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## Unparalleled Challenge and Opportunity in Water

### Introduction

Water is the most basic element needed for survival. It is a precious and powerful thing. Water supports life. It supports the environment. It supports commerce. In recent years, broad recognition of the vital importance of water and the issues facing our future water supply have been the impetus for a wide range of initiatives designed to protect, renew, and more efficiently distribute water.

In this paper, we reintroduce you to water in hopes that you come to see water in a new way—not only as an irreplaceable resource for which there is no substitute, but also as a viable, long-term investment opportunity. We discuss the risks and opportunities associated with water, including the environmental, demographic, and structural challenges we face today. And, we provide examples of the types of solutions that are surfacing from these challenges in the form of regulatory support and legislation, and water-related innovation, products, and services. We believe that these developments create strong growth potential in the water sector and in water-related companies.

Read on to learn more about the types of companies that make up the water sector, what developments we believe will drive growth in the sector, and how water can play a role in a diversified investment portfolio.

### The Current Environment: Facing the Challenges

The need for water is clear, but access to water in many parts of the world is limited. We see this trend of limited access increasing in the coming years. By 2050, the United Nations predicts that two-thirds of the world will be “water stressed”, with close to two billion people living in countries facing water scarcity.<sup>1</sup>

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, maintaining and replacing water-related infrastructure, and constructing sanitation systems.<sup>2</sup> In the United States alone, it is estimated that at the current rate of investment it will take 900 years to replace the water infrastructure.<sup>3</sup> The developed world needs to replace old water infrastructure and increase water-use efficiency. Developing countries need to provide water access to growing populations. What this means is that we expect there to be no shortage of water-related projects for years to come. Governments recognize the need for financial support for water projects and have set aside significant funds as part of global stimulus plans.

Against this backdrop, we have observed four important developments that we believe will serve as drivers of longer-term growth in the water sector. They are:

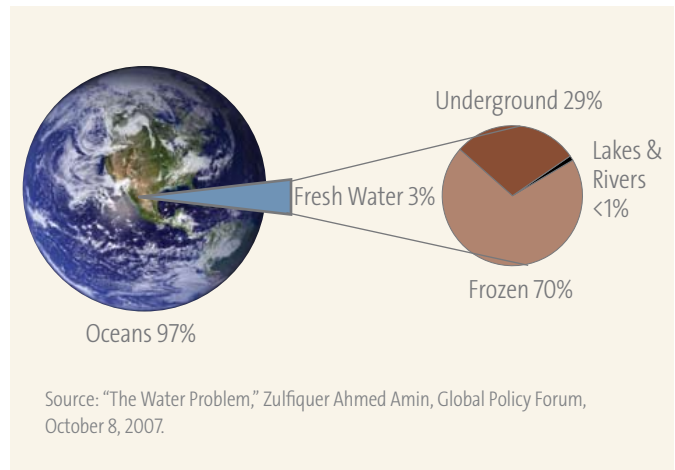
1. Shrinking supply
2. Growing global demand
3. Evolving regulatory landscape
4. Advancing technology

### Shrinking Supply

Water is a finite resource without a substitute. Only a tiny fraction of all water on Earth is fresh and available. And of that, only a small percentage of fresh water is easily accessible by humans. The result: less than one-tenth of the planet's water is both fresh and easily accessible.<sup>4</sup> Several factors threaten this fragile supply of water:

- Pollution and contamination
- Excess harvesting of groundwater
- Geographic mismatch of supply versus demand
- Distribution and infrastructure

Like oil, water is a finite resource; unlike oil, water has no alternatives.



### POLLUTION AND CONTAMINATION

Our water supply is only as good as how we treat it. Every day, two million tons of sewage and other waste drain into the water supply. According to the United Nations, in developing countries over 80% of sewage returns untreated into receiving bodies of water. The health of a community and its economy is dependent on how well water is managed. In fact, each year, unsafe water causes more deaths than violence (including war).<sup>5</sup>

### A CLOSER LOOK AT THE WATER SECTOR



The following sectors are involved in the collection, treatment, usage, and distribution processes in the water cycle. We believe that all three sectors are well-poised to benefit from increased opportunities for investment at almost every stage of the human use water cycle.

