WHITE PAPER | AUG 2016

ADEC INNOVATIONS
ESG SOLUTIONS

WATER AND CORPORATE RESPONSIBILITY WHAT CAN COMPANIES DO?

As the world embraces the importance of environmental sustainability, organizations must place a greater emphasis on addressing the global water crisis, and minimizing impact to themselves and the planet.

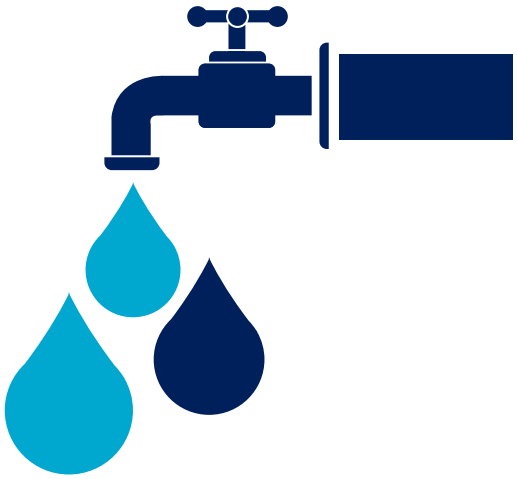
INTRODUCTION

Over the past two decades, businesses have progressively embraced the idea of sustainability as an integral part of their corporate agenda. It is now widely acknowledged that spending on sustainability is an investment rather than a cost. Studies have increasingly supported the contention that corporate responsibility positively influences financial performance in the long term (Ameer & Othman, 2012). As a result, corporations have proactively integrated sustainability in their strategic efforts, rather than simply reacting to direct and imminent risks and environmental threats (Whiteman, Walker, & Perego, 2013). In 2010, two-thirds of global firms with an annual revenue exceeding one billion dollars had an existing enterprise-wide climate change program, and more companies were projected to follow their example (Ernst & Young, 2010). According to The Conference Board's September 2015 report Driving Revenue Growth Through Sustainable Products and Services, revenues from sustainable products and services climbed 91% from 2010 to 2013.

Despite this encouraging progress, one key exception needs to be acknowledged: while the world is more aware of the importance of environmental sustainability, there is less focus on the specific issue of an impending water crisis. While some scholars argue that a global water crisis does not exist (Rijsberman, 2006), others (Lall, Heikkila, Brown, and Siegfried, 2008) attribute the lack of consensus on water risk to two factors. First, the water crisis is not seen as a global crisis; rather a collection of local ones. That is, while an issue like climate change is perceived to be a collective and global problem, the fact that the Yellow River no longer makes it to the sea is perceived by the average person as a China problem; the depletion of Long Island aquifers is a State of New York problem; the impending collapse of North Indian agriculture is an India problem; and poor-quality drinking water in rural Ethiopia is an Ethiopia problem. Second, the water crisis becomes confusing when we fail to distinguish between its interdependent facets—water access, water pollution and water scarcity.

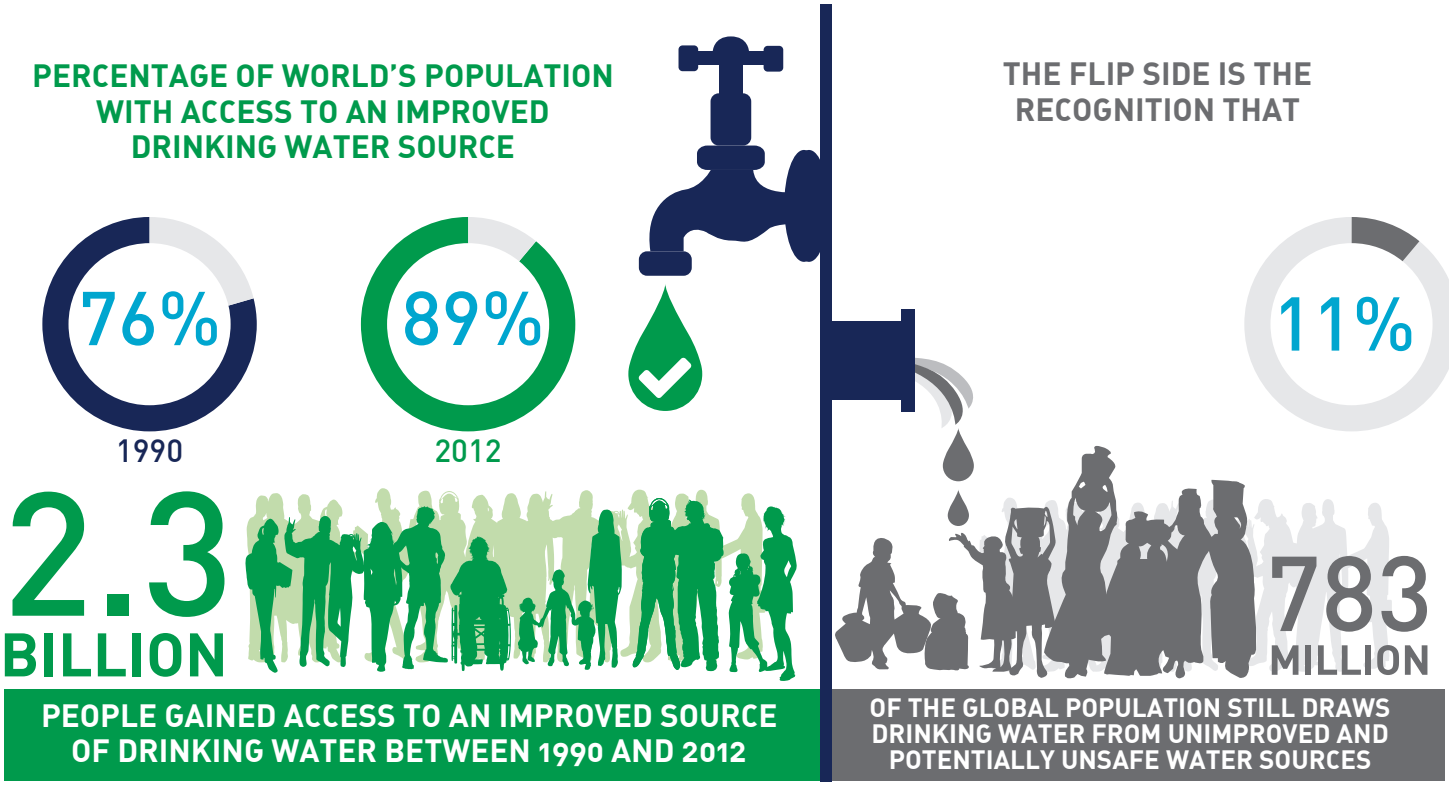
This white paper will explore what companies can do from a corporate social responsibility (CSR) standpoint to address the global water crisis, and minimize impact to themselves and the planet.

