

Ontario Global Water Leadership

Summit Takeaways: *Highlighting discussion points and showcasing global water innovation leaders*

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Key Report Takeaways

The State of Global Water Innovation Takeaways

- Innovation in the water sector is viewed, unanimously, as essential to meeting water challenges that will emerge in the 21st century. Despite the well documented challenges of the undervalued water pricing and conservative venture capital investments there are a number of under currents shaping water innovation today:
 - Jurisdictions like Ontario, Israel, Singapore and the Netherlands have implemented holistic and coordinated policies for water resource management and are proven leaders in water technology innovation.
 - Multi-national corporations like GE, Veolia, ITT and Suez have launched innovation programs with a particular focus on water.
 - New market entrants like IBM, BASF and Samsung acknowledge the opportunity that global water challenges present and have now entered the mix.
 - Formation of unique water specific funds like that of XPV has emerged and draws the interest of not only the VC, PE, and investment banking community but also high net worth individuals.
 - Early adopter utilities like Global Water and American Water pioneer standards for interfacing with external innovation.

Water Leaders

- The water market involves various stakeholders, both public and private entities, and evolving competition between large, established vendors and emerging, early stage innovators. Market leaders that are truly moving the needle on innovation must navigate this ecosystem. We believe that success is driven by five key elements: R&D capacity, capital availability, access to commercialization vehicles, presence of demand drivers, and entrepreneurial talent.
- Ontario, Israel, Singapore and the Netherlands stand out as four exemplary regions that have been successful in cultivating water innovation communities. Each of them has invested in significantly developing each of the aforementioned ecosystem components.
- Promising water innovators are developing required technologies for sustainable water systems. Leading companies include **Enbala Power Networks, Puralytics, Hydropoint Data Systems, Emefcy** and **Voltea**.

Ontario Summit Takeaways

- Improved quantity and quality of data will be essential for any comprehensive water management strategy. The intersection of information technology and water markets will drive critical transparency.
 - Regulators such as the U.S. EPA should work with industry to develop a standard water device communication protocol.
- Technology demonstration and early adoption platforms are necessary to encourage the commercialization of new water technology market entrants.
 - Utility demonstration networks that cross regional borders should be developed to provide global water technology demonstration platforms.

- Supportive domestic markets are a key component to catalyzing local innovation. Local companies can leverage home markets to master demonstration platforms before launching into export markets.
 - Regions should drive local infrastructure spending to include new innovation by setting targets like zero energy wastewater plants or minimum levels of infrastructure leakages.
- Talent Wanted: the water market must attract more visionary talent. The goal of innovative water businesses requires entrepreneurs.
 - Cluster organizations should work with local networks and organizations to encourage the engagement and development of business and technical talent.
- Getting ahead of the curve: corporations find diverse ways in which to partner with external innovation.
 - Veolia's Veolia Innovation Accelerator program embraces a mindset that acknowledges the value of external innovation to continued business development.

Introduction

Satisfying water demand safely, efficiently, and cost effectively will undoubtedly be one of the great challenges of this century. While it may not yet be as central to public consciousness as energy issues, access to a reliable water supply at a reasonable price is a fast growing area of concern across all water users: residential, commercial, industrial, and agricultural. What will be required of key stakeholders to build more sustainable water systems?

In May, 2011, the Government of Ontario hosted the Ontario Global Water Leadership Summit in Toronto (“Summit”), which brought together regional leaders, innovative water businesses, investors and buy-side stakeholders of the water sector, to participate in an interactive dialogue on the future of water innovation. The agenda featured a number of global leaders who shared their best practices, specific water challenges and suggestions for the future of innovation. The main panel topics are described below:

- **Keynote: The State of Water Innovation** | *Against the backdrop of venture investment trends in water is the steady shift from a linear water use paradigm to one that is more sustainable. The Cleantech Group’s water practice presents its findings of the most promising water upstarts and their current and potential impact on water users across various industries and water suppliers across the globe. This presentation answers fundamental questions about the promise of innovation on our water resources and addresses the opportunities and challenges ahead for new market entrants.*
- **Panel: Stimulating Water Innovation** | *How can commercialization programs be practically designed to stimulate water innovation, create green jobs and protect both the public good and the environment? Leading industry experts will present and discuss their ideas on how they are trying to positively change the dynamics of the water industry.*
- **Panel: Industries that Matter** | *Water truly does permeate through all industries and impacts everything we eat and use. However, some industries, such as oil and gas, food and beverage, mining and agriculture, are more exposed than others when it comes to water usage and requirements that are having a major impact on both their present and future. Sector-specific experts will discuss the key water challenges and opportunities that are now present within these industries.*
- **Panel: Financing Innovation** | *The world will face a multi-trillion dollar gap due to the challenges associated with aging water infrastructure and a rapidly growing freshwater supply demand imbalance. Access to capital will be critical to support the innovation needed to bridge this gap. A panel of expert water investors will share its views on how we might address and fund this challenge.*
- **Panel: Innovation Catalysts** | *Innovation is being generated throughout the supply chain from the large technology system and component providers to the private and public end users. A panel consisting of these innovation catalysts will discuss some of the strategies and programs they are undertaking to accelerate the adoption of innovation in the sector.*
- **Panel: Water Innovation Titans** | *The panel includes some of the most successful entrepreneurs in the water industry who have created billions of dollars in shareholder value. These leaders have*

previously taken small companies and built them into global business whose solutions are sought after around the world.

- **Panel: Navigating a Changing Industry** | *This candid “fireside chat” featuring a panel of leaders from top water companies will highlight the strategies and actions they are utilizing not only to cope with the industry’s changing dynamics but also to position themselves to take advantage of opportunities.*

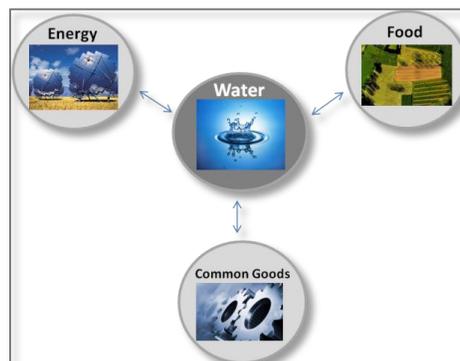
Given the state of global water innovation as outlined by keynote speaker Sheeraz Haji, CEO of the Cleantech Group, unlocking capital and removing adoption barriers for innovative water businesses are among the key challenges facing the development of water innovation today. At the same time, the Summit recognized that there is a growing and committed group of leaders that are in front of water innovation development and the building of sustainable water systems. It is instructive to learn from such leaders and share insights.

The purpose of this report is to draw out key conclusions from the discussions that took place at the Summit and highlight recommendations for the continued development of innovation in the water sector. In doing so, the report will (1) set context for the current state of global water innovation, (2) articulate key Summit discussion themes in the context of innovation ecosystems and (3) highlight exemplary examples of water leaders.

Background: The State of Global Water Innovation

Today, the world’s water systems are not sustainable, flexible or robust enough to meet the growing demand on our water resources. Population growth, increasing urbanization, industrial growth, climate change and deteriorating and insufficient water infrastructure are five key macro trends that are simultaneously impacting the water supply.

Water At The Nexus Of Trade-Off Debates



In addition to availability issues, global water systems face a host of emerging challenges. Among them are new contaminants entering the water supply and an aging centralized water infrastructure that is experiencing huge losses. At the same time, the economics of the water industry continue to be relatively opaque with the cost of delivered water far higher than actual prices paid by consumers.

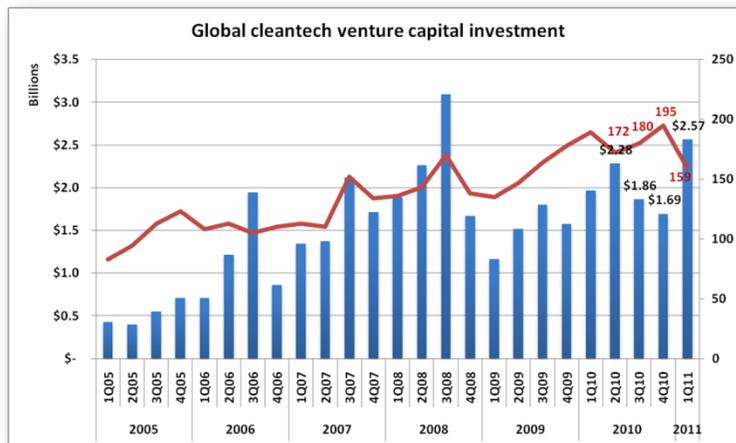
Finally, we see water at the center of various resource trade-off debates (see figure above) with energy, as well as with food and agriculture, resulting in commodity calculus scenarios that will stymie even the best-intentioned environmental economist.

