

# The state of water innovation

Annual review of water upstarts and the VCs that backed them

## Executive Brief

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## Executive Summary

While visibility around water risk exposure gains traction across industry verticals and governments alike, the water sector remains a challenging investment environment for venture capitalists.

The price of water does not reflect its scarce nature and ultimately betrays its value. Holistic water policies and regulatory structures are emerging, but slowly. And buyers of water-related goods and services across public and private sectors have very different needs. But it is precisely because of this environment that we are also seeing change.

The winning venture backed water companies in 2009 are increasingly emphasizing solutions that help reduce customers' water and energy use. Meanwhile, early-stage deals in resource management technologies focused on improving water treatment and distribution efficiency increased despite a drop in investment dollars.

The overall surge in early-stage activity is a particularly promising and unique trend in the cleantech industry where later-stage deals rule. Water innovation is on the rise, scarcity issues are gaining visibility and water policy is catching up – and so begins the floodgates of the water sector's opportunity.

### Key Takeaways

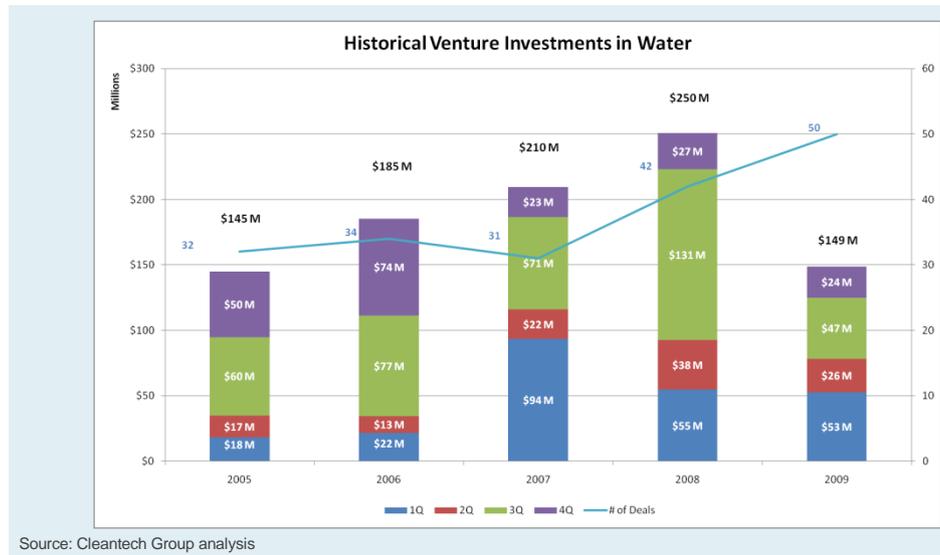
- **Water innovation surges despite drop in investment dollars.** 2009 deal activity reached a record high of 50 deals. 60 percent of the financings went to early-stage deals, hinting at a sea of change for a historically challenging sector in which to invest.
- **Energy-water relationship heats up.** Traditional 'mousetrap' technologies have been replaced by energy efficient treatment technologies that fundamentally aim to improve the productivity of water treatment and distribution.
- **Water reuse is another twist on the energy efficiency play.** Reducing water conveyance has an energy component built into its purchase cost making another attractive energy efficiency twist for venture investors. Businesses must learn to do more with less and reusing wastewater is a practical way alternatively source water.
- **Water analytics are critical across the entire water cycle.** As the saying goes, you cannot manage what you do not know. While large industrial players and utilities are starting to track their water resources, the need for more data and analysis persists.

## Water dollars plunge but early-stage deal activity boils

While total investment numbers dropped 41 percent from the previous year, deal activity in 2009 hit a record high, with early-stage deals taking center stage. Water companies raised \$149 million in venture investments across 50 deals, claiming a 2.6 percent share of the 2009 total of \$5.7 billion.

Increased early-stage funding rounds explain the drop in total dollars invested. 60 percent of the 2009 deal activity went to early-stage financings, dropping the average round size to \$3.4 million down 43 percent from the \$6.1 million average round size the previous year.

