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Investing in Water:
GLOBAL OPPORTUNITIES IN A GROWTH SECTOR

For professional Investors – January 2013

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1. Executive summary

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 investments in water treatment technologies and distribution infrastructure to reduce these 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 and requires a deep knowledge of current 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 sector within global equities, with significant long-term investment potential. This paper outlines the opportunities available to long term investors in this exciting market.

2. The gap between water supply and demand

There are some 336,000,000 cubic miles of water on earth and circulating through the hydrological cycle. The vast majority of this is salt water, only 2.5% of the total is considered 'fresh', and less than 1%, or 0.025% of all water on earth[i], is accessible surface water.

While fresh water supplies are relatively static, the global population is expected to increase from around 7.0 billion to an estimated nine billion by 2050[ii]. This would be enough to meet humanity's needs – if it were evenly distributed. It is not. In Malaysia, every 100 people share 35 million cubic feet of water, while in India this volume must supply 350 people, and in Israel, 4,000[iii]. In many areas, water is polluted, exacerbating the supply constraint. Almost one-third of the world's population 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 63 trillion of global GDP, or approximately 22%, at risk by 2050[iv]. [v]In developed countries, roughly half of all water consumed is for industrial use, whereas in developing countries, agriculture is usually the biggest consumer, at levels approaching 80%. The growing imbalance between supply and demand is underpinned by four key factors:

1. Population growth
2. Ageing infrastructure
3. Water regulation
4. Extreme weather

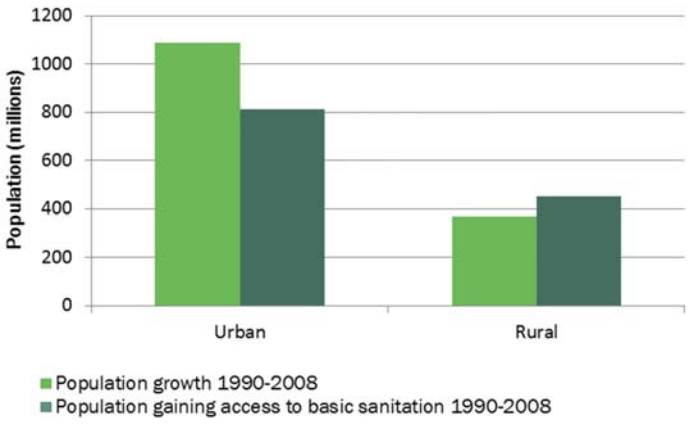
1. POPULATION GROWTH

The number of people on our planet is increasing rapidly, at 1% - 3% per year, and is the main reason behind additional demand for water. The UN predicts that by 2050 two-thirds of the world's inhabitants will be 'water stressed', with two billion people living in countries facing water scarcity[vi]. This is a particular issue in emerging markets, with Asia having 60% of the world's population but only 36% of the world's fresh water supply (in China these figures are 21% and 7% respectively)[vii] . Conversely, the numbers for the US are 8% and 15% respectively[viii], although this masks a significant imbalance within the country.

This population growth, urban migration and rising living standards, is greatly increasing the demand for water services. Furthermore, an expanding and more affluent middle class with a preference for a higher protein/meat diet in many emerging economies is exacerbating agricultural water demand. 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 an urgent need in many places in both developing and developed regions.

Urban areas in particular are under strain, as people migrate to cities seeking 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[ix] million people between 1990 and 2011 and now exceeds the rural population. A further 400 million people are expected to move to urban areas by 2025[x], increasing the total number living in Chinese cities to approximately one billion. This huge strain on existing infrastructure is driving substantial government investment (China Five-Year Plan 2012: USD 450 billion[xi]). Clearly, China is not alone in facing these challenges; there are similarly ominous supply and demand imbalances in emerging economies such as India and Brazil. However, in China, now the world's largest economy, issues such as the downward trend in access to basic sanitation among both the growing urban and the rural populations, are notable (see Fig. 1).

