Explore Thematic ESG: Water Technology

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As sustainability comes more into focus for investors, few issues loom as large as water scarcity. Vital to life, water provides a common point where humanitarian, environmental, and business issues all begin to intersect. In this piece, we examine the importance of water to sustainability, analyze factors that contribute to water complexity, and finally, finish with a discussion of water investment and how companies with a technology focus could contribute to the future of water.

Turning Towards a Sustainable Future

The last century was one of tremendous economic growth and global integration. However, it has also become abundantly clear that in a rapidly changing world, the challenges we face have become as complex and interconnected as the global economy. One of the most complete pictures of these issues are the UN Sustainable Development Goals (SDGs). Adopted in 2015 by all member countries, the SDGs set targets for improving in 17 core competencies by 2030 to ensure not only prosperity, but equity, health, and environment for everyone.

Perhaps more importantly, the UN views these SDGs as fully integrated - meaning the issues they address are inter-related, and progress in one area will have a direct effect on the others. While all the issues benefit from integration, none represent this more fully than Goal 6 - Clean Water & Sanitation. From basic consumption to agriculture, medicine, and advanced industrial processes, water is an integral part of nearly every human activity. In this way, SDGs about health, climate change, and economic equity, all circle back to water in some way.

Exhibit 1: The UN Sustainable Development Goals

Source: un.org

Especially with an issue as complex as climate change, water redistribution - flooding in some places and droughts in others - is a central impact. As Sustainalytics put it aptly in their 2019 water review, “if climate change is the shark, water is its teeth.” In the World Economic Forum’s 2021 risk assessment, three of the top risks - climate action failure, natural resource crises, and human environmental damage - all have roots in water, not to mention how often water crises show up on their own at the top of the list.
Water Scarcity – The Path to Today

In many ways, water is still treated as abundant in today’s marketplace, so how have we gotten to this point of water scarcity? Up to now, this has often been treated as a geographic issue. As shown in Exhibit 2, western countries have had comparatively little water scarcity vs. the rest of the world, and this can impact perceptions of water abundance.

However, no country is immune. As we’ve seen in the US, climate change and long-term drought conditions in California have led to large-scale wildfires that come at an enormous human and economic cost. Access to water is also a serious business risk. In December 2020, Chicago Mercantile Exchange launched futures on the California water market. With over 10% of the US population and a majority of fruit and vegetable crops, there is a clear need for farmers and municipalities to hedge their water risk.4

Exhibit 2 – Water Scarcity Around the Globe

Across the globe, water resources are estimated to have fallen 56% between 1962 and 2014.5 Meanwhile, populations have skyrocketed, threatening water further on a per capita basis. As Exhibit 3 demonstrates, these losses have come across the board, and no region has been immune to the overall trend - even nations that started at high levels.

Speaking to this trend, the world has already seen several large-scale water crises in the past few years. In 2018, Cape Town was only 90 days away from “Day Zero” when municipal water systems would run dry - an event that is 80% more likely to occur again this century.6 In 2019, Chennai, a city of 10 million in India, nearly had its aquifer run dry.7 In Mexico, the rapid emptying of aquifers beneath Mexico City has been linked to earthquakes.8

Exhibit 3 – Renewable Internal Freshwater Resources per capita (cubic meters)

Source: ourworldindata.org as of July, 2018
The Complex Nature of Water Scarcity

As with many complex global issues, while the human and economic costs can be similar, the drivers of water scarcity can vary widely. Below, we discuss some of these variables before discussing how technology can offer solutions.

Climate Change

Climate change is an obvious culprit of water scarcity issues, and one that particularly effects dry areas. Warmer temperatures can exacerbate soil evaporation and lead to drought feedback loops where fewer plants grow, further weakening the area’s ability to trap what little rainfall there is. However, even in wet areas, we are seeing large-scale water issues.

Pollution & Land Use

While climate change is a key force exacerbating water issues, not all areas suffer equally from drought. In Asia, for example, known for robust rainy seasons, pollution can often be a more direct threat. Rapid industrialization and booming population growth have strained many water resources. In a landmark study, the Global Water Forum found that human waste bacteria in Asian rivers can be up to three times higher than the global average. More human waste also combines with increased pesticide and fertilizer use to support larger populations, which adds to harmful runoff. In recent estimates, upwards of 70% of surface water in India and 70% of the water table in China have been deemed unfit for human consumption.

The case of Chennai offers unique insights into the complexity at work in water scarcity. In 2018, Chennai saw about 30 inches of rainfall, which is more than a typical year in London. However, Chennai is also an industrial city that has seen rapid development of its auto sector. The land uphill from the main reservoir is the site of a special economic zone, where new factories have been built for multinationals like Hyundai. Because reservoirs are complex ecosystem catchments, rapid urbanization has reduced the water flow throughout the region. This shows that water scarcity issues go beyond basic supply and into the realm of complex policy and technology problems.

