L.E.K.

EXECUTIVE INSIGHTS

VOLUME XVI, ISSUE 44

When Sustainability Drives Performance: The Case for Water

Turn on the tap in any developed country and there it is: water, abundant and essentially free. The public uses it with barely a thought, for drinking, for washing cars and for watering gardens and golf courses. Businesses, too, long took the water they needed from wherever they could and disposed of waste water with limited restrictions. No longer.

Water has become the new frontier for sustainable business practices, as significant and serious an issue as air pollution and carbon footprint. Questions about how to re-tool business models to achieve water sustainability, where to source water supplies responsibly and how to comply with new rules for wastewater disposal occupy top management agendas in international corporations with increasing urgency.

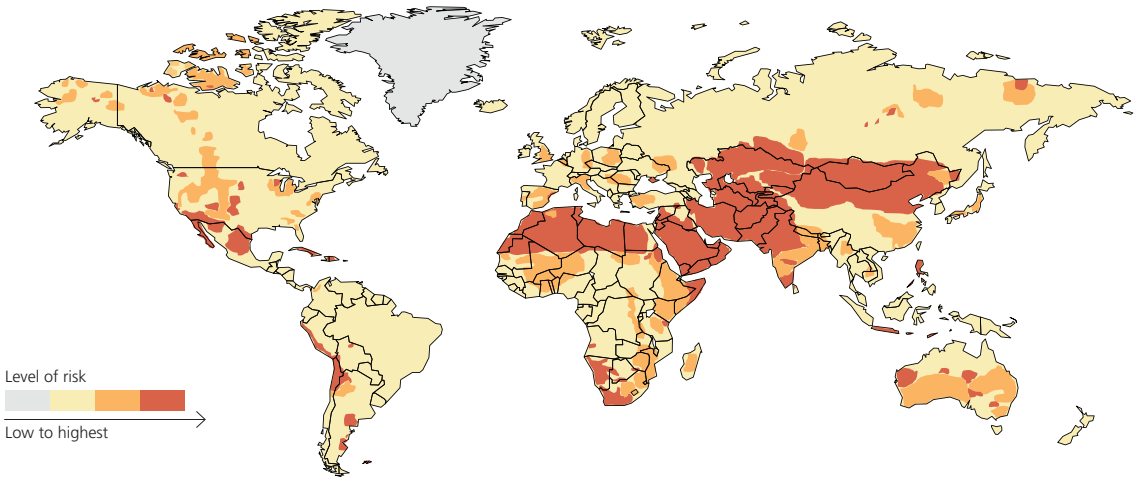
They have little choice. Businesses in all sectors and of all sizes are facing increasingly tough scrutiny of the way they interact with the world around them, including with water. This scrutiny is coming not just from environmental activists and regulators, but from consumers and, increasingly, investors, lenders, insurers and rating agencies.

As with other issues of environmental sustainability, many companies worry that being more judicious with their water

Figure 1

Water Stress Index (2012)

Water Scarcity is a Major Risk in Many Regions Today



Source: IPCC, Aqueduct, L.E.K. Consulting analysis

When Sustainability Drives Performance: The Case for Water was written by **Clare Chatfield**, a Partner in L.E.K. Consulting's Paris office. For further information, please contact energy@lek.com

use could erode their competitiveness. But for forward-thinking companies, such pressures present an opportunity. If businesses adopt a holistic view involving customers, suppliers, competitors and government in order to better understand the options in the short and longer term, this can in turn help them drive innovation and improve their overall business efficiency and performance.

The key challenge for boards and managers is to align water sustainability with profitability, reviewing and adjusting the business model so that sustainability factors and risks are accurately anticipated, assessed and accounted for.

In this *Executive Insights, we* examine the particular challenges posed by water and show how companies can turn sustainability to their advantage, strengthening their risk management and working to achieve the dual goal of being both profitable and sustainable.