Water Innovation: Following the Footsteps of Other Cleantech Sectors

As a result of the entwined nature of these resource challenges, water innovation is viewed as being critical to the cleantech agenda. And while venture investments have not organized around water innovation as it has in solar and the smart grid, this should come as no surprise to astute observers of these markets. Incentives for early adopter utilities were necessary demand drivers for the solar market while the acknowledgement electric grid efficiencies spurred the government and the private sector in the U.S. to make direct investments in innovative smart grid vendors.

As an investment category, cleantech has attracted significant amounts of venture capital, or ‘innovation financing’ since the Cleantech Group began tracking transactions in 2002. In 2010 alone, cleantech companies raised \$7.9 billion dollars of venture finance, up from the previous year’s investments of \$6.0 billion but still under the 2008 record year of \$8.8 billion.

Cleantech Attracts Significant ‘Innovation Finance’



Not only does cleantech hold the promise of returns on investments, it is also viewed as a tool for resource security and economic development. The Ontario Government, for example, enacted the Ontario Green Energy Act, with the intention of expanding renewable energy production, encouraging energy conservation, developing smart grids and creating green jobs. Similarly, countries like China have made cleantech mission critical, in China’s case with pronouncements from its 12th Five Year Plan. China now leads the world in manufacturing jobs for solar panels, advanced batteries and turbine components. In the U.S., the Department of Energy provided \$3.4 billion in Smart Grid Investment

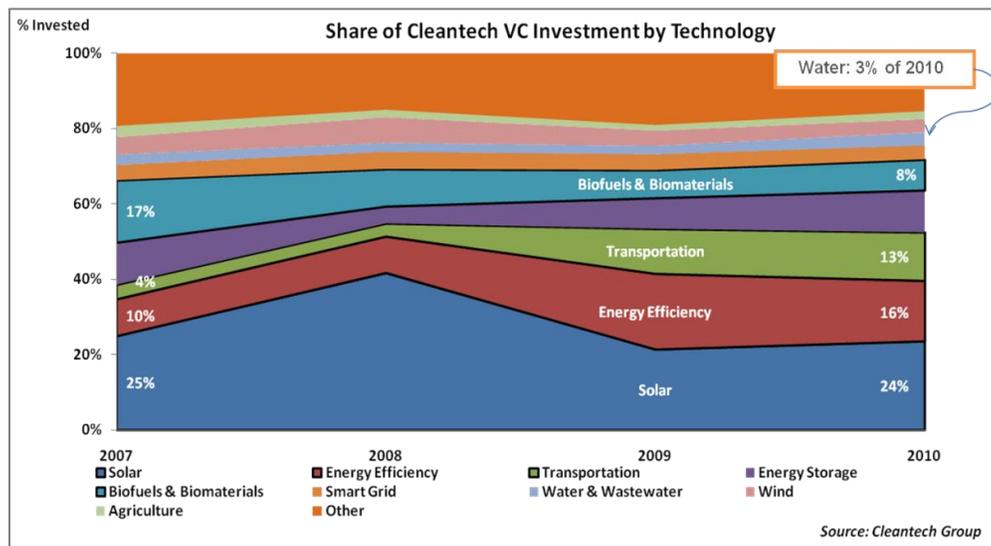
Grants, shining a bright light onto the smart grid sector in particular and though making a broader U.S. statement of interest in cleantech.

As regions become serious about resource security in parallel with economic development, water emerges as central to managing these resource trade-off debates. Therefore, it is with this sense of importance of cleantech and current challenges facing our current water systems that water innovation weighs heavily on the cleantech and broader global community agenda.

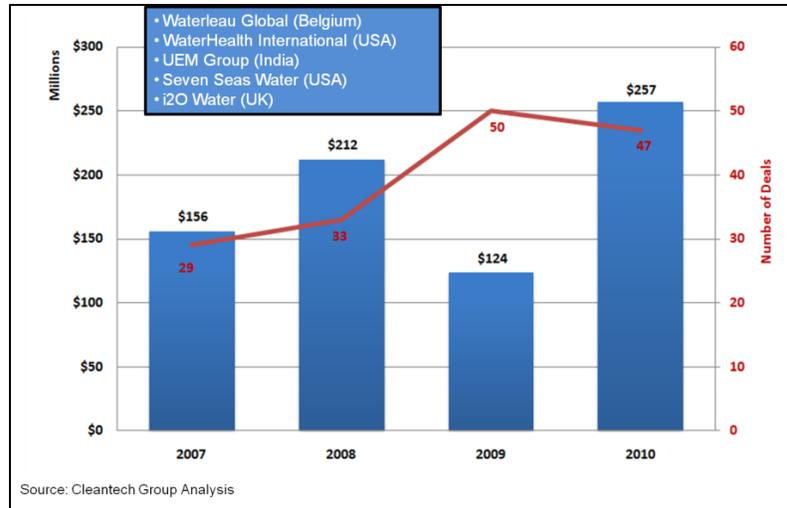
Inequality in Cleantech VC: Today, Water Represents 3% of Total Investments

Despite this acknowledged importance placed on water innovation, venture capital investments in the sector to date have not organized around new water technology upstarts though we have indeed seed the emergence of new funds like Suez’s Blue Orange fund as well as Ecomundi Ventures. As the figure below illustrates, water investments account for a mere 3% of total venture investments. A larger chunk of the pie is claimed by energy related technologies in Solar, Energy Efficiency and Transportation.

Total Water Investments As a % Of Total Global Cleantech Venture Capital



While water’s share is modest, the numbers are conservative, the investment dollars are not insignificant. Sixty-six unique investors supplied \$257 million in venture capital investments across 47 deals in 2010 to water companies from all over the world.



Of these investments and other earlier stage innovation on our radar, we have identified three key innovation themes, which include (1) smart water, (2) distributed treatment/ reuse and (3) recovering value from waste that will prove critical to challenging our conventional water systems.

Smart water innovations involve information technology based solutions concerned with water quality management, distribution network & process control management, and automated metering. Both government and private sector support of an electric smart grid has brought attention to the potential analogy of a water smart grid. Additionally, as governments and businesses attempt to develop comprehensive water management strategies, the lack of quality and quantity data about direct and indirect water use surfaces. Such challenges demand innovative sensing, data collection, storage and analysis solutions.

Distributed treatment and reuse innovations involve alternatives to centralized treatment systems. Since every business has a different relationship with water, industry specific systems that address unique wastewater profiles can enable sustainable business operations that make economic sense. Distributed treatment solutions, for example, in the oil & gas industry not only offer alternatives to costly disposal methods but sustain business operations by treating the wastewater to standards fit for on-site reuse. Other areas where distributed treatment solutions are required are for those rural communities without access to centralized water systems and rely on well water.

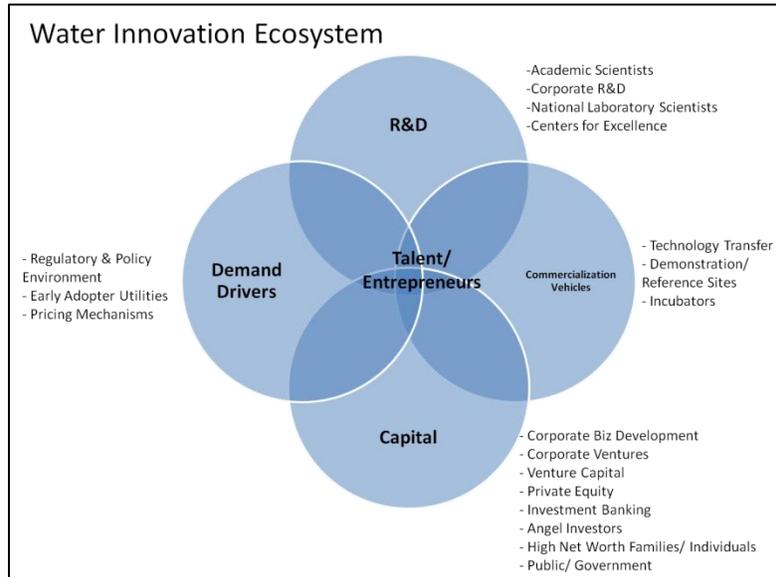
Innovation concerned with recovering value from waste involves solutions that produce renewable energy, fertilizer or liquid fuels from wastewater streams. Such solutions allow customers to turn a disposal cost into a revenue stream. Given the global need for improved resource efficiency, innovation under this umbrella will further allow water users to 'close the loop' on water and add products back into other important sectors like agriculture and energy.