THE TOTAL VOLUME OF WATER ON EARTH IS ABOUT 1 MILLION KM3. THE VOLUME OF FRESHWATER IS ONLY 2.5% OF THAT TOTAL VOLUME, ABOUT 35 MILLION KM3. OF ALL THE FRESHWATER ON EARTH, ONLY ABOUT 0.3% IS CONTAINED IN RIVERS AND LAKES, WHICH ARE THE WATER SOURCES WE ARE MOST FAMILIAR WITH, AS WELL AS WHERE MOST OF THE WATER WE USE IN OUR EVERYDAY LIVES EXISTS.



SOURCE: GLOBAL WATER PARTNERSHIP http://www.gwp.org/en/Press-Room/Water-Statistics/

"THE TARGET OF HALVING THE PROPORTION OF PEOPLE WITHOUT ACCESS TO AN IMPROVED DRINKING WATER SOURCE WAS ACHIEVED IN 2010, FIVE YEARS AHEAD OF SCHEDULE."
(UNITED NATIONS, 2014)



WATER ACCESS

The problem of access with regard to safe drinking water was recognized by the United Nations (UN) as significant enough on a global scale to be specifically included in the 2000 Millennium Development Goals and reinforced by its inclusion in the 2016 Sustainable Development Goals. In 1990, 24% of the world's population had no access to safe drinking water. The development goal for safe drinking water access set by the UN was to cut this proportion in half by 2015. This goal, according to the UN, was met in 2010: "The target of halving the proportion of people without access to an improved drinking water source was achieved in 2010, five years ahead of schedule. In 2012, 89% of the world's population had access to an improved source, up from 76% in 1990. Over 2.3 billion people gained access to an improved source of drinking water between 1990 and 2012." (United Nations, 2014). The 2030 Agenda for Sustainable Development aims to ensure universal access to clean water and sanitation.

On the one hand, this is excellent news. The fact that the UN's development goal for improved water access was achieved in ten years suggests that water access will continue to improve and the amount of water will continue to meet existing demands. This is one of the reasons why some scholars argue that there is no global water crisis. 783 million people worldwide—about 11% of the global population—still draw their drinking water from unimproved and potentially unsafe sources. In addition, Oceania and sub-Saharan Africa continue to have minimal access to clean drinking water. According to Peter Gleick, founder of the Pacific Institute and winner of the 2011 U.S. Water Prize, at least 2 million people die of cholera, dysentery and guinea worm each year (Austin, 2014). This is a state of affairs that is "morally unacceptable in a world that values equity and decency," and which seems at present to be "unavoidable" (Gleick, 2004).

WATER POLLUTION

Water pollution is defined as the contamination of water by chemicals, microbes and other pollutants so as to make it non-potable. Water pollution, though related to the water access issue, is a distinct facet of the overall water crisis. In some cases, access is the primary issue. For example, in places such as rural Ethiopia, one would have to walk three hours daily to access drinking water. Sometimes, though, the primary issue is pollution rather than access. The water is physically accessible, but unsafe to drink.

There are two ways to address this issue. The first is to build the infrastructure to treat contaminated water on a large scale in order to produce enough potable water to make a difference. The other solution is to stop or regulate the sources of pollution. In the former case, the key component is technological. The acceleration of technological progress in the 20th century means that key discoveries have been made, and solutions have been designed to treat and remove chemicals from wastewater to make them potable (Gray, 1989; Parsons, 2004). In the latter case, the solution requires funds and the political will to establish tighter environmental regulations.

Adhering to environmental regulations can be overwhelming and time-consuming. Regulations and political will vary among different countries. As a result, certain industries have developed measures that will help them become sustainable without relying on existing environmental regulations. One such example is the apparel and footwear industry's Zero Discharge of Hazardous Chemicals (ZDHC). ZDHC has set guidelines for managing hazardous chemicals in apparel and shoe factories, with an ultimate goal of ensuring zero discharge of hazardous chemicals for all clothing and footwear by 2020. By committing to ZDHC, companies can attain sustainability regardless of their existing geographic environmental regulations.

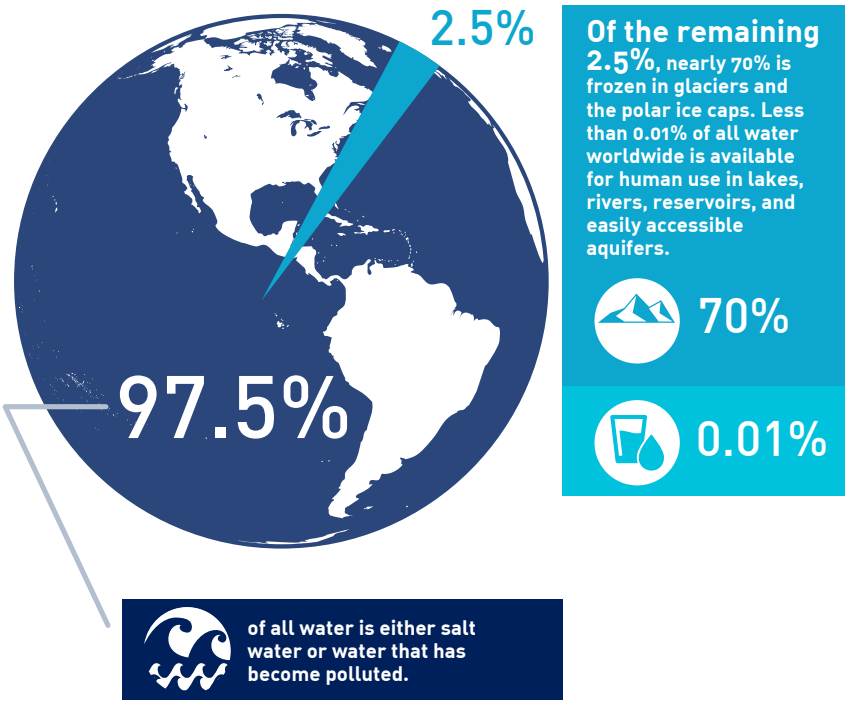
Additionally, regulations require that we know what specific factors need to be regulated. Controlling pollution from point sources is relatively manageable. If you can pinpoint exactly where the pollution comes from, you can develop an appropriate policy response — or in the case of ZDHC, an industry-led response. Knowing that sludge is coming from a specific drain pipe, or that garbage in bodies of water are a consequence of a specific municipal waste disposal system, allows you to identify and engage all the actors and stakeholders involved, and base your discussions on evident facts.

The trickier situation is with non-point source pollution that, as Lall et al. (2008) explain, "results from diffuse sources, such as farms, or is caused by atmospheric deposition from industrial polluters. This form of pollution can have wide-ranging impacts, both on human use and on ecology, particularly through the accumulation of contaminants in water bodies and through the biological food chain."

Since the source of pollution is diffused and indirect, accurate data is necessary in order to make the right causal connections between diverse environmental impacts. It is also necessary to measure the specific extent of that relationship in quantifiable terms. Only then can proper policy responses be drafted, whether in the form of low-cost loans, tax breaks or water pricing schemes.

