

UBS Investment Research

Q-Series®: Water

Water scarcity: The defining crisis of the 21st century?

■ Water stress increasingly affecting developed economies

Water stress is increasingly affecting developed as well as emerging economies. This is likely to increase with population growth, urbanisation and the impacts of climate change. Thus, is water scarcity the defining crisis of the 21st century?

■ The 'water industry' - a framework

We undertook an extensive review of scientific literature and reports by the UN and others on the extent and impact of water stress on populations and economies. We then created the framework of a cross-sectoral 'water industry', representing the business chain of 'water-solutions companies': infrastructure, treatment and filtration, and metering/gauging.

■ Investing in water: Themes

Our focus is on opportunities for companies in the 'water industry', which may profit by providing potential 'water solutions'. In consultation with UBS analysts across sectors, we conclude that there may be opportunities for firms in the following areas: utilities; pumps, pipes and valves; new technologies for water and waste water treatment; metering; and quality testing.

■ Investing in water: Stocks

We highlight utilities: American States Water Company, IAM, Manila Water Company, Aqua America; filtration/treatment companies: Pall Corp, Kurita Water, Bio-Treat Technology; pumps, pipes and valves companies: Geberit, Weir, Rotork; and metering and testing companies: Thermo-Electron.

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Executive summary

Water scarcity: The defining crisis of the 21st century?

About 1.1 billion people around the world currently lack access to good water supplies and, according to the 2006 UN World Water Development Report¹, ‘in many parts of the world, available water quantity is decreasing and quality is worsening.’ This is true not only of the developing nations, as the report highlights the increasing water challenges also facing the wealthier nations.²

The amount of fresh water available for consumption is estimated to be less than 1% of all water, and it is widely believed that this figure is likely to decline further as a result of urbanisation, population growth, climate change and contamination of water sources. Groundwater is the largest available supply of fresh water, where the water is held in layers of porous rock, or aquifers. When groundwater supplies are over-utilised, even when surface water sites and reservoirs are replenished after heavy rainfall, that rainfall may not be sufficient for groundwater renewal.

Agriculture is by far the largest user of water, using an average of 70% of all water, though this figure disguises wide variations: in the relatively wet UK, water used for agriculture accounts for less than 1% of consumable water, whereas in Spain, Portugal and Greece irrigation water exceeds 70% of the total. In many developing nations, irrigation uses more than 90% of available water resources³. In the US, irrigated agriculture has been depleting groundwater resources beyond natural recharge rates for several years in some regions. For example, in the High Plains aquifer, the principal source of drinking water and irrigation for more than 20% of the US cropland from South Dakota to West Texas, the water level has fallen and is close to depletion in certain areas. According to the OECD, ‘in certain parts of the US, water depletion now poses a serious threat to the sustainability of the agricultural and rural economy’.⁴

Damming and flood control may provide solutions in certain circumstances, but large-scale projects can often have negative impacts, resulting ultimately in less water being available. For example, in Egypt, the Aswan Dam has caused the Nile Delta to shrink, and a ‘dramatic increase in floods on the Rhine River has been attributed to increased urbanisation, engineering, and the walling off of the river from its floodplain’.⁵ The total effects of such ‘river fragmentation’ – or the interruption of a river’s natural flow to the sea by dams, inter-basin transfers or water withdrawal – are not fully understood, but are thought to affect the entire biodiversity and ecological structure of the surrounding area⁶.

Increasing challenges for water face many parts of the world, including wealthier nations

Agriculture – the largest use of water, using an average of 70%

“In certain parts of the US, water depletion now poses a serious threat to the sustainability of the agricultural and rural economy”

Human efforts to control the hydrological cycle, such as damming and flood control, may exacerbate ‘river fragmentation’ and water pollution

¹ Water: a shared responsibility; The United Nations World Water Development Report 2, 2006

² UNEP - Global Economic Outlook, 2000

³ Water Facts and Trends; World Business Council for Sustainable Development, March 2006

⁴ Water and farms: Towards Sustainable use; OECD Directorate for Food, Agriculture and Fisheries, Parris and Legg, March 2006

⁵ www.unep.org/vitalwater/23.htm

⁶ Ward and Stanford, 1989, and Dynesius and Nilsson, 1994, as cited in Revenga et al., 2000

Scope of this report

It is not the scope of this report to discuss the wider social, ethical and humanitarian issues emanating from any impairment of human rights to water access; these have been comprehensively and coherently detailed in reports by the United Nations, World Health Organisation (WHO) and other non-governmental organisation (NGOs). Instead, we attempt to highlight the ways in which these potential social and environmental problems may impact companies, and how some companies can potentially add value by responding to these problems. We particularly focus on potential business opportunities for those companies that appear to offer direct solutions to the water-scarcity issue.

In this publication, we focus purely on potential business opportunities in the 'water business', ie, firms engaged in water infrastructure (including pumps, pipes and valves), water filtration and treatment, and water metering and quality testing. Investment ideas in the report are taken from a universe of UBS Buy and Neutral recommended stocks, although we also mention stocks not covered by UBS that offer exposure in the water-solutions area. We have concentrated on companies for whom the 'water business' is a large part of their business and/or likely to be their main area of growth. We have not, therefore, considered large conglomerates, such as General Electric or Siemens, both of which have Water Technology divisions and are likely to be major players in the segment.

We highlight utilities: American States Water Company, IAM, Manila Water Company, Aqua America; filtration/treatment companies: Pall Corp, Kurita Water, Bio-Treat Technology; pumps, pipes and valves companies: Geberit, Weir, Rotork; and metering and testing companies: Thermo-Electron.

Of course, the issues surrounding water and its efficiency of use are wide ranging, and many firms and sectors could potentially be impacted in different ways, whether, for example, in the procurement of water or the imposition of regulatory targets on water efficiency. For a discussion of the wider water-related risks and opportunities, and a watchlist of water-strategy-related firms, see *Water debate: Fresh water – liquid gold* by Julie Hudson, 29 March 2006.

We focus on the potential business opportunities for those companies providing solutions to the water-scarcity issue

We focus on the 'water business': infrastructure, treatment and metering/testing

Water issues will affect many sectors. See *Water debate: Fresh water – liquid gold* by Julie Hudson, 29 March 2006

Table 1: Companies mentioned in this report

Company	Industry	Theme	Country	Price target (local cur)	Price (local cur)	Upside/downside to price target	EV/EBITDA 2006E	PE 2006E	Rating	Analyst
Pall Corp.	Advanced industrial equipment	Filtration/Treatment	United States	36	31.5	14%	11.59	20.585	Buy 2	Jeffrey Cianci
Kurita Water Industries	Factory equipment	Filtration/Treatment	Japan	2,700	2,285	18%	9.55	24.253	Buy 2 (CBE)	Hidehiko Hoshino
Bio-Treat Technology	Water utilities	Filtration/Treatment	Singapore	0.9	0.68	32%	10.06	23.524	Buy 2 (CBE)	Jaj Singh
Nalco Holding Company	Chemicals, specialty	Filtration/Treatment	United States	19	19.05	0%	9.30	27.579	Neutral 1	Jeffrey Cianci
Nitto Denko	Chemicals, specialty	Filtration/Treatment	Japan	7,200	6,640	8%	9.92	22.135	Neutral 2	Fumihide Goto
Abengoa	Advanced Industrial Equipment	Filtration/Treatment	Spain	22.7	21.88	4%	9.69	26.396	Neutral 2 (CBE)	Ignacio Carvajal Cebrian
American States Water Company	Water utilities	Infrastructure	United States	43	38.58	11%	9.93	24.24	Buy 1	Ajay Jain
Inversiones Aguas Metropolitanas	Water utilities	Infrastructure	Chile	776	588	32%	9.74	13.03	Buy 1 (CBE)	Ben Laidler
Manila Water Company	Water utilities	Infrastructure	Philippines	10.3	8.9	16%	5.45	8.7557	Buy 2	Karisa Magpayo
aqua america	Water utilities	Infrastructure	United States	27	22.29	21%	13.98	30.489	Buy 2	Ajay Jain
Northumbrian Water Group	Water utilities	Infrastructure	United Kingdom	340	302.5	12%	8.63	13.027	Buy 2	Andrew Wright
Pennon Group	Water utilities	Infrastructure	United Kingdom	580	544.3	7%	9.25	18.572	Neutral 2	Andrew Wright
Severn Trent	Water Utilities	Infrastructure	United Kingdom	1,560	1,486	5%	9.15	13.027	Neutral 2	Andrew Wright
awg plc	Water utilities	Infrastructure	United Kingdom	1,675	1,598	5%	8.32	14.725	Neutral 2	Andrew Wright
Geberit	Building materials	Pumps and valves	Switzerland	1,700	1,591	7%	11.42	18.59	Buy 2	Torsten Wyss
Weir	Industrial diversified	Pumps and valves	United Kingdom	540	471.5	15%	10.57	15.426	Buy 2	Peter Whiting
Rotork	Industrial diversified	Pumps and valves	United Kingdom	850	765	11%	13.80	21.668	Buy 2	Peter Whiting
Thermo-Electron	Advanced industrial equipment	Water quality analysis	United States	47	39.85	18%	14.28	22.984	Buy 1	Derik De Bruin PhD

