Calvert White Paper: Unparalleled Challenge and Opportunity in Water



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Executive Summary

As demand for water grows and the finite supply of this crucial resource dwindles, investors will face tough new questions about sustainability and which companies are best positioned to address the future. This white paper highlights the following key facts:

- To provide enough water for all uses through 2030, the world will need to invest as much as $1 trillion per year on applying existing technologies to conserve water, maintain and replace water-related infrastructure, and construct sanitation systems.
- While China has only 8% of all the fresh water in the world, it is home to 22% of the world's population. Also, analysts expect India's demand for urban water to double by 2025. In the U.S., the population is gradually shifting toward warmer, drier regions, such as the Southwest.
- Adding global equity investments in water-related companies may potentially enhance overall portfolio returns while also improving portfolio diversification. The water sector — as represented by the Janney Global Water Index (JGI) — has had attractive risk/return characteristics.

All over the world, demand for safe water is outpacing supply. The United Nations estimates that two-thirds of all nations will become "water stressed" by 2050, with close to two billion people living in countries facing "absolute water scarcity." Many communities in drier areas are already struggling to maintain their water supplies.[1]

Water is essential to sustain agriculture, industry, and life itself. The growing scarcity of water is leading to starvation, disease, political instability, and even conflict in many parts of the world. Like oil, water is a finite resource; unlike oil, water has no alternatives.

Access to clean drinking water is a basic human right, but it will take significant investment to allow everyone access to clean water. To provide enough water for all uses through 2030, industry analysts estimate that the world will need to invest as much as $1 trillion per year on applying existing technologies to conserve water, maintain and replace water-related infrastructure, and construct sanitation systems.[2] In the U.S. alone, at the current pace of investment it would take 900 years to replace the water infrastructure.[3] Thus, the prospects for companies that are positioned to manage water demand and improve access to safe water appear bright and potentially profitable over the long term. Sustainable investment in water also will allow the market to address issues related to human rights, governance, and accountability.

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The Drivers of Water's Potential

Four key drivers, or factors, make a compelling case for water investments:

1. Supply is affected by pollution, climate change, and outdated infrastructure.
2. Demand is increasing as a result of demographic shifts, urbanization, industrialization, and dietary changes.
3. Government regulations related to water are becoming more stringent in both developed and developing countries.
4. Technology related to water is advancing rapidly.

The evolution of these fundamentals gives investors an opportunity to diversify their equity portfolios to include an area that has impressive risk-reward characteristics.

THE WATER SECTOR DEFINED

Calvert defines the water sector as companies directly involved in various stages of the water cycle. This ranges from utility companies that supply fresh water and treat waste water to companies that make pipes, pumps, and valves. The sector also includes companies involved in engineering wastewater plants, producing environmental controls such as meters, and developing new technologies such as desalination (removing salt from sea water).

However, the water sector does NOT include companies that package or resell bottled water, processes that are associated with a number of problematic issues. In fact, bottled water can cost anywhere from 500 to 10,000 times more than tap water.[4] And of course, the packaging and transportation of bottled water involves a number of environmental issues as well.

Inside the Sector

Water & Wastewater Utilities. Water utilities are often vertically integrated, meaning that they not only distribute water but collect, treat, store, and monitor it. However, their scopes of service can vary widely. Many water utilities serve a single city, town, or municipality, but others cover multiple counties, provinces, or even countries. Utilities should benefit from the rising demand for infrastructure improvements, a heightened focus on recycling wastewater for use by industries and farms, and the continuing trend toward outsourcing and consolidation.

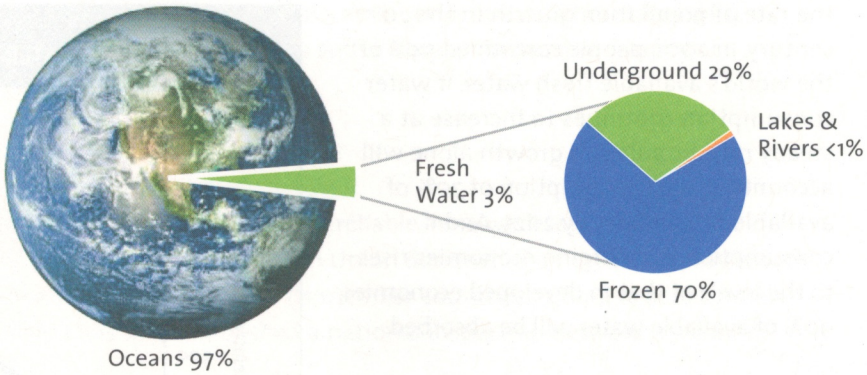
Water Infrastructure. Water equipment, construction, engineering, and consulting companies offer solutions and services to address the needs of the aging water infrastructure. The need for new infrastructure in developing nations should also continue to support this sub-sector.

