

The Rising Tide of Water Markets

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Water is a booming business. Worldwide, annual industry revenues are estimated at \$300 billion, with the United States accounting for more than half that amount. And this number is expected to grow as water becomes more scarce and markets begin to mature. Two of the fastest growing market areas are in water rights and municipal water supply systems.

Developing Water Markets

Water has been traditionally viewed as an inexhaustible resource that should be available to everyone at little or no charge. However, this view is changing with demand outstripping supply wherever it is treated as a “free” good. A recent study by Johns Hopkins University predicts that, under current water management, 35 percent of the world’s population will run short of water in the next 25 years. With the impending water shortages countries are looking for new, innovative ways to manage this valuable resource.

Most experts agree that the opportunities for expanding traditional water sources such as groundwater and reservoir storage is limited due to rising environmental and economic costs. For example, in some parts of the world, the cost of tapping new groundwater supplies has tripled as a result of aquifers being drawn down. The draw down is also causing pollution problems, further driving up the cost of treating water. With limited supplies of fresh water, some users are turning to desalinization to meet the rising demands. Even with recent technological advances, desalinization still comes with a hefty price tag.

With the high cost of development limiting expansion of water supply, the growing demand for water will be kept in check by higher prices, and supplies to meet the demand will have to come from reallocating water from current uses. Neither of these has occurred because prices and allocation have been determined in the political arena. In that setting, powerful interest groups have prevented any meaningful increases in water prices or reallocations.

To bring demand and supply into balance, water markets are necessary. Under a market system, prices are not regulated, but are determined by the free exchange of water rights. In most countries where water is scarce or costly to access, systems of rights for water have emerged either through custom or through laws and regulations. The rights define the amount of water to which the owner is entitled.

With rights well defined, water markets allow owners to make better decisions about the water they use. They can decide for themselves whether to use the water or trade the right. The owner of the right may choose to use the water himself when the market price is low. In fact, if the price is low enough the owner may even decide to enter the market and purchase additional water. When prices are high, however, the owner may find it cost effective to conserve water and sell it.

The western United States is home to some of the world’s best established water markets. Colorado, for example, has one of the most active, with tens of thousands of acre-feet (an acrefoot is enough water to supply a family of four for a year) of water traded each year through private, voluntary transactions. Profits go to those who conserve water and sell it. During the last few years, the market has grown considerably, providing a reliable source of water for farmers as well as thirsty residents of Denver, Fort Collins, and Colorado Springs.

California may be catapulted to the forefront of water markets with a single deal that transfers more than 250,000 acre-feet of water from California’s Imperial Irrigation District, one of the richest agricultural areas in the country, to the city of San Diego. The deal, first proposed by the Bass brothers after they purchased land and water rights within the district, is now being orchestrated by US Filter Corporation, which bought the Bass’ assets in 1997. The deal has been delayed by disagreements over wheeling rates with Metropolitan Water District of Southern California, the state’s largest water provider. Wheeling rates are rates charged by Metropolitan to move water through their canal system. Imperial Irrigation District needs Metropolitan’s canals to deliver the water to San Diego. The deal will require extensive negotiations by all three groups before it is finalized.

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US Filter is not the only company showing interest in California's developing water market. Azurix, a global water company formed by Enron Corporation, purchased property in Madera County, California, with plans to develop groundwater storage in the underlying aquifer. The company intends to use the aquifer to store surplus water during wet years and lease it during times of greater scarcity. Customers would import water and bank it below ground in an area that could hold up to 400,000 acre-feet of water.

Water markets are forming elsewhere in the western United States. Westlands Irrigation District in California has an electronic trading board where farmers buy and sell water. In Utah and Nevada, residential building booms have given rise to active markets as well. In those states, developers are buying water to ensure that new homes have an adequate supply. Oregon has even developed an energetic market for water intended for environmental needs. In that state, an environmental organization is paying farmers to use less water for irrigation and leave more water in the rivers to help protect endangered salmon. Similarly, the city of Reno, Nevada, is buying water from farmers to increase flows and solve some of the water quality problems in the Truckee River. The river serves as the city's primary source of drinking water.

Interstate trades are the newest form of water marketing and are taking shape on the Colorado River where California and Nevada face water shortages and high costs for alternative supplies, while Arizona has cheap surplus water from the Central Arizona Project. A recent agreement between the states allows Arizona to market a portion of its Colorado River allotment to California and Nevada. Under the agreement, California and Nevada may store river water in Arizona's underground aquifers, banking it for the future. When either state needs water, it takes its share of the river plus some of Arizona's unused allotment. In return, Arizona pumps water from the aquifer with California and Nevada paying the pumping and storage cost plus a fixed rate for the water.

