

WATER AND CLIMATE: THE ROLE OF DIGITAL TECHNOLOGIES IN SOLVING WICKED CHALLENGES

The world is parched. Climate change is not helping. Nor are things like poor governance and over-allocation. This article looks at how digital technologies and innovation present a tremendous opportunity to help solve many of today's pressing water challenges. It delves into AB InBev - the world's leading brewer - as an example of a company adopting advanced technologies to help address the growing water challenges where they operate.

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Water and climate challenges are wicked problems

Water and climate change are wicked problems. A “wicked problem” is one that has no definitive solution and can be considered a symptom of another problem. Both water and climate change have often been treated as separate wicked problems, but the challenges associated with water and climate change are often inextricably linked, with climate change serving as a threat multiplier.

As the impacts of climate change increase, so do the stressors on water security. A thoughtful evaluation of where these two wicked problems intersect can help guide businesses and society towards enduring, sustainable, and resilient solutions.

Who solves wicked water and climate challenges?

Responsibility for solving wicked challenges is shared and therefore all stakeholders have a role to play. Solving these

wicked problems not only requires stakeholders to understand how their choices impact water and climate, and enact change at the individual level, but also to incorporate that change into their broader associated stakeholder groups. Multinational companies are in a unique position to make a significant contribution in solving wicked water and climate challenges. Wicked problems, by their nature, are not only hard to solve, but a single-point solution can ripple through the system to create another problem. Solutions to wicked problems, which are system-level problems, need to be multifaceted, with multiple vectors. And a multi-vector solution requires coordinating multiple strategies from multiple stakeholders.

Collaboration between multinational companies and entrepreneurs is a powerful tool for addressing wicked climate and water problems, and one that is often overlooked. Combining the scale of the private sector with the speed and focus of

entrepreneurs has the potential to amplify impact – and amplified impact is exactly what is needed as the issues of climate change and water become more acute, negatively impacting economic development, business growth, social well-being and ecosystem health. One only has to look at the impacts of climate change on the Colorado River Basin in the American West to appreciate the urgency in implementing watershed scale solutions.

Corporate strategies to build and maintain watershed health are a growing trend. Several multinational companies are focusing on watershed water quantity, quality, access and resilient ecosystems and communities – here are a few examples:

★ PepsiCo has a stated goal to “achieve sustainable water security for our business, natural ecosystems and local communities that depend on an accessible and reliable supply of clean, safe water.”

★ The Coca-Cola Company states they are “enhancing community water resil-



ience with a focus on women and girls; and improving the health of priority watersheds.”

★ Cargill notes its aims to “restore 600 billion litres of water by 2030 and reduce 5 million kg of pollutants in priority watersheds.”

★ AB InBev’s commitment is that by 2025, 100% of its communities in high stress areas will have measurably improved water availability and quality.

The digital water technology opportunity

The water sector is moving rapidly from an analog world into the digital world. We now use satellite data and analytics to map surface water, measure real-time water quality, and predict flooding. Digital technologies enable the more efficient and effective management of utility infrastructure and industrial assets and have ushered in an age of smart water in urban and rural homes. Likewise, digital technologies such as IoT devices and ar-

tificial intelligence (AI) are increasingly available for the management of utility and industrial assets and support the transition to a digitally enabled human workforce. Digital technologies are already transforming the water sector and our relationship with water in ways that were unimaginable just a few years ago.

The digital transformation of water also presents private sector companies with significant potential value and opportunity. Predictive analytics can support companies in preparing for changes in the quality of the water they intake and support targeted changes in water treatment capabilities. AI- and IoT-powered technologies can provide companies with a much more nuanced, real-time, and predictive understanding of their operational water use, fostering significant improvements in water use efficiency and discharge management. Digital technologies can also empower companies to partner with suppliers to improve water

efficiency and reduce negative water impacts further up their value chain.

Finally, for companies committed to helping improve watershed health outside their factory walls, digital water technologies enable companies – and the partners they work with – to more accurately understand the actual, measurable impact they are having on watersheds through the projects they invest in, and to make smarter, more informed decisions about the types of solutions and interventions that will actually move the needle on water risk.

AB InBev - Digital technologies and watershed health

As the world’s leading brewer, AB InBev aims to be a catalytic force to help solve the growing water challenges where it operates. The growing scarcity and declining quality of freshwater resources is not just a material issue for the company, it is also a significant economic, social and environmental risk for the communities the company is a part of. That’s why as part of its 2025 Sustainability Goals, the company has committed that by 2025, 100% of its communities facing high water stress will have measurably improved water availability and quality.