These diversified companies cover a wide range of specialties, from fluid control equipment, pumps, seals, valves, and pipes, to design, construction, flood control, and engineering. They provide equipment and services to fix leaks, distribute water over larger areas, or conserve water.

Water Technologies. Water technologies are critical to maximizing potable (fit for human consumption) water supplies. Current and new technologies help filter, purify, separate, and desalinate water and otherwise make it safe for use. As mentioned above, desalination is a strong driver of growth for this sub-sector, as are treatments to remediate waste water. Engineering and chemical breakthroughs that mimic nature's process of filtration are advancing desalination and wastewater treatment processes. Water metering is another rapidly growing area because increasing efficiency involves knowing how much you use and when you use it. Consolidation will also be a factor in this sub-sector because some larger conglomerates will look to acquire specific technologies they currently lack.

Shrinking Supply

Water is a finite, scarce natural resource without a substitute.[5] Under normal circumstances, only a tiny fraction of all water on Earth is fresh and available. Fully 97% of the Earth's water is salty, and most fresh water is either frozen in glaciers or icecaps, or situated underground. As a result, less than 1% of all water on earth is both fresh and easily accessible.



Several factors threaten this fragile supply of fresh water. First and foremost, pollution and contamination are a significant threat to supplies. The practice of harvesting the groundwater supply beyond its natural rate of replenishment is also taking its toll. Water is not always located where it is needed most. Although China has only 8% of all the fresh water in the world, it is home to 22% of the world's population. Also, analysts expect India's demand for urban water to double by 2025.[6] In North America, Canada has 10 times more water resources than the U.S. on a per-capita basis.[7]

In the U.S., the population is migrating gradually toward warmer, drier regions, such as the southwest. In 2007, the Census Bureau announced that seven of the 10 most populous cities were located within 500 miles of Mexico. Many of those areas are historically arid and water-starved.

Addressing the challenges related to an imbalanced water supply requires commitments from governments, communities, and companies. Private companies and communities that can find ways to more efficiently use, reuse, and distribute water are vital to preventing future scarcity. Private firms face responsibilities as well as opportunities to address these needs through both innovation and the implementation of best practices and new technologies.

Growing Demand in the U.S. and Around the World

Thanks to population growth and industrial expansion around the world, demand for water is rising at an alarming rate. The U.N. estimates that human water use, including industrial development and irrigation, increased at twice

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CLIMATE CHANGE AND WATER SUPPLY

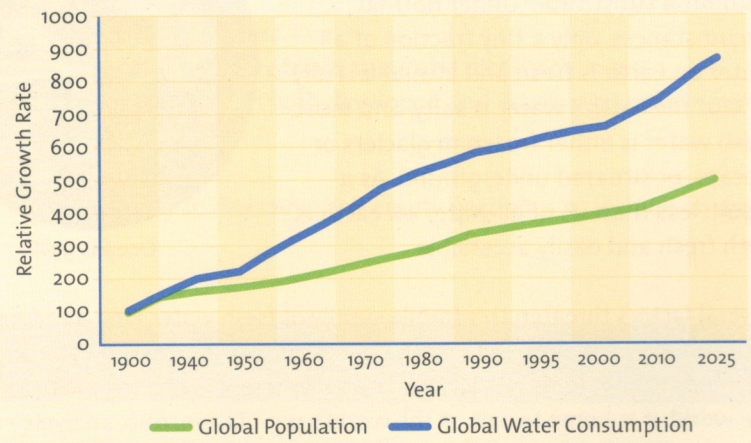
Climate change is exacerbating the freshwater supply problem. Changes in climatic variables such as temperature and precipitation will alter the hydrological cycle. Climate change is affecting runoff and evaporation patterns as well as the quantity of water found in glaciers, snowpacks, lakes, wetlands, soil, and ground water.[8]

A warming planet poses a particular threat to Earth's largest reserve of fresh water — glaciers. Rising temperatures are accelerating glacial melt, and a disappearance of this freshwater source would have catastrophic effects on ecosystems, power generation, and freshwater supplies for many people.[9]



the rate of population growth in the 20th century. In 2001, people consumed 54% of the world's available fresh water. If water consumption continues to increase at a steady rate, population growth alone will account for the consumption of 70% of available fresh water by 2025. And if consumption in emerging economies rises to the levels of that in developed economies, 90% of available water will be absorbed.