Source: UBS estimates. Prices at 9 October 2006

Table 2: Companies mentioned by this report but not covered

Company	Industry	Theme	Country	Price Target (local currency)	Price (local currency)	Upside/downside to price target	EV/EBITDA 06E	PE 2006E	Rating
Horiba	Advanced industrial equipment	Filtration/treatment	Japan	na	3480	na	na	na	Not rated
BWT	Pollution control	Filtration/treatment	Austria	na	30.51	na	na	na	Not rated
Toyobo	Clothing and fabrics	Filtration/treatment	Japan	na	302	na	na	na	Not rated
Christwater	na	Filtration/treatment	Austria	na	na	na	na	na	Not rated
Esco Technologies	na	Filtration/treatment	United States	na	na	na	na	na	Not rated
Sinomen Technology	na	Filtration/treatment	Singapore	na	na	na	na	na	Not rated
Calgon Carbon	na	Filtration/treatment	United States	na	na	na	na	na	Not rated
Puncak Niaga Holding BHD	Pollution control	Infrastructure	Malaysia	na	2.85	na	na	na	Not rated
Jacobs Engineering Group	Heavy construction	Infrastructure	United States	na	75.94	na	na	na	Not rated
Guangdong Investment Ltd	na	Infrastructure	China	na	na	na	na	na	Not rated
Lindsay Mfg	na	Irrigation technology	United States	na	na	na	na	na	Not rated
Watts Water	na	Pumps and valves	United States	na	na	na	na	na	Not rated
Consolidated Water	na	Pumps and valves	United States	na	na	na	na	na	Not rated
Mueller Water Products Inc	na	Pumps and valves	United States	na	na	na	na	na	Not rated
Pentair Inc	Unclassified companies for DMART only	Pumps/filtration	United States	na	28.5	na	na	na	Not rated
ITT Industries Inc.	Industrial diversified	Wastewater re-use	United States	na	52.3	na	na	na	Not rated
Hydro International	na	Wastewater re-use	United Kingdom	na	na	na	na	na	Not rated
Techem Group	Industrial services	Water gauging/metering	Germany	na	39.45	na	na	na	Not rated
Itron Inc	Advanced industrial equipment	Water gauging/metering	United States	na	52.91	na	na	na	Not rated
Roper Industries	Advanced industrial equipment	Water gauging/metering	United States	na	45.25	na	na	na	Not rated
Badger Meter	na	Water gauging/metering	United States	na	na	na	na	na	Not rated
Danaher	Advanced industrial equipment	Water quality analysis	United States	na	68.55	na	na	na	Not rated

Source: Company, UBS estimates. Prices at 9 October 2006

The concept of water stress

Water stress and water scarcity occur when the demand for water exceeds available supply, or when poor quality restricts the use of available water⁷.

- **Water stress:** Defined as a country's annual supply of renewable fresh water falling to between 1,000 and 1,700 cubic metres per person. Such countries can expect to experience temporary or limited water shortages.
- **Water scarcity:** Defined as a country's annual supply of renewable fresh water falling to less than 1,000 cubic metres per person. Such countries can expect to experience chronic and widespread shortages of water that hinder their development⁸.

The adjudication of 'high water stress' is based on an interpretation of the level of water usage combined with the geological features of the region, and this may vary from 20% to 60% of available fresh water. Overall, however, the World Water Council interprets a withdrawal rate of 40% as indicating high water stress.⁹

It is evident that, although problems are still most acute in the world's poorest countries, many areas of the developed world, particularly parts of the US, Australia and southern Europe, are already facing water challenges. Additionally, areas such as India, China and parts of Latin America, considered so integral to global economic growth, already appear to be under 'high stress'.

Although problems are still most acute in the world's poorest countries, many areas of the developed world are already facing challenges

Water, water...everywhere?

Increasing demand for water due to population growth, urbanisation and industrialisation, combined with the reduction in supply due to pollution and the potential effects of climate change, is forecast to increase water stress (and scarcity)¹⁰. Moreover, the condition of water stress itself causes the further deterioration of freshwater resources, for example, over-exploitation of aquifers may make them vulnerable to saline intrusion.

As water becomes scarcer, tensions are likely to arise among different users within countries and also across borders. Companies operating in water-stressed regions will have to be aware that they are competing for an essential resource and will have to manage any potential reputational repercussions of this. More than 260 river basins are shared by two or more countries, which means that without regional collaboration, major projects can become a point of conflict¹¹.

As water becomes scarcer, the potential for conflict between users rises

⁷ European Environment Agency. 1999. Environment in the European Union at the turn of the century. Page 155. Environmental assessment report No 2

⁸ Defined by UNPD, UNEP, World Bank and WRI, 2000

⁹ World Water Council: <http://www.worldwatercouncil.org/index.php?id=25>

¹⁰ Intergovernmental Panel on Climate Change, UNEP, WMO: Impacts of Climate Change on Water Resources: A Global Perspective 2001

¹¹ World Water Council: <http://www.worldwatercouncil.org/index.php?id=25>

Singapore, for example, is dependent for around half its water on Malaysia. Over the years, water supply has become a flashpoint more than once in relations between the two countries.

Singapore is dependent on Malaysia for around half its water

At the same time, important agreements involving the Plata Basin (shared by Brazil, Argentina, Paraguay and Uruguay) have facilitated the development of key water resources in the region, notably hydropower and navigation. A 1969 umbrella treaty, to which all of the riparians are signatories, provides a framework for joint management of the basin. A co-operative management body has been in place on the La Plata basin since 1969, but this has been tested by some recent projects¹².

Brazil, Argentina, Paraguay and Uruguay share the Plata Basin resources

Severe water shortages have already led to a growing number of conflicts in India between water-surplus states and their water-deficit neighbours. Internationally, the Indus Waters Treaty of 1960, which gives both India and Pakistan clearly demarcated water rights to shared river water, has increasingly come under pressure over increasing water and energy needs.

India and Pakistan: Indus Water Treaty under pressure

In December 2005, the Ontario government strengthened protection of the Great Lakes Waters Agreement, a historic deal with Quebec and the eight Great Lakes states, which share the basin with Ontario. The agreement establishes a virtual ban on diversions, which may have been in anticipation of increasing demands from dry south-western states of the US.

Canada and the US: Great Lakes Waters Agreement

In the Texas Lower Rio Grande valley, one of the US's most important agricultural regions, water withdrawals and drought have led to some stretches becoming completely dry. Competing demands from Mexico are likely to lead to pressure on resources in the Rio Conchos, which will further reduce the water that reaches the Rio Grande.

US/Mexico tension over Rio Grande resources

In our view, the availability and quality of water is one of the top policy issues for governments, and a significant driver of risks and opportunities for firms. In this report, we highlight increasing water problems in areas that are not commonly thought of as suffering from water stress, and attempt to outline the potential risks and opportunities for companies operating in those areas.

In our view, the availability and quality of water is one of the top policy issues for governments, and a significant driver of risks and opportunities for firms

¹² Organisation of American States Office for Sustainable Development & Environment; Water Project Series, 6 October 2005

Symptoms of water stress: Developed markets Europe

The symptoms of water stress are increasingly apparent in Europe: water shortages, flooding, pollution and ecosystem damage. Though few Europeans suffer devastating water shortages, there is an imbalance of supply and demand across the region which has already created hydrological 'hot spots'.¹³ This is particularly the case in southern Europe where demand, especially from agriculture, is often greatest when supply is least. Four countries already withdraw more than 20% of their total available supplies: Cyprus, Italy, Malta and Spain.¹⁴

Water resources are also becoming a major political issue as 20 European countries are dependent on their neighbours for more than 10% of their water resources (5 countries get over 75% of their water from rivers originating in another country: The Netherlands, Hungary, Moldova, Romania and Luxembourg). Spain has only one third of the water availability per person of that of Portugal, which receives 48% of its water resources from the trans-boundary rivers of Spain.¹⁵

Germany's River Rhine passes through five countries on its way to the North Sea, supporting the heavily industrialised Ruhr Valley as well as agriculture and drinking water needs in the region; in 1986 the emission of 30 tonnes of toxic pesticides into the river forcing the closing of water systems in Germany, France and the Netherlands. This was the catalyst for a series of cross-border initiatives to clean up the Rhine. Though much improved, the Rhine/Ruhr continues to have pollution issues.¹⁶

Contamination, particularly with nitrates, is also a major groundwater issue in Europe.¹⁷ The European Union Water Framework Directive, implemented in 2000, is an attempt to systematically deal with Europe's water issues; for the first time, the whole range of inland and coastal waters will be looked at on a river basin basis, with the requirement that waters reach 'good status' by 2015¹⁸.

US

It is estimated that large areas are already using substantially more water than can be naturally replenished¹⁹. Salinity threatens important irrigation areas, and there is increasing anxiety over the level of contamination with chemicals and pathogens in water sources and water supplies. A 2003 survey of urban drinking water in the US found repeated occurrences of lead, arsenic, rocket fuel and

Symptoms of water stress are increasingly apparent in Europe

20 European countries are dependent on their neighbours for more than 10% of their water resources

Chemical contamination a major groundwater issue in Europe

Large areas of the US are using more water than can naturally be replenished; salinity and contamination threaten supply

¹³ 'hot spots' defined as: where conditions are such to adversely affect human health, threaten ecosystem functioning, reduce biodiversity and/or compromise resources and amenities of economic importance in a manner that would appear to warrant priority management attention (UNEP)

¹⁴ European Environment Agency, 2005. The European environment — State and outlook 2005: Freshwater. Copenhagen

¹⁵ Water Stress in Europe - Can the Challenge be met? European Environment Agency, 1997

¹⁶ The Miracle of the Rhine: Unesco Courier, June 2000

¹⁷ UNEP Division of Early Warning and Assessment, Global Resource Information Database; <http://www.grid.unep.ch>

¹⁸ <http://ec.europa.eu/environment/water/water-framework>

¹⁹ Rich Countries, Poor Water: WWF, August 2006

carcinogens. Many cities failed to meet the EPA's 'level of concern' for various contaminants that are not yet regulated. These problems are believed to be due to a combination of ageing infrastructure combined with insufficient legislative protection for source waters²⁰.

