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"When the well is dry, we know the worth of water."
- Benjamin Franklin, 1746

THE BUSINESS OF WATER: A NEW AGE OF INVESTMENT TRENDS AND TECHNOLOGIES

The issues presented by climate change in tandem with the complexities of an expanding global population are introducing significant disruptions to the full spectrum of developed and emerging nations. The business sector is rising to meet a range of associated challenges, and perhaps the most pressing is the steady decline of universal access to potable water – inarguably the most precious resource on the planet.

Historically, water has been considered more like air (infinite and inexhaustible), while the public battle has literally raged over more clearly finite and exhaustible resources such as oil. But across the U.S. and the world, the supply of water is being noticeably outpaced by demand. Sustained droughts are becoming a mainstay for regions across the world, with 10 percent of the world's population – 663 million people – lacking access to safe water.[i]

The water crisis is tied directly to global warming. Expected effects include wide temperature swings and more serious weather patterns. Increased pressure will be felt by suppliers of food and water, yet the ability to naturally generate these resources will diminish without innovative technology entering the mix.

Companies and investors that are positioned to be part of a solution have the opportunity to play profitable, critical leadership roles in a new economy. Efforts around conservation and replenishment will be the main pillars supporting these trends. Water.org estimates that every $1 invested in water and sanitation provides a $4 economic return[ii], and companies looking to support and invest in preservation and reuse technologies will leap to the foreground.

Opportunities in conservation and infrastructure

In most parts of the country, relative luxuries such as internet and cell phone service still cost quite a bit more than water, which has been seen as a necessity that should be distributed at a low price. And the average cost of that perceived right to water is already on the rise, having increased 48 percent since 2010.[iii]

It is critical to temper these pricing strategies by creating more efficient infrastructure and conservation efforts that will help preserve the integrity of the resource. A clear need exists for managing systems that will have an impact on water consumption and conservation:

- *Irrigation*

  Agriculture accounts for 80% of the water that is consumed in the U.S.[iv] Producing crops is just as critical as water to a growing population, making efficient irrigation a paramount concern. National Geographic estimated that the use of micro-irrigation has risen worldwide at least 6.4-fold, from 1.6 million hectares to more than 10.3 million.[v]

  Even more efficient than spray irrigation is drip irrigation, a practice that sees heavy use in arid climates as it delivers water predictably and directly to plant roots, making it a highly effective and conservative method. Compared with conventional irrigation, drip methods can reduce the volume of water applied to fields by up to 70 percent, while increasing crop yields by 20-90 percent. [vi]

- *Metering*

  Household leaks waste more than 1 trillion gallons annually nationwide, the equivalent of the annual household water use of more than 11 million homes.[vii] Conservation requires stemming these losses – and that calls for tracking water use (and loss) at a more granular level. An hourly meter that shows a small but steady flow all night long – while most people are asleep – may be an indication of a faulty valve or punctured pipe somewhere in the system.

  A new generation of companies using internet connections and radio transmitters are making it possible for consumers to spot leaks before they become a major problem. Readings on an hourly or quarter-hourly basis, as opposed to monthly, bimonthly, or even quarterly measurements traditionally employed by utilities.

- *Water Reuse*

  With migratory patterns in the United States and elsewhere continuing to favor arid regions, competition for scarce freshwater supplies among residential, commercial and industrial users is intensifying. As a result, strained surface and groundwater sources are placing communities under increasing pressure to find alternative means of meeting the freshwater needs of citizens and businesses.

  Against this backdrop, direct water reuse – the process of treating municipal wastewater in order to remove contaminants so that water can be safely reused for a variety of purposes – has emerged as a cost effective and environmentally sustainable alternative for communities seeking to address mounting supply and demand imbalances. The water reuse market is expected to have considerable

growth over the next four years. Reports anticipate growth in recycled water production and use across all market sectors, including commercial, residential, and municipal, agricultural, and industrial to the tune of a compounding annual growth rate of 22 percent.[viii]

Though agricultural water reuse has been practiced for decades, the concept of treating wastewater streams for immediate re-entry into the water cycle is gaining traction, unlocking a "hidden source" of potable supply for many areas. In California, over 525,000 acre-feet of wastewater is recycled each year. About half of that (48%) is used for agricultural irrigation, while 20% is used for landscape irrigation and about 12% for groundwater recharge.[ix]

Returning this recycled water to the hydrologic cycle is only one possible option. Some fire departments are now using it to fight fires.[x] Stormwater runoff can also be used to irrigate parks or golf courses, mix concrete, or even flush toilets.

