Plight of Phoenix: how long can the world's 'least sustainable' city survive?

Set deep in the Valley of the Sun, the lush and sprawling 'megapolis' has a problem - the rivers

'An urban bullseye for global warming' ... Phoenix, Arizona. Photograph: Dreamframer/Getty Images/iStockphoto

Jennifer Afshar and her husband, John, pushed their bikes across the grass and paused to savour the sunshine, while their two boys went to look at the duck pond. Other kids were playing soccer or doing tricks in the skate park, and families picnicked on blankets or fired up a barbecue across from the swimming pool.

“We moved here from Los Angeles, to get away from the rising cost of living and the traffic,” said Jennifer. “When we saw this park, we thought they were punking us it was so good. There's low crime, the home owners association takes great care of the grass and trees - we like it.”
The Afshars live in the squeaky-clean suburb of Anthem, Arizona. It’s part of a giant conurbation of satellite towns surrounding Phoenix, and is a classic example of why this metropolitan - or “megapolitan” – area is tempting fate.

Twenty years ago, Anthem sprung out of virgin desert, a community “masterplanned” from scratch with schools, shops, restaurants and spacious homes - many behind high walls and electronic gates - and its own country club and golf course. It now has a population of 30,000.

To look around Anthem would be to imagine there is no such thing as a water shortage. But the lush vegetation and ponds do not occur naturally. Phoenix gets less than eight inches of rainfall each year; most of the water supply for central and southern Arizona is pumped from Lake Mead, fed by the Colorado river over 300 miles away. Anthem’s private developer paid a local Native American tribe to lease some of its historic water rights, and pipes its water from the nearby Lake Pleasant reservoir – also filled by the Colorado.

That river is drying up. This winter, snow in the Rocky Mountains, which feeds the Colorado, was 70% lower than average. Last month, the US government calculated that two thirds of Arizona is currently facing severe to extreme drought; last summer 50 flights were grounded at Phoenix airport because the heat - which hit 47C (116F) - made the air too thin to take off safely. The “heat island” effect keeps temperatures in Phoenix above 37C (98F) at night in summer.

Phoenix and its surrounding area is known as the Valley of the Sun, and downtown Phoenix - which in 2017 overtook Philadelphia as America’s fifth-largest city - is easily walkable, with restaurants, bars and an evening buzz. But it is a modern shrine to towering concrete, and gives way to endless sprawl that stretches up to 35 miles away to places like Anthem. The area is still growing – and is dangerously overstretched, experts warn.

“There are plans for substantial further growth and there just isn’t the water to support that,” says climate researcher Jonathan Overpeck, who co-authored a 2017 report that linked declining flows in the Colorado river to climate change. “The Phoenix metro area is on the cusp of being dangerously overextended. It’s the urban bullseye for global warming in north America.”

One of those plans is Bill Gates’s new “smart city”. The Microsoft founder recently invested $80m (£57m) in a development firm that aims to construct 80,000 new homes on undeveloped land west of Phoenix, and a new freeway all the way to Las Vegas.

Despite year-round sunshine, Arizona only derives 2-5% of its energy from solar power. Photograph: Deirdre Hamill/AP

Another firm wants to build a “masterplanned community”, like Anthem, south of Tucson, and modelled after the hilltop towns of Tuscany. It envisages five golf courses, a vineyard, parks, lakes and 28,000 homes. The promotional video contains no details about where all the water will come from, but boasts: “This is the American dream: whatever you want you
can have.”

What these cities want is water. The Phoenix area draws from groundwater, from small rivers to the east, and from the mighty Colorado. The Hoover Dam holds much of the Colorado’s flow in the vast Lake Mead reservoir, but the river itself is sorely depleted. That water has now dropped to within a few feet of levels that California, Nevada and Arizona, which all rely on it, count as official shortages. Lake Powell, the reservoir at the other end of the Grand Canyon, similarly averages half its historic levels.

And yet despite the federal Bureau of Reclamation reporting in 2012 that droughts of five or more years would happen every decade over the next 50 years, greater Phoenix has not declared any water restrictions. Nor has the state government decided its official drought contingency proposal.

“There’s an enormous fight over all this,” says Jim Holway, vice president of the Central Arizona Water Conservation District. “Climate change is having an impact but that’s a controversial, unsettled issue in the western US.”

‘Sprawl is the norm’

As a hummingbird flitted to a shrub near Holway’s swimming pool – Phoenix from above is a blue mosaic of back-garden pools – Holway explained that the Valley of the Sun may have to choose between agriculture and further urbanisation. Twenty years ago, when he moved here, his house looked out on to citrus groves and flower farms. Now the valley is dominated by mega-farms growing winter vegetables for export and thirsty alfalfa for the cattle feed market. “Do we want to grow houses or crops?” he asks.

The conversation in Arizona even turns periodically to the outlandish ideas of drawing water from the Great Lakes, 1,700 miles away, or building expensive desalination plants on the Pacific Ocean, instead of imposing water restrictions.

Greater Phoenix is good at recycling waste water, but most of it is used for cooling the Palo Verde nuclear power plant to the west of the city, the largest in the US and the only one not on its own body of water. Conversely, the water department is Arizona’s biggest electricity consumer, because it has to pump the water uphill from the Colorado along miles of canals into Phoenix and Tucson. And most of that electricity comes from the heavily polluting, coal-fired Navajo Generating Station in the north of the state.

Meanwhile, despite enjoying more than 330 days of bright sunshine a year, Holway estimates that Arizona only derives 2-5% of its energy from solar power.
Phoenix is extreme but not alone. “Most American cities use more resources than necessary and that’s the way they were designed,” says Sandy Bahr, director of the Arizona chapter of the Sierra Club. “There is overconsumption and a disposable mentality. Our waste is taken to remote landfill sites, the cities are designed for cars, and sprawl is the norm.”

In his 2011 book Bird on Fire, the New York University sociologist Andrew Ross branded Phoenix the least sustainable city in the world. He says he stands by his assessment and warns of an “eco-apartheid”, whereby low-income neighbourhoods on the more polluted south side of the Salt River (which once flowed vigorously through the city and is now a trickle) are less able to protect themselves from the heat and drought than wealthier citizens.

“There’s a stark disparity,” he says. “The resource havens, with their hybrid cars, their solar panels and other green gizmos; and the folks on the other side struggling to breathe clean air and drink uncontaminated water. It’s a prediction of where the world is headed.”

Or, he says, you can just look at the past. The Hohokam people were the original irrigators of the valley that later became home to Phoenix. Their society, numbering an estimated 40,000, collapsed in the 15th century - for reasons believed to relate to disagreements over scarce water.

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