Idealized Ecosystems are Key to Unlocking Capital for Water Innovation

Innovative water business addressing these areas, however, will rely heavily on the strengths of its local ecosystem, a key discussion theme at the Summit. Summit participants unanimously view the

development of ecosystem components as key to both unlocking capital and the wide adoption of innovative water technologies. In this section, we highlight the key components to an innovation ecosystem and draw on discussion themes regarding the development of such ecosystems.

A water innovation ecosystem is comprised of five key components, the combination of which varies depending on the unique features of any one particular area.



- The first component, **Research and Development (R&D)** involves the community of researchers and scientists in academia, national labs and corporate labs that are investigating new technologies with applications in the water sector.
- The second component of the water innovation ecosystem is **Capital**, or the required investment dollars to not only develop but commercialize new technologies and businesses. This component involves a diversity of investment capital ranging from high net worth individuals, angel investors, venture investors, private equity investors, corporate venture investors and investment banking dollars.
- The third component involves **Commercialization Vehicles**. Commercialization vehicles come in the more traditional form of incubators and technology transfer offices but also encompass innovation platforms offered by utilities and other corporations with the infrastructure to provide testing and reference sites for new technologies.
- The fourth component involves **Demand Drivers**. A necessary and perhaps obvious component to any innovation ecosystem, demand drivers broadly encompass the buyers and users of water innovation. Given that water issues are hyper-local, demand drivers can vary widely since, region to region, a regulatory and policy environment is unique. Furthermore, geographic differences affect water availability and quality issues.
- The fifth and final component to a water innovation ecosystem is **entrepreneurial talent**. Often overlooked, innovative water businesses are relatively new to the water sector. Finding the talented individuals to sell and build the vision of an innovative water startup should not be

underestimated and, indeed, many would argue that the water sector suffers from a drought of such entrepreneurial talent.

Unlocking capital and barriers to new technology adoption, therefore, will require the careful orchestration of the ecosystem's various moving parts. Based on Summit discussions there are five takeaways in particular to consider when creating an idealized innovation ecosystem:

Innovative commercialization vehicles needed. Governments should invest in innovative commercialization vehicles to stimulate innovation. Such vehicles play an important role in capturing the commercial potential of R&D spending as well as in connecting the worlds of science, business and government. As is discussed in more detail below, some leading regions and jurisdictions have established such vehicles through a variety of different models. One such example is the Ontario Government's MaRS incubator. It was borne from a public-private partnership aimed at helping innovation from Canada's science, technology and social innovation sectors become global businesses. The founders of the incubator include investors from both the public and private sector. **Echologics**, a developer of acoustic based technologies for the detection and location of leaks in large diameter pipes was a former resident of MaRS and has enjoyed success with the help of MaRS' resources via acquisition by the Mueller Company.

According to summit participant, Wei Sheng Lee, Regional Director Americas, Singapore Economic Development Board (EDB), Singapore views water as mission critical and therefore creates idealized innovation ecosystems accordingly to ensure the country's water security. Specifically, the country invests heavily in R&D and ensures demand driver implementation and receptacles, which take the form of the Public Utility Board (PUB). PUB serves as the main water infrastructure, customer and test bed of new water technologies. Lee says that Singapore's innovation ecosystem is built on a public private partnerships model where intellectual property is explicitly viewed as strictly in the realm of the private sector, while the EDB plays the role of facilitator.

Transparent customer challenges required. The articulation of water challenges from the buy-side community is fundamental to facilitating demand drivers in water. Since water is a critical component to the success of any economic endeavor, a variety of businesses, governments and consumers rely on a steady supply of water. Therefore, understanding the basic water challenges for heavy users can draw innovation and facilitate the rapid development of required technology solutions.

According to Summit participant Booky Oren, CEO of Booky Oren, Global Water Technologies and Chairman of WATEC Israel, a key reason why few innovators have been able to crack the U.S. municipal market is because it is simply not clear what the specific challenge areas are. Recently, Booky developed i2i "innovation to implementation," a network of utilities sharing their specific challenge areas, which aims to define required technologies or products based on customer criteria.

Meanwhile, Summit participants Vikram Rao, Executive Director of Research Triangle Energy Consortium, Hu Fleming, Global Director of Hatch Water, and John Burns, Marketing Director at GE Water & Process Technologies, shared views on some water challenges faced by the Oil & Gas, Mining and Food & Beverage industries respectively. While each does not represent the specific view of the

buyer, their insights illuminated the need for transparency and the clear articulation of challenge areas to inform internal R&D and/or requirements from external innovation.

Quality data is a pre-requisite to any comprehensive water management strategy. As governments and heavy water use industries alike embark on comprehensive water management strategies, the pervasive lack of quality data emerges. Not only does the water strategy of a business rely on the detailed knowledge of its own water use, it also requires detailed knowledge of the local water situation (availability, quality and demands from other users). For a government, this requires a detailed accounting of its water situation as well as other key systems like food and energy. A number of Summit participants articulated this need and lack of available data on water resources.

Capital must seek innovation and vice versa. As the investment community grows ever more interested in the water sector, it will be important that they be proactive in cultivating their dealflow. Since innovation is relatively new to the water sector, a keen eye is required on the part of the investor to seek out a pipeline of innovative water startups versus passively filtering through existing dealflow.

Summit participant Scott McDonald, Partner at Emerald Technology Ventures, pointed out that a very small portion of the venture firm's dealflow represented water companies and suggested a potential shortage of water innovation. Fellow panelist, Lydia Whyatt, Managing Director of Aqua Resources Fund, on the other hand underscored the necessity of proactive dealflow cultivation in water while Amol Deshpande, Partner at Keleiner Perkins Caufield & Byers, echoed Whyatt's sentiment with the assertion that rather than a lack of innovation, he observes a lack of entrepreneurship.

The vision of an innovative business is sold by the talented entrepreneur. A strong undercurrent of Summit discussions was the water sector's drought of talented entrepreneurs. It was acknowledged by a number of summit participants that the sector is in dire need of a facelift; and that the introduction of new businesses to this conservative and little changed market will require the leadership of water sector visionaries. Serial entrepreneurs with track records of success are critical components to innovation that should not be underestimated. We are still looking for those outstanding entrepreneurs that sell the vision of an innovative water business and that build powerful brands, which serve to define the sector and excite the market.

Water Leaders Move the Innovation Needle

In the context of innovation ecosystems, water leaders can take on different forms: a geographic region, an innovative water business or even an investor. Internationally, regional jurisdictions have made significant investments in developing their respective water sectors. A regional innovation hub not only improves domestic water issues and security, it presents an economic development opportunity to export domestic know-how to the global market. When the right pieces are in place, the wide adoption of innovative water technologies becomes more likely. Below, we highlight leading water jurisdictions with highly developed innovation ecosystems as well as some examples of the most promising emerging innovations in water.

Ontario

Despite plenty of water resources, the province of Ontario has leveraged its unique strengths to grasp at the global water market opportunity. In November, 2010, the province passed the Ontario Water Opportunities and Conservation Act, which aims to orchestrate the province's existing ecosystem components with a holistic regulatory and policy environment. It requires municipalities to prepare water sustainability plans, requires standardized information about water use on bills, and establishes water efficiency standards as well as a Water Technology Acceleration Project (WaterTAP) to support R&D and commercialization of technologies in Ontario's water sector.

Ontario already has a long history of private sector successes in the water industry, boasting success stories like ZENON Environmental and Trojan Technologies. With deep research capabilities (a number of water organizations and institutes are located in Ontario), Ontario has built significant expertise in the areas of advanced filtration and disinfection technologies, water reuse, smart water/ smart infrastructure and wastewater treatment. The region is particularly equipped to help commercialize such R&D stage technologies with the Ontario Centers for Excellence, the MaRS Discovery district, and the Bloom Center for Sustainability.

