A Discussion on Innovation in Water Amidst Drought Conditions

AUTHORS: TROY AULT, DIRECTOR OF RESEARCH, CLEANTECH GROUP
SAMANTA JOVANOVIC, ASSOCIATE, CLEANTECH GROUP
Introduction

In September, innovators, corporates, utilities, investors, and other stakeholders in the water sector gathered in Berkeley, California, in the shadow of the state’s severe drought conditions. Indeed, the wide-ranging discussions at Cleantech Group’s third annual Water Innovation Summit all seemed to draw on the sense of urgency in the Golden State. A consensus was reached that this drought must not be wasted; that the case for adoption of innovative solutions toward sustainable water use must be strengthened by it. This was, of course, not the only theme to come out of the two days’ discussions. The gathering yielded several core learnings, of which four will be detailed in this white paper. First, we’ll investigate how the low price of water impacts the pace of innovation adoption. Then, we’ll explain why water innovators are facing a real quandary: whether to focus purely on saleable disruptive technology, or on integration and the provision of services. Next, water innovators have in recent years found big opportunity in the oil & gas industry’s unconventional production boom. We’ll reveal what principals in attendance had to say on the pace of new technology adoption in that industry. Finally, several attendees shared experiences from other clean technology sectors. We’ll explore how their veteran perspectives helped inform how innovators might adjust their approach to the water sector.
The misaligned price of water

Despite the crucial need for water as a commodity input across the diverse industries represented, participants agreed and iterated on the risks associated with the current approach to pricing water. As current and common approaches are solely based on its treatment cost, (i.e., cost to pump, cost to treat, cost to transport) they do not reflect the resource’s social and environmental value as a non-renewable resource. Further conversation among the group highlighted that current organizational water goals are arbitrary in the absence of relevant benchmarks. Mary Curtiss, National Director for Enterprise Efficiency at Siemens elaborated on this point describing “Clients may commonly set arbitrary water efficiency goals in the absence of benchmarks. Until water impacts an organization’s ability to do business, it will not be taken more seriously.”

Some investors highlighted that the ROI associated with water technologies is expected to be negligible due to the low cost of water. Attendees identified clear analogues in the electric power sector where efficiency and conservation technologies have had success, but noted that the low price of water simply presented very different economics where such business models are not as compelling. One prominent investor focused on demand response, stating, “it makes sense and is coming to the water sector,” but that private investors would have to hold back further investment until the business model made sense under eventual upward price pressure.

Product vs. Service

Throughout the two days’ sessions, one recurring theme in discussions involved an interesting divergence of views: Is it best for new start-ups in the water space to pursue a product- or a services-based business model?

As is true for many clean technology sectors, innovative solutions in water often require expert-guided, site-specific integration with existing processes. Unlike plug-and-play technologies in areas like building efficiency, solar, or enterprise software, solutions in water create a pull for technology entrepreneurs to structure their business model around the perpetual provision of services associated with their technology’s implementation in the field.
What we heard from corporates in oil & gas, food & beverage, and other industries over the two-day summit clearly affirmed this pull. Tom Arata, Vice President of Global Technology Platforms and Anchor Marketing at Ecolab noted, “It’s all about integration for large companies like ourselves and our customers—not just any one technology or solution as a stand-alone offering. We look for [start-up companies] prepared to partner in delivering an integrated program because anything we implement needs to be ready for all of our customers, tailored to each of their needs, and it needs to work from day one.”

“...not just any one technology or solution as a stand-alone offering. We look for [start-up companies] prepared to partner in delivering an integrated program because anything we implement needs to be ready for all of our customers, tailored to each of their needs, and it needs to work from day one.”

— Tom Arata, Vice President of Global Technology Platforms and Anchor Marketing at Ecolab

A similar message came out of the oil & gas industry. One start-up’s CEO, whose company targets the treatment of produced water for the oil & gas industry, explained that the variability in produced water content between organics, chemicals, minerals, etc. demands a site-specific approach. This has led him to build his business around the provision of such tailored services and, though he’s frustrated with the slow rate of adoption by large oil & gas majors, his company has seen good early success and has attracted investment from several venture capital firms.

That’s not always the case. Another entrepreneur in the room noted, “You have to be a services company that competes on cost in order to get a serious look from oil & gas majors, but venture capital firms want to invest in technology companies!” This admonition speaks to the common convention that venture firms, by and large, tend to look for pure technology plays with the strongest exit potential in the shortest time frame.

Services companies are commonly understood not to fit this profile due to the extra overhead costs associated with onsite integration staff, as well as a more complex sales cycle for tailored services and a longer runway to high-valuations.

The entrepreneur went on to note that organizations and institutions established to support the most early-stage start-ups, such as incubators/accelerators and government programs like the Small Business Innovation Research (SBIR) grant program in the United States, also tend to demonstrate plug-and-play technology bias.