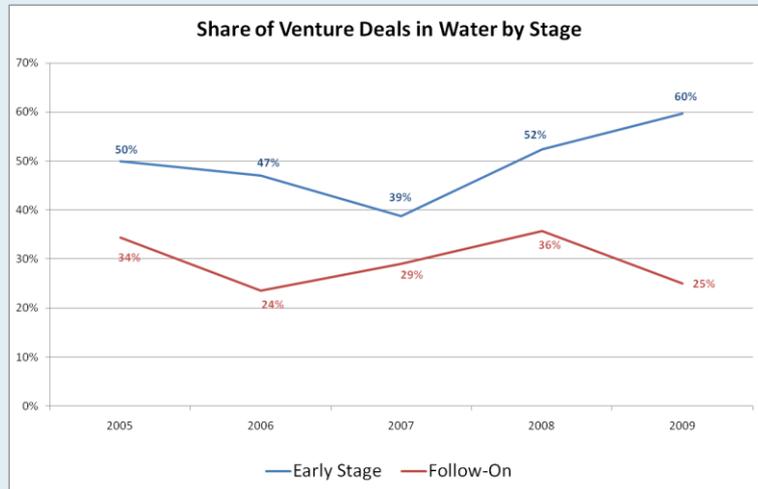
Water companies raised \$149 million in venture investments across 50 deals.



Source: Cleantech Group analysis

With water demand outstripping supply, innovators are jumping at the opportunity to enable industry to do ‘more with less.’ By some estimates, closing the gap between supply and demand by improving water productivity across geographies and sectors could require \$50 billion to \$60 billion annually over the next two decades<sup>1</sup>. The venture community is paying attention.

<sup>1</sup> McKinsey Quarterly – The business opportunity in water conservation



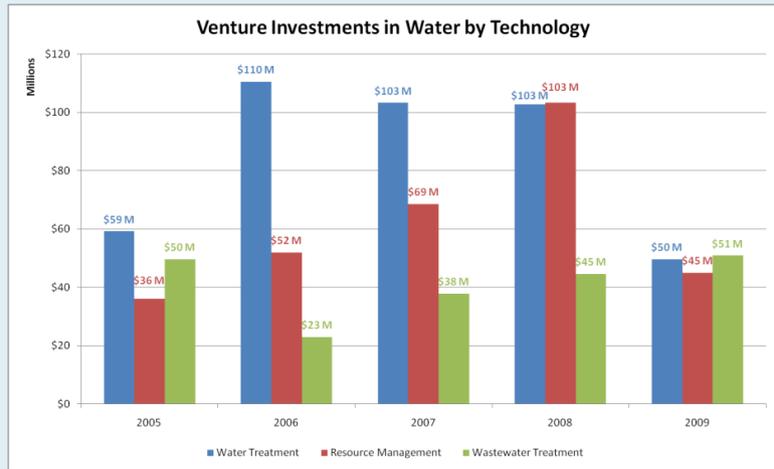
Source: Cleantech Group analysis

## Water and wastewater treatment claim lion's share

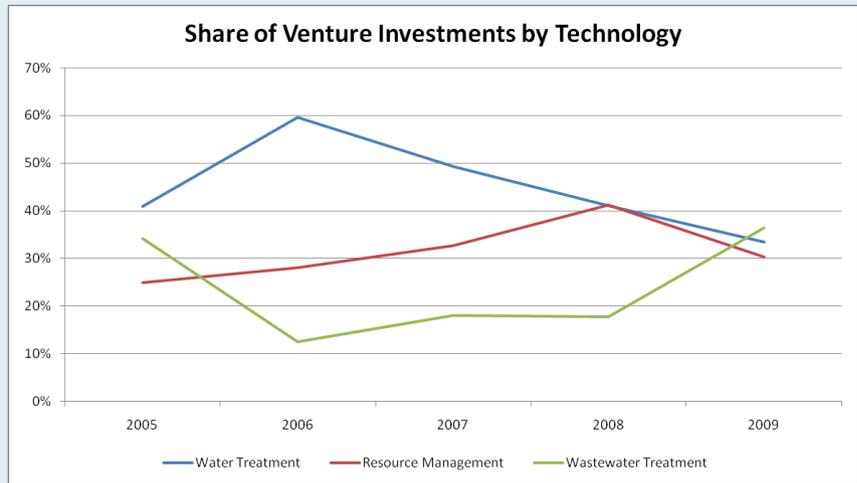
The Cleantech Group looks at water technologies across three main segments:

- **WATER TREATMENT**: Involves technologies associated with the treatment of raw water supplies (or influent) and includes filtration, purification and desalination technologies.
- **WASTEWATER TREATMENT**: Involves the technologies associated with the treatment of used water (or effluent) from consumers, business or industrial sources and includes biological, mechanical, or other technologies.
- **RESOURCE MANAGEMENT**: Involves technologies that enable both the efficient use and data analysis of water and includes monitoring & control, sensors & meters, water saving appliances, and crop yield enhancing technologies.

Wastewater treatment technologies claimed a 36 percent share of total venture investments in water, up from an 18 percent share in 2008. Meanwhile, water treatment technologies claimed 34 percent and resource management technologies claimed 30 percent, arresting a steady rise in investments since 2005.



Source: Cleantech Group analysis



Source: Cleantech Group analysis

The seven largest deals in 2009 represent each water technology category:

- Florida-based, **Seven Seas Water**, provider of seawater desalination and wastewater recycling plants for various Caribbean municipalities raised a \$15 million follow-on round of financing from Element Partners, Texas Pacific Group and Virgin Green Fund.
- California-based, **Hara Environmental and Energy Management**, provider of Software-as-a-Service that allows enterprises to holistically monitor and manage their natural resource consumption and environmental impact raised a \$14 million follow-on round of funding from Kleiner Perkins, Nth Power and JAFCO.
- Germany-based, **Triton Water** received a €10.4 million round of financing from Zouk Ventures and Meidinger

Partners. The company designs, assembles and installs water treatment modules ranging from low-energy desalination to water management and waste water systems serving clients in Europe, the Middle East, the USA and China.

- Israel-based, **BPT**, received a \$12 million Series B round of financing from U.S. Venture Partners, Pitango Venture Capital, Aurum Ventures and Elron Electronic Industries. The company develops chemically-stable membrane-based separation solutions for the landfill, mining, chemical, biopharma and food industries to filter their wastewater for reuse.
- India-based, **Concord Enviro Systems**, raised \$10 million from Sage Capital Funds Management. The company is engaged in the development, manufacturing and installation of wastewater treatment and reuse systems in India, Vietnam, Jordan, the Philippines, Mexico, Australia, New Zealand and Sri Lanka based on its patented membrane-based separation technology.
- Massachusetts-based, **Oasys Water**, developer of a forward osmosis technology originally developed at Yale University, raised a \$10 million Series A from Flagship Ventures, Advanced Technology Ventures and Draper Fisher Jurveston. The funding will support the development of its commercial platform aimed at reducing the energy costs typically associated with desalination.
- California-based, **WaterHealth International**, provider of point of use ultraviolet water purification and disinfection technology raised a Series D round of funding from SAIL Venture Capital, Dow Venture Capital and the Acumen Fund to expand sales.

#### Water Treatment Technologies

Water treatment technologies raised \$50 million across 16 deals. The technologies ranged from point of use ultraviolet disinfection, reverse osmosis, forward osmosis, advanced oxidation and membrane-based purification.

69 percent of water treatment funding rounds were early-stage, while the remaining 31 percent were later-stage deals.

#### 2009 Venture-Backed Water Treatment Companies

Company	Technology	Amount/ Period	Stage	Investors
<b>NEI Treatment Systems (USA)</b>	Purification	Undisclosed/ 3Q09	First Round	Black Diamond Ventures
<b>Inge (Germany)</b>	Membrane-based purification	\$7M/3Q09	Follow-On	BayTech, Emerald Technology Ventures, Entrepreneurs Fund Management, Siemens Venture Capital, Stonefund, Sustainable Performance Group, Taprogge Watertech
<b>Nordaq (France)</b>	Purification	\$690K/3Q09	Seed	Undisclosed
<b>Hydro-Photon (USA)</b>	Disinfection	\$2M/4Q09	Follow-On	Undisclosed
<b>RC-lux (France)</b>	Disinfection/	\$1.2M/4Q09	First Round	Rhone Dauphine

