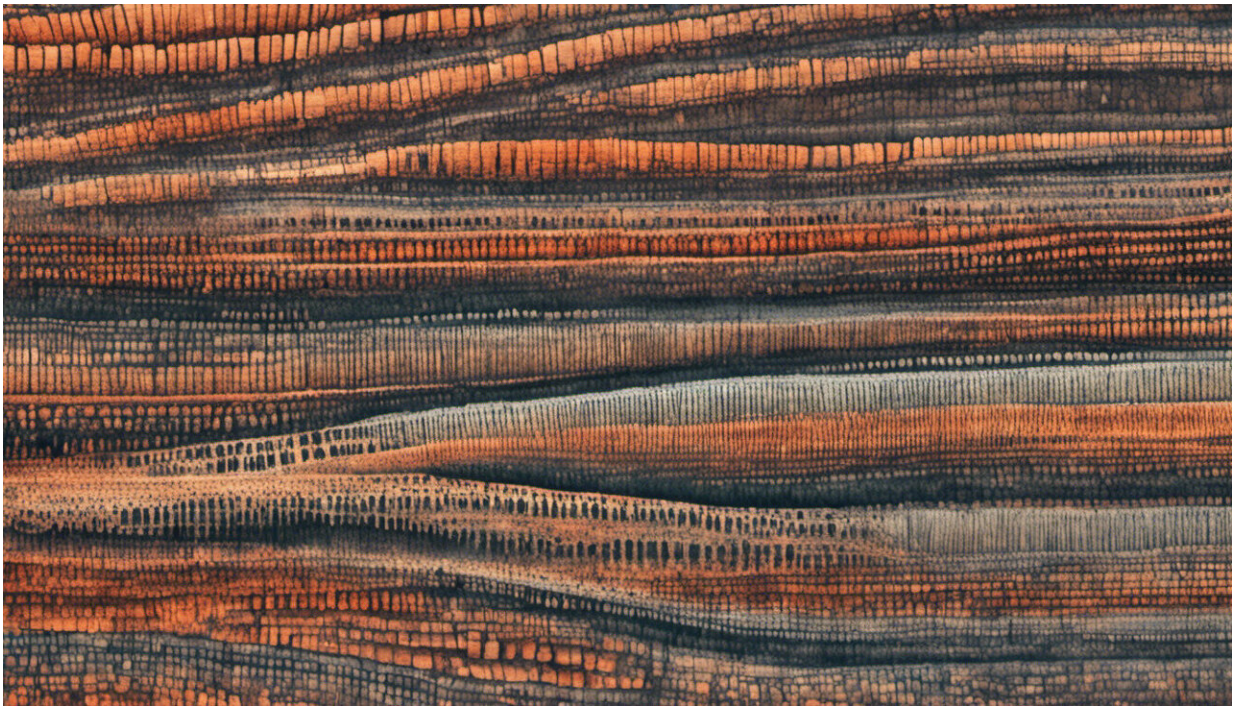
As a water crisis looms in Cape Town, could it happen in Canada?

February 19 2018, by John Pomeroy



Credit: AI-generated image (disclaimer)

The city of Cape Town, South Africa is under extreme water rationing and heading towards complete depletion of its municipal water supply. When Day Zero —the day the tap runs dry —arrives, it will be the first major city in the world to run out of water.

Though drought has ravaged much of the world in recent decades and severe drought continues over large swaths of Africa, to see a large, developed city run out of water raises questions for us all: Could this happen in Canada? If so, how might we prevent it?

We think of ourselves as the water wealthy country, but Canada is not immune to water shortages or disasters.

Last year, we had record drought over the southern Prairies, unrivalled dry conditions and forest fires in British Columbia and the Rocky Mountains, and unprecedented flooding in the Great Lakes-St. Lawrence River basin that left millions of Canadians reeling from either insufficient or excessive water.

Severe water restrictions have already happened in Canada. In the summer of 2015, both Regina and Moose Jaw, Sask., had to ration water supplies due to the inability to treat a massive algae bloom in Buffalo Pound Lake, which supplies drinking water to both cities. There was enough water in the lake to drink, but it was undrinkable.

