What Does the World's Water Shortage Mean to Investors?

Potentially, significant opportunity, particularly around nanotechnology solutions

Given the magnitude of the water challenges that face the world today and the attention and resources the issue is receiving from governments and industry globally, investors should seek out opportunities to participate in the growth of companies developing solutions to address the world's significant water challenges.

Nanotechnology-based solutions could significantly increase the effectiveness of existing water treatment solutions and be made available at a much lower cost. We believe that in the next 50 years, water will become the most precious of all natural resources. Companies that are able to purify water, improve the waste water process and convert seawater more efficiently and cost effectively will win and provide investors handsome returns. We are betting on nanotechnology companies to address these challenges and solve many of world's water shortage challenges.

Dr. Thomas W. Kenny,
Chief Emerging Technology Advisor at Cedrus Investments and a Stanford University professor

Momentum

The water problem has been referred to by many experts in the investment and scientific communities as the 21st century "oil" – being scarce, expensive and the potential cause of future war between nations.

Unlike oil, which has alternatives, albeit either not all feasible, or fully explored or developed, water is an absolutely essential resource. Next to air, water is the most essential element to human life. Water is also used for manufacturing of almost every product consumed by mankind, from food to computer chips.

Global water problems are attracting increasing attention at the international level. Wang Yahua, deputy director of the Center for China Study at Tsinghua University in Beijing, recently said "water shortage is the most important challenge to China right now, the biggest problem for future growth. It's a puzzle that the country has to solve." Likewise, former U.S. Sen. Paul Simon from Illinois recently authored *Tapped Out: The Coming World Crisis in Water and What We Can Do About it.* Simon's publication sounds an alarm about the approaching crisis. "Within a few years, a water crisis of catastrophic proportions will explode upon us — unless aroused citizens ... demand of their leadership actions reflecting vision, understanding and courage."

"Water shortage is the most important challenge to China right now."

Wang Yahua, deputy director of the Center for China Study at Tsinghua University in Beijing

Future Approaches to the Problem

New technologies for purifying and reusing contaminated water, and converting seawater must come into widespread use.

Technologies that can help produce more usable water are guaranteed to play a growing role in the water-driven economies of the future. Throughout history, effort has been focused on controlling naturally-available water sources. Roman Aqueducts, large dams, and pumping and drilling technologies all emerged out of necessity to meet this challenge. All successful civilizations in history leveraged large-scale water management to enable expansion. In the future, the scarcity of natural water sources will force us to look in new directions.

Facts about water scarcity:

- A prime cause of the global water concern is **the ever-increasing world population**. According to the World Bank, water supply cannot remotely keep pace with demand, as populations soar and cities explode.
- **Human use of water has tripled in the past 50 years** and will continue to grow. This reflects greater water usage associated with rising standards of living (e.g., diets containing less grain and more meat). It also reflects potentially unsustainable levels of irrigated agriculture.
- **Global warming** and other environmental factors are placing extreme stress on water supplies in many important locations.
- The World Bank reports that **80 countries now have water shortages** that threaten health and economies while 40 percent of the world — more than 2 billion people — have no access to clean water or sanitation.
- **Water quality is deteriorating** in many areas of the developing world as population increases and salinity caused by industrial farming and over-extraction rises. About 95 percent of the world's cities still dump raw sewage into their waters.
- While over 70 per cent of the Earth's surface is covered by water, **most of it is unusable for human consumption.**
- Partial list of the countries **whose only consumption is of contaminated wate**r: Sudan, Venezuela, Tunisia and Cuba.

Nanotechnology Must Dominate this Sector

The use of nanotechnologies in four key water industry segments – monitoring, desalinization, purification and wastewater treatment – could play a large role in averting the coming water crisis. Investors should look to nanotechnology if they are interested in participating in the development of new water production technologies. The emerging ability to design and build structures at the nanoscale is the driver for this entire sector. New nanomaterials that can manipulate H_2O and contaminants at the molecular level are the key to this future. Companies that can quickly identify nanotechnology opportunities and develop new water purification technologies will control huge new markets.

Investors should pay attention to companies, both large and small. At **General Electric (GE)**, for example, nanotechnology is defined as the "ultimate material science." The company sees huge potential in leveraging the novel material properties found at the nanoscale to create completely new material performance levels for future GE products. GE Water & Process Technologies unit is a global leader. It provides the full gamut of services from desalinization to filtration, and is looking to grow to $10 billion in annual sales.

Some of the nanotechnologies being developed in the water sector today, include: nanotextured cloths and powders which feature extremely high surface area within a small volume element and chemically-activated surfaces for selective capture of specific ionic or molecular contaminants for **water purification**; magnetic nanoparticles for **wastewater processing**; nanotechnological approaches such as reverse osmosis, nanofiltration, and distillation for **seawater conversion.**

That said, while nanotechnology poses a unique opportunity, it is complex and requires experience and expertise to decipher what is real and what is not. Investors should seek advisors with proven nanotechnology expertise. Cedrus Investments has an established track record of continued focus in the nanotechnology sector, including nanotechnology investment products and two nanotechnology indexes; Cedrus is in the nanotechnology sector to stay. Cedrus offers a balanced team of financial and technology experts, who are now poised to guide to new investments in nanotechnologies for water.

Cedrus Investments has been a leader in the nanotechnology investment community and remains one of the longest-standing investment firms committed to this field. The firm has an in-house team of nanotechnology experts that publishes proprietary nanotechnology equity research and offers an array of investment products. For more information, please contact Tel: (852) 3519-2830 or information@cedrusinvestments.com.hk.