Figure 1: Much of China's new urban population lacking access to basic sanitation[xii]



In 2001, people consumed 54% of the world's available fresh water. If water utilization continues to rise steadily, population growth alone will account for the consumption 70% of available fresh water by 2025[xiii]. 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

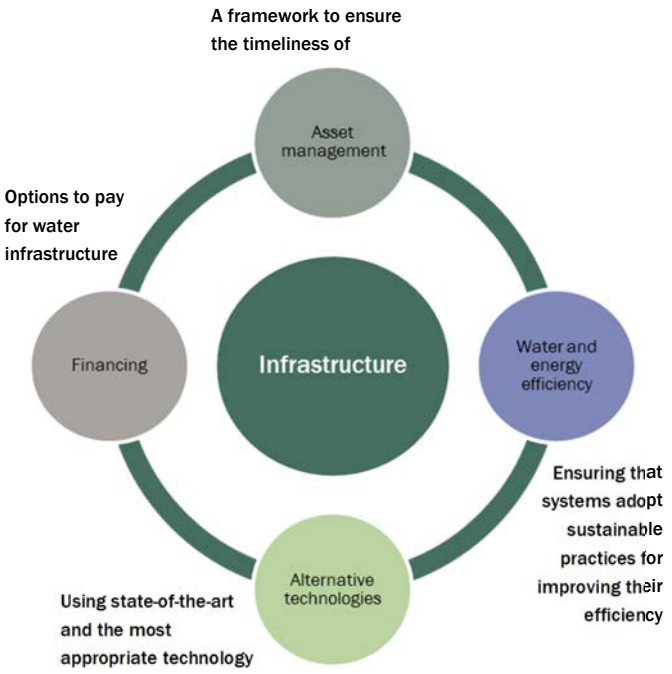
Accelerating urban growth is sharpening the demand for robust infrastructure to deliver the water needs in both the developed and developing world. In developed nations there has been significant underinvestment in repairs and upgrades, especially to urban infrastructure, much of which was built in the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

The gap between water supply and demand

Due to damage and inefficiencies, an estimated 30% - 40% of water is lost to leakage in such systems[xiv]. In most cases water infrastructure was not built to cope with the levels of use to which it is now subjected and this has placed 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 Fig.2 below[xv]:

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. The city is meeting this target but the financial loss is still severe. San Diego loses at least USD 21.8 million annually from leaked water[xvi]. The water authorities cannot pinpoint where these losses are occurring, whether from faulty meters, leaking pipes or unauthorized 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 infrastructure that is over 150 years old. Thames Water has proposed a long-term objective to reduce leakage by approximately 50% by 2035, and to endeavour to keep leakage levels in line with other developed world cities[xvii].

In Sao Paulo, Brazilian quoted water utility, Sabesp (Companhia De Saneamento Básico Do Estado De São Paulo), is investing BRL 4.3 billion in its Water Loss Program 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[xviii]. In Manila, the Philippines, the target for Non-Revenue Water (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[xix].

Ageing and deteriorating infrastructure is also a major issue in the US[xx]. In 2008, the EPA conducted a study that identified an investment requirement of USD 298 billion 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 productive 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 meet their Clean Water Act and Safe Drinking Water Act requirements more effectively, 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 agendas, not least because governments and their regulators dictate the quality of water, the quality of service, and the price.

The gap between water supply and demand

In Europe the water supply is under intense pressure and nearly half of the people in the EU live in water-stressed areas[xxi]. 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[xxii]. 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. Water quality also remains under constant threat of pollution from various sources. 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.

The Water Framework Directive has four key economic principles:

Water users (e.g. 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 12th 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[xxiii]. By the end of the 12th Five-Year period, China aims to treat 85% of its urban wastewater. This would require the building of 1,200 new treatment plants 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[xxiv].

