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Investment Institute Sustainability

Liquid assets: Why water stress should be a priority for responsible investors

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Key points

- Water stress is a matter of availability, quality and access – and can unevenly affect countries, industries and individuals
- We think there may be particular risks in emerging countries where agriculture and industry can demonstrate high levels of water consumption and pollution
- We have found that fewer than 50% of companies from at-risk sectors implement adequate water-use and pollution management systems today. We think active engagement by investors can bring a real change by incentivising companies to address water issues.

The quantity and quality of available water is a unifying global concern. Every country, every citizen, every company and every investor is affected. It reaches into human rights for access to proper hygiene and to equitable sharing of the benefits from nature and its basic resources.

It is also a food security matter with the potential to undermine stability for the global agrifood sector as well as an operational risk for many industries relying on water for cooling or other functions.[1] It is, in our view, an inescapable and discrete issue for responsible investors seeking to protect portfolios against risk while fostering sustainable economic models for the future.

Water stress is an issue of **water consumption** (availability), **water pollution** (quality) and **equitable distribution** (access). Investors can think of these three factors as constituent parts of the relevant United Nations (UN) Sustainable Development Goal (SDG 6 – Clean Water and Sanitation).[2]

For companies and their investors, we can boil this down to three potential areas of action: Improving the management and quality of water resources; protecting and restoring water-related ecosystems; and ensuring people have access to safe and affordable drinking water and adequate sanitation and hygiene.

There are wider implications too. In many cases water stress may be broadly associated with climate change, with particular impacts around pollution, increased soil salinity, the drying up of wetlands (which are also highly effective natural carbon sinks), erosion and loss of biodiversity.

In its turn, climate change through time is only exacerbating water stress by driving a shift in the nature and location of dry/wet areas around the globe and increasing flood risks while ramping up the duration and intensity of droughts. Any disturbances to the availability and quality of water brings clear issues of access.

The UN estimates 2.3 billion people worldwide live in 'water-stressed' countries, and 733 million of those are in nations deemed to be either 'high' or 'critically' water-stressed.[3]

New guidance for companies to address freshwater impacts

In September 2022, the Science Based Targets Network (SBTN) sought public comment on draft guidance for companies to set science-based targets (SBTs) for nature, with the first focus on freshwater. The first release of SBTs for nature is scheduled for the first quarter of 2023. According to the proposed process for freshwater SBTs, corporates should work to formulate both water quantity (withdrawal) and water quality (pollution) targets. This work should be done in collaboration with stakeholders (including local water resources agency, etc.) and with reference to estimates of the impact on basins (water areas) affected.

Pressure points

Water stress does not fall evenly around the world and not every industry faces the same level of risk. Developing countries, by and large, are much more exposed to issues of water availability, quality and access than their developed market peers, with direct effects on local population health, safety, and economic development. Industries operating in emerging markets (EM) may also be more intensive in terms of their impact – sometimes driven by demand from developed markets that have effectively outsourced certain water-intensive industries. In food, for example, Brazil was the world's third-largest exporter of food in 2021, behind only the European Union (EU) and US, while in textile production, China, India, Turkey, Vietnam and Pakistan were all in the global top 10 of exporters.[4]

Advanced water risks in EM

Developing countries are most affected by water shortages, flooding, and poor water quality – and their economies most likely to be held back by those conditions. Just after the turn of the last century, the UN was warning that about 80% of illnesses in the developing world were linked to inadequate water and sanitation.[5] And yet still today more than 1.7 billion people do not have basic sanitation services, such as private toilets or latrines.[6] Emerging countries may experience steadily decreasing water availability, and at the same time suffer increasing weather extremes, including violent rains and floods.

Some parts of the developing world are already known to be at high risk of water deficit in the near future, including nations in the Mediterranean region and North Africa. Meanwhile, countries like China, Brazil, India, and others in Central Africa, West Africa and Latin American, are also exposed to water-related risks aggravated by deforestation, intensive agriculture practices and the presence of highly intensive and polluting industries operating under insufficient local technical and legal standards. They may also suffer from limited availability of efficient infrastructure and effective administrative management of land and resources, including water.

In all these countries, the ambition to increase and further develop agriculture and industry is high. China is home to almost 20% of the global population and is one of the leading food producers globally – the top producer of wheat, pork and poultry, and the second largest supplier of corn[7] – but counts just 7% of the world's freshwater reserves.[8] Moreover, some 80% of its groundwater was highly polluted, according to an official 2016 study.[9]

China has committed to significant investment in water projects across its territory, and access to water of good quality has become a matter of social and economic survival – back in 2005 it moved the minister of water resources to state that China must "fight for every drop of water or die".[10] It would be understandable if tensions then arose between intensive and polluting sectors, including agriculture, and the desire for food safety and health.