Ontario also has unique access to capital. The province is home to two of the leading venture capital firms, XPV Capital and Emerald Technology Ventures. XPV is one of the few venture capital funds in the world dedicated to water technology companies, while Emerald has its own dedicated water group. The province also supports private sector capital through several funds, which include the Ontario Venture Capital Fund, the Ontario Emerging Technologies Fund, the Investment Accelerator Fund and the Innovation Demonstration Fund.

Ontario's water sector abilities are also evident in the province's leading organizations and research institutes. In the Greater Toronto area alone more than 8,200 university students graduate in fields related to water sciences and more than 150 experts conduct research and development at 25 water-related research institutes. One such example is the United Nations University Institute for Water, Environment and Health, which is hosted by McMaster University. Combined, the province is uniquely positioned to attract innovative start-ups to the area.

Israel

Israel is widely regarded as one of the foremost regional leaders of innovative water technology solutions. With a clear emphasis on water security due to years of drought, innovative water businesses are nurtured by a highly coordinated interministerial committee that allowed Israel to build significant expertise in desalination, water reuse and drip irrigation. In these areas alone, a 2008 mapping of Israel's water ecosystem highlights over 48 water companies including Amiad Filtration Technologies, Tahal Group and Aquapure.

Part of the supportive regulatory and policy environment are the strengths of the country's national water company, Mekorot, which supplies 80% of the country's fresh water. In 2004, Mekorot established the Water Technologies Entrepreneurship Center, or WaTech, which offers a platform for

business ventures in the fields of water quality, desalination, wastewater treatment and smart water/ smart infrastructure. Not only does WaTech aim to promote the development of water technologies in Israel, it serves as a platform to expand the technological capabilities of the company. As of June 2007, WaTech has carried out more than 250 assessments for projects at various stages of development. Mekorot accepted 35 of these projects based on the most favorable assessments by the professional teams.

In 2006, Israel launched its Novel Efficiency Water Technologies (NEWTech) program in an effort to build on the Israeli experience and export the country's domestic expertise. To date, the program has resulted in 26 government-funded water technology incubators, the combination of which have attracted close to \$700 million in private investment. While it predates NEWTech, Israel's main incubator is **Kinrot**, one of the most active venture firms globally. Not only has Kinrot established partnerships with global equipment vendors like **GE**, it boasts over 20 companies in its portfolio. According to a comment made at the Summit, Israel has built a water industry that boasts 2010 water technology exports to the tune of approximately \$2 billion.

Singapore

Singapore has placed a similar emphasis on water security as Israel, due to its reliance on imports of water from neighboring Malaysia. With this clear emphasis on water security, Singapore consolidated all water-related administrations under the ministry of Environment and Water and has successfully implemented extremely efficient demand and supply management practices. These efforts have allowed Singapore to build significant expertise in rainfall storage, desalination and water reuse. Indeed, it is one of the few regions in the world that is directly water 'from toilet to tap'.

While the number of domestic water businesses has not yet reached the heights of Israel, branding efforts and strategic partnerships with international organizations and government bodies through *Singapore International Water Week* have facilitated interest and investment from multi-national companies in Singapore's water industry. Global equipment vendors GE and Siemens as well as global engineering firm CH2M Hill have all established an R&D presence in the country resulting in the local employment of hundreds of researchers the garnering of millions of dollars worth of R&D funding.

Domestic water innovation is also flourishing. Singapore is making a concerted effort to bridge the gap between R&D researcher and the investment and business community with its inaugural TechXchange Workshop and R&D Innovation Booth at the 2011 Singapore International Water Week. This year's presentations feature **Membrane Instruments and Technology's** (MINT) membrane integrity sensor, **FluiGen's** waterborne pathogen monitoring system, Professor Chen Zhong's research on semiconductor oxide nanostructures for pollutant removal in aqueous media, **Singapore Membrane Technology Center's** thin-film composite forward osmosis hollow fiber membrane and Professor Sam Li's piezoelectric sensors for chemical pollutants in water.

The Netherlands

The basis of Dutch expertise with water innovation has to do with its two thousand year history in a delta area close to sea level. The country's permanent battle to control the sea and rivers has made the Dutch experts in water management with a broad range of technological expertise in areas like hydraulic engineering and water purification; **Norit** is one such success story. A highly coordinated interministerial national structure places water management high on the agenda of several ministries.

The Dutch are particularly known for their knowledge infrastructure and strong government support for water-related development cooperation. Not only does it boast myriad public and private-sector research centers, technological and educational institutes, the Netherlands is also home to international NGOs that focus on sustainable development of water resources in developing countries. Ultimately, such relationships provide Dutch technologies channels to market in developing countries.

To make the expertise and knowledge of the Dutch water sector available to the rest of the world, the Dutch public and private sectors have established the Netherlands Water Partnership (NWP). The principal aim of the NWP is to coordinate Dutch activities abroad and to promote Dutch expertise in the water field worldwide. Like Israel and Singapore, the Netherlands hosts an annual Aquatech event that draws international delegates.

Promising Innovation Challenges Conventional Water Systems

Few water innovations have been broadly adopted by the water sector. Indeed, the existing water titans, which include Zenon, Energy Recovery Inc. and Trojan UV, required over a decade to crack the market and establish the market positioning each can claim to date. Emerging innovation will require the support of idealized ecosystems like those we highlight above in order to become broadly adopted solutions.

Given the key macro trends driving the market for innovative water solutions – population growth, increasing urbanization, industrial growth, climate change, and deteriorating and insufficient water infrastructure – we believe that the following examples of early stage innovation leaders will have a large impact on the development of more sustainable water systems.

Emefcy

Emefcy’s introduction of a wastewater treatment solution with the added benefit of creating electricity has generated interest in more than one industry, as the company’s microbial fuel cell (“MFC”) technology is able to treat industrial water from dairy products, pharmaceuticals and food additives. While the company has only recently deployed its first pilot plants in the field, we expect the results that come out later this year to be positive and accordingly, to raise more buzz around MFC technology. In case Emefcy’s marketing efforts aren’t as fruitful as hoped, the company can ride on the fact that its MFC solution yields less sludge than conventional A/S processes, making the technology more attractive to companies looking to get their hands on extra carbon credits.



The Basics

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 Israel

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Emefcy

Develops microbial fuel cells for wastewater and energy generation

Emefcy is seeking \$2,000,000 as of 6/10/2011 according to Cleantech Research.

Overview

Founded in 2007, Emefcy is developing microbial fuel cell based water treatment technologies. The technology can be used to produce electricity and hydrogen from wastewater or treat wastewater with near zero-power needs.

Stats & Status

<small>COMPANY STATUS</small>	<small>TOTAL PAID-IN CAPITAL</small>
Private (Venture-Backed)	\$5,000,000

Investments

Date	Type	Investors	Amount
5/10/2010	Series A	Israel Cleantech Ventures, Plan B Ventures, Pond Venture Partners	\$5,000,000
1/2/2009	Seed	Israel Cleantech Ventures	Undisclosed

Products/Technology

Emefcy's core product is the patent pending Megawatter, a wastewater treatment product which uses microbial fuel cell (MFC) technology. Microbial fuel cells are biologically active fuel cells which produce electricity directly from degradation of organic matter. The technology enables direct electricity generation or hydrogen production from wastewater or wastewater treatment with near zero-power consumption with a reduced sludge yield up to 80% according to Emefcy. Megawatter systems have high ...[Read More](#)

Strategy

Emefcy will initially focus on the industrial wastewater treatment market. The core components of the technology: the treatment modules and the control components will be produced by Emefcy and its subcontractors. Emefcy will reach the market through a global network of reps, sales offices and subsidiaries and will offer the customers a complete treatment solution. The business model will call for a BOT/profit sharing with the customers and the project developers.

Information for Emefcy last updated on 6/10/2011.

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Enbala Power Networks

Enbala provides an attractive service in the face of Ontario’s development of a smart grid. The Company’s system of financially rewarding Smart Grid participants should help to draw customer relationships of all kinds – industrial, commercial, and municipal. It is also likely that the company will receive continued support from the Ontario government, whose recent push to drive innovation in green technologies has resulted in a rise in cleantech patenting. With a technology solution applicable to all electricity users, we look forward to hearing who ENBALA will partner up with for its pilot programs and what the results will be.



