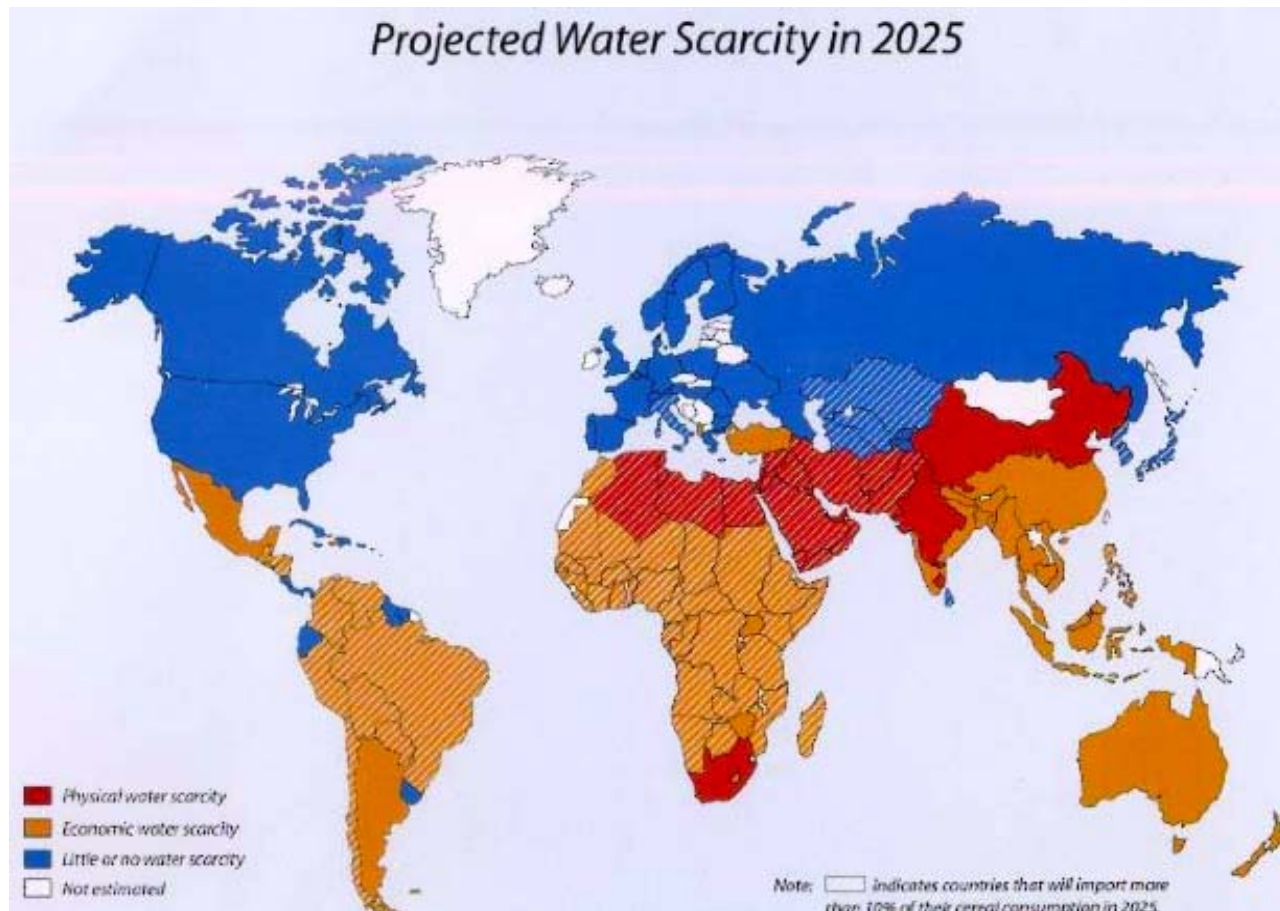


Water: Cheap and abundant, but not for long



Source: World Water Supply and Demand in 2025. World Water Scenario Analysis, IWMI, 2000

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Executive Summary

Water is essential to life on earth, it covers two thirds of our planet and yet only 0.6% of all water on earth is available to the world's flora and fauna.

Demand is driven by the combined pressures of population growth, economic development, a more protein rich global diet (70% of global water use is for agriculture), over appropriation and rural to urban human migration. Water use has increased six fold in the last 100 years and is expected to increase by 50% over the next 20 years.

