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Editorial

Blockchain with Artificial Intelligence to Efficiently Manage Water Use under Climate Change

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Assessments may underestimate the annual global water scarcity, driven by seasonal water availability and consumption distribution heterogeneity [1]. These assessments however do not reflect how climate induces change in multi-scale water availability [2], since multi-scale irregular water resource spatial distribution escalates under climate change conditions, and irregular climate change impacts are related to geographic location [3]. Conventional approaches to water-related vulnerabilities are handled at country or regional scales, without articulating how water sources and water demands through river network flows are geographically related [4]. A suitable approach to water resource management for multi-scale water issues thus may be a distributed network approach. Using blockchain technology for a decentralized immutable public water transactions record [5,6], additionally ensuring trust and involvement in its data fidelity, data security, and data verification, may be advantageous even though it is argued that inefficiencies and ethical issues exist if applied in science [7]. While remote water use sensors can yield vast amounts of continually refreshed 'big data', insights remain limited as does its accessibility to the non-specialist public. Yet, artificial intelligence (AI) can accelerate the discovery of complex patterns in big data on shifting water distribution by consistently executing small-scale scientific processes [8–10]. Combining these mutually reinforcing technologies can demonstrate how we may increase public trust with automatic and conditionally implemented water use 'smart contracts', based on secure, immutable data; and how we may increase efficient optimization and validation of local water use data—a key driver in global scale ecosystem change studies [11] and informed decision making. With a distributed intelligent approach to global water management, blockchain data securitization protocols converge with AI algorithms trained by remote sensor water data to distribute water. This technology integration can yield advantages in efficient water abundance and scarcity pattern identification for equitable multi-sale water resource management under climate change conditions.

Conflicts of Interest: The authors declare no conflict of interest.

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