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

The gap between water supply and demand

Figure 3 – Strong regional regulations driving water investment[xxv]

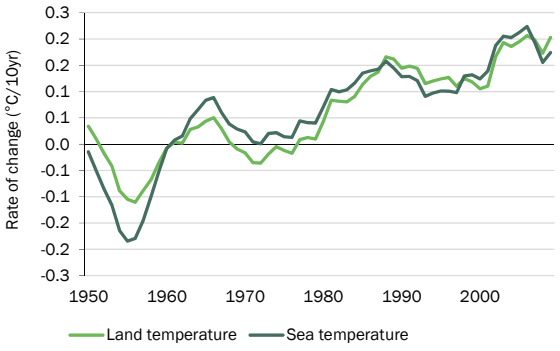
EUROPE	US	ASIA
Dangerous Substances Directive **(1976): cadmium, mercury, DDT etc**	**Clean Water Act (1976):** pollutant discharge legislation, BOD/COD, temperature, turbidity, nitrogen, phosphorus, heavy metals such as mercury and cadmium, and synthetic organic chemicals such as dioxin and PCBs	**China – 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 fertiliser 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
		China - 12th Five-Year Plan: Water and waste USD 450bn – specific provisions approved for enhanced water quality

4. EXTREME WEATHER EVENTS AND CLIMATE CHANGE

Extreme weather and climate change are exacerbating the fresh water 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 in glaciers, snow pack, lakes, wetlands, soil and groundwater.

A warming planet poses a particular threat to the Earth's glaciers which are the largest reserves of fresh water, acting as buffers by releasing in summer the water accumulated during the winter. Rising temperatures are accelerating glacial melt, and the depletion of this freshwater source could have catastrophic effects on ecosystems, power generation and freshwater supplies[xxvi]. Fig.4 below 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[xxvii]



Land temperature = Goddard Institute for Space Studies ("GISS") temperature analysis
Sea temperature = Haley Centre's HadCRUT3 sea surface temperature analysis

The Gap between Water Supply and Demand

Global warming is also changing rainfall patterns with important implications. In Southern Europe, rainfall has decreased in recent years. In the second half of this century, annual rainfall is forecast to be up to 40% lower than current levels. Summer rains are predicted to become scarcer and summer temperatures to rise. The International Panel on Climate Change (IPCC) warns that summers could be 6°C hotter in Spain and Portugal by 2070[xxviii].

In many regions, climate change is expected to have a significant impact on water resources in the coming decades. The latest report for the IPCC 34th session[xxix] anticipates the following trends:

In the high latitudes and in some tropical regions, the average annual runoff will increase by 10% to 40% by the middle of this century.

It is likely that even wider areas will be affected by drought and that water shortages will be more common.

An overall increase in the frequency of heavy downpours is predicted. This increases the probability of human settlements experiencing flooding and severe damage.

The volume of water stored in glaciers and the snow pack will decline over the course of the next century. After an initial phase of increased discharge there will be less water available in regions supplied by melt-water run-off from major mountains. This is of particular concern as 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 little data is currently available on the socio-economic aspects of climate change and the impacts related to water resources and water demand. Despite its significance, groundwater has also received little attention in climate change impact assessment, compared to surface water resources. Fig.5 below shows the impact of severe weather events on the water cycle as well as on agriculture, industry and human needs.

Figure 5 – Climate Change will impact the entire water cycle[xxx]

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 water logging 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 food borne diseases	Water shortages for settlements, industry and societies; reduced hydropower generation potentials; potential for population migration
Tropical cyclone	Damage to crops; wind throw (uprooting) of trees; damage to coral reefs	Power outages causing disruption of public water supply	Increased risk of deaths, injuries, water- and food borne 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

3. Investing in the water sector

We believe the growing imbalance between supply and demand represents the key attraction of investing in the water sector.

The diagram below[xxxi] 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[xxxii].

