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WHITE PAPER
The case for investing in the water sector

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Abstract

Increasing populations and evolving consumption patterns arising from higher standards of living are putting freshwater resources under considerable strain. The growing gap between supply and demand, exacerbated by climate disruptions and extreme weather events, is set to require substantial capital investment in water treatment technologies and distribution infrastructure to reduce these imbalances. This opens the door to a number of investment opportunities for companies providing new ways to supply, distribute, conserve and treat water.

Investing in the water sector can be complex and requires keeping on top of legislation and technological developments. To date, the water sector has provided investors with strong risk-adjusted returns, and we believe that it will continue to develop into a dynamic market for global equities with significant long-term investment potential. This paper outlines the opportunities available to long term investors in this exciting market.

> "Of the world's static water supply, only about 2.5% is considered fresh"

THE GAP BETWEEN WATER SUPPLY AND DEMAND

There are some 1 400 000 000 cubic kilometres of water on earth and circulating through the hydrological cycle. Nearly all of this is salt water and most of the rest is frozen or underground.

While fresh water supplies are relatively static, the global population is expected to increase from around 6.4 billion to an estimated nine billion by 2050[1]. Of the world's static water supply, only roughly 2.5% is considered 'fresh', and of this, less than 1% is accessible surface water – 0.025% of all water on earth[2]. This would be enough to meet humanity's needs – if it were evenly distributed. It is not. In Malaysia, every 100 people share a million cubic metres of water, while in India this volume must supply 350 people, and in Israel, 4 000[3]. In certain areas, the water is polluted, exacerbating the supply constraint. Almost one-third of the world's developing populations currently has no access to safe drinking water, which creates local supply-demand challenges on a huge scale.

Under a current 'business as usual' scenario, water demand will outstrip supply by 40% by 2030. This has the potential to put USD 3 trillion of global GDP at risk by 2050[4], which would be approximately 22% of world GDP[5]. For developed countries, roughly half of all water consumed is for industrial use, whereas in developing countries, agriculture is the biggest consumer, at close to 80%. The growing imbalance between supply and demand is underpinned by four key factors:

1. Population growth

2. Ageing water infrastructure

3. Water regulation

4. Extreme weather events and climate change

> "In China alone, the urban population has more than doubled from 254 million to 691 million"

1. Population growth

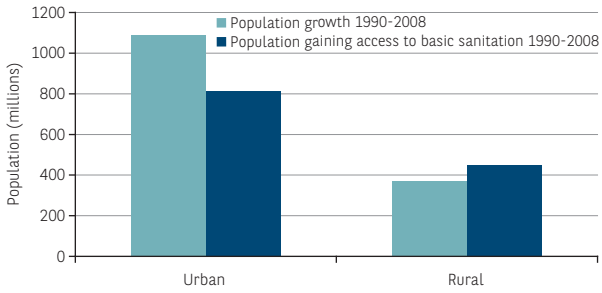
The world's population is increasing rapidly and is the main reason behind additional demand for water. This is a particular issue in emerging markets, with Asia having 60% of the world's population and only 36% of the world's fresh water supply (in China these figures are 21% and 7% respectively)[6]. Conversely, the US has 8% of the world's population yet 15% of the world's fresh water supply[7], although this masks a significant imbalance within the country.

In many regions, population growth is approximately 1%-3% a year. This growth, as well as migration and rising living standards, will increase the demand for water services. Furthermore, an expanding middle class and greater affluence is leading to higher protein/meat content in the diet of many inhabitants within emerging economies, which is exacerbating the agricultural water demand burden. Much of the existing water supply and sanitation infrastructure was designed and built at a time of significantly different resource availability and water use. Upgrading and/or expanding the water supply and sanitation infrastructure is in many places an urgent need.

By 2050, the UN predicts that two-thirds of the world's population will be 'water stressed', with two billion people living in countries facing water scarcity[8]. Urban areas in particular are under strain, their populations multiplying as inward rural migrants seek employment opportunities and (perceived) better living standards. This is notably an issue in China, where the urban population more than doubled from 254 million to 691[9] million people between 1990 and 2011. It has now exceeded the rural population for the first time in the country's history[10]. A further 400 million are expected to move to urban areas by 2025[11]. This will increase the total population living in Chinese cities to approximately one billion, and this huge strain on existing infrastructure is driving very substantial government investment (China five-year plan 2012: USD 450 bn[12]). Clearly, China is not alone in facing these challenges; similarly ominous supply and demand imbalances are being seen in other emerging economies such as India and Brazil. However, in the world's largest economy, issues such as the downward trend in access to basic sanitation among both the growing urban population as well as the rural population, are notable (see Figure 1).

> "Asia holds 60% of the world's population versus 36% of the world's water supply"

Figure 1 - Much of China's new urban population lacks access to basic sanitation[13]



In 2001, people consumed 54% of the world's available fresh water. If water consumption continues to rise steadily, population growth alone will account for the consumption of 70% of available fresh water by 2025[14]. This unsustainable trend explains the need for urgent action to address the demand for improved water conservation, treatment, re-use, and desalination facilities.

