

DEPOLITICIZING Groundwater

By Angela Logomasini, Ph.D.

Groundwater management problems in Jakarta Indonesia, as recently highlighted in the *Financial Times*, demonstrate the perils of poor water management policy. Because of over extraction from the aquifer, city residents must actually raise their houses regularly because the ground sinks as groundwater sources are consumed. Relatively unlimited and unmonitored access to the groundwater means that residents mine the water without limit—despite the consequences.¹

Such problems occur around the world, making water supply the source of contentious political battles. The issue is not simply short supply or that the world is running out of water, as some have suggested.² The problem rests mainly with our water management regimes.

The key problem is relatively unlimited public access; i.e., the failure to establish private ownership. Development of ownership of water resources has been more complicated than other resources, such as land or agricultural products, which are easily developed and traded. Water, on the other hand, is always moving, making it difficult to define boundaries. Even groundwater migrates from one property to the next. One individual's actions to extract from an aquifer can impact supplies elsewhere.

Some argue that these attributes produce market failure: the inability of the private marketplace to properly manage a resource. In addition, they contend that common/government ownership of such a vital resource is fairer.

The key source of such problems, however, stems from common ownership—the failure to establish markets rather than market failure. When resources are owned in common and open for public access via a governmental regime, there is little incentive for anyone to conserve or manage it sustainably. The result is what ecologist Garret Hardin called “the tragedy of the commons.”³ Where common ownership exists, all users consume as much of a resource as possible before others take their share. As a result, the resource is quickly depleted.

This tragedy occurs under a number of management regimes commonly used for groundwater. Some water is managed under the *absolute ownership* doctrine through which landowners above water sources are free to take as much as they desire under what is referred to the *rule of capture*. But every landowner has the incentive to capture as much as they can before their neighbors.

In areas where water users are few and resources plentiful, the amount of a resource captured might not exceed its ability to replenish naturally. As population water demands increase, however, this system can diminish water supplies quickly because the only way to ensure ownership is to remove the water from the source.

Some jurisdictions apply what is called the *reasonable use rule*, under which landowners can take a reasonable amount of

Water Conditioning & Purification

water that does not cause significant problems for others. But as water policy experts Terry Anderson and Donald Leal note, there are problems with “the interpretation of reasonableness has been subjugated to the whims of judges and administrators, which has made the tenure of rights uncertain.”⁴ While it may not seem reasonable, water resources are often over exploited under reasonable rule.

Some water is managed via the *prior appropriation* doctrine. In this case, the first person to have accessed the water obtains a first right to the amount they put to beneficial use. The second person to access secures a second right and so on down the line until there is no more resource to allocate. Unfortunately, in this case, there is again no system to manage the resource sustainably, just incentives to max out each player's allocation.

Many US states apply these rules along with a state permitting system in an attempt to control use. Limitations may reduce problems, but political allocations often serve the politically organized rather than the common good, and there is no market pricing to establish a value for the resource.

In that case, many advocate government controls. Yet such political management yields its own problems. Government by definition serves political interests and lacks the disciplines of the marketplace, such as the possibility going out of business or liability costs from harm done to others. As a result, they often make bad decisions or prove incapable of rational management.

For example, in Jakarta, the government has failed to properly control and monitor use of water resources. It may also tolerate certain unwise uses to buttress political allies in certain industries. Absent private owners with the power to enforce their rights to the water, the resources suffer abuse. Property owners and others who are negatively affected above the source have little recourse from a governmental owner that may hold itself immune to such liability under sovereign immunity laws.

In the US, there are many cases of government managing resources to benefit industries—often agricultural—to the detriment of residential users. For example, research by Indur Goklany shows that while US farmers have developed technologies that make land more productive, requiring less land to produce more food, similar developments have not occurred in regard to their water usage.⁵ In fact, agricultural water usage has continued to increase. He suggests that more clearly defined property rights to land and associated market pricing of land promoted land conservation. On the other hand, agricultural uses of water are subsidized, keeping prices artificially low and producing less incentive to conserve.

Goklany notes that political forces have begun to shift as environmental and urban interests have become more politically active on the issue. While this trend has encouraged some

conservation, it may shift the pendulum too far. In particular, environmental interests often push non-use or local-only use of water resources without regard to benefits associated with market-driven water usage to communities.

Water expert and economist Gary Libecap explains that when many political constituencies attempt to manage a resource like water, the result can become a “tragedy of the anti-commons;” i.e., paralysis—under-usage of a resource.⁶ As a result, the life-enhancing benefits of using that resource are lost to the community and everyone else.

Nonetheless, many activists complain that private water companies, particularly those interested in accessing ground water for bottled water, do not pay an adequate price for water and are basically getting water for free or at prices that are simply “too low.” While the issue is surely more complex,⁸ no one should get a resource for free or at a subsidized level. It is impossible, however, to know whether anyone is paying too little or too much without having a proper mechanism for pricing water. Only property rights and market pricing can determine the value.

Rather than throw the baby out with the bathwater, and opting to prevent potentially valuable uses of a resource, communities should be looking for ways to depoliticize water so that it can be used in a sustainable fashion that benefits everyone—residential uses, agricultural and commercial interests and communities that would gain jobs and tax revenue from bottling companies and others. Case School of Law professor Andrew P. Morriss outlines many of the benefits that market pricing of water generates in his chapter of *The Water Revolution*.⁹

Once allocation is secured as a right, owners have strong incentive to only supply the amount of water that can be accessed sustainably without jeopardizing the long-term viability of the resource. They will generate more income over time if the resource is not overexploited. In addition, where owners are held responsible for the impacts of extraction on others, they have strong incentives to manage the resource responsibly.

Where supplies are low, prices will rise, which will trigger conservation and innovation. For example, when water prices rise, farmers will seek and discover ways to meet their needs using fewer resources—as they have with land—through such options as drip irrigation. Other users become more innovative in terms of developing water sources, employing technologies like desalination, POU devices for cleaning surface water and/or better wastewater treatment. The only question is how to establish markets.

One option is *unitization*, a system of ownership used in the oil and gas industry. The owners of lands above the resources each receive royalties on mining from the source. The amount allocated to each unit holder is based on the proportion of land each owner possesses.

Authors of a *Houston Journal of International Law* article on the topic noted some of the benefits that this system produced for the oil industry. The article also discussed some of the details for setting up unitization agreements for oil and gas, using examples of how the concept is applied around the world. It raised the prospects for similar models to be used for groundwater sources, and should be a good source for policymakers seeking to set up similar systems in the field of water.

Unitization offers an opportunity for everyone to benefit from the most efficient extraction of a resource. This market approach also has the potential for reducing conflict, while driving technology forward.

Todd Jarvis, associate director of the Institute for Water and Watersheds at Oregon State noted, “The unitization concept the oil industry developed is built around people unifying their rights and their goals and working cooperatively to make a resource last

as long as possible and not damaging it. That’s similar to what we could do with groundwater, although it takes foresight and cooperation.”¹⁰

In the past, Jarvis has been critical of privately bottled water from underground sources because of his concerns about overuse of groundwater resources.¹¹ Unlike other critics of bottled water, however, Jarvis offers a constructive solution to the debate. Unitization could help not only address concerns about bottled water, but also promises to resolve larger-scale disputes associated with water usage around the world. It could facilitate a system where many users from farmers to city residents to bottled water companies, could peacefully coexist.

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