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Averting the Global Water Crisis

Three Considerations for a New Decade of Water Governance

Cora Kammeyer, Ross Hamilton, and Jason Morrison

Water is the most essential resource on the planet. Not only do we need it for basic survival, but our economies and natural ecosystems also rely on it. Governance structures for water management in many countries are weak and fragmented; institutional and administrative rules, practices, and processes are inadequate.¹ The resultant challenges are of a nature and scale that truly constitute a global crisis.²

Today, over two billion people live in regions where water demand outstrips supply, and it is anticipated that by 2050 there will be five billion people (half the global population) living in these “water-stressed” regions.³ Over 80 percent of the world’s wastewater is returned to rivers and oceans untreated,⁴ polluting waterways and causing damage to ecosystems and human health

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and livelihoods. Overextraction and pollution of water have significantly affected the environment, with over 60 percent of ecosystem services being degraded or used unsustainably.⁵ In addition to the intrinsic value of nature, this degradation represents an annual loss of USD \$3–5 trillion in natural capital.⁶ Lastly, while water has been internationally recognized as a human right,⁷ 2.1 billion people still lack access to safe drinking water, and 4.5 billion lack access to adequate sanitation services like clean, functional toilets.⁸

Examples like the water contamination crisis in Flint, Michigan; record-breaking drought in California; the “Day Zero” crisis in Cape Town, South Africa; and the water crisis in Chennai, India, demonstrate that these severe water challenges are widespread and mounting.⁹ If the current evidence of crisis is not daunting enough, these challenges are only expected to be further exacerbated by climate change and the addition of one billion people to the global population by 2030, equating to an expected 40 percent increase in water demand.¹⁰

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The global water crisis is mainly a crisis of governance.¹¹ Poor management and allocation of water resources by governments, communities, and water users leads to negative water outcomes like depletion and pollution. Past and current approaches to water governance have created many of the challenges we face. New approaches are needed to reverse negative trends and improve the ecological sustainability, human equity, and economic efficiency of water management. In this paper we discuss the background and recent developments of global water governance and put forth three key recommendations for reform in the coming decade, including improving groundwater governance, integrating water and climate governance, and establishing the appropriate role of the private sector in water governance.

Existing Water Governance Frameworks

The term “water governance” refers to the political, social, economic, and administrative systems that influence the use and management of water resources. It includes water policies and institutions and the roles and responsibilities of different sectors of society (public, private, and civil society) in reference to water.¹²

Over the past several decades, since the advancement of water governance as a formal concept at the Dublin Conference in 1992, water governance has continued to evolve. At the global level, the three dominant frameworks relating to water governance and management are Integrated Water Resources Management (IWRM), the Organization for Economic Cooperation and Development (OECD) Principles on Water Governance, and the United Nations Sustainable Development Goal Six on water and sanitation (SDG 6). The former two frameworks provide normative guid-

ance on what good water governance entails, while the latter sets ambitious targets for the status of water resources management by 2030.

Integrated Water Resources Management (IWRM) (mid 1990s)

IWRM is defined by the Global Water Partnership as “a process which promotes the coordinated development and management of water, land, and related resources in order to maximize the resultant economic and social welfare in an equitable manner without compromising the sustainability of vital ecosystems.”¹³ IWRM is a conceptual framework, a set of common sense suggestions for “good” water governance based on the principles of social equity, economic efficiency, and environmental sustainability. It is the most commonly used guiding framework for water governance; as of 2018, over 40 percent of countries are implementing most elements of IWRM.¹⁴ One of its most significant contributions has been to establish a common language and framework for the water community. This facilitates the sharing of knowledge, lessons learned, monitoring results, and more across basins, regions, and national borders.