AB InBev also seeks to help transform the world’s relationship with and management of water resources through cutting-edge digital technology and innovation. The cornerstone of the sustainability innovation effort at AB InBev is the 100+ Accelerator, which began as a platform for open innovation to help the company reach its 2025 Sustaina-

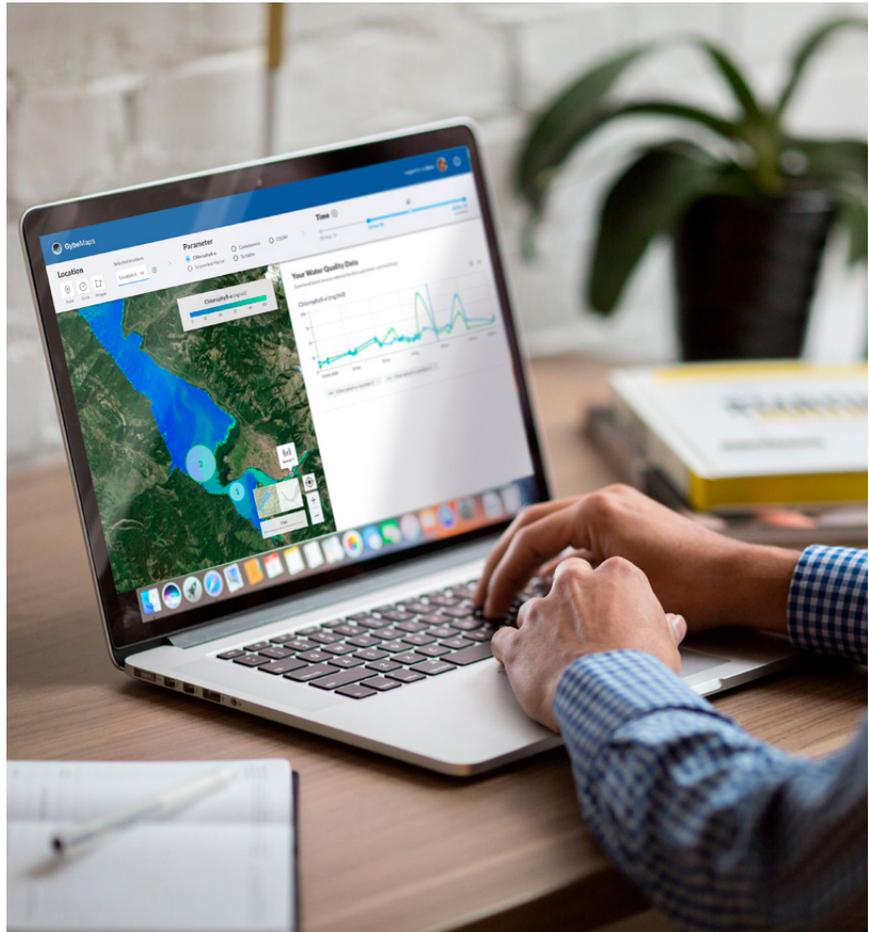
Multinational companies are in a unique position to make a significant contribution in solving wicked water and climate challenges



bility Goals. Since then, it has become one of the company's most transformational programmes, creating efficiencies, driving value creation, and inspiring colleagues to reimagine how they do business to build a company to last. The 100+ Accelerator aims to accelerate the broader adoption of the promising technologies that the start-ups pilot through the programme and the start-ups from the first two cohorts have gone on to raise more than \$200 million from an impressive network of investors.

One of those start-ups is Gybe, a company revolutionizing water quality monitoring through remote sensing and satellite data. As part of the 100+ Accelerator second cohort, AB InBev deployed the GybeMaps™ platform to track water quality changes in a multi-use public reservoir in Idaho. This reservoir is important since it provides water storage for irrigation of several agricultural crops including barley, which is used in beer production.

As AB InBev worked with the US Forest Service to implement bank stabilization projects in this watershed helping to reduce soil erosion and sediment runoff, it was important to determine the effectiveness of these efforts to reduce the sediment deposition and at the same time to also improve water clarity. Gybe installed three automated sensor stations, generating real-time continuous data at key inputs to the reservoir, and a unique time-series data that was never before available for this body of water. Gybe's geospatial analytics immediately put maps of current sediment concentra-



tions into context of historical sediment transport from satellite data over the last decade. Within months from installation, this deployment provided AB InBev with the ability to quantify and track the movement of sediments that accompanies the seasonal run-off in real-time across the key river and creek inflows.

Path forward: the call to action

Today and tomorrow's water challenges require bold action and investments. No longer will analog data solutions meet the needs of the public and private sectors in ensuring water security for economic development, business growth, ecosystem health and social well-being. Actions that the private sector, along with other key stakeholders, can take include the following.

- ★ Accelerate the adoption of digital technologies for real-time water quantity and quality management.

- ★ Create platforms that combine the scale and capabilities of the private sector with the agility and future-focus of entrepreneurs to multiply the impact of technology solutions.

- ★ Increase focus on local watershed water and climate challenges and the application of innovative digital technologies.

- ★ Increase workforce capacity to understand and utilize digital technologies.

Fortunately, there are excellent examples of how digital technologies can address critical water and climate challenges. We now need to learn from these examples and accelerate adoption and integration of them into business models.

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