated political tensions, forcing difficult trade-offs across industries. Rising scarcity can also challenge political stability by reducing crop yields and overall food production, driving higher food prices, food insecurity and increased international migration.⁸

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The geopolitics of scarcity is extending beyond traditional sources of competition and conflict, such as oil and gas, to a wider array of resources, including freshwater. Water is critical to life and is a fundamental need for households around the world. And it is required for critical products and infrastructure, such as food and power. So, it's not surprising that increasing water scarcity has led to increasing geopolitical attention to water resources.

- Courtney Rickert McCaffrey, EY Global Geostrategy Insights Leader, [2026 Geostrategic Outlook](#).

We all have a role to play, and the global EY organization is in a strong position as a global professional services firm to drive meaningful change across stakeholder groups to provide a more equitable, and water secure future.



Figure 2. State of access to safe drinking water. The map shows the percentage of the population with no access to safe drinking water supplies, collecting drinking water from unprotected and unsafe sources. Maps produced based on Aqueduct 4.0 data²

AI's role in transforming freshwater management

But, while AI is compounding our freshwater problem, it is also opening new pathways to water resilience. EY is working with startups and innovators who are using AI to address freshwater shortages at scale, with the potential to transform our approach to the global water crisis.

Across other water-intensive sectors, like energy and manufacturing, circular approaches and water efficiency measures are already helping reduce industry-wide water use. Now, similar approaches are being applied in data centers by adopting alternative cooling approaches, including closed-loop systems, air cooling and immersion cooling to reduce environmental impacts and support more sustainable outcomes for surrounding communities.⁹

Beyond data centers, there is also significant potential to mitigate water use and increase efficiency in agriculture – a sector that accounts for 70% of global freshwater withdrawals – by improving crop management and irrigation efficiency.¹⁰

Generative AI and large language models can analyze and synthesize vast amounts of data in real-time, helping to bridge information gaps in water-stressed areas.¹¹ This can enhance water management by enabling location-specific insights, closing data gaps and assisting decision makers to act more precisely.¹²



Freshwater shortages demand different policy approaches

While AI tools can fundamentally transform freshwater usage and management, policymakers must also reassess how water is valued, managed and governed at a national and regional level. As climate change accelerates and demand continues to grow, effective responses must balance near-term interventions with long-term solutions.

Public policy approaches to alleviate water stress include revisiting frameworks on water pricing and extraction rights, scaling investments in water use efficiency and strengthening climate resilience. Already governments are beginning to pair large-scale investments with tighter governance and more strategic approaches to water. Examples include:



European Union (EU):

The European Commission is actively implementing its EU Water Resilience Strategy, focused on restoring and protecting the water cycle, building a water-smart economy and ensuring access to clean and affordable water for all.¹³ In parallel, EU sustainability reporting requirements are requiring companies to quantify and disclose material water-related impacts and risks, helping to standardize how water use, exposure and dependencies are measured and strengthening the data foundations needed for more informed investment and long-term resilience planning.



Mexico:

In late-2025, Mexico enacted sweeping reforms to its National Water Law, ending the treatment of water concessions as tradable commodities. The reforms tighten control over extraction rights; limit transfers; combat hoarding and prioritize human consumption, sanitation and ecosystem protection, significantly reshaping the regulatory environment for water-intensive industries and reinforcing the constitutional right to water.¹⁴



China:

In late-2024, China expanded its use of water resource taxation to curb over-extraction, applying usage-based taxes on surface and groundwater withdrawals. Higher rates apply in water-scarce regions and for groundwater extraction, reinforcing price signals to reduce waste and promote conservation across industry and agriculture.¹⁵



India:

India is scaling national digital water and irrigation efficiency programs through expanded large-scale digital and efficiency-focused water initiatives, including smart irrigation, aquifer monitoring and AI-enabled water accounting under national water missions. These programs aim to address chronic water stress affecting more than 600 million people by reducing agricultural water losses and improving basin-level management.¹⁶



Freshwater and AI

These countries are gaining traction by treating freshwater as critical economic and social infrastructure. Effective government interventions combine investment, regulatory reform and new accountability mechanisms to improve how water is allocated, protected and managed. As these frameworks mature, they will need granular, high-quality, real-time data, increasing demand for digital tools and AI to support more sustainable water system management.