Organization for Economic Cooperation and Development (OECD) Principles on Water Governance (2015)

The OECD’s set of twelve principles on water governance is the emerging leading guidance on water governance and is more specific than IWRM.¹⁵ It provides a framework for assessing whether a water governance system is performing well and for identifying where adjustments are needed. Like IWRM, it also helps catalyze dialogue and sharing of knowledge across countries and regions, affecting change and helping to avoid pitfalls. The twelve principles are

grouped into three categories: effectiveness (the ability to set sound water policy goals and meet them), efficiency (the ability to maximize water benefits at least cost to society), and trust and engagement (the ability to foster stakeholder dialogue and promote fairness and transparency). Put simply, the OECD considers water governance to be “good” if it helps solve key water challenges, using a combination of bottom-up and top-down processes, and fosters constructive relationships between government and water users. It is “bad” if it generates unnecessary transaction costs and does not respond to the needs of the place and people.¹⁶

United Nations Sustainable Development Goal Six (SDG 6) on Water and Sanitation (2015)

SDG 6, the overarching goal of which is to “ensure access to water and sanitation for all,” is the global 2030 ambition for water.¹⁷ The goal is comprised of six targets, including achieving universal access to safe drinking water, achieving universal access to improved sanitation and hygiene services, improving water quality by reducing pollution and reducing the volume of untreated wastewater, increasing water use efficiency and decreasing the number of people suffering from water scarcity, implementing IWRM at all levels, and protecting and restoring water-related ecosystems.

The aim of this article is not to create another framework, but to put forth three recommendations for water governance reform in this new decade. It is now 2020, which means that as a global community we have just ten more years to meet the targets of SDG 6. Doing so requires significant and urgent changes in how we think about, manage, and value water and the ecosystems from which it comes, all in the context of our increasingly populated, urbanized, and globalized world. Three key actions to help

accelerate and achieve these targets include improving groundwater governance, integrating water and climate governance, and establishing the appropriate role of the private sector in water governance.

Daylight Groundwater Governance

“Out of sight, out of mind” is an adage many of us learned in our childhoods to teach us that what cannot be seen or is not noticeable will be forgotten. Unfortunately, it also applies to the governance and management of groundwater resources, which are being depleted or polluted at an alarming rate across all continents.

Groundwater is the largest unfrozen freshwater resource on Earth, containing almost 96 percent of the planet’s freshwater.¹⁸ Groundwater provides two billion people with drinking water and supplies more than 40 percent of the water used for the world’s agricultural irrigation.¹⁹ Importantly, it also supports climate adaptation for often vulnerable communities by helping regions cope with droughts and even by acting as subsurface sponge for floods.²⁰

But this invisible resource is now facing a visible crisis. The effects of agricultural expansion and intensification and the proliferation of nearly unrestricted groundwater pumping (particularly as a “solution” to pronounced surface water scarcity) are showing in aquifers and hydrologically connected streams all over the world.²¹ Global groundwater withdrawals have tripled in the past fifty years, and continue to increase.²² Twenty-one of the thirty-seven largest aquifers in the world are being depleted at unsustainable rates.²³ In some places, like China’s northern Beijing plain and California’s Central Valley, the land itself is sinking due to depletion of the water beneath it.²⁴ Ongoing mismanagement of groundwater resources

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poses serious risks to water, food and energy security, climate adaptation, ecosystems, social well-being, and local economies.

In December 2019, over seven hundred global groundwater experts from more than seventy-five countries called for urgent global action.²⁵ This included investing in groundwater governance and management by implementing groundwater sustainability plans for stressed aquifers by 2030 and committing to applying sustainability guiding principles when managing and governing groundwater from local to regional scales.

The time is long overdue for recognizing groundwater as a critical asset that must be managed sustainably. In order to achieve this, groundwater resources will need to be incorporated into existing water governance approaches and institutions, and new approaches and institutions must be developed to address the unique aspects of groundwater as a water resource.²⁶ Particular policy emphasis and investment is needed in groundwater monitoring, to better understand its complex geohydrology and to ensure it does not again become the invisible and underappreciated resource.²⁷ Taking immediate measures to more equitably govern and manage an unseen resource under threat, on which many regions of the world depend, is an imperative.