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

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

A. The value chain
B. Sector growth
C. Merger and Acquisition activity
D. Prospects for water pricing
E. Defensive or cyclical?
F. Risks and challenges

A. THE VALUE CHAIN

Water investments with strong growth potential have business models that are addressing supply-demand imbalances. A balanced portfolio of water investments can be constructed with exposure to early cycle, late cycle and defensive business models. To simplify how investors can categorize the investible water universe, we split the sector into three categories: water infrastructure, water treatment and water utilities[xxxiii].

Investing in the water sector

1. Water infrastructure:

Pumps, pipes and valves – Relatively commoditized products, with some early cyclical exposures to the construction and the general industrial capital expenditure cycles. While growth of 2% - 4% on a global basis is steady, emerging markets growth can be up to 10% to 15%.

Water reuse, conservation and irrigation equipment – Attractive global growth rates of 6% - 12%, with up to 16% achievable in emerging markets and Asia.

Demand reduction products and metering infrastructure –Predominantly a developed market technology, with potentially double digit market growth potential. Construction market exposure implies a degree of early cyclicality.

Infrastructure projects – Globally a 6% growth business, but emerging market growth expectations are between 12% and 24%. Attractive Asian opportunities exist given government commitments to invest 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 waste water have a growth profile of GDP + 1% -

2%. Water chemicals tend to be an operating expenditure item and are often characterized as having relatively low monetary value, but high importance in the treatment process. Rather than relying on new capital investment for growth, water chemical companies tend to have clear earnings visibility due to the importance of their product in existing processes. This area exhibits a degree of cyclicality but is generally defensive.

Filtration, membrane technology, desalination – As a rule these businesses are less cyclical than water infrastructure companies, but nevertheless are exposed to both industrial and utility applications. Filters wear out and need replacing hence all 'membrane' or filtration-based businesses offer investors above-average earnings visibility due to the high proportion of recurring 'consumables' revenues generated. Global growth rates are around 15% - 20%, with 26% annual growth forecast in China and 15% - 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 historically this has been a focus for substantial corporate activity.

Physical water treatment – Technologies with highly specialized, niche applications, such as ozone and ultraviolet water treatment are used in a number of utility and industrial applications. The emerging ballast water treatment sector is another area with interesting investment potential. Companies in this field tend to have high margins, specialized technologies and strong pricing power. Historically, another area of intense mergers and acquisitions activity.

The global water treatment equipment market is predicted to grow at approximately 2% - 4%, while 13.5% annual growth and 15% to 20% are considered achievable in China and India respectively. There are relatively few market participants.

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% - 7%, with China and India offering growth rates of 11% and 15% - 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% - 10%. Tariffs are expected to rise in the coming years in order to facilitate the substantial growth expected in the country. Utilities are defensive in nature, tend to perform well during periods of market volatility, and generally offer higher than average dividend yields.

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. The total water investment universe contains approximately 300 companies worldwide which span water infrastructure, water treatment and utilities.

Investing in the water sector

In the past a potential barrier to investment in this area has been the difficulty in defining this market and understanding its investment characteristics. The launch of the FTSE Environmental Markets Classification System ("EMCS")[1] in 2009 enables investors to identify and measure investment opportunities in global environmental markets. The investment community now has a company classification system with sufficient granularity and precision to define this growing area and assist in the design of investment products. Water sector companies are listed within the EMCS.

[1]For more information on the FTSE Environmental Markets Classification System and the Independent Committee, please visit the FTSE website: http://www.ftse.com/products/indices/Env-Markets

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 on-going struggle to maintain infrastructure within the framework of tightening water quality regulations. Growth tends to be steady, at around 3% - 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 several years.

Below are selected examples of technologies and their respective anticipated growth rates which highlight global versus emerging market examples and the disparity in growth expectations.

Figure 7 – Global growth rates of selected water sectors[xxxiv]

	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

The desalination market is expected to show robust growth, especially in coastal regions where energy is relatively cheap. Global market growth is currently 15% - 20%. Desalination has been undertaken for centuries, traditionally by 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 solution. 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[xxxv]. It is estimated that China will invest USD 3.7 - 4.4 billion in the sub-sector by 2015, making it one of the largest and most attractive future markets.

