



RBC BlueBay
Asset Management

The water challenge: a primer for investors

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Published May 2023

The world is facing many serious challenges, but there's no doubt that water and the issues around it are very much among them. Whether it is drought, sewage on beaches or impacts on energy supply, the implications are very real for people around the world and for businesses.

As ever, investors have an important role to play. By targeting capital for innovative solutions and engaging with issuers which need to improve, we have the potential to move the needle. And in helping to address the world's vital water challenges, we can also find that there are significant potential return opportunities.

We've been taking a close interest in the industry for a number of years and have been tailoring our portfolio accordingly. In this whitepaper, we'll take a deeper look at the issues around water. From the importance of tariffs to what makes for an attractive issuer, we'll discuss the fundamental challenges and the implications for investment strategy.

What are the challenges?

Water is vital for human life and for the environment but we are facing a wide-ranging set of problems that will only intensify. Several of these factors are interconnected and can be summarised as follows.

Water scarcity

The World Wildlife Fund (WWF) estimates that by 2025, two-thirds of the world's population may face water shortages¹. Climate change is a big cause, but overuse of water for agriculture and pollution are also contributors. The result is set to be more water rationing, competition for resources, and conflicts, between different users.

Water pollution

Water pollution has a clear impact on the environment, wildlife and human health. According to the World Health Organization, around 2 billion people worldwide consume water that is contaminated with faeces². Meanwhile, it has been estimated that plastic pollution kills 100,000 marine mammals every year³.

The problem is caused by human activities such as industry and agricultural practices, sewage discharge and littering. Notably, 44% of all wastewater on Earth currently returns to the environment untreated⁴.

Water-related diseases

Related to the above, lack of sanitation and access to clean water can lead to the spread of diseases. This is a particular problem in developing countries, where the likes of cholera, dysentery, typhoid and polio are estimated to cause 485,000 diarrhoeal deaths each year⁵.

Unequal access

Some communities have easy access to clean water and sanitation facilities while some don't – geographic location, economic status and political factors are all elements that play into this. People living in extreme poverty – women and girls, children, people with disabilities and remote communities are particularly likely to have difficulty gaining access⁶.

Water management and governance

Underpinning all of these is the need for effective water management and governance to ensure equitable and sustainable use of water resources. Even in the developed world, many countries have ageing water infrastructure that is failing to distribute water efficiently and needs significant investment. We'll discuss some of those countries in more detail later in this whitepaper.



These wide-ranging challenges around water are set to have increasingly serious consequences. We can anticipate water scarcity leading to rationing, reduced agricultural production and increased food prices, affecting people's livelihoods and wellbeing.

Water pollution, meanwhile, is not only having serious health consequences for people, but causing harm to wildlife and ecosystems, exacerbating the loss of biodiversity that has such profound implications for our own livelihoods.

Relevance for investors

From an investor's perspective, the implications are very real too. Water is essential for economic growth. Widespread food shortages and conflicts over water could be profoundly destabilising for the global economy. More immediately, scarcity, quality and regulatory risks around water can have significant impacts on individual issuers.

For example, water scarcity can affect the availability of water for industrial processes. Or companies causing water pollution can find themselves exposed to reputational and regulatory risks. Dealing with the effects of water pollution, such as cleaning up contaminated water or installing new water treatment systems, can be expensive and increase the cost of doing business.

These challenges do also create opportunities. For example, businesses that invest in water treatment technology and sustainable water management practices can help mitigate financial, regulatory, and reputational risks, and improve their long-term sustainability. We believe investors in these companies are more likely to see enhanced returns and reduced risk over the long term.

¹ [worldwildlife.org - Water Scarcity](https://www.worldwildlife.org/our-work/our-approach/water-scarcity)

² [who.int - Drinking water](https://www.who.int/news-room/fact-sheets/detail/drinking-water)

³ [wwf.org.au - Plastic in our oceans is killing marine mammals](https://www.wwf.org.au/what-we-do/our-approach/plastic-in-our-oceans-is-killing-marine-mammals)

⁴ [unwater.org - Water quality and wastewater](https://www.unwater.org/our-work/our-approach/water-quality-and-wastewater)

⁵ [who.int - Drinking water](https://www.who.int/news-room/fact-sheets/detail/drinking-water)

⁶ [wateraid.org - Tackling inequality](https://www.wateraid.org/our-work/our-approach/tackling-inequality)

Case study: the 2022 summer heatwaves in Europe

Consequences of water challenges were amply demonstrated during 2022's summer heatwaves which led to Europe's worst drought in 500 years⁷. Along with causing wildfires and forcing the introduction of water usage restrictions, the drought had serious implications for energy production, exacerbating already high prices for electricity and gas.

Most obviously, it reduced the availability of hydropower. Low water levels in reservoirs meant monthly hydro production in the EU