Furthermore, even the most effective and well-meaning regulations are limited. Regulations tend to be implemented on a local or geographic level. The effects of water pollution, however, extend beyond regulations' jurisdictions and cannot be perceived as a local issue. As long as people are drinking water, for example, water pollution affects them, regardless of their location.

THERE ARE TWO WAYS TO ADDRESS THIS ISSUE. THE FIRST IS TO BUILD THE INFRASTRUCTURE TO TREAT CONTAMINATED WATER ON A LARGE SCALE IN ORDER TO PRODUCE ENOUGH POTABLE WATER TO MAKE A DIFFERENCE. THE OTHER SOLUTION IS TO STOP OR REGULATE THE SOURCES OF POLLUTION.



EARTH IS A WATER-RICH PLANET, YET WE HAVE WATER SHORTAGES IN MANY DIFFERENT COUNTRIES AND REGIONS AROUND THE WORLD.

WATER SHORTAGE

Earth is a water-rich planet, yet we have water shortages in many different countries and regions around the world. This does not seem logical. To understand, we need to recognize some commonly accepted figures. As Levy and Sidel (2011) explain, "Approximately 97.5% of all water is either salt water or water that has become polluted. Of the remaining 2.5%, nearly 70% is frozen in glaciers and the polar ice caps. Less than 0.01% of all water worldwide is available for human use in lakes, rivers, reservoirs, and easily accessible aquifers."

Water shortage itself is not necessarily a global catastrophe. Civilizations exist even in arid or semi-arid regions. In places not as arid, temporal water scarcity—the temporary but recurring kind that follows seasonal weather patterns—also occurs. In these cases, the solution is often to build large dams, reservoirs and other storage facilities that can be filled or tapped depending on the season.

The type of water scarcity that is potentially catastrophic is that which is not seasonal and not something that follows the established rhythms of the environment. This type of water scarcity has been caused by radical changes in climate, technology, economic production, social organization and population over the last few decades.

Many places in the world are currently facing water shortages that go beyond familiar periodic dry spells. China's available water resources are currently 2,200 cubic meters per capita per year—one of the lowest levels in the world, exacerbated by China's growing population and the threefold increase in water demand since the 1980s by its industries (Rousset, 2007). The western part of the United States is experiencing drying summer conditions made worse by water levels in the region's critical reservoirs dropping to alarmingly low levels (Levi, 2008). In the state of California, in particular, communities tap aquifers as an alternative source of water. However, the rapid depletion of the groundwater is causing the land to sink. Iran is facing a potentially catastrophic water crisis, with per capita water availability projected to be halved by the year 2050 (Yazdanpanah, Thompson, Hayati, & Zamani, 2013). Many of Australia's capital cities and other urban centers have experienced water shortages as a result of extended periods of low rainfall (Byron, Johnson, Baker, & Barker, 2008). The climate in Australia is governed by the hot, sinking air of the subtropical high pressure belt, which leads to extended periods of low rainfall. Due to frequent droughts, heat waves are a common event, drying out the vegetation and contributing to catastrophic bushfires and wildfires. When abnormal temperatures and fires lead to a dramatic spike in the demand for power, they exacerbate water shortage as blackouts lead to the shutting down of water pumps.

The element that needs to be understood and, if possible, quantified is the extent to which these water shortages are consequences of man-made factors. A study that addresses this very question is one by Tim Barnett (2008) and his team from the Scripps Institution of Oceanography that has demonstrated empirically and mathematically that greenhouse gas (GHG) impact is the primary variable in the dropping water levels currently afflicting the western part of the US. California, for instance, draws its water supply mainly from the Snowpack in the Sierra Nevada Mountains. Due to climate change, however, the Sierra Nevada Snowpack has been at its lowest level in the past 500 years. Additional studies will help clarify the issues of water access, water pollution and water scarcity.

WATER AND SOCIAL CONFLICT

While access, pollution and scarcity are problems associated with water itself, an issue just as devastating is the varying scales of social conflict erupting as a result of the water crisis. In many cases, inadequate access to water and civil unrest go hand in hand. In some areas of Africa, for example, women collect water for their families and, by doing so, are putting themselves in risky situations by traveling great distances.

Many conflicts may be regional in scope, especially in cases where a body of water is shared by multiple 'owners.' According to Levy and Sidel (2011), "about three-fifths of water flowing in all rivers is shared by two or more countries—in 263 river basins in 145 countries, where two-fifths of the world's population lives. As a result, many countries are highly dependent on water resources that originate from outside their national territory. For example, 34% of water resources in India and 76% of water resources in Pakistan originate from outside these countries."

Conflict erupts when one country decides to do something that has consequences on another country dependent on the same water resource. The case of the Nile River Basin is especially pertinent, as it is shared by eleven countries. Of these, three in particular—Egypt, Sudan and Ethiopia—experienced tension that could have possibly lead to armed conflict and regional instability (Swain, 2008). It was only on March 23, 2015, that these three nations signed an initial deal over sharing the Nile waters.

> "ABOUT THREE-FIFTHS OF WATER FLOWING IN ALL RIVERS IS SHARED BY TWO OR MORE COUNTRIES —IN 263 RIVER BASINS IN 145 COUNTRIES, WHERE TWO-FIFTHS OF THE WORLD'S POPULATION LIVES. AS A RESULT, MANY COUNTRIES ARE HIGHLY DEPENDENT ON WATER RESOURCES THAT ORIGINATE FROM OUTSIDE THEIR NATIONAL TERRITORY."
> (LEVY AND SIDEL, 2011)

The Pacific Institute (2013) points out at least 173 unique cases of water-related conflict since the year 2000.

TYPES OF WATER-RELATED CONFLICTS

Control of Resources: water supply or access to water is at the root of tensions.

Military Tool: water resources or systems are used by a nation or state as a weapon during a military action.

Political Tool: water resources or systems are used by a nation, state or non-state entity for a political goal.

Terrorism: water resources or systems are either targets or tools of violence or coercion by non-state actors.

Military Target: water resources or systems are targets of military actions by nations or states.

Development Disputes: water resources or systems are a major source of contention and dispute in the context of economic and social development.

WATER AND CORPORATE RESPONSIBILITY

It may be fair to conclude that the water crisis is a consequence of a variety of factors, including GHG impacts. Further, the effects of the water crisis transcend social sectors and national borders. Hence, it is imperative that businesses work together with governments on a global level to address the water crisis. Since some businesses have global supply chains and consumers, water problems in one part of the world may threaten a business organization irrespective of where its headquarters are located.

The primary imperative of business is that of profitability. A business organization can have a variety of other goals—some of them even altruistic. However, without profitability, there is no sustainable business. While corporations are aware of and addressing various environmental issues including global water issues, a business organization's first imperative is to evaluate the economic viability of their sustainability framework.

That said, profitability is not the only significant driver. Sustainability must likewise be taken into consideration. If profitability is pursued at the expense of sustainability, the natural balance between economics and the environment is broken and the system cannot endure. Natural resources are not unlimited; the environment requires time to replenish itself. Profitability is not sustainable when business growth exceeds this natural capability of the environment to fuel growth, including the availability of water. In formulating strategies for long-term viability, businesses must consider both profitability and sustainability, and understand the relationship between them on a global scale.