In a move that may indicate increasing anxiety about potential water diversions and cross-border conflict, in December 2005, the Great Lakes governors and premiers strengthened protection of the Great Lakes Waters in an historic agreement with Quebec and the eight Great Lakes states, which share the basin with Ontario. The agreement establishes a virtual ban on diversions, a basin-wide environmental standard for water uses and better conservation measures.²¹ In addition, there have been long-standing and well-documented tensions with Mexico as populations and water needs increase on both sides of the Rio Grande.

Japan

Despite its relatively high rainfall, Japan has surprisingly low levels of water per capita, and Japanese cities can be prone to both water shortages and floods. Groundwater is being increasingly polluted by toxic substances and problems arising from organic chlorinated compounds in the drinking water have occurred, causing social concern about carcinogenicity.²² Monitoring of groundwater quality by the Japanese Ministry of Environment in 2003 found 8.2% of wells had levels of nitrates that exceeded environmental quality standard levels.²³ Recently rainfall in Japan has been fluctuating dramatically from year to year and has been on the decline from a long-term perspective.²⁴

Great Lakes Water Management Initiative strengthened to establish a virtual ban on water diversions

Japan has low levels of water per capita; groundwater has been increasingly polluted and rainfall is becoming increasingly erratic

²⁰ What's on Tap? Grading Drinking Water in US Cities: National Resources Defense Council, June 2003

²¹ Ontario Ministry of Natural Resources: MNR Water Resources section, Lands and Waters Branch website

²² Water Resources in Japan 2005 on Water Environment Partnership in Asia website

²³ Ministry of the Environment, Government of Japan: Monitoring Results of Groundwater Quality in FY 2003, December 16th 2004

²⁴ Water Resources in Japan: Japan Water Agency <http://www.water.go.jp>

Symptoms of water stress: Emerging markets

LatAm

Latin America and the Caribbean have 26% of the world's freshwater resources, supplying 6% of the global population. In recent decades, water and sanitation services have greatly improved, serving 134 million more people between 1990 and 2004.²⁵

However, its irregular distribution throughout the region combined with pollution makes water a scarce resource for many people. According to Eduardo Mestre, head of the International Network of Basin Organisations: 'Two worlds co-exist: one in which there is a great deal of water and few people, and another where water is scarce and the population is dense.'²⁶ Many people, particularly in rural areas, still do not have access to a water supply and sanitation, and water quality is degrading in many areas. In Latin America as a whole, only about 2% of sewage receives any treatment²⁷, and 40-60% of water comes from aquifers that are facing increasing pollution from over-mining and agriculture. Of Mexico's 653 aquifers, 102 are overused. In some areas, the lack of water has meant farmers have had to switch from more water-intensive crops to less profitable grain crops.²⁸

India

India's drive to achieve food self-sufficiency in the late 1960s transformed the nation into one of the world's biggest agricultural producers, becoming an exporter of grain in the late 1970s. However, 'double cropping', ie two harvests per year instead of one, which was a primary feature of India's 'Green Revolution', relied on large irrigation facilities, so that dams were built to store large volumes of natural monsoon water.

However, these dams were not maintained, and as water services became unreliable, the population came to depend on wells instead. Increasingly reliable electricity supplies have led to the number of mechanised wells growing from a few thousand at the time of independence in 1947 to tens of millions today²⁹. Today, 70% of India's irrigation needs and 80% of its domestic water supplies come from groundwater. This has led to rapidly declining water tables and critically depleted aquifers, which also suffer, in many cases, from salination and contamination.³⁰

Despite the relative abundance of water in Latin America,...

...local and regional water scarcity problems are exacerbated by water quality problems

India's successful drive for food self-sufficiency has had a devastating effect on its water resources

Some 80% of India's domestic water supplies come from groundwater, depleting the water tables

²⁵ WHO Joint Monitoring Programme for Water Supply & Sanitation: http://www.wssinfo.org/en/238_wat_latino.html

²⁶ Eduardo Mestre, head of the International Network of Basin Organisations (IBO) quoted in *Terramerica*, 4th October 2006

²⁷ UNEP; Global Environment Outlook, 2000

²⁸ Water Problems in Latin America; Comision Nacional Del Agua, 4th World Water Forum

²⁹ Overcoming Water Scarcity and Quality Constraints: Food Policy Research Institute: 2020 Focus 9, Brief 8, Marcus Moench, October 2001

³⁰ Water Facts and Trends; World Business Council for Sustainable Development

A number of areas are already in crisis: among these are the most populated and economically productive parts of the country. Estimates suggest that by 2020, India's demand for water will exceed all sources of supply.³¹

Estimates suggest that by 2020, India's demand for water will exceed all sources of supply

China

There has been much debate about the potential effect of water scarcity in China, with some commentators forecasting a soft-commodity boom as China's ability to feed itself declines. China has limited arable land capacity (relative to its population size) with high levels of fertiliser and pesticide use. Indeed, some of the most fragile land is returned to more sustainable forest or grass cover, further reducing availability.³² The expansion of irrigation, which has underpinned China's increases in grain production, is unlikely to be sustainable as water stress increases; farmers already receive more than two-thirds of China's water, even in water-stressed regions³³. Even in southern China, some regions suffer from drought in the driest months, while in most areas precipitation during the four wettest months comprises around 70% of the annual total rainfall and often results in flooding.³⁴

China has limited arable land capacity relative to its population size

At the end of 2004, China's Minister of Water Resources, Wang Shucheng, warned that 'the price of China's economic boom is being paid in water,'³⁵ stating even then that China needed another 40 billion cubic metres of water each year. China's per capita water holdings are one-third of the world's average, and this is combined with low efficiency in terms of its use rate. For example, the amount of water used to produce a ton of steel in China ranges from 23 to 56 cubic metres, whereas in highly industrialised countries, such as the US and Japan, the average is less than 6 cubic metres.³⁶

'The price of China's economic boom is being paid in water'

The Chinese Institute of Water Resources reported that 80% of domestic waste water is released without any form of treatment. This discharge of waste water amounts to nearly 43 billion tons annually, and pollutes 90% of urban waters and 70% of rivers.³⁷ According to one estimate, the resulting water stress from intense consumption and pollution cost the Chinese economy between 5 billion yuan and 8.7 billion yuan¹ (US\$620 million and US\$1.06 billion) in 1990³⁸.

³¹ India's Water Economy: Bracing for a Turbulent Future, John Briscoe, Senior Water Advisor World Bank

³² A Statistical Overview of China's Food and Agriculture in China's Food and Agriculture: Issues for the 21st Century; USDA, April 2002

³³ Will Water Scarcity Affect Agricultural Production in China in China's Food and Agriculture: Issues for the 21st Century; Bryan Lohmar and Jinxia Wang, Economic Research Service/USDA, April 2002

³⁴ Water Stress in China: Shortage and Pollution; Chen Ying - presentation to Environmental Workshop at University of Nottingham, 22-24 June, 2005

³⁵ Chinadaily.com; 27 December 2004

³⁶ United Nations: Freshwater Country Profile: China 2004. Adapted from UN-Habitat, WHO and UNDESA, *Cities: competing needs*, 2003

³⁷ Zhidong, Li. *Energy and Environmental Problems Behind China's High Economic Growth*. March 2003. Nagoaka University of Technology.

³⁸ Environmental Problems in China: Estimates of Economic Costs, East-West Centre Special Reports, No 5 (April 1996): 55, Vaclav Smil

Water managers and users, from the national level to the village level, are developing water-saving strategies, and China's national government has renewed its commitment to invest in water storage, delivery infrastructure and maintenance. There is also great interest and investment in treatment technologies, to enable waste water to be used for agriculture.³⁹ Addressing an international symposium on the development of urban water-related projects at the end of 2005, China's construction minister, Wang Guangtao, said: 'China welcomes foreign investors to participate in urban water supply and sewage disposal projects', and that China wishes to diversify the financing channel for the construction and operation of urban water projects. Guangtao estimated that the investment in China's sewage disposal industry is likely to exceed 500 billion yuan (about US\$60bn)⁴⁰.

China is increasingly inviting foreign companies to participate in water supply and waste-water treatment projects

³⁹ Ensuring Safe Drinking Water for Rural Areas Under a Sustainable and Human-oriented policy; Address on Millenium Development Goals by Mr Zhai Haohui, Ministry of Water Resources, 25th March 2004

⁴⁰ *People's Daily* online; 31st October 2005

Water security for business

The recent World Business Council report, *Business in the world of water*, assimilated the views of participants from the mining, chemicals, beverage, consumer products, banking, utilities and oil sectors⁴¹. The consensus was that water security concerns occur:

- **Upstream**, where water is a direct or indirect resource, mostly in the form of a raw materials component;
- **Midstream**, where water is a significant element in the production process;
- **Downstream**, where water is an enabler of product use and consumption⁴².

It is clear that any threat to water security could have a significant impact on: (1) food and beverage producers, for whom water is their main ingredient, or a major input; (2) companies employing water-intensive industrial processes, for example, aluminium, cement and energy companies; and (3) companies that produce consumer products, such as cleaning and hygiene products, which employ water for their use. These wider water issues are discussed in our earlier report (*Water debate: Fresh water – liquid gold* by Julie Hudson, 29 March 2006)⁴³.

Potential opportunities for firms in emerging markets

It is also clear that companies that can respond to the water needs of both developed and emerging markets may prosper themselves by offering solutions to water-related problems. There are a variety of technologies that may have a part to play in this, depending on the particular needs and resources of the region: more efficient irrigation systems, water treatment technologies to re-use waste water, desalination technologies, pumps and pipes to more efficiently transport water from wetter regions to arid ones where it is needed, and water meter and gauging technologies to track usage and quality levels.