Supply is being constrained due to the dwindling number of clean freshwater reserves as a result of climate change and water pollution (25-30% of all reserves are now polluted) and due to the irregular distribution of water.

The impacts of increasing demand and the constraints of supply mean that global water scarcity is increasing. The UN estimates that the percentage of the global population living with water scarcity will increase from 8% in 1995 to 42% by 2050.

Constraints to water availability have economic implications and business will need to demonstrate that they have assessed the long term sustainability of their business models through water risk assessments of their supply chains, their business process (and location) and future consumer demands; and have developed water management programmes to counteract these risks.

Sectors with particular exposure are those with strong reliance on agricultural inputs (e.g. **Food producers**); those with high levels of water use in their production process (e.g. **beverages, mining and pulp & paper**) and those who produce high levels of aquatic pollution (e.g. **textiles and mining**).

The increase in global water scarcity will also offer opportunities to business in developing new sources of water (e.g. desalination and recycling); improving the supply of freshwater reserves through infrastructure upgrades (benefiting companies such as **Weir** and **Rotork**); improving the efficiency of water use (e.g. **Spirax-Sarco** as well as those companies producing more water efficient consumer products) and in reducing water pollution (e.g. **Christ Water Technology**). We would also expect a general increase in the recognition of the value of water leading to increased prices for water, benefiting water utilities in general (e.g. **Veolia Environment, United Utilities** and **Wavin**).

Introduction

Water covers just over two thirds of our planet, but only 0.6% of this is in a form readily available to mankind. 97% is salt water and 2.4% is stored in glaciers and ice caps. Fresh water is essential for life on earth (in the human body the brain is 85% water, blood 80% and muscle 70%) and in the successful functioning of the global economy. Over the next 20 years water use is expected to increase by 50% (having increased six fold over the last century, double the rate of population growth) and the UN predicts that by 2025 two-thirds of the earth's population will be living in areas suffering water scarcity. This lack of sufficient volume of clean fresh water can be measured in humanitarian costs with 300-500m people falling victim to diseases directly linked to the lack, or quality, of water; resulting in 1.6-2.5m deaths every year, economic costs (water pollution in China cost the country \$1.7bn in lost industrial income in 1992 – the last year for which figures are available) and environmental costs (50% of the world's wetlands have disappeared over the last century and 20% of freshwater fish are endangered or extinct).

This report examines the issues causing water scarcity and explores the potential impacts that this can have on industry before looking at some of the solutions to the challenges of water scarcity and identifying some companies that may benefit as a result.

Water Stress/Scarcity¹

As water stress increases (which is predicted to occur²), tensions between users of water will increase and companies will have to become aware that they are competing for an essential resource and will have to manage the potential reputational repercussions of this. National water use appears to be growing without concerns for the future, however warning signals are starting to be fired about the short time frame until which water scarcity may actually start impeding growth. For example, it is estimated that India's demand for water will exceed all sources of supply by 2020 and concerns are also being raised about the economic impact of water scarcity in China.

Water stress may also cause conflict between countries (e.g. Singapore relies on Malaysia for around 50% of its water and water supply and this has been an historical flashpoint between the two countries), though it can also be a cause for collaboration (e.g. La Plata basin project between Paraguay, Uruguay, Argentina and Malaysia), increasing the risk to where companies locate their operations and where their supply chains are located.

The causes of water stress can be split into demand and supply issues

Table 1: Drivers of water scarcity

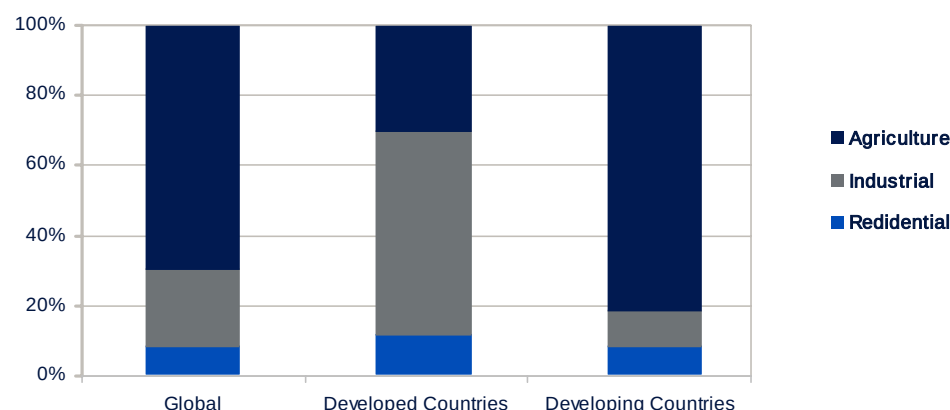
<u>Demand</u>	<u>Supply</u>
Diet & Agriculture	Water Pollution
Population Pressure	Climate Change
Over-appropriation	
Economic development	