ECONOMIC VIABILITY

Michael Porter and Class van der Linde (1995) first put forward the proposition that environmental regulations lead to greater profitability. This has been referred to as the Porter Hypothesis and has inspired scholarship and debate on the relationship between sustainability and profitability in the last two decades. The main proposition is that properly designed environmental regulation motivates firms to innovate, which ultimately increases profitability in terms of lower costs and higher revenues. Other studies have since explored the issue with varying focuses in sustainability and profitability.

Depending on how the terms are defined, scholars have contradictory results on the question of whether or not environmental compliance and corporate responsibility are good for corporate organizations. Rassier and Earnheart (2010), using panel data analysis to examine the effect of water regulation on the profitability of publicly held firms operating within the chemical manufacturing industries, conclude that water regulation meaningfully lowers profitability in terms of sales and costs. Other studies conclude differently. Ameer and Othman (2011), in their analysis of the top 100 sustainable global companies of 2008, find that sustainable companies posted higher financial performance levels as well as higher mean sales growth, return on assets, profit before taxation, and cash flows from operations. Lai, Chiu, Yang, and Pai (2010), focusing on other dimensions of profitability such as brand management and corporate reputation, argue that there is a strong link between corporate responsibility, brand equity, and financial performance. Cortez's (2011) study of companies publicly listed in the Tokyo Stock Exchange was slightly different in that it included the factor of social governance. He concludes that markets care about environmental performance, but not so much about social costs.

All these studies focus on the performance of individual firms. This is an important perspective, limited by the fact that the problem is global in scope. The threat is to the global economy itself, rather than individual companies. The rise of sustainability indices in the field of global investment, such as DJSI, FTSE4Good, ISE, etc., can be interpreted as the business world's recognition of the importance of establishing universally applicable criteria and principles for evaluating sustainability. There is growing awareness that corporate stewardship of the environment is an altruistic and even profitable proposition, as well as a requirement for economic survival. To quote Gladwin et al. (1995, p. 875): "Quite simply, how many organizations could exist in the absence of oxygen production, fresh water supply, or fertile soil?"

ORGANIZATIONS COMMITTED TO ADDRESSING THE WATER CRISIS

The **Global Water Initiative (GWI)** aims to promote global food security and sustainable agricultural production by enabling farmers to have better water access. Funded by the Howard G. Buffet Foundation, the GWI operates in Central America, East Africa and West Africa, working closely with governments (both local and national), donors, NGOs, farmers and research institutions to come up with strengthened water governance systems and innovative irrigation schemes.

The **Global Water Alliance (GWA)**, formerly known as the Philadelphia Global Water Initiative, is a network of non-governmental organizations (NGOs) that aims to meet the UN's goal of improved access to water, hygiene and sanitation access. Since its inception in 2006, the GWA has been a regional knowledge hub for water, hygiene and sanitation. In 2014, the GWA started incorporating the UN SDGs in its strategic planning.

The **Global Women's Water Initiative (GWWI)** trains women in East Africa to become water technicians, educators and entrepreneurs. Through the GWWI's training program, women learn how to build water storage, irrigation and sanitation facilities using local products. The women also learn how to make and sell soap, shampoo and reusable sanitary pads. As educators, they can train people to address the water issues affecting their respective communities (e.g., hygiene, water-borne diseases, drought, etc.). As a result, women in East Africa are able to improve their access to water and better the lives of their families and communities.

CORPORATE STEWARDSHIP

The concern over water is part of the overall issue of environmental sustainability. Water access, pollution and scarcity are all connected to environmental impacts caused by the operational framework of 20th century industrialism. The World Economic Forum notes that 20th century industrialism has made prevalent a one-way model of production and consumption. Organizations that adopt this linear model provide products manufactured from raw materials which are then sold, used and discarded or incinerated as waste. In this model, the social or environmental costs are ignored or externalized, meaning they are not included in the assessment of a product's real value.

Under the linear model of industrialism, a product's value is derived from its positive contribution to human welfare only after production and before being discarded. This approach ignores the cost of externalities in production before and after the product life cycle, and is akin to a corporate perspective of unlimited profit and growth as primary imperatives. It is important to note that, originally, this was not how corporations were envisioned.

Pre-industrial concepts of corporations predominantly framed them as state-approved and to be granted commercial privileges by state laws in exchange for serving a public purpose. In many cases, corporations were dissolved once the purpose had been met. The modern industrial concept of corporations granted independent legal status as 'entities' gave rise to corporations that single-mindedly pursued what they perceived to be their primary objective—increased profits—at the expense of other imperatives.

On the other hand, corporate stewardship in a circular age demands that we include a product's negative impact on the environment in the assessment of its value. The implicit assumption in corporate stewardship is that the environment as a total system contributes to human welfare and industry —as corporations were initially designed to do. Ignoring social and environmental costs leads to products and services that have negative value. That is, their adverse impact on the long-term trajectory of our political and economic future exceeds the short-term value of their features and functionality. However, determining a product's environmental costs requires greater corporate transparency, which was a difficult proposition for businesses to accept, opening them up to risks related to liability and trade secrets.

Due to the escalating impacts that water risks pose, businesses, investors, shareholders and consumers are calling for greater corporate transparency related to water. Investors are turning their attention to water-related issues as they take an interest in seeking a more comprehensive disclosure regarding water management and the risks associated with it.

As investors continue their campaign for more comprehensive water management disclosures, some of them have initiated water-related shareholder resolutions, particularly in the United States. According to Ceres, investors in the United States have filed more than 30 water-related shareholder resolutions since 2009. These resolutions encourage companies to conduct water risk assessments, disclose water management operations, and address water risks in their operations and supply chains. Most of these resolutions were implemented in industries such as oil and gas, food and beverage, and electric power companies.