2. Ageing water infrastructure

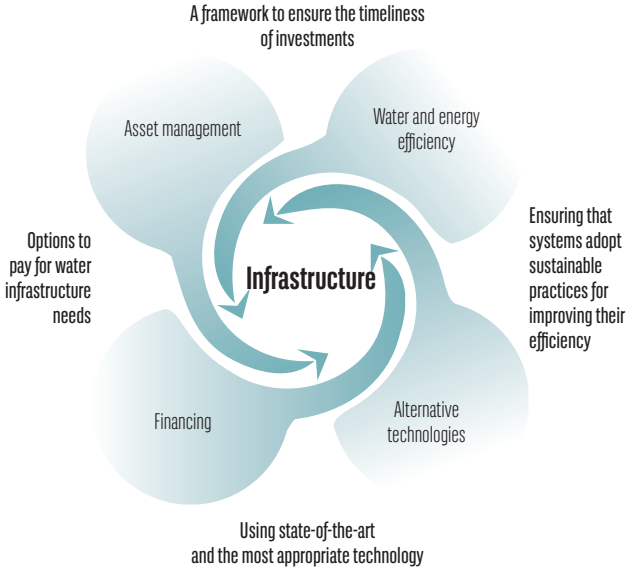
The accelerating urban population growth is sharpening the demand for robust infrastructure to serve the water needs of the developed and developing world. In developed nations, there has been significant underinvestment in repairs and upgrades, especially to urban infrastructure, much of which was built in the late 19th and early 20th centuries. The useful life of these systems is considered to be around 60 to 80 years.

Due to damage and inefficiencies, an estimated 30% to 40% of water is lost to leakage in such systems[15]. Rapid population growth since this infrastructure was built has put further strain on these structures and systems, heightening the urgency for improvement and replacement.

In the US, The Environmental Protection Agency (EPA) is providing the knowledge and tools needed to ensure that the investments made in water infrastructure are moving towards a sustainable footing. The path to sustainable water and a recommended investment framework can been seen in Figure 2[16]:

> "By 2050, the UN predicts that two-thirds of the world's population will be 'water stressed'"

Figure 2 - The path to sustainable water infrastructure



In San Diego, the target threshold for water leakage, or non-revenue water (NRW), is less than 10% of treated water. Even though the city is meeting this target, the financial loss is still severe. San Diego loses at least USD 21.8 mn annually from leaked water[17]. The water authorities cannot pinpoint where these losses are occurring, whether from faulty meters, leaking pipes or unauthorised usage. This lack of clarity compounds the problem.

In London, more than 25% of residential water is lost to leakage, much of it due to Victorian era infrastructure that is over 150 years old. Thames Water has proposed a long-term objective of reducing leakage by approximately 50% by 2030-2035, and to endeavour to keep leakage levels in line with other developed world cities[18].

In Sao Paulo, locally quoted water utility, Sabesp (Companhia De Saneamento Básico Do Estado De São Paulo), is investing BRL 4.3 billion in its Water Loss Programme between 2009 and 2019. Its strategy is to combat water loss through the replacement and repair of water pipes, preventative maintenance of water meters and non-visible leak research[19]. In Manila, the Philippines, the target NRW is 10%-12%. Continuous investment in the infrastructure enabled the city to reduce its NRW from 19.5% in 2008 to 11.2% in 2011, well within the target range[20].

> "The useful life of these systems is considered to be around 60-80 years"

Ageing and deteriorating infrastructure is also a priority issue in the US[21]. In 2008, the EPA conducted a study that identified an investment requirement of USD 298.1 bn for the upgrading and maintenance of the US wastewater and storm water infrastructure network. Furthermore, the EPA is promoting a Sustainable Water Infrastructure Initiative with four main pillars:

1 Better management	Focusing on efficiency and production decisions
2 Full-cost pricing	Including all relevant variable costs and a full share of attributable fixed costs
3 Watershed approach	Focusing public and private efforts on the highest priority problems
4 Water efficiency	Employing water-saving practices to reduce costs and to slow the depletion of the water supply

The objective of the initiative is to assist the user community, including water utilities, to more effectively meet their Clean Water Act and Safe Drinking Water Act requirements, and to improve water infrastructure sustainability.

3. Water regulation

As the world's water resources become increasingly stressed, national and local governments have had to raise awareness and develop short and long-term initiatives to find a solution. Water infrastructure, and particularly water treatment, has moved sharply up government priority lists, not least because governments and their regulators dictate the quality of water, the quality of service, and the price.

Water quality remains under constant threat of pollution from various sources. In Europe, the European Commission's Integrated Pollution Prevention and Control (IPPC) Directive defines the obligations with which industrial and agricultural activities with a high pollution potential must comply. All such activities must have a permit, which is only issued once certain environmental conditions have been met. The aim is to prevent or reduce pollution of the atmosphere, water and soil, as well as the quantities of waste arising from industrial and agricultural activities.

> "If we reduce leakage in London by 1%, it will provide enough water for 224,000 people"

The European Union Water Framework Directive commits member states to achieving good quality water in sufficient quantities by 2015. It establishes a legal framework to protect and restore clean water across Europe and ensure its long-term, sustainable use. As it stands, Europe's water is under intense pressure. Recent figures show that 20% of surface water is at serious risk from pollution, 60% of European cities over-exploit their groundwater resources, and 50% of wetlands are endangered[22]. Nearly half of the EU population lives in water-stressed areas[23].

