

GLOBAL GROUNDWATER SUSTAINABILITY: A CALL TO ACTION

Groundwater, the invisible water beneath our feet, represents 99% of Earth's liquid freshwater, making it critical for supplying drinking water, ensuring food security, adapting to climate variability, supporting biodiversity, sustaining surface water bodies and meeting the UN's Sustainable Development Goals.

Unfortunately, in many regions, groundwater is increasingly depleted or polluted, hampering socio-economic development and threatening water and food supplies and ecosystems. At the same time, advances in research, technology and policy offer innovative solutions. There is a unique, but shrinking, window of opportunity to act – and now is the time for action to ensure groundwater continues to benefit society today and in the future.

Groundwater challenges and opportunities are often overlooked in national and international strategies for sustainable development, climate adaptation and biodiversity. As a global group of scientists, practitioners and other experts in groundwater and related fields, we call on international and national governmental and non-governmental agencies, development organizations, corporations, decision-makers and scientists to address three action items.*

*This statement was drafted at the AGU Chapman conference on Aquifer Sustainability in Valencia, Spain in October, 2019. The statement is meant to raise awareness of the global importance of groundwater, encourage future international action-oriented initiatives and build momentum towards the 2022 UN World Water Day. We invite fellow scientists, practitioners and other experts to sign on their own behalf.



ACTION ITEM 1

Put the spotlight on global groundwater sustainability

Put the spotlight on global groundwater sustainability by completing a UN World Water Development Report, planning a global groundwater summit and recognizing the global importance of groundwater in the UN's Sustainable Development Goals by 2022.

Groundwater plays a major role in the achievement of the UN's Sustainable Development Goals (SDGs), including directly supporting access to water and sanitation for all. Although it is a crucial contributor to a number of SDGs, including those concerning food, energy and climate, groundwater is under-represented in SDG targets and indicators. Global groundwater sustainability hinges on understanding and managing the following facts: Groundwater is interlinked globally through international trade via water embedded in traded goods. Groundwater is a critical part of the Earth system, influencing major water flows and regional climate. Groundwater is key to climate adaptation, serving as a manageable buffer to droughts and water stress. Groundwater depletion and contamination are issues of increasing global concern. By encouraging greater understanding of these facts, this action item builds momentum towards the 2022 UN World Water Day entitled 'Groundwater - Making the invisible visible.'



ACTION ITEM 2

Manage and govern groundwater sustainability

Manage and govern groundwater sustainability from local to global scales by applying a guiding principle of groundwater sustainability by 2030.

Emerging groundwater sustainability success stories in parts of the United States, the European Union, China and New Zealand underscore the importance of effective local to regional management for achieving groundwater sustainability across the globe. We advocate for applying a crucial guiding principle of local to regional groundwater sustainability: **maintaining long-term, dynamically stable storage of high-quality groundwater using inclusive, equitable and long-term governance and management**. This principle will provide the basis for acceptable trade-offs to support the achievement of the SDGs, as well as water, food and energy security; surface water resources; groundwater-dependent ecosystems; and infrastructure development, social well-being, and growth of local economies for current and future generations. We recognize that in some arid regions with highly stressed aquifers, such as the Middle East, only managed groundwater depletion, rather than groundwater sustainability, may be possible. On the other hand, regions with largely untapped aquifers, such as parts of Sub-Saharan Africa, could sustainably expand groundwater use to contribute to achieving the SDGs.



ACTION ITEM 3

Invest in groundwater governance and management

Invest in groundwater governance and management to strengthen emerging and existing institutions and strategies by 2030.

As a hidden resource, groundwater is inherently challenging to govern and manage. Yet we already know enough to act and move in positive directions towards global groundwater sustainability. Developing effective groundwater sustainability plans requires committing to:

- 1) establishing an open, transparent global monitoring and reporting system on aquifer conditions and groundwater use;
- 2) incorporating nature-based solutions and measures for protected and managed aquifer recharge and groundwater quality protection;
- 3) coordinating management of groundwater, surface water and new water sources;
- 4) incorporating groundwater into all SDG pathways related to water, energy and food security;
- 5) changing the economic incentives of direct and indirect groundwater users;
- 6) strengthening inclusive groundwater management bodies at all levels;
- 7) developing institutional groundwater management capacity at all levels and enhancing global networking and sharing of best practices;
- 8) raising awareness with stakeholders representing agricultural, industrial, urban, domestic and environmental water users; and
- 9) holding global, high-level deliberations on groundwater management, including transboundary basins and aquifers.

The statement has no formal funding with participants freely volunteering time and support. The leadership team includes [Tom Gleeson](#), [Karen Villholth](#), [Richard Taylor](#), [Deb Perrone](#), [Jay Famiglietti](#), [David Hyndman](#), [Anne van Loon](#) and [Yoshi Wada](#). The website and graphics team includes [Rich Pauloo](#), [Aakash Ahamed](#), and [Corey Scher](#), with infographics by [Form New York](#). The communications team includes [Mark Ferguson](#) and [Stefan Siepmann](#).

This statement focuses on the global role of groundwater in relation to the [2030 Agenda for Sustainable Development](#), the [Paris Agreement on Climate Change](#), the [Framework for Action on Groundwater Governance](#) and the [Sendai Framework for Disaster Risk Reduction](#). It builds on previous important declarations and statements, including the [Valencia declaration on Intensive Groundwater Use](#) (2002), the [Kampala statement on Groundwater and Climate in Africa](#) (2008), and the [ISMAR9 call to Action on Sustainable Groundwater Management Policy Directives](#) (2016).