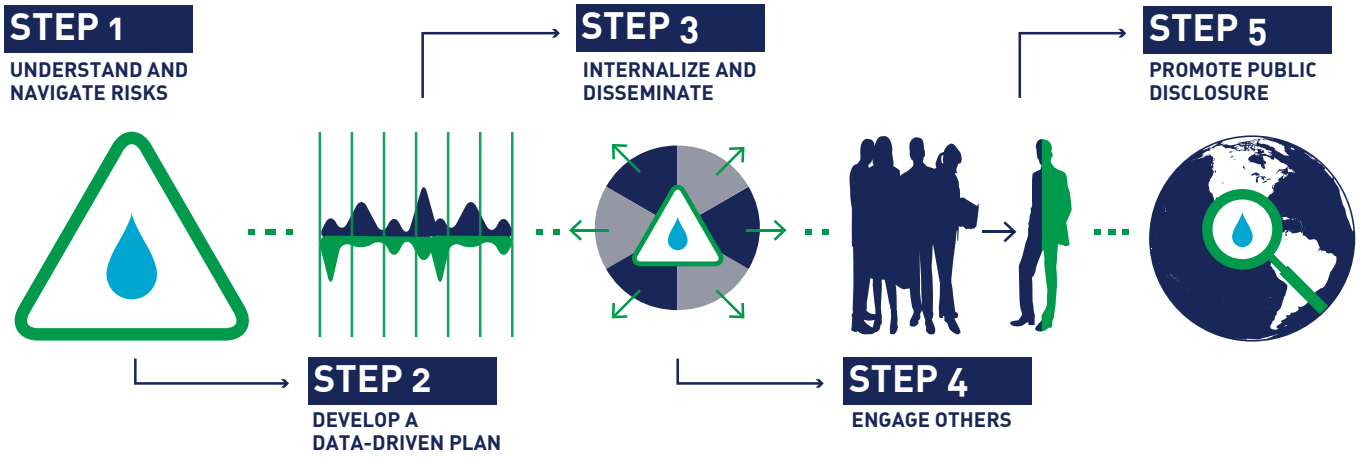
THE IMPLICIT ASSUMPTION IN CORPORATE STEWARDSHIP IS THAT THE ENVIRONMENT AS A TOTAL SYSTEM CONTRIBUTES TO HUMAN WELFARE AND INDUSTRY —AS CORPORATIONS WERE INITIALLY DESIGNED TO DO.

CDP's Water Disclosure Program provides a system for businesses and governments to report key information such as water use, impacts, risks and opportunities. Organizations complete a questionnaire measuring their water usage, as well as the risks it poses to their supply chains. According to CDP's Global Water Report 2015, the number of responding companies rose to 1,226 in 2015 from 1,064 in 2014. The S&P Global Water Index is a portfolio of 50 global equity securities from companies engaged in water-related businesses. The 50 equity securities are divided equally between water utilities and infrastructure, and water equipment and materials.

PREVENTING FUTURE RISK THROUGH STRATEGIC PLANNING

There is a great deal of work to be done for water stewardship to be perceived as relevant to the corporate agenda as carbon emissions management has become. Nevertheless, the threat of a water crisis is prompting companies to develop various planning strategies that will help their businesses be resilient against future water-related threats.

Preventing Future Risk through Strategic Planning



Step 1: Understand and navigate risks
The first step is to learn how to navigate the various types of risks related to water and to have a better understanding of the impact of water on their operations, products and services. Once organizations have accurate data on their specific water-related risks, they can take the necessary actions to improve their supply chain operations and exercise better control in their use of water resources (Ernst & Young, 2012).

Step 2: Develop a data-driven plan
Second, an organization's water risk assessment plan needs to be based on updated information on current water issues, both in their specific industry and within the countries they operate, thus giving their analysis both global and local dimensions.

Step 3: Internalize and disseminate
Third, a company's water risk assessment plan must be widely disseminated and internalized – from the Board of Directors, Chief Executive Officer and top management, to the organization's employees and external suppliers. Effective planning for future water-related risks takes into consideration the importance of corporate reputation and buy-in among external stakeholders such as consumers, the media and NGOs (World Wildlife Fund, 2013).

Step 4: Engage others
Planning to prevent future water-related risks also involves organizational partnerships and engagement among external stakeholders such as outside companies, the public sector, government agencies, and NGOs to provide an avenue for creating sustainable solutions for water management. Concurrently, businesses need to participate in supporting water governance and public policy. Creating a broader public interest regarding water issues aids in gaining greater political support towards progressive water governance. In the long run, efforts to influence public policy will help reduce the future water-related risks and issues brought about by the changing climate (World Wildlife Fund, 2013).

Step 5: Promote Public Disclosure
Transparency of environmental information can be an effective way to prevent future water-related risks. When firms know that consumers are aware of what they release into the environment, they may think twice before adopting unsustainable practices. Public pressure and negative publicity created by information disclosure can force negligent companies to change their policies and operations.

PUBLIC REPORTING

The availability of accurate data about global water issues is crucial in influencing consumers and investors in their decision-making. Current trends indicate that public reporting of environmental data is producing the desired effect—consumers and investors are embracing sustainability in business and companies are responding by disclosing their environmental impacts and programs in annual reports. According to CDP's 2015 Global Water Report, there was a 38% increase in the number of companies who disclosed their water management efforts to investors from 2014.

Water risk disclosure initiatives have been steadily emerging as stakeholders such as investors, consumers and policy makers become increasingly aware of various water risks and their consequences. These initiatives serve as platforms that allow organizations to share practices and common approaches in partnering with governments and international NGOs in the fight against global water scarcity. Ernst & Young (2013) summarizes the most prominent tools and initiatives that help organizations improve their water management programs:

The CEO Water Mandate

CEO WATER MANDATE

The CEO Water Mandate is a collaborative partnership and knowledge sharing initiative created by the UN Global Compact in 2007 to support the disclosure of water sustainability policies and practices by private companies worldwide. The initiative aims to establish an international committee of companies from all sectors where CEOs are willing to endorse the global water initiative.

Global Water tool

WBCSD GLOBAL WATER TOOL

The World Business Council on Sustainable Development (WBCSD) provides the Global Water Tool to help visualize, analyze and prioritize water risk for companies. The Global Water Tool runs on Microsoft Office Excel and is available for free. The tool can generate online maps that combine information related to the organization's installations with external datasets. The WBCSD also has a Water Task Team that hosts a forum for companies to engage in water-related issues and assist in developing other tools to support corporate water risk assessment.

CERES AQUA GAUGE

The Ceres Aqua Gauge is a framework and management tool that is used for assessing corporate water risk management. The Aqua Gauge is established from the Ceres Roadmap for Sustainability and it is designed to enable investors and companies to have a better understanding of water-related risks and the most effective water strategies and practices used to manage them.

Water Impact Index

VEOLIA WATER IMPACT INDEX

Veolia Water developed a Water Impact Index that uses a volume-based water measurement tool to provide a detailed and holistic set of parameters for effective water management. The Veolia Water Impact Index has measurement tools that factor in the amount of water volume, water stress and water quality of an organization. The tool also helps cities and companies plan sustainable, long-term projects in order to ensure long-term water supplies and healthy water ecosystems.

CDP
DRIVING SUSTAINABLE ECONOMIES

CDP WATER DISCLOSURE PROJECT

CDP's Water Disclosure Project is a program that helps businesses report their water usage and their exposure to water-related risks. It is a vital tool for investors and businesses in evaluating their ability to successfully operate in a water-constrained world. The Water Disclosure Project will also help institutional investors better understand the business risks and opportunities associated with water scarcity and other water-related issues.

CASE STUDIES

Apart from environmental data and public reporting, learning from other organizations' experiences also improves water management programs. Important insights to the water crisis are learned from both successes and failures of corporate programs across a variety of industries.