#### Water & Wastewater Utilities

Water utilities are often vertically integrated, meaning that they not only distribute water but collect, treat, store, and monitor it. Utilities should benefit from the rising demand for infrastructure improvements, a heightened focus on recycling wastewater by industries and farms, and the continuing trend toward outsourcing and consolidation.

#### Water Infrastructure

Water infrastructure companies provide a range of services to address

the needs of aging infrastructure. In addition, the sector is poised for significant growth in developing nations that need new pipes and water systems. These companies provide specialized water equipment or services, from pumps, seals, valves, and pipes, to design, construction, flood control, and engineering. Attractive opportunities exist for this sector to improve the use and delivery of water.

#### Water Technologies

Water technologies are critical to making water safe to drink. Desalination is a strong driver of growth for this 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 is the most cost effective solution for those in water stressed areas. Consolidation may also occur in this sector as some larger companies seek to deliver innovative technologies and services that will add value and new markets to their business.

The water sector does not include companies that package or resell bottled water, processes that are associated with a number of problematic issues. The production, transportation, and disposal of bottled water can cost anywhere from 500 to 4,000 times more than supplying tap water.<sup>6</sup> And, of course, the packaging and transportation of bottled water involves a number of environmental issues as well.

### EXCESS HARVESTING OF GROUNDWATER

Extracting ground water beyond its natural state of replenishment also leads to water supply constraints. Agriculture has been a key cause of this overuse. For instance, 60% of the water withdrawn for agriculture may never reach the crop and is lost to evaporation and runoff.<sup>7</sup>

### GEOGRAPHIC MISMATCH OF SUPPLY VERSUS DEMAND

The supply of water is often not where it is needed most. In the United States, the first half of the 2000 to 2010 decade saw population movement toward warmer, drier regions, such as the Southwest. Such divergences between supply and demand also take place on a global level. In emerging market countries growing populations are often situated in areas where the supply source is dwindling or the infrastructure is no longer adequate.

### DISTRIBUTION AND INFRASTRUCTURE

Finally, the amount of water people can use is significantly affected by the infrastructure that carries it to them. The rapid rate of urbanization is placing an increasing strain on existing infrastructure. By the year 2030, it is estimated that 4.9 billion people, or 60% of the global population, will be living in cities.<sup>8</sup> Also, as infrastructure ages, its effectiveness declines dramatically. In some developed country cities, as much of 20% of water is lost to leakage, and this percentage can be even greater in developing countries.<sup>9</sup> Governments, especially those seeking to grow and develop, will have to grapple with water issues and the costs associated with delivering safe water supplies.

### Growing Global Demand

Population growth and industrial expansion around the world is resulting in an alarming rate of growth in water demand. The United Nations estimates that human water use, including industrial development and agricultural irrigation,

### CHANGING THE CYCLE: TAPPING INTO A NEW WATER SUPPLY

Although not a new idea, water recycling is gaining traction as a method of choice for replenishing water supply. Despite the resistance many feel about recycling wastewater, a new system in Orange County, California proves it can be done safely. The Orange County recycling plant, the largest and most high-tech in the world, can produce 70 million gallons of potable water a day, enough water for half a million people a year. A three-step process filters and treats wastewater with reverse-osmosis, ultraviolet light, and hydrogen peroxide. The water is then injected into a groundwater basin where it percolates through natural filtration materials such as sand, gravel, and clay. It takes a year for the treated water to reach a customer's tap. The result? Water that exceeds federal and state drinking standards.

increased at twice the rate of population growth in the 20th century.<sup>10</sup> In 2001, people consumed 54% of the world's available annual fresh water supply. If water consumption continues to increase at a steady rate, population growth alone will push water demand to an unsustainable level.<sup>11</sup> Neither current supply nor current infrastructure will be sufficient to deliver an adequate supply and maintain acceptable water quality.

Economic growth is also spurring improved standards of living in many areas. As a result, consumers typically adopt a higher-calorie diet that includes more meat and poultry, which requires more water to produce. This combination of a growing population, rising standards of living, and limited freshwater supplies is creating water stress in emerging countries such as India and China—although the United States, Mexico, and some European countries are experiencing pressure as well.

### 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 the quantity of water found in glaciers, snowpacks, lakes, wetlands, soil, and ground water.<sup>12</sup>

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 the global population.<sup>13</sup>



## Evolving Regulatory Landscape

Around the world, regulation of the water sector is intensifying as access to reliable and safe water supplies becomes a dominant public policy issue. Water infrastructure projects are growing and are a cornerstone of governments' priorities, which has resulted in more stringent regulations and increased fiscal stimulus.