Doing business in emerging markets

We highlight emerging markets in particular as they present an area where companies need to manage both business risk and reputational risk. As well as the direct impact on companies' source materials or cost of manufacturing, it is also clear that societies that are suffering from water stress or scarcity are not healthy markets for business. Nor do they provide a stable environment for companies to operate: the situation all too easily gives rise to the perception, accurate or not, that companies are taking water supply at the expense of local people and communities.

Societies suffering from inadequate access to water are not healthy markets for business

⁴¹ Participants included: Air Products and Chemicals Inc, Alcan Inc, BHP Billiton, Cargill Inc, Caterpillar Inc, The Coca-Cola Co., Conoco Phillips, Procter & Gamble, Rabobank Group, Shell Group, Severn Trent Plc, Suez, Unilever NV.

⁴² *Business in the World of Water*; World Business Council for Sustainable Development, August 2006

⁴³ Hudson, 3rd March 2006

As we noted in our *World water week landmark report* (Julie Hudson, 1 September 2006), we believe that wasteful uses of water are likely to become increasingly frowned upon and subject to increased regulatory intervention. There appear to be increasing expectations on the part of shareholders and other key stakeholders that firms should handle environmental and social issues proactively, and we see the profile of issues such as water availability, quality, and usage as generally on the rise.

In the medium term, we expect to see increasing regulatory intervention in water usage

The World Business Council for Sustainable Development comments: 'For business, water-related 'security' begins to mean more than just a secure supply of water to meet needs. At times, it comes close to meaning 'security of license to operate' in a water-stressed region.'⁴⁴ It goes on to say: 'What begins as a security deficit evolves into a "trust deficit" for business if allocation issues are not fully resolved or become tainted by corruption.'⁴⁵

'Water security' comes close to meaning 'security of license to operate' in water-stressed regions

The economic case for investing in water management and services

Investments in water can be an engine for accelerated economic growth, sustainable development, improved health and reduced poverty. A WHO report⁴⁶ calculates that poor countries with access to improved water and sanitation services achieves annual GDP growth of 3.7% versus 0.1% for those without such access. Economic benefits of US\$3 to US\$60 per US dollar invested are estimated if the Millennium Development Goals⁴⁷ related to water and sanitation are achieved. A Chinese study estimates that, in 1992, environmental pollution in China resulted in 98.6 billion yuan in economic losses, with water pollution accounting for 37.6% of this (36.1 billion yuan). Overall, environmental pollution is estimated to have caused economic losses equivalent to 4.04% of China's 1992 GDP.⁴⁸

Water conservation

We acknowledge that simpler, low-cost technologies for water conservation, such as rainwater harvesting systems, may be the more sustainable option in some regions and in some situations. In some regions, atmospheric water generation may be appropriate. By taking advantage of the work that healthy watersheds and freshwater ecosystems perform naturally, and protecting and utilising the natural hydrological system, at least some of the impacts of urbanisation, population growth and climate change might be mitigated. However, we believe that 'high technology' solutions will also have a part to play in most circumstances.

⁴⁴ *ibid*

⁴⁵ *ibid*

⁴⁶ Making Water a Part of Economic Development: The Economic Benefits of improved Water Management and Services - SIWI and the WHO on behalf of the Governments of Norway and Sweden (May 13th 2005)

⁴⁷ see: <http://www.un.org/millenniumgoals/>

⁴⁸ An Estimate of the Economic Consequences of Environmental Pollution in China; Policy Research Centre of the National Environmental Protection Agency, Xia Guang

Solutions for managing water

1. Enhance supply

As in Latin America and China, even if water resources are available, they may not necessarily be located where they are needed, nor at the right time. It is increasingly acknowledged that large-scale infrastructure projects, such as dams, may not, in the long term, be the optimum solution to water supply as they disrupt the natural hydrological cycle with negative impacts on biodiversity and downstream fertility.⁴⁹

Therefore, it is likely that infrastructure to store, convey, and otherwise manage water could have a significant role to play in providing a secure supply of water in areas with variable rain flow.

■ Technical remedies to enhance water supply

There are a large number of technical remedies to increase the supply of water, as outlined below by the World Business Council for Sustainable Development:

- Using seawater for industry and agriculture, diverting water from water-rich to water-scarce areas, recycling waste water, using the heat content of waste water as a source for regenerative energy supply, using waste water irrigation to increase production, new groundwater exploration techniques, microbiological wastewater treatment techniques combined with novel membrane separation techniques, nanotechnology, innovative desalination techniques, crystallization techniques, membrane development, cheap point-of-use treatment systems, and consumer products to remove bacteria, viruses, parasites, and heavy metals.⁵⁰

2. Reduce demand

As agriculture is by far the largest user of water, improving efficiencies in irrigation techniques afford significant potential to reduce water withdrawal. It is estimated that if a farmer in an arid developing country improves water efficiency on average by 1%, it could save 200,000 litres of fresh water per hectare per year – enough to provide drinking water for more than 150 people.⁵¹

■ Increasing the productivity of water

- More efficient agricultural irrigation technologies, the cultivation of drought-resistant crops and high-yield crops, saline water-based agriculture, and increased water-use efficiency of agricultural practices.⁵²
Recycling techniques, leak detection, and improved pipes and valves

⁴⁹ New Internationalist, Issue 273

⁵⁰ World Business Council for Sustainable Development; Business in the world of water, August '06, p22

⁵¹ Unlocking the water potential of agriculture: Food and Agriculture Organisation of the United Nations, March 2003

⁵² World Business Council for Sustainable Development

could all significantly reduce the amount of water withdrawn for municipal and industrial uses.⁵³

3: Improve water management

Improved water management strategies and structures need to be implemented from the local to the international level. Privatisation may be part of the equation to improve efficiencies and service at the local level, but in order for water to be retained as a human right across societies, this must be underpinned by good governance, firm regulatory frameworks and strong institutions.

■ Economic instruments and economic regulation

- Increasing the price of water and increasing regulation for industrial water use. Installation of metering facilities and effective pricing tariffs. Agricultural policies that provide farmers with subsidies linked to production do not offer incentives to use water more efficiently. In addition, farmers often pay very low prices for their water compared with households and industry. The OECD calculates that in the US, for instance, farmers pay on average around US\$0.05 per cubic metre compared with US\$0.50 per cubic metre paid by industry; in France, the respective figures are US\$0.08 and US\$0.95, and for Spain, US\$0.05 and US\$1.08.⁵⁴

4: River basin/watershed approaches to protection

There is increasing recognition that water systems are not simply rivers themselves, but are part of a common hydrologic system within which all living things are linked and interdependent. Restoring the hydrological cycle of watersheds/river basins, taking into account the ground and surface flow, and the ecological structure around the river, is a long-term integrated way of securing future water supplies.

European Water Framework Directive – integrated river basin management for Europe

In 2000, Europe adopted the Water Framework Directive, to integrate work on water resource management across the EU on a river basin basis. One of its main principles is to restore every river, lake, groundwater, wetland and other water body across the EU to a ‘good status’ by 2015. Any water abstraction has to maintain ecologically sustainable river flows, preserve groundwater reserves and discharges have to be restricted to a level that does not affect the expected biology of the water⁵⁵.

**European Water Framework Directive:
First integrated river basin
management legislation**

⁵³ Global Water Futures: Center for Strategic and International Studies (CSIS) and Sandia National Laboratories (SNL)

⁵⁴ OECD Observer, no 254: Water and Farms Towards Sustainable Use, March 2006

⁵⁵ European Commission; http://ec.europa.eu/environment/water/water-framework/index_en.html

Member states are required to develop broad-based river basin management plans by 2009 that set out how this will be achieved. These plans represent a unique opportunity to introduce the required co-ordinated measures across sectors. 'River basin' denotes the catchment area of a river, which, only in rare cases, coincides with the local, regional or international administration boundaries. This piece of legislation may have significant implications for any business whose operations have an impact on the aquatic environment across Europe. However, there are likely to be shared technical, geographical and administrative challenges to such a comprehensive cross-border initiative.

The EWF Directive may have significant implications for water use of businesses in the region

Private companies in water distribution

The issue of public-private partnership in water provision is complex, and also controversial, dealing with the emotive issue of human access to fresh water. For some, any sense that water might be priced is contrary to the ethical sense of free and unlimited access to water as a human right. However, many commentators, including some NGOs, are reaching the conclusion that unless water is effectively priced, particularly for agricultural use, there will be no incentive for its conservation. In other words, the fear is that ineffective price signals will encourage increasingly unsustainable exploitation of water resources, to the detriment of all humankind.

For developing countries, the main challenge is investment in new infrastructure. The problem is that governments alone do not always have the will or funds to expand infrastructure, which has given rise, particularly in Latin America, to the model of public-private partnership model (ie, private companies operating the water utilities with government holding a controlling stake). The benefits to governments of accessing private capital for 'public-good projects' are easy to see. The benefit to the water companies, however, is less clear. Drinking water infrastructure, including treatment and storage plants and distribution systems, require intensive fixed capital investment, with the prospect of potential regulatory and political difficulty when prices need to be raised, not to mention the potential of ensuing reputational risks.⁵⁶

In Latin America, this public/private debate over water provision has been taking place for over a decade, and there have been well-publicised problems with private water concessions. However, there have also been many successes, and private local investors in several other countries are negotiating to acquire the assets of the departing European firms.⁵⁷

China may provide a more profitable environment for the big water utilities. Veolia Environnement, Suez Environnement and Thames RWE all have extensive joint ventures in rural and urban China, and have seen increasing interest from municipalities seeking help to manage their water services. Currently, non-Chinese companies are obliged to partner with a Chinese firm.