Exhibit 4 – Drivers of Water Quality

Source: United Nations Water, Towards a Worldwide Assessment of Water Quality
Investing in Clean Water – A Technology Approach

Given the severity of the water scarcity issue, it is understandable why many investors are interested in the space. As with many sustainability issues, there is an acute economic need for more water investment, which also provides an opportunity for sustainability-minded investors to ‘do well by doing good’. To this end, the World Economic Forum projects that $26.4 trillion will need to be spent on water provisions by 2030 alone\textsuperscript{12}.

Traditionally, investors have seen water investing through the lens of utilities and infrastructure – the basic function of piping water from place to place and selling it to customers. While this is still of vital importance, given the complexity of global water issues outlined above, investors interested in sustainability could benefit from a technology approach.

Take, for example, the Nasdaq OMX US Water Index (GRNWATUSL). This index is designed to target companies in the ‘Green Economy’ that offer products and services that help to conserve and purify water. In practice, the index shows the diversity of companies involved in solving for water scarcity. While still investing roughly 20% in utilities, the index also includes a number of companies in the industrials, technology, and healthcare sectors\textsuperscript{13}. Below are a few examples of such companies and how they participate in water sustainability. Holdings are subject to change and are not buy/sell recommendations.

**A.O. Smith**

While A.O. Smith is a leader in high-efficiency water heaters in the US (a driver of sustainability in its own right), they have also opened a broad segment in China that provides pollution treatment chemicals.

**Danaher**

A provider of medical equipment, Danaher is also heavily invested in the water industry, providing water testing and treatment equipment. Furthermore, Danaher has sought to increase their exposure to water in recent years, making strategic acquisitions of names like Hach and Trojan to further boost water capabilities.

**Lindsay Corporation**

Operating primarily in the agriculture space, one of Lindsay’s main segments consists of advanced irrigation systems. The ability to flexibly pivot the systems and remotely monitor resource usages show some of the ways in which new technology can help retain resources in agriculture.

In many cases, the examples above show a complex, multinationally driven industry where companies are rushing to innovate in the vital water space. From smart metering to pollution treatment, these examples show that companies need to not only focus on supplying water, but cleaning and conserving the water we already have.

**Conclusion**

In the above paper, we attempted to provide an overview to the state of the world’s water scarcity problem. Throughout the past half-century, water scarcity has grown more severe as booming populations and rapid urbanization have pushed water systems to the brink. Meanwhile, climate change is set to further destabilize existing supplies, exacerbating the existing trend. To solve these issues, there will need to be concerted investment in water. We made the case for why a technology focus could be helpful – investing in solutions for both purifying and conserving existing water. As the UN made clear, water scarcity is a key threat on both humanitarian and economic grounds, and for sustainability-focused investors, it is a key area for the future.
Endnotes:
1 United Nations, Sustainable Development Goals, un.org
2 Sustainalytics, The business case against letting the well run dry, July 2019
4 Bloomberg Green, California Water Futures Begin Trading Amid Fears of Scarcity, December 2020
5 Source: ourworldindata.org as of July, 2018
6 World Economic Forum, Cape Town could experience another ‘day zero’ this century as water supplies dry up, November 2020
7 NPR, The Water Crisis in Chennai, India: Who’s to Blame and How Do You Fix It?, July 2019
8 BBC, How a City that Floods is Running Out of Water, May 2018
9 C2ES, Drought and Climate Change, February 2021
10 Global Water Forum, Water Pollution in Asia: The Urgent Need for Prevention and Monitoring, June 2012
11 The Borgen Project, Ten Facts about Water Quality in Asia, 2020
12 Institutional Investing in Infrastructure, $100t Projected in Global Infrastructure Investment by 2030, March 2019
13 Source: Nasdaq Global Indices as of June 30, 2022

Important Information

The NASDAQ OMX US Water Index (GRNWATUSL) is designed to track the performance of the companies creating products that conserve and purify water for homes, businesses, and industries which are listed on an US Exchange. The Index is weighted in such a matter as to enhance the underlying liquidity and increase the tradability of the Index Securities. An investment cannot be made directly into an index.

Important Information

The use of environmental, social and governance factors to exclude certain investments for non-financial reasons may limit market opportunities available to funds not using these criteria. Further, information used to evaluate environmental, social and governance factors may not be readily available, complete or accurate, which could negatively impact the ability to apply environmental, social and governance standards.

Investments focused in a particular industry, such as water, are subject to greater risk, and are more greatly impacted by market volatility, than more diversified investments. This does not constitute a recommendation of any investment strategy or product for a particular investor. Investors should consult a financial professional before making any investment decisions.

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