The Water Framework Directive has four key economic principles:

Water users (eg. farmers, industries and households)	
1 Pay for the full cost of water services received	
Member states	
2 use economic analysis	
3 Manage water resources	
4 Assess cost effectiveness of alternatives	

China's current 12th Five-Year Plan (2011-2015) includes the most ambitious energy saving, water-conserving and emissions-reducing targets China has ever set. China is shifting from the singular pursuit of economic growth to focusing attention on the quality of its development. At the forefront of this change is reducing water use and pollution. The growth and five-year plan seeks to reduce water usage by 30% for every new dollar of industrial output, thus maintaining the same target as was in the 11th five-year plan[24]. By the end of the 12th five-year period, China aims to treat 85% of its urban wastewater, implying that 1 200 new treatment plants need to be built by 2015. The government is investing USD 161.3 billion to achieve this target. China easily met its previous goal of reducing water consumption by almost 37% between 2005 and 2010. The water-conserving measures have helped constrain the growth in water usage to around 1% annually[25].

To illustrate the extent to which water quality has become a 'global' concern, Figure 3 gives an overview of key regional regulations, with selected specific pollutants singled out in Europe and the US in particular.

"Europe: 20% of surface water at serious risk from pollution"

Figure 3 - Strong regional regulations driving water investment[26]

Europe	US	Asia
Dangerous Substances Directive (1976): cadmium, mercury, DDT etc	**Clean Water Act** (1976): pollutant discharge legislation, BOD/COD, temperature, turbidity, nitrogen, phosphorus, heavy metals such as mercury and cadmium, and synthetic organic chemicals such as dioxin and PCBs	**China – Prevention and Control of Water Pollution** (1984 - revised 1996)
Urban Wastewater Treatment Directive (1991): sewage discharge (covers BOD/COD, phosphorus, nitrates etc)	**Safe Drinking Water Act** (1984): 200 potential contaminants including microbial contaminants (e.g., cryptosporidium); by products of drinking water disinfection; radon; arsenic	**China - The Water Law of PRC** (1998 - revised 2002)
Directive on Nitrates Pollution from Agricultural Sources (1991): nitrogen fertilizer and manure leachate	**Arsenic Rule** (2001): Reduces arsenic levels from 50 ppb to 10 ppb; Drives activated alumina and other technologies	**China - Law of PRC on Water and Soil Conservation** (1991)
Directive on Integrated Pollution Prevention and Control (1996): pollution from factories and other facilities.	**Enhanced Surface Water Treatment Rule (LT2) (2005) Pathogen Control:** enhance monitoring, membrane filtration, and UV treatment	**China - 11th 5 Year plan:** RMB 330bn investment in Wastewater [as well as RMB320bn for the "South North Water Transposition" project
EU Water Framework Directive (2000): combines many of the above measures to cover industrial effluent, pesticides, nitrates, biocides etc.	**Stage 2 Disinfection By-Product Rule** (2005): controls chlorine by-products – drives UV treatment	**Japan – Water Pollution Control Law** (1997)
	Combined Sewer Overflow (CSO) Rules: some rules completed; more pending	**Japan – Sewage Law** (1970)
	ARRA (2009): $6 billion in funding for municipal water ($2b) and sewer ($4b) projects under the State Revolving Funds program	**Japan – Water Works Law** (last revision in 2001): controls water quality criteria

"Water scarcity now bigger threat than financial crisis"

The Independent, 15 March 2009

> "Summers could be 6°C hotter in Spain and Portugal by 2070"

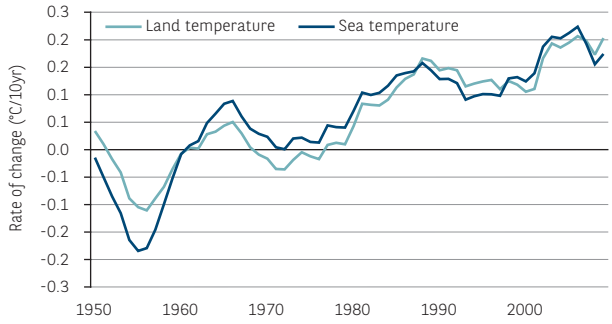
4. Extreme weather events and climate change

Extreme weather and climate change are exacerbating the freshwater supply problem as changes in temperature and precipitation alter the hydrological cycle. Climate change is affecting runoff and evaporation patterns as well as the quantity of water found in glaciers, snow pack, lakes, wetlands, soil, and groundwater.

A warming planet poses a particular threat to Earth's largest reserves of fresh water — glaciers, which normally act as buffers by releasing in summertime water accumulated during the winter. Rising temperatures are accelerating glacial melt, and the disappearance of this freshwater source would have catastrophic effects on ecosystems, power generation, and freshwater supplies for many people[27]. Figure 4 shows the rise in global average land and sea surface temperatures over the past 60 years.

