

CALIFORNIA: WHY IT'S NOT JUST ABOUT WATER

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ABSTRACT

California's long ongoing drought and its effects, namely water restrictions and wildfires, have garnered national attention as the drought has dragged on. Beyond its direct impact on residents in the state, however, the future implications of the water situation in California seem to remain a mystery to many.

BACKGROUND

California gets its water supply from a variety of sources: surface water in the state managed by both state and federal water distribution systems, underground aquifers that both feed surface water systems and can be tapped directly via drilling, and the Colorado River, which supplies water to southern portions of the state. Water is used for environmental purposes (such as maintaining habitats for endangered species and maintaining water quality), agricultural needs to grow California's wide variety of crops, and, of course, to supply the residents with the water they need to drink, bathe, and otherwise live their everyday lives. Some of the other statistics for water usage in the production of a variety of consumer goods may surprise the average reader, and call into question what can be done to cut back on that usage, particularly as populations continue to grow (Burch, 2015).

Water conservation efforts, spurred both by increases in technology and by the drought, have cut back on urban water usage significantly. Conservation efforts in agriculture, however, do little more than directly impact a farmer's bottom-line. Environmental conservation, additionally, limits just how much water is available for other uses, but the environmental usage of water fluctuates the most (Cahill & Lund, 2012).

PROBLEMS

Even with all of our best water conservation efforts, California still faces a major coming problem in terms of where it's going to get its water in the future to serve over 20 million people, agriculture and recreational activities. Precipitation is critical to replenishing both the state's aboveground and belowground water sources, but as any meteorologist would be happy to tell you, precipitation in any of its forms is far from a guaranteed phenomenon. And unfortunately, science has not yet devised a way to control just when and how much precipitation is produced.

OPTIONS TO RESOLVE PROBLEM

Since we can't control the rain, what other options are available? The size of the reservoirs can be increased but this is costly and has pushback in some places from various interest groups (USBR, 2008). A creative distribution of water within the state could be initiated but that would face some of the same limitations. Other options such as transporting water from other locales and finding ways to make use of water would be expensive and could face opposition by tax payors.

There's two major ways to bring water to California: tow an iceberg, or build a pipeline. The state has already been willing to build massive pipelines to transport crude oil, albeit it's become more controversial in recent years because the decision makers have been fairly cavalier about where to put these thousand-mile pipelines. But water is significantly less damaging if there's a spill, and surely a means could implement some of the same emergency cutoff systems that are used ubiquitously in the oil and gas industry to prevent the type of spills that could be catastrophic. California may not have to go as far to find excess water since places such as Seattle could probably spare an acre-foot or two. William Shatner has already even tried to start funding for a private project doing exactly that (Pogue, 2015). It's exorbitantly expensive at \$30 billion, but a high cost for water is a reality that tax payers are probably going to have to accept.

The other option is to tow an iceberg to California for access. The United Arab Emirates already has a plan in motion to begin doing just that next year, since the average iceberg has enough water to supply a million people for an entire year (Osborne, 2017). California has even considered towing an iceberg in the early years of the recent drought, but wrote it off due to high costs. Again, a high cost for water is a reality that will need to be accepted and funded.

If transporting water is too expensive, risky, or otherwise deemed an unworthy option, perhaps the solution is to ways to make water potable for California's various needs. Desalination plants could potentially make more water usable for environmental and agricultural purposes, if not for drinking (Li et al., 2013). In fact, California already used desalination plants to soften water from the Colorado River before it reaches Mexico but it must be based on the Colorado River management. This begs the question of why not use the same methods to bring water from the ocean into the cities, or even from the Great Salt Lake in Utah.

Wastewater treatment systems could be upgraded in order to make that water potable, or at least suitable for other purposes (Mara & Horan, 2003). It's unsavory, to be sure, but NASA uses the process in space travel to the international space station, so why can't California employ its utilization? No doubt that it's prohibitively expensive, but necessity must be the driver behind the solutions created. Scientists are constantly finding clever ways to do a lot of things with wastewater as it is, so perhaps they can find the means to utilize that wastewater to cut down on water usage in other areas, rather than having to recycle it back into bottled water.

ACTION

With no foreseeable decline in water consumption in California, or, indeed, the rest of the western United States, governments and the private sector need to get creative and proactive about devising a solution for providing the water that is needed to survive.

One way or another, something must be done. The water supply is dwindling in California, and population growth in the Southwest is only going to exacerbate the problem. It may sound like a doomsday prophet, but a couple of good years of rain cannot influence the decision makers to ignore California's water problem.

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