Clearly, this presents a conundrum: markets for new water technology often demand service models, but developmental support for start-up companies is too often biased toward plug-and-play technologies.
Several venture partners in attendance at the Summit offered counter examples, which highlighted services companies they had successfully backed. One venture partner provided an illustrative example, noting that recurring revenue models with repeatable monthly or annual fees, are attractive to investors. However, the consensus view of most participants seemed to affirm the conundrum.

Oil & Gas

A dedicated oil & gas session at this year’s event shared interesting views from both oil & gas attendees and from water solution providers. While the oil & gas industry inherently requires water in order to sustain its operations (i.e., 0.4 barrels of fresh water for every barrel of bitumen produced from in-situ operations, and 3.1 barrels of fresh water for every barrel of bitumen produced from mining operations1), representatives explained the industry’s natural aversion to risk and favor for longer periods of time before deploying a new technology. Some investors in attendance echoed a similar experience, explaining that the oil & gas sector was believed to adopt innovation faster than originally identified target markets, such as municipal water utilities. Looking back, investors now also understand that the industry requires longer periods than originally anticipated to integrate new technologies at scale.

As unconventional resource extraction becomes increasingly prevalent, water will become a significantly larger part of oil & gas producers’ production formula, and therefore the interest in becoming a “waterless” operator will likely grow. Finding technologies that bridge the gap between the industry’s growing need for water resources and its desire to reduce its impact will remain at the forefront of the industry’s interest. A representative from a vertically integrated oil & gas corporation stressed the importance of making water-related decisions that do not sacrifice other important sustainability metrics, such as energy efficiency or CO2 levels.

The session concluded with a reminder from oil & gas players, who are still in the process of identifying the unique water problems. They highlighted the need for patience and understanding during the (sometimes long) investment decision periods.

1 Canadian Association of Petroleum Producers, Water Use Quick Facts
Cross-Pollination

A new session for the Summit focused on what the water sector can learn from innovation and disruption in other sectors. The discussion seemed particularly relevant when Sungevity and SFunCube co-founder, Danny Kennedy, told participants, “Closing my eyes and substituting ‘energy’ for ‘water’ in many of the conversations to this point has been just like energy conferences 5-6 years ago talking about distributed models in solar.” Knowing the tremendous growth the solar sector has had in recent years – particularly distributed rooftop PV – it was an encouraging parallel to draw.

“Closing my eyes and substituting ‘energy’ for ‘water’ in many of the conversations to this point has been just like energy conferences 5-6 years ago talking about distributed models in solar.”

— Danny Kennedy, Co-founder of Sungevity and SFunCube

It seems that expertise from other sectors is already permeating the water technology space simply through hiring decisions. A CEO of a growth-stage water technology start-up highlighted personnel decisions as one of the lessons he has learned. Pointing out that bringing real change and new technology to the water utility industry would likely require a fresh perspective, he stated, “We almost never hire from the water sector anymore. We’re almost always looking to Silicon Valley to fill positions.”

The bulk of the conversation, however, seemed to focus on pitfalls the water sector could avoid by studying the experiences of start-ups that are disrupting other (often capital intensive) sectors. Many analogues were drawn to the building energy efficiency and solar spaces, and the growing pains they experienced in learning to adopt financing and software-as-a-service models.

A representative of the real estate services industry indicated that experience with clients in building energy efficiency suggested the water sector should anticipate new demands. “As soon as we had smart metering of energy,” they said, “building managers demanded more granular data via sub-metering of individual loads. The water sector should be planning for this now and delivering solutions earlier.”

Others noted that they already saw great synergies with existing building technologies. “We can leverage water data by tapping into a lot of the same existing energy management systems that were cutting edge five years ago,” said one water entrepreneur.
Puon Penn, Executive Vice President of Technology and Venture Banking at Wells Fargo, added to the conversation with two important lessons from efficiency and solar.

First, Penn noted that most innovators in new building efficiency technology had undersold the value of their solutions as merely a percentage of energy savings. This approach completely ignored other benefits, including comfort, productivity, and reduced absenteeism of personnel. Developers of new water technology for buildings should build such benefits into their pitches from the start.

Second, Penn said, “Learn from the power sector that for any capex-heavy, heavily regulated utility business, even a five percent revenue shift from a move to distributed models is going to cause big opposition.” The clear parallel was the so-called “utility death spiral” that observers of the distributed solar power boom had coined to describe the situation of power utilities in dealing with increasing penetration of rooftop PV. As more and more utility customers adopted rooftop solar and demanded utility interconnection, costs for accommodating those new net-metered interconnections and maintaining grid reliability were rising. Meanwhile, utility revenues were declining in line with those customers’ dependence on utility power. The message: engage water utilities early on as partners, rather than as competitors, and pay special attention to how things like water efficiency or on-site wastewater treatment and waste-to-energy systems might impact the utility’s bottom line.

