

# Coming up DRY: California taps into drought advice from Down Under

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**Sheep wander parched land near a dry reservoir in Australia. The struggle to survive in a land short on water is a constant thread in the country's history.**

California has turned to the world's driest inhabited continent for solutions to its longest and sharpest drought on record. Australia, the land poet Dorothea Mackellar dubbed "a sunburnt country," suffered a torturous drought from the late 1990s through 2012. Now Californians are facing their own "Big Dry," and looking Down Under to see how they coped.

Australia faced tough water restrictions — along with dying cattle, barren fields and monstrous wildfires that killed 173 people. But

when the rains finally returned, Australians had fundamentally changed how they handle this precious resource. They treat water as a commodity to be conserved and traded, and carefully measure what's available and how it's being used.

Efficiency programs cut their average daily use to 210 litres, compared with 400 litres per day for each Californian.

The lesson: long dry spells are here to stay, so societies had better plan ahead, says drought-policy expert Linda Botterill of the University of Canberra.

"We can expect longer, deeper and more severe droughts in Australia, and I believe the same applies in the U.S.," Botterill says. "As a result, we need to develop strategies that are not knee-jerk responses but that are planned risk-management strategies."

California water officials now routinely cite Australia's experience. Felicia Marcus, who runs California's Water Resources Control Board, can describe in minute detail the capture system watering soccer fields in Perth. But Californians may find Australia's medicine tough to swallow.

Australians are accustomed to living in a dry land, expect government intervention in a crisis and largely support making sacrifices for the common good.

Californians, for much of their history, have enjoyed abundant water, or were able to divert enough of it to turn deserts green, and lawyers make sure property rights remain paramount.

From an Australian perspective, California's drought response has been "absolutely pathetic," says Daniel Connell, an environmental policy expert at the Australian National University.

Australia's drought response was hardly perfect, and some of its gains might be slipping away, but Americans suffering their own "Big Dry" may benefit from some comparisons:

#### WHOSE WATER IS IT?

Australia: Overuse and drought had depleted Australia's main river system, which winds across four states that produce a third of the nation's food, and ran so low by 2002 that the Murray River had to be dredged to reach the sea.

The government capped entitlements, cancelled inactive licences, bought back hundreds of billions of gallons from irrigators and strictly metered usage to make sure licence holders used only their allocation.

Availability now affects price as shares are traded on an open market worth \$1.2 billion US a year.

The water that farms, industries and towns get depends on what's in the river; in drought, it can dwindle to virtually nothing.

But entitlements can be bought and sold, keeping agriculture afloat. A farmer of a thirsty crop such as cotton might not profit when both water and cotton prices are low. But if an orchard grower in desperate need buys that water, the cotton farmer can live off the sale while the orchard owner reaps a profitable harvest.

California: Nearly 4,000 so-called senior water-rights holders who staked claims before 1914 or own acreage abutting a river or stream get priority. In drought, authorities must completely deny water to most other claimants before they touch the water of these senior water-rights holders. San Francisco has stronger water rights than many other cities because in 1902, Mayor James Phelan hiked up the Sierra Nevada and tacked a water claim to an oak tree along the bank of the Tuolumne River. Gov. Jerry Brown calls the system "somewhat archaic."

"Revising the water-rights system is a thermo-nuclear issue in California," says John Laird, California's secretary for natural resources. But if water shortages go on, "almost everything has to be on the table."

#### WATCHING THE FLOW

Australia: Thousands of gauges across Australia measure rainfall, authorities in each state and territory measure surface water at stream gauging stations, and underground water is monitored through a complex process involving the drilling of bores and controlled pumping tests. Water data collection agencies report to the federal Bureau of Meteorology, which publishes the data online.

California: The legislature last year required monitoring to be phased in gradually, eventually showing for the first time how much groundwater is being pumped. But roughly a quarter-million California households and businesses still lack water meters, and aren't required to have them until 2025. The state relies on an honour system: Rights holders self-report their use of river and stream water every three years. Gov. Brown's budget proposed last week would require monitors and annual usage reports.

#### TIGHTENING THE TAP

Australia: All major cities imposed limits or bans on watering lawns and washing cars, and inspectors fined rule-breakers. Public-service campaigns and water-saving appliances reduced household water use from 320 litres per person per day in 2000 to 210 litres per person today.

California: After voluntary cutbacks were ignored, Brown's administration mandated a statewide 25 per cent cut in water use by cities and towns, and ordered more farmers to stop pumping from rivers and streams. Marcus said the one piece of advice that seemed universal in both Australia and California "was conserve, conserve,

conserve, as early as you can, because it's the cheapest, most economical way to buy time" while tougher water-saving measures are phased in.

#### DO MORE WITH LESS

Australia: Australians began conserving long before their drought. In 1995, Sydney's water authority was ordered to slash per capita demand by 35 per cent by 2011, and it met that target by reducing pressure and leaks in pipes, boosting businesses' water efficiency, and offering low-cost water-saving technologies in homes, such as dual-flush toilets, low-flow shower heads and rainwater tanks for gardens, toilets and laundry. With government rebates, these devices became common across Australia.

Such efficiency measures can be implemented quickly, economically and easily, says Stuart White, an Australian sustainability expert who has advised Californians on drought response. "In some cities, it's quite possible we would have reached death's door if it hadn't been in place."

California: Communities across California offer rebates on drought-friendly plumbing and appliances, and a growing number of local ordinances are being rewritten to allow families to recycle water from rain and from showers. But the rooftop-rain collectors, stormwater cisterns and bath water recycling for gardens common in Australia remain rarities.

#### MIRACLES OF TECHNOLOGY

Australia: Billions were spent on desalination plants in major cities, and many are not operating because cheaper water is now available in Australia, prompting critics to dismiss them as expensive and power-hungry flops that will create greenhouse gases and worsen the continent's climate change woes. Supporters say the plants will protect the country from the next drought.

California: Brown has called for conservation while focusing on an ambitious, \$17-billion plan, opposed by environmental groups, to build 65 kilometres of tunnels to take Northern California water to Southern California's bigger farmers. Desalination plants also are envisioned: San Diego's would be the biggest in the Western Hemisphere.