From managing AI's footprint to scaling its potential

The growing intersection between AI and water scarcity presents a dual responsibility for organizations. First, we must understand and manage the environmental impacts associated with AI adoption, including water use across data centers. Second, we must identify how AI can help to reduce freshwater use, particularly in areas where water scarcity is acute.

At EY Global Service LLP, we recognize the imperative to embed sustainability and responsibility in AI usage across the firm. As part of our Global Environment Strategy, we are integrating data gathering and planning around technology and AI use across our offices as data availability and measurement approaches mature. Water usage for data centre cooling and across our technology supply chain, will be incorporated into the development of nature positive metrics and practices for water, waste and pollution, and support greater collaboration with suppliers and alliance partners to manage emissions and water use linked to purchased goods and services.

While understanding environmental impact and maintaining responsibility is important, the scale of the freshwater challenge demands investment in innovation. Investment in water falls behind other infrastructure sectors globally, such as transportation and energy, with an estimated US\$7 trillion financing gap.¹⁷ Some of the most promising solutions are emerging from startups applying AI to water quality monitoring, leak detection, forecasting, treatment and resource optimization. Yet many of these impact entrepreneurs struggle to access the capital, expertise and networks needed to scale their solutions beyond local communities.

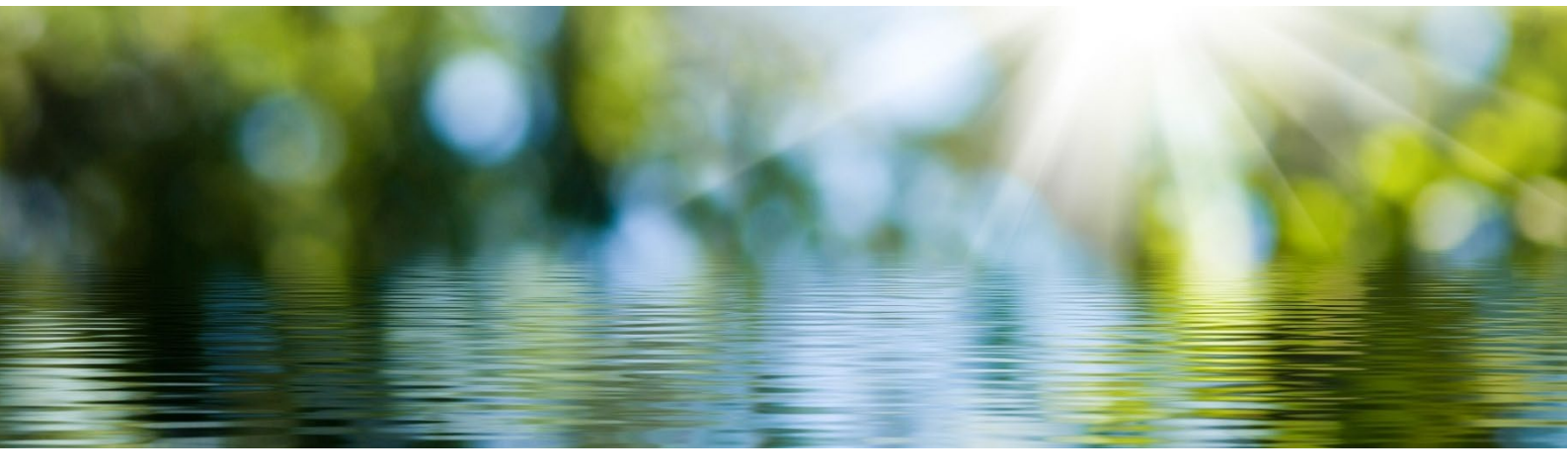
EY Ripples, our global social impact program, is working to catalyze, support and scale local efforts to combat global water challenges. Current programs include the **EY Sustainable Development Goals (SDG) Accelerator: Freshwater x AI** and the **EY AI & Data Challenge: Optimizing Clean Water Supply**.