Demand

Diet & Agriculture

Agriculture is by far the largest global use of freshwater using on average around 70% of all water used. However usage patterns vary depending on geography and the level of development. For example the UK has a relatively wet climate so agriculture uses about 1% of fresh water, whereas in Spain, Portugal or Greece irrigation accounts for 70% of the total water useⁱⁱⁱ. Figure 1 (overleaf) demonstrates the difference in water use between developed and developing countries, this is reflective of less efficient agricultural systems and less industrial development.

Figure 1: Patterns of Water Usage.



¹Water stress is described as a country's annual supply of renewable fresh water falling to between 1,000m³ and 1,700m³; such countries can expect to experience temporary or limited shortages. Water scarce is defined as a country's annual supply of renewable fresh water falling to less than 1,000mm pp. Such countries can expect to experience chronic and widespread shortages of water that hinder economic development and cause serious environmental degradation.

²The UN population division expects that the percentage of the world's population living with water scarcity or stress will grow from 8% in 1995 to 42% in 2050. And this will not be distributed equitably around the world.

Despite these figures it should be recognised that irrigated agriculture is practiced on less than 20% of the world's agricultural land, though this produces nearly 40% of the world's food production. However about 40% of water used in irrigation systems evaporates during use, which means that as issues over water scarcity increase then opportunities to improve productivity per drop present themselves:

- Crop breeding
- Fertilizer application practices
- Low cost supplemental irrigation technologies for rain fed wares (e.g. shallow pumps and bucket and drip irrigation)
- Irrigation – shifting to more efficient methods of irrigation (e.g. drip irrigation or sprinklers can cut water use by between 50 and 80 per cent)
- Improving Irrigation management practices
- Integration, recycling and re-use of water
- Integrated natural resource management within basins
- Increasing production in areas with abundant water resources and favourable conditions

The irregularities in the global distribution of water reserves give rise to the concept of virtual water which refers to the transfer of water through trade and aid. In that exporting and importing food is the equivalent to the transfer of huge shadow volumes of water used in the production of goods from the exporting country to the importing one. For example the virtual water content of maize, wheat and rice is 900, 1300 and 3000 m³/tonne (respectively) and chicken, pork and beef is 3900, 4900 and 15,500 m³/tonne (respectively) . Given the water requirements of these crops some nations would find it impossible to sustain their populations without the import of virtual water; global water use could be reduced if there was an increased focus on exporting food from countries which would be more productive per unit of water to less productive countries, however global trade tends to be driven by economic reasons not by water scarcity. In addition to water required to grow crops, the water used during processing and distribution should also be accounted for; so the virtual water content of rice would increase from 2291m³/t to 1134m³/t. Clearly the concept of virtual water can also be applied to other industrial products.

By introducing the concept of virtual water it throws a stark light on the disparities between water resource consumption for food, drinking and domestic use. The amount of water consumed in producing today's average diet is 1,200m³ per year (varying from 600m³/yr in the world's poorest regions to 1,800m³/year in the richest) whereas annual drinking water figures vary between 0.7 – 1.8m³ per year, and water used in domestic requirements varies between 36 – 183m³ per year, which helps to demonstrate why 70% of freshwater reserves are used for agricultural purposes vii.

As we have seen in the previous section different food types require different volumes of water in their production (Appendix 1 lists the water consumption for different products), and changes in the world's diet (e.g. more red meat) due to economic progress is placing increasing pressure on water reserves. Table 2 (below) provides an indication of the water requirements of different food items as well as the trends in global demand.

Table 2: Water Requirements of food items and trends in global demand (Water, more nutrition per drop, Stockholm International Water Institute, 2004).

