



Could climate change herald mass migration?

Concerns raised as the U. S. Southwest grapples with historic drought, water supply depletion and the creeping sense that things can only get worse

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The state of Arizona has more than 300 golf courses, a booming economy, endless sunshine and, at last count, at least five Saks Fifth Avenue department stores — in short, nearly everything the well-heeled sybarite would need.

There's just one thing missing: rain.

For the past month, not a drop has fallen in Maricopa County, home to greater Phoenix, the state's economic engine and fastest-growing hub. Over that period, temperatures have hovered five to seven degrees above the 30-year average, at one point holding steady at over 43C for 10 straight days, while hundreds of brush fires burned statewide.

"And they're still building billion-dollar houses, right in the middle of the desert," says Paul Oyashi, incredulous. "It doesn't seem rational, does it?"

In a word, no. Rational, some would say, would be a mass migration from the drought-ravaged American southwest, where Southern California just experienced its driest 12-month period in recorded history, to more verdant climes.

One such place? Cleveland, the battered hub of Cuyahoga County, where Oyashi sits as director of the department of development. "We don't have earthquakes, we don't have brush fires, we've got all the fresh water you could ever want," Oyashi says. "That's logic. But the problem is, it flies in the face of reality."

LOGIC HAS NEVER been the lone – or even dominant – factor in human behaviour. And in Cleveland, much like all the depressed cities of the Great Lakes rust belt, the reality is this: over the past four decades, the

population has bled away to less than half, as it has in Buffalo and Detroit.

And the loss continues. Last year, Cuyahoga was sixth among American counties in population loss, trailing only the four counties in the New Orleans area decimated by Hurricane Katrina as well as Wayne County, home to Detroit.

A foreclosure crisis on defaulted mortgages in Cleveland, mirrored all along the rust belt, left about 10,000 of the city's 80,000 homes vacant. "Jaywalking is far too easy in downtown these days," Oyashi says gruffly.

At first glance, the crises of the rust belt and the Southwest would seem unrelated. They are, in fact, inexorably linked. Each has what the other does not. In Phoenix, tremendous affluence; in Cleveland, and in Detroit, Toledo, Youngstown, Buffalo, Rochester, Thunder Bay and Sault Ste. Marie, abundant, near-endless water – in the Great Lakes alone, as much as 25 per cent of the world's supply.

And as the Southwest and parts of the Southeast grapple with historic drought, water supply depletion – earlier this year, Lake Okeechobee in Florida, a primary water source for the Everglades, caught fire – and the creeping sense that, with climate change, things can only get worse, a new reality is dawning: that logic, finally, will have a larger role to play in human migratory dynamics, continent-wide. With it come not just doomsday scenarios, but for certain urban centres left for dead in the post-industrial quagmire, a chance at new life.

"Sticking a straw in the Great Lakes is not a solution to Phoenix's water problems," says Robert Shibley, director of the Urban Design Project at the State University of New York at Buffalo. "Maybe it's time to really think about what constitutes need and stop spending money to build carrying capacity in places that don't have it by nature, and start investing in places that do."

Shibley has long been a champion of Buffalo's dormant potential – a potential reduced by half or more through the latter part of the 20th century, as the population fell below 300,000 from a historic high of more than 700,000.

He suggests that in the Great Lakes basin, where less than half a per cent of the world's population sits within easy reach of a quarter of the planet's fresh water, the opportunity for harmony exists. In a perfect world governed by reason, Shibley says, the only robust economic centre in the region would serve as its heart. And that would be Toronto.

That's an issue for international bureaucrats to solve. But the reality is

this: according to the U.S. government, the population of the United States is expected to reach 450 million by 2050 – an increase of almost 50 per cent. The predicted pattern of settlement for these new citizens will take them to the seven most built-out regions of the country – Arizona, Texas, Florida and California among them.

"You're going to have 150 million people living in at least seven of the major regions that don't have water, don't have carrying capacity, can't feed themselves," Shibley says. "It's an ecological disaster waiting to happen. So there's a good reason to think that people should come back to the Northeast, where we have the carrying capacity, and have the water."

Some have already taken notice. Last year, *The Economist* ranked Cleveland the most liveable city in America (26th in the world) based on five categories: stability, health care, culture and environment, education and infrastructure. Among the booming cities of the Southwest, only Los Angeles and Houston cracked the top 50. Phoenix didn't make the list, falling behind Nairobi, Algiers and Phnomh Penh among the world's top 126 urban centres.

Water is a factor. It is already a significant issue in the major regions Shibley mentions which, not coincidentally, depend on the same diminishing source for much of their hydration.

In 1922, seven states – many of them, like Nevada, Arizona, Texas and California, desperately arid – signed the Colorado River Compact, which divvied up the mighty waterway's seemingly abundant flow.

But recent observation of the river is alarming. Only two per cent of the river's water makes it beyond the U.S. border, where large Mexican cities dependent on its bounty are left with a trickle – much less than they need. With climate change, river flow has been dwindling, due, among other things, to decreasing snowfall and less consequent spring runoff, which forms a significant part of the Colorado River basin's lifeblood.