In India, the provision of formal irrigation and water supply services is the virtual exclusive monopoly of government agencies, which tend to provide poor and intermittent service. There are a couple of exceptions where an industry with a dominant presence in a town has taken over responsibility for providing water supply services to households. In these cases, service quality has improved substantially. But the situation in India currently remains one in which public monopolies continue to be the main provider of public water.⁵⁸

[Funding investment in new infrastructure in the developing world](#)

[Private/public debate in Latin America](#)

[Joint ventures in China](#)

[Mainly government agencies in India](#)

⁵⁶ Public-Private Partnerships for Funding Municipal Drinking Water Infrastructure: What are the Challenges, Discussion Paper, May 2006

⁵⁷ Taken from a speech from Luis Alberto Moreno, president of the Inter-American Development Bank Originally published in The Wall Street Journal, March 9, 2006; Page A19.

⁵⁸ Worldbank.org; India, Resources, Water

Investing in water

A wide variety of companies, across sectors and industries, make up the 'water industry'. We consider companies that provide products and services around the provision, conveyance, treatment and monitoring of water and waste water for business and consumer use. We based our suggestions on the four water strategies mentioned above: (1) **enhance supply**: infrastructure, treatment and filtration; (2) **reduce demand**: irrigation technology companies, pumps, pipes and valves companies, meter and gauging companies; and (3) **improve management**: watershed/river basin approaches to protection; (as a latent medium-term opportunity).

Investment ideas, by theme

Table 3: UBS water sector investment ideas, by theme

Company	Industry	Theme	Country	PT (l.c.)	Price (l.c.)	Up/down-side to PT	EV/ EBITDA 2006E	PE 2006E	Rating	Analyst
Pall Corp.	Adv. Ind. Equipment	Filtration/Treatment	US	36	31.5	14%	11.59	20.585	Buy 2	Jeffrey Cianci
Kurita Water Industries	Factory Equipment	Filtration/Treatment	Japan	2700	2285	18%	9.55	24.253	Buy 2 (CBE)	Hidehiko Hoshino
Bio-Treat Technology	Water Utilities	Filtration/Treatment	Singapore	0.9	0.68	32%	10.06	23.524	Buy 2 (CBE)	Jaj Singh
Nalco Holding Company	Chemicals, Specialty	Filtration/Treatment	US	19	19.05	0%	9.30	27.579	Neutral 1	Jeffrey Cianci
Nitto Denko	Chemicals, Specialty	Filtration/Treatment	Japan	7200	6640	8%	9.92	22.135	Neutral 2	Fumihide Goto
Abengoa	Adv. Ind. Equipment	Filtration/Treatment	Spain	22.7	21.88	4%	9.69	26.396	Neutral 2 (CBE)	Ignacio Carvajal Cebrian
American States Water Company	Water Utilities	Infrastructure	US	43	38.58	11%	9.93	24.24	Buy 1	Ajay Jain
Inversiones Aguas Metr.	Water Utilities	Infrastructure	Chile	776	588	32%	9.74	13.03	Buy 1 (CBE)	Ben Laidler
Manila Water Company	Water Utilities	Infrastructure	Philippines	10.3	8.9	16%	5.45	8.7557	Buy 2	Karisa Magpayo
aqua america	Water Utilities	Infrastructure	US	27	22.29	21%	13.98	30.489	Buy 2	Ajay Jain
Northumbrian Water Group	Water Utilities	Infrastructure	UK	340	302.5	12%	8.63	13.027	Buy 2	Andrew Wright
Pennon Group	Water Utilities	Infrastructure	UK	580	544.3	7%	9.25	18.572	Neutral 2	Andrew Wright
Severn Trent	Water Utilities	Infrastructure	UK	1560	1486	5%	9.15	13.027	Neutral 2	Andrew Wright
awg plc	Water Utilities	Infrastructure	UK	1675	1598	5%	8.32	14.725	Neutral 2	Andrew Wright
Geberit	Building Materials	Pumps and valves	Switzerland	1700	1591	7%	11.42	18.59	Buy 2	Torsten Wyss
Weir	Industrial Diversified	Pumps and valves	UK	540	471.5	15%	10.57	15.426	Buy 2	Peter Whiting
Rotork	Industrial Diversified	Pumps and valves	UK	850	765	11%	13.80	21.668	Buy 2	Peter Whiting
Thermo-Electron	Adv. Ind. Equipment	Water quality analysis	US	47	39.85	18%	14.28	22.984	Buy 1	Derik De Bruin, Ph.D.

Source: UBS, data as at 9 October 2006

Table 4: Companies not covered by UBS

Company	Industry	Theme	Country	Price target (lc)	Price (local cur)	Up/down side to target	EV/ EBITDA 06E	PE 2006E	Rating
Horiba	Adv. Ind. Equipment	Filtration/Treatment	Japan	na	3480	na	na	na	Not Rated
BWT	Pollution Control	Filtration/Treatment	Austria	na	30.51	na	na	na	Not Rated
Toyobo	Clothing & Fabrics	Filtration/Treatment	Japan	na	302	na	na	na	Not Rated
Christwater	na	Filtration/Treatment	Austria	na	na	na	na	na	Not Rated
Esco Technologies	na	Filtration/Treatment	US	na	na	na	na	na	Not Rated
Sinomen Technology	na	Filtration/Treatment	Singapore	na	na	na	na	na	Not Rated
Calgon Carbon	na	Filtration/Treatment	US	na	na	na	na	na	Not Rated
Puncak Niaga Holding BHD	Pollution Control	Infrastructure	Malaysia	na	2.85	na	na	na	Not Rated
Jacobs Engineering Group	Heavy Construction	Infrastructure	US	na	75.94	na	na	na	Not Rated
Guangdong Investment Ltd	na	Infrastructure	China	na	na	na	na	na	Not Rated
Lindsay Mfg	na	Irrigation Technology	US	na	na	na	na	na	Not Rated
Watts Water	na	Pumps and valves	US	na	na	na	na	na	Not Rated
Consolidated Water	na	Pumps and valves	US	na	na	na	na	na	Not Rated
Mueller Water Products, Inc	na	Pumps and valves	US	na	na	na	na	na	Not Rated
Pentair Inc	na	Pumps/Filtration	US	na	28.5	na	na	na	Not Rated
ITT Industries Inc.	Industrial Diversified	Wastewater Re-use	US	na	52.3	na	na	na	Not Rated
Hydro International		Wastewater Re-use	UK	na	na	na	na	na	Not Rated
Techem Group	Industrial Services	Water Gauging/Metering	Germany	na	39.45	na	na	na	Not Rated
Itron Inc.	Adv. Ind. Equipment	Water Gauging/Metering	US	na	52.91	na	na	na	Not Rated
Roper Industries	Adv. Ind. Equipment	Water Gauging/Metering	US	na	45.25	na	na	na	Not Rated
Badger Meter	na	Water Gauging/Metering	US	na	na	na	na	na	Not Rated
Danaher	Adv. Ind. Equipment	Water Quality Analysis	US	na	68.55	na	na	na	Not Rated

Source: UBS, data as at 9 October 2006

1. Enhance supply

(i) The water utilities

Water utilities is a broad term for companies which supply products to improve water infrastructure, often requiring huge investment to upgrade and repair pipes in order to meet tightening environmental standards. The table below contains UBS Buy- and Neutral-rated stocks in the water utility business:

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Table 5: Water utilities and infrastructure companies

Company	Industry	Theme	Country	Price target	Price	Upside/downside to target	EV/EBITDA 2006E	PE 2006E	Rating	Analyst
American States Water Company	Water Utilities	Infrastructure	US	43	38.7	11.1%	10.0	24.3	Buy 1	Ajay Jain
Inversiones Aguas Metropolitanas	Water Utilities	Infrastructure	Chile	776	590	31.5%	9.8	13.1	Buy 1 (CBE)	Ben Laidler
Manila Water Company	Water Utilities	Infrastructure	Philippines	10.3	8.9	15.7%	5.5	8.8	Buy 2	Karisa Magpayo
aqua america	Water Utilities	Infrastructure	US	27	22.01	22.7%	13.9	30.1	Buy 2	Ajay Jain
Northumbrian Water Group	Water Utilities	Infrastructure	UK	340	302.5	12%	8.63	13.027	Buy 2	Andrew Wright
Pennon Group	Water Utilities	Infrastructure	UK	580	544.3	7%	9.25	18.572	Neutral 2	Andrew Wright
Severn Trent	Water Utilities	Infrastructure	UK	1560	1486	5%	9.15	13.027	Neutral 2	Andrew Wright
awg plc	Water Utilities	Infrastructure	UK	1675	1598	5%	8.32	14.725	Neutral 2	Andrew Wright

Source: UBS. Data as at 9 October 2006

American States Water Company

Through its non-regulated subsidiary, American States Utility Services (ASUS), the company contracts with municipalities, the U.S. government and private entities to provide various services, including billing and meter reading, water marketing and operation and maintenance of water and wastewater systems at various military installations throughout the United States.

The ASUS subsidiary has reached critical mass and gained significant expertise in water and waste water treatment at military facilities. We continue to be encouraged by its progress. Both new military contracts in Virginia and Maryland and new lease revenue from the City of Folsom should represent significant annuity streams for AWR going forward.⁵⁹

Numerous catalysts⁶⁰

- **Improving weather comparisons.**
- **Military privatization initiatives.**
- **More favourable regulatory climate.** Following the replacement of several commissioners in the California Public Utility Commission (CPUC), we believe that AWR will increasingly benefit from a more favorable regulatory

⁵⁹ Remain Upbeat About 2H06 Outlook, 10th August 2006

⁶⁰ Recent Pullback Offers Opportunity - Upgrading to Buy 1, 13th June 2006

environment as it relates to both the efficiency of the decision-making process and the overall degree of rate case relief. While AWR's geographical profile may have been a liability in recent years, going forward the improved regulatory environment should allow the company to maintain at least a peer multiple.

