Water Science Alliance
Deutsche Wasserforschungsallianz

Global Water Bankruptcy: Science-Based Adaptation to a New Reality

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The recent publication of the United Nations University report "Global Water Bankruptcy: Living Beyond Our Hydrological Means in the Post-Crisis Era" [1] marks a critical moment for global water policy and science. The report is based on the paper by Mandani (2026) "Water Bankruptcy: The Formal Definition" [2]. Its key conclusion is that the world has moved beyond episodic water crises and entered a state of structural water bankruptcy, in which natural water systems can no longer recover to historical (baseline) conditions. The impacts of water bankruptcy are profound and long-lasting: Glaciers that once fed rivers have vanished and depleted aquifers now constrain future water security; degraded soils reduce agricultural resilience, while the loss of wetlands weakens natural buffers against floods and droughts; declining water quality further increases risks to ecosystems, food systems, energy production, and human health, creating cascading effects across regions and generations. Against this background, the report calls for a more "honest, science-based" agenda to adapt to a new reality.

The UN report therefore directly resonates with the work of the Water Science Alliance (WSA), which has long advocated for evidence-based, interdisciplinary approaches to water management. In fact, many of the report's core findings and proposed responses are not new to water research and were also articulated in a WSA position paper published five years ago [3]. As the WSA repeatedly stressed - technical solutions alone are insufficient. Key priorities now include transparent water accounting, clear prioritization of water uses, stronger governance, and integration of social, ecological, and economic knowledge. Furthermore, robust water monitoring data are essential for incorporating these elements into a holistic science-based action concept. These principles are now echoed in the recent UN report, which calls for a reset of water management to remain within biophysical limits, underscoring urgent action.

Science-based, interdisciplinary adaptation is more necessary than ever. We emphasize the necessity of implementing and expanding existing legislation such as the EU Water Framework

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Directive, the Nature Restoration Law, and the Urban Wastewater Directive. We invite a dialogue on how research, policy, and practice can jointly transition from warning to implementation. This requires openly acknowledging limits while working collectively to reduce harm and build resilience in a water-bankrupt world. Given this obvious urgency, we call upon all interested members of the water research community to join us in proposing sustainable, actionable, and implementable scientific solutions.

For the Board of the Water Science Alliance,

Martina Flörke, Florian Leese, Kerstin Stahl, Jörg Seegert

References:

[1]: UNU-INWEH Report: Madani, K. (2026).
[2]: Madani, K. Water Bankruptcy: The Formal Definition. *Water Resources Manage* **40**, 78 (2026).
[3]: Water Science Alliance Strategy Framework Paper