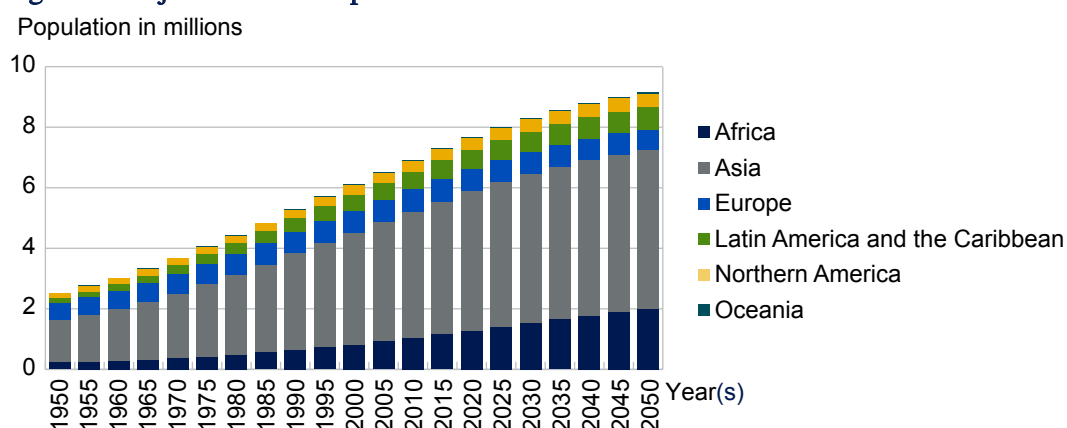
Food Item	Water Requirement (m ³ /kg)	Trends in demand
Beef (grain fed)	15+	Increasing in developing countries by about 5% pa over last 20years
Lamb	10	
Poultry	6	Share in meat consumption has more than doubled over the last three decades
Cereals	0.4-3	Current world output of 1.7bn tonnes expected to increase to 2.6-2.8bn tonnes in 2025
Citrus Fruits	1	
Palm Oil	2	Growth by 3% expected
Pulses, roots and tubers	11	

Table 1: Water Requirements of food items and trends in global demand (Water, more nutrition per drop, Stockholm International Water Institute, 2004).

Population pressure

Figure 2 (overleaf) shows the predicted, continuous growth in the human population to around 9bn by 2050. Under current water productivity levels the additional population would need a further 3,800km³ per annum by 2025 and 5,600km³ of water per annum by 2050. However the 3,800km³ per annum figure is equivalent to all the water withdrawals at present to support municipal, industrial and irrigation needsvii. So in meeting the future demand we will have to see radical improvements in productivity per unit of water used, serving to reduce demand, and improvements in the supply of water.

Figure 2: Projected World Population Growth



Source: <http://data.un.org> - UN World Population Prospects 2008 Revision

In theory there is enough water to satisfy human needs (currently there is 9,000m³ available per inhabitant per year which would drop to 5,100m³ per year by 2025 based on a growth in the human population of 2bn), however the water reserves are not distributed equitably around the world and Table 3 (below) shows the distribution of the world's water reserves alongside the distribution of the world's population.

Table 3: Distribution of global water reserves in comparison to human population

	North & Central . America	South America	Europe	Africa	Asia	Australia & Oceania
World's water reserves (%)	15	26	8	11	36	5
World's population (%)	8	6	13	13	60	<1

In addition to the challenge of population growth there is the further challenge of human migration from rural environments to urban ones which brings with the need for increased investment in water conveyance and treatment systems.

Over-Appropriation

The clearest visible example of this is the Aral Sea, which, since 1960, has been reduced to 75% of its volume due to over-appropriation of water for irrigation, but there are similar occurring with the Colorado River, US and the Murray Darling Basin in Australia.

At the corporate level one of the most recent examples of the negative impacts of over-appropriation was Coca-cola losing its license-to-operate in the southern Indian state of Kerala over concerns its water use was reducing the amount available to the local community. Beijing has also announced that it is planning to limit the development of water intensive businesses in the region due to water scarcity concerns.

Economic Development

Table 1 demonstrated the difference between water demands in developed and developing economies, showing that as economies grow water demand shifts from agriculture to other industries. With a growing economy one would expect that the standards of living also increase causing an increase in the water consumption per capita.

Supply

Water Pollution

Globally, 2 million tonnes of industrial, chemical, human and agricultural waste are disposed of into receiving waters. If one considers that the only renewable supply of water is rainfall which delivers 40,000 to 50,000 km³ of water each year and one considers that 1lt of wastewater pollutes 8lt of freshwater the present burden of pollution may be 12,000km³, or between 25 and 30% of our freshwater supplies.