Point-of-Use UV				Developpement, Rhone-Alpes Creation
<b>Waterlife India Private (India)</b>	Purification/Mini plants	Undisclosed/4Q09	Seed	Aaviskaar Venture Management
<b>Advanced Hydro (USA)</b>	Membrane-based purification	\$500K/1Q09	Seed	21Ventures, Quercus Trust
<b>AquaGenesis (USA)</b>	Purification/RO	Undisclosed/2Q09	First Round	Clean Pacific Ventures, Undisclosed
<b>Kolmir Water Technologies</b>	Purification/Ultra sonic	\$500K/2Q09	Seed	Kinrot Ventures
<b>WaterHealth India (India)</b>	Disinfection/Point of Use UV	\$2.7M/2Q09	Follow-On	Dow Chemical New Ventures, SAIL Venture Partners
<b>WaterHealth International (USA)</b>	Disinfection/Point of Use UV	\$10M/1Q09	Follow-On	Acumen Fund, Dow Chemical New Ventures, SAIL Venture Partners
<b>Oasys Water (USA)</b>	Forward Osmosis	\$10M/1Q09	First Round	Flagship Ventures, Draper Fisher Jurveston, Advanced Technology Ventures
<b>Seven Seas Water (USA)</b>	Reverse Osmosis	\$15M/1Q09	Follow-On	Element Partners, Texas Pacific Group, Virgin Green Fund
<b>Rotec (Israel) Pump</b>	Reverse Osmosis	\$100K/3Q09	First Round	Undisclosed
<b>Engineering Inc (USA)</b>	Reverse Osmosis	Undisclosed/1Q09	First Round	Plymouth Venture Partners
<b>BiAqua (Netherlands)</b>	Physical water purification/Bio-based	Undisclosed/3Q09	Seed	ICOS Capital

#### Wastewater Treatment

Wastewater treatment (wwt) technologies raised \$51 million across 15 deals. The technologies ranged from activated sludge, advanced oxidation, alumina catalyst-based treatment, membrane-based wwt, advanced aeration and microbial fuel cell-based technology.

60 percent of wastewater treatment funding rounds were early-stage, while the remaining 40 percent were later-stage deals.

#### 2009 Venture-Backed Wastewater Treatment Companies

Company	Technology	Amount/Period	Stage	Investors
<b>APTWater (USA)</b>	Advanced Oxidation	Undisclosed/3Q09	Follow-On	KPCB, XPV Capital
<b>MAR Systems (USA)</b>	Alumina Catalysts	Undisclosed/4Q09	First Round	Early Stage Partners
<b>Microvi Biotech (USA)</b>	Biotech	\$1M/3Q09	First Round	Undisclosed
<b>BPT (Israel)</b>	Membrane-based WWT/ Nanotech	\$12M/3Q09	Follow-On	Pitango Ventures, US Venture Partners
<b>Triton Water</b>	Onsite WWT	\$13M/1Q09	First Round	Meidlinger Partners,

<b>(Germany)</b>				
<b>Bluewater Bio (UK)</b>	Activated Sludge	\$3M/1Q09	Follow-On	Zouk Ventures Aqua Resources Fund Limited
<b>AquaPure Technologies (Israel)</b>	Advanced Oxidation	\$720K/3Q09	Follow-On	Undisclosed
<b>Concord Enviro Systems (India)</b>	WWT/Reuse	\$10M/4Q09	Seed	Sage Capital Funds Management
<b>Micro Media Filtration (USA)</b>	WWT/Reuse	\$6M/4Q09	Follow-On	SAIL Venture Partners
<b>Guangxi Bossco Environmental (China)</b>	WWT	\$3M/2Q09	First Round	Shenzhen Fortune Venture Capital
<b>Eco-Solids International (UK)</b>	WWT/Beneficial Waste Harvesting	\$1M/2Q09	Follow-On	Undisclosed
<b>AtraNova (UK)</b>	WWT/Electrolysis Process	\$714K/1Q09	Seed	South Yorkshire Investment Fund
<b>Diffusair (Israel)</b>	WWT/Aeration	\$500K/3Q09	Seed	Kinrot Ventures
<b>Algal Scientific Corporation (USA)</b>	WWT/ Energy Recovery to biofuels	Undisclosed/ 3Q09	Seed	Undisclosed
<b>Emefcy (Israel)</b>	WWT/ Energy Recovery to electricity	Undisclosed/ 1Q09	Seed	Israel Cleantech Ventures