DEMAND FOR WATER IS RISING



Sources: U.S. Census Bureau; German Ministry of Environment

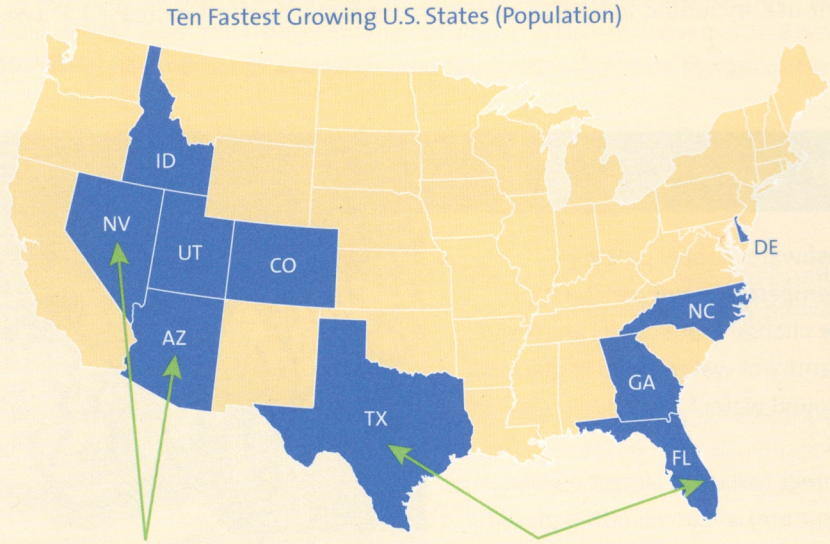
Economic growth is spurring improved standards of living in many areas. As a result, residents typically adopt a higher-calorie diet that includes more meat and poultry. Raising cows and chickens requires more water than growing fruit or vegetables. The combination of a growing population, rising standards of living, and limited freshwater supplies is creating water stress in countries such as India and China — although the U.S., Mexico, and some European countries are experiencing water stress as well.

In the U.S., water consumption demands contribute to water stress. Many of the fastest-growing states are located in the nation's most arid, water-stressed region: the Southwest. Nevada and Arizona are the first- and second-fastest

POPULATION GROWTH DRIVING WATER USAGE

Fast-growing, water-scarce states are a key driver of demand for water conveyance technology.

Ten Fastest Growing U.S. States (Population)



Nevada and Arizona rank 1st and 2nd, respectively, in population growth and 49th and 50th, respectively, in annual precipitation.

Florida and Texas, though they enjoy relatively high precipitation levels, suffer from increasing scarcity of usable freshwater resources.

Paradoxically, given the increasing national attention to water scarcity, many of the fastest growing states in the U.S. are located in the nation's most arid, water-stressed region: the southwestern desert states.

Fastest Growing States

State	Precipitation Rank	Pop. Growth Rank*
NV	49	1
AZ	50	2
GA	9	3
UT	44	4
ID	46	5
FL	7	6
TX	28	7
CO	43	8
NC	15	9
DE	19	10

*2000 – 2006

Source: World Almanac; U.S. Census Bureau; Boenning & Scattergood.
Note: Precipitation statistics are an imperfect gauge of (but still a decent proxy for) water scarcity.

growing states according to the most recent census data,[10] and they are also among the driest. Other states with fast-growing populations, such as Florida and Georgia, have also begun to suffer from an increasing scarcity of usable fresh water.

Evolving Regulatory Landscape

Around the world, regulation of the water sector is intensifying as access to reliable, renewable, and sufficient freshwater supplies becomes a dominant public policy issue. The European Union designed the new Water Framework Directive to improve and integrate the management of water bodies in its member countries.[11] China enacted 71 new national standards for drinking water in 2007. China has also established a national inspection network to monitor water quality.[12]

The U.S. is also grappling with difficult water scarcity and quality issues. The western U.S. has been dealing with ongoing drought conditions that are drying up major sources of drinking water.[13] Affected states will need to implement more regulations to ensure that their future water needs are met.

California has been a leader in environmental control and regulation. Its five-member State Water Resources Control Board is responsible for setting statewide policy and for coordinating and supporting regional efforts. In early 2008, California introduced a new set of initiatives to address its water concerns. The state set a new, aggressive target — reduce water consumption by 20% by the year 2020.[14]

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A LOOK AT A FEW WATER INDUSTRY LEADERS

Utilities: SABESP

Companhia de Saneamento Básico do Estado de São Paulo (SABESP) is Brazil's largest water company, serving some 22.7 million people. The country of Brazil owns a 50.3% stake in the company. Given its leadership position and Brazil's solid economic growth, the company has attractive prospects for customer growth. SABESP has developed a technology called Aqualog to automate and monitor water and sewage stations for maximum efficiency — providing improved water quality, lower costs for electricity and chemical products, and reduced water loss.

