Water Pricing is Not the Roadblock to Water Innovation

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There is a commonly held view among industry observers that "water is undervalued" and "water is underpriced". Gloomy venture capitalists frequently cite the fact that "water is underpriced" as having the effect of hindering innovation and adoption of new technologies in the water sector (… and, incidentally of course, the ability to make good returns on venture capital investment). If water were properly priced, so goes the logic, then innovation would flourish.

It is worth remembering that the *raison d'etre* of the water industry is not to provide a vehicle for water technology companies and venture capital investors to make double-digit returns. It is to provide water services in the most efficient manner possible. When a new technology can do this, it has a commercial advantage with the potential to make double-digit returns. But the technologies need to reflect market realities, not the other way around. There is no onus on the water industry to alter its value and pricing systems to facilitate water technology companies and investors.

Breakthrough innovation does not need to be subsidized by paying more than market rate. In fact, subsidies create a very rocky foundation on which to build a business, as we saw with solar feed-in tariffs. They appeared when the times were good and disappeared when the times were bad.

In my mind, when people speak about the "value of water", there is an underlying assumption that we should assign some nominal monetary value to our water resources (e.g. rivers, lakes, rain, etc.) to reflect the value of the resource. The issue of "water pricing" is slightly different. It relates to how much consumers pay for water services and how this relates to the actual cost of providing those services. I would like to discuss each of these concepts in turn.

Water is undervalued – The idea that naturally occurring water is a resource that should be assigned some monetary value.

I do not believe that water needs to be assigned a value, unless you wish to prolong the life of natural resource or the goal is to internalize external costs. When discussing naturally occurring water, it is important to note that there are two types of water: renewable and non-renewable. Renewable water is the type of water that flows through bodies of water, such as our rivers and lakes, and is replenished each year from sources such as rain and melting snow. On the other hand, non-renewable water or "fossil" groundwater has been built up over hundreds or thousands of years and will not be replenished at the same rate we are extracting it.

In the case of renewable freshwater flowing in a river, where the quantity available exceeds the rate of abstraction, there is no reason to assign a monetary value to a cubic meter of water unless you wish to internalize external costs (e.g. environmental and social impacts of low flow rates). An analogy for this is solar energy that is a renewable resource. Current solar PV technology is not terribly efficient in absolute terms (approx. 15%), but we don't often hear complaints that we are "wasting the sunlight" or that "sunlight is underpriced".

With respect to renewable water, there is a case to be made to adjust water pricing to internalize externalities. For example, if over-abstraction leads to an impact on fisheries, habitats or tourism downstream, should water pricing reflect this? Who pays for this? The Polluter Pays Principle is often applied in environmental policy and economics. If an upstream city takes water out of a river, affecting

cities downstream, there is a case to be made for adjusting the price of abstraction to act as a disincentive to over-abstraction or to reflect the real costs. This is the objective of a carbon tax, which tries to account for the cost of climate change and the petrol pump.

The situation in relation to non-renewable water is somewhat different. Assigning a value above actual costs to a non-renewable resource can help to prolong the life of a natural resource. Renewable water sources, even when transported over distances, can be economical when the renewable water does not have an associated cost; however, non-renewable water does have a cost to supplies. So in the case of fossil groundwater in the Ogallala aquifer in the Great Plains of the United States, where the water dates back to the last ice age, there is a case for assigning a nominal value or price to this water because the costs of pumping it up do not factor in the scarcity and non-renewable nature of the resource.

There is also a tragedy of the commons taking place here. If you don't pump water from the aquifer below your property, it may still be drained because your neighbor is pumping up the water and cashing in, so you might as well too!

In summary, naturally occurring water does not need to have a monetary value unless you wish to internalize external costs or prolong the life of fossil groundwater.

Water is too cheap – The idea that we are not paying the true cost for water.

In the water business, there are frequent complaints that "water is too cheap". That is, the consumer does not pay enough for water. It is worth considering two facts:

1. For the most part, in the developed world we have access to clean safe drinking water and sanitation.
2. The companies that provide the infrastructure, technology and services required to provide this water are not doing so on an altruistic basis, but rather to make profits.

If we have access to clean water and sanitation and the companies providing these services are not doing so on an altruistic basis, why then should we pay more for water than we currently do? To help create a market for innovative new technologies developed by inventors and entrepreneurs? Or to deliver better returns to investors? That in it itself is not a valid reason to pay more for water.

Any technological innovation, by definition, should be more efficient and cost effective than its predecessor or incumbent. Hence, innovation should reduce water costs, not increase them. There are two instances I can see where the argument that "water is too cheap" stacks up. Firstly, when discussing whether an end-user is paying their fair share for water services, and secondly, when you consider the costs over a 50-year time span.

Firstly, the fact that water technology and service providers are paid doesn't mean that each end-user is paying their fair share of the costs of producing that water. While at a national level, someone is paying the private sector companies and highly skilled water utility operators to provide water services, these costs may be cross subsidized from other government funds and not captured directly in water charges. That is an issue of true cost accounting and revenue collection, not a matter of price.

Secondly, in terms of the economic models around water, we do not always factor in future infrastructure replacement costs and put money away for a "rainy day" fund. An analogy would be a building management company who knows that the windows or the roof may need to be replaced over the lifetime of a building. To prepare, they start a fund into which rates are paid to ensure that funds are available when that "rainy day" comes. Much of our water infrastructure, including water reservoirs, networks and energy grids, is over one hundred years old and was essentially "gifted" to us by our great grandfathers at the start of the last century. There is a valid case to be made that the cost of water today does not include infrastructure replacement costs in 2050, and, in that sense, if you draw the box around future costs, water is too cheap.

In summary, I don't believe that low water costs are what hinder innovation in the water sector. While we may not incorporate costs for environmental impact or a "rainy day" fund into the cost of water, this does not mean that water pricing impedes innovation. I think what drives innovation is need. Necessity is the mother of invention and creativity. Innovation is driven by factors such as water scarcity, urbanization, tightening regulatory limits, ageing infrastructure and bankrupt utilities. It is also driven by the need to recover and reuse resources and reduce energy costs. Good innovation addresses these needs competitively, and, more importantly, cost effectively. We don't need to pay more for water in order for innovation to occur. It should deliver its own value.

About the Author

Paul O'Callaghan is the founder and CEO of O_2 Environmental, a leading consultancy providing expertise and analysis on water technology market opportunities. Paul also founded BlueTech® Research, a subsidiary of O_2 Environmental, which provides intelligence services to clients to identify key opportunities and trends in the global water industry. Paul holds a bachelor's in biochemistry and a master's degree in water resource management. He authored and addressed numerous papers on emerging treatment technologies, guest lectured at Harvard Business School, presented on the Discovery Channel, and delivered keynotes at numerous international events, including the Singapore International Water Week TechXchange Workshop.

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