

WATER TO SUPPLY THE LAND

Irrigated Agriculture in the
Colorado River Basin

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About the **Project Team**

Michael Cohen

Michael Cohen is a senior research associate at the Pacific Institute and is based in Boulder, Colorado. His research focuses on municipal and agricultural water use and efficiency in the West and on the restoration and rehabilitation of the Salton Sea and other Colorado River wetlands. He is the lead author of several Institute reports and the co-author of several journal articles on water and the environment in the U.S.-Mexico border region. He has a Master's degree in Geography, with a concentration in Resources and Environmental Quality, from San Diego State University and received a B.A. in Government from Cornell University.

Dr. Juliet Christian-Smith

Dr. Juliet Christian-Smith is a senior research associate at the Pacific Institute and the author of several Institute reports. Her interests include agricultural water use, comparative analyses of water governance structures, and climate change. In 2009, she received the Environmental Protection Agency's Environmental Achievement Award, along with colleagues Heather Cooley and Dr. Peter Gleick, for the Pacific Institute's work on agricultural water use in California. Dr. Christian-Smith holds a Ph.D. in Environmental Science, Policy and Management from the University of California at Berkeley and a B.A. in Biology from Smith College.

John Berggren

John Berggren is a Ph.D. student in the Environmental Studies program at the University of Colorado at Boulder and a research affiliate at the Center for Science and Technology Policy Research. His research is on western water policy, with a focus on Colorado River governance. His specific research interests include analyzing the adaptability of water institutions, understanding and reflecting societal values, and the narratives used to frame problems and solutions. Mr. Berggren holds a M.H.S. in Environmental Health from the Johns Hopkins Bloomberg School of Public Health and a B.A. in Public Health Studies from the Johns Hopkins University.

Jason Sauer

Jason Sauer identified and compiled water and land use information for this project. He is a student of environmental geosciences and policy at the University of Colorado at Boulder. Mr. Sauer is chiefly concerned with the connections between climate change, natural resources, and migration vulnerability.

Matthew Heberger

Matt Heberger developed the project's interactive web map available at www.pacinst.org/co_river_ag_2013/map/. Mr. Heberger is a research associate with the Pacific Institute. He spent 12 years working on water issues as a consulting engineer, in water policy in Washington D.C., and as a hygiene and sanitation educator in West Africa. He is currently researching issues related to water supply and quality, the nexus between water and energy, and impacts of climate change on water resources. He holds a B.S. in Agricultural and Biological Engineering from Cornell University and an M.S. in Water Resources Engineering from Tufts University in Boston and is a licensed professional engineer.

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Executive Summary

The Colorado River basin covers 256,000 square miles in the western United States and parts of northwest Mexico (see Figure ES-1). Much of the basin is extremely arid, in some areas receiving less than three inches of precipitation per year. Irrigation and agriculture are closely linked in the Colorado River basin. More than ninety percent of pasture and cropland in the basin receives supplemental water to make the land viable for agriculture. This irrigated land extends across some 3.2 million acres within the basin, while water exported from the basin reportedly helps irrigate another 2.5 million acres in Colorado, Utah, New Mexico, and southern California. Irrigating this much land requires a lot of water, consuming roughly 70 percent of the basin's water supply (not including evaporation or exports).

As shown by the recent [Colorado River Basin Water Supply & Demand Study](#), limited supply, climate change, and growing demand for water challenge the basin. Irrigators were among the first to divert and put water from the basin to beneficial use, securing legal rights to the use of that water. With some of the oldest and largest water rights in the basin, irrigators face increasing pressure from urban interests to sell or relinquish some of these water rights.

This report has two goals. First, improve understanding of crop acreages and water use in the basin. Second, having assessed irrigation methods and cropping patterns, develop a set of plausible scenarios in which some of the water currently devoted to irrigation could be conserved and used for other purposes without reducing the amount of land in production.

This report focuses on the last decade (2000 to 2010) and addresses land irrigated by Colorado

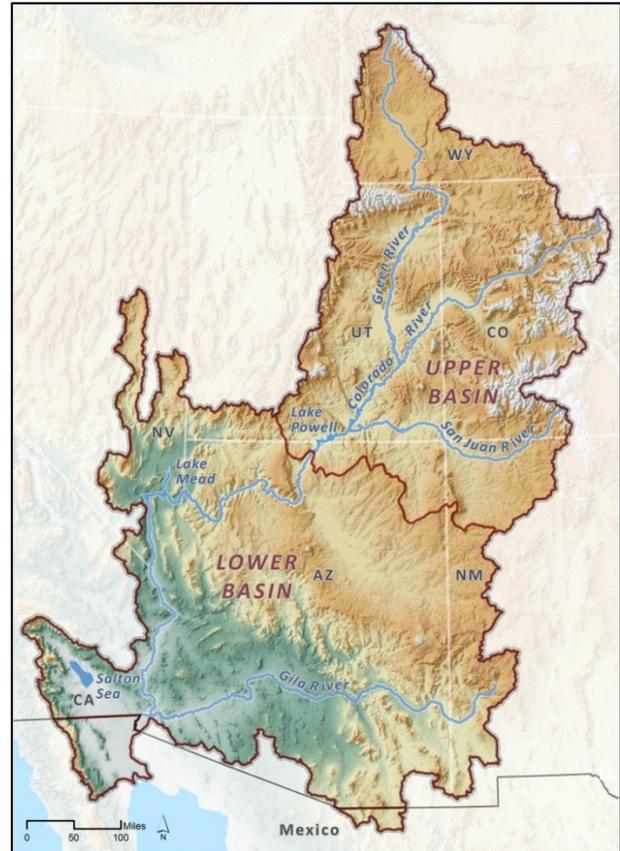


Figure ES- 1. The Colorado River Basin

River basin water, including water diverted from the river's mainstem, from tributary water, or pumped from groundwater in the basin. The report includes districts within the basin as well as those outside the basin that import basin water for at least a portion of their water supply and for which information was available. The data in this report come from federal and state sources, primarily the [Bureau of Reclamation](#), the [USDA/NASS Census of Agriculture](#), and the [USGS estimate of water use](#). We performed no new measurements or surveys for this report.