EY SDG Accelerator

In partnership with Bright Tide, the EY SDG Accelerator: Freshwater x AI aims to develop scalable, AI-driven methods for global water sustainability challenges, particularly in areas facing high water stress. By supporting entrepreneurs through the EY SDG Accelerator, EY helps strengthen the innovation environment needed to scale approaches to address global water challenges, paving the way for a more equitable and sustainable future. Ventures in the Accelerator come from a wide range of geographies and are tackling diverse global water challenges. The include [Shayp](#), [AquaWatch](#), [SmartWTI](#), [NatureDots](#), and [Ainwater](#).

Venture spotlight

AquaWatch helps organizations to manage operational risk and public trust when working near, or discharging into, waterways. Clients in New Zealand, the UK, Europe and Australia use the AquaWatch SWIM-OS (Surface Water Integrated Management Operating System), a platform that ingests data from high-grade continuous water quality monitoring IoT sensors, AI-powered cameras, client data and operational observations to deliver answers to water management questions in real time.





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To improve freshwater, we need to change how we manage it now, not six months down the road after grab samples have been collected, spreadsheets reviewed, data cleaned and consultants have reported. Our clients want to make sure that their ESG and regulatory reporting requirements provide layers of value. Our goal is to reduce operational risk and the associated costs they bring while protecting the freshwater systems the next generation will inherit.

-Abi Croutear-Foy, CEO of AquaWatch,

SmartWTI, a Jordanian-based company, addresses freshwater challenges through an AI powered IoT platform for smart water management, enabling real-time monitoring, leak detection and water optimization. In Jordan, one of the world's most water scarce countries, SmartWTI's solutions focus on schools, industry, agriculture and community facilities, offering 98% accuracy and data updates every 60 seconds. Across 35 schools in northern Jordan, SmartWTI's system detected 564 leaks, enabling participating schools to achieve 20-25% water savings. SmartWTI also helps factories and industrial facilities to improve water monitoring and reduce operational costs. The technology also enables IoT-based irrigation optimization in agriculture, helping to preserve soil and improve yields. For community and social facilities, automated controls and leak detection is delivering water savings of more than 30%.

EY AI & Data Challenge

The EY AI & Data Challenge is a global competition that invites university students, early-career professionals and EY employees to use AI and data science to improve access to clean, safe water. This year, the Challenge is to forecast water quality for rivers in South Africa using satellite imagery, weather data and environmental datasets. Participants are developing AI models to predict water suitability, identify environmental and climatic influences and generate insights that can inform public health and policy decisions. Through learning and global engagement, the Challenge aims to drive innovation and advance the ongoing measurement and improvement of water quality worldwide.

Water stewardship starts with collective action

Climate change is accelerating water insecurity fastest in communities which are least able to adapt. Living without safe water, sanitation and hygiene contributes to 1.4 million deaths from preventable diseases each year.¹⁸ While water scarcity affects all income levels, its health and economic impacts fall disproportionately on women, children, and low income and climate vulnerable communities. Technology and policy have an important role to play in improving freshwater outcomes, but long-term progress also depends on public awareness and community stewardship. Organizations such as WaterAid focus on universal access to clean water, sanitation and hygiene, and as AI reshapes how we approach these challenges, there is an opportunity to combine the reach of EY services with their advocacy and insight. Creating a culture of water stewardship requires people to understand the connection between their actions and the health of the ecosystems they depend on. Hands-on conservation activities can help build that understanding, turning environmental challenges from abstract concepts into tangible local priorities.

This principle underpins initiatives like the EY Ripples aquatic and beach cleanups that remove waste from rivers, lakes, coastlines and other water systems, helping to safeguard biodiversity and ecosystem health. These programs pair action with education, equipping volunteers with a deeper understanding of freshwater and marine biodiversity, the impacts of pollution, and the role of collective action in water conservation.

Since FY23, EY Ripples has completed more than 1,100 cleanups globally. In Singapore, for example, EY volunteers partnered with the Waterway Watch Society in a series of cleanups that removed more than 800 kg of rubbish from local waterways.

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The cleanups create vibrant, clean and biodiverse rivers that benefit the local communities and wildlife. They create healthier waterways by improving water quality, reconnecting rivers with landscapes, and delivering habitat restoration, natural flood management, and education. EY people gain greater understanding of land and river management, helping them to better appreciate and improve the rivers for the benefit of people and wildlife. By taking part in the initiatives we have a better understanding of the transforming and pioneering research being carried out in our local communities.