Inversiones Aguas Metropolitanas

IAM is the holding company that owns 50.1% of Aguas Andinas, Chile's largest water utility, with around 1.5 million clients. Aguas de Barcelona (Agbar), one of the world's largest water utilities, is the 56% controlling shareholder of IAM. Aguas Andinas provides drinking water, sewage treatment, and sewage collection services to the metropolitan Santiago area.

With its combination of low risk, strong cash flow, clear dividend policy (100% payout, 7-8% yield), and the potential for a large extraordinary dividend (amongst other upside catalysts, including the removal of its technical assistance fee, and entry into the electricity generation and rainfall collection businesses) as the company gears its balance sheet, IAM is one of the most compelling stories in our LatAm coverage universe, in our view. Given the nature of the business (Chilean water utility with tariffs and capex defined until 2010), we consider our current estimates conservative and low-risk⁶¹.

Manila Water Company

Manila Water Company (MWC) is the sole water distributor in the East Zone of Metro Manila, and serves approximately 5m customers. The company operates under a 25-year concession agreement with the government-owned Metropolitan Waterworks and Sewerage System (MWSS), which was established in 1997 when the water distribution and sewerage service in Metro Manila was privatised. Under the agreement, MWC is allowed to earn a rate of return based on an appropriate discount rate (ADR) on the company's expenditure during the lifetime of the concession. Ayala Corporation holds a 30% stake in the company.

■ New sources of growth

While MWC's water distribution operations remain strong on continued operating efficiencies, management identifies two major drivers of growth in the medium to long term.

- **Waste water expansion projects within the East Zone.** MWC is increasingly focusing on the waste water side of the business. It plans on increasing sewer coverage from only 10% at present to 30% in 2010, which is targeted to benefit more than 3.3m people. Currently, around 20-25% of capex is allocated to the waste water projects, but management expects to increase this.

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⁶¹ The Latin Earlybird, 14th August 2006

- **New water source: Laiban dam.** The government, in partnership with MWC and Maynilad, plans to undertake the development of a new water source (the Laiban dam) to increase water security in Metro Manila in the long term. The project cost is around US\$1bn.

Aqua America Inc

- **Best-in-class profile**⁶²

We expect WTR to remain the fastest-growing and among the most visible investor-owned water utilities. Despite recent under-performance due to increased regulatory lag and higher fuel costs, WTR's recent equity offering (forward sale agreement) should provide much greater capital flexibility going forward.

- **Sustainable long-term growth targets**

The degree of fragmentation in the water industry should also create opportunities for further consolidation. We see WTR as the biggest beneficiary of this trend. The acquisition of NY Water will result in greater scale from an additional 135K customers.

Longer term, we expect that Aqua America will continue to be one of the largest beneficiaries of industry consolidation. The growing infrastructure needs of the nation's water supply (estimated to be US\$280 billion over the next 20 years) and the unrealized consolidation potential of the water sector should fuel Aqua America's growth platform for years to come. Following a significant phase of geographical expansion that began in the late 1990s, we look for the company to continue to be opportunistic with respect to its acquisition strategy.

Additionally, while just 10% of the current sales mix is generated from waste water operations, we believe this represents a significant growth opportunity. Aqua America's stated financial objectives (7% revenue growth, 10% earnings, 5% dividend growth) are also highly sustainable, in our view.

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Growing infrastructure needs and sector consolidation should sustain growth prospects

10% of the current sales mix is generated from waste water operations, we believe this represents a significant growth opportunity

Table 6: Not covered by UBS: Water utilities and infrastructure companies

Company	Industry	Theme	Country	Price target	Price	Upside/ downside to target	EV/EBITDA 2006E	PE 2006E	Rating
Puncak Niaga Holding BHD	Pollution Control	Infrastructure	Malaysia	na	2.85	na	na	na	Not Rated
Jacobs Engineering Group	Heavy Construction	Infrastructure	US	na	75.94	na	na	na	Not Rated
Guangdong Investment Ltd	na	Infrastructure	China	na	na	na	na	na	Not Rated

Source: UBS. Data as at 9 October 2006

Puncak Niaga Holdings BHD

The group's principal activities are the operation, maintenance, construction, rehabilitation and refurbishment of water treatment facilities and dams. It is also

⁶² Aqua America: Initiate with Buy 2 rating, 21st September 2006

involved in investment holding and the provision of management services. Operations are carried out in Malaysia, Southeast Asia and the Asia-Pacific region.

Jacobs Engineering Group

Jacobs designed and built the Ultrapure Water (UPW) System for Holtek Microelectronics, Inc, a prominent Taiwanese manufacturer of semiconductors. With Holtek's US\$1-billion manufacturing facility, Jacobs was the first American firm to introduce US UPW technology to Taiwan. The company managed the design and construction of nearly 40 separate projects designed to preserve the Columbia Slough watershed.

Guangdong Investment Ltd

Guangdong Investment Limited is engaged in investment holding. The company operates in seven segments.

The water distribution segment operates a water supply project in Mainland China, supplying natural water to Hong Kong, Dongguan and Shenzhen.

1. Enhance supply

(ii): Water treatment and water filtration

Our analyst, Takaaki Muramatsu, in analysing the water membrane market⁶³, estimates that the global water market could grow to about ¥110trn (US\$100bn) by 2025. His estimates are based on UN forecasts of population growth multiplied by the per-capita average water price – using Tokyo prices. As he notes, however, the price for water varies greatly across the world, and underlying demand could be much greater than forecast. Accordingly, of the technologies that we discuss below, no single method is likely to become totally dominant, given the differences that exist in the environments that surround the resource, and in the demand for the product.

Desalination processes entail high energy costs, resulting in higher water prices, but in areas like the Middle East, where there are no water resources but there is often enough capital available to invest in desalination plant, this can be a viable business. However, a water treatment plant that used the evaporation method next to a heat power plant would only need to collect water vapour from heated sea water, so its water treatment costs would be relatively low.

Desalination entails relatively high energy costs; evaporation is a low-cost method

Waste water can be made drinkable as a result of filtration through a combination of RO membranes and MF (micro filtration) membranes made of hollow fibre. As it does not require high pressure treatment at the time of filtration, treatment costs are relatively low. However, Takaaki Muramatsu notes that there may be some resistance to drinking treated waste water within the Islamic world, just as there is in Japan.

Can waste water be made drinkable?

River water can be made drinkable by MF membrane filtration alone. MF membranes are about one-half to one-third as expensive as RO membranes. However, this treatment method can only be used in areas near rivers.

MF membrane filtration can make river water drinkable

According to a report from Business Communications Company Inc⁶⁴, the 2005 global market for RO membranes and system components is expected to add 2.5 billion gallons of RO capacity daily. The US leads the world in expenditure on RO equipment, with US\$848 million in 2005. With an estimated market size of US\$433 million, the Asia-Pacific region currently ranks second and is rising the fastest.

Waste water re-use

We believe that opportunities will increase in the area of water ‘re-use’ – ie, the treatment for healthy re-use of sewage effluent, storm water run-off, and industrial discharges. In many countries, the necessity to protect the natural environment from waste water pollution has already led to much improved treatment techniques, which also may be extended to the treatment of waste water to drinkable standards. In many situations in developing countries,

⁶³ Q-Series: Water Treatment Membranes (Part 2), 8th June 2006

⁶⁴ Major Reverse Osmosis System Components for Water Treatment: The Global Market (RGB-255R), from Business Communications Company Inc, July 2005

especially in arid and semi-arid areas, waste water is already used in agricultural production and can even provide higher crop yields due to its higher nutrient content. However, there are often negative health impacts from using untreated waste water, thus there are likely to be opportunities for companies offering appropriate solutions in waste-water treatment.

Filtration and treatment companies

Table 7: Filtration and treatment companies

Company	Industry	Theme	Country	PT	Price	Up/down side to target	EV/ EBITDA 2006E	PE 2006E	Rating	Analyst
Pall Corp.	Adv. Ind. Equipment	Filtration/Treatment	US	36	31.5	14%	11.59	20.585	Buy 2	Jeffrey Cianci
Kurita Water Industries	Factory Equipment	Filtration/Treatment	Japan	2700	2285	18%	9.55	24.253	Buy 2 (CBE)	Hidehiko Hoshino
Bio-Treat Technology	Water Utilities	Filtration/Treatment	China	0.9	0.68	32%	10.06	23.524	Buy 2 (CBE)	Jaj Singh
Nalco Holding Company	Chemicals, Specialty	Filtration/Treatment	US	19	19.05	0%	9.30	27.579	Neutral 1	Jeffrey Cianci
Nitto Denko	Chemicals, Specialty	Filtration/Treatment	Japan	7200	6640	8%	9.92	22.135	Neutral 2	Fumihide Goto
Abengoa	Adv. Ind. Equipment	Filtration/Treatment	Spain	22.7	21.88	4%	9.69	26.396	Neutral 2 (CBE)	Ignacio Carvajal Cebrian

Source: UBS. Data as at 9 October 2006

Pall Corp

Pall designs, manufactures and markets filtration and separation products for the removal of solid, liquid and gaseous contaminants from a variety of liquids and gases. The company's products have applications in a broad range of markets, including life sciences (with blood collection and drug development products) and industrial markets such as oil refinery, power generation, semiconductors and water filtration.