The river is the main water source for more than 30 million people stretching from Colorado in the north all the way down to the U.S.-Mexico border. By the end of the century, inflow to the river (which includes runoff and tributaries) is expected to drop by as much as 40 per cent.

At the same time, climate change projections show temperatures in the most parched regions of the Southwest increasing between five and seven degrees. That would make Phoenix's hottest days well over 54C.

In Arizona, though, these warnings seem to fall on deaf ears. "The Greater Phoenix region continues to bust at the seams," says Christopher Scott, a

research professor of water resource policy at the University of Arizona in Tucson. "People look at this and think, 'This can't go on, can it?'"

But it does, and faster than anywhere else in America. From 1990 to 2005, the population of Greater Phoenix grew 47.7 per cent. In Scottsdale, a posh, affluent corner of Greater Phoenix that, despite the lack of moisture, has more golf courses per capita than anywhere else in America, growth was 72.1 per cent over the same period.

Altogether, Greater Phoenix will likely crest at 4 million people some time this year, making it the fourth-largest metropolitan area in America. By mid-century, some estimates suggest it will reach 10 million, leaving Phoenix and Tucson fused in the desert. "We'll basically be one massive urban corridor," Scott says.

Phoenix receives water from the Colorado through canals hundreds of kilometres long, pumped through parched landscapes and small communities along the way that take their fill. It is, essentially, a city that shouldn't be there, so distant is the water supply.

Scott, who has studied water supply issues from India to Mexico to West Africa, has seen no end to water-appropriation schemes in development-crazy Arizona. "Piping in sea water from the Sea of Cortez in Mexico, desalinating it, and then piping the salty brine back into the ocean – that's the kind of hare-brained notion I've heard here," he says. "Do I consider these things tenable? Not at all. But these are proposals people are talking about seriously, in public, and they're getting a lot more play."

Scott worries that technology may well make such things possible, but at a destructive energy cost that simply exacerbates the problem. "We're already starting to ask questions about the larger issues associated with pumping in all that water along those canals – the energy costs, and the carbon impact associated with it," he says. "They may solve the water issue short-term, but they pull the sustainability rug out from under you in the process."

The long-term solution, of course, is to relocate people where they can comfortably exist. (Oyashi certainly knows a place where you can get a decent house on the cheap.) In a free society, of course, forced migration isn't really an option.

But as the sustainability crisis worsens, "usually economic forces will do it for you," says Robert McLeman, a professor of geography at the University of Ottawa. "When cities have to build new infrastructure and to jack up taxes to cope, when the cost of running a household becomes prohibitive, people will move."

McLeman has long studied the impact climate has on migration all over the world. As climate change continues apace, the numbers of potential environmental refugees from such countries as Bangladesh, India and Pakistan are staggering – as many as 50 million in the next five years, according to a U.N. report.

In the U.S., says McLeman, the stresses of climate change will be most keenly felt in the "dry belt" states of the Southwest. Given that many sun belt residents fled the rust belt for warmer climes in the first place, a backtracking isn't out of the question in the climate-changed world.

"Once the heat becomes unbearable, they may find the freezing cold a little more bearable—especially if it's not quite so freezing cold as they remember."

It won't happen without help. In Buffalo, Shibley speaks of a federal urban sustainability plan that funnels federal money to the Great Lakes region to help draw population back. It's been more than 30 years since the U.S. had a comprehensive national urban plan. Looming ecological crises in burgeoning urban centers more than justify a revival. "Cities don't grow by topsy, it's not a thing of nature – it's a function of public policy," he says.

But a significant piece is missing, McLeman warns. "These cities will have milder climates, be easier to live in, and cheaper," he says, "but ultimately, they'll have to have the jobs to go with them."

Oyashi is painfully familiar with the concept. Cleveland may have a surfeit of cheap, liveable housing and an abundance of fresh water, but its problems are legion. Abandoned industrial sites litter the area, too big or too expensive to put to other purposes. Small victories pale in the face of greater challenges, like trying to convince Ford not to close two of its three plants in the region. "We've got some dinosaurs walking around here," he says.

But those problems, endemic rust-belt-wide, are just the most visible. High crime rates, languishing schools and spiralling urban poverty plague Cleveland, too. Phoenix, for all its money, can't make it rain any more than Cleveland, with all its water, can print the money it needs.

The difference, Oyashi says, is that the Great Lakes are a viable place to live long term. "The problem is," he says, "that doesn't do anybody any good now."

He lays the responsibility at the federal government's door. "It's not like we have a policy that says, 'You know, we should have a national policy that provides incentive for people to live in ecologically sustainable areas,'"

he says. "What we have here is 'Go wherever you want, do whatever you want, and the government will follow with its chequebook.' You get this haphazard checkerboard of winners and losers, rather than directed development in the regions that can sustain it. It's crisis management."

But the coming crisis, Shibley warns, could well become something no chequebook could manage.

"We're so focused on the cost of keeping large populations in the Southwest," he says, "that we haven't considered anywhere near enough the cost of leaving them out there long term. All of this is going to come home to roost, and as a society, we're going to have to figure out lower-impact ways of delivering quality of life. We can do that right here, right now."