ENBALA Power

(fka Sempa Power Systems Ltd) Operator of a network platform enabling multi-stakeholder participation in Load Based Regulation Services for the Smart Grid

The Basics

Founded in 2003
[Website](#)
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Tags

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Management

Ron Ditz (President & CEO)
 Malcolm Metcalfe (Founder & CTO)
 Ken Scott (CFO)
 Todd Sankey (VP of Product Development)
 Omar Alghabra (VP of Market Development)
 Carlos Silva (EVP of Operations)

Overview

Regulation Services on the electricity grid have traditionally meant modulating the output of generation supply to balance a variable load. ENBALA Power operates a network platform that taps large electricity users and modulates the already flexible demand of their municipal or industrial loads (typically a few hundred kW), turning load into a resource for Regulation Services. Participants in ENBALA's network are paid for turning their load into such a resource, presumably through ENBALA's par...[Read More](#)

Stats & Status

COMPANY STATUS	DEVELOPMENT STAGE	INVESTMENT STAGE	TOTAL PAID-IN CAPITAL
Private (Venture-Backed)	Shipping Product	Pilot Follow-on	\$8,000,000

Investments

Date	Type	Investors	Amount
3Q2010	Series B	Chrysalix Energy Venture Capital, edc et, EnerTech Capital, Walsingham Group, XPV Capital Corporation	\$8,000,000
4Q2008	Series A	Walsingham Group, XPV Capital Corporation	Undisclosed

Key Competitors

[Beacon Power](#), [Energate](#), [EnerNOC](#), [Silver Spring Networks](#), [Tendril](#)

Products/Technology

ENBALA installs a local communication panel at the participant's site which interfaces with their existing SCADA control system as another input. ENBALA's software monitors the available flexibility in the participant's demand for electricity. Then, when control signals are sent from the Independent System Operator, the ENBALA interface modulates the electric power consumption of devices and systems onsite without disrupting the participant's normal operations, supplying Regulation Services ba...[Read More](#)

Strategy

Examples of ideal resource partners for the ENBALA Power Network include operators of water and wastewater treatment facilities, high volume water pumps, chillers & cold storage, Energy from Waste (EFW) generators, large battery charging stations, wood chippers / rock crushers, and electric boilers. ENBALA is currently targeting Independent System Operators and Regional Transmission Operators for pilot programs offering Load Based Regulation, and has active pilot programs with PJM, IESO, an...[Read More](#)

Information for ENBALA Power last updated on 6/7/2011.

HydroPoint Data Systems

HydroPoint has had six successful rounds of financing, with the majority of funding coming from repeat investors. The over \$50 million that has been raised to date is a testament to the success of HydroPoint’s smart irrigation systems so far, as well as the confidence that reputable private investors, such as Monitor Network and Shea Ventures, have in the company. While the sheer number of customers that HydroPoint has engaged is impressive, so is the size and visibility of these customers, which include amazon.com, Lockheed Martin and Regency Centers. With solutions for a wide range of end users and recognition from organizations like The Artemis Project and the EPA, we do not expect to see HydroPoint fall off the irrigation radar anytime soon.



HydroPoint Data Systems

Provider of satellite-based smart irrigation technologies

The Basics

Founded in 2002
[Website](#)
 (707) 769-9696

1720 Corporate Circle
 Petaluma, CA
 United States

Tags

[Water & Wastewater](#) PRIMARY
[Water Conservation](#)
[Sensors & Controls](#)

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Management

Paul Ciandrini (President & CEO)
 Chris Spain (Chairman & Chief Strategy Officer)
 Peter Carlson (VP of Product Management & Technology)
 Sharon Thompson (VP of Marketing)

Overview

HydroPoint is the developer of a satellite-based smart irrigation system that continuously analyzes local weather data to optimize and control water use for landscape irrigation. This reduces pollution runoff, lowers water bills, and prevents property damage from overwatering.

Stats & Status

COMPANY STATUS	DEVELOPMENT STAGE	INVESTMENT STAGE	# OF EMPLOYEES	TOTAL PAID-IN CAPITAL
Private (Venture-Backed)	Wide Commercial Availability	Follow-on	100	\$59,500,000

Investments

Date	Type	Investors	Amount
1Q2010	Series E+	Chrysalix Energy Venture Capital, Firelake Capital Management, LLC, Monitor Ventures, RockPort Capital Partners, Shea Ventures (VC arm of J.F. Shea Co)	\$8,600,000
2Q2009	Series E+	Chrysalix Energy Venture Capital, Firelake Capital Management, LLC, Monitor Ventures, RockPort Capital Partners, Shea Ventures (VC arm of J.F. Shea Co)	\$9,000,000
3Q2007	Series D	CRI Sustainable Development Investments	\$7,000,000
1Q2007	Series C	Chrysalix Energy Venture Capital, Firelake Capital Management, LLC, Monitor Networks, RockPort Capital Partners, Shea Ventures (VC arm of J.F. Shea Co), Toro Company	\$19,000,000
4Q2005	Series B	Firelake Capital Management, LLC, Monitor Venture Management LLC, Scenic Ventures, Shea Ventures (VC arm of J.F. Shea Co), Toro Company	\$5,000,000
4Q2004	Series A	Monitor Networks, Raisin Capital, Scenic Ventures, Shea Ventures (VC arm of J.F. Shea Co), Toro Company	\$11,900,000

Relationships

Date	Type	Company	Source
8/1/2007	Project Development	CRI Alternative Investments	source
2/1/2007	Project Development	Chrysalix Energy Venture Capital	source
11/1/2005	Project Development	Firelake Capital Management	source
11/1/2004	Project Development	Monitor Ventures	source
11/1/2004	Project Development	Shea Venture Capital	source
11/1/2004	Project Development	Toro Company	source
	Customer	Lockheed Martin	
	Customer	AMD	
	Customer	AIMCO	
	Customer	Archstone Smith	source
	Customer	Burbank Housing Development Corporation	
	Project Development	ValleyCrest Landscape Maintenance	source
	Customer	City of Hope	source

Key Competitors

[ET Water Systems](#)

Products/Technology

HydroPoint's WeatherTRAK system is comprised of a controller and scheduling software deployed at the customer's site. This system periodically queries data from 14,000+ weather stations across the U.S. including the National Oceanic and Atmospheric Administration (NOAA) network, state and county networks and private weather stations. The system's modeling software then validates local weather down to one square kilometer before scheduling updates are transmitted to the controller. The system a...[Read More](#)

Strategy

HydroPoint's system has evolved through more than 20 public and private research and test studies since 1998. The company targets residential and commercial customers directly.

Information for HydroPoint Data Systems last updated on 6/7/2011.

Puralytics

Puralytics has piqued the attention of the water innovation community with its growing list of industry awards. The company has developed a patent-pending water purification technology that uses a light-activated photocatalyst nano coating. This technology can be used in tandem with LEDs in a modular unit, or by harnessing sunlight in a portable bag. Strategically, we believe that the company's go-to-market strategy is well formulated: Puralytics is targeting applications where water quality is business critical, the purification requirements are well defined and new capability is required due to increasing awareness, regulations, or cost. In order to penetrate specific industrial markets, the company is engaging with local channel partners to sell its two product families: the Shield and the SolarBag. While still in the earlier stages of development the company is off to a good start with a 342% growth in revenue from 2009 to 2010.



The Basics

Founded in 2007
[Website](#)
 (503) 616-2582

15250 NW Greenbrier Parkway
 Beaverton, OR 97006
 United States

Tags

[Water & Wastewater](#) PRIMARY
[Water Treatment](#)
[Purification](#)

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Management

Mark Owen (CEO & Founder)
 Dr. Tom Hawkins (VP Engineering)
 Ed Kolasinski (Chief Operating Officer)
 Dave Moser (VP Business Development)

Puralytics

Developer of a patent-pending photochemical water purification technology

Puralytics is seeking \$5,000,000 as of 6/7/2011 according to Company Self-Submission.