Solve for Water and Climate Change Together

The impacts of climate change already being felt throughout the world are most prominently expressed through changes to the wa-

ter cycle. The water-related risks of warming global temperatures include changes in the timing, state (rain or snow), volume, and predictability of precipitation: more frequent heavy rainfall events, smaller snowpack, increasing frequency of droughts, and more frequent and intense extreme wet events such as tropical storms. Such impacts come at a cost; nine in ten natural disasters are water related, with global flood damage projected to cost USD \$1 trillion a year by 2050.²⁸ Further, an estimated 0.5–3.1 billion additional people will be living with water scarcity by 2050 because of climate change.²⁹

In essence, climate change is a threat multiplier, acting to exacerbate existing water-related risks that governments and communities are already struggling to adequately address.

Given the inextricable interlinkages between water and climate, we must solve them simultaneously. Climate change responses are typically divided into two categories: *mitigation*, meaning minimizing future impacts of climate change by reducing greenhouse gas emissions, and *adaptation*, meaning preparing for and coping with the impacts of climate change already under way. For mitigation and adaptation efforts to be effective and meaningful, they must be integrated with water management and planning, and vice versa.

Past planning and management efforts were typically based on the assumption of climate stationarity—assuming that the past predicts the future.³⁰ Given the changes we are expecting with climate change and the high level of uncertainty around the timing and severity of those changes, this is no longer a viable assumption. To more effectively build climate resilience, governance and management structures will urgently need to use best available scenario planning and modeling rather than historical hydrologi-

cal models when formulating water policy, as well as allocating water and planning new infrastructure.

Similarly, much of the water infrastructure that exists today was built under the assumption that fossil fuel energy would be cheap and abundant forever. Now that we know this is no longer true, water management decisions must account for the energy and climate realities of today, including the greenhouse gas implications of water investments.³¹

Fortunately, these linkages are increasingly being recognized and mainstreamed. Water figures centrally in most of the Green Climate Fund's adaptation portfolio, with USD \$5.6 billion being committed to date to climate mitigation and adaptation. Water-related adaptation actions are also referenced in approximately 90 percent of the Nationally Determined Contributions (NDC's) as part of countries' commitments under the Paris Climate Agreement.³² However, these commitments are not without shortcomings, with only a handful of countries explicitly referring to taking a coordinated water management approach to adaptation across sectors (both among private and public sectors and across agencies within governments) and levels of geography and political jurisdictions. The effective governance and management of water resources under uncertain climate conditions will be critical to our ability to adapt and build resilience to the impacts of climate change.

Define the Appropriate Role of the Private Sector in Water Governance

Influence of the private sector, particularly multinational corporations in an increasingly globalized economy and society, on all forms of governance is undeniable. Water is no exception, but there has been little in-

depth inquiry into the explicit effects of the private sector on water governance, what their current role is, and what it might or should be in the future.

A growing number of largely multinational companies are adopting water stewardship as an approach to responsibly manage water. In simple terms, water stewardship requires companies in their water planning and management to go beyond their "factory fence line" to consider other water users and communities within the watershed.³³ Some of the leading companies in water stewardship, however, have come to realize that even if they run highly water-efficient operations and partner with the local community or civil society groups to address shared water challenges in the local watershed, they still may face major water-related risks. That is, if the water resource is being poorly governed—such as by the overallocation of water resulting in scarcity or poor enforcement of water quality discharge resulting in pollution—no amount of individual action will protect a company from resultant water risks.³⁴ At that point, direct private sector engagement in water governance is often needed.

Most companies operating outside of the water sector are reluctant to get directly involved in the governance and management of what is understood by most as a public good. Concerns range from allowing the public sector to abrogate their responsibility, creating a dependency, being perceived as acting unethically, and operating outside of their core area of expertise and competency. Within the water sector, an increasing trend of privatization of water service providers has caused its own set of governance dilemmas.³⁵ The public sector and civil society hold serious reservations about private sector involvement in water governance as well, including fears around corruption, policy capture, information asymmetries

among stakeholders, and commodification of a public good.