In developed countries, by contrast, the focus has moved towards more higher value (and less water-intensive) agriculture and away from any substantial increase to intensive production. As a result, water risks seem manageable despite lingering questions around the quality and efficiency of water management in different countries.

Richer nations may also benefit more quickly from the development of potential solutions including internal purification systems, water consumption optimisation and recycling systems. On a structural level, water-related equipment and infrastructure are well established and pollution levels tend to be more carefully monitored.

Industries risk running dry

Agriculture accounts for 69% of global freshwater consumption (known as withdrawals) and so the agrifood sector finds itself at the sharp end of policy and stakeholder action calling for a systemic change in natural resources use.[11]

Other industries, however, may also present some important levers in terms of achieving a reduction of negative impacts. To identify those sectors and their level of preparedness to address water-related issues, it is possible to use some of the environmental, social and governance (ESG) datapoints already available to investors. These might include a company's exposure to water-related controversies/incidents; company data on water intensity and its three-year trend; and company data on systems and programmes implemented to optimise water consumption and reduce pollution.

Using these datapoints, sourced from ESG research firm Sustainalytics, we think it is possible to identify the companies (and therefore sectors) most exposed to water-related concerns and then track the level of mitigation efforts made by the affected companies.

Below we set out some top-level findings from this process from a range of companies, many of which are corporates with a diverse geographical footprint and presence in emerging markets.

We looked at water-use controversies and identified four sectors most exposed to those in their own operations – **agrifood**, **chemicals**, **metals and mining**, and **energy**.

- We found that about 38% of the companies exposed to significant water-use-related controversies implemented effective water risk management programmes helping them to show either a positive three-year trend on water intensity or the ability to at least keep water consumption at the same level despite company developments. The metals and mining sector showed more systematic and effective water management efforts, in our view, while we felt that some 62% of companies exposed to water-use controversies did not address this issue in any substantial way.

We then looked at water pollution incidents as part of emissions effluents and waste controversies **and identified five sectors most exposed to those** in their own operations – **metals and mining**, **chemicals**, **energy**, **agrifood** and **manufacturing** (including building products, paper/forestry, and household products).

- We found that roughly 43% of companies exposed to significant effluents-related controversies had implemented what we saw as effective pollution management systems across their operations. The chemicals industry appeared the most effective in addressing this issue. In the metals and mining sector and in the energy sector we also saw noteworthy development of pollution reduction and incident-mitigation actions. Some 57% of companies exposed to water pollution controversies failed to address this issue in any substantial manner, in our view.

Other sectors exposed to water risks include the garment and textile industry, pharmaceuticals, automotive and consumer goods, all of which are material for emerging economies like China and India where the production often takes place.[12]

The nuclear sector and paper industry are also responsible for large-scale water withdrawal, with operations often positioned close to water sources and with most of the water rejected back to its source after use. Over time water availability may become a real operational risk for these industries.

The chemical industry is among the most intensive in terms of discharge of effluents and hazardous waste. While the most important chemical risks in drinking water arise from arsenic, fluoride or nitrate, there are emerging contaminants such as pharmaceuticals, pesticides, perfluoroalkyl and polyfluoroalkyl substances (PFAS[13]) and microplastics which are also to be considered.[14]

Investor engagement is not a drop in the ocean

When investors consider how they might approach companies on the issue of water stress, we think it makes sense to encourage at-risk industries to structure their water management approach to address those three pillars: Water consumption (availability); water pollution (quality); and equitable distribution (access).

Water availability will relate either to physical scarcity (local shortage of water due to local climate or ecological conditions) or to a lack of water infrastructure. Adopting a location-based approach identifying water availability risks as well as their cause could be an efficient way to inform a company's water management actions.

Taking into consideration each step of the water cycle in a company's own operations, including eventual treatment, recycling and purification of water used would not only contribute to optimise water consumption, but also to decrease the volume of effluents and general water contamination with pollutants. In turn, any increase in water quality would lower costs and health risks associated with water consumption by local communities, making clean freshwater more accessible for all.

We think that active engagement from responsible investors can support companies at each of these steps with the goal of maintaining sustainable and thriving businesses that serve their communities and reduce operational risks. The tables on the following page set out a potential engagement structure aligned to those three pillars and draw out relevant key performance indicators (KPIs).