Nevada is expected to be the new bank's biggest customer because the state has experienced record growth in Las Vegas and holds a small share in the Colorado River. California, on the other hand, is showing little interest in the bank. For years, the state has benefitted from unused river allocations by upstream states. Currently, any water that is allocated to Arizona and Nevada, but unused by those states, runs downstream to California, which consumes nearly one million acre-feet per year of this unused water. With the bank in place, Arizona and Nevada can start charging California for that water or begin storing it.

On the other side of the country, Azurix offered to help the federal government with the cost of restoring the Florida Everglades. In return, the company would get a share of the water that it could then sell to thirsty Floridians. While the company has not fully explained the plan, it presents a cheaper alternative to a current federal proposal that could end up costing taxpayers nearly \$8 billion.

The market revolution has not been confined to the United States. Markets can be found in Australia, Chile, and Mexico. The introduction of markets in these countries has encouraged conservation and stimulated economic opportunities. For example in Santiago, Chile, the water company, EMOS, found it cheaper to rehabilitate its aging pipe system and thus reduce leaks than to pay the market price for water rights. Some Chilean farmers have even used dry year options contracts as a way to save on buying water rights that are only needed during droughts. Dry year options are contractual arrangements made ahead of time for access to water during droughts. Similarly, Mexican farmers have adopted water saving irrigation systems when confronted with prices. In Mexico, water markets enabled an entrepreneur to start a bottled water company by purchasing water rights to a spring from a farmer. Not only was the farmer better off, but the company created employment opportunities for the local community.

The potential for water markets is also expanding in the Middle East, Asia, and North and South Africa. In Pakistan, informal water markets are providing a way for young farmers to get started. They are able to lease water from established farmers who can afford to develop wells. Due to the tenuous nature of property rights and the difficulty of enforcing contracts in the region, however, transactions are limited to spot sales and short term leases that may only extend one week.

Stumbling Blocks for Water Markets

While water right markets are emerging all over the world, they are still in their infancy and face several challenges. Lack of information is one problem common across all water markets. Buyers and sellers have a hard time finding trading partners and when they do, limited market information exists to direct them on prices and terms of trade.

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The Water Bank Group based in Albuquerque, New Mexico, is one of several new water companies trying to capitalize on this problem. The company recognizes the difficulty market participants face in finding trading partners and is willing to help for a cut of the action. To overcome this problem the company operates a listing service for people looking to sell or buy water rights. It also offers consulting services to guide people through the legal maze of trading water rights.

Another problem challenging the future of water markets is that almost every deal needs the blessing of government agencies. The ostensible purpose of the approval process is to ensure that a resulting transfer does not impair other water right claims. Many buyers and sellers, however, argue that these proceedings are slow, costly and are limiting market growth. A few states realize this and are streamlining the process. For example, Oregon issues decisions on transfers within three months of the initial filing, and in Colorado's market, transactions occur; with a minimum of red tape.

Federal and state agencies have taken steps to stimulate market development. In 1988, the Bureau of Reclamation declared itself a "water market facilitator." The bureau even went so far as to come up with regulations for buying and selling federally supplied water. States have also tried to create markets through water banks, allowing buyers and sellers to exchange water at an administered price.

But these changes have been little help. Market activity in federal water has not increased significantly. In addition, most state regulated water banks are slow in starting. For example, Texas' water bank, which has been in operation since 1993, has seen only a handful of deals.

Market activity outside the bank program, however, is on the rise. Some contend that price controls and a quagmire of regulations have stunted the Texas water market, as well as others created by governmental entities.

Privatizing Public Water Services

Markets are also bringing a profound change in how the water supply industry is financed and operated around the world. Traditionally, the industry has been dominated by the public sector, with most water supply systems funded and operated by state or municipal governments. However, recent pricing reforms that charge customers commercial rates is attracting private capital and transforming many publicly held water systems into economically viable and financially attractive enterprises.

Historically, water has been underpriced. Most countries have treated it as a social rather than an economic commodity, subsidizing prices so that it is affordable for everyone, especially the poor. In fact, these subsidies do little to help the poor. In developing and transitional economies, 30 to 60 percent of the urban population has no formal hook-up to potable water. Often, water vendors with tanker trucks are the only option. A United Nations study found that the poor pay on average 10 to 20 times more per liter (and sometimes as much as 300 times more) for water purchased from water vendors. Consequently, many go without enough water.

The main problem is underpriced water. Prices set by government at levels below the cost of services limits the opportunity for utilities to generate revenues. According to the World Bank, publicly operated water utilities in many developing countries rarely collect revenues on as much as one third of the water they supply. Cost recovery in developed countries is not much better.

Without adequate revenues, public water utilities have no incentive or ability to expand water services to large sectors of the population, especially low-income people without political clout.