Despite the risks and fears around private sector engagement in water governance, their participation is unavoidable and, in fact, necessary. The targets of SDG 6 cannot be met without political support, direct action, and financing from the private sector.³⁶ The same is true of achieving groundwater sustainability and addressing water and climate change; the public sector and civil society need the private sector on board and contributing to solutions.³⁷

The value in bridging private and public sector efforts to improve water-related outcomes has been recognized by a number of groups, and there are some signs of movement. The UN Global Compact CEO Water Mandate has developed guidelines on how the private sector should responsibly engage in water policy, centered around five principles including sustainability, respecting public and private roles, inclusiveness, pragmatism, and transparency.³⁸ The 2030 Water Resources Group—a public, private, civil society partnership hosted by the World Bank—supports country and catchment-level collaborations on actions such as reforming water allocation regimes to provide for greater water security. In addition, the Global Water Partnership and CEO Water Mandate are currently exploring how private and public sector efforts to more effectively manage water resources could be better aligned and coordinated.

There are ways for private sector companies to engage responsibly and meaningfully in water governance, and efforts are underway to facilitate that engagement. For example, the Ceres Connect the Drops initiative in California harnesses the political power of major corporations to advocate for state legislation that advances sustainable water management.³⁹ However, these examples are still uncommon, and examples

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of corruption and poor water management from the private sector are common. There need to be clear, enforceable expectations for the role of private sector actors in water governance to harness the potential for positive impact while protecting against the negative.

In closing, the water challenges we face in 2020 are significant and mounting. Confronting massive population and economic growth and unprecedented climate change against the backdrop of decades of unsustainable water management, we are facing greater water risks than ever, including the threat of violent conflict over water resources.⁴⁰ To address these risks and avert water crisis, we need appropriate and effective political, social, economic, and administrative systems to first end the catastrophic depletion of groundwater and bring aquifers to sustainability; second, integrate water resources management and climate change adaptation and mitigation; and third, define and facilitate responsible private sector engagement in water governance. These three interventions will be critical levers for meeting the targets of SDG 6 and carrying the world into a sustainable water future.

Notes

1. Global Water Partnership, "Preparing to Adapt: The Untold Story of Water in Climate Change Adaptation Processes," accessed January 6, 2020, <https://www.gwp.org/globalassets/global/events/cop24/gwp-ndc-report.pdf>.