Agricultural exposure as the "key determinant" of financial risk from water scarcity

The vast majority – roughly 70% – of the world's freshwater is used for agriculture and animal breeding, while the rest is divided between industrial (19%) and domestic uses (11%), including for drinking. The growing global population and development of economies mean water demand continues to grow. Domestic water withdrawals grew by 600% from 1960-2014, according to research from the World Resources Institute, underpinning sustained demand from other areas, including agriculture.

In a 2021 research note, analysts at Barclays identified agricultural exposure as the "key determinant" of financial risk from water scarcity, and as "the most important environmental concern" for the global consumer staples sector. According to Barclays analysts, the cost of inaction for the sector may be roughly 18 times greater than the cost of action. They picked consumer foods giant Unilever, consumer products firm Colgate and cleaning products maker Reckitt Benckiser as some of the most at-risk companies.*

Companies mentioned are for illustrative purposes only and do not constitute a recommendation to buy or sell securities.

* Why some of the world's biggest companies are increasingly worried about water scarcity, CNBC, June 2021

Pillar 1 – Water Consumption

Examples of relevant engagement questions	Potential KPIs to follow
• Did the company conduct a water stress mapping (including both natural factors and infrastructure insufficiencies)? • Did the company assess potential economic and financial impacts of water stress on its business model? (*For example, the 2015 drought in Brazil hit General Motors with $8m in additional local costs, including $2.1m in higher utility charges)*[15] • Did the company work on a scenario of business transformation for it to be able to both decrease its dependence on natural resources (including water) and to ensure its future economic growth? • What are the concrete hot spots or zones of risk identified via the mapping? What actions are planned to limit the risks? • What is the business' global water intensity versus peers? What it the company's product water intensity (per product unit)? • Does the company have timebound goals to reduce its water consumption and/or water intensity? What is the perimeter of those goals (company-wide or site level)? • What is the concrete action plan associated with the timebound goals set? • What is the three-year trend of water consumption and/or intensity? • Does the company have processes in place to avoid clean water waste and leakages?	• Global volumes of water withdrawal • Volumes of water withdrawals and/ or average water intensity in water-stressed or water-scarce areas • Percentage of freshwater withdrawal out of available freshwater resources in hot spots • Global volumes of water consumed • Global water intensity (financial and product-based) and its three-year trend • Global water intensity (financial and product-based) and its three-year trend • Cost of floods, droughts, etc. absorbed by the company for the last five years • Water performance in the supply chain/value chain • Existence of internal systems to control clean water waste and leakages

Pillar 2 – Water Pollution

Examples of relevant engagement questions	Potential KPIs to follow
• Does the company have systems in place to systematically avoid, reduce, and eventually clean effluents and wastewater generated? *(According to a 2017 UNESCO Report, 80% of wastewater flows back into the ecosystem without being treated or reused.)*[16] • Does the company process (reuse or recycle) used water and wastewater before final discharge to environment? • Did the company fix any concrete targets on effluents and wastewater reduction and treatment? • How does the company assess water quality and/or pollution levels? What is the frequency of such assessment? What methods and tools are used? • Does the company assess its impacts on both surface water and groundwater? • Incidents-related pollution: What is the company's accidents protocol? How many accidents happened in the last three years? What is the average downtime due to system failures? What are the depolluting and other rehabilitation measures taken? • Operations and products-related pollution: Chemicals use by the company, including hazardous chemicals; compliance with EU REACH or equivalent regulations?[17] Does the company work to change its mix of products and/or purchases to transit to alternative solutions?	• Volume of wastewater generated • Volume of water discharge by destination type • Volume of water recycled (vs. withdrawn) • Volume of water reused (vs. withdrawn) • Fines and penalties paid during the last five years as a result of water pollution controversies • Number of pollution-related incidents over the last three years • Volume of water depolluted and positive trend in water-related ecosystems restoration

Pillar 3 – Access to Water

Examples of relevant engagement questions	Potential KPIs to follow
• Local communities: Does the company have a formal commitment to consult with local communities on water management, especially in water stress locations? • Local infrastructure: Does the company collaborate with local authorities on water infrastructure or other related projects? (*Almost two billion people depend on healthcare facilities without basic water services.)*[18] • Industry collaboration: Does the company participate in industry initiatives on water? (*Around two-thirds of the world's transboundary waters do not have a cooperative management framework.*[19] *This is an international political cooperation question. Companies operating in such high-risk locations should work to optimise their water use in collaboration with their peers despite the absence of the international guidance.)* • How are responsibilities for water resources management distributed within the company? Does the company top management supervise this topic? • Does the company analyse projects for their water use or process their contribution to/against the equitable sharing of the resource?	• Volume of wastewater generated • Volume of water discharge by destination type • Presence in locations where the population does not have fully operational safely managed drinking water services • Proportion of effluents and wastewater flows safely treated • Change in water-use efficiency over time • Established operational policies and procedures for participation of local communities in water and sanitation management • Collaboration projects with peers and/or local authorities to provide proper infrastructure and to ensure access to clean water