The unit costs of desalination processes have decreased considerably over the last three decades, from approximately USD 2.50 per cubic meter in 1972 to around USD 0.65 per cubic meter in 2010[xxxvi]. There is also an economy-of-scale cost benefit associated with increasing plant capacity and construction costs.

Investing in the water sector

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[xxxvii].

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

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

Xylem Inc.

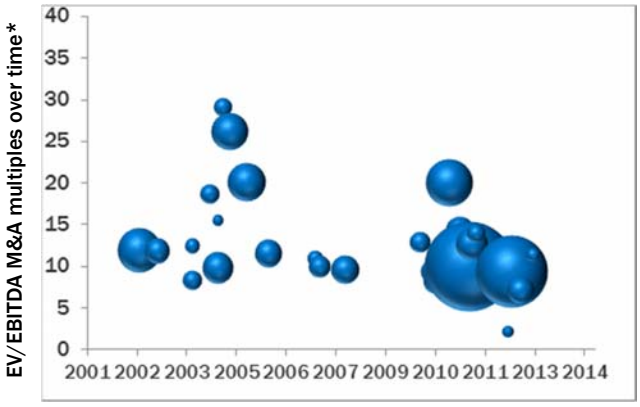
- Large global water equipment Company.
- Manufacturer of pumps, pipes, valves, flow controllers, analytical instrumentation and water treatment equipment selling into a USD 30 billion global water equipment market.
- Has a diverse range of end markets including water utilities, agriculture, food &beverage 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, mergers and acquisitions ("M&A") have been a major sector driver. The general pattern of M&A in the water sector has been for companies to grow and diversify through targeted acquisitions. The focus has been on the more technologically advanced parts of the water value chain. As a result, and as illustrated in the chart below (Fig.8), average acquisition multiples of 14.8x trailing EV/EBITDA in the water sector have been stronger than the broader global industrial sector comparable multiple of 12.4x[xxxviii]. 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) 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 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 have been compelling for water investors[xxxix]



Source: Bloomberg. Data as at 31 December 2013. Bubble size represents relative deal size in USD.

Investing in the water sector

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 built 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 completed 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. Siemens also entered the sector, acquiring US Filter (water treatment) in 2004 for an undisclosed EBITDA multiple.

In the last 24 months, Ecolab has purchased water chemicals group Nalco. Thermo Fisher Scientific has bought Dionne (pollution monitoring and testing) and Pentair has both acquired Norit CPT (ultra filtration) and recently completed a merger with Tyco Flow (water infrastructure). We thus believe there is plentiful evidence that the attractions of acquiring high growth, niche-focused businesses remain compelling. While water sector M&A did not cease following the acquisition '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 strong risk-adjusted returns for equity investors[xl].

Whereas most utilities encounter issues raising cost-covering water tariffs, the price of water has increased significantly in many regions 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 the same period for Europe, Canada and Australia show outperformance of 9%, 35% and 22% respectively in water prices over and above headline inflation[xli].

There is considerable disparity in water prices between countries. The price of a cubic meter of water in France, which is relatively water-rich, is about 50% higher than the price of a cubic meter of water in Spain, which is considered to be water-poor. Countries including the UK, Denmark and Germany set tariffs not only covering operating costs, but also covering the capital financing costs. Libya, Ireland and Turkmenistan, barely charge for water services at all and 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[xlii].

In China in 2009 the integrated water price of 36 large and medium-sized cities went up 5.5% year-on-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[xliii].

E. DEFENSIVE OR CYCLICAL?

Water utilities are known for their defensive qualities, given that the sector yields regulated, stable earnings with consistent revenues which are considered to be an effective inflation-hedge. 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.

It is often thought that investing in the water sector means investing in utility companies and investments are therefore protected from cyclical downturns. This is not necessarily so. While there are defensive elements to water investing, it is also possible to access growth or to create a more balanced portfolio through the market cycles[xliv].