For companies water quality concerns may mean more national restrictions on the type, size or location of specific industrial investments as well as new and costly constraints on a company's wastewater outflow. In addition the quality of the water will reduce its usability in manufacture or the supply chain, constricting productivity. The BBC news reported in May 2006 that China's economy could crash by 2015 as the supply of fresh water becomes critical to the global economy.

Climate Change

Climate change will impact on water resources in several ways over varying time frames:

- Changes in precipitation - It is likely that precipitation will increase from latitudes 30oN and 30oS, but many tropical and sub tropical regions are likely to get lower and more erratic rainfall.
- Increase in more extreme weather – The frequency and severity of extreme weather (floods, droughts, mudslides, typhoons and cyclones) will increase. In 2007 alone we have seen extensive flooding in the UK and Mexico, on-going drought in Australia and a cyclone killing 3,500 people and displacing 2 million in Bangladesh.
- Glacial melt – The effects of glacial melt are expected to be severe, affecting hundreds of people in Asia and Latin America. In the short term there is increased risk of flooding, but in the medium-long term, the reduced run-off will impact rivers that rely on glaciers for their source water. Some Andean Glaciers could disappear in 15-25 years denying major cities water supplies and putting populations and food supplies at risk.
- Rising sea levels – will threaten coastal aquifers and have implications for coastal populations reliant on groundwater.
- Degradation of water quality – increased water temperatures, changes in flows and runoff rates will all serve to deteriorate water quality

The impacts of climate change on water resources are already being felt. In Q3 2007 Premier Foods announced the price of bread would have to increase due to a shortage of wheat), in 2003 25% of France's 58 nuclear power plants had to shut down due to the incoming 'cooling' water being too warm and due to there being insufficient water reserves (nuclear power plants are the largest consumers of water 830gallons/MWh of which 97% is returned to rivers, though much warmer) an event that was repeated on a smaller scale in 2006.

Business Impacts and response

The first section of this report has demonstrated that humanities increasing demand for, and impact on, water resources is likely to become (if not already has) a constraint on economic growth and that historical attitudes to water use and disposal will have to changed.

Businesses will therefore need to demonstrate that they have undertaken assessments of the risks of water scarcity and water security to their business and how their own needs will sit alongside the communities in which they operate. Companies should be developing anticipatory water strategies which assess its use through their value chain – upstream (in the production and supply of raw materials); midstream (manufacturing and business process) and downstream (consumer use).

Given the level of knowledge that we now have about water scarcity it is possible to develop a rudimentary prediction of a company's, or sector's, water risk exposure and what this means to the future growth of the business. For example it takes 100 tonnes of water per tonne of aluminium³, 200 tonnes of water per tonne of steel, 300 tonnes of water per tonne of paper and 6,000 tonnes of water per tonne of fertilizer. Table 5 (below) shows how to assess the exposure of a companies business to water risk (though this hasn't taken into account the virtual water risk within the supply chain. This shows that Mittal Arcelor, Acerinox and Norske Skog have significant parts of their business exposed to water risks. This means that some sectors will have to seriously consider the locations of their businesses in future years.

Table 4: Example of predicting business water risk exposure

Product	Company Name	% sales in steel/paper/fertiliser	% production sites in China	% production sites in India	% production in other 'thirst triangle' countries: mainly South Africa, Malaysia and Persian Gulf countries	% production in 'thirst triangle'	% group sales produced in 'thirst triangle'
Steel	Acerinox	95.0	0.0	0.0	14.0	14.0	13.3
	Hoganas B	20.0	10.0	10.0	0.0	20.0	4.0
	Mittal Arcelor	100.0	13.4	0.0	12.4	25.8	25.8
	Outokumpu	80.0	0.0	0.0	0.0	0	0
	Rautaruukki	58.0	0.0	00	0.0	0	8
	Thyssen	21.5	6.8	7.8	0	14.6	3.1
Paper	Billerud	95.0	8.0	0.0	0.0	8.0	7.6
	Holmen B	80.0	7.0	0.0	0.0	7.0	5.6
	Norske Skog	100.0	8.0	0.0	3.0	11	11.0
	SCA Cellulosa	92.0	7.0	0.0	3.5	10.5	9.7
	Stora Enso	833.0	1.0	0.0	0.0	1.0	0.8
	UPM-Kymmene	68.0	6.0	0.0	0.0	6.0	4.1
Fertiliser	Akzo	15.0	15.0	5.0	3.0	23.0	3.5
	Bayer	25.0	0.0	4.0	0.0	4.0	1.0
	Dow	10.0	0.0	0.0	0.0	0.0	0.0
	DSM	5.0	0.0	0.0	0.0	0.0	0.0
	Dupont	27.0	5.0	4.0	6.0	15.0	4.1
	Monsanto	55.0	0.0	0.0	10.0	10.0	5.5
	Tessenderlo	8.0	0.0	0.0	0.0	0.0	0.0
	Yara Intl	90.0	0.0	0.0	5.0	5.0	4.5