#### Resource Management Technologies

Enabling resource management technologies raised \$45 million across 18 deals. The technologies ranged from automated irrigation, crop yield enhancing technologies, physical water quality monitoring, various smart water technologies and water saving appliances.

61 percent of wastewater treatment funding rounds were early-stage, while the remaining 39 percent were later-stage deals.

#### 2009 Venture-Backed Resource Management Technologies

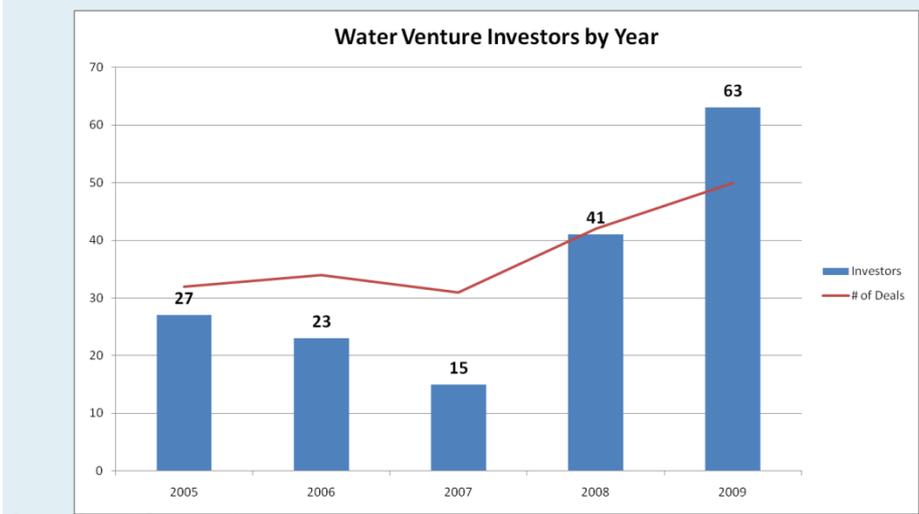
Company	Technology	Amount/ Period	Stage	Investors
<b>Hara Environmental and Energy Management (USA)</b>	Smart Water/Monitor & Control	\$14M/3Q09	Follow-On	JAFCO, KPCB, Nth Power
<b>HydroPoint Data Systems (USA)</b>	Automated Irrigation	\$8M/2Q09	Follow-On	Undisclosed
<b>Kaiima (Israel)</b>	Crop Yield	\$8M/3Q09	Follow-On	Draper Fisher Jurveston, Musea Ventures
<b>i20 Water (UK)</b>	Smart Water/ Monitor & Control	\$6.4M/2Q09	Follow-On	Swarraton Partners, Undisclosed Investors

<b>Checklight (Israel)</b>	Water quality monitoring/ bioluminescence	\$2M/3Q09	Follow-On	Undisclosed
<b>Xeros (UK)</b>	Water saving appliance	\$1.5M/2Q09	Follow-On	Enterprise Ventures, RisingStars Growth Fund, South Yorkshire
<b>Shaw Technologies (UK)</b>	Physical water quality monitoring	\$1.2M/2Q09	Seed	Par Equity, Scottish Enterprise
<b>Sens-Innov (France)</b>	Smart Water/Sensors	\$640K/3Q09	Seed	Credit Agricole Private Equity
<b>Ecochemtech (Israel)</b>	Smart Water/Monitor & Control	\$500K/4Q09	Seed	Kinrot Ventures
<b>Hydrospin (Israel)</b>	Smart Water/Monitor & Control	\$500K/4Q09	Seed	Kinrot Ventures
<b>Aquarius Spectrum (Israel)</b>	Smart Water/Monitor & Control	\$500K/1Q09	Seed	Kinrot Ventures
<b>TA Count (Israel)</b>	Water quality monitoring/micro biology	\$500K/2Q09	Seed	Kinrot Ventures
<b>Checklight (Israel)</b>	Water quality monitoring/ bioluminescence	\$500K/2Q09	First Round	Whitewater Technology
<b>Sorbisense (Denmark)</b>	Smart Water/Sensors	\$461K/2Q09	Follow-On	Agro Business Innovation
<b>EnPrint (UK)</b>	Physical water quality monitoring	\$248K/4Q09	Seed	Genomia Seed Fund
<b>Plant Sensory Systems (USA)</b>	Crop Yield	\$100K/4Q09	Seed	Undisclosed
<b>TaKaDu (Israel)</b>	Smart Water/Monitor & Control	Undisclosed/ 3Q09	First Round	Gemini Israel Funds, Giza Venture Capital
<b>Smartap (Israel)</b>	Water saving appliance	Undisclosed/ 3Q09	First Round	Terra Venture Partners