### MORE STRINGENT REGULATIONS

Global emphasis on sustainable resources in the past decade includes in-depth focus and action regarding water issues. The European Union designed the new Water Framework Directive to improve and integrate the management of water bodies in its member countries, providing a comprehensive, coordinated effort for its 27 member countries.<sup>14</sup> China's

water quality is creating long term health and economic risks such that the government has made water treatment a priority for regulation. To address its challenges, China enacted 71 new national standards for drinking water in 2007 and also established a national inspection network in 2008 to monitor water quality.<sup>15</sup>

### INCREASED FISCAL STIMULUS

Across the world, governments are focusing on investing in infrastructure to attract private capital, increase jobs and productivity, and ensure long-term growth. The prioritization of government spending on public infrastructure has led to new water projects such as pipeline upgrades, water treatment plants, and levee and flood controls. In the United States, the overall Environmental Protection Agency budget allocation to water has increased dramatically, with the percentage of total



## A LOOK AT A FEW INDUSTRY LEADERS

### Pentair

Pentair, based in Minnesota, serves global commercial, municipal, and residential markets. The company's water unit comprises 69% of its sales and has grown dramatically through a dozen acquisitions since the mid 1990s. 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, all of which are in high demand in the sector. Recent business highlights include providing pumps for the Harvey Street Canal Pump Station in New Orleans, the largest in the world, and its involvement in the Sydney desalination plant, which provides 15% of the city's water needs. Pentair is also partnering with Water Health International to create sustainable safe water access and sanitation in India.

### Hyflux Ltd.

China, home to 22% of the world's population, possesses only 8% of the world's water supply.<sup>16</sup> Demand for water is only expected to grow as the country develops. In addition, much of the available water in China is polluted. To address this crisis, China has opened up its \$14.2 billion water market to foreign firms.<sup>17</sup> Hyflux Ltd., a leading provider of water management solutions globally, was an early entrant to China in 1994, and, thus, is well entrenched in the China water market. By 2004, Hyflux secured a deal to build China's largest seawater reverse osmosis desalination plant in Tianjin. With a business presence in 26 out of the 31 Chinese provinces, Hyflux is well positioned to benefit from the substantial market growth opportunities in China.

### Consolidated Water Co. Ltd.

Consolidated Water designs, builds, and operates desalination plants and water distribution systems in the Caribbean where the supply of fresh water is exceptionally scarce. Over the last decade, the company, through an aggressive acquisition strategy, has grown from a small Cayman Islands-based utility with revenues of less than \$10 million dollars per year to a regional water provider with 2008 revenues in excess of \$65 million dollars. The Caribbean basin is one of the fastest growing desalination markets in the world due to the abundance of seawater combined with significant demand for water from hotels and resort properties as well as an increasing residential population.

*Company holdings represented the following percentages of assets under management in the Calvert Global Water Fund as of March 31, 2010: Consolidated Water Co. Ltd., 0.68%; Hyflux Limited, 1.51%; and Pentair, Inc., 4.72%. 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 the Calvert Global Water Fund, visit [www.calvert.com](http://www.calvert.com). Current and future portfolio holdings are subject to market risk.*

budget apportioned to water rising from 25% to 45% and budget expenditures for 2010 totaling close to \$16 billion.<sup>18</sup> China is expected to invest significantly in sewage treatment plants in the 2011 to 2015 period in light of increased government scrutiny on industrial waste. We expect that budget allocations and spending on water projects will continue to support growth throughout the water sector.

### Advancing Technology

For millennia, mankind has been a prodigious consumer of water without giving much thought to preserving the quality and supply of the resource. Ironically, our passion for science and discovery has only recently extended to mankind's most basic necessity—water. Studying water and its properties is helping providers to develop new technologies that will enhance efficiency, distribution, and filtration.

There is much to understand about 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, H<sub>2</sub>O. As researchers grow to understand the functions and properties of water, they are unlocking a host of water-related technologies which can be applied at a commercial level for ultrafiltration, desalination, and wastewater treatment.

Companies are already putting new technologies to use. A Goldman Sachs survey of the 200 largest water utilities

in the United States showed that they planned to increase their use of ultraviolet light disinfection by 15% to 20% annually over the next several years.

