

Probing Question: Are water wars in our future?

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Schoolkids know that over 70 percent of Earth's surface is washed in water. Yet very little of that abundance — less than two percent — is available for drinking and agriculture. Over the last 50 years, moreover, freshwater use has tripled as global population has doubled, leading to scarcities in many regions of the globe. According to the United Nations, over 1.1 billion of the world's people lack access to a clean water supply.

With rapid population growth, wasteful practices, and impending climate change, the situation is likely to get worse. Water resources in semi-arid regions are expected to be especially hard-hit, warned the Intergovernmental Panel on Climate Change in its 2007 summary report. By some estimates, two-thirds of the world's population will be water-stressed by 2025.

During a year when many states across the U.S. are suffering some of the worst droughts ever, water is a topic on people's minds. Will the prospect of a diminishing water supply result in serious geopolitical conflict?

"Freshwater resources are unevenly distributed around the globe," says Robert B. Packer, lecturer in political science at Penn State, who studies international political economy and the causes of war. "While freshwater is relatively abundant in Europe and much of North America, other regions of the globe, such as the Middle East, Central Asia, and parts of West and Eastern Africa, face increasingly severe shortages." According to the BBC, the number of 'water-scarce' countries in the Middle East

grew from three in 1955 to eight in 1990, with another seven expected to be added within 20 years.

"Of particular concern," said Packer, "are certain riparian basins that could explode into conflict as sources of freshwater diminish. Conflict is more likely to occur where water can be seized and controlled in addition to being scarce."

Among Middle East countries, where every major river crosses at least one international border, up to 50 percent of water needs of any specific state finds its source in another state, Packer noted. "Hydro-politics already play a central role among states in riparian basins, such as the Tigris-Euphrates, the Nile, the Jordan, as well as those sharing the underground aquifers of the West Bank."

Conflicts are likely to emerge as competition intensifies to control river waters for hydroelectricity, agricultural use, and human consumption, he added. "Farms and cities downstream are vulnerable to the actions and decisions of upstream countries that they have little control over. This is exemplified in the tensions over the Tigris-Euphrates, where Turkey commenced construction of a system of hydroelectric dams. Iraq and Syria have protested, citing the project would reduce the rivers' flow downstream. Turkey's response to the Arab states has been 'we don't control their oil, they don't control our water.'"

To the west, the Nile has been the lifeline for Egyptian civilization dating back to antiquity. Nearly all of Egypt's 80 million people live on the three percent of Egyptian territory that is the river's valley and delta. "For Egypt the Nile is life, and its government has voiced to upstream countries that any reduction of Nile waters would be taken as national security threat that could trigger a military response," says Packer.

"Nearly all freshwater in the Israeli-occupied West Bank comes from

underground aquifers," he added. "Water access has become a major issue between Israelis and Palestinians."

"Perhaps the greatest of all modern Middle East conflicts, the Six Day War of 1967, began as a dispute over water access," Packer noted. Israel built a National Water Carrier to transport freshwater from the Jordan and the Sea of Galilee to the country's farming and urban centers. (The Carrier now supplies half the drinking water in Israel.) In 1965, Israeli forces attacked a Syrian water diversion project that would have cut the Carrier's supply, and prolonged violence led to war. "For Israelis, control of the Golan Heights is important strategically in terms of controlling the headwaters of the Jordan River," Packer noted.

The effects of global warming and desertification also have impacted hydro-politics around the world. In West Africa, rainfall has declined 30 percent over the last four decades and the Sahara is advancing more than one mile per year. Senegal and Mauritania engaged in militarized conflict in 1989 across the Senegal River that divides them, in part over changing access to arable land.

In the United States, 36 states project water shortages by 2013. Legal battles over water for crops, drinking, and electricity -- common in the West -- have now reached the Southeast, where several years of drought have caused a dramatic decrease in water levels in Lake Lanier, pitting the water needs of Atlanta's huge and growing metropolis against the threatened shellfish industry 300 miles downriver in Florida's Apalachicola Bay.

"Freshwater access is a classic example of the tragedy of the commons," Parker said. "As with all common resources, unlimited demand and waste by some can lead to depletion of the resource for all. The hydroelectric dams that power the air conditioners of Las Vegas and Phoenix have depleted the waters of the Colorado River for agriculture.

Heavy pesticide and fertilizer chemical use in agriculture has spoiled drinking water in many parts of the globe."

But our future need not be dominated by water wars, he suggested. Hope lies in preventive measures, such as creating international institutions to resolve river claims, strengthening conservation efforts, and improving cross-border management of scarce freshwater resources.

Source: By Lisa Duchene, Research/Penn State

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