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# nature REPORTS climate change

the news behind the science, the science behind the news

## A FLUID APPROACH

In the rush to rapidly reduce greenhouse gas emissions, various policies are being precipitated to bring about the speedy demise of our dependence on fossil fuels. Yet making the move to an alternative-energy economy could diversify problems elsewhere by increasing pressure on one of our most prized resources: water.

The world's freshwater resources are in a fragile state, as reported recently in a special issue of *Nature*. Over a billion people currently lack access to adequate drinking water (*Nature* **452**, 283; 2008), and experts predict that by 2050 as much as 75 percent of the global population could face water shortages (*Nature* **452**, 285–286; 2008). The impending water crisis, partly attributable to poor water management practices and a burgeoning human population, will be worsened considerably by the drier conditions we can expect in a carbon dioxide-enhanced world.

One area where it would be possible to make serious cutbacks in water use is the energy sector. Currently accounting for almost 40 percent of freshwater withdrawals in the US, energy is second only to agriculture in its demand for this finite resource. It is also catching up fast, with global energy demand expected to increase 57 percent by 2030 (*Nature* **452**, 253; 2008).

The current need to find alternative energy sources would seem to offer a unique opportunity to reduce water consumption from this sector. But from Europe to the US, energy and climate policies are being proposed that give scant regard to water usage, in many cases increasing the demands on freshwater in the quest to reduce greenhouse gas emissions. Just one example, highlighted on page 46 of this issue of *Nature Reports Climate Change*, is the “extensive irrigation required for those waving fields of midwest grain that supply the ethanol” for biofuels, one of the many contenders to replace gasoline in transport fuel.

When the sums are done, at least 40 gallons of water go into every mile travelled by an ethanol-powered vehicle, according to Michael Webber of the Center for International Energy and Environmental Policy, University of Texas-Austin, who coauthored a recent paper on the subject in the journal *Environmental Science & Technology*. And electric vehicles would fare little better on this front, requiring an estimated 17 times more water per mile than today's gas-guzzlers.

On both a national and global level, there is a clear need for a more fluid and cohesive approach to connecting water, climate and energy policies, which are rarely integrated. In the US, for example, energy and water issues are cobbled together across more than two dozen House and Senate committees. And in the charge to find alternative energy supplies, certain sources that use less water, such as wind and solar, are often dismissed as too expensive. It's time that the benefits of water conservation were weighed carefully against the costs of implementing cheaper water-intensive solutions.

OLIVE HEFFERNAN, EDITOR

Published online: 01 April 2008  
 doi:10.1038/climate.2008.31

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