



Maxwell

# The Water Industry: A Closer Look at the Numbers

It's been quite a few years since we talked specifics in this column about the changing size and general characteristics of the water market itself. Because this is after all the "Market Outlook" column, perhaps it's time to take another look at the water market—how to define or draw a boundary around the water business, the outlook and growth characteristics of the business, and how it is expanding or changing as time marches forward.

## A DISPARATE BUSINESS

Although we commonly talk about the "water industry," strictly speaking, of course, there is really no such thing. What there really is instead is a broad and diverse group of fundamentally quite different business sectors—all of which have something to do with delivery of clean water. All of these business sectors collectively add up to what we call the water industry, but they can't all be classified under any single heading.

The water industry includes

- a broad array of infrastructure-related companies (from steel and concrete pipe manufacturers to valve makers);
- tank manufacturers;

- specialty chemical producers that supply various aspects of the primary and wastewater treatment process;
- businesses that measure, monitor, and test the water;
- treatment equipment manufacturers that supply a diverse range of products from sand filters to lamps for ultraviolet radiation to membranes for reverse osmosis filtration;
- new technology developers of all conceivable stripes;
- manufacturer's representatives who play the role of middlemen and who sell, install, and maintain all these varied technologies and systems;
- engineers, consultants, and contractors who design, build, and sometimes operate all manner of water supply, treatment, distribution, and processing systems; and
- water utility agencies and companies that actually deliver the water directly to users and the wastewater treatment works that treat used water before returning it to the environment.

This is a broad spectrum of "subindustries" and different types of companies that can obviously be quite different from one another. Yet all of these companies are somehow involved somewhere in the process of

providing clean water, and some way of aggregating them must be found in order to study the market characteristics, growth, and profitability potential of the water industry.

A diffuse and fragmented industry such as the water business is difficult to classify and analyze. In turn—and perhaps more critically from the perspective of business planners and marketing professionals—when it is difficult to accurately define an industry, it is even more difficult to accurately estimate its size, growth characteristics, and other market attributes. This is the real reason there is such a paucity of good, reliable market research data and intelligence for the water business. Although detailed market research studies have been conducted for various specific niches of the broader water industry, there are few thorough and reliable overarching studies of the entire business.

Newcomers to the water industry, potential investors, and students of the business are uniformly surprised and frustrated by the lack of good market information about the water industry, and only gradually are we beginning to develop a decent understanding of just how large this total industry is and how fast it is growing. Nevertheless, there are a few conventional wisdoms and rough market statistics for the overall water-related business. The size of the domestic US water and wastewater industry today is typically estimated at about \$130 billion per year, as summarized in Table 1 (EBI, 2010).

### THE US WATER INDUSTRY

At first glance, the data in Table 1 appear to be fairly simple. (These data were assembled by a supply-side aggregation approach—identifying the key larger companies in each sector, adding up their annual reve-

nues, estimating the magnitude and rough revenue size of the remaining smaller players, and then calculating the total.) A more thorough analysis of these summary figures and the more detailed assumptions and data behind them, however, reveal some interesting insights about the industry.

First, the fees that individuals and businesses pay to utility organizations (whether municipally or investor-owned) for primary drinking water and sewage services comprise about two thirds of the estimated annual total spending on water in the United States (i.e., the last two lines in Table 1). From a business perspective, it is critical to remember and understand that the majority of these revenues are paid to municipal and public agencies—some 55,000 water utilities and about 16,000 wastewater utilities—not private companies. Only about 12–15% of US citizens receive their drinking water from private companies, and the back-end wastewater treatment sector of the business is represented by a far lower percentage. Thus, these dollars for the most part are not really “private industry” revenues—that is, they aren’t available to private companies or investors, at least over the short-term.

One way, therefore, of thinking about the water industry might be to divide it into a “public” sector and a private or “commercial” sector in which the former is roughly twice the size of the latter. Nonetheless, many new observers or potential investors simplistically and incorrectly assume that because the US water market is so large, at about \$130 billion per year, there must be plentiful opportunities to find and invest in large and exciting companies. These assumptions ignore the fact that a large percentage of these revenues flow through publicly owned or managed organizations.

Second, notice that the right column of Table 1 emphasizes the sectoral variability that was mentioned. Projected longer-term growth rates for different sectors of the numerous water-related industries show considerable variation. The fastest-growing sector is projected to be the water utility industry itself—the largely publicly owned water delivery agencies. (This is primarily a manifestation of the rising water rates and prices previously discussed in this column.)

