

Collaborative Efforts Yield Numerous Publications



By Sharon B. Megdal

Because this issue of the *Arizona Water Resource* has a focus on research, I thought I'd use this space to talk about some recent collaborative work. This year has been a very busy one, with attention focused on a number of water policy and management topics at multiple geographic scales.

I have been busy guest editing, along with my Australian colleague

Peter Dillon, a special issue of the journal *Water* on the policy and economics of managed aquifer recharge (MAR) and water banking. This special issue grew out of our involvement in ISMAR9, the October 2013 triennial international conference held on MAR. The papers published to date can be accessed at no charge at http://www.mdpi.com/journal/water/special_issues/MAR. Arizona's water banking efforts are featured in the paper, "Water banks: Using managed aquifer recharge to meet water policy objectives," which I wrote with co-authors Peter Dillon and K. Seasholes. The paper summarizes the purpose and performance of the Arizona Water Banking Authority in the context of Colorado River shortage conditions and Arizona's statutory framework for storage and recovery, along with the applicability of water banking to Australia.

Another paper that features international comparative analysis is "A Tale of Two Rivers: Pathways for improving water management in the Jordan and Colorado River Basins," coauthored with A. Chen, A. Abramson, and N. Becker. We argue that there are common factors with respect to the policy and management options of these two basins that may provide insights into the similarities and divergences of their respective future pathways. These factors are regional water supply and demand pressures, water governance, transboundary issues, and demand for environmental flows. This paper is forthcoming in a special issue of the *Journal of Arid Environments*. I draw upon the analytical framework of this paper in my invited October presentation at the international conference on "The Rehabilitation of the Lower Jordan River (Phase A) and the Development of the Border Region Between Israel and Jordan along the Jordan River."

Sustainable agriculture has been the focus of some publications. My collaborators from the Jordanian Royal Scientific Society, A. Ghrair and O. Al-Mashaqbeh, and I published the paper "Performance of a Grey Water Pilot Plant Using a Multi-Layer Filter for Agricultural Purposes in the Jordan Valley," which appeared in the July 2014 issue of the journal *CLEAN – Soil, Air, Water*. The article addresses the water quality results for an installed pilot filtration system, which was built with natural locally available materials. The results indicate that the filtration system has worked well and is potentially transferable to other locations in the developing world.

The edited volume *Convergence of Food Security, Energy Security, and Sustainable Agriculture*, with an October 2014 release date, includes

the chapter, "Impact of Technology and Policy on Sustainable Agricultural Water Use and Food Security." I was a coauthor of this chapter, along with M. Alam, G. Kruger, and D. Songstad, who also served as the book's lead editor. The chapter considers the sustainability of irrigated agriculture and acknowledges the associated challenges of avoiding degradation of water and soil quality and adverse impacts on the environment. The chapter points to the need for convergence of agricultural producers, society, and policy makers to develop strategies of adjustment and acceptance of future agricultural water use.

I have continued working with University of Arizona colleagues A. Gerlak and R. Varady and graduate student Ling-Yee Huang on examining groundwater governance and management. Our paper, "Groundwater Governance in the United States: Common Priorities and Challenges," has been accepted by the journal *Groundwater*. Survey responses revealed that states' legal frameworks for groundwater differ widely in recognizing the hydrologic connection between surface water and groundwater, the needs of groundwater-dependent ecosystems, and the protection of groundwater quality. The states also reported a range in capacity to enforce groundwater responsibilities. California's recent approval of major groundwater legislation points to the crucial importance of groundwater in meeting water demands. Identifying good governance and regulatory frameworks will be evermore important as many areas experience increasing demands for water, along with diminished surface supply reliability.

Supply and demand imbalance was the focus of a policy brief I wrote for the National Agricultural and Rural Development Policy Center, entitled "Facing an Uncertain Colorado River Basin Future." This policy brief highlights key questions communities should consider as they plan for their water future. Questions include the extent to which communities control their water resources, available financing mechanisms, and how collaboration among communities and water agencies can assist in preparing for alternative water futures. The policy brief can be accessed at http://www.nardep.info/uploads/Brief20_UncertainColoradoRiver.pdf.

More locally, graduate student Nate Delano and I followed up on a recommendation of the "Tucson Regional Water Assessment Task Force Think Tank Report" by examining alternative approaches to regional water management. Our article, "Regional Water Management Collaboration," was published in the March 2014 issue of *The Water Report*. Study of four regional organizations showed that collaborative efforts typically grow out of distinctive regional needs. We concluded that efforts toward greater cooperation among regional water stakeholders should focus on the Tucson region's unique water situation, rather than an external model for water collaboration. The paper is at <https://wrrc.arizona.edu/publications/other/regional-water-management-cooperation>.

I look forward to continuing to foster and participate in collaborative efforts, including several not mentioned due to space limitations, so that I can do my small part to develop sound water management, policy and governance strategies. Such strategies are crucial for achieving policy objectives related to sustaining communities large and small, feeding the world's population, and supporting natural systems. 🌱