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## Sandra Postel

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### IN HARMONY WITH EARTH'S WATER CYCLE

A little over a decade ago, I stood on desiccated Earth in the degraded delta of the Colorado River and listened to an elder Cocopa Indian, whose people had fished and farmed in the delta for more than a thousand years, say, "I hope one day to see the river rise again."

The Colorado was one of the first major rivers to be dammed, diverted, and depleted into oblivion before reaching the sea. It happened to the Colorado in the early 1960s, but since then the Yellow River of China, the Amu and Syr Darya of Central Asia, the Nile of northeast Africa, the Indus and Ganges of southern Asia, and the Rio Grande of the American Southwest have joined the

list of rivers, the blue arteries of the earth, drained dry before their final destinations—ecological disconnections as consequential as diverting the bloodstream from its appointed path in the human body.

So for me to join the Cocopa elder in hope for the future is not easy. As I look at the world through a water lens, the trends are not good. To believe we can harmonize human activities with Earth's sustaining water cycles is to believe that a deep transformation in human consciousness and collective action is possible. But that is exactly what I believe.

As I write, the natural world around us is changing far faster than anyone, including scientists, would have imagined even five years ago. Glaciers are melting, seas are rising, rivers and lakes are drying up, lands from Australia to Alabama lie parched from drought, and the prospect of the next Katrina resides just over the horizon. Amid the battery of studies and predictions about the coming impacts of a warming climate, it seems we have already crossed a threshold of change that has catapulted us into a new world, one like nothing humanity has witnessed before.

Until now, we have been like the frog that chooses to stay in the pot of water as the heat is gradually turned up, unable to grasp the dire consequences of incremental change. But now, the shock and surprise at the pace of change in our environment is shaking us out of our stupor. It's time to jump out, for safety's sake, to a different place. By the day, more citizens, corporate leaders, and government officials appear ready to make the leap.

So I believe that fifty years from now our lives in relation to water—the basis of life on the planet—will look very different than it does today. Good health, sufficient food, secure homes, stable livelihoods, recreational enjoyment, spiritual inspiration, peace with neighbors—so often these things boil down to water. Is there enough for all? Is it clean? Is it shared fairly? Is it used wisely? Right now, the answer in most of the world is no. But the trends of today only determine the future if they remain unaltered.

When I fast-forward fifty years, I see a redesigned world of water. In it, diseases due to polluted ponds, rivers, and aquifers, which now claim more than two millions lives each year, most of them children under the age of five, are virtually

nonexistent, because all people will have access to a safe supply for drinking, bathing, and cooking. Women in poorer countries will have expanded opportunity, because as girls, they attended school instead of spending their days fetching water for their families. They will also choose to have fewer children, confident that those they have will survive.

More rivers will be rivers again. Engineers will have removed or set back flow-confining levees so that floodwaters can spill naturally onto floodplains, rejuvenating fisheries and replenishing groundwater. Cities and towns will have relocated away from flood-prone areas because of the higher risks of costly flood damages as rivers swell with spring runoff from fast-melting mountain snowpacks. Dams and reservoirs providing valuable water and power will be operated so as to also give rivers the volume and timing of flows

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they need to sustain fish and overall ecological health. Meanwhile, thousands of dams will have been removed, as their ecological downsides and safety risks outweigh their benefits. Sadly, however, the variety of life within rivers will be less diverse, because dams, diversions, pollution, and warmer temperatures will have driven one in three freshwater species to extinction.

Our production and consumption of food will look very different from today. Modernized irrigation systems will enable farmers to water their crops more precisely, and new information technologies will enable them to incorporate real-time data on rainfall, evapotranspiration, and other factors into their management decisions. By irrigating more efficiently and planting crops suited to their local climates, farmers overall will use half as much water for the same amount of crop production as today. Organic foods will dominate the

marketplace because of their health and environmental benefits. Consumers will also buy more of their food from local farms because of the high cost of transporting food great distances. In cities, people will get most of their vegetables from rooftop gardens. And diets everywhere will include less meat, because the cost and availability of the land and water needed to produce it will have pushed its price considerably upward.

Computers, clothes, cars, and other goods will be made in factories that recycle and reuse all of their water and discharge no pollutants to the environment. The water productivity of national economies—the volume of water used per dollar of GNP—will be up to ten times higher than it is today.

Overall, water management will be less about pipes, pumps, and pouring concrete, and more about ideas, innovation, and ingenuity. The politics of water will have evolved from competition to cooperation, as nations and states realize they have more to gain by sharing the benefits of a healthy, smartly managed watershed than by fighting for the last drop. And cadres of ecological engineers will enable communities to rely on nature's infrastructure—wetlands, floodplains, and forested watersheds—to supply clean water while at the same time preserving habitats for fish and wildlife and natural areas for people to enjoy.

What I have sketched here is not a prediction, but a vision. By envisioning a desired future, we can work with intention to create it.

We live, today, in the decisive decade. Our action—or inaction—during these next few years will determine whether a better world can emerge from the catastrophic change we have unleashed.