Even though Table 1 breaks out a number of sectors of the water business, each line actually comprises a number of “subniche” areas that are not broken out and that may also have widely differing characteristics. For example, the category of water treatment equipment in Table 1 is estimated to be growing at a rate of 4.6% per year. However, within that broad subcategory, there are different types of treatment technologies that may be growing at much higher rates. A recent report by the Union Bank of Switzerland, for example, estimated the following growth rates for various treatment technology subsectors. Activated carbon treatment was estimated to be growing at 5.5% annually,

**TABLE 1** Global water industry growth by segment

Segment	2010 Revenues \$ millions	2010 Growth Rate %
Water treatment equipment	10,900	4.60
Delivery and infrastructure equipment	12,230	2.00
Water treatment chemicals	4,340	3.00
Contract operations	2,930	2.60
Consulting and engineering	9,160	2.90
Maintenance services	2,080	2.50
Instrumentation and monitoring	1,180	5.00
Analytical services	920	2.00
Water utility revenues	46,910	6.50
Wastewater utility revenues	42,050	3.60
Total	132,700	4.40

Modified from EBI, 2010

ozonation at 8%, reverse osmosis treatment at 10%, ultraviolet radiation disinfection at 13%, microfiltration and ultrafiltration membrane treatment at 15%, and membrane bioreactors at 20%. This same qualification would apply to many of the other sectors in Table 1—underscoring again the variability and complexity of the water industry when it is explored at a deeper level.

Another key observation is that the growth rates of these individual sectors are themselves changing as the industry changes—as water scarcity and quality problems become more severe, as technologies evolve and improve, and as public awareness of and demand for new products grow. For example, even though water treatment chemicals compose a fairly large piece of the commercial market, many observers believe that the average growth rate of this sector will gradually decline as chemical treatment methods fall out of favor. In the same vein, 10 years ago Table 1 would have shown contract operations as one of the fastest-growing segments of the commercial industry; however, with growing public opposition to privatization, forecasts for this sector have dropped off considerably. Nonetheless, as more and more public utilities—particularly the roughly 50,000 smaller ones—face daunting technological and regulatory challenges as well as fiscal squeezes, this trend in growth may reverse again in the future.

Growth rates in traditionally less glamorous sectors, such as the infrastructure equipment business, are likely to increase in the future. Sectors such as in situ pipe rehabilitation, advanced infrastructure diagnostics, and water loss management, are likely to exhibit increasing growth rates as more and more capital is poured into maintaining and upgrading the nation's infrastructure. If you look at the US Environmental Protection Agency's estimates of future capital expenditure requirements, it is clear that a high percentage of future spending will be going into such products as steel and concrete pipe, pumps and valves, and storage tanks. This may not be the "sexy" side of the business—and the companies in this sector are not yet attracting as much attention from Wall Street analysts—but there is little doubt that this is where many of the dollars will be spent.

What about the broader global water industry? If data for the US market are sparse, then information for most of the rest of the world is truly speculative. Although the United States is clearly the world's largest individual country market, it

is also increasingly clear that the water market in many other countries or regions is showing faster growth than in the United States. Simply put, opportunities abound for water companies in the rest of the world. Conventional wisdom seems to suggest that the total world market is about four to five times the size of the US market. Companies such as General Electric have pegged the level of world business at around this level. Global Water Intelligence (GWI, 2010) recently valued the global water market at roughly \$500 billion per year.

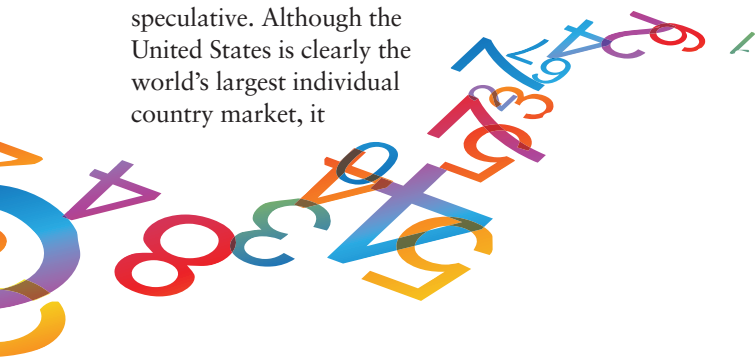
## EMERGENCE OF NEW SECTORS

Even though the water industry is already a wonderfully diverse hodgepodge of different products and services, it seems that new businesses and new opportunities continue to emerge all the time—and some are gradually evolving into what we might consider to be new sectors of the water industry. New companies continue to develop, and established companies continue to refashion new products or services or to redefine themselves as water players.

New treatment technologies continue to be developed, and existing technologies from other industries continue to be applied for the first time to water treatment applications. A review of startup and venture capital-backed technology companies in this industry can be dizzying including such processes as electrocoagulation, sonication, cavitation, demineralization, electrodeionization, biocidal disinfection, electrodialysis reversal, and multistage bubble aeration. Few of these new technologies are expected to revolutionize the industry, but many of them may have a critical role to play in the future. Promoters of "better mousetrap" technologies—and, unfortunately, many opportunists and "snake oil" salesmen—are pervasive across the industry.

Water loss management services and control technologies—products and services geared to locating, measuring, and repairing the vast water losses that occur because of decaying underground infrastructure—seems to be one emerging and coalescing sector of the market. Another sector appearing with increasing frequency is "advanced infrastructure diagnostics." The types of products in this emerging sector include surface leak detection systems, robotic and video pipeline monitoring technologies, high-precision flow monitoring and metering technologies, and pipeline rehabilitation systems. Several companies have focused their strategic growth plans in this area on the assumption that as water becomes more scarce and more valuable, one of our most immediate solutions is simply to not lose so much of the already treated water in the system.