- Theresa Peers, recurring initiative owner for cleanups on London's Canals





Freshwater and AI

Navigate the AI-water trade-off

Combining innovation with local community engagement and action is achievable but takes coordination and effort. Organizations should work together to navigate the relationship between AI and water, balancing innovation with the need to conserve this essential resource as technology's water needs grow.

Three actions to consider now:

Measure and manage AI's water footprint

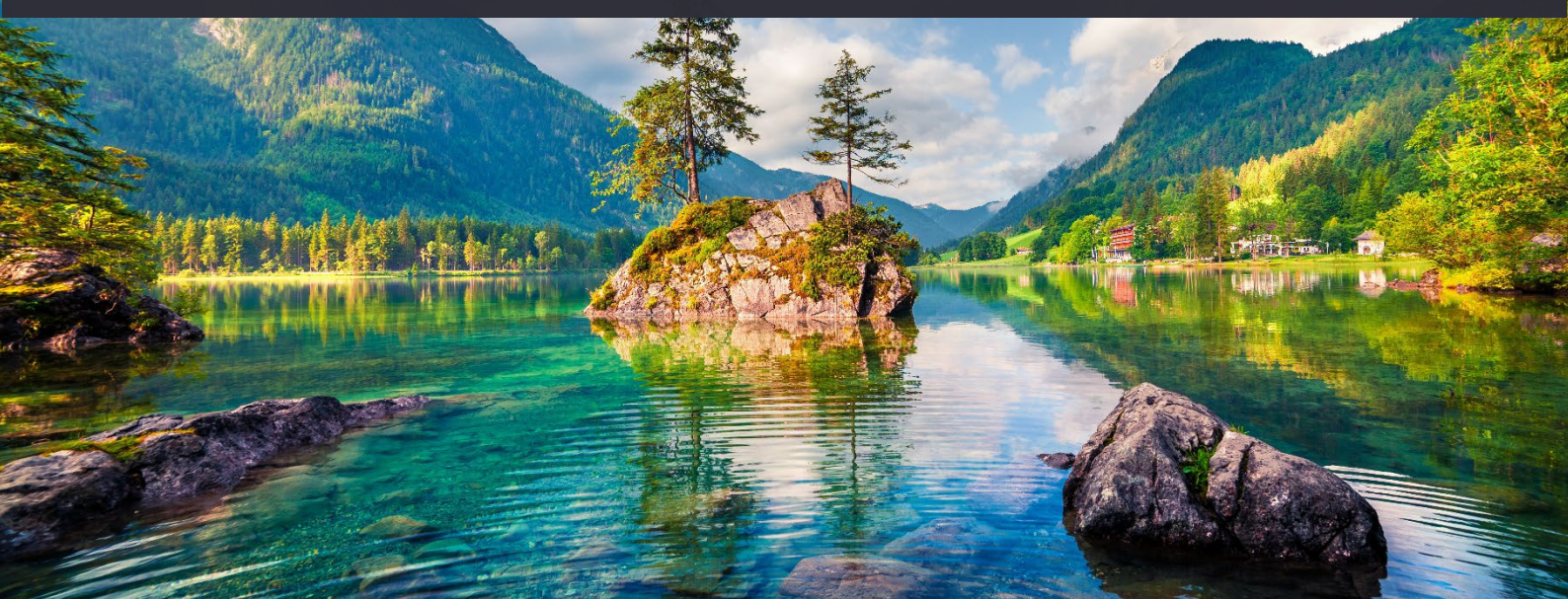
Greater visibility into the water implications of AI technology infrastructure can help inform responsible decisions making. Understanding where and how water is being used is a critical first step toward more sustainable AI governance.

Invest in community action

The effects of water scarcity are felt unevenly, and communities in water-stressed regions often bear the consequences first. Organizations can benefit from understanding how water use affects the people and ecosystems around them, especially as challenges grow. Working with local partners who are closest to these communities and with clients to factor broader impacts into decision making can help ensure the applicability of AI and innovation on watershed management and resilience.