Figure 4 - Rate of change of global average temperature[28]

Land temperature = Goddard Institute for Space Studies (GISS) temperature analysis



Sea temperature = Hadley Centre's HadCRUT3 sea surface temperature analysis

In southern Europe, rainfall is already decreasing. In the second half of this century, yearly rainfall could be 40% lower than today. Summer rains are expected to become scarcer, with summer temperatures rising. The International Panel on Climate Change (IPCC) warns that summers could be 6°C (42.8°F) hotter in Spain and Portugal by 2070[29].

In many regions, climate change will have a significant impact on water resources in the coming decades. Its latest report for the IPCC 34th session[30] anticipates the following trends:

- In the high latitudes and in some tropical regions, the average annual runoff will increase between 10% and 40% by the middle of this century.
- It is likely that even more areas will be affected by drought and that water shortages will be more commonplace.
- An overall increase in the frequency of heavy downpours is predicted. This also makes it more likely that human settlements will experience severe damage from rainfall.
- The volumes of water stored in glaciers and the snow pack will decline over the course of the next century. This means that after a phase of increased discharge there will be less water available in regions supplied by melt-water running off from major mountain chains. This is an ominous development, because more than one-sixth of the world's population currently lives in these regions.

Climate change impacts on water quality are, in general, poorly understood in both developing and developed countries, particularly with respect to the impact of extreme events. Relatively few data are available on the socio-economic aspects of climate change impacts related to water resources, including climate change impacts on water demand. Despite its significance, groundwater has also received little attention in climate change impact assessment, compared to surface water resources. Figure 5 shows the impact of severe weather events on the water cycle as well as on agriculture, industry and human needs.

> "Nations should prepare for an unprecedented onslaught of deadly and costly weather disasters"

> "Average annual runoff will increase between 10% and 40% by the middle of this century"

Figure 5 – Climate change will impact the entire water cycle[31]

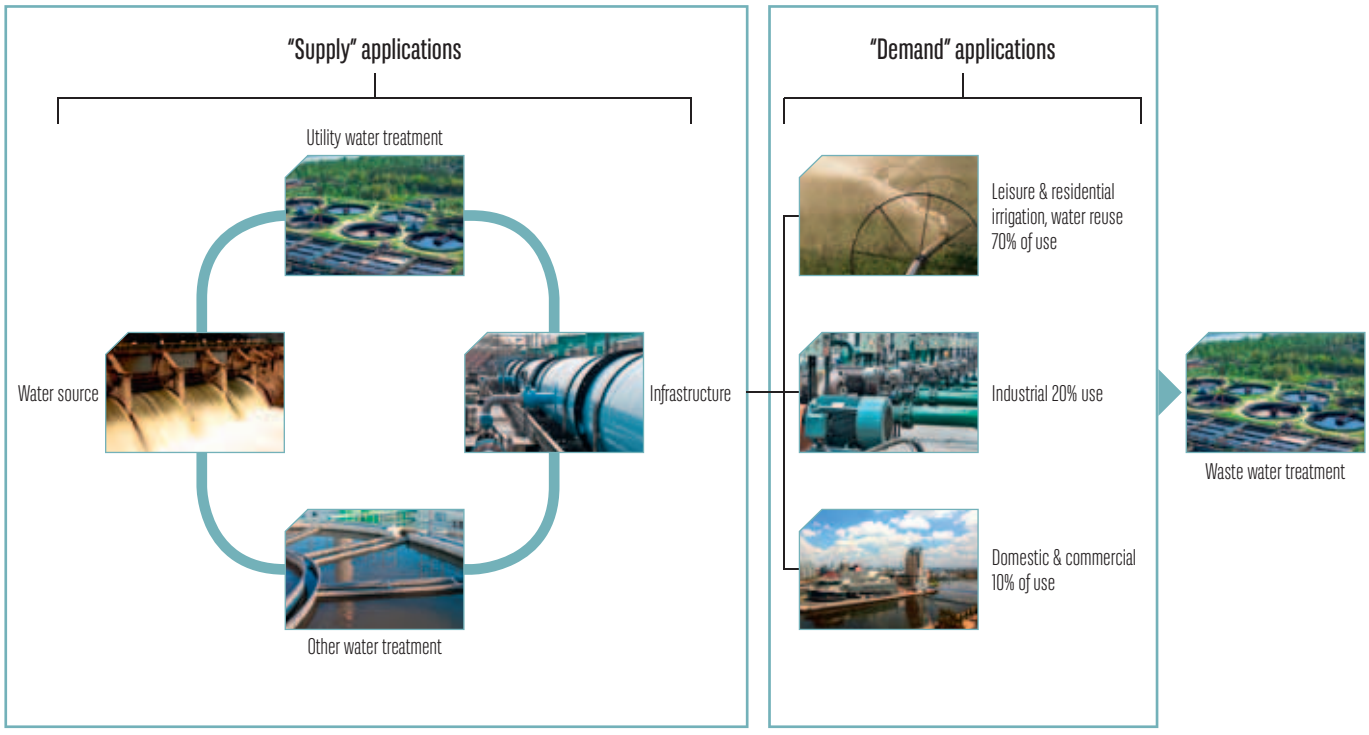
Phenomenon	Impacts			
	Agriculture and Ecosystems	Water resources	Human health	Industry, settlements and society
Heavy rain, hail or snow	Damage to crops; soil erosion; inability to cultivate land due to waterlogging of soils	Adverse effects on quality of surface and groundwater; contamination of water supply; water scarcity may be relieved	Increased risk of deaths, injuries and infectious, respiratory and skin diseases	Disruption of settlements, commerce, transport and societies due to flooding; pressures on urban and rural infrastructures; loss of property
Drought increases	Land degradation, lower yields/crop damage and failure; increased livestock deaths; increased risk of wildfire	More widespread water stress	Increased risk of food and water shortage; increased risk of malnutrition; increased risk of water- and foodborne diseases	Water shortages for settlements, industry and societies; reduced hydropower generation potentials; potential for population migration
Tropical cyclone	Damage to crops; windthrow (uprooting) of trees; damage to coral reefs	Power outages causing disruption of public water supply	Increased risk of deaths, injuries, water- and foodborne diseases; post-traumatic stress disorders	Disruption by flood and high winds; withdrawal of risk coverage in vulnerable areas by private insurers; potential for population migrations; loss of property