Water demand for municipal use does not vary much, but it 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.

However, water portfolios have shared the risk profile of the broader global equity markets. The FTSE EO Water Technology Index total return's beta versus the MSCI World Index was 1.05 over the three-year period to August 2012. We believe that the major long-term trends in water, including the supply-demand imbalances and greater awareness of global water quality, should result in consistent growth over the demand cycle.

Investing in the water sector

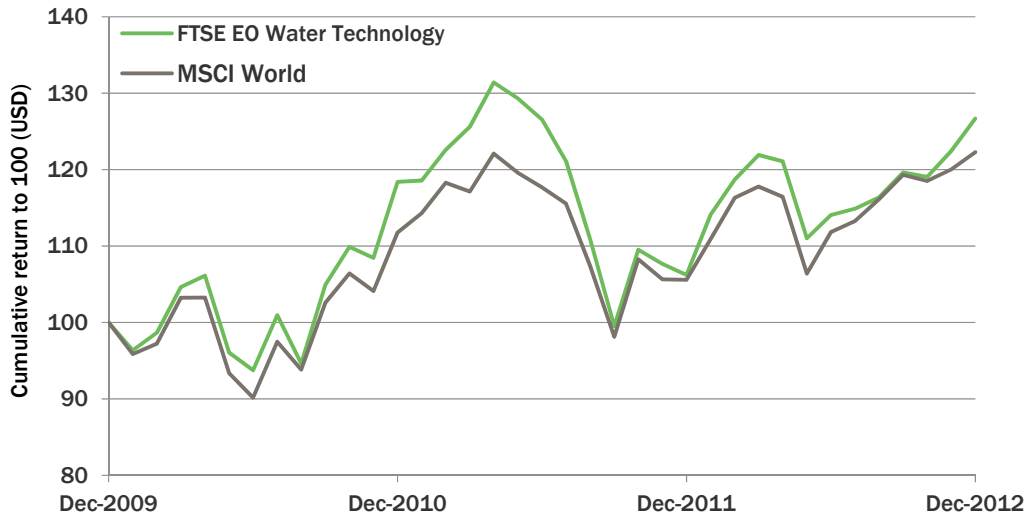
F. RISKS AND CHALLENGES

As with other infrastructure investments, water and sanitation projects tend to 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 these companies, investors need to be mindful of the following risks

- **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 appears 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.

In the last three years, the water sector has outperformed global markets on a cumulative total return basis (see Fig.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 lead to enhancements in efficiency, distribution and filtration. Scientific research is also providing a greater understanding of water properties, which can be applied at a commercial level for ultra-filtration, desalination and wastewater treatment.

Figure 9 – Water has outperformed the broader global markets



Source: FactSet. Data as at 31 December 2013 in USD. MSCI index is total net return (net dividend reinvested), FTSE index is total net return (net dividend reinvested)

4. 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 higher trading volumes they require, water sector ETFs tend to be dominated by the larger, more liquid companies, particularly the lower-growth utilities. In contrast, the smaller cap, pure-play stocks that specialist fund managers can identify, value and access open up further growth opportunities in emerging technologies. Active portfolio management of water stocks requires deep understanding and specialist knowledge so that portfolio construction can to capitalize on specialist 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 macro-economic environment. Active management of a balanced portfolio allows for varying exposures and positioning to benefit from fluctuating valuations over time.

5. Conclusion

The global availability of accessible fresh water is under major strain. Concerns over the scarcity of potable water resources will be compounded in the future as a result of rapidly rising populations and living higher standards, under-investment in water infrastructure, and the likely further impact of climate change. The need to minimize water wastage must be addressed. The broadening 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 future capital investment. This will lead to a number of investment opportunities in 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 wide range of global opportunities. Navigating the opportunities should be done with the help of experienced, skilled portfolio management, in order to achieve competitive advantages, and keep 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.

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