Innovative irrigation systems and technologies for measuring and implementing more efficient agricultural water use are also starting to coalesce into a more specific—and increasingly critical—subsector of the water industry. This also includes products and services such



as advanced soil-moisture monitors, laser-leveling techniques for agricultural fields, and all manner of advanced underground drip and capillary-action irrigation systems. The reasons behind the growing interest in this sector are pretty clear: In many arid parts of the world, agriculture is responsible for a high percentage of total water consumption—80% or more in many arid western states. Better conservation and small percentage efficiency gains here can free up a lot of water that can result in large percentage increases available for municipal and industrial use. So it's hardly surprising that this should be an emerging sector of the business. Yet, even just a few years ago, most observers thought of the irrigation equipment business as part of the agricultural equipment industry—not part of the world water business.

Other companies that were scarcely thought of as water firms a few years ago—such as the Toro Company—are more and more often being classified as water industry players. The agricultural equipment manufacturer John Deere has made several significant acquisitions in this area in the past few years and clearly has designs on becoming a leading player in the irrigation marketplace. Not surprisingly, as a result of their very arid climate, Israeli companies are among the leaders in this emerging sector as well. It's not just more efficient treatment or application systems that are of interest here—better monitoring and measurement capabilities are critical as well. Real-time and wireless types of microlevel soil-moisture monitoring can improve agricultural productivity, save energy, reduce fertilizer use, cut waste, and free up scarce water for other uses.

Another area that is emerging and beginning to distill into a specific investment area or sector of the marketplace is the ownership, trading, and marketing of actual, physical water rights—particularly in the western United States, and other regions where scarce water consumption or usage rights are starting to be allocated by various types of market mechanisms. The ownership and trading of water rights has generally been restricted to the more arid Great Plains and southwestern regions of the country where the “prior appropriation” legal doctrine of water ownership is used. Most of the business transacted in water rights ownership has been between farmers or mining enterprises who originally held the historical water right and municipal agencies, which desperately need that water today.

Now a few private companies and investment groups are getting involved in this area—attempting to bring private capital to bear in the allocation process for scarce water rights and the development of public water supply and management projects. A handful of tiny public companies purport to play in this area, including Pico Holdings, Purecycle, and

Cadiz Development. Although all of these players are taking advantage of investor interest in the sector, which has bid up their stock prices, none of them are what could really be called significant players. There are also some companies that previously tried and failed to get into this aspect of the water business—the former public company Western Water and US Filter's experience with massive water rights investments in Southern California more than a decade ago are good examples. Some of these efforts may have been ahead of their time in trying to capitalize on water as a long-term store of value. This area is fraught with both market and political uncertainties, and is subject to the ongoing controversy around the intersection of public and private approaches to water resource management. Nonetheless, more and more companies are looking at the possible opportunities here. There is no doubt we will see other new areas and sectors emerge within the water industry in the longer-term future.

#### **A GROWING AND COALESCING INDUSTRY**

Many “Johnny-come-lately” and ill-informed analysts have airily predicted exploding growth for the overall water industry in the near future. In certain narrow sectors of the industry, this is certainly accurate. However, in most sectors of the water business, the real situation has been more one of unspectacular but very consistent growth—a sort of dependable “tortoise” situation, rather than a volatile and occasionally speedy growth “hare” situation.

There can be no doubt that fundamental supply and demand considerations around world water resources ensure continuing—and likely somewhat accelerating—growth into the long-term future. Indeed, it is difficult to construct any kind of future scenario in which this industry will be characterized by anything other than steady and sustained growth. However, would-be investors in this business need to understand that only a few subsectors are growing at the 15–20% annual rates that are often bandied about. The growth of the overall “business” will probably continue in the neighborhood of 5–7% a year—or, generally speaking, a little in excess of the gross national product or population growth rates. For strategic planning and market analysis purposes, it is much more meaningful to talk about the growth and profitability characteristics of individual market sectors than to try to peg growth rates or profit potential in the overall industry.

Certain conventional wisdoms have taken hold within the industry, but it is difficult to document growth rates or market size estimates without solid market data. Many studies have tried to calculate this value, but even when all of these individual sectors are precisely defined and carefully totaled up, we still





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don't have a very good idea of just how big this pie really is. The world water market is huge, and in the final analysis, debating or trying to pin down the actual figure is probably not productive. For most firms, rough estimates of specific end-markets in certain geographical areas are much more meaningful—and thus more useful in terms of good business planning. Perhaps more important to recognize is that many of the key geographic markets, such as China, are at an earlier and much more rapid stage of growth than is the United States. With a total market value that is generally agreed to be somewhere in the range of hundreds of billions of dollars per year and given the truly critical underlying human needs and factors that are driving this market, individual firms don't really need to worry whether the annual world market size is \$400 billion or \$500 billion.

As water resource challenges are more broadly recognized and understood and as more companies start to provide goods and services to help solve critical water needs, there is anecdotal but increasing evidence that this balkanized "industry" will begin to consolidate or coalesce into a more distinct and more definable whole. As that happens and as more and more researchers, scholars, and policy-makers turn their attention toward water, better market information should eventually become available.

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