

# Institutional Connectivity and Water Conservation During Drought

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Every time we turn on the kitchen faucet, the garden hose, or the shower, we encounter the interface of climate change and public policy. Droughts, which are regular occurrences in many regions throughout the globe and are expected to increase in intensity with climate change, require public policy responses to ensure stable water supplies. During California’s extreme drought, Governor Jerry Brown implemented mandatory water use reductions in urban areas for eight months beginning in April 2015. The 25 percent statewide water use reduction target was met, but compliance varied significantly at the level of individual “urban water districts”, or localized water management units.

Our recent study analyzed the factors predicting water conservation for a sample of 300 California water districts during the policy enforcement period. A key finding was that water districts that were institutionally connected to others via imports of water were significantly more likely to achieve mandated statewide conservation targets than those districts not linked to others.

## **Interconnections facilitate conservation**

The problem of supplying urban water has been a central issue in California politics for decades. The key infrastructure challenge is to move water from areas of high precipitation largely in the California Sierra to urban population centers in drier regions of Central and Southern California. For this, a massive water delivery and management structure has been established that includes enormous infrastructure projects like the State Water Project, which utilizes over 700 miles of canals and pipelines to bring water to 25 million people.

Some urban water districts are served by a single institutional unit using only local groundwater (by pumping it) or surface water (by diverting it from a river or canal). In other urban areas, water is supplied to end users through multiple institutional levels. These institutional levels might include, for example, a very large utility company like the San Francisco Public Utilities Commission, which facilitates the transfer of water from the Hetch Hetchy reservoir through intermediary organizations to many smaller, local water districts throughout the San Francisco Bay Area. By being connected to other institutions, these water districts are able to access both state scale water resources like the State Water Project and local resources like groundwater wells. Our study found that districts that were part of a network like this achieved significantly greater relative conservation during the mandatory restrictions than the districts that relied on local water resources only. This was true even after controlling for the diversity of water sources.

Why so? One benefit of interconnected, or multi-level institutions, is that efficiency programs and conservation best practices can be passed between those districts more easily. For example, the largest water district in California, the Metropolitan Water District of Southern California, developed a rebate program for the installation of water-efficient devices such as low-flow shower heads. The rebate programs were then implemented in the dozens of water districts to whom Metropolitan sells water and may have contributed to those districts' greater conservation. This coheres well with insights generated by international trade scholars: when countries trade, they not only sell stuff, they also share norms such as environmental protection or respecting labor rights, and best practices to translate these norms into policies.

Another reason might be that interconnected districts conserved more because of a cost incentive. Importing water from afar requires a lot of energy, and the cost of that energy is more variable than the cost of pumping local water. So, when water is in short supply, districts relying on imported water may be especially motivated to conserve water and promote efficiency because of the risk of increased costs.

Whichever the reason (and it is likely a combination of reasons), we are left with an intriguing result: California's interconnected institutional system facilitated water conservation even though it was originally created to provide more diverse and secure water sources. This finding suggests that policies that support interconnected water management institutions, in California and other

drought-prone regions, can offer the dual benefits of risk-hedging and better water savings during drought.

### **Public administration and drought**

Overall, California's mandatory water use reduction policy was a success, and the state achieved its urban water use reduction goal. However, the state has since lifted mandatory use restrictions, leading to a relaxation in conservation practices. This makes it even more imperative for policymakers to draw lessons from the recent drought, as the intensity of such events is likely to increase and as vulnerability to climatic drought increases with a growing population. Looking forwards, analyses of interconnected water management structures in other regions beyond California may lead to further insights into how to effectively promote water conservation. Finally, for scholars of policy and administration, we suggest an interesting insight: going "local" is not always the best idea; having "global" connections can have unanticipated policy payoffs.

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