INVESTING IN THE WATER SECTOR

From an investment perspective, we believe the growing imbalance between supply and demand represents the key attraction of investing in the water sector.

The figure below[31] identifies the main categories of supply and demand within the global water sector, which is currently estimated to be a USD 450-500 billion global market[33].

Figure 6 - Global water industry: a USD 450bn-500bn opportunity



> "The water sector is currently a USD 450-500 billion global market"

> "China will invest USD 3.7-4.4 billion in the sector by 2015"

In this section, we examine what we consider to be the pivotal factors in evaluating the investment characteristics and potential of the water sector:

A. The value chain

B. Sector growth

C. M&A activity

D. Prospects for water pricing

E. Defensive or cyclical?

F. Risks and challenges

A. The value chain

Water investing is about investing in companies with business models that contribute to addressing supply-demand imbalances. From an investment perspective, a balanced portfolio can be constructed with exposure to early cycle, late cycle and defensive business models. To simplify how we, as investors, can categorise the investible water universe, we split the sector into three categories, based on different parts with their own investment characteristics: water infrastructure, water treatment and water utilities[34].

1. Water infrastructure:

- **Pumps, pipes and valves** – relatively commoditised products, with some early cyclical exposures to the construction and the general industrial capital expenditure cycles. While growth of 2% to 4% on a global basis is steady, emerging markets growth can reach 10% to 15%.
- **Water reuse, conservation and irrigation equipment** – particularly attractive growth rates in the emerging markets and Asia. Global growth rates of 6% to 12%, with up to 16% achievable in Asia.
- **Demand reduction products and metering infrastructure** – predominantly a developed market technology, with substantial (potentially double digit) market growth potential. Construction market exposure implies a degree of early cyclicality.
- **Infrastructure projects** – globally a 6% growth business, but with emerging market growth expectations of between 12% and 24%. Attractive Asian opportunities exist given government commitments to investing heavily in water infrastructure.

2. Water treatment:

- **Chemical treatment** – chemicals used for the treatment of municipal/utility water sources (water and waste water) as well as industrial water and wastewater have a growth profile of GDP + 1% to 2%. Water chemicals tend to be an operating expenditure item to their users and are often characterised as having relatively low monetary value, but high importance in the process in which they are used. Rather than relying on new capital investment for growth, water chemical companies tend to exhibit generally good earnings visibility due to the importance of their product in existing processes. A degree of cyclicality, but generally quite defensive, predictable companies.
- **Filtration, membrane technology, desalination** – generally less cyclical than water infrastructure companies, but exposed nevertheless to both industrial and utility applications. All 'membrane' or filtration-based businesses offer investors above-average earnings visibility due to the high proportion of recurring 'consumables' revenues generated by the companies involved, as filters wear out and need replacing. Global growth rates of 15% to 20%, with 26% annual growth forecast in China and 15% to 20% in India. Companies in this segment have high value-added products which command higher margins than those of other products in the value chain, and this has been a focus for substantial corporate activity historically.
- **Physical water treatment** – technologies with highly specialised, niche applications, such as ozone and ultraviolet water treatment used both in utility and industrial applications. Also an area of opportunity in the emerging ballast water treatment sector. Companies in this field are characterised by high margins, highly specialised technologies and strong pricing power. Historically, an area of intense mergers and acquisitions activity.

  Globally, water treatment equipment market growth is approximately 2% to 4%, while 13.5% annual growth and 15% to 20% are considered achievable in China and India respectively. Market participants are few in number.
- **Pollution monitoring and testing** – companies involved in the manufacture of machinery for water sample testing, as well as the laboratories involved in sample analysis. These companies focus on fulfilling increasingly strict global water purity regulations and are active in both the industrial and utility fields. The sector has forecast global growth rates of 5% to 7%, with China and India offering growth rates of 11% and 15% to 20% respectively.

3. Water utilities

Regional regulatory regimes are key to understanding global water utilities. The UK, for example, runs on 5-year investment cycles, with inflation passed on to the consumer and contributing to the regulatory asset value of the company. The US system sees utilities invest and subsequently request a region-specific cost of capital from the regulator to enable competitive returns.

