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Desalination booms at 15% a year as world water dries up

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In the Atacama Desert in northern Chile, 158 438 residents of the city of Copiapó suffered daily cut-offs of tap water last year as Anglo American and other companies helped suck nearby aquifers dry for their mines. With little water left for drinking or mining, the government of President Sebastián Piñera convinced the companies to seek a solution to the water crisis 60 kilometres away from Copiapó – on the shores of the Pacific Ocean.

London-based Anglo American is spending \$107 million (R947m) to build a desalination plant on the coast that will pump about 120 litres a second of water through the desert to its Mantoverde copper mine. Set for completion in the second half of this year, the project will provide enough salt-free water, which is used to separate copper from ore, to operate the mine.

Two other companies are building similar desalination plants in an effort to keep Chile's mining-driven economic boom alive, Bloomberg Markets magazine will report in its March issue.

"If we don't take these steps today, it will become an obstacle to the development of our country," Loreto Silva, Chile's minister of public works, said.

As the global population soars by about 74 million people a year, water shortages are becoming more severe.

About 300 million people in rural China had no access to safe drinking water in 2005, according to the website of China's Water Resources Ministry. At current rates of growth, the demand for water worldwide may exceed supplies by 40 percent by 2030, according to the World Bank sponsored 2030 Water Resources Group.

Desalination is not a panacea – it is expensive and harmful to marine life – but governments desperate for supplies are ramping up construction of plants.

Some of the first industrial-scale plants emerged in the oil-rich Middle East in the 1950s. Early on, the only method for extracting salt from seawater was by boiling it and capturing the vapours, a costly and energy-intensive process.

As salt-filtering technologies replace boiling and reduce the price of desalinated water, governments in Australia, China, Israel, the United Arab Emirates and the US are tapping the oceans. From 2001 through 2011, the industrial capacity of desalinated water expanded 276 percent to 6.7 billion cubic metres a day, according to the International Desalination Association.

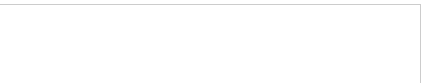
There are almost 16 000 plants operating today, according to the association, with Saudi Arabia standing out as the biggest producer. And the industry was now growing about 15 percent a year, said Julio Zorrilla, an international construction director at Acciona Agua, the water unit of Acciona, a Spanish renewable energy company.

"As populations grow, countries will have no option but to desalinate water," he said.

A project in Southern California faced stiff opposition from consumers and environmental groups. San Diego, confronting a water crunch as supplies from Northern California and the Colorado River dwindle,



Main picture: A binding agent mixed with sea water, attracts the foreign matter in the water in the first stage of the desalination process at the Thiess Degrémont, Victorian Desalination project in Wonthaggi, south east of Melbourne, Australia.



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approved a \$922m coastal desalination plant to provide 7 percent of the city's drinking water last year, after almost a decade of legal challenges and debates.

San Diego residents protested at public hearings to stop the proposal because the costs of desalination may increase the average household water bill by about \$5 to \$7 a month when the plant is completed in 2016, according to the San Diego County Water Authority.

"It gets down to the cost of energy," Jeffrey Kightlinger, the general manager of the Metropolitan Water District of Southern California, said.

San Diego Coastkeeper and Surfrider Foundation, two California environmental groups, sued in state court to block approval of the project because of the harm it would cause to marine organisms as hundreds of millions of gallons of seawater were sucked into the plant each day.

Connecticut-based Poseidon Resources, the plant's owner, plans to use water that has already been drawn from the ocean to cool a nearby power station. The lawsuits said the desalination plant would require the power station to pull in even more water, adding to destruction of sea life.

A California court dismissed the lawsuits. Poseidon will also restore 66 hectares of wetlands in Southern California to mitigate the plant's harmful impact.

The industry has introduced innovations that have reduced the costs of desalinating water.

Companies started to adopt technologies to pump water through membrane filters to capture salt in the 1990s. That brought down the price of desalinated water to less than \$1 a cubic metre from \$3, said Ashvalom Felber, the chief executive of IDE Technologies, one of the world's three largest manufacturers of desalination plants.

And technology developed by California-based Energy Recovery and other companies that recirculated water in filtering plants had cut energy expenses by as much as 60 percent, Energy Recovery chief executive Tom Rooney said. The technology lessened the cost of a cubic metre of desalinated water to about 50 cents, Felber said.

Fresh ground supplies, by comparison, run less than 20c, according to the 2030 Water Resources Group.

"The industry keeps evolving, and prices keep coming down," Felber said.

Rooney said desalination plants would mostly spring up in regions willing to pay a premium for water to keep their economies growing.


China plans to more than triple its production to 2.2 million cubic metres a day by 2015, according to the Chinese National Development and Reform Commission.

The water would supply 15 percent of the needs of China's factories along its industrial eastern seaboard, the commission said.

The country was on track to become the world's biggest producer of desalinated water, Rooney said. "In places like China, desalination is an economic slam-dunk." – Matt Craze from Bloomberg



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George Galbraith · 3 months ago

The methodology is very inefficient in terms of the fresh-water yield ratio. I can see further downstream difficulties arising too and perhaps some families taking strategic decisions around not wanting to expose their future generations to the gathering crises that are beginning to beset the worlds' hugely burgeoning population (even with one child policies).

It seems that man has a gene-based self-destruct default that drives his predilection for procreation and sex, that is less controlled (read greater); the lower down in the civilization pyramid he finds himself. Methinks that an indispensable part of general education for every person in the world, is the perils of CO2 and other earth degradation issues, such as the acid water drainage that then leaves these mines on the vehicle of this very desalinated water!

WE NEED TO SIT DOWN AND RETHINK MAN'S PHILOSOPHIES, METHODOLOGIES AND ONLY APPROVE ACTIVITY THAT SUPPORTS LIFE, NOT DESTROYS IT, IF OUR MORTAL COIL IS TO SURVIVE FOR FUTURE GENERATIONS! What a legacy we are leaving them! We need to initiate and market a 'Blue Skies and Green Fields' world survival project that rethinks EVERY FACIT of our lives; now and in the future

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