Filtration, reverse osmosis and ultraviolet (UV) purification are all technologies that have applications in this growth, though it is worth noting that UV technology has been used in all recent large scale projects. These initiatives are capturing the inherent advantage of UV treatment, which helps to purify water by replacing the use of chlorine - a known poison that is believed to have negative side effects on human health.

The water crisis is steadily gaining recognition as one of the world's most pressing issues. Ongoing efforts are focused on battling drought conditions in populous regions, while in the U.S. there is a growing emphasis on water education. In fact, an IMAX film, *Grand Canyon Adventure: River at Risk* (released in 2008 and produced in part by *Reynders, McVeigh Capital Management*) gained wide acclaim for its telling of the plight of the Colorado River – once the lifestream of the Southwest but now a drying, limited resource.

As the situation unfolds, education and business will unite to provide the next generation of solutions for distributing, conserving, and replenishing supply. Well-positioned players can capitalize on the need for innovative technology, and investors who understand the issues and scope of the crisis may gain from early entry into the marketplace.

About the Authors

Charlton Reynders, III, Chairman and Chief Executive Officer of Reynders, McVeigh Capital Management, brings more than 25 years of experience in investment management and social venture investing to Reynders, McVeigh. His passion for forward-thinking investment strategy rooted in fundamentals has provided a guidepost for his success to date. In addition to his leadership in the traditional investment management world, Chat has structured and funded public/private partnerships that have brought more than $150 million in revenues to leading cultural institutions around the world – projects that have won numerous awards. In this vein, he has for decades produced socially oriented IMAX films including *Dolphins*, which was produced in conjunction with the National Wildlife Federation and garnered an Academy Award nomination in 2000, and *Coral Reef Adventure*, which received the largest grant in the history of the Informal Science Division of the National Science Foundation.

Chat's focus on climate change also led him to his current role as a Director on the Board of the One World One Ocean Foundation, an organization committed to increasing awareness of the delicate state of today's oceans. Using the power of film, television, new media and grassroots education, OWOO strives to change the way people see and value the ocean — and motivate action to restore it. He previously served as Executive Director of The Whale Conservation Institute, the nation's leading independent cetacean research center, which was founded under a grant from the MacArthur Foundation. Chat graduated from Princeton University with a degree in history. In addition to being a director at the One World One Ocean Foundation, he is a trustee at Brookwood School and is on the advisory board of Project Adventure. He has been featured in numerous publications including the Wall Street Journal, Business Week and Forbes.

Patrick McVeigh, President and Chief Investment Officer of Reynders, McVeigh Capital Management, is widely recognized as a pioneer in bringing traditional investment management together with socially responsible investing. With over 30 years of experience in the industry, Patrick was one of three original employees at Trillium Asset Management. His research there was a key factor in the growth of assets from startup to $700 million. Since 1995, Patrick has been project manager for a series of groundbreaking studies conducted by the Social Investment Forum, tracking the growth of socially responsible investing and its implications in the investment markets. Patrick was honored as the Scholar-Athlete of the Year for the West Coast Athletic Conference in 1978.

Endnotes

[i] Facts about water and sanitation, Water.org
[ii] Facts about the economic importance of safe water, Water.org
[iii] Price of water 2016, Brett Walton, Circle of Blue
[iv] Water and Irrigation Use, USDA
[v] Drip irrigation expanding worldwide, Sandra Postel, National Geographic, June 25, 2012
[vi] Ibid.
[vii] Water Sense, Environmental Protection Agency
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[x] From drain to drink: innovations in wastewater reuse, Rachel Cernansky, Greenbiz.com, December 16, 2013