Water is an essential ingredient for a wide range of manufacturing sectors, in particular power generation, oil & gas, mining, food & beverage and pharmaceuticals. Water is an abundant resource but it is not always available in the right place, in the right quantity and with the right quality at the right time. Availability of and access to water, its treatment and its disposal, can be existential questions for businesses.

In countries from China to Mexico to Yemen, there is a real risk of water shortages in the coming decades; an estimated 2.8 billion people, or about 44% of the world's population, lives in areas of high water stress (See Figure 1).

Water scarcity is already leaving its mark in unexpected ways, even for companies sensitive to water issues. Water shortages in California represent a recurrent risk to electricity supply. Further afield, Coca Cola's operations in India and gold mines in Papua New Guinea have also been impacted by water-related issues.

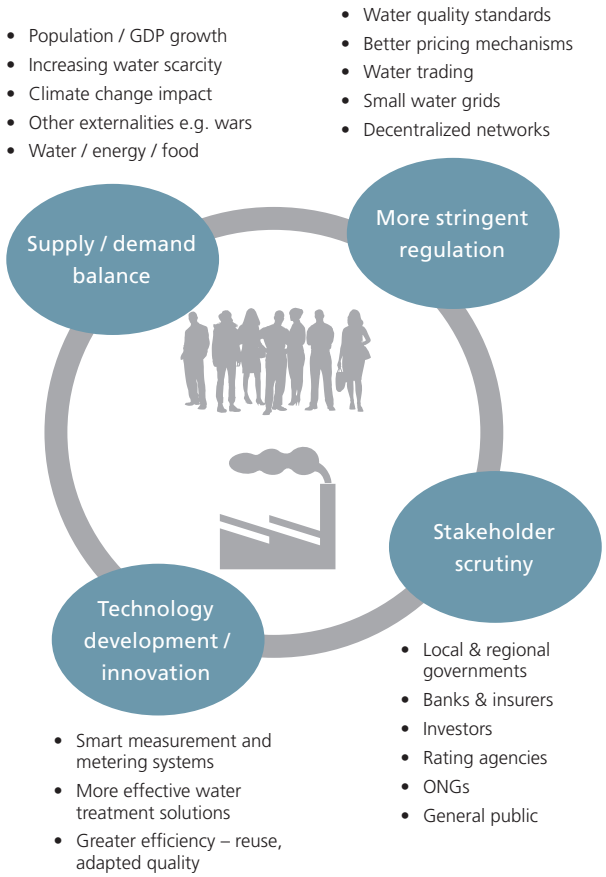
Drivers of Water Sustainability

Water sustainability is driven by four principal factors: supply and demand, regulation, stakeholder scrutiny and technology development and innovation (See Figure 2).

The balance of water supply and demand, or water scarcity, is a primary driver of the push for sustainability. Businesses are increasingly aware of and concerned about the risk. In a 2013 survey of major global companies by the non-profit Carbon Disclosure Project, 70% of the 184 respondents reported exposure to water-related risks that could substantively affect their business, in many cases directly impacting operations and supply chains over the next five years. At the same time, two thirds of respondents also saw opportunities to improve their bottom-line by mitigating risks that lead to new products and services. In its 2014 report on Global Risks, the World Economic Forum warns: "Because of the systemic importance of water for global economic activity, any failings in its planning, management and use in one country can ripple across the world."