Overview

Founded in 2007, Puralytics addresses the need for water purification in C&I, laboratory, and remote settings. The company's products, enabled by advances in semiconductors, optics, and nanotechnology, use natural or LED light to induce photochemical reactions to purify a given volume of water.

Cleantech Group Insights & Resources

[Puralytics - Company Insight Profile - 04.2011](#)

Stats & Status

<small>COMPANY STATUS</small>	<small>TOTAL PAID-IN CAPITAL</small>
Private (Venture-Backed)	\$830,000

Investments

Date	Type	Investors	Amount
5/1/2009	Seed	Engmann Options , Stiefel Foundation , Undisclosed Investors	\$830,000

Relationships

Date	Type	Company	Source
3/1/2010	Technology Partner	Oregon Nanoscience and Microtechnologies Institute (ONAMI)	source
1/5/2009	Technology Partner	National Science Foundation	source
	Channel Partner	HTI Water (FKA Hydration Technologies, Inc.)	source

Key Competitors

[Axeon](#), [Excel Waters](#), [Ozomax](#), [Raindance](#), [RO Ultratech](#)

Products/Technology

Puralytics' purification technology uses only light energy to activate a photocatalyst nano coating. Water is purified by five simultaneous photochemical reactions, breaking down organic compounds, reducing and removing heavy metals and sterilizing microorganisms. There are no chemical additives and 100% of the water is purified. Puralytics currently markets two product lines; the Shield and the SolarBag, both based upon Puralytics patent-pending technology. Electrically powered, the Shield... [Read More](#)

Strategy

Puralytics has identified target applications that have a defined need for removal of organics, heavy metals, and microorganisms, and have flow rate requirements which fit with initial system capabilities. Laboratory Waste Water and Well Water treatment are the company's initial target markets. The primary strategy will be to develop channel partnership or OEM supply agreements with corporations and organizations that currently serve the company's target applications. Market and geographic di... [Read More](#)

Information for Puralytics last updated on 6/7/2011.

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Voltea

Voltea has garnered a lot of attention within the water market, from innovation awards to industry publication shout outs. The attraction is in no small way related to the company's focus on developing flexible and economic technology that can be integrated into a wide array of applications. Already, Voltea has expanded from water softening systems for laundry machines to cooling towers, desalination of brackish ground water, and eventually, commercial greenhouses. The most recent funding award, from the Netherlands, will call for Voltea to build a full-scale wastewater recycling solution for agricultural use, further expanding the company's reach in the water and wastewater industry. With strong leadership figures like Dean Spatz (formerly of Osmonics Inc.) serving as Chairman of the Board, we expect Voltea's strategy to continue to be developed and refined as it strives to become an established leader in water purification.



Voltea

Developer of a scalable water desalination technology using membrane capacitive deionization.

Voltea is seeking \$7,000,000 as of 5/31/2011 according to Cleantech Group Research.

Overview

Founded in 2006 as a venture project of Unilever and its venture arm, Voltea is the developer of a water desalination process that uses membrane capacitive deionization, or MCDI. Unilever began experimenting with capacitive deionization in a partnership with U.S.-based BioSource in 2004 as a means of water softening to be used in washing machines. Voltea was spun off to develop and exploit BioSource's technology and, since acquiring BioSource in 2008 to consolidate intellectual property rights. [Read More](#)

Stats & Status

COMPANY STATUS	DEVELOPMENT STAGE	INVESTMENT STAGE	# OF EMPLOYEES	TOTAL PAID-IN CAPITAL
Private (Venture-Backed)	Shipping Product/Pilot	First Round	30	\$4,600,000

Investments

Date	Type	Investors	Amount
3Q/2010	Series A	Pentair , Rabo Private Equity , Unilever Ventures	\$4,600,000
6/1/2006	Seed	Unilever Ventures	Undisclosed

Relationships

Date	Type	Company	Source
5/03/2011	Customer	Dutch Ministry of Infrastructure and Environment	source
12/1/2010	Project Development	Ecological Management Foundation	source
12/1/2010	Project Development	Dhaka Ahsania Mission	source
12/1/2010	Project Development	Proportion Foundation	source
12/1/2010	Project Development	Micro Water Facility	source
12/1/2010	Project Development	Akvo	source
1/1/2006	Technology Partner	Unilever	

Key Competitors

[Desalitech](#), [ENPAR Technologies](#), [Ionics](#)

M&A History

Date	Type	Company	Amount
1/1/2008	Acquisition	BioSource	

Products/Technology

When salt dissolves in water it forms positive and negative ions. In capacitive deionization, feed water flows through a space between oppositely positioned porous electrodes. The opposing charges of the two electrodes creates a low-voltage electromagnetic field (1.5 V in Voltea's design) that draws out the ions in the solution. The ions are adsorbed in the pores of the electrodes, resulting in the output of deionized, and in this case desalinated water. Including ion exchange membranes in f. [Read More](#)

Strategy

Voltea will pursue a strategy of selling and installing complete water desalination systems and believes its technology has multiple applications. According to a portfolio profile released by Unilever Ventures, Voltea is initially targeting commercial greenhouses directly for wastewater treatment applications, but hopes to find customers in other applications such as point-of-entry water softening, boiler feed water, and simple drinking water installations.

Company Contacts

Michiel Lensink
CEO
michiel.lensink@voltea.com

Information for Voltea last updated on 6/2/2011.

The Basics

Founded in 2006
Website
31713322239

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Sassenheim 2171 AE
Netherlands

Tags

[Water & Wastewater](#) PRIMARY
[Desalination](#)
[Water Treatment](#)

[UPDATE YOUR COMPANY >>](#)

Management

Michiel Lensink (CEO)
Jonathan Hodas (CFO)
Bert van der Wal (R&D Director)
Hank Reinhoudt (Production Development & Operations Director)
Maarten van Raemdonck (Sales Director)

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Conclusions

The future of water innovation that supports sustainable water systems will require a great deal of work. Private and public sectors simply have to work together. And despite the fact that availability, quality, and security are all complex challenges to water, they are solvable and will require multiple types of stake holders.

As the global state of water innovation shows, unlocking capital and breaking down adoption barriers are two specific challenges that face private and public stakeholders. Unlocking capital and barriers to new technology adoption, therefore, will require the careful orchestration of the ecosystem's various moving parts. Specifically, Summit discussion takeaways underscore the following:

Innovative commercialization vehicles are needed.

As we have observed, private sector venture capital and corporate water R&D is not yet being deployed at a rate commensurate with the water market opportunity and potential future societal risks from water scarcity. These players are hesitating for a variety of reasons that could be justified as rational given their individual lenses. They are concerned about time to market, slow adoption processes, uncertain regulatory environments, and the threat of large competitors. Innovative commercialization vehicles, most likely developed and supported by government entities, are necessary to catalyze innovation and will help alleviate some of the concerns that have kept private sector players on the sidelines. Such vehicles play an important role in capturing the commercial potential of R&D spending as well as in connecting the worlds of science, business and government. Mueller's acquisition of Ontario-based Echologics, for example is one such success story that was born from an innovative commercialization vehicle, MaRS.

Quality and Quantity Data Is A Prerequisite to Effectively Manage Water Resources

In various other areas of resource management, from electricity to transportation, we are seeing the incredibly powerful role that data can have on paving the way for efficiency and optimization. The intersection of information technology with various cleantech sectors is increasingly producing innovation that is helping to address resource constraints. Significant investment in areas such as Smart Grid is demonstrating that transparency into resource supply, demand, and availability throughout a distribution network opens up the ability to monitor, control, and optimize resource flows. Similar information models can have a profound effect on the water market. Improved quantity and quality of data will be critical for any comprehensive water management strategy. Deploying monitors and sensors throughout the water distribution network to assist in leak detection or implementing data-driven energy saving strategies around water pumping are examples of how information technology can be applied in the water sector. All of these information strategies will need to remain grounded in detailed knowledge of both intended water use as well as an assessment of local water supply conditions.

Proof-of-concept Mastery in Domestic Markets Is Critical for the Export Market

A key aspect of an idealized ecosystem is mastering the ability to put a stamp of approval on domestic technologies. Leading regions like Singapore and Israel have national water utilities that serve as demand drivers and reference sites for innovative water technologies. Fast tracking solutions, while continuing to maintain high levels of safety and security, can serve to overcome private sector concerns

around the slow pace of adoption in the sector. Not only do these national utilities function as early technology adopters, they are key partners for startups looking to prove their solutions at scale. These startups can then use these reference accounts to gather necessary test data and a history of success to expand abroad. Consequently, domestic support for these technologies not only improves the quality of a country's water infrastructure, but it helps to build world leading technology companies that can drive economic growth.