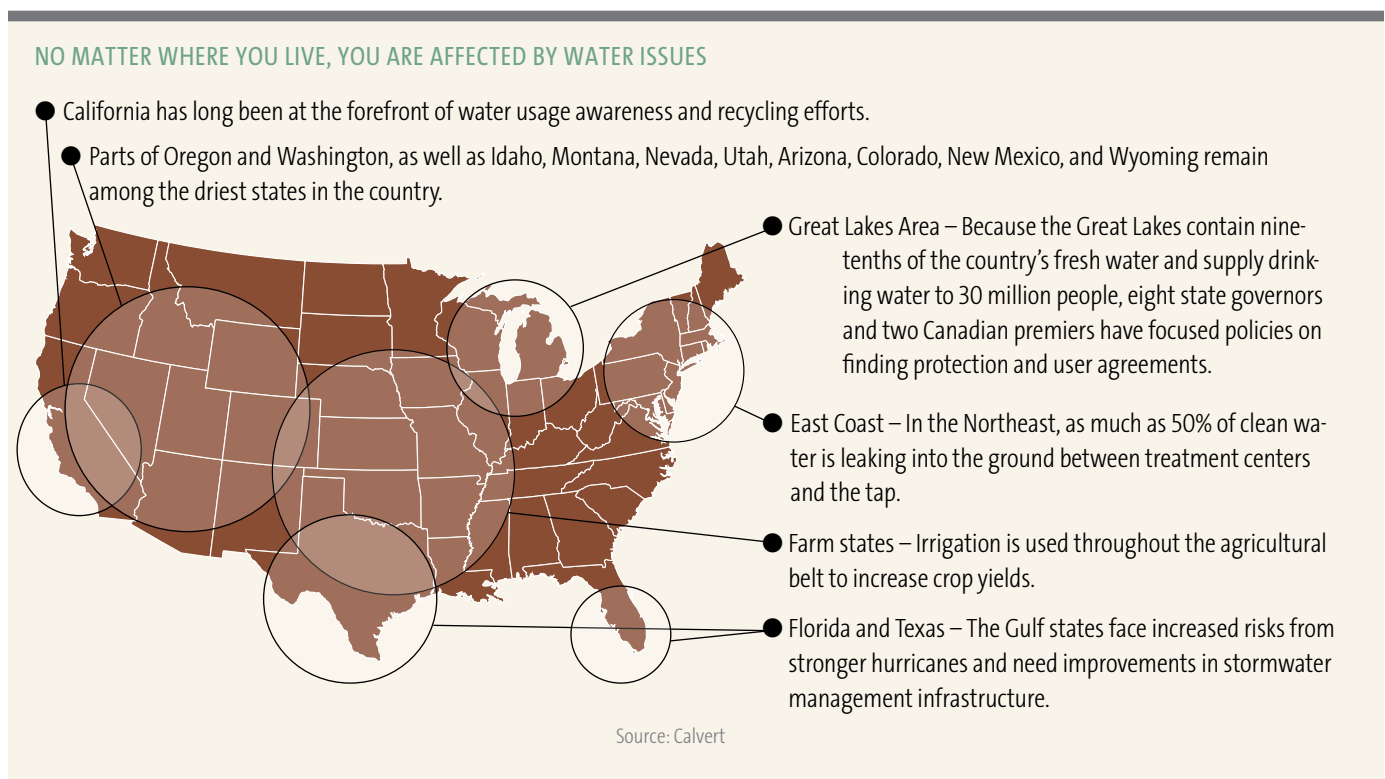
Decreasing water supplies and rising prices are critical considerations for any manufacturing company building new plants. As such, water companies are differentiating themselves by offering services backed by newer, more innovative technologies that improve quality, safety, and efficiency. Increased interest is being paid to systems that focus on reuse, such as closed-loop and conservation systems. The potential effects of these and other technological advances in conservation and efficiency can not even be quantified yet.

### Water's Role in a Diversified Portfolio

The factors discussed—declining supply, growing demand, an evolving regulatory environment, and advancing technology—all point to the possibility for strong growth momentum for water-related companies. However, many investors wonder just how they should look at the water sector. We believe there are a number of ways to look at water as it relates to an investment portfolio.