Our analyst, Jeff Cianci, notes that the company has an alliance with GE for water treatment/filtration.⁶⁵

Kurita Water Industries

Kurita Water Industries began more than fifty years ago as a manufacturer of water treatment chemicals, then moved into water treatment equipment. Some 36% (¥62.1bn) of its water treatment equipment sales are to the electronics industry (ultra-pure water production systems, etc), 21% (¥36bn) to the general manufacturing industry, and 12% (¥20.6bn) to the public sector. Kurita is strong in sales to the electronics industry, including LCD and semiconductor makers.⁶⁶

Our analyst, Hidehiko Hoshino, foresees capex of nearly ¥20bn on the water business, due to the acceleration of existing projects as well as new ones, such as that to supply Toshiba's Yokkaichi plant, etc. He recently raised his water sales estimates from ¥5.7bn to ¥10bn for FY 06, and to ¥15bn for FY 07.

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⁶⁵ US Chemicals Monthly 'October Edition-Update and Outlook', 3rd October 2006

⁶⁶ Raising PT; greater relative attractiveness likely, 13th September 2006

Bio-Treat Technology

Bio-Treat Technology is one of China's leading wastewater treatment companies specialising in the use of biotechnology to treat polluted water to a level where it can be released into the environment. It developed BMS Biological Process Technology and, since its first trial in 1993, it has applied the technology to over 500 waste water treatment projects in China.

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BioTreat's Q4 earnings were undermined by one-off items and other items that we think could remain with the company on a recurring basis. We believe the company's long-term structural position remains intact, but, in the near term, the confidence in the stock is unlikely to recover quickly unless there is evidence of strong sustained earnings. We think that, at the current stock price, the disappointment is fully reflected.⁶⁷

Table 8: Companies not covered by UBS: Filtration and treatment companies

Company	Industry	Theme	Country	Price target (lc)	Price (local cur)	Upside/downside to target	EV/EBITDA 06E	PE 2006E	Rating
Horiba	Adv. Ind. Equipment	Filtration/Treatment	Japan	na	3480	na	na	na	Not Rated
BWT	Pollution Control	Filtration/Treatment	Austria	na	30.51	na	na	na	Not Rated
Toyobo	Clothing & Fabrics	Filtration/Treatment	Japan	na	302	na	na	na	Not Rated
Christwater	na	Filtration/Treatment	Austria	na	na	na	na	na	Not Rated
Esco Technologies	na	Filtration/Treatment	US	na	na	na	na	na	Not Rated
Sinomen Technology	na	Filtration/Treatment	Singapore	na	na	na	na	na	Not Rated
Calgon Carbon	na	Filtration/Treatment	US	na	na	na	na	na	Not Rated
ITT Industries Inc.	Industrial Diversified	Wastewater Re-use	US	na	52.3	na	na	na	Not Rated
Hydro International	na	Wastewater Re-use	UK	na	na	na	na	na	Not Rated

Source: UBS. Data as at 9 October 2006

Toyobo

Toyobo is the world's only manufacturer of CTA/hollow fibre membranes, and commands a share of over 60% in the Middle East, where sea water salt levels are high and water quality is low. Its annual sales of RO membranes are around ¥2bn-3bn, the majority of which are for sea water desalination plants. Demand for sea water desalination is high in the Middle East, where water resources are limited. In 2005, the company received an order for a large-scale project in Saudi Arabia. The company estimates the order to be worth about ¥1.5bn in total. For this project, the company has expanded its RO membrane production capacity by some 60%.⁶⁸

Calgon Carbon

Calgon Carbon Corporation's UV Technologies Division has installed hundreds of systems for treating a broad spectrum of contaminated groundwater, waste water, process water, and drinking water. Calgon Carbon's CalSolutions™ brand covers a full line of media, equipment, and services targeting numerous

⁶⁷ Singapore Analyst: Sector Strategy and Stock Picks; October 2006

⁶⁸ Water Treatment Membranes, Part 1, Muramatsu, 11th June 2006

groundwater remediation and drinking water applications. The programme is designed to deal with water treatment problems, including arsenic and nitrate contamination.

Sinomen Technology

Sinomen Technology Limited, located in Singapore, is an integrated membrane technology company. Its business covers the entire membrane industry value chain: membrane material manufacturing, membrane process and engineering, and downstream nutraceuticals production that employs membrane-based separation and purification technologies. The group focuses mainly on the Chinese market, and is currently the dominant membrane separation and purification solutions supplier for China's pharmaceutical and fermentation industries.

Waste water treatment companies

ITT

Via its Advanced Water Treatment (AWT) division, estimated at 40-45% of the business and growing, ITT operates in the transport, treatment and control of water, and waste water segments. ITT/AWT supplies treatment and filtration systems to convert waste water to usable water, along with desalination technologies and other water solutions. The company's technologies are also designed to be energy-efficient, and in some cases can save up to 50% of the energy consumed by alternatives.

The company is positioning its business in emerging markets (China, India), and plans to bundle its technology portfolio for growth in re-use and process applications in attractive industry segments. The company also plans to grow its base in the drinking water and desalination markets, using its filtration and disinfection technologies.

Hydro International

Hydro International, operating mainly in the UK, offers products for the control of storm-water and treatment of waste water. The group has developed a range of technologies to control urban run-off, treat storm water, combined sewage overflows and municipal waste water. Through the application of advanced vortex and complementary technologies, Hydro International's products are designed to control the quantity and improve the quality of water.

2. Reduce demand:

(i) Pumps, pipes and valves

Improved pumps, pipes and valves could significantly reduce the amount of water that has to be withdrawn. The pump industry is forecast to benefit from the increasing necessity to convey and treat water, particularly in urbanising Asia. Pumps have an enormous range of applications in the water industry, including in desalination and waste water treatment plants – and where there are pumps, there are valves.

An industry report by McIlvaine Co estimates the world market for pumps to reach US\$49bn by 2016 and the valves market to reach US\$52bn by 2010.⁶⁹

More efficient agricultural irrigation techniques have potentially one of the largest impacts on reduction of demand for water.

Table 9: Pumps, pipes and valves companies

Company	Industry	Theme	Country	Price target (lc)	Price (local cur)	Upside/downside to target	EV/ EBITDA 2006E	PE 2006E	Rating	Analyst
Geberit	Building Materials	Pumps and valves	Switzerland	1,700	1,586	7.2%	11.391	18.543	Buy 2	Torsten Wyss
Weir	Industrial Diversified	Pumps and valves	UK	540	473	14.2%	10.626	15.516	Buy 2	Peter Whiting
Rotork	Industrial Diversified	Pumps and valves	UK	850	768	10.7%	13.959	21.923	Buy 2	Peter Whiting

Source: UBS, prices at 9 October 2006

Geberit

Geberit is the European market leader in sanitary technology, focusing on sanitary systems and piping. The group's products are mainly technology oriented versus the design orientation of other companies in the sanitary market. Close ties to plumbers, the main decision-makers in the buying process for Geberit's products, provide significant entry barriers. We believe the market for technology-driven products is less price-sensitive, has higher margins and is less competitive. Two-thirds of sales are exposed to the repair, maintenance and improvement (RMI) segment; this makes the group less dependent on cyclical developments.

Geberit is located in Germany, where it does most of its sales, along with Switzerland and Italy (both 12% of sales). It also does business with the UK and Eastern Europe. The Asia-Pacific and Middle East/Africa regions currently account for only 4% of group sales, but this figure has doubled since 2003.⁷⁰

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⁶⁹ Pumps World market Update; McIlvaine Company, August 2006

⁷⁰ Geberit: Positive Momentum Lingering into 2007?, 11th August 2006

Weir

Weir's water-related divisions comprise: its engineering products, a global clear water and slurry pump and valve manufacturer, which supplies a diverse range of end markets, including mineral extraction, power, oil and gas, water, industrial and marine; and its engineering services, which provides maintenance, repair and technical services to Weir's installed base, as well as other products. Our Buy case for Weir is based on the group's industry and geographical exposure, together with the scope for improved performances in some parts of the group following recent restructurings⁷¹.

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Rotork

Rotork is a supplier of control instrumentation equipment worldwide, providing a range of products and services for the motorisation of industrial valves and dampers, including valve actuators for use in the water industry. Actuated valves are major control elements in refineries, pipelines, power stations, water distribution systems and sewage treatment plants, and in all industries in which liquids or gases are transported through pipes.

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Our medium-term buy case for Rotork is two-fold: robust end-user markets, and a resilient business model, with continuing strong growth in the majority of markets and territories. Expectations for the group are high, but we regard this performance as strong enough to result in further outperformance.⁷²

Table 10: Companies not covered by UBS: Pumps, pipes and valves companies

Company	Industry	Theme	Country	Price target (local cur)	Price (lc)	Upside/ Downside to	EV/EBITDA		Rating
						Target	2006E	PE 2006E	
Watts Water	na	Pumps and valves	US	na	na	na	na	na	Not Rated
Consolidated Water	na	Pumps and valves	US	na	na	na	na	na	Not Rated
Mueller Water Products, Inc	na	Pumps and valves	US	na	na	na	na	na	Not Rated
Pentair Inc	na	Pumps/Filtration	US	na	28.5	na	na	na	Not Rated
Lindsay Mfg	na	Irrigation Technology	US	na	na	na	na	na	Not Rated

Source: UBS. Prices at 9 October 2006

Consolidated Water

Consolidated Water specialises in developing and operating ocean-water desalination plants and water-distribution systems in areas where natural supplies of drinking water are scarce, such as the Caribbean and South America. It currently supplies water to Belize, Barbados, the British Virgin Islands and the Bahamas, and has expansion plans.