China operates on a cost-plus model, set and approved by local governments to allow a return on equity of 8% to 10%. Tariffs are expected to rise in the coming years to facilitate the substantial growth expected in the country. Utilities are extremely defensive in nature, tend to perform well during periods of market volatility, and generally offer dividend yields above those of companies in other industries.

As well as several pure-play companies in the water sector, many multi-industry and electrical equipment companies also have a presence which they can leverage against the various end markets, geographies and technologies. Companies whose activities significantly, though not entirely, relate to the water sector make up an important component of the water industry and are often among the leading providers of a key product or technology. To give an idea of size, the total investment universe contains approximately 300 companies worldwide across water infrastructure, water treatment and utilities.

A potential barrier to investment in this area in the past has been the difficulty in defining this market and understanding its investment characteristics. The launch of the FTSE Environmental Markets Classification System ("EMCS")* in 2009 enables investors globally to clearly identify and measure investment opportunities in environmental markets. The global investment community now has a company classification system with sufficient levels of granularity and precision to define this growing area and assist in the design of investment products. Listed within the EMCS are companies in the water sector.

B. Sector growth

In deriving growth estimates for the water sector, it is important to assess both the developed and the developing world. In developed markets, there is an ongoing struggle to maintain infrastructure within the framework of tightening water quality regulations. Growth tends to be steady, at around 3% to 4% a year. In developing nations, the initial development of systems and infrastructure is still under way. This is driving 8%-10% growth rates that are expected to continue for the foreseeable future.

Below we set out selected examples of technologies and their respective growth rates so as to highlight global versus emerging market examples of the disparity in growth expectations.

Figure 7 - Global growth rates of example water sectors[35]

	Pumps, pipes valves	Water treatment equipment	Desalination, membranes	Water testing equipment	Irrigation	Water, wastewater project market
GLOBAL	2-4%	2-4%	15-20%	5-7%	6-12%	6.2%
CHINA	10-15%	13.5%	26.0%	11%	14-16%	24.0%
INDIA	>15%	15-20%	15-20%	15-20%	16.0%	12-15%

Desalination

A key area of expected growth is the desalination market, especially in coastal regions. Global market growth is currently 15%-20%. Desalination has been around for centuries yet was traditionally done through thermal methods, essentially capturing salt-free steam after heating. Since the 1980's, reverse osmosis and energy-saving equipment have helped drive the sub-sector and have proved an attractive drought-proof remedy. As technologies have advanced, the cost of the treatment has fallen. Indeed, a new study by MIT scientists has revealed further improved techniques which can desalinate water two to three times faster than reverse osmosis[36]. It is estimated that China will invest USD 3.7 to 4.4 billion in the sub-sector by 2015, making it one of the largest and most attractive markets for desalination in the coming years.

* For more information on the FTSE Environmental Markets Classification System and the Independent Committee, please visit the FTSE website: http://www.ftse.com/Indices/FTSE_Environmental_Markets_Index_Series/index.jsp

> "In the US and UK, water tariffs have outstripped headline inflation by 18% and 27%"

The unit costs of desalination processes have fallen considerably over the last three decades, from approximately USD 2.50/m^3 in 1972 to approximately USD 0.65/m^3 in 2010[37]. There is also an economy-of-scale cost benefit associated with increasing plant capacity to effectively reduce membrane desalination plant unit construction costs.

Over the next five years, investment in water infrastructure, wastewater treatment, desalination and water recycling is expected to rise steadily. As climatic conditions and the global water industry change, businesses and utilities will need to invest more in water technologies and infrastructure[38]. The capacity and future capabilities of two leading companies in the sector, China Everbright International Ltd and Xylem Inc., are highlighted below as examples of this.

China Everbright International Ltd

- Hong Kong listed company involved in the construction, upgrade and operation of wastewater treatment plants, reusable water and surface water
- Handles wastewater for more than six million people
- Potential for further growth is supported by China's 12th five-year plan, which boosted investment in wastewater treatment and water recycling by 35%
- Increasing tariffs on water use should continue to generate increased profits as companies strive to increase efficiency and reduce their water costs

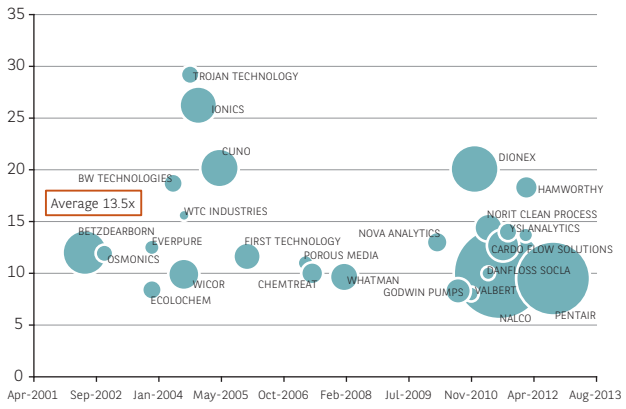
Xylem Inc

- Large global water equipment company
- Manufacturer of pumps, pipes, valves, flow controllers, analytical instrumentation and water treatment equipment selling into a USD 30 billion global water equipment market
- Has a diverse range of end markets including water utilities, agriculture, food &beverage and construction
- Exposure across full water value chain
- Leading market share in most segments
- Defensive business model
- Margin expansion potential
- The Company does business in more than 150 countries and has 12,000 employees worldwide

