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Why Cape Town Is Running Out of Water Who's Next

The South African city plans to shut off the taps to 4 million people. But it's just one of many cities in the future with too little water.

Cape Town's main water supply, at the Theewaterskloof Dam, is running dry, and the city ma

PHOTOGRAPH FROM AP

By Craig Welch

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Editor's Note: On Monday, February 5, Cape Town officials announced that the city had gotten "Zero" had been pushed back to May 11. The reason: Fruit growers and other agricultural operators have delayed their annual water allocation, making more water available for the city. "There has not been a significant increase in water usage," deputy mayor Ian Neilson stressed in a statement. With a heat wave forecast to increase temperatures, he said, Capetonians must reduce consumption "to prevent the remaining water supplies running out before winter rains."

By late spring, four million people in the city of Cape Town—one of Africa's most densely populated—will have to stand in line surrounded by armed guards to collect rations of the region's most precious resource: water.

Population growth and a record drought, perhaps exacerbated by climate change, have led to the city's most dramatic urban water crises, as South African leaders warn that residents are increasingly being forced to ration. That's the day, now projected for mid-April, when the city says it will be forced to shut off water to parts of the city because reservoirs have gotten perilously low—a possibility officials now consider almost inevitable.

"The question that dominates my waking hours now is: When Day Zero arrives, how do we manage the city and prevent anarchy?" says Helen Zille, former Cape Town mayor and the current premier of the Western Cape province, in a guest newspaper column published last week.

For years, a shutdown of this magnitude in such a cosmopolitan city had been all but inevitable. It was the result of overdevelopment, population growth, and climate change upset the balance between water supply and demand. From North America to South America and from Australia to Asia increasingly face these shortages.

Nowhere has that threat seemed to come on faster and catch more by surprise than in Cape Town. "I'm afraid we're at the 11th hour," says South African resource-management expert. "We need more time for solutions. We need an act of God. We need divine intervention."

APPROACHING "DAY ZERO"

The situation seems to be worsening by the day.

The city is prepping 200 emergency water stations outside groceries and other grocery stores to serve almost 20,000 residents. Cape Town officials are making plans to store emergency water in public buildings, and say using taps to fill pools, water gardens, or wash cars is now illegal. The city has stepped up water-theft patrols at natural springs where fights broke out, according to local reports. Officials have asked to crack down on "unscrupulous traders" who have driven up the price of bottled water.

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For months, citizens have been urged to consume less water. But many residents ignored those volunteer restrictions. So earlier in the year, officials imposed steeper cuts, asking residents to consume just 50 liters per day, less than the average American uses. If consumption doesn't drop significantly, warned this week, everyone will be forced into Day Zero, with water rationing as little as 25 liters a day, less than typically used in four days.

"I'm not sure if we'll be able to avert Day Zero," says a member of an urban water group at the University of Cape Town. "We can't contain it. It's tragic."

Says David Olivier, a research fellow at the Global Change Institute at the University of the Witwatersrand, "The fundamental problem is the kind of lifestyle we're living. It's the entitlement that we have a right to consume as much as we want. The attitude and reaction is indignation. It's 'we pay our taxes' and therefore we should be as comfortable as possible."

THE COMPLICATIONS OF CLIMATE

The path to Cape Town's crisis is both typical—and not.

Much like southern California, South Africa is arid, but Cape Town's most recognizable feature, Table Mountain, traps onshore breezes coming off warm ocean waters, creating local rains that recharge the city's underground aquifers. It is an oasis surrounded by desert with a Mediterranean climate that has drawn populations skyward and brought increasing wealth and prosperity. There are pools and lush gardens, though even as the city modernized, hundreds of thousands still live in informal settlements. Unemployment tops 25 percent.

L.A. DROPS 96 MILLION 'SHADE BALLS' INTO ITS RESERVOIRS

About 3 million black shade balls covered the Ivanhoe Reservoir in the Silver Lake section of Denver, Colorado, taken in September 2009. Managers hoped the balls would cool the water, to decrease chemical carcinogens.

