With climate change and water issues gaining credence, *Revolve* speaks to Professor David Zetland about potential solutions to water scarcity and the economics behind them.

The issue of water scarcity in arid regions has called for innovative solutions. What have been some of the most successful projects to date?
Many historical solutions to water scarcity (qanats in Iran, for example) delivered an excellent economic and environmental value. Cheap energy has made modern man far more wasteful with water – drilling fossil water from great depths, desalinating shallow seas, and lavishing water everywhere (pools, air-conditioning, golf courses).

The most successful modern communities treat water as a precious resource by limiting their diversions from the environment and charging users the full cost of water. Israel’s experience with water demonstrates both sides: excess use by various subsidized groups and extreme conservation by those lacking access to water or paying dearly for it.

The idea has been advocated of exporting water from abundant to poor areas via pipelines and large canals. Are such plans economically feasible?

This idea is “feasible” in that governments often advocate them, but unfeasible from a cost-benefit perspective when one considers the environmental cost to the exporting (not-really-surplus) region, the fact that water users on the receiving end rarely pay the full cost of building and running canals, and the fact that “more supply” does nothing – in the face of growing demand – to reduce the risk of shortages.

Indeed, water-importing regions are far more vulnerable to losing their water, by action of man or nature. Consider Cambodia and Vietnam's vulnerability to dams built on the Mekong in China and Laos. It’s better to rely on local water.
Can appropriate pricing schemes effectively help avoid water being wasted and reduce pollution?

There’s no downside to this statement as we’d like to think that people would never waste or pollute. Prices tend to remind people that water is costly (the campaign for prices in Ireland says “that running tap is draining your money”).

Pollution can be managed with prices, regulations or insurance incentives – according to circumstances. I’d definitely support taxes on discharge quality, for example, as a means of reducing industrial pollution. China could see big results (and revenues) with such a program, which only requires sensors and (non-corrupt) field inspectors.

Countries such as Singapore are recycling wastewater to reduce imports and become self-sufficient. How do you rate such conservation methods?

These methods are sound in places like Singapore, where the cost (and risk) of relying on outside water flows is high, but wastewater recycling makes more and more sense in places
where discharge quality needs to be high and existing sources are strained. It’s not uncommon, actually, for wastewater discharges to be cleaner than the rivers they join – the same rivers providing “natural” water to drinking water treatment plants.

Singapore plans on providing one third of its water supply from recycled water, processed at facilities including the Jurong wastewater treatment plant. Source: Meiden

Most people are not aware of acute water crises or understand the implications. Are education and a change in lifestyle key to curbing consumption?

Yes and no. Yes, a change in consciousness would have a major impact, but how do you change that? I recommend (higher) prices as an accessory to conservation messages, as they give a nice clear reminder of the value of saving water.

Higher prices are also critical to ensuring that the utility selling water doesn’t get into financial trouble when people “do the right thing” and buy less water. Utilities have high fixed costs, and they need revenue if they are going to spend on protecting service reliability.

David Zetland is assistant professor of economics at Leiden University in The Hague, and a
blogger for *Aguanomics.com*. He is also the writer of the acclaimed books *The End of Abundance* (2011) and *Living With Water Scarcity* (2014).

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