C. Merger and acquisition activity

Over the last decade, and particularly in the early 2000s, the general pattern of M&A in the water sector has been one of major companies growing through targeted acquisitions, generally focused on the more technologically advanced parts of the water value chain. As a result, and as illustrated in the chart below (Figure 8), average acquisition multiples of 14.8x trailing EV/EBITDA in the water sector have been full when compared to the broader global industrial sector comparable multiple of 12.4x[39]. We argue that these water sector multiples reflect the high technological content of many of the companies involved, as well as their superior global and regional growth prospects. Well-capitalized global equipment companies such as Danaher, ITT (now the quoted 'pure play' water treatment and infrastructure company, Xylem), Siemens and General Electric (GE) in particular have been active acquirers of water assets over the past 10 years, as their low cost of capital enabled these large conglomerates to buy small, high growth, niche-focused businesses. We would highlight that many of the most technologically complex companies active in the sector were acquired in the 2004/2005 period on particularly high multiples of EBITDA; when excluded from the analysis below, it is apparent that over the last decade, acquirers have still consistently been prepared to pay between 10x and 15x EV/EBITDA for access to high quality businesses within the water sector, a handsome premium to sector average multiples.

Figure 8 – Acquisition multiples in the water sector (EV/EBITDA acquisition multiple basis)[4]



Bubble size represents deal size in USD

Between 2002 and 2006, GE acquired BetzDearborn (water treatment), Osmonics (water treatment), Ionics (desalination) and Zenon (membranes) as part of its move into the sector, where it intended to build a broad, high-tech focused portfolio of water businesses to capture the attractive growth rates on offer in those businesses. All of these transactions were completed on EV/EBITDA multiples in excess of 11.9x.

Between 2004 and 2007, Danaher Corporation began to develop its own niche-focused water platform, adding Trojan Technologies (water treatment) and Chemtreat (water treatment) to its smaller Hach acquisition in laboratory testing (1999). These deals were carried out at multiples of 27x EV/EBITDA and 10x respectively.

In 2005, consumer staples business, 3M, also moved into the water sector with its acquisition of Cuno (18x EV/EBITDA), one of the world's largest filtration companies, while Siemens also entered the sector, acquiring US Filter (water treatment) in 2004 for an undisclosed EBITDA multiple.

In the last 18 months, Ecolab has purchased water chemicals group Nalco, Thermo Fisher Scientific has bought Dionex (pollution monitoring and testing) and Pentair has both acquired Norit CPT (ultrafiltration) and proposed a merger with Tyco Flow (water infrastructure) that is scheduled to close in late 2012. We thus believe there is plentiful evidence that the attractions of acquiring high growth, niche-focused businesses remain compelling. While water sector M&A's did not cease following the acquisitions 'boom' of 2002-2006, we believe that the recent scale and frequency of transactions in the sector underpin the investment case in the sector. We also see these recent moves as potentially marking the onset of a second wave of corporate activity/water sector consolidation that seems likely to broaden out to include, in particular, pollution monitoring and testing companies.

D. Prospects for water pricing

Looking at the evolution of water prices relative to headline inflation from 1986 to 2011, real water prices have risen similarly to those of oil, highlighting the scarcity of the resource. Should this trend continue, the sector is likely to offer further risk-adjusted returns for equity investors [41].

Whereas most utilities encounter problems in raising cost-covering water tariffs, the price of water has increased significantly in many places around the globe in recent years. In the US and UK, water tariffs have outstripped headline inflation by 18% and 27% respectively over the past five years. The equivalent statistics for Europe, Canada and Australia show outperformance of 9%, 35% and 22% respectively in water prices over and above headline inflation in the past five years[42].

There is considerable disparity in water prices between countries. The price of a cubic metre of water in France, which is relatively water-rich, is about 50% higher than the price of a cubic metre of water in Spain, which is considered to be water poor. Also, countries like the UK, Denmark and Germany set tariffs not only covering operating costs, but also covering the capital financing costs. On the other hand, in countries like Libya, Ireland and Turkmenistan, which barely charge for water services at all, the taxpayers bear the entire financing burden. In China and India, water is very cheap as a percentage of disposable income, but this fosters over-extraction of water resources, a situation that will prove to be unsustainable over the long term[43].

In the case of China, in 2009 the integrated water price of 36 large and medium-sized cities went up 5.5% year over year. Larger increases can be expected in the years ahead, given that many hike requests have been lodged with the local pricing agency but have yet to be implemented. Recent tariff announcements highlight the government's strong commitment to raising tariffs, an important factor in the future development of the Chinese water market[44].

