Item number	**Title/reference** *(academic style) name initials (year) title, publisher, volume, pages*	**Name of reviewer**
7	Nardi, Fernando, Christophe Cudennec, Tommaso Abrate, Candice Allouch, Antonio Annis, Thaine Assumpção, Alice H. Aubert et al. "Citizens AND HYdrology (CANDHY): conceptualizing a transdisciplinary framework for citizen science addressing hydrological challenges." *Hydrological Sciences Journal* 67, no. 16 (2022): 2534-2551.	**Karl Donert**

Review of findings / main outcome

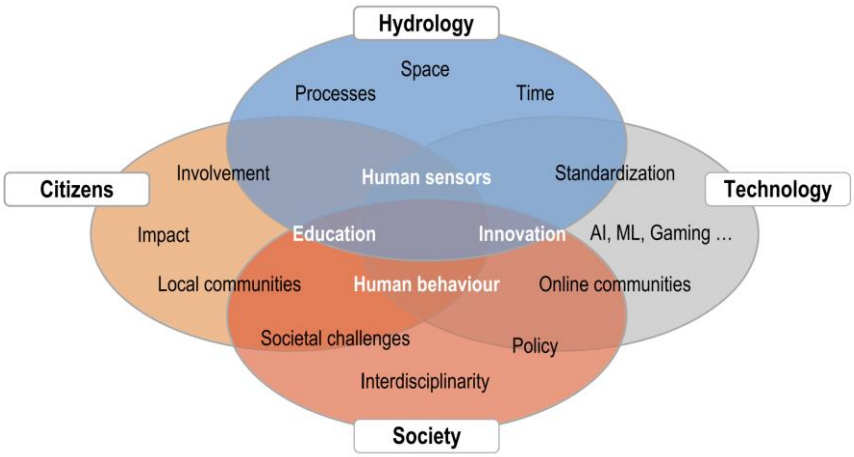
This paper relates citizen science to different elements of the hydrological cycle. Hydrology is poised to become a major field of activity for citizen science, which may lead both scientists and citizens to better understand the complexity of hydrological phenomena.

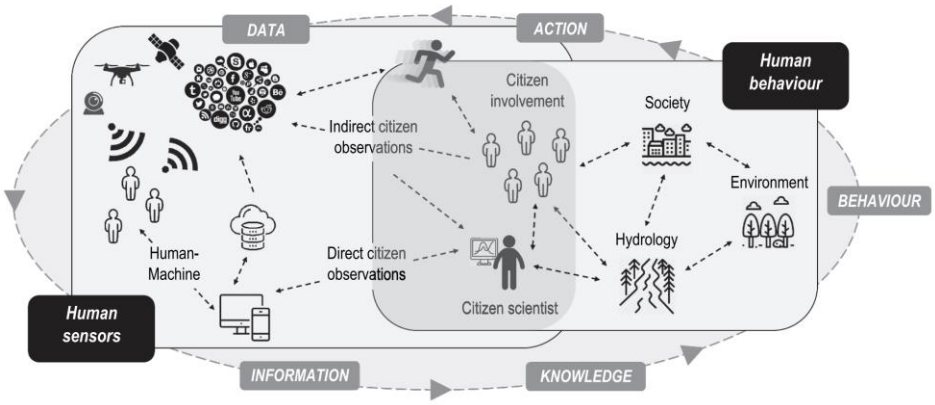
Crowdsourcing is a specific type of citizen science which is expected to increase in use. There is however an absence of procedures on how to incorporate citizens' knowledge effectively to inform policy and decision-making.

Citizen science is an opportunity to integrate scientific, social, economic, cultural, political, and administrative processes in projects. The authors suggest pressing scientific and societal challenges linked to water, energy and food security could be researched in the context of human activity and the role this play in the water–energy–food–ecosystem. They confirm hydrology remains a data-scarce science, with many important variables (such as river flow, water quality, sediments, rainfall/snow depths, and groundwater levels) being severely under-sampled.

The article identifies and introduces a conceptual framework that integrates crowdsourcing and behavioural mechanisms, to enable transdisciplinary surveys and assessments. The proposed framework aims to support the development of accumulated knowledge, avoid pitfalls, and maximize the effectiveness of joint efforts between different citizen science projects.

There are four main elements common to most citizen science efforts addressing water issues, (a) citizens, (b) the hydrological sciences (hydrology, for simplicity), (c) technology, and (d) society. The authors create a transdisciplinary framework which can be applied to citizen science projects in hydrological sciences.





Schematic representation of the “human sensors” and “human behaviour” components.

The main issues they conclude are financing citizen science projects, as technology becomes obsolete very quickly and data infrastructure needs to be maintained. It is difficult to organize sustainable, long-term citizen science projects. Intellectual property, licensing, and data protection are also serious challenges that need to be managed. They suggest this requires government and financial support, multi-sectoral coordination, and a long-term vision.