Collaborate across sectors to scale what works

Water scarcity is a complex challenge that crosses industries, geographies and communities. At EY, we are committed to fostering collaboration to undertake these pressing issues. By sharing knowledge, supporting innovation and building partnerships across sectors, organizations can help accelerate progress and ensure that successful approaches reach the communities and ecosystems that need them most.



Now is the time to act. Together, we can create a sustainable future for freshwater, our most important resource. If you are ready to collaborate and explore opportunities, please reach out to us. By connecting innovative thinkers, we can drive meaningful change - let's work together to safeguard clean, safe water for all.

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Sources:

- ¹ World Bank. (2024). Continental drying: A threat to our common future. Retrieved from <https://www.worldbank.org/en/publication/continental-drying-a-threat-to-our-common-future>
- ² Madani, K. (2026). Global water bankruptcy: Living beyond our hydrological means in the post-crisis era. United Nations University Institute for Water, Environment and Health (UNU INWEH). Retrieved from https://3collections.unu.edu/eserv/UNU:10445/Global_Water_Bankruptcy_Report__2026_.pdf
- ³ Environmental and Energy Study Institute (EESI). (n.d.). Data centers and water consumption. Retrieved from <https://www.eesi.org/articles/view/data-centers-and-water-consumption>
- ⁴ Li, P., Yang, J., Islam, M.A., & Ren, S. (2023). Making AI Less 'Thirsty'. Communications of the ACM, 68, 54 - 61.
- ⁵ Xylem Inc. (2026). Watering the new economy: Managing the impacts of the AI revolution. Retrieved from <https://amp.xylem.com/m/aa10f8022757c5e/original/Watering-the-New-Economy-DIGITAL-final.pdf>
- ⁶ World Economic Forum. (2023). Freshwater demand will exceed supply 40% by 2030, say experts. Retrieved from <https://www.weforum.org/stories/2023/03/global-freshwater-demand-will-exceed-supply-40-by-2030-experts-warn/>
- ⁷ Madani, K. (2026). Global water bankruptcy: Living beyond our hydrological means in the post-crisis era. United Nations University Institute for Water, Environment and Health (UNU INWEH). Retrieved from https://3collections.unu.edu/eserv/UNU:10445/Global_Water_Bankruptcy_Report__2026_.pdf
- ⁸ Ernst & Young (EY). (2026). Top 10 geopolitical developments in 2026. Retrieved from https://www.ey.com/en_gl/insights/geostrategy/geostrategic-outlook
- ⁹ World Economic Forum. (2025). How AI is rewriting and enhancing water risk management. Retrieved from <https://www.weforum.org/stories/2025/07/ai-water-risk-management/>
- ¹⁰ World Wildlife Fund. (2025). Water scarcity: Causes, impacts, and solutions. Retrieved from <https://www.worldwildlife.org/our-work/freshwater/water-scarcity/>
- ¹¹ World Economic Forum. (2025). How AI is rewriting and enhancing water risk management. Retrieved from <https://www.weforum.org/stories/2025/07/ai-water-risk-management/>
- ¹² Ibid
- ¹³ European Commission. (2026). Water resilience strategy. Retrieved from https://commission.europa.eu/topics/environment/water-resilience-strategy_en
- ¹⁴ Greenberg Traurig, LLP. (2025). Nueva Ley General de Aguas y reformas a la Ley de Aguas Nacionales. Retrieved from <https://www.gtlaw.com/en/insights/2025/12/nueva-ley-general-de-aguas-y-reformas-a-la-ley-de-aguas-nacionales>
- ¹⁵ Third World Centre for Water Management. (2025). China expands pilot water resource fees into a tax reform. Retrieved from <https://thirdworldcentre.org/2025/03/china-expands-pilot-water-resource-fees-into-a-tax-reform/>
- ¹⁶ Ministry of Jal Shakti (Department of Water Resources, River Development and Ganga Rejuvenation). (n.d.). Offerings. Retrieved from <https://www.jalshakti-dowr.gov.in/offerings?page=1>
- ¹⁷ Devex. (2026). Special edition: Water is life. But can it generate money? Retrieved from <https://www.devex.com/news/special-edition-water-is-life-but-can-it-generate-money-103879>
- ¹⁸ WaterAid. (n.d.). Facts and statistics. Retrieved from <https://www.wateraid.org/ca/facts-and-statistics>

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