

ECONOMY

The Risks of Cheap Water

OCT. 14, 2014

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ECONOMIC SCENE

This summer, California's water authority declared that wasting water — hosing a sidewalk, for example — was a crime. Next door, in Nevada, Las Vegas has paid out \$200 million over the last decade for homes and businesses to pull out their lawns.

It will get worse. As climate change and population growth further stress the water supply from the drought-plagued West to the seemingly bottomless Great Lakes, states and municipalities are likely to impose increasingly draconian restrictions on water use.

Such efforts may be more effective than simply exhorting people to conserve. In August, for example, cities and towns in California consumed much less water — 27 billion gallons less — than in August last year.

But the proliferation of limits on water use will not solve the problem because regulations do nothing to address the main driver of the nation's wanton consumption of water: its price.

“Most water problems are readily addressed with innovation,” said David G. Victor of the University of California, San Diego. “Getting the water price right to signal scarcity is crucially important.”

The signals today are way off. Water is far too cheap across most American cities and towns. But what's worse is the way the United States quenches the thirst of farmers, who account for 80 percent of the nation's water consumption and for whom water costs virtually nothing.

Adding to the challenges are the obstacles placed in the way of water trading. “Markets are essential to ensuring that water, when it’s scarce, can go to the most valuable uses,” said Barton H. Thompson, an expert on environmental resources at Stanford Law School. Without them, “the allocation of water is certainly arbitrary.”

Two studies to be presented at a forum next week organized by the Hamilton Project at the Brookings Institution and the Stanford Woods Institute for the Environment make the case that markets and prices are an indispensable part of the tool kit to combat scarcity. They are essential to induce both conservation and investment in water-saving technology, and to steer water to where it is valued most.

“There is enough water; we can live within our means,” said Jim Lochhead, chief executive of Denver Water. “But the systems we have in place simply do not have enough flexibility to move water to the places where it is most needed.”

The price of water going into Americans’ homes often does not even cover the cost of delivering it, let alone the depreciation of utilities’ infrastructure or their R&D. It certainly doesn’t account for other costs imposed by water use — on, say, fisheries or the environment — caused by taking water out of rivers or lakes.

Consumers have little incentive to conserve. Despite California’s distress, about half of the homes in the capital, Sacramento, still don’t have water meters, paying a flat fee no matter how much water they consume.

Some utilities do worse: charging decreasing rates the more water is consumed. Utilities, of course, have little incentive to discourage consumption: The more they did that the more their revenues would decline.

Rates have little relation to water’s replacement cost. In Fresno, which gets less than 11 inches of rain a year, a family of four using 400 gallons a day faces a monthly water bill of \$28.26. In Boston, where rainfall exceeds 40 inches, the same family would pay \$77.73.

While this may seem a mess, it is nothing compared to the incentives facing American farms.

Their water rights are primarily subject to state law. In the West, they have been allocated by a method that closely resembles “first come first served.” The first farm that drew water had a right to whatever it needed pretty much forever. Junior users — who arrived later — had to stand in line.

Farmers pay if the government brings the water to the farm, say via an aqueduct from the Colorado River. But the fees are minimal. Farmers in California's Imperial Irrigation District pay \$20 per acre-foot, less than a tenth of what it can cost in San Diego. And the government has often subsidized farmers via things like interest-free loans to cover upfront investments. (An acre-foot is the amount it takes to cover one acre of land a foot deep in water.)

This kind of arrangement helps explain why about half the 60 million acres of irrigated land in the United States use flood irrigation, just flooding the fields with water, which is about as wasteful a method as there is. It also helps explain why underground water reserves declined by 53 million acre-feet between 2003 and 2014, about twice the volume of Lake Mead.

This is hardly the only obstacle to conservation. A farm that doesn't use its full allotment of water risks forfeiting it for not putting it to "beneficial use." And any water saved automatically flows to other farmers with junior rights.

Farmers in many states are theoretically allowed to lease unused water. But the many holders of junior rights can block them. And they are legion: California has granted rights to five times its average annual flow of surface water.

These restrictions have perverse consequences. San Diego, for instance, is building the nation's biggest desalination plant to produce fresh water at a cost of about \$2,000 per acre-foot. But alfalfa growers in Southern California last year used hundreds of billions of gallons growing alfalfa that might fetch at best \$340 a ton, or \$920 per acre-foot of water.

Markets, and sensible pricing structures, are good at resolving these problems. Some water districts, like Irvine Ranch in California, have successfully introduced rising fee schedules: starting low for a basic allotment covering families' essential needs and rising quickly with volume to make people think twice about refilling the swimming pool.

Spurred by the sense of crisis, incipient water markets show great promise. Santa Fe, N.M., has required builders to have water rights with their building applications since 2005 — giving farmers an opportunity to sell their rights to developers rather than using them for low-value crops.

In 2003, the San Diego Water Authority cut a deal with the Imperial Irrigation District — a large area of parched farmland near California's Arizona

border — to provide the city with 200,000 acre-feet of water at a price starting at \$258 per acre-foot.

Seven states in the Colorado River system are starting a pilot program to explore a market between farmers and urban water authorities to help maintain water volumes in Lake Powell and Lake Mead.

This isn't quite charging farmers for the water they use. But that may be a bridge too far, considering the tight margins of many farms and the political clout of many farmers.

Still, markets such as those timidly emerging in the West could not only free water for the users who value it more, but they could also provide farmers with the revenue needed to invest in water management technology.

None of this will come easily. People like cheap water and protest when rates rise. Farmers have resisted transfers of water to cities at least since California's water wars a century ago.

The looming prospect of acute water scarcity demands a solution, however. It's not only the West's problem. Two years ago, the drought in the Midwest was as severe as the current drought in California. Lakes Michigan, Superior and Huron were at historic lows.

Alternative solutions have been proposed — like towing icebergs from the Arctic or diverting water from the Missouri River to use on the other side of the Rockies. But the standard response to scarcity — grabbing more — cannot work any longer. There isn't more water to grab.

Which means markets must play their part. "Without prices or trade," said Robert Glennon, an expert on water at Arizona University's College of Law, "we will just get more diversion of rivers, more dams and more wells." And nothing will be fixed.

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A version of this article appears in print on October 15, 2014, on page B1 of the New York edition with the headline: The Risks of Cheap Water.