(source: CM-CIC Securities, October 2006)

³ Aluminium production in China has not kept up with demand, with China becoming a net importer in 2004, this slow down is not due to energy requirements and one possible explanation could be water shortages.

Clearly the sectors that will be impacted most are those where water is a major input/output; where the industrial process is water intensive; where end of process water resource pollution is high and where companies produce consumer products that employ water for their use. The following table provides a brief breakdown of different sectors exposure to water risk:

Table 5: Sector exposure to different water risks

<u>Water Exposure</u>	<u>Sectors</u>
Water consuming	Food, beverages, pharmaceuticals
Water polluting	Agriculture, apparel, mining, defence
Water transport	Construction, infrastructure
Water financing	Insurance, investment banking
Water provisioning	Utilities, water technology providers
Water dependant	Energy, shipping, tourism

Table 5 (above) is a gross summary as many sectors will be exposed to a variety of risks. For example agriculture will be exposed to water consumption risks as well as pollution of waterways as a result of agricultural run off; apparel too (through the dyeing and washing requirements in the upstream element of the value chain).

From a shareholders perspectives, companies should be able to demonstrate the long term viability of their business, and this report has demonstrated the role that water plays in many businesses. Therefore companies which have some exposure to water throughout the value chain should undertake water footprint assessments (which would serve to demonstrate that they fully understand and appreciate the importance of water at all stages of the value chain). A risk assessment should be undertaken, evaluating risks such as shortages, flooding, disparities in local and regional access and impacts on local communities) and, having prioritized these issues, the company should then develop a corporate water strategy (this would cover management commitment, policy statement, key performance indicators and goals). Many companies publish information on direct water use, but few on indirect water use (e.g. virtual water) which could be incorporated alongside the water reporting guidelines of the Global Reporting Initiative:

- Volume of water withdrawn by source
- Volume and rate of water re-use and re-cycling
- Total effluent discharges by quality and disposal method
- Impact on local communities and the environment (e.g. water bodies and related habitats affected by discharges of water and run off, and water sources significantly affected by withdrawal)

Water Resource Solutions

It is clear that water plays a vital role in economic development and sustainable business practice, and that a dwindling supply of clean freshwater threatens this status quo. The nature of the challenges and the scale of the responses means that there has to be political and regulatory reforms in order to assure a successful response to them. These reforms will drive through an increased focus on water efficiency in the business process, but with demand for water continuing to grow there will also be opportunities in securing new sources of supply. This section provides an overview of some of the solutions that are available through the water value chain (sourcing, supply/demand management and disposal).

Sourcing

As well as improving supply of, and demand for, water (through improved infrastructure and better water efficiency), there will be an increased focus on water abstraction (from rivers, lakes and ground water reserves), creating more reserves (e.g. dams and reservoirs) and using new methods to collect or create potable water (e.g. rainwater harvesting, desalination and water transfer).

Desalination

Effectively desalination is the process of retrieving brackish water or seawater and converting it into freshwater through a process of filtration, pre-treatment (e.g. nanofiltration, ultrafiltration, chemicals), desalination (e.g. reverse osmosis and distillation) and post-treatment.

Since the 1980's desalination capacity has been doubling, but it still only accounts for about 0.5% of all freshwater collected globally. The Ground Water Intelligence Report estimates that desalination capacity will increase from around 30m m3 per day in 2005 to 60m m3 per day in 2015.

Reverse osmosis (high pressure sea water permeates membranes leaving sodium and chlorine ions behind) tends to be favoured above distillation (using evaporation and condensation – distillation plants tend to be built in conjunction with power plants) and table 6 (below) demonstrates the advantages of reverse osmosis (RO) over distillation.

