Getting the Facts Straight for Sound Water Policy

By Merin Yu and Angela Logomasini, Ph.D.

According to the environmentalist blog *Treehugger*, the world is suffering from a 'peak water crisis,' which implies that we could eventually run out of water. Using this argument, environmentalists call for water conservation regulations and programs.

Such arguments have already produced a host of mandates, such as regulations on watering lawns as well as mandates for low-flow showerheads and toilets and water-use-efficient appliances, such as washing machines. Many people find these regulations inconvenient and some regulations impede product performance.

Regulations also raise the cost of these consumer products. Similarly, many communities are refusing to allow water-bottling companies to access natural water sources because they fear it will deplete supplies.

Sound and rational

But there are some fundamental problems with the arguments underlying these laws. In the interest of sound water management and rational regulatory policy, it is important to set the facts straight about water conservation, particularly the 'peak water' concept. This phraseology is simply an adaptation of the phrase 'peak oil.'

Peak oil is a phrase that has been used in energy debates since the 1950s, referring to the maximum rate of oil production. Roughly speaking, production hits a peak in a bell-shaped curve and then declines until the resource is exhausted.

Yet water and oil are two different resources with completely different characteristics that make the analogy between them completely inappropriate. The first trait that distinguishes water from oil is whether the resource is renewable or non-renewable.

Peak oil is an issue because it takes millions of years for oil to form and thus, for human purposes, is essentially non-renewable. There is—given current technology—no practical way for humans to reduce consumption of oil to a point where it can naturally replenish itself. Even if oil consumption were cut in half, we could still reach peak oil in the foreseeable future, perhaps a generation or two later than the current prediction.

In contrast, water is indeed renewable as natural forces such as precipitation replenish water sources on a regular basis. There are certain local stocks of water that can be depleted if the water is used at a faster rate than it is replenished, but that is a demand, not supply, issue. Even in such cases, it is possible to decrease water consumption to sustainable levels that allow sources to be replenished for ongoing use.

Quantity differences

The second area in which water and oil differ is in quantity. Peter Gleick of the Pacific Institute makes the important distinction between resources being 'literally' and 'practically' limited. The quantity of water and oil are both literally limited.

Oil is practically limited, whereas water is practically unlimited as worldwide supplies are abundant. In fact, water covers 70 to 75 percent of the planet.

By Gleick's estimates, humans worldwide use approximately one hundredth of one percent of the world's water. This figure includes salt water, but that is not to say commercial scale desalination will never happen.

The water exists; it is just a matter of making it feasible to use. Limited quantity is a key characteristic of peak oil, so if water is not limited, then there isn't much of a case for peak water.

Consumption characteristics

The third and final distinction between water and oil is whether they are consumed. Oil can only be consumed once. On the other hand, water is used for many non-consumptive purposes whereby most of it simply returns to its source: industrial cooling, flushing, washing and recreational usage.

Some uses of water are classified as consumptive, which involves incorporation into a product or evaporation. Such uses include irrigation because water is consumed by plants.

But even in that case, irrigation immediately returns anywhere from 20 to 60 percent of water back into the natural cycle according to the U.S. Geological Survey (USGS).[1] And even the consumed portion eventually does return to the environment further down the line as rain or treated wastewater.

This is not to say that there aren't any existing problems with water, because there certainly are. Over 1.1 billion people worldwide do not have access to clean drinking water, but that is mainly the result of governments failing to provide their citizens with water and preventing more capable private firms from entering the market.

Accordingly, use of such water supplies requires management, which is what market pricing provides. Where water supplies are low, prices would naturally go up to promote conservation. But if supplies are plentiful and prices are low, there is no incentive to save the resource. It can be used and replenished.

Government mismanagement

Problems emerge mostly where government mismanagement prevents the development of private water markets. Water is either a government resource that is not priced properly or is essentially owned by no one.

In the first case, under-pricing can encourage users to over-consume, producing shortages. In many cases, such shortages result when the government subsidizes use for politically organized groups (like farmers) at the expense of everyone else. In the second case, a common water resource that is not owned, protected and managed by anyone becomes overused and polluted.

The solution involves establishing water as an owned resource—protected by its owners from pollution—that is sold in private markets with market pricing. Water bottling operations surely can be part of this process as the industry has a history of

accessing water from natural springs on an ongoing, sustainable basis, with many operating for decades with no end in sight. They not only have the incentive to only use what can be replenished so they can continue operating long-term, they generally use only a very small portion of the water supply.

In fact, a study produced by a University of Maryland researcher notes: "Groundwater supplies are continuously 'recharged' or replenished by precipitation, thus ground water resources are considered 'renewable.'" Based on data published by USGS, the 1995 renewable groundwater supply was determined to be 1,270.4 billion gallons (4,808.98 billion liters) per day or 463,696 billion gallons (14,720.50 billion liters) per year.

Bottled-water production was found to use an infinitesimal percentage of renewable supplies at the national scale and in all but one water resource region (lower Colorado). It was determined that annual bottled-water production accounted for only 0.0012 percent of the nation's total renewable supply.[2]

Water is certainly a critically important resource and if we want to manage it properly, we need to get the facts straight. Otherwise, we end up with unnecessary regulations that mandate conservation where supplies are nearly unlimited and encourage overuse where supply is short—exactly the opposite of what we should expect from rational water policy.

References

1. U.S. Geological Survey, *Irrigation Water Use*, http://ga.water.usgs.gov/edu/wuir.html.

2. Keith N. Eshelman, Ph.D., Associate Professor, University of Maryland, Center for Environmental Studies, May 2005, *Bottled Water Production in The United States: How Much Ground Water is Actually Being Used?* http://www.thefactsaboutwater.org/pdf/gw_withdrawls.pdf.

About the authors

♦ *Angela Logomasini, Ph.D., is Director of Risk and Environmental Policy at the Competitive Enterprise Institute (CEI) and this article is based upon her research and organizational studies. She is also author of "Bottled Water and the Overflowing Nanny State" (2009), which is available at enjoybottledwater.org.*

♦ *Merin K. Yu is a research fellow at the Competitive Enterprise Institute. She is currently studying economics at International Studies and Economics at Dickinson College in Pennsylvania.*