PHOTOGRAPH BY GERD LUDWIG, NATIONAL GEOGRAPHIC

Over the last 20 years, the city recognized some of the increased threat. It made investments in its six major reservoirs, which hold up to 230 billion gallons of water. Per capita consumption, water leaks, it forced large users to pay more, and generally promoted water efficiency, says W. Gary Winter, a recipient of international water management awards. It even tries to shame top water users by publishing their names.

But officials also made an increasingly common mistake: They assumed future risks would be like the past, or at least not change too quickly.

"It's like driving a motor car and looking in the rear-view mirror," Winter says. "They didn't recognize the risks ahead. Now here comes the juggernaut."

A decade ago, the city was told that population growth and shifts projected to come with hotter weather, with less winter rainfall, and reduced stream flows—would require it find ways to conserve water.

"They were warned, but those warnings were not enough to shift attention from other things on the agenda," Winter says.

In the end, the dangers came suddenly. In 2014, the six dams were full, but then came a severe drought—the worst in more than a century. Now, according to NASA data, reservoirs store only 13.5 percent of the single largest, which provides half the city's water, in the worst shape. City officials say that other reservoirs hit 13.5 percent.

While it's not clear how much of the current dry spell is driven by natural variability, "it's clear our current system is no longer reliable enough," Olivier says. "We may not have another such event for a few decades. But extreme events are only going to become more common."

And consequences could be felt in many other places across the globe.

OTHER WORLD CITIES AT RISK

Already, droughts in recent years have helped spark famine and unrest in rural areas from Iran to Somalia. But water crises are also threatening massive cities around the world.

Already, many of the 21 million residents of Mexico City only have running water for a few hours from their taps a week. Several major cities in India don't have enough water. Melbourne, Australia, reported last summer that they could run out of water in little more than a week running so dry that the city is sinking faster than seas are rising, as residents suck up groundwater from the surface.

Much like Cape Town's fiasco, reservoirs in Sao Paulo, Brazil, dropped so low in 2014 that emergency water trucks were looted, and the flow of water to taps in many homes was cut off for a week. Only last-minute rains prevented Brazilian authorities from having to close taps completely.

"Sao Paulo was down to less than 20 days of water supply," says Betsy Otto, director of the World Resources Institute. "What we're starting to see are the confluence of a lot of factors that are underappreciated, ignored, or changing. Brought together, though, they create the perfect storm."

Competition for water is increasing, as population growth drives demand for drinking water as countries become more affluent. In fact, cities aren't always even aware that the water they use has been claimed or polluted or is being consumed by other users.

Meanwhile, climate change is causing wider swings in weather, with more intense droughts and floods. "Think of southern California's record snowpack after five years of drought followed by heavy rains. These swings are likely to be the new normal," she says.

At the same time, as with Mexico City or Jakarta, infrastructure is often inadequate. Pipes are old, unsanitary, leaky, polluted by heavy metals, or not sufficient to deliver enough supply to meet demand. "It's not up to the task," Otto says.

Often the failure is about money, but there are almost always political dynamics at play.

POLITICAL MISCALCULATIONS

"Frankly, where it gets dangerous is the inability of our political institutions to keep up with the challenges of the 21st century."

associate dean and director of the environmental studies program at Ohio University. "This decade is going to be about how well our institutions deal with the increased rate of change."

In South Africa, the ruling African National Congress and the Democratic Alliance, the city, each have some responsibility for maintaining or administering water. Experts point to several fundamental missteps.

"Both believed that this would be a short-term drought and that things would return to normal," Turton says. "But climate change is a factor now, and it's only begun to dawn on them how things will just keep increasing."

For the moment, the region is scrambling to bring new supplies on line. Four new dams are under construction. New water wells are being drilled and a plant that would reuse effluent is under construction. More than half are more than half completed.

All but one, however, is behind schedule, as city leaders push to at least get some water flowing.

"Residents of Cape Town are very surprised by how dramatically the situation has changed," says [Bourblanc](#), a public policy analyst specializing in resource management at South Africa's Council on Geographical Names. "I think people are realizing very quickly just how bad the situation could be."

[Craig Welch](#) writes about the environment for National Geographic.

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