Table 6: Reverse Osmosis vs. Distillation (advantages, disadvantages)

Advantages	Disadvantages
More energy efficient (a key attraction with rising energy costs)	Sensitive to water quality
Less impact of waste water (e.g. not heated)	Potentially higher maintenance costs
50% water recovered	Use of chemicals for cleaning
Reduction of corrosion problems	
Smaller area covered by plants	

Source: CM-CIC Securities, 2006

Desalination plants are a very energy intensive and costly tool (see Table 7) for treating water and so would only be built if they had to. If the primary energy source is from fossil fuels then the plant will contribute to climate change (and therefore adding to the problem), in addition there are negative environmental impacts of disposing of warmer waters and highly saline brine to aquatic environments.

Table 7: Cost of different sources of freshwater

Source	Groundwater	River Water	Desalination
Cost in €/m3	0.4	0.6 – 0.8	0.8 – 1.1

Source: CM-CIC securities, 2006

Water Transfer

Water may be available to countries, but may not be available in the right locations or at the right times of year, which has resulted in some governments considering the use of large scale infrastructure projects for the transfer of water over long distances (e.g. Spain looked at building a canal from the Ebro River in Catalonia in the north to the Murcia and Alicante regions in the south). However water transfer projects require high energy and infrastructure costs (the cost to transport water by pipeline is 4x the cost of electricity transportation, and 8x the cost of gas; whereas for both gas and electricity the cost is only 3x their annual retail value; therefore it can only be economic over shorter distances^{xi)}) and so water transfer projects will only work on a local scale. Having considered the costs of the Spanish project the government chose to develop a desalination plant instead.

In addition there is greater focus on resource management and in the European Union the value of managing the watersheds from which water is withdrawn has been recognised in the establishment of the EU Water Framework Directive, which recognises the benefits of a healthy ecosystem and aims to restore every river, lake, groundwater, wetland and other water body across the EU to a 'good status' by 2015.

Supply/Demand Management

Supply

Improving the supply of water can be achieved through better infrastructure management, increasing the use of purification technologies and increasing the practice of recycling and re-use of water.

Many of the world's water distribution networks suffer from serious underinvestment and with advances in piping and monitoring there is significant need and opportunity in the upgrading of existing networks⁴. Though whole network upgrades is a costly exercise which means that leak detection technologies will be a preferred substitute, enabling the operator to identify smaller scale fixes, though in the longer term the natural corrosion of piping and movements of the earth would mean that networks will have to be upgraded. One option for facilitating this is the privatisation of water utilities as research has indicated that this can lower operational and capex costs over the longer term (though prices may rise in the short term).

This raises the issue of the value of water. Water (and sanitation) has historically been regarded as a public good and charges for these services have been below cost (often in the agricultural and municipal sectors) which means that costs have failed to be recovered resulting in under-investment and subsidies. A recognised way to improve the efficiency of water use would be to set higher water prices, but full cost charging would put clean water and adequate sanitation facilities beyond the means of the majority of the underprivileged, resulting in subsidies and is a very unpopular political decision. Reforming charging policies will be essential in the process of increasing water use efficiency and decreasing pollution, however any price increases need to ensure that they are coupled with efficiency programmes to ensure that production and crop yields do not decline, resulting in an increase in product and food prices; . In addition by having the true cost of water reflected a better decision making process will be established (whether this is regarding product development, infrastructure planning or manufacturing locations for example).

Demand

If the price of water is accurately reflected in its supply, then this can serve as an incentive to improve the efficiency of its use (or, with regards to agriculture, 'crop-per-drop'). This will create increased demand for metering products which allow consumers to better manage the quantity of water they are using, whilst at the same time stimulating reforms to production processes and increase the demand for more efficient products. With the largest user of water being the agricultural sector there will be significant opportunities in servicing this sector, whether it is in more efficient irrigation technologies or in the improvement of crop yield per unit of water through genetic manipulation or improved fertilizer and pesticide application and technology.

If water supply becomes scarce and price increases then the option of re-cycling and re-using water will become increasingly viable, which, as well as reducing demand, has additional benefits of reducing the

⁴ Europe needs a total water CAPEX of €356bn by 2015 of which nearly 2/3rds is in waste water. The US needs €277bn investment in drinking water infrastructure over the next 20 years and China will spend between €200 and €400bn in urban sewerage by 2015. Veolia Water says that the size of the water market is €400bn pa worldwide for the service activity and €100bn pa for equipment^{xiv}.