FOOD AND BEVERAGE INDUSTRY

MillerCoors

Potable water is a primary ingredient for beverage companies since they use the same water sources as the local population. Water scarcity or the contamination of water resources can be alarming for the beverage industry since it may force their factories to shut down or relocate. MillerCoors, the second largest brewery in the United States, employs nearly 9,000 people in its breweries and facilities across ten cities. In 2015, the company conducted watershed assessments in brewery locations that experienced water risk in their agricultural supply chain, and identified three regions (Texas, Colorado and California) experiencing water stress. As a result, MillerCoors partnered with the Sand County Foundation to help improve water quality and quantity in these areas. As MillerCoors initiated partnerships with foundations and communities, they also helped improve water management in surrounding communities and their own supply chain. The partnerships helped their company and improved the water management techniques in all their watersheds.

Diageo plc

The multinational British alcoholic beverage company advocated a long-term action plan regarding water management in the form of the Diageo Water Blueprint. With the aim of reducing the overall impact of water usage, particularly in water-stressed areas, Diageo has set a particular approach to water stewardship that leads to substantial, sustainable and measurable change. The Diageo Water Blueprint is based on four key platforms. As a beverage company, Diageo is taking on the full responsibility of exercising water control across all of its operations.

Hershey's

Since the food industry relies heavily on water in production processes, it is the industry most at risk given the threats on the quality and quantity of the world's water supply. Hershey's is the largest chocolate producer in North America and employs approximately 14,000 employees worldwide. As Hershey's has been working to curb its impact on water supply, it initiated water use audits in all its facilities. The audit assisted in the development of the company's comprehensive water management plan in order to promote water mitigation efforts in the company. Hershey's participation in reporting initiatives such as the CDP Water Disclosure Project and Dow Jones Sustainability Index (DJSI) provided additional incentive for the company to be proactive in its water management efforts and integrate water stewardship into the framework of the company's corporate culture.

SEMICONDUCTOR INDUSTRY

Fairchild Semiconductor

Fairchild Semiconductor makes microchips for cars and electronic devices such as cellular phones and is renowned for being an influential high-tech company that initiated today's digital revolution. Their factory in Wright Township, Pennsylvania, USA is the longest continually operating semiconductor manufacturing facility in the world, and uses about 260,000 gallons of water per day to produce semiconductors, which is equivalent to filling an Olympic-sized pool every 2.5 days. Fairchild completed a project that aims to reuse nearly 100% of rejected water through ultrapure water generation, a process for removing contaminants from water. Based on initial impact and follow-up, Fairchild's water use was reduced by about 25%.

HEALTHCARE

Stanford University Medical Center

Although healthcare providers are exempt from California's mandatory water restrictions, the state's hospitals are making efforts to reduce their water consumption. Beginning with a comprehensive water audit in 2009, Stanford University Medical Center went on to install more than 600 laminar-flow restrictors and 150 low-flow fixtures in patient care areas. It also replaced its steam sterilizers with a closed-loop water system that captures and reuses effluent water. This technology helps Stanford save at least 12 million gallons of water every year.

Kaiser Permanente

Kaiser Permanente, a leading healthcare provider, replaced some of its facilities' in-ground sprinkler systems with drip irrigation, which consumes 20-50% less water. It also installed weather-monitoring irrigation controls, substituted turf with native and drought-resistant landscaping, and used low-flow and flow-control plumbing fixtures. As a result, water use for irrigation at Kaiser Permanente's Woodland Hills Medical Center and Panorama City Medical Center, both in California, was reduced by 50% and 60%, respectively.

Sutter Health

Sutter Health saves 12 million gallons of water every year by consolidating its laundry services into a single LEED-certified facility that uses high-efficiency equipment. Sutter's California Pacific Medical Center in San Francisco saved water by upgrading its cooling system and using low-flow plumbing fixtures, allowing it to reduce its yearly water consumption by 24% (equivalent to about 18.7 million gallons of water per year). The company's Santa Rosa Regional Hospital cut its water use by 50% by having onsite bioswales and catch basins that recycle storm water.

Memorial Sloan Kettering Cancer Center

Memorial Sloan Kettering Cancer Center serves tap water at meetings and events instead of single-serve bottled water. It also cleans its facilities using microfiber mops, which clean more effectively and are less water- and chemical-intensive than conventional wet loop mops. Moreover, Memorial Sloan Kettering Westchester in West Harrison, New York, USA is built with plumbing fixtures designed to reduce water consumption. The West Harrison facility is Memorial Sloan Kettering Cancer Center's first location to receive a LEED (Leadership in Energy and Environmental Design) Gold certification for environmental sustainability.

UW Medicine

UW Medicine Phase 3.1, UW Medicine's biomedical research building in South Lake Union, Washington, USA is an excellent combination of science and sustainability. The building was designed to accommodate at least 400 researchers in various medical fields. At the same time, it has sustainability facilities such as a storm water cistern for irrigation and high-efficiency boilers. UW Medicine Phase 3.1 received a LEED Gold certification in 2014.

Dell Children's Medical Center of Central Texas

Dell Children's uses native plants in its landscaping, which require less freshwater than their non-native counterparts. In addition, the hospital uses low-flow bathroom fixtures and has a special storm water pond that gathers rainwater for irrigation. As a result, it is able to save 3.1 million gallons of water every year. Dell Children's is the first hospital in the world to receive a LEED Platinum certification.

PRIVATE-PUBLIC PARTNERSHIPS

Israel

Israel developed technologies that improve water use efficiency in agriculture and is sharing its technologies with other countries (Federbush and Muys, 2012), a significant contribution since 70% of water utility goes to agriculture, and only about 20% of the water used actually gets absorbed by the crops, making agriculture very wasteful and inefficient (Lall et al., 2012). Since all countries have agricultural sectors and many global businesses depend on water in some part of their supply chains, this is an opportunity for global public-private partnerships to have a tremendous impact on water management.

Cadiz Valley Water Conservation, Recovery and Storage Project

In May 2015, the Los Angeles County Business Federation partnered with the Santa Margarita Water District to support the Cadiz Valley Water Conservation, Recovery and Storage Project. The Project aims to draw ancient groundwater from Cadiz's 35,000-acre property in California's eastern Mojave Desert and sell the water to six Southern California counties. The aquifer is expected to supply Southern California with water for 50 years.