E. Defensive or cyclical?

It is often thought that investing in the water sector boils down to utility companies and is therefore protected from cyclical downturns. This is not necessarily so. While there are defensive elements to water investing, enabling the construction of a portfolio biased to the defensive, it is also possible to access growth or to create a more balanced portfolio through the market cycles[45]. Water utilities are known for their defensive qualities, given that the sector yields regulated, stable earnings with consistent revenues, and its inflation-hedging potential. Infrastructure is closely linked to the construction market and is also renowned for its defensive qualities, especially in the developed world. The opportunities for investment in emerging markets have, however, opened up a stronger growth play wherein earnings have the potential to escalate.

Water demand for municipal use varies little, but is far more cyclical for commercial and industrial end users. The propensity to defer infrastructure upgrades adds a cyclical element to the demand curve for all the equipment and services associated with the water sector.

In general however, water portfolios have shared the risk profile of the broader global equity markets. As an example, the FTSE EO Water Technology Index total return's beta versus the MSCI World Index was 1.05 over the three-year period

> "Historically, the water sector has had attractive risk/return characteristics"

to August 2012. We believe that long-term megatrends in water, including the supply-demand imbalances and greater awareness of global water quality, should result in consistent growth over the demand cycle.

F. Risks and challenges

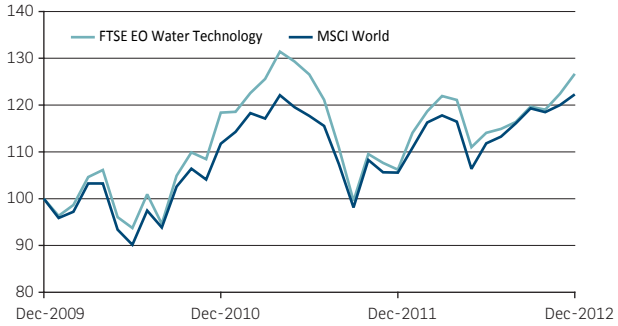
As with other infrastructure investments, water and sanitation projects can be affected by political and macroeconomic instability, inadequate and frequently changing legal and regulatory environments, and insufficient government commitment to contractual obligations. When investing in shares of companies active in this space, investors need to be mindful of the following risks, among others:

- **Low perceived project returns** - Returns across much of the water industry are seen to be insufficient to cover the perceived risks and secure the necessary financing for water infrastructure projects. Utilities tend to invest in infrastructure assets where i) the relevant regulations have been stable; ii) the regulator is immune from direct political intervention; and iii) the investment is likely to provide solid returns.
- **Technical expertise** - Lack of private sector involvement may hold back public sector investment due to the limited technical expertise of the latter.
- **Budgetary constraints** - Public sector investment is often limited by budgetary constraints, especially in times of austerity programmes.

SECTOR PERFORMANCE

In the last three years, experience shows that the water sector has significantly outperformed global markets on a cumulative total return basis (see Figure 9). Improvements in science and technology have greatly contributed to an influx of new products and services for equipment and water service companies. We believe that such advances will open the door to enhancements in efficiency, distribution and filtration. Scientific study is also providing a greater understanding of water properties, which can be applied at a commercial level for ultrafiltration, desalination and wastewater treatment.

Figure 9 - Water has outperformed the broader global markets[46]



The added value of active portfolio management

Exchange Traded Funds (ETFs) offer one possible investment approach; they are generally liquid and their associated costs are relatively low. However, due to the liquidity they require, water sector ETFs tend to be dominated by the larger, more liquid companies, particularly the lower-growth utilities. In contrast, the more illiquid, smaller cap, pure-play stocks that specialist fund managers can access can open up growth opportunities such as emerging technologies. Active portfolio management of water stocks draws on such specialist expertise, enabling portfolio construction to capitalise on niche markets, evolving company valuations and end-market dynamics.

In addition, the level of demand for certain companies or sub-sectors within the water value chain can vary due to changing water regulations, uneven company performance and/or the degree to which they are affected by the macroeconomic environment. Active management allows the portfolio to vary its exposures accordingly and thus potentially benefit from fluctuating valuations.

Conclusion

The global availability of accessible fresh water is under considerable strain. Concerns over the scarcity of water resources are set to increase in the coming years as a result of rapidly rising populations and more people striving for higher standards of living, underinvestment in water infrastructure, and worsening climatic impacts. The need to avoid wasting water has had to be addressed. The growing gap between supply and demand will continue to fuel the need for more effective solutions in water utilities, infrastructure and technologies.

Significant progress comes at a cost and the sector will need substantial capital investment into companies that contribute to reducing supply-demand imbalances. This opens the door to a number of investment opportunities into companies providing new ways to supply, distribute, conserve and treat water. Investing in the water sector can be complex, given the speed at which it is evolving and the array of global contributors. Navigating the opportunities should be done with the help of skilled portfolio management, so as to achieve competitive advantages, and keeping abreast of the many legislative and technological developments.

The recent outperformance of the water sector (as highlighted by the FTSE EO Water Index versus the MSCI World index) has yielded consistent risk-adjusted returns for investors. Although the sector has provided an effective defensive position over the past few years, its value is expected to rise in tandem with global demand. It is this demand that will ensure that the water sector develops into a dynamic future market, with significant long-term investment potential.

“Navigating the opportunities should be done with the help of skilled portfolio management”

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