

A journal for all water-related research



Nature Water aims to be a venue for all research on the evolving relationship between water resources and society.

In the series of notes now commonly known as the Codex Leicester, Leonardo da Vinci described water as ‘vetturale della natura’, the driving force of all nature. Da Vinci was fascinated by water and by its motion. His studies focussed specifically on the way water flows, especially in rivers, the way it goes around obstacles, the way it erodes rocks, and more broadly on how everything in nature progresses through the motion of water.

Although Da Vinci was mostly referring to the physical properties of water, it would be fair to extend his words to take into consideration that water resources are also the engine of human society. Since the origin of civilization, people have settled around rivers, lakes and along coastal areas. Water was essential for drinking of course, but also for sanitation, transportation and for agriculture. Throughout history, the relationship between water and society has evolved primarily thanks to scientific and technological progress. Aqueducts, sewages, irrigation and transportation canals and eventually water and wastewater treatment systems have improved how water is distributed, and helped prevent damage to the environment and the spreading of pathogens and pollutants.

All the scientific and technological progress of the past has however not been enough to prevent the water-related challenges of modern society. According to the United Nations (UN), as of 2020, 26% of the world population still lacked access to safely managed drinking water and 46% did not have safely managed sanitation. Water and sanitation are in fact the focus of the 6th Sustainable Development Goal (SDG) of the UN, which aims at ensuring access to clean water and sanitation for

all by 2030. Furthermore, water is central to the achievements of most of the other SDGs, including zero hunger, sustainable cities, gender equality, climate action and responsible consumption.

Although the most significant problems with water and sanitation are in the poorest countries, the richer countries also suffer from water inequalities and water injustice. At a global level, rising temperatures and extreme weather events like floods and droughts drastically reduce water quantity and quality. Furthermore, increasing population and technological progress generate higher demands for clean water on the one hand, and severe water contamination on the other.

Facing the challenges related to water requires changes in the current technological and social infrastructure, in order to achieve environmentally sustainable use of water resources and a more equal and just water access. This will be possible through the combination of concurrent and diverse actions, including improvements in technological infrastructure, behaviour, governance, laws and regulations.

The launch of *Nature Water* originates from the desire to create a venue where all researchers working towards a more equitable and sustainable relationship between water and society can find the most significant contributions from natural sciences, social sciences and engineering. Our aim to report significant contributions from all water-related research is clearly expressed in the [Viewpoint](#) published in this first issue, which showcases the contribution of nine experts covering some of the challenges and prospects in a range of areas of water research.

The rest of the content also covers a variety of topics. The [Review](#) by Rodell and Reager and the [Article](#) by Schilling et al. focus on hydrology; the [Analysis](#) by Zeng et al. is about the water–energy nexus; the [Perspective](#) by Schipanski is about governance of ground

water resources; the [Article](#) by Mueller and Gasteyer and the [Article](#) by Rachunok and Fletcher analyse water-related economic inequalities in different communities; finally the [Perspective](#) by Elimelech and co-authors, the [Article](#) by Xie and co-authors and the [Article](#) by Liu and co-authors, focus on water and wastewater treatment.

As a journal covering a thematic research area, there are two essential aspects that *Nature Water* will endorse from the outset. The first one, which is beautifully illustrated by Julia Martin-Ortega in her [World View](#), is that when looking at the interaction between people and water, social sciences must be an integral part of research, on par with natural sciences and engineering. Improving our understanding of natural resources or developing new and efficient technologies will not be enough if we do not take into account how behaviours, perceptions, laws and regulations can lead to a more just, less expensive and more environmentally sustainable access and use of water resources.

The second is that the results of water research should be open to all. *Nature Water* is a transformative journal, which means that authors of primary research have the option of open-access publication. We are also fully committed to open and FAIR (findable, accessible, interoperable and reproducible) data, as well as the sharing of code. The [Comment](#) by Emma Schymanski and Stanislaus Schymanski, and the [Comment](#) by Rhea Verbeke illustrate the importance of open science as well as the obstacles that seem to limit the data and code sharing at this stage. At *Nature Water*, we explicitly encourage our authors to deposit their data and codes in public repositories, and we shall work with the research community to ensure that open science becomes common practice for all areas of water-related research.

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