2. United Nations, “Sustainable Development Goal 6 Synthesis Report on Water and Sanitation,” accessed January 6, 2020, https://www.unwater.org/publication_categories/sdg-6-synthesis-report-2018-on-water-and-sanitation/.
3. Alli Gold Roberts, “Predicting the Future of Global Water Stress,” MIT News, 2014, <https://news.mit.edu/2014/predicting-the-future-of-global-water-stress>.
4. United Nations, “Goal 6: Ensure Access to Water and Sanitation for All,” accessed January 6, 2020, <https://www.un.org/sustainabledevelopment/water-and-sanitation/>.
5. David C. Holzman, “Accounting for Nature’s Benefits: The Dollar Value of Ecosystem Services,” *Environmental Health Perspectives* 120, no. 4 (2012): A152-7, <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3339477/>.
6. Holzman, “Accounting for Nature’s Benefits.”
7. United Nations, “Resolution 64/292: The Human Right to Water and Sanitation,” August 2010, <https://undocs.org/A/RES/64/292>.
8. UN Water, “Water, Sanitation and Hygiene,” accessed January 6, 2020, <https://www.unwater.org/water-facts/water-sanitation-and-hygiene/>.
9. Flint Water Advisory Task Force, “Flint Water Advisory Task Force: Final Report. Office of Governor Rick Snyder, State of Michigan,” accessed January 6, 2020, http://www.michigan.gov/documents/snyder/FWATF_FINAL_REPORT_21March2016_517805_7.pdf; California Department of Water Resources, “California’s Most Significant Droughts,” accessed January 6, 2020, https://water.ca.gov/LegacyFiles/waterconditions/docs/California_Significant_Droughts_2015_small.pdf; United Nations Environment Programme, “Crisis in Cape Town: 3 Months Until the Taps Run Dry,” accessed January 6, 2020, <https://www.unenvironment.org/news-and-stories/story/crisis-cape-town-3months-until-taps-run-dry>; Lauren Frayer, “The Water Crisis in Chennai, India: Who’s to Blame and How Do You Fix It?” NPR, 2019, <https://www.npr.org/sections/goatsand-soda/2019/07/18/742688141/the-water-crisis-in-chennai-whos-to-blame-how-do-you-fix-it>.
10. 2030 Water Resources Group, “Charting Our Water Future,” 2009, https://www.mckinsey.com/-/media/mckinsey/dotcom/client_service/sustainability/pdfs/charting%20our%20water%20future/charting_our_water_future_full_report_ashx.
11. Global Water Partnership, “Towards Water Security: A Framework for Action,” 2000, <https://www.gwp.org/globalassets/global/toolbox/references/towards-water-security.-a-framework-for-action.-mobilising-political-will-to-act-gwp-2000.pdf>.
12. Water Governance Facility (WGF) at Stockholm International Water Institute and United Nations Development Program, “What Is Water Governance?,” accessed January 6, 2020, <https://www.watergovernance.org/governance/what-is-water-governance/>.
13. Jan Hassing et al., “Integrated Water Resources Management in Action,” DHI Water Policy and UNEP-DHI Centre for Water and Environment, 2009, <https://unesdoc.unesco.org/ark:/48223/pf0000181891>.
14. UN Water and UN Environment Program, “Progress on Integrated Water Resource Management,” 2018, <https://www.unwater.org/publications/progress-on-integrated-water-resources-management-651/>.
15. Quentin Grafton et al., “The Water Governance Reform Framework: Overview and Applications to Australia, Mexico, Tanzania, U.S.A. and Vietnam,” *Water* 11, no. 1 (2019): 137, <https://www.mdpi.com/2073-4441/11/1/137>.
16. OECD, “OECD Principles on Water Governance,” 2015, <https://www.oecd.org/cfe/regional-policy/OECD-Principles-on-Water-Governance.pdf>.
17. UN Water, “Water, Sanitation and Hygiene.”
18. B. L. Morris et al., “Groundwater and Its Susceptibility to Degradation: A Global Assessment of the Problem and Options for Management,” *United Nations Environment Programme (UNEP) Early Warning and Assessment Report Series, RS 03-3*, 2013, <https://wedocs.unep.org/handle/20.500.11822/8035>.
19. Morris et al., “Groundwater and Its Susceptibility to Degradation”; S. Siebert et al., “Groundwater Use for Irrigation—A Global Inventory,”

- Hydrology and Earth System Sciences* 14, no. 10 (1863–1880, 2010), <https://www.hydrol-earth-syst-sci.net/14/1863/2010/hess-14-1863-2010.html>.
20. T. Gleeson, “Groundwater: A Call to Action,” *Nature* 576, no. 213 (2019), <https://www.nature.com/articles/d41586-019-03711-0>.
 21. I. E. M. De Graaf et al., “Environmental Flow Limits to Global Groundwater Pumping,” *Nature* 574 (2019): 90–94, <https://www.nature.com/articles/s41586-019-1594-4>.
 22. Jac van der Gun, “Groundwater and Global Change: Trends, Opportunities, and Challenges,” UNESCO, 2012, <http://www.unesco.org/new/fileadmin/MULTIMEDIA/HQ/SC/pdf/Groundwater%20and%20Global%20Change.pdf>.
 23. Earth Security Group, “CEO Briefing: Global Depletion of Aquifers,” 2016, <https://earthsecuritygroup.com/wp-content/uploads/2016/06/ESG-Brief-Aquifers.pdf>.
 24. Lin Zhu et al., “Land Subsidence Due to Groundwater Withdrawal in Northern Beijing Plain, China,” *Engineering Geology* 193 (2015): 243–55, 2015, <https://www.scienceirect.com/science/article/abs/pii/S0013795215001362>; James W. Borchers and Michael Carpenter, “Land Subsidence from Groundwater Use in California,” *California Department of Water Resources*, 2014, https://water.ca.gov/LegacyFiles/waterplan/docs/cwpu2013/Final/vol4/groundwater/13Land_Subsidence_Groundwater_Use.pdf.
 25. Global Groundwater Statement, “Global Groundwater Sustainability—A Call to Action,” accessed January 6, 2020, <https://www.groundwaterstatement.org/>.
 26. Groundwater Governance, “Groundwater Governance: Synthesis of Thematic Papers/Case Studies,” 2012, http://www.groundwatergovernance.org/fileadmin/user_upload/groundwatergovernance/docs/Thematic_papers/GWG_Synthesis_report_update.pdf.
 27. UN Water, “Sustainable Development Goal 6: Synthesis Report on Water and Sanitation,” 2018, https://www.unwater.org/app/uploads/2018/12/SDG6_SynthesisReport2018_WaterandSanitation_04122018.pdf.
 28. J. Matthews, N. Matthews, E. Simmons, and K. Vigerstol, “Wellspring: Source Water Resilience and Climate Adaptation,” *The Nature Conservancy*, 2019, https://www.nature.org/content/dam/tnc/nature/en/documents/Wellspring_FULL_Report_2019.pdf.
 29. S. N. Gosling and N. W. Arnell, “A Global Assessment of the Impact of Climate Change on Water Scarcity,” *Climate Change* 134, no. 3 (2016): 371–85, <https://link.springer.com/article/10.1007/s10584-013-0853-x>.
 30. Matthews, Matthews, Simmons, and Vigerstol, “Wellspring.”
 31. Heather Cooley et al., “Global Water Governance in the 21st Century,” Pacific Institute, 2013, <https://pacinst.org/wp-content/uploads/2013/07/pacinst-global-water-governance-in-the-21st-century.pdf>.
 32. Global Water Partnership, “Preparing to Adapt.”
 33. CEO Water Mandate, “What Is Water Stewardship?,” accessed January 6, 2020, <https://ceowatermandate.org/university/101-the-basics/lessons/what-is-water-stewardship/>.
 34. CEO Water Mandate, “Shared Water Challenges and Interests: The Case for Private Sector Engagement in Water Policy and Management,” 2014, <https://ceowatermandate.org/files/private-sector-water-policy-engagement.pdf>.
 35. Mohammed Yousef Al-Madfaei, “The Impacts of Privatisation on the Sustainability of Water Resources,” IWA Publishing, 2009, <https://www.iwapublishing.com/news/impact-privatisation-sustainability-water-resources>.
 36. Mariana Matoso and William Smith, “Private Sector and Water Supply, Sanitation and Hygiene,” Overseas Development Institute, 2015, <https://www.odi.org/publications/10023-private-sector-and-water-supply-sanitation-and-hygiene>.
 37. Earth Security Group, “Global Depletion of Aquifers”; Pacific Institute and United Nations Global Compact, “Climate Change and the Global Water Crisis: What Businesses Need to Know and Do,” 2009, https://ceowatermandate.org/files/research/UNGC-PI_climate-water_whitepaper_FINAL.pdf.
 38. UN Global Compact CEO Water Mandate, “Guide to Responsible Business Engagement

- with Water Policy,” 2010, https://ceowatermandate.org/files/Guide_Responsible_Business_Engagement_Water_Policy.pdf.
39. Ceres, “Connect the Drops,” accessed January 6, 2020, <https://www.ceres.org/initiatives/connect-the-drops>.
40. Peter Gleick and Charles Iceland, “Water, Security, and Conflict,” Pacific Institute and World Resources Institute, 2018, <https://pacinst.org/publication/water-security-and-conflict/>.