⁷¹ Weir: Interims even stronger than expected, 17th August 2006

⁷² Rotork: Living up to High Expectations

Mueller Industries

Mueller Industries, Inc. is a leading manufacturer of copper, brass, plastic and aluminium products. The range of these products is broad: copper tube and fittings; brass and copper alloy rod, bar and shapes; aluminium and brass forgings; aluminium and copper impact extrusions; plastic valves and fittings; refrigeration valves and fittings; and fabricated tubular products. The company also resells imported brass and plastic plumbing valves, malleable iron fittings, steel nipples, faucets and plumbing specialty products. Mueller's operations are located throughout the United States, and in Canada, Mexico, Great Britain, and China.

Watts Water Technologies

Watts Water has been doing business in China since 1995. Today, Watts Regulator is part of the Watts Water Technologies family with operations in North America, Europe and Asia. Watts designs, manufactures and sells an extensive line of flow control products for the water quality, residential plumbing & heating, commercial and OEM markets.

Lindsay Manufacturing

Lindsay Manufacturing offers several solutions in the field of irrigation technology: its center pivot technology, through accurate distribution of water at low pressures, enables increased crop yields while using less labour, chemicals, water and energy. Its 'GrowSmart' irrigation system allows irrigation times to be planned based on water requirements or electricity rates. The company also offers a Land Application System to allow waste water to be used effectively in irrigation systems.

2: Reduce demand

(ii) Water gauging technologies

The introduction of water meters is estimated to lead to water savings of up to 15%⁷³. As we noted in our recent *Water Debate* publication⁷⁴, increasing evidence to suggest that ground water resources are being over-exploited and irreversibly degraded suggests that there will be increasing pressure on firms to improve their water efficiency, and that increased regulatory intervention is a possibility. Meters and related gauging equipment can assist in the location of leaks and are a route to the effective pricing of water.

It is also likely that the degradation of ground water, and the increasing need to re-use waste water will lead to an increasing demand for water testing, at both the municipal and domestic levels.

Table 11: Water gauging/metering and testing companies

Company	Industry	Theme	Country	Price			EV/	PE	Rating	Analyst
				Price target (lc)	(local cur)	Up/downside to target	EBITDA 2006E	2006E		
Thermo-Electron	Advanced Industrial Equipment	Water Quality Analysis	US	47	39.57	18.8%	14.2	22.8	Buy 1	Derik De Bruin, Ph.D.

Source: UBS. Prices at 9 October 2006

Thermo Electron

The measurement and control operations are estimated at 25% of the business, providing analytical tools, online process instruments and precision temperature-control systems that are used to increase quality, improve productivity, and meet environmental and other regulatory standards.⁷⁵

Thermo offers a full range of water analysis instruments, serving markets such as environmental, food and beverage, pharmaceutical, and general laboratory equipment. Its environmental testing package includes testing and solutions for drinking water, waste water, salt water, soils, surface fresh water, and ultra-pure water.

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⁷³ Environment Agency: Water Metering; <http://www.environment-agency.gov.uk/>

⁷⁴ Water Debate-Chart Update; Hudson, 1 September '06

⁷⁵ Life Science Tools, 29th September

Companies not covered by UBS:

Table 12: Not covered by UBS: Water gauging/metering and testing companies

Company	Industry	Theme	Country	Price target (lc)	Price (local cur)	Upside/downside to target	EV/ EBITDA 2006E	PE 2006E	Rating
Techem Group	Industrial Services	Water Gauging/Metering	Germany	na	39.45	na	na	na	Not Rated
Itron Inc.	Advanced Industrial Equipment	Water Gauging/Metering	US	na	52.91	na	na	na	Not Rated
Roper Industries	Advanced Industrial Equipment	Water Gauging/Metering	US	na	45.25	na	na	na	Not Rated
Badger Meter	na	Water Gauging/Metering	US	na	na	na	na	na	Not Rated
Danaher	Advanced Industrial Equipment	Water Quality Analysis	US	na	68.55	na	na	na	Not Rated

Source: UBS, prices at 9 October 2006

Techem AG & Co

Techem is the German market leader for energy services, which includes the measuring and billing of energy or water consumption. Its energy contracting business comprises the planning, financing, installation and operation of energy-producing facilities.⁷⁶

Techem's core metering business has traditionally accounted for some 75% of group sales and EBITDA, and typically provides high margins and stable cash flows. The group's principal activity is to provide water and heating invoicing services for the owners of real estate properties to their tenants. In addition, the group rents and sells water and heating measuring and recording instruments, as well as meters to real estate owners. With market shares of between 25% (Germany) and up to 80% (Eastern Europe), Techem is a dominant player in regional oligopolistic markets.

Badger Meter

Badger Meter, Inc. markets flow-measurement meters and control technologies. Its product line includes residential, commercial and industrial water meters, automotive fluid meters, small precision valves and industrial process meters. The customers of the group include water utilities, original equipment manufacturers and various industrial customers, primarily operating in the water, waste water and process water, energy and petroleum, food and beverage, pharmaceutical, chemical and concrete markets. The group has manufacturing facilities at Milwaukee, Tulsa and Rio Rico in the United States, Nogales in Mexico and Brno in Czech Republic. It also has facilities for assembly at Stuttgart in Germany and Nancy in France.

⁷⁶ Taking Stock Extract; 19th June 2006

Itron

From solid-state meters and automated meter reading technology to enterprise-wide software platforms and real-time analytic applications, Itron provides a portfolio of products and services for energy and water providers around the world. Itron's products allow clients to collect detailed, reliable and timely data; analyse and use it to make informed decisions that optimise the delivery and use of energy and water.

Roper Industries

Roper's Industrial Technology businesses produce water meter and automatic meter reading products and systems, industrial pumps, flow measurement and metering equipment, and industrial valves and controls. They serve customers in the water/waste water, general industrial, commercial refrigeration, power generation and oil and gas markets.

Danaher

The group operates in water quality analysis and treatment, providing instrumentation and disinfection systems to countries and municipalities to increase the supply of clean water and manage residential, commercial and industrial waste water. The company's ultraviolet treatment systems disinfect billions of gallons of water every day in more than 35 countries. Its Professional Instrumentation segment produces and sells electronic test tools and calibration equipment, water quality instrumentation and consumables, and ultraviolet disinfection systems.

3. Improve management: Eco-permits and water quality trading

Another investment strategy is investing in eco-permits; according to the US Environmental Protection Agency, permitting on a watershed basis and water quality trading are all means of ensuring that actions to preserve and conserve water resources achieve the greatest benefit.⁷⁷

Nascent markets currently exist in ecosystem assets, such as wetland mitigation banking, species conservation banking, and water quality trading. Investment vehicles in ecosystem mitigation (such as permits) appear to change hands mainly in the USA, and in a small number of other countries. Currently, therefore, 'pure' investment opportunities are available only to a few specialists. In our view, this may be a latent medium-term opportunity⁷⁸.

⁷⁷ US Environmental Protection Agency: Watersheds <http://www.epa.gov/>

⁷⁸ See: SRI Spotlight; Exploring permit trading in eco-assets, J Hudson, 25th April 2006

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In addition to the water utilities, the 'water business' comprises a diverse range of companies across industries, such as specialty chemicals, advanced industrial equipment, factory equipment, building materials, industrial diversified and advanced industrial equipment. As such, the risks involved are those pertaining to the particular industry and company. Investors are advised to consult specific UBS company research for further details.

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Reduce 1	FSR is > 6% below the MRA, higher degree of predictability	Reduce 2	FSR is > 6% below the MRA, lower degree of predictability	Sell	12%	27%

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Companies mentioned

Company Name	Reuters	Rating	Price	Price date/time
Abengoa ²⁰	ABG.MC	Neutral 2 (CBE)	€21.89	09 Oct 2006 23:40 BST
American States ^{2b,4b,16}	AWR.N	Buy 1	US\$38.58	09 Oct 2006 19:36 EDT
Aqua America Inc ^{2c,4a,6a,16}	WTR.N	Buy 2	US\$22.29	09 Oct 2006 19:36 EDT
awg plc	AWG.L	Neutral 2	1,600p	09 Oct 2006 23:40 BST
Bio-Treat Technology ²⁰	BIOT.SI	Buy 2 (CBE)	S\$0.68	10 Oct 2006 23:39 HKT
Geberit ^{4a,5,18}	GEBN.S	Buy 2	CHF1,594.00	09 Oct 2006 23:40 BST
IAM ^{2c,4a,20}	IAM.SN	Buy 1 (CBE)	P588.00	06 Oct 2006 19:35 EDT
Kurita Water Ind. ²⁰	6370.T	Buy 2 (CBE)	¥2,285	10 Oct 2006 23:49 JST
Manila Water Company ^{2b,4a}	MWC.PS	Buy 2	P8.90	10 Oct 2006 23:39 HKT
Nalco ^{2b,4a,6a,16}	NLC.N	Neutral 1	US\$19.05	09 Oct 2006 19:36 EDT
Nitto Denko ¹⁶	6988.T	Neutral 2	¥6,640	10 Oct 2006 23:49 JST
Northumbrian	NWG.L	Buy 2	292p	09 Oct 2006 23:40 BST
Pall Corp. ^{2a,4a,5,6a,6b,6c,7,12,16}	PLL.N	Buy 2	US\$31.50	09 Oct 2006 19:36 EDT
Pennon Group	PNN.L	Neutral 2	536p	09 Oct 2006 23:40 BST
Rotork ^{4a,14}	ROR.L	Buy 2	764p	09 Oct 2006 23:40 BST
Severn Trent	SVT.L	Neutral 2	1,482p	09 Oct 2006 23:40 BST
Thermo Electron ¹⁶	TMO.N	Buy 1	US\$39.85	09 Oct 2006 19:36 EDT
Weir ^{4a,14}	WEIR.L	Buy 2	471p	09 Oct 2006 23:40 BST

Source: UBS. BST: British summer time; EDT: Eastern daylight time; HKT: Hong Kong time; JST: Japanese standard time.

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