HSL Contractor

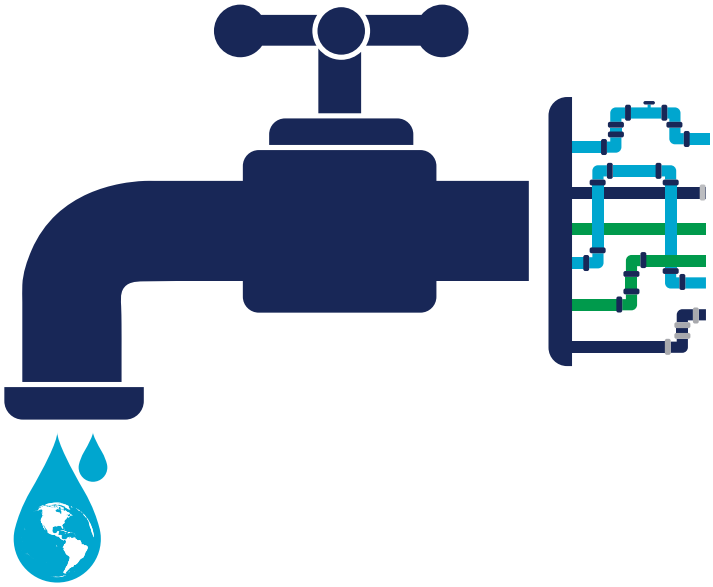
In November 2015, HSL Contractor began building Singapore's third desalination plant in Tuas (the country's two desalination plants are the 30mgd SingSpring desalination plant and the 70mgd Tuaspring desalination plant). The Tuas desalination plant is expected to start operating in 2017 and add 30 million gallons (136,000 cubic meters) of water daily to Singapore's water supply. Desalinated water currently meets just 25% of Singapore's water needs.

KEY TAKEAWAYS

The success of future water initiatives depends on many factors, but two in particular stand out:

1) INVOLVEMENT AND COOPERATION AMONG DIVERSE BUSINESS, COMMUNITY AND GOVERNMENT STAKEHOLDERS, AND

2) THE INTEGRATION OF UPDATED AND ACCURATE ENVIRONMENTAL DATA IN WATER MANAGEMENT PLANS THAT ADDRESS LOCAL, NATIONAL AND GLOBAL LEVELS.



Global cooperation among diverse stakeholders is necessary because water issues are global. Water problems in one region impact the economies of other regions, especially if they lead to disruptive conflict, and businesses cannot ignore local problems when their supply chains extend globally. Successful corporate stewardship points the way to better international and public-private partnerships.

Public-private partnerships, in order to be effective, need to be based on accurate information and data. Data from academia and science facilities establish and measure connections among various types of environmental impacts. Data disclosed by companies and publicly reported by global water management initiatives is also vital.

The water crisis is a socio-political problem as well as an economic one. The economic bottom line is directly threatened by the specter of resource depletion while the corporate top line is threatened by potential stakeholder fallout arising from negative reputation. One thing is clear: businesses can no longer afford to stand on the sidelines on this issue.

WATER MANAGEMENT SOLUTIONS

ADEC INNOVATIONS IS A LEADING SUSTAINABILITY SOLUTIONS PROVIDER WITH EXPERTISE IN CLIMATE CHANGE AND WATER MANAGEMENT, PROVIDING COST-EFFECTIVE SOLUTIONS TO DISCLOSE AND OPTIMIZE THE USE OF WATER RESOURCES. WHILE INDUSTRIES AND GOVERNMENTS DEAL WITH CLIMATE-RELATED CHALLENGES, ADEC HELPS ORGANIZATIONS UNDERSTAND THE BUSINESS DRIVERS FOR WATER MANAGEMENT AND MANAGE PROGRAMS FOR INTERNAL OPERATIONS AND EXTERNAL STAKEHOLDERS.

Request more information today at esg.adec-innovations.com/water.

REFERENCES:

Ameer, R., and Othman, R. (2012). Sustainability practices and corporate finance performance: A study based on the top global corporations. Journal of Business Ethics, 108(1), 61-79.

Austin, C. (2014, December 25). Peter Gleick: Solutions in a World of Peak Water Limits. Maven's Notebook. Retrieved November 9, 2015, from http://mavensnotebook.com/2014/12/25/peter-gleick-solutions-in-a-world-of-peak-water-limits/

Barnett, T. P., Pierce, D. W., Hidalgo, H. G., Bonfils, C., Santer, B. D., Das, T., & Dettinger, M. D. (2008). Human-induced changes in the hydrology of the western United States. Science, 319(5866), 1080-1083.

BBC. (2015, March 23). Egypt, Ethiopia and Sudan Sign Deal to End Nile Dispute. Retrieved February 3, 2016, from http://www.bbc.com/news/world-africa-32016763

Byron, N., Johnston, A., Baker, R., & Barker, A. (2008). Towards urban water reform. Australian Economic Review, 41(4), 401-412.

Cadiz Valley Water Conservation, Recovery and Storage Project. (n.d.). Retrieved February 12, 2016, from http://cadizinc.com/water-project/

CDP. (2015, October). Accelerating Action: CDP Global Water Report 2015. Retrieved November 16, 2015, from https://www.cdp.net/CDPResults/CDP-Global-Water-Report-2015.pdf

CDP Water Program. (2015). Retrieved November 16, 2015, from https://www.cdp.net/water

Cesare, C. (2015, September 14). California Snowpack Lowest in Past 500 Years. Nature. Retrieved November 12, 2015, from http://www.nature.com/news/california-snowpack-lowest-in-past-500-years-1.18345

Channel News Asia. (2015, November 16). HSL Constructor to Build Singapore's Third Desalination Plant in Tuas. Retrieved February 12, 2016, from http://www.channelnewsasia.com/news/business/hsl-constructor-to-build/2265030.html

Cortez, M.A.A. (2011). Do markets care about social and environmental performance: Evidence from the Tokyo stock exchange. Journal of International Business Research, 10, 15-22.

Dell Children's Medical Center of Central Texas. (2016). About Our "Green" Building: LEED Facts. Retrieved July 21, 2016, from https://www.dellchildrens.net/about-us/building-details/about-our-green-building/leed-facts/

Ernst & Young (2010). Action Amid Uncertainty: The Business Response to Climate Change. Available at: http://www.ey.com/Publication/vwLUAssets/Action_amid_uncertainty_-_The_business_response_to_climate_change/$FILE/EY_Action_amid_uncertainty_-_The_business_response_to_climate_change.pdf. (accessed 25 November 2014).

Ernst & Young. (2013). Preparing for Water Scarcity: Raising Business Awareness on Water Issues. Retrieved November 26, 2014 from http://www.ey.com/Publication/ vwLUAssets/ Preparing _for_water_scarcity_-_Raising_business_awareness_on_water_issues/$FILE/EY_Preparing_for_water_scarcity.pdf.

Federbush, M. S., & Muys Jr, J. C. (2012). Israel and Water—(What's Next for the) "Turn around Nation": How Israel's Leadership in Advanced Water Technologies Can Enhance Global Economic Growth and Diplomatic Relations. American Foreign Policy Interests, 34(6), 309-321.

Ferenc, J. (2016, January 25). "California Hospitals Conserve Water as Drought Drags On." Health Facilities Management. Retrieved February 10, 2016, from http://www.hfmmagazine.com/display/HFM-news-article.dhtml?dcrPath=/templatedata/HF_Common/NewsArticle/data/HFM/Magazine/2016/feb/upfront-drought-california-kaiser-permanete

Fitch, J., Laporte, M., Nussbaum, J., Kern, A., & Barney, S. (2013, December). "Fact Sheet on Steam Sterilizers at Stanford University." Stanford University. Retrieved February 10, 2016, from https://lbre.stanford.edu/sem/sites/all/lbre-shared/files/sem/files/shared/sem_SteamSterilizers_Stanford_2013.pdf

Gladwin, T. N., Kennelly, J. J. and Krause, T. S. (1995). Shifting paradigms for sustainable development: Implications for management theory and research. Academy of Management Review, 20, 874–907.