### AN INVESTABLE TREND

Demographic shifts that channel purchases in certain directions; technological advancements that change human behavior; shifts in long-standing business practices that



## MASSACHUSETTS: HARNESSING SOLAR POWER TO TREAT AND DELIVER WATER

The State of Massachusetts plans to tackle cost savings and climate change at the same time. The state will use federal stimulus money to mount solar panels on 12 water and wastewater treatment plants. Treating and delivering water is an energy-intensive business: The state's plants consume about 30% of its municipal power. By using clean and renewable sources of energy, the state estimates it will save \$650,000 a year. The move will have the equivalent effect of reducing the greenhouse gas emissions from 600 homes annually.<sup>19</sup>

may affect many but benefit few. These types of social and economic developments not only create change but also present opportunity. Savvy investors refer to them as investable trends. For example, as the large Baby Boomer generation drew closer to retirement age, many investors added or increased holdings in the healthcare sector in hopes of benefiting from an increased demand for medical products and services thanks to the aging Boomers. Likewise, we see water as an investable trend by which investors may capitalize on the growth potential of water-related companies.

### A DIVERSIFYING ELEMENT

Since the world's water issues are global, so too are the solutions. When reviewing companies that make up the water sector, you will find them located around the world. This global nature of the water sector means that investors could benefit from some international diversification in their portfolios, depending on which companies are purchased and where those companies are domiciled. From an asset allocation perspective, some investors consider their water investments as part of their international equity portfolio allocations.

On a sector basis, water companies tend to offer some diversification benefits based on correlation relative to

certain other sectors. Specifically, water companies have a lower correlation to a broad equity market index, such as the S&P 500 Index. As you can see in the Correlation table, water companies, as measured by the Janney Global Water Index, are 88% correlated with the S&P 500 Index. That means water investments are somewhat less likely to move in lock step with their U.S. domestic holdings.

Where water investments really demonstrate low correlation is within the commodities category of the market. Commodities are traditionally bulk goods such as grains, metals, and foods that are traded on a commodities exchange. In turning to the Correlation table once again, we see that water companies, as measured by the Janney Global Water Index, are only 49% correlated with commodities, as measured by the Dow UBS Commodity Index. Some more sophisticated investors who hold commodities in their portfolios have come to view water itself as a commodity, incorporating water-related companies into their commodity allocations to serve as a diversifier.

### ABOVE-AVERAGE GROWTH POTENTIAL

In terms of performance, the water sector has done extremely well, supported, we believe, by the advent of the types of developments discussed in this paper. On an absolute basis, the water sector, as measured by the Janney Global Water Index (JGI), has returned an average annual return of 10.21% since the inception of the Index (April 2005-March 2010). Other major indexes lagged the water sector considerably over the same period, including the MSCI EAFE (4.24%), S&P 500 (1.92%), and Russell 2000 (3.36%) indexes. Of course, past performance is no guarantee of future results.

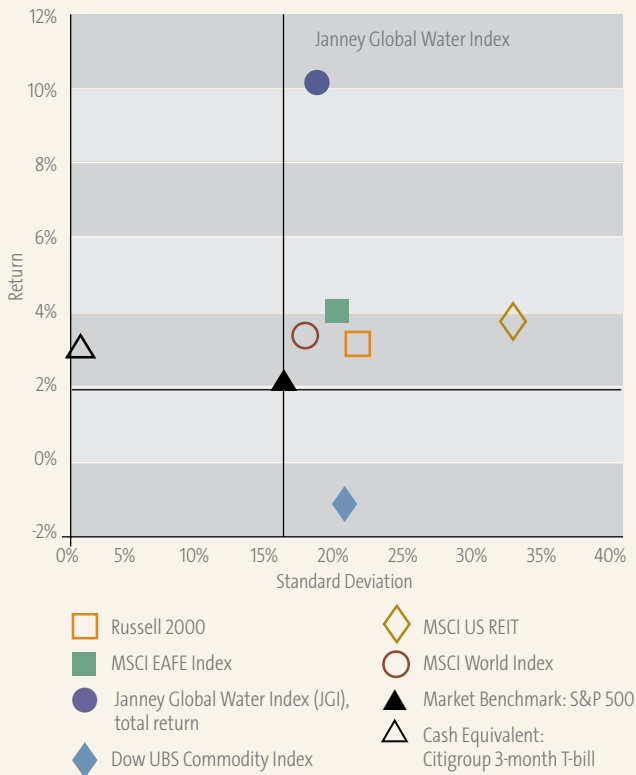
When we look at the water sector's performance on a risk-adjusted basis, the already-strong story strengthens. As illustrated in the Risk/Return Comparison graph, the JGI produced significantly higher returns without a significant

