



Running Out of Water



“The Earth Institute is a core partner of the PepsiCo Foundation’s enviro-social portfolio, intended to help underserved communities adapt to the significant crises of poverty, climate and water scarcity.

Their masterful navigation of business needs and smart philanthropy has proven critical to the success of our collaboration.”

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In India and many other places around the world, fresh water is becoming increasingly scarce.



Agriculture is one of the biggest consumers of fresh water worldwide. Some crops, like rice, require large amounts of water.

The Columbia Water Center is working with farmers in India to promote the use of crops that reduce water consumption and boost incomes.

It’s something many of us take for granted, but, in regions around the world, supplies of it are dramatically declining, both in terms of quantity and quality, and may soon vanish altogether. Fresh, clean water is a treasure of increasing value. From Mali to Brazil to India to the southwestern United States, people are facing drier times to come and the Earth Institute is searching for long-term solutions.

Take India, for example. When the monsoons rush across the subcontinent, the skies darken, the swollen clouds burst and the rain comes down in torrents. Yet groundwater supplies are dropping as a result of overconsumption, one to three meters a year or more in some places, faster than they can be replenished by the monsoons.

Will India run out of water? “This is a serious concern in many regions,” says Upmanu Lall, the Alan and Carol Silberstein Professor of Engineering, who heads up work at the Columbia Water Center. India is one of many places where he and others from the Earth Institute are investigating strategies to reduce water stress while improving livelihoods—often closely tied to the state of water resources—with support from the PepsiCo Foundation.

Many factors are contributing: intensive agriculture to support a growing economy and population, changing land use patterns, increasing variability in rainfall and temperature due to climate change, and the absence of suitable government reforms in support for water sustainability. “All these taken together put a huge pressure on water and lead toward a situation of stress—water stress,” says Kapil Narula, director of the Water Center’s India office. “It results in crisis, the tragedy of the commons. What happens if no one comes forward to protect it? The water gets polluted, depleted in quantity, and there is a physical water stress (limited quantities of water) and an economic water stress (lack of infrastructure needed to ensure safe and equitable access and availability).”

The availability of water in a country like India is closely tied to its ability to maintain a secure food supply. Agriculture is by far the largest consumer of water in the country, using 80 to 90 percent, and is the main source of income for 60 percent of the population as well as a significant contributor to GDP. In many places, there is no incentive to conserve water, and subsidies support inefficient use. Over the long run, water stress will impact livelihoods and incomes, especially of farmers, and it can impact food security. Feeding the masses today may be creating a recipe for disaster later.

Narula, Lall, Vijay Modi and others from the Earth Institute are working with local partners to create and implement solutions through pilot projects in the states of Gujarat and Punjab, such as incentives for farmers to conserve water and the cultivation of diverse crops that reduce water consumption and increase incomes. The group is also working to sensitize the government and people to the risks of water scarcity. “The signs of water stress are visible today, but not fully understood by the common man, so the social-political system is not fully aware of the threats and the risks that it’s prone to in the future,” says Narula. ■