Source: AXA IM internal ESG research

Transformations

Of course, different companies may have different levels of preparedness and maturity as regards water management. This is especially true for entities operating in emerging markets. Corporations at the early stages of understanding and addressing water stress could start by identifying how water may be a material issue for their businesses and operations, before building up a way to deliver water-stress mapping. They can also take steps to measure their global water consumption and wastewater generation.

Much of the responsibility for water management lies within the field of public authorities, local and international, particularly as regards development of nationwide or international (cross-border) water management infrastructure suited to local and regional circumstances. Clearly, government regulation and policy action will be a powerful driver for corporate behaviour.

However, water stress is a global problem, without borders, and the private sector and every affected industry has a role to play in improving the broader picture to the wider benefit of investors everywhere. Companies are able not only to contribute to reduce consumption and pollution pressures on

water, but also to bring forward transformational solutions within their industries. We think these could include:

- Transforming agriculture by reducing heavily industrialised approaches and favouring alternative, local, circular, ecological solutions
- Introducing sustainable land development solutions (smaller parcels better managed, etc.) and smart technology and irrigation management (satellite and other solutions to identify where water is needed/where it is being wasted, for example)
- Working on supply chain management – choosing suppliers with a view to developing more sustainable approaches
- Revegetating, depolluting and protecting – restoring what can be restored where it makes sense
- Developing water management approaches in connection with improved protection strategies for global biodiversity and natural capital alongside sustained climate change efforts.

We think water can offer a clear focus for investors to make a tangible positive difference to corporate behaviour. And we think this can be done while seeking sustainable investment outcomes through thoughtful engagement and deep portfolio research backed by specialist third parties. Just 3% of the world's water is freshwater, and much of that is locked in glaciers or otherwise unavailable.[20] Simply put, water is not an infinite resource; and it will only continue to feel that way if we are able to successfully manage its circulation through nature, into our homes and through the industries reliant upon it.

[1] The agrifood sector covers the value chain from agricultural technology and farming to food distribution and consumption.
[2] The UN SDGs are a set of 17 targets adopted by all member states in 2015 with the intention of guiding and influencing the global policy environment to 2030.
[3] Summary Progress Update 2021: SDG 6 — water and sanitation for all, UN Water, July 2021
[4] WTO Stats Dashboard, Merchandise Exports 2021, World Trade Organization, retrieved November 2022
[5] 'Water-Related Diseases Responsible For 80 Per Cent Of All Illnesses, Deaths In Developing World', Says Secretary-General In Environment Day Message, UN, May 2003
[6] World Health Organization Fact Sheet: Sanitation, World Health Organization, March 2022
[7] Chine: contexte agricole et relations internationals, French Ministry of Agriculture and Food, October 2019
[8] China has a water crisis - how can it be solved? World Economic Forum, April 2016
[9] 80 per cent of groundwater in China's major river basins is unsafe for humans, study reveals, South China Morning Post, April 2016
[10] China's acute water shortage imperils economic future, Financial Times, February 2018
[11] The United Nations World Water Development Report 2020: Water and Climate Change, UNESCO, 2020
[12] Top 5 Industries with the Highest Water Consumption, Smarter Business, January 2020
[13] Perfluoroalkyl and Polyfluoroalkyl Substances (PFAS), National Institute of Environmental Health Services, July 2022
[14] Role of Industries in Water Scarcity and Its Adverse Effects on Environment and Human Health, Chowdhary et al, July 2019
[15] These 5 ways water scarcity affects businesses might surprise you, Valuing Water Initiative, September 2021
[16] 2017 UN World Water Development Report, Wastewater: The Untapped Resource, UN Environment Programme, 2017
[17] Understanding REACH, European Chemicals Agency. REACH stands for Registration, Evaluation, Authorisation and Restriction of Chemicals. It entered into force on 1 June 2007.
[18] Almost 2 billion people depend on health care facilities without basic water services, World Health Organization, UNICEF, December 2020
[19] Transboundary water management – why it is important and why it needs to be developed, Stockholm International Water Institute, 2013
[20] How Much Water is There on Earth? US Geological Survey, November 2019

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