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Arid Australia Sips Seawater, but at a Cost

By **NORIMITSU ONISHI**

BRISBANE, Australia — In [Australia](#), the world's driest inhabited continent, early British explorers searching for a source of drinking water scoured the bone-dry interior for a fabled inland sea. One overeager believer even carted a whaleboat hundreds of miles from the coast, but found mostly desert inside. Today, Australians are turning in the opposite direction: the sea.

In one of the country's biggest infrastructure projects in its history, Australia's five largest cities are spending \$13.2 billion on [desalination](#) plants capable of sucking millions of gallons of seawater from the surrounding oceans every day, removing the salt and yielding potable water. In two years, when the last plant is scheduled to be up and running, Australia's major cities will draw up to 30 percent of their water from the sea.

The country is still recovering from its worst drought ever, a decade-long parching that the government says was deepened by [climate change](#). With water shortages looming, other countries, including the United States and China, are also looking to the sea.

"We consider ourselves the canary in the [coal](#) mine for climate change-induced changes to water supply systems," said Ross Young, executive director of the [Water Services Association of Australia](#), an umbrella group of the country's urban water utilities. He described the \$13.2 billion as "the cost of adapting to climate change."

But desalination is also drawing fierce criticism and civic protests. Many homeowners, angry about rising water bills, and environmentalists, wary of [the plants' effect on the climate](#), call the

projects energy-hungry white elephants. Stricter conservation measures, like mandating more efficient washing machines, would easily wring more water from existing supplies, critics say.

Desalination has also helped dampen the enthusiasm for a “big Australia,” the previous, [immigration](#)-friendly government’s projection that the country’s population will rise to 36 million in 2050, from 22 million now.

“Big waste of money,” said Helen Meyer, 65, a retired midwife in Tugun, the town where the northeastern state of Queensland opened a \$1 billion desalination plant last year. “It cost a lot of money to build, and it uses a lot of power. Australia is a dry country. I think we just have enough water for 22 million people. What are we going to do when we’re up to 36 million?”

The plant, sprawling across 15 acres next to an airport and near residential neighborhoods, provides water to Brisbane, the capital of Queensland, and other areas of southeastern Queensland, the nation’s fastest-growing region. Despite technical problems that temporarily shut down the plant recently, it has been supplying 6 percent of the region’s water needs and has the capacity to deliver 20 percent, said Barry Dennien, chief executive of the [SEQ Water Grid Manager](#), the utility that oversees this region’s water supply.

The drought in this region lasted from 2000 to 2009, as the reservoir behind the largest dam, Wivenhoe, dropped to only 16 percent of capacity at one point. (On a recent visit, it was at 98 percent.) While it took the state authorities until 2005 to grasp the magnitude of the crisis, Mr. Dennien said, they moved quickly after that.

Besides restricting water use and subsidizing the purchase of home water tanks to capture rainwater, the state spent nearly \$8 billion to create the country’s most sophisticated water supply network. It fashioned dams and a web of pipelines to connect 18 independent water utilities in a single grid. To “drought proof” the region, it built facilities for manufacturing water, by recycling wastewater, to use for industrial purposes, and by desalinating seawater. Production of desalinated water can be adjusted according to rain levels.

“When the last of the assets were coming online, it rained, as it always does,” Mr. Dennien said, adding that the region now has enough water for the next 20 years.

“We’ve got a method of operating the grid that the next time any sign of drought occurs, we can

just,” he snapped his fingers, “build something else or turn something else on, and we’ve got enough water supply.”

Other cities are making the same bet. Perth, which opened the nation’s first desalination plant in 2006, is building a second one. Sydney’s plant started operating early this year, and plants near Melbourne and Adelaide are under construction.

Until a few years ago, most of the world’s large-scale desalination plants were in the Middle East, particularly in Saudi Arabia, though water scarcity is changing that. In the United States, where only one major plant is running, in Tampa Bay, officials are moving forward on proposed facilities in California and Texas, said Tom Pankratz, a director of the [International Desalination Association](#), based in Topsfield, Mass. China, which recently [opened its biggest desalination plant, in Tianjin](#), could eventually overtake Saudi Arabia as the world leader, he said.

Many environmentalists and economists oppose any further expansion of desalination because of its price and contribution to global warming. The power needed to remove the salt from seawater accounts for up to 50 percent of the cost of desalination, and Australia relies on coal, a major emitter of greenhouse gases, to generate most of its electricity.

Critics say desalination will add to the very climate change that is aggravating the country’s water shortage. To make desalination politically palatable, Australia’s plants are using power from newly built [wind farms](#) or higher-priced energy classified as clean. For households in cities with the new plants, water bills are expected to double over the next four years, according to the Water Services Association.

But critics say there are cheaper alternatives. They advocate conservation measures, as well as better management of groundwater reserves and water catchments. “Almost every city which has implemented a desalination plant has nowhere near maxed out or used up their conservation potential,” said Stuart White, director of the [Institute for Sustainable Futures](#) at the University of Technology, Sydney. Even without restrictions, cities could easily save 20 percent of their water, Mr. White said.

He said cities should practice “desalination readiness” by drawing plans to build a plant, but should carry them out only as a last resort in the event of a severe drought.

Mr. Young of the Water Services Association said desalination in Australia costs \$1.75 to \$2 per cubic meter, including the costs of construction, clean energy and production. The prices are probably the world's highest, said Mr. Pankratz of the International Desalination Association, adding that desalination was cheaper in countries with less strict environmental standards. He said the cost at a typical new plant in the world today would be about \$1 per cubic meter.

Opponents of desalination say that a cheaper and environmentally friendlier alternative is recycling wastewater, though persuading people to drink it remains difficult and politically delicate. The SEQ Water Grid Manager, for instance, retreated from its initial plan to introduce recycled wastewater into its drinking reservoirs after it began raining.

"There's a stigma against recycled water," said David Mason, 40, a resident of Tugun.

"But since there's only so much water in the world, and it's been through somebody's body or some other place over the past 250 million years, maybe it's not that bad. At least, it might be better than desalination."