## CORRELATION BETWEEN WATER AND OTHER SECTORS OF THE MARKET

April 2005 - March 2010									
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	
1) S&P 500	1.00								
2) Russell 2000	0.92	1.00							
3) MSCI EAFE Index	0.90	0.82	1.00						
4) Janney Global Water Index (JGI), total return	0.88	0.87	0.93	1.00					
5) Ardour Global Alternative Energy Index (AGI), total return	0.80	0.80	0.87	0.89	1.00				
6) Dow UBS Commodity Index	0.45	0.37	0.60	0.49	0.55	1.00			
7) MSCI US REIT	0.81	0.86	0.72	0.74	0.61	0.28	1.00		
8) MSCI World Index	0.97	0.89	0.98	0.93	0.86	0.56	0.77	1.00	

## RISK/RETURN COMPARISON

April 2005 - March 2010



*Index performance does not represent fund performance. A fund may perform significantly differently. Index returns are for illustrative purposes only and do not represent actual performance of a Calvert Fund, such as the Calvert Global Water Fund. For information on Calvert Global Water Fund performance, please visit [www.calvert.com](http://www.calvert.com).*

increase in risk levels versus the other indexes, including the S&P 500. While this presents a compelling performance story for the water sector, it's important to remind investors that the water sector is more narrow in scope than the indexes presented here. In unfavorable market conditions, we would expect the water sector to experience bouts of volatility. It has been widely accepted across the investment world that where there is greater opportunity there is usually greater risk.

## Conclusion

For 2010 and beyond, we believe that increasing water demand combined with supply challenges will continue to drive the need for improved water utility, infrastructure, and technology solutions. What's more, the growing regulatory focus and fiscal stimulus around the world indicates to us a global commitment to a fundamental and permanent change in the way the world treats its water supply, paving the way for strong growth prospects for the sector.

From an investment perspective, we believe the four key drivers discussed herein build a case for considering water-related investments as part of an investment portfolio's equity allocation. Including water-related companies can enhance overall portfolio returns by providing investors with access to a new, potentially high-growth set of companies.

However, the water sector is complex and rapidly evolving, with a wide array of domestic and global participants. Navigating the companies in this sector should be done with the help of investment professionals skilled in assessing the financial strength, competitive advantages, supply/demand fundamentals, and future growth prospects of these unique companies.

At Calvert, our focus is on selecting companies with strong fundamentals that are market leaders in industries and that are supported by regulatory and fiscal stimulus. We tend to favor companies that we consider to be long-term winners, low-cost producers, and companies with proven technologies.

With the growing need for water, companies in this sector can have a significant part to play in coming up with solutions to fulfill this need. Companies that are providing new ways to collect, treat, and deliver water can offer attractive opportunities. With positive economic growth anticipated globally, we feel this is a good time to consider adding water exposure to a diversified investment portfolio. ■

**“The total amount of water on Earth will never change. Man’s interaction with water, however, through agriculture, energy creation, domestic use, sewage, and other touchpoints, has a profound effect on the hydrologic cycle. Each individual, through his every day activities, has an impact on the future of fresh, available water.”**

Source: Water: A Global Innovation Outlook Report, IBM, 2009

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**Calvert Global Water Fund (CFWAX) is an all-market-cap mutual fund that invests in a globally diverse selection of water-related companies.**

**For ongoing updates about water-related companies and the Calvert Global Water Fund, please visit us online at [www.calvert.com](http://www.calvert.com).**

**A Word About Risks.** Investment in mutual funds involves risk, including possible loss of principal invested. The Calvert Global Water Fund is subject to the risk that stocks that comprise the water-related sector may decline in value. The stock markets in which the Fund invests may also experience periods of volatility and instability. In addition, shares of the companies involved in the water sector have been more volatile than shares of companies operating in other, more established industries. Consequently, the Fund may tend to be more volatile than other mutual funds. Lastly, foreign investments involve greater risks than U.S. investments, including political and economic risks and the risk of currency fluctuations.

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