Water Equipment: PENTAIR

Pentair, which is based in Minnesota, serves global commercial, municipal, and residential markets. The company's water unit comprises 70 percent of its sales and has grown dramatically through a dozen acquisitions in about as many years. Part of Pentair's business strategy involves water reuse and efficiency, as well as reducing costs for new filtration technologies that are more eco-friendly and energy efficient. Pentair is also partnering with Water Missions International to create sustainable, safe water access and sanitation in Honduras.

Treatment Technologies: KURITA WATER INDUSTRIES

Kurita Water Industries is an environmental leader with strong disclosure of its own environmental management practices as well as a range of innovative technologies in its water treatment products. Kurita's reverse osmosis seawater desalination equipment is used in regions lacking freshwater sources, such as remote islands. Kurita is poised to expand the application of this technology through its network in Asia. Kurita also developed a wastewater treatment method that uses a newly discovered microorganism called Anammox bacteria to break down waste water, which results in approximately 70% less surplus sludge waste.

As of August 31, 2008, Pentair represented 0.05% of Calvert Social Index Fund. No Calvert socially screened equity fund held shares of SABESP or Kurita. Calvert may or may not still invest in, and is not recommending any action on, companies listed. For the most recently available information on holdings in each Calvert socially screened equity fund, please go to **www.calvert.com**.

Technology

Improvements in science and technology have greatly contributed to an influx of new products and services for equipment and water service companies. Advances in these areas can reveal key properties of water that will add substantially to enhancements in efficiency, distribution, and filtration. Scientific study can lead to a greater understanding of water's properties, such as the association between water and surface tension, water's ability to shed bacteria and pollutants, and the unique characteristics of the water molecule. This improved understanding of the functions and properties of water can influence a host of water-related services and can be presently applied at a commercial level for ultrafiltration, desalination, and wastewater treatment.

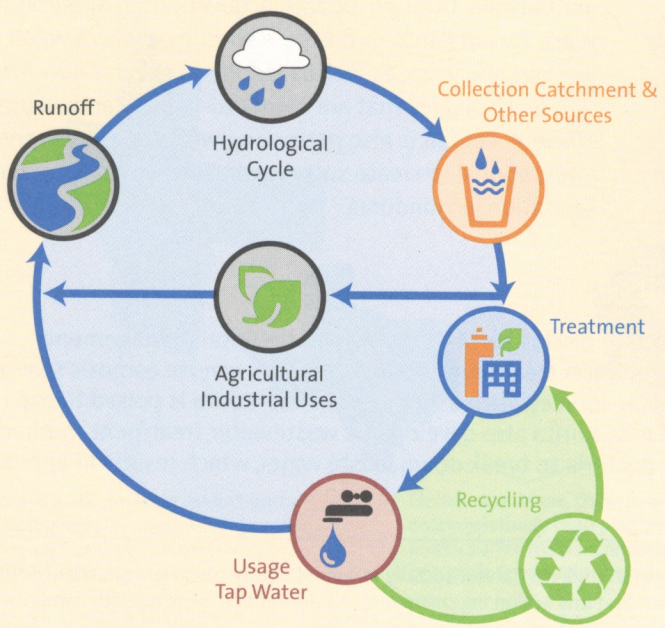
Changes in industrial and manufacturing processes often demand new and innovative methods of water-efficient technology for operational use. For example, a recent Goldman Sachs survey of the 200 largest U.S. water utilities showed that they planned to increase their use of ultraviolet light disinfection by 15% to 20% annually over the next several years.

Decreasing water supplies and rising prices are a critical consideration for any manufacturing company building new plants. As such, water companies are differentiating themselves by offering services backed by newer, more innovative technologies that improve quality, safety, and efficiency. Increased interest is being paid to systems that focus on reuse, such as closed-loop and conservation systems.

Opportunities Throughout the Water Cycle

There are opportunities for investment at almost every stage of the human use water cycle. The water treatment area has many prospects for investment in filtration or purification of water as well as seawater desalination. The use of water involves metering technology to measure usage as well as technology to make water use more efficient. Of course, the distribution of water will require massive investments in infrastructure such as pipes and valves, along with technologies to help detect water loss during the distribution process.

