

## Running on Empty

In the fall of 2007, the town of Orme, Tennessee temporarily ran out of water. Local sources had dried up but emergency supplies from elsewhere were not available. This conundrum was an outcome of the dispute between the state of Georgia and its downstream neighbors, Alabama and Florida, over how much water to release from Lake Lanier, one of Atlanta's main reservoirs, at a time of regional drought. This dispute is small potatoes compared to the conflicts over water that are emerging elsewhere, such as that between Israel and the Palestinians over the aquifer under the West Bank; that between Turkey and Iraq over the watersheds of the Tigris and Euphrates; and that within Pakistan over the distribution of water in the aftermath of serious drought. But it did draw attention in the U.S. for at least one news cycle to a problem that is likely only to become more significant globally over the coming years: reliable access to potable water. It is not, I hasten to add, that the Earth's water is in danger of being used up, but of matching water's availability to the places where people live.

There are several dimensions to the global water problem, none of which is independent of the others. As geographers, finding out more about these and proposing plausible responses should be one of our highest research and teaching priorities. The first dimension is that as the world's population grows and incomes rise, consumers in general, and the farmers who feed them in particular, will need much more water. Yet, according to the International Water Management Institute, about a fifth of the world's population, about 1.2 billion people, currently live in places that are short of water because of physical scarcity or the lack of adequate infrastructure (wells, reservoirs, etc.) to distribute it. At the same time, water and sanitation are possibly the world's most pressing "development" issue. If many people lack access to clean drinking water, even more, perhaps 2.6 billion, lack access to minimal sanitation. As a result, serious disease

burdens and potent water deficits undermine general development goals. Many charities warn that without greater priority to water and sanitation many of the Millennium Development Goals relating to improved standards of living and better health are unrealizable. Unfortunately, we can no longer assume, as once we could, that nature will see us through. The long assumed stationarity of the world's climate regions is now completely in question. Indeed, much evidence suggests that climate change is already exacerbating regional water shortages. Recent climate models identify precisely those regions under greatest stress as those which will see the largest shortfalls in precipitation, particularly highland snowfall, and in the recharging of aquifers. Examples are the Mediterranean, southern Africa, the Middle East, and the American West. As if some of these regions needed more trouble.

What is to be done? One thing is to cut down on the amount of water that is squandered, particularly by farmers who are the major culprits in this regard. This can be done by more rational pricing and a withdrawal of water subsidies or by encouraging cooperative management and the negotiated distribution of entitlements (as in Australia's Murray-Darling Basin). Whichever strategy is chosen, the days of regarding water as simply ubiquitous and without scarcity value are long gone. The Scotsman Adam Smith could well afford to see water in this light, elsewhere and today its self-evident use value is less open to such generosity. Even simple conservation measures can often have big returns. One recent study by the Pacific Institute of Oakland, California, concluded that the city of Las Vegas, Nevada, could easily cut its Colorado River withdrawals by 10 percent by adopting some very simple conservation

measures such as restricting lawn watering and turning down the volume of casino water fountains. Currently, however, there is insufficient incentive to do so. Another approach is to encourage regions with water shortages to specialize to the greatest extent possible in their most valuable cash crops and to recycle their wastewater. Technology could well come to the rescue,

through desalinization of brackish groundwater and of seawater, but this can be done satisfactorily only if it doesn't simply resolve the water problem by increasing the carbon one. Desalinization is a large energy user. Finally, and most radically, those of us who live in arid regions will have to dramatically reduce our water consumption or move out.

I personally hope it doesn't come to that. The American Southwest, however, seems on an unsustainable track. Projected increases in population alongside a water-devouring corporate agriculture that has made California a major global producer of rice and cotton will likely make for an environmentally untenable future. The Presidential Plenary session on the "Future of Water in the American West" at the Las Vegas Annual Meeting next March will address some of these regional issues in much more detail.

What seems clear is that only by looking at the water problem globally and holistically – along with energy consumption, settlement patterns, and climate change – will we ever begin to find any way out of it. Orme, Tennessee may well become as famous in retrospect as did another small town in Tennessee – Dayton – in its day. It all depends on whether we are impressed with the seriousness of the warning signs or just complacent that things will always work out. ■



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