“Most innovators in new building efficiency technology had undersold the value of their solutions as merely a percentage of energy savings. This approach completely ignored other benefits, including comfort, productivity, and reduced absenteeism of personnel. Developers of new water technology for buildings should build such benefits into their pitches from the start.”

“Learn from the power sector that for any capex-heavy, heavily regulated utility business, even a five percent revenue shift from a move to distributed models is going to cause big opposition.”

— Puon Penn, Executive Vice President of Technology and Venture Banking at Wells Fargo
Conclusions

At Cleantech Group, through our online i3 Platform and premium services which help corporates in resource-intensive industries connect with sustainable innovation, we are constantly evaluating trends in investment and adoption of new technology. In the water sector, we see technologies in treatment and resource recycling, and in the expansion of digital sensory measurement and monitoring being developed. These new technologies have the potential to make significant impacts; to bring about truly sustainable use of valuable water resources as global population increases. Yet we also see that, as a stand-alone innovation sector, water consistently draws only a fraction of the venture investment seen in sectors like transportation or building energy efficiency (typically on the order of 3-5 percent of all clean technology investment compared with 10-20 percent for more active sectors).

Learn more about i3:
http://www.cleantech.com/i3/

As we’ve seen, the low and inelastic price of water and the slow pace of adoption by risk-averse buyers and acquirers are key hindrances to investment. There remain big opportunities for water innovators in industries like unconventional oil production, but adoption of new technology has been slower than anticipated due to risk aversion and ineffective or unenforced regulation. At this year’s Summit, we also learned of key adjustments start-ups can make to improve their prospects. Corporate buyers demand business models designed not just around disruptive technology but also the ongoing services required to integrate new technology with existing processes. Meanwhile, many of the experiences of entrepreneurs who have brought disruptive technology to energy and buildings can inform future innovation in water.

Anytime you can gather expert stakeholders from across an industry under one roof, it provides a unique opportunity to draw out important perspectives on the state of innovation in that industry. In 2014, our annual Water Summit has certainly delivered such a temperature-check. We look forward to next year's gathering, and to engaging in new and exciting ways with all those who, like us, aim to foster new technology and business models that aim to bring about sustainable water use.
Founded in 2002, Cleantech Group’s (CTG) mission is to accelerate sustainable innovation. Core to this mission is i3, an online platform that connects corporates with innovation, at scale, by allowing them to find, vet, and connect with start-ups—efficiently building an innovation pipeline. In conjunction with i3, we offer premium Advisory Services for corporates in need of expertise designing and executing strategies for sustainable innovation, and managing the pipeline created in i3. The i3 platform comes to life at our global Events, which convene corporates and start-ups, along with other players shaping the future of sustainable innovation. CTG is headquartered in San Francisco, and has offices in London and New York. For more information, please visit cleantech.com
About our Sponsors

UNITED WATER, founded in 1869, provides water and wastewater services to more than seven million people in the United States. In addition to owning and operating regulated utilities, United Water operates municipal and industrial systems through public-private partnerships and contract agreements which include many of the nation’s largest water and wastewater contracts. For more details, please visit https://www.unitedwater.com/LocalNavigation.aspx

Wells Fargo & Company (NYSE:WFC) is a nationwide, diversified, community-based financial services company with $1.6 trillion in assets. Founded in 1852 and headquartered in San Francisco, Wells Fargo provides banking, insurance, investments, mortgage, and consumer and commercial finance through more than 8,700 locations, 12,500 ATMs, and the internet (wellsfargo.com), and has offices in 36 countries to support customers who conduct business in the global economy. With approximately 265,000 team members, Wells Fargo serves one in three households in the United States. In 2013, the Company invested $275.5 million in grants to 18,500 nonprofits, and team members contributed more than 1.69 million volunteer hours around the country. A leader in reducing its own greenhouse gas emissions and operating sustainably, Wells Fargo has been recognized by the U.S. Environmental Protection Agency’s Center for Corporate Climate Leadership, the Carbon Disclosure Project and the U.S. Green Building Council. Since 2005, Wells Fargo has provided more than $28 billion in environmental finance, supporting sustainable buildings and renewable energy projects nationwide. This includes investments in more than 300 solar projects and 47 wind projects that generate enough clean renewable energy to power hundreds of thousands of American homes each year. For more information, please visit: www.wellsfargo.com/about/csr and the Wells Fargo Environmental Forum.

XPV Capital Corporation, a Toronto-based investment firm focused on making a difference in water. By combining proven water entrepreneurs with seasoned investment professionals, XPV is a true value added financial partner for both investors and companies aiming to capitalize on the sweeping transformation taking place in the global water industry. For more information, please visit http://www.xpvcapital.com/