Figure 2

Drivers of Water Sustainability

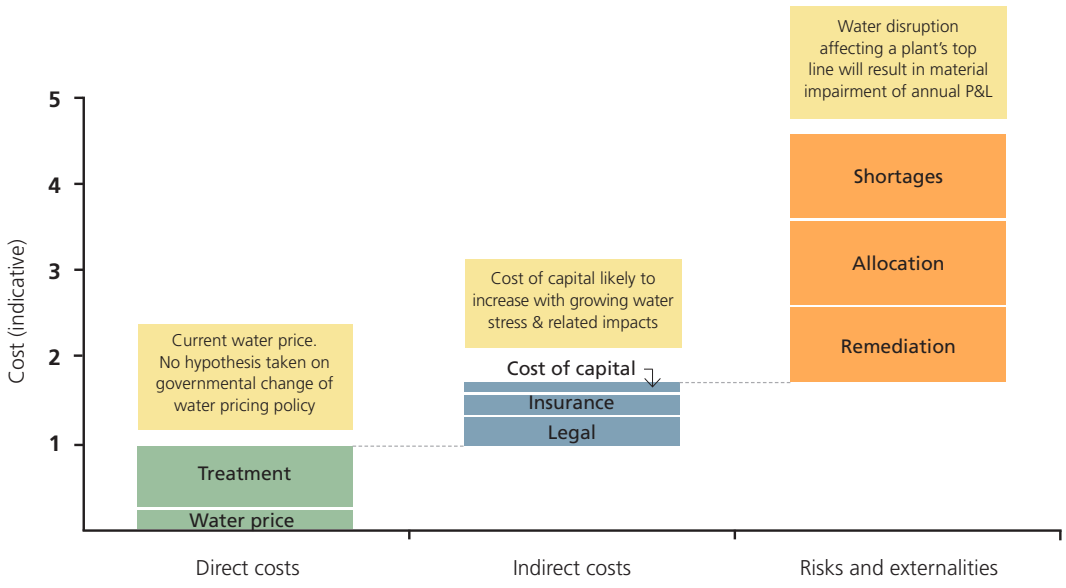


Source: L.E.K. Consulting analysis

Figure 3

Direct vs Indirect Cost of Water

The Real Cost of Water Could be up to Five Times the Direct Cost



Note: Water use arbitrages based on political decisions
Source: L.E.K. Consulting analysis

In the face of such problems, water regulation is becoming increasingly stringent around the world. In developed countries, strict regulation coupled with penalties for non-compliance and rigorous enforcement are the main drivers of water sustainability. Regulation remains patchy in many emerging markets, but is getting tighter.

Wastewater treatment is a particular focus, especially for mining / natural resources and energy companies. Some countries have put in place comprehensive policies covering multiple aspects of water. In Australia, the government's National Water Initiative is aimed at increasing the efficiency of water use, boosting investment and introducing new standards for water rights, accounting and trade. In the European Union (E.U.), the 2000 Water Framework Directive has so far led to three implementation reports that aim to maintain pressure on E.U. member states to adopt harmonized measures.

As regulation grows, so too does stakeholder scrutiny. Rating agencies such as Moody's Investment Service are now factoring water-related issues into their credit assessments. In a February 2013 note, Moody's said it believes water scarcity and broader environmental risks will continue to push up development and operating costs in the global mining industry and that it expects to place greater analytical emphasis on rated mining companies' environmental policies and risk management.

Corporations' conduct around water sustainability can also significantly impact their external image and perception with stakeholders. It can be negative: for example, in South Africa, the utility Eskom has drawn fire from organizations such as Greenpeace for its Kusile coal mine, which will take water from the Vaal River with potentially serious effects on local agriculture. Conversely, water sustainability can be a positive factor driving top line growth. In 2010, DuPont's offering of drought-tolerant corn outperformed competitors' seeds by 15% in tests when the weather was relatively mild. The technology was able to change the economics of farming by reducing the need for irrigation, lowering crop insurance premiums and boosting land values in water-starved regions.

Increasing awareness of water scarcity, regulatory developments and the growing concerns and mobilization of a range of stakeholders are also driving demand from industries and municipalities for new and better technologies to both measure and treat water at different stages of the value chain.

The Costing Conundrum

Factoring water sustainability into a company's operations is easier said than done. Reliable information on water's economic value is hard to come by. Potable water today in most parts of the world either has no market price or has a price that does not reflect the full cost of supply.