Fortunately in the last 10 years there has been considerable change in the way countries view water pricing policies. Government officials are realizing that subsidized water services are an inefficient way of ensuring that the poor have access to basic water needs. Many countries are moving toward prices that cover the full cost of delivering water to the customer.

According to the Organization for Economic Cooperation and Development (OECD), most countries have made progress "toward the goal of more efficient and effective pricing" of water services. However, while water prices have increased in real terms in nearly every country, most still fall short of the full cost of

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supplying water. The OECD found that industrial and agricultural water users received the largest subsidies in the delivery of water. Yet, some of the most significant changes in pricing are occurring in these sectors. For example, water metering of agricultural users in the United Kingdom is standard practice since water services were privatized. Also, other countries such as the United States and Australia have developed tradable water right markets as a way to make farmers consider the opportunity cost of the water and encourage conservation.

Potential for investment in the water supply industry is massive. Cities throughout the world are facing growing populations and aging water systems in desperate need of capital improvements. The World Bank estimates that nearly \$600 billion is needed globally to meet the demand for services in water supply over the next ten years. Much of this investment is expected to come from the private sector.

Global Water Companies

Britain led the way in privatization in 1989, when it sold off publicly held water supply and sewage treatment facilities in England and Wales. The need for massive investment was a primary force driving privatization. The results have been overwhelming. The British government had estimated that at least \$40 million would be required to meet new European Union standards. In fact, private water companies have exceeded those requirements and invested far more than initially estimated.

A once splintered industry is experiencing a great deal of consolidation as large multinational companies buy up smaller, domestic ones. The largest, Vivendi with annual revenues of more than \$16 billion, operates in countries around the world. It supplies water to more than 80 million people, from the 25 million in its home market of France to the 6 million residents of Tianjin, China. It recently expanded into the United States market by purchasing the California based water treatment company US Filter for \$6.2 billion.

Suez Lyonnaise des Eaux, France's other water giant, generates nearly \$7.4 billion in annual revenues. The company is particularly active in Europe with large contracts and investments in Britain and Spain. However, its activities reach around the world as far as Argentina, Malaysia, Hong Kong, and China. It too recently entered the growing United States market by acquiring Nalco and Calgon, two of the world's largest providers of water treatment services.

With headquarters in Houston and London, Azurix, the newest global water company, made its initial splash in the international market in 1998, by purchasing Wessex Water Plc., one of Britain's largest water companies for \$2.2 billion. Despite the company's youth, it is proving to be a serious market player. Last year it went head-to-head in a bidding war with Lyonnaise and Vivendi to secure the contract to manage water supplies for Rio de Janeiro. The company is also looking for deals in the United States. It recently entered negotiations with Houston, Birmingham, Alabama, and Cincinnati, among others, to acquire and operate these cities' water and sewage systems.

Quenching the Poor's Thirst

The wave of privatization sweeping out from the developed world is starting to reach developing countries. Already the private sector has invested more than \$25 billion to upgrade water systems in developing countries where lack of sound management and leaky pipes result in substantial losses of both revenues and water. By involving the private sector, these utilities can achieve greater efficiency, improved access to capital for new investment, and provide better, more reliable service to its customers.

Probably the single most critical factor for the private investor in making a commitment to purchase and operate water supply systems is securing the right to charge a commercial rate to the customers. The private sector is reluctant to make substantial investments in regions that lack reliable political and legal systems for protecting private ownership.

This problem is particularly true for developing countries. Consider that there is almost no private investment in African countries for water projects, while, Argentina, with a stronger legal system, has attracted over \$6 billion from private water companies. Companies are still exploring opportunities in developing countries, but in risky regions they are limiting their investments to management operating contracts.

Despite a move toward privatization, the water supply market is still highly restricted. Most governments have placed tight regulations on such things as ownership, management, and prices. Yet these controls may

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be excluding potential buyers and could very well be causing the massive consolidation that is occurring in the industry. It may be difficult for smaller companies to compete successfully in a market with tight regulatory controls on profits, prices and ownership.

The United Kingdom has acknowledged this problem and is looking for ways to introduce competition to its privatized water supply industry. Rather than imposing additional restrictions, Britain's water regulatory agency is considering further deregulation by allowing water right trading. The proposal is designed to create opportunities for new water supply companies to enter the market by purchasing water that could then be delivered to households.

Conclusion

All across the globe, developing markets for water rights and water supply systems are improving the way water is used. They are providing potential buyers and sellers with the incentive to conserve water and are bringing about equitable and efficient water reallocation. Water trading and the ability to charge customers for services has spurred a substantial amount of private sector investment. While some critics assert that the poor will be hurt by water markets, in reality the markets created through private investment are expanding the poor's access to water. Despite their rapid advancement around the world, water markets are still in their infancy. This is likely to change, however, as more countries face water scarcity problems and look for better ways to allocate the lifeblood of the planet.