INVESTMENT OPPORTUNITIES ALONG THE WATER CYCLE



COLLECTION
- Water collection facilities, watershed management
- Desalination of saltwater, condensation techniques

TREATMENT
- Industry consolidation and outsourcing trends, water treatment and large-scale project management
- Treatment, purification, testing technology to respond to quality and safety standards

USAGE
- Improve metering to manage affordability and accountability of use
- Repair and replace leaking pipes and build infrastructure to supply water to needed areas

DISTRIBUTION (INCLUDING RECYCLING)
- Waste water management and recycling gray water for other uses
- Remediation of contaminated ground water

Water's Place in a Diversified Portfolio

Strong Risk-Adjusted Returns

Adding global equity investments in water-related companies can enhance overall portfolio returns while also improving portfolio diversification. Historically, the water sector — as represented by the Janney Global Water Index (JGI) — has had attractive risk/return characteristics.

At the same time, risk-adjusted returns for the JGI, as measured by its Sharpe ratio, have been among the highest of any major market segment over the five-year period. The Sharpe ratio is the average annual total return divided by the standard deviation of annual returns.

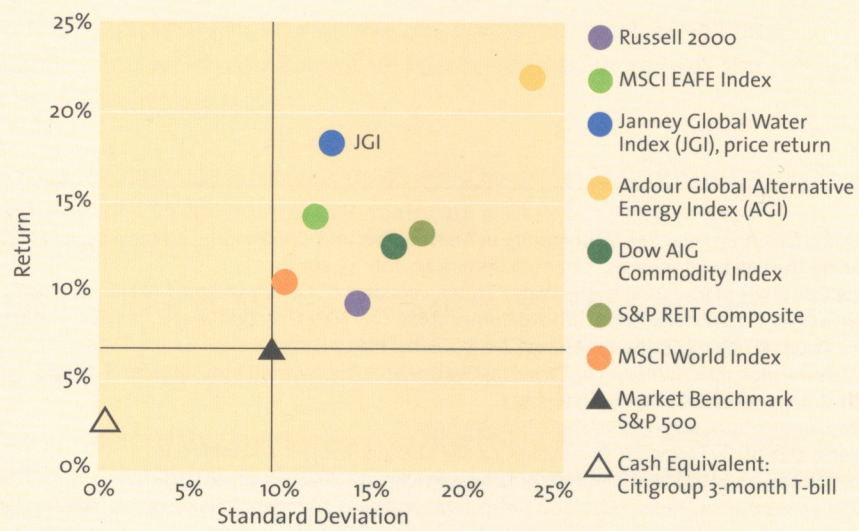
Attractive Correlations

The water-related equity investments represented by the JGI provide some diversification benefits as part of a broad equity allocation since the Index does not move directly in sync with most other sectors of the U.S. and global stock markets.

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RISK/RETURN COMPARISON

September 2003 – August 2008



Source: Zephyr and Ardour Global Indices, LLC. Data as of 8/31/08.

CORRELATION MATRIX

September 2003 – August 2008

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1) S&P 500	1.00							
2) Russell 2000	0.84	1.00						
3) MSCI EAFE Index	0.80	0.67	1.00					
4) Janney Global Water Index (JGI)*, price return	0.80	0.74	0.87	1.00				
5) Ardour Global Alternative Energy Index (AGI), price return	0.66	0.70	0.72	0.71	1.00			
6) Dow AIG Commodity Index	-0.03	-0.05	0.28	0.12	0.22	1.00		
7) S&P REIT Composite	0.61	0.62	0.44	0.44	0.31	-0.12	1.00	
8) MSCI World Index	0.94	0.79	0.96	0.89	0.74	0.18	0.54	1.00

Source: Zephyr and Ardour Global Indices, LLC. Data as of 8/31/08.

More importantly, investors in these water-related sectors can obtain significant diversification benefits against their holdings in commodities. The correlation between the Dow AIG Commodity Index, a common benchmark for commodities, and the JGI was just more than 0% over the five year period through June 30, 2008. (Although diversification does not ensure a profit or eliminate the risks of investing, it can help reduce the volatility — or variability — of portfolio returns.) ■

1. "WATER: Oil Companies See Opportunity in Another Precious Commodity," Greenwire, July 28, 2008.
2. "Facing the Freshwater Crisis," Scientific American, July 23, 2008.
3. "The Essentials of Investing in the Water Sector; version 2.0", Goldman Sachs, March 24, 2008.
4. Sierra Club, http://www.sierraclub.org/committees/cac/water/bottled_water/bottled_water.pdf.
5. "The Water Problem", Zulfiquer Ahmed Amin, Global Policy Forum, http://www.globalpolicy.org/security/natres/water/2007/1008wprob.htm, October 8, 2007.
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