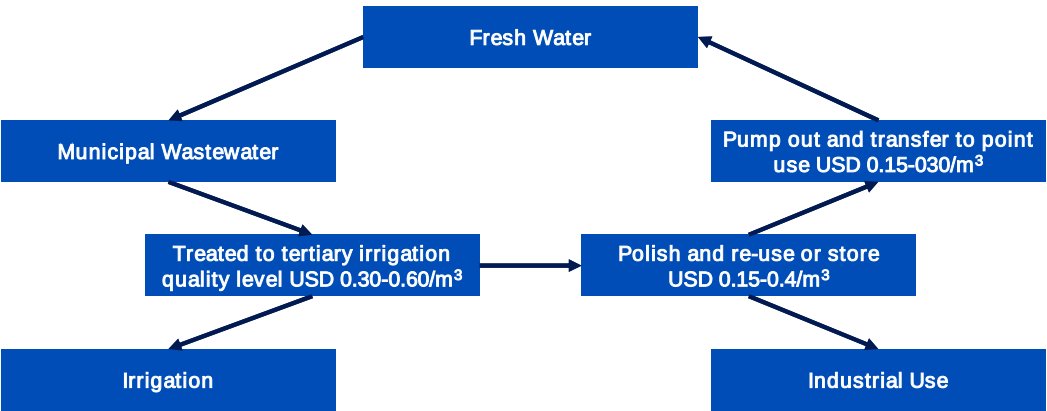
potential impacts of the discharge of pollutants into water sources, and this will stimulate opportunities in waste-water recycling.

Disposal

Making waste water a valuable commodity is essential to managing the growing water supply challenge. 95% of freshwater consumed is for non-potable purposes, so there is significant scope for waste water use in non-potable demand areas (e.g. irrigation, aquifer recharge, grey water systems [flushing]) however there is considerable resistance to this.

Figure 3, (overleaf) demonstrates the different costs of treating wastewater to varying levels. If the price of desalinated water is taken at USD0.5 -1.2/m³ then it is clear that using different levels of treatment for different water supply demands can be more cost effective. For example if waste water were to be treated to a level suitable for irrigation then there is a clear cost advantage, as is the case for water treated to the level for industrial use (total cost USD0.45-1.0/m³). It is only when water is recycled to fresh water standards again that the costs for recycling become comparable with that for desalination USD0.6-1.3/m³.

Figure 3: The Economics of wastewater reclamation



Source: International Desalination Association and Schrodgers

Whilst using waste water may have certain concerns associated with it, these can be overcome (Singapore currently leads the world in reusing sewage, putting the water back into industry, air conditioning and some drinking water reservoirs), it may actually make the best economic solution to providing increased water supplies, especially in large urban areas away from the ocean and increased treatment of waste water will reduce the pollutant loads currently impacting on freshwater availability.

Business opportunities from water scarcity

Water stress and scarcity is already having an impact on businesses and their supply chains. It is clear that current attitudes to this once clear, abundant resource will have to change and that this will create new market opportunities for various businesses.

We expect that the price of water will increase which will benefit water utility companies such as **Veolia, United Utilities and Wavin**. The increase in the price of water will be as a result of the need to recognise the true value of water and the need to improve supply (which will require investment), we would therefore expect that some companies with exposure to the installation of water networks and the equipment used in the supply of water would benefit (e.g **Weir, Rotork**). Whilst prices rises can signal the investment in new infrastructure and demands there is also the likelihood that there will be increased pressure on decreasing pollution (as well as improving the quality of supply) which will benefit firms such as **Cardo** and **Christ Water Technology**. Increased prices will also increase efforts to use water more efficiently which can be facilitated by metering (e.g **Spirax-sarco**). This analysis did not discover any European companies that have material exposure to desalination.

Appendix 1: Water consumption of different products

Product	Litres of water
1 kg cheese	5000
1kg coconut	2500
1 hamburger	2400
1litre of milk	1000
1 egg	200
1 bag of crisps	185
1 cup of coffee	140
1 glass of wine	120
250ml beer	75
Apple	70
1 orange	50
1 slice of wheat bread	40
1 cup of tea	30
1 A4 sheet of paper	10

Source: www.waterfootprint.org

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