## The most active VCs

63 venture investors participated in funding water companies in 2009, a record year up 54 percent from 2008. The most active investor in 2009 is Israel-based, **Kinrot Ventures**, with four early-stage deals in smart water companies. Please note that in

February 2010, however, Israeli venture fund AguAgro acquired Kinrot in a share swap deal.



Investor	# of Deals	Companies
Kinrot Ventures (Israel)	4	Ecochemtech, Hydrosping, Kolmir Water Technologies, TA Count
SAIL Venture Partners	2	Micro Media Filtration, WaterHealth India Private Limited/ WaterHealth International
KPCB	2	APTWater, Hara Environmental & Energy Management

### What It Means

Building scale in water startups is not easy but successful innovators win venture funding by underscoring the close relationship between energy and water. While investment dollars in water companies dropped, early-stage deal activity sizzled with a theme on water productivity and doing more with less.

This surge in early-stage activity is a particularly promising trend in the cleantech industry where later-stage deals rule. Water innovation is on the rise and so begins the floodgates of the water sector's opportunity.

### Energy-water relationship heats up

Traditional 'mousetrap' technologies have been replaced by energy efficient treatment technologies that fundamentally aim to improve the productivity of water treatment and distribution. Of note is the early-stage funding rounds of Massachusetts-based **Oasys Water**, Israel-based **Rotec** and Michigan-based **Pump Engineering**.

Wastewater treatment technologies are on the rise, and are boosted by early stage deals in both energy efficiency and energy recovery focused technologies. Companies of note include Israel-based **Emefcy**'s energy recovery to electricity technology, Michigan-based **Algal Scientific**'s energy recovery to biofuels technology and Israel-based **Diffusair**'s energy efficient advanced aeration technology.

### Water reuse is another twist on the energy efficiency play

Reducing water conveyance has an energy component built into its purchase cost making another attractive energy efficiency twist for venture investors. To that end, alternative sources of water supply are top of mind for industries facing water risk exposure.

Singapore, for example, is utilizing reuse as a strategy for water conservation and separately collects varying gradations of effluent and redirects its use for industries requiring lower quality levels (watering lawns and irrigation). Meanwhile, corporations like Coca-Cola and other food & beverage corporations diversify scarce water supplies with onsite wastewater treatment technologies for reuse.

The venture community has placed several early-stage bets on companies providing onsite water recycling including India-based **Concord Enviro Systems**, USA-based **Micro Media Filtration** and Germany-based **Triton Water**. Kleiner Perkins-backed **APTWater** is yet another, later-stage, company addressing water reuse.

## Water analytics are critical across the entire water cycle

As the saying goes, you cannot manage what you do not know. While large industrial players and utilities are starting to track their water resources, the need for more data and analysis persists.

Players including **SAP**, **Schneider Electric**, **Oracle**, **Cisco** and **IBM** are all circling around the water monitoring and control platforms for enterprises and utilities but do not always draw from in-house innovation.

Early-stage smart water technologies funded in 2009 include France-based **Sens-Innov**, Israel-based **Ecochemtech**, Israel-based **Hydrospin**, Israel-based **Aquarius Spectrum** and Denmark-based **Sorbisense**.



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