Unlike carbon, which is a global concern, the impact of water tends to be more local, usually depending on the degree of water scarcity in the affected area.

As regulators increasingly take a holistic approach to solving environmental impacts on water, air and soil, businesses will be faced with the challenge of simultaneously balancing these different demands: for example, advanced wastewater treatment processes which improve water quality or lead to potential reuse, may entail higher energy consumption and have a negative impact on overall carbon footprint.

For all these reasons, there is a clear costing conundrum around water sustainability, which can only be resolved by analysis of a number of different factors involving technical, regulatory, legal, insurance and other disciplines. L.E.K. Consulting has helped a number of companies address these issues: reviewing technological and other solutions, modelling trade-offs, and carrying out complex scenario analysis to enable businesses to better understand the issues and potential opportunities.

Companies seeking to assess the costs of making their operations water-sustainable must first map out their risks as accurately as possible. This is a complex task, since three sets of costs are involved (see Figure 3).

Direct costs include the water price. While that tends to be low today because of governmental choices and the cost of water extraction and treatment, it is rising as a result of tougher regulation. Capital expenditures here may include construction of advanced dewatering and treatment plants as well as the exploration and development of alternative water resources.

Indirect costs include the cost of capital, but also insurance and legal costs. These are also rising and have the potential to soar given the fundamental importance of water for human life and health.

Risks and externalities are the hardest to assess. Risk mapping needs to take into account different problems of access to water of the right quality - shortages linked to regional

Case Study: The Water Energy Nexus

Water and energy systems are closely interlinked and interdependent. Energy is required to extract and deliver water for human use and to treat after use. Water is used in many phases of energy production and electricity generation. Power generation is one of the most significant users of water in industry, principally for steam cooling of thermal plants. Overall, the sector uses around 17% of global water supplies, although much of that is from withdrawals that are subsequently recycled.

L.E.K. supported a major energy client to assess the water sustainability of its business, the risks this represented and the potential opportunities which management might exploit in the mid- to long-term. The first stage of the project mapped the organization's 'watermark' assessing the impact and role of water in the different stages of the value chain across a number of different technologies and regions with different levels of water scarcity. In examining the risks associated with water, L.E.K. studied the different trade-offs in terms of technology, cost and environmental impact, and the uncertainties of evolving regulation in the context of long timeframe capital investment projects.

We recommended actions to optimize the client's 'watermark', mitigating the risks linked to water stress or inadequate sustainability. We provided the company with a tool to model and guide decisions on adapted and sustainable technology options in different scenarios. As a result of L.E.K.'s insights, our client has been able to stabilize its costs of environmental compliance and has successfully exploited several opportunities to create additional revenues.

characteristics, caused by conflicts or due to changes in water allocation driven by political decisions - as well as the cost of remediation. It is also important to factor in other eventualities, such as the total loss of an environmental license to operate.

Simulations that L.E.K. has run for companies operating in water-stressed locations suggest that indirect costs are often of the same order of magnitude as direct costs. Externalities (weighting potential risk impact by likelihood of occurrence) may represent three times the value of direct costs. The full life cycle cost of water could be up to five times the direct cost.

Some companies are deliberately pricing these "hidden costs" at a very high level internally in order to force executives to take into account a range of dire scenarios in their business models.

In a world where clean water is an increasingly valued commodity and an essential input to economic activity, businesses will need to take steps to map risks and evaluate different options:

- Undertake a water risk assessment, examining supply and demand, regulation and technology development
- Evaluate the real cost of water to the organization and prepare contingency plans for rising cost scenarios
- Review water use and recycling processes and technologies to ensure optimum efficiency
- Factor water sustainability into the product and service development function to understand the opportunities presented by greater scarcity of water and increased scrutiny of water use

Carrying out such groundwork is essential for companies seeking to transform the challenge of water into a source of greater efficiency and profitability. If handled intelligently, water sustainability can be a driver of performance.