In the summers since 2014, Vancouver and other cities in British Columbia have had to ration water use. Poor summer rainfall and spring snow melt have left municipal water reservoirs unfilled.

This is eerily similar to Cape Town's situation.

In 2016, a summer drought led to water restrictions in southern Ontario and Nova Scotia. Last summer, water restrictions were imposed on many southern Alberta communities and farms due to low river flows, and a moratorium on new water licenses has been in place on the South Saskatchewan River Basin in Alberta since 2006. Canadian Geographic declared "The South Saskatchewan River Runs Dry" in 2010. The river still flows, but at vastly reduced levels from its natural flow in dry years.

A week without winter

In Canada, our greatest natural disasters come from floods, fires and droughts —and they are getting worse as our climate changes. They are wreaking havoc on the infrastructure of our communities and transportation networks, contributing to impoverishment of disadvantaged Canadians, diminishing our natural resources capital, disturbing our ecosystems and reducing agricultural and energy production. Canada needs to be better prepared.

In 2016, the University of Saskatchewan and three partner universities developed the Global Water Futures (GWF) program to find ways to reduce the impact of these disasters nationally —and globally.

This is now the largest university-led water research program in the world, with more than 220 university professors and more than 450 graduate students and researchers involved in the rapid transformation of our measurement, understanding, management and prediction of water resources.

But the GWF findings are distressing: Climate warming from human actions is altering precipitation patterns, reducing snow-packs, accelerating glacier melting, thawing permafrost, degrading water quality, intensifying floods and increasing the risk and extent of droughts.

In short, Canada is "losing its cool." This matters because our water supplies are dependent upon seasonal or longterm water storage in the form of snow and ice. This makes water from winter snowfalls available in spring and summer when we most acutely need it.

An intense 2015 drought reduced water levels across much of Western Canada, including Lake Diefenbaker, Sask., a source for hydropower and irrigation. Credit: John Pomeroy, Author provided

In mid-January this year, daily high temperatures in all the settled parts of Canada, plus much of the Yukon and Mackenzie Valley, were above

freezing. It was a week without winter, a phenomenon that would have been extraordinarily rare in the 20th century.

Avoiding a Cape Town in Canada

The impacts of this water insecurity are felt by cities, agricultural communities, Indigenous communities and industries —and are a source of domestic and international tension.

With such unprecedented change, it is clear that historical patterns of water availability, flooding and drought are no longer a reliable guide for the future.

"We're going to have to understand that bracing for a 100-year storm is maybe going to happen every 10 years now, or every few years," Prime Minister Justin Trudeau said as he toured the flood zones in Gatineau, Que., in May 2017.

Yet we are the only G7 country without a national flood-forecasting program.

How can Canadians avoid our own Cape Town and advance solutions to our own water security problems?

1. We can start by better integrating and coordinating our water governance, planning and services —by creating a national capability to forecast floods, droughts, water quality and water supply.
2. We can work to reduce flood damages through more active and integrated river basin water management, calculating future flood risk and restricting development in future flood zones.
3. We can reassess our infrastructure, and capability to manage and store water, in expectation of droughts longer and more severe

than any experienced.

4. We can manage the cumulative effects of development in our watersheds to reduce the contamination of our lakes and rivers —so that the water we have is safe to drink and sustains our aquatic ecosystems.

A country of water solutions

To achieve these water security goals we need more coordinated, inclusive and effective water governance.

Right now, the services the government provides to measure, predict and manage water are fragmented into dozens of federal and provincial ministries.

Indigenous people are left out of water governance and policy decisions, despite their treaty rights and the high exposure of many Indigenous communities to drought, flooding and impaired source water quality.

If we implement coordinated, integrated water management and prediction in a national water security strategy, this will generate a tremendous advantage for Canada. It will also make us a beacon of good governance to the world in the face of increasing climate change threats.

Advances in science, prediction, measurement and policy analysis made by the Global Water Futures program, and others, can contribute to making Canadians safer from water disasters. We can be the water-solutions country that others go to for answers to their water problems.

We need only look to South Africa to see what awaits us if we ignore these threats.

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