Gleick, P. H. (2004). The Millennium Development Goals for Water: Crucial Objectives, Inadequate Commitments. The World's Water 2004-2005: The Biennial Report on Freshwater Resources, 200405, 1.

Global Water Alliance. (2015). Retrieved November 15, 2015, from http://globalwateralliance.net/

Global Water Initiative. (2015). Retrieved November 15, 2015, from http://globalwaterinitiative.org/

Global Water Partnership. (2010, May 25). Water Statistics. Retrieved July 18, 2016, from http://www.gwp.org/en/Press-Room/Water-Statistics/

Global Women's Water Initiative. (2014). Retrieved November 15, 2015, from http://www.globalwomenswater.org/

Gray, N. F. (1989). Biology of waste water treatment. Oxford University Press.

Hardcastle, J.L. (2015, May 22). "Public-Private Partnership to Create Long-Term Water Supply." Environmental Leader. Retrieved February 12, 2016, from http://www.environmentalleader.com/2015/05/22/public-private-partnership-to-create-long-term-water-supply/

Jennison, K. (2014, October 10). "Farmers Fight Coca-Cola Over Groundwater." Environmental Leader. Retrieved February 9, 2016, from http://www.environmentalleader.com/2014/10/10/farmers-fight-coca-cola-over-groundwater/

Kaplan, A. (2015, June 15). "Water Shortage." Beverage World. Retrieved February 9, 2016, from http://www.beverageworld.com/articles/full/17438/water-shortage

Lai, C, Chiu, C, Yang, C, and Pai, D. (2010). The effects of corporate social responsibility on brand performance: The mediating effect of industrial brand equity and corporate reputation. Journal of Business Ethics, 95(3), 457-469.

Lall, U., Heikkila, T., Brown, C., & Siegfried, T. (2008). Water in the 21st century: Defining the elements of global crises and potential solutions. Journal of International Affairs—Columbia University, 61(2), 1-17.

Levi, B. G. (2008). Trends in the hydrology of the western US bear the imprint of manmade climate change. Physics Today, 61(4), 16-18.

Levy, B. S., & Sidel, V. W. (2011). Water rights and water fights: preventing and resolving conflicts before they boil over. American Journal of Public Health, 101(5), 778-779.

Lockie, Alex. (2015, May 14). Nestle Waters' CEO will 'absolutely not' stop bottling water in California — 'In fact, if I could, I'd increase it'. Business Insider. Retrieved November 16, 2015, from http://www.businessinsider.com/nestle-waters-ceo-will-absolutely-not-stop-bottling-water-in-california-in-fact-if-i-could-id-increase-it-2015-5

Mathews, R.D. (2011, July 1). "The Plachimada Struggle against Coca Cola in Southern India." Ritimo. Retrieved February 9, 2016, from http://www.ritimo.org/The-Plachimada-Struggle-against-Coca-Cola-in-Southern-India

McMahon, B. (2007, November 1). Man charged with killing his neighbor for watering his lawn. The Guardian. Available at: http://www.theguardian.com/world/2007/nov/01/australia.barbaramcmahon (accessed 26 November 2014)

Memorial Sloan Kettering Cancer Center. (2016). Sustainability at Memorial Sloan Kettering. Retrieved July 21, 2016, from https://www.mskcc.org/sustainability-msk

Pacific Institute (2013, February). Water Conflict Chronology Timeline List. Available at: http://worldwater.org/water-conflict/ (accessed 26 November 2014)

Parsons, S. (2004). Advanced oxidation processes for water and wastewater treatment. IWA publishing.

Pegram, G. (2010). Global Water Scarcity: Risks and Challenges for Business. Lloyd's and World Wildlife Fund. Retrieved November 26, 2014 from http://www.lloyds.com/news-and-insight/news-and-features/environment/environment-2010/lloyds_report_highlights_water_scarcity_threat.

Porter, M., & Van der Linde, C. (1996). Green and competitive: Ending the stalemate. Business and the Environment. London: Earthscan Publications Ltd, 61-77.

Rassier, D. G., & Earnhart, D. (2011). Short Run And Long Run Implications Of Environmental Regulation On Financial Performance. Contemporary Economic Policy, 29(3), 357-373.

Rijsberman, F. R. (2006). Water scarcity: fact or fiction? Agricultural Water Management, 80(1), 5-22.

Rousset, N. (2007). The impact of climate change, water security and the implications for agriculture. China Perspectives, (2007/1).

S&P Global Water Index. (2015). S&P Dow Jones Indices. Retrieved November 16, 2015, from http://us.spindices.com/indices/equity/sp-global-water-index

Swain, A. (2008). Mission Not Yet Accomplished: Managing Water Resources in the Nile River Basin. Journal of International Affairs, 61(2), 201-214.

The Conference Board. (2015, September). Driving Revenue Growth Through Sustainable Products and Services. Retrieved February 1, 2016, from http://irrcinstitute.org/wp-content/uploads/2015/09/FINAL-TCB-Sustainable-Products-July-20151.pdf

United Nations (2014). Millennium Development Goals Report 2014. Available at: http://www.un.org/millenniumgoals/2014%20MDG%20report/MDG%202014%20English%20web.pdf. (accessed 25 November 2014)

United Nations Development Program. (2016). Goal 6: Clean Water and Sanitation. Retrieved February 1, 2016, from http://www.undp.org/content/undp/en/home/sdgoverview/post-2015-development-agenda/goal-6.html

United Nations Development Program. (2016). Sustainable Development Goals (SDGs). Retrieved February 1, 2016, from http://www.undp.org/content/undp/en/home/sdgoverview/post-2015-development-agenda/

University of Washington. (2014, January 6). LEED Gold for UW Medicine Phase 3.1. Retrieved July 21, 2016, from https://green.uw.edu/news/leed-gold-uw-medicine-phase-31

Whiteman, G., Walker, B., & Perego, P. (2013). Planetary boundaries: Ecological foundations for corporate sustainability. Journal of Management Studies, 50(2), 307-336.

World Wildlife Fund. (2013). Water Stewardship: Perspectives on business risk and responses to water challenges. Retrieved November 26, 2014 from http://wwf.panda.org/?210092/Water-Stewardship--Perspectives-on-business-risk-and-responses--to-water-challenges.

Yazdanpanah, M., Thompson, M., Hayati, D., & Zamani, G. H. (2013). A new enemy at the gate: Tackling Iran's water super-crisis by way of a transition from government to governance. Progress in Development Studies, 13(3), 177-194.

ADEC INNOVATIONS
ESG SOLUTIONS

REQUEST MORE INFORMATION TODAY AT ESG.ADEC-INNOVATIONS.COM

NORTH AMERICA | EUROPE | AFRICA | AUSTRALIA | ASIA