Transparency is Required: Utility and Industrial Water Resource Challenges

Innovative technologies must address existing problems. Water utilities and industrial water users need to work harder on communicating the challenges that they face. It may sound simple, but there are entrepreneurs with significant enthusiasm for solving water sector issues, waiting for those problems to be articulated more clearly. Concern over the conservative nature of market adoption has led innovators to be deliberate in their quests to solve problems that are pressing to end customers. These entrepreneurs know that the simplest path to market is to solve a problem where a customer is saying "if this solution existed today, I would buy it." Utilities and industrial users need more forums for ensuring that their specific water challenges are transparent so as to catalyze the development of required solutions.

Getting Ahead of the Curve: Corporations Partner with External Innovation

Partnership models with external innovation will continue to be a key strategy for businesses. Whether the approach takes the form of a corporate venture arm or joint R&D efforts, there is a deliberate effort by corporations to work with innovation outside of their businesses. This is particularly important in the water sector, which has been traditionally dominated by large, global vendors. Equipment vendors such as GE, Siemens, Grundfos and ITT and water service firms such as Veolia and Suez, have a great deal of market influence given their scale. These companies can all serve as important channels for innovation to get to market. They can help break down customer concerns about working with smaller, less established vendors. In addition they can serve as viable acquirers for young companies. This is an important function as it will help attract investment capital that is concerned about potential exit paths.

Capital Must Seek Innovation and Vice Versa.

As the investment community grows ever more interested in the water sector, it will be important that investors be proactive in cultivating their dealflow. Since innovation is relatively new to the water sector, it will require a keen eye on the part of the investor to seek out a pipeline of innovative water startups versus passively filtering through existing dealflow. Establishing steady dealflow momentum is critical. The sector needs more case studies to talk about, more enthusiastic entrepreneurs to promote as role models.

The Vision of an Innovative Water Business is Sold by the Talented Entrepreneur

Wanted: talented entrepreneurs. The water market must attract more visionary talent. The goal of innovative water businesses requires entrepreneurs. Under scoring this key discussion theme was a question posed by a Summit participant: what will it take to convince a GE or Siemens executive to spin out a water business? There is an existing drought of an entrepreneurial culture in water. Many of the solutions proposed in these conclusions will help to create a market that is seen as attractive to entrepreneurs. Continuing to aggressively cultivate a market structure that allows innovative

companies to be funded, that paves the way for products to get to market, and that opens up avenues for these young companies to deliver returns to investors, are all key to attracting a talented entrepreneurial base to the sector.

Appendix

Acknowledgements

The Cleantech Group would like to thank the following partners for their respective expertise and support in producing the Ontario Global Water Leadership Summit:

Ontario Government Ministry of Economic Development & Trade

The Honourable Sandra Pupatello, Minister of Economic Development and Trade
www.ontario.ca/economy

Ontario Government Ministry of Research and Innovation

The Honourable Glen Murray, Minister of Research & Innovation
www.ontario.ca/innovation

XPV Capital Corporation

David Henderson, Managing Director
www.xpvcapital.com

The Artemis Project

Laura Shenkar, Principal
theartemisproject.com

Ontario Centers of Excellence (OCE) Inc.

Dr. Tom Corr, President and CEO
www.oce-ontario.org

Ontario Global Water Leadership Summit Agenda

CHAIRMAN'S WELCOME | Speaker: David Henderson, Managing Director, XPV Capital

STATE OF WATER INNOVATION | Speaker: Sheeraz Haji, President and CEO, The Cleantech Group

Against the backdrop of venture investments trends in water is the steady shift from a linear water use paradigm to one that is more sustainable. The Cleantech Group's water practice presents its findings of the most promising water upstarts and their current and potential impact on water users across various industries and water suppliers across the globe. This presentation answers fundamental questions about the promise of innovation on our water resources and addresses the opportunities and challenges ahead for new market entrants.

WELCOME ADDRESS FROM THE GOVERNMENT OF ONTARIO | the Honorable Glen Murray, Minister of Research and Innovation

PANEL: STIMULATING WATER INNOVATION

How can commercialization programs be practically designed to stimulate water innovation, create green jobs and protect both the public good and the environment? A panel of leading industry experts will present and discuss their ideas on how they are trying to positively change the dynamics of the water industry.

Moderator: Nicholas Parker, Chairman, The Cleantech Group

Panelists:

Sally Gutierrez, Director, National Risk Management Research Laboratory, Environmental Protection Agency

Wei Sheng Lee, Regional Director, Americas, Singapore Economic Development Board, Singapore

Booky Oren, Chairman and CEO of Booky Oren, Global Water Technologies, Chairman of WATEC Israel

Aleid Diepeveen, Director - Innovation Program in Water Technology, The Netherlands Water Partnership

PANEL: INDUSTRIES THAT MATTER

Water truly does permeate through all industries and impacts everything we eat and use. However, some industries such as oil and gas, food and beverage, mining and agriculture are more exposed than others when it comes to water usage and requirements that are having a major impact on both their present and future. Sector-specific experts will discuss the key water challenges and opportunities that are now present within these industries.

Moderator: Rengarajan Ramesh, Managing Director, Wasserstein & Co.

Panelists:

Vikram Rao, Executive Director, Research Triangle Energy Consortium

Hu Fleming, Global Director, Hatch Water

John Burns, Global Food & Beverage Industry Market Director, GE Water & Process Technologies

COMPANY PRESENTATIONS: INNOVATION IN ACTION

Four innovative emerging companies will be selected from the Artemis Project Top 50 water companies to give a short presentation on their company and the water opportunity they are pursuing. After each brief presentation the panel of experts will then challenge the presenter with comments and questions.

- evandtec (www.evandtec.com)

evandtec, a cleantech industry leader, provides proven, reliable solutions for maximizing energy and water efficiencies while minimizing environmental impacts of cooling towers. The company enables commercial, institutional and industrial customers to drive down their energy costs through a clean, comprehensive water conditioning system that delivers consistent, measurable results.

- Aquarius Technologies Inc. (www.aquariustechnologies.com)

Aquarius Technologies Inc. designs and manufactures biological wastewater treatment equipment for municipalities and industries in need of a superior solution for their secondary wastewater treatment challenges and obligations.

- SCFI Group Ltd. (www.scfi.eu)

SCFI Group Limited own the patented AquaCritox technology which is the only technology capable of processing wet waste (sewage sludge, pharma waste, oil & gas waste, metals recovery) without the need to evaporate water, thereby providing full destruction without any hazardous bi products, while simultaneously generating renewable energy.

- Emefcy Ltd. (www.emefcy.com)

Emefcy's Electrogenic Bio-Reactor (EBR) revolutionizes the economics of wastewater treatment. We liberate energy from wastewater while making clean water, instead of burning precious energy to treat wastewater. This is good business and good environmental policy, without subsidies. Conventional wastewater treatment uses 2% of the global power (80,000 MW and 57,000,000 ton per year of CO₂), amounting to \$40B/year. Rather than using energy to treat wastewater, Emefcy harvests green electricity directly from the wastewater and feeds it to the grid. The total potential carbon footprint reduction of Emefcy's EBR's technology is 76 million tons per year of CO₂. Emefcy believes that good return on investment can be achieved while simultaneously making a better world.

PANEL: FINANCING INNOVATION

The world will face a multi-trillion dollar funding gap due to the challenges associated with aging water infrastructure and a rapidly growing freshwater supply demand imbalance. Access to capital will be critical to support the innovation needed to bridge this gap. A panel of expert water investors will share their views on how we might address and fund this challenge.

Moderator: Scott MacDonald, Partner, Emerald Technology Ventures

Panelists:

Amol Deshpande, Partner, Kleiner Perkins Caufield & Byers

Usha Rao-Monari, Global Head of Water, Infrastructure and Natural Resources, International Finance Corporation

Assaf Barnea, CEO, Kinrot Ventures

Lydia Whyatt, Managing Director, Aqua Resources Fund

NETWORKING ROUNDTABLES

There will be two sets of highly interactive 25 minute sessions that will enable the delegates to meet in small groups and discuss important water industry topics and issues. Each roundtable will be moderated by an industry leader.

- Venture and growth capital investing.

Moderators:

Hank Habicht, Managing Partner, Sail Venture Partners

Maritza Liaw, Partner, Kleiner Perkins Caufield and Byers

- Build own operate financing.

Moderator:

Jeff Garwood, Managing Partner, Liberation Capital

- How engineering firms approach, support and adopt new water innovations.

Moderator:

Peter Nicol, Global Director of Business Development, Water Business Group, CH2M HILL

- TSX as a growth platform for water companies

Moderator:

Rob Peterman, Head, Business Development - Clean Technology, Toronto Stock Exchange & TSX Venture Exchange

- Partnering for success.

Moderator:

William Wescott, Vice President - Innovation Americas, Veolia Environment

- Water utilities - a channel for new technology.

Moderator:

Paul Gagliardo, Manager Innovation Development, American Water

- Bluegold - water opportunities in the mining sector.

Moderator:

Hu Fleming, Global Director, Hatch Water

- Oil sands - a water opportunity with an oil problem!

Moderator:

Kevin Slough, CEO, Filterboxx Water and Environment

- Start-up to Scale-up - working with large industrial customers.

Moderator:

Rishi Shukla, Lead, Water Technology, Archer Daniels Midland Company

- Adapting to a changing world - water and agriculture investing.

Moderator:

Jud Hill, Managing Director, NGP Global Adaptation Partners. LLC

- SWAN: the growth of smart water networks.

Moderator:

Amir Peleg, CEO, TaKaDu

- What is more important - a better mouse trap or a path to the customer's door?

Moderator:

Christopher Gasson, Publisher, Global Water Intelligence

- Blueprint to a Billion - 7 Essentials to growing a billion dollar business.

Moderator:

David Thomson, Founder and Chairman, The Blueprint Growth Institute

PANEL: INNOVATION CATALYSTS

Innovation is being generated throughout the supply chain from the large technology system and component providers to the private and public end users. A panel consisting of these innovation catalysts will discuss some of the strategies and programs they are undertaking to accelerate the adoption of innovation in the sector.

Moderator: Vicky Sharpe, President and CEO, Sustainable Development Technology Canada

Panelists:

Laurent Auguste, President and CEO, Veolia Water Americas

Jane Pagel, President and CEO, Ontario Clean Water Agency

Steve Watzeck, Chief Marketing Officer, GE Water & Process Technologies

WELCOME/NETWORKING RECEPTION AT THE ROYAL ONTARIO MUSEUM

Hosted by the Honourable Sandra Pupatello, Minister of Economic Development and Trade

Guests will be invited to experience Water - The Exhibit. Developed by the American Museum of Natural History in New York with enhanced Canadian content by The ROM, this feature exhibit explores the scientific and cultural importance of water on an international scale.

<http://www.rom.on.ca/water/exhibition/>

PANEL: WATER INNOVATION TITANS

The panel includes some of the most successful entrepreneurs in the water industry who have created billions of dollars in shareholder value. These leaders have previously taken small companies and built them into global businesses whose solutions are sought after around the world.

Moderator: John Coburn, Managing Director, XPV Capital

Panelists:

Andrew Benedek, Chief Executive Director, UTS Bioenergy

Andy Seidel, President and CEO, Underground Solutions Inc.

Hank Vander Laan, Founder and Senior Advisor, Trojan Technologies

COMPANY PRESENTATIONS: INNOVATION IN ACTION

- ENBALA Power Networks Ltd. (www.enbala.com)

ENBALA Power Networks pays large electricity users to connect to the Smart Grid and deliver demand-side Grid Balance to their regional electricity systems. ENBALA's network is based on the flexibility of the demand-side assets of industrial and municipal electricity users. Participating companies are paid for their every day electricity usage, which provides Grid Balance to the electricity grid and allows for easy integration of renewable power to the grid while giving our clients a way to play an engaged role in the electricity system. Clients are compensated for helping the electricity operators balance the grid and use innovative solutions to increase the grid's reliability.

- OndaVia, Inc. (www.ondavia.com)

OndaVia is developing a microfluidics-based water-testing instrument that will allow real-time, sophisticated water analysis in the field. This portable device will improve response time from days to minutes, while maintaining water monitoring accuracy by accurately measuring contaminants. The user loads a water sample onto a single-use cartridge containing our patent-pending microfluidics technology,

inserting the cartridge into the handheld instrument for analysis. The instrument then analyzes the sample, providing the user with a list of contaminants and corresponding concentrations. The platform technology is designed to measure a wide range of organic and inorganic compounds and heavy metals at a part-per-billion level.

- Aquaporin A/S (www.aquaporin.dk)

Aquaporin A/S is a Danish cleantech company working on the development of a new, revolutionary Forward Osmosis (FO) water membrane technology capable of purifying water to a unique level while concurrently reducing energy costs. Aquaporin's product is a novel bulk liquid membrane containing aquaporins (proteins) and thereby mimicking nature's tremendous capability for selective water transport. The liquid membrane will be incorporated into hollow fiber contactor modules or other encapsulation modules and this proprietary and superior "Aquaporin Inside" technology will be delivered to component and system providers in the segments of ultra pure water production and desalination of seawater using FO.

- TaKaDu (www.takadu.com)

TaKaDu is the global leader in Water Infrastructure Monitoring, providing a Software-as-a-Service (SaaS) solution for water utilities. TaKaDu's solution detects, classifies, alerts and provides real-time insight on leaks, bursts, DMA breaches and other network inefficiencies. The solution is based on complex algorithms which analyze existing online data from meters within the network (flow, pressure, etc) and external data (weather, holidays, etc). TaKaDu' patented technology is easy to deploy, requiring no network changes, no additional devices and no capital expenditure. The service is in use by leading water utilities worldwide. TaKaDu was recognized as Technology Pioneer 2011 by the World Economic Forum.

PANEL: NAVIGATING A CHANGING INDUSTRY

This candid "fireside chat" featuring a panel of leaders from top water companies will highlight the strategies and actions they are utilizing not only to cope with the industry's changing dynamics but also to position themselves to take advantage of opportunities.

Moderator: Debra Coy, Principal, Svanda & Coy Consulting

Panelists:

David Flitman, Senior Executive Vice President and President, Water and Process Services, Nalco

Bertrand Camus, CEO, United Water / SUEZ ENVIRONNEMENT North America

Bob Wolpert, President, Flow Control and Chief Innovation Officer, ITT Corporation

Jeff Sterba, President and CEO, American Water

NETWORKING LUNCH IN PARTNERSHIP WITH DISCOVERY 2011

The Ontario Global Water Leadership Summit guests will join the over 2,000 participants at the opening of the Ontario Centres of Excellence's Discovery 2011 showcase and forum. Summit delegates will be given VIP seating to take advantage of this unique networking opportunity.

Welcome Address by Premier Dalton McGuinty

Following the welcome address by the Premier, David Thomson, Founder and Chairman of The Blueprint Growth Institute and the award winning author of the book *Blueprint to a Billion: 7 Essentials to Achieve Exponential Growth* will present a new paradigm shift in how we turn innovation into billion dollar companies. His research provides the first quantitative identification of the success patterns of the highest growth companies as they grew from start-up to over a billion dollars in sales. David will share his insights and findings with delegates on how these fast growing companies will impact the water sector, the economy and most importantly what it take for emerging water companies to achieve exponential growth.

DISCOVERY 2011 EXPO OPENS

Summit delegates will have the opportunity to explore the 200,000 square feet of exhibits that will feature Ontario's innovation ecosystem.

DISCOVERY 2011 GLOBAL WATER LEADERSHIP SUMMIT DEBRIEF

The dialogue started at the Summit on water leadership will continue at Discovery 2011. Following the conclusion of the Summit, a panel of water experts, capitalists and entrepreneurs will provide Discovery 2011 participants with an overview of the insights, discussions and conclusions generated during the Summit.

Moderator: David Henderson, Managing Director, XPV Capital Corporation and Honourary Chair, Ontario Global Water Leadership Summit

Panelists:

Laura Shenkar, Principal, The Artemis Project

Mia Javier, Senior Analyst, The Cleantech Group

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