UN 2023 Water Conference Side Event

How Scaleups and Startups are Transforming Water Management through AI
March 22, 2023, 10:00-11:30am EST
Organized by: WaterValue, AGWA, Atlantean Media

Background on the event
Artificial intelligence has rapidly emerged as a technology that holds great promise to transform various aspects of society. But what does it mean for water management? Over the course of 90 minutes, a terrific group of AI practitioners and water sector professionals tackled this question and much more.

Key Issues discussed
Transformation of the water sector is essential if society is to meet SDG 6 and the various aspects of the NDCs that have water as a central component or that have a water nexus. Climate change and the movement from centralized water systems to decentralized and modular systems are two major drivers that amplify the need for this transformation.

Artificial intelligence, and more broadly digitization, have the potential to be enablers of this transformation but ultimately people must drive it and determine how best to leverage these emergent tools to generate actionable insights and inform decisions.

Water is not just a sector but a connector. It connects across multiple sectors – such as agriculture and energy – but also across multiple disciplines – such as hydrology, chemistry, biology, meteorology, sociology.

This complexity and the multitude of interconnections and relationships in water speaks to some of the strengths of AI, including the ability to ingest massive amounts of data and synthesize information.

While we are in the very early days of identifying potential applications of AI in water management, some existing and potential examples that were highlighted during the discussion were:

- machine learning is particularly useful in exploring the multiple interconnections between variables, such as those that occur within a watershed where topography, soil

type, forests/land cover, precipitation and temperature all interact to affect the amount and quality of water;

- machine learning can be deployed to rapidly run experiments to determine whether having additional data is advantageous and improves outcomes and decision making;
- could AI help to bring people together to take collective action in locations where the need for action is particularly acute action is needed and create actionable intelligence to help inform what actions should be taken?
- could massive datasets from smart meters around the world be assembled to create "virtual meters" in locations that don't have or can't afford actual meters?
- how can AI be deployed beyond water quantity issues to address water quality and WASH issues?

Leveraging AI for transformation of water management will require standardization so that the vast amount of existing data sources can be more fully utilized and new data coming online is categorized and labelled in a consistent and useful manner. In addition, the barriers to entry to utilizing AI need to be lowered to ensure that it is a tool that is accessible and useful regardless of technical skill and organizational size while remaining "platform agnostic."

Given that AI requires a certain level of data richness, the delineation of what data is available for the common good versus what remains private is one critical issue that will likely frame the ultimate usefulness of AI.

Key recommendations for action

User informed design is critical for ensuring that the needs, values and objectives of people, organizations and institutions are reflected and integrated into AI applications and tools.

An assessment of the types of water management challenges and opportunities that best lend themselves to being addressed by AI should be conducted. This can both help guide end users on best uses as well as indicate to tool developers which opportunities hold the most promise.

Normalizing and standardizing existing and new data should be prioritized so that the vast amounts of data that has been, and will be, collected can be leveraged to hasten the development of AI tools and potentially help fill data gaps.

Maximize the common good by avoiding the "walled gardens" that have developed in other sectors that have undergone digital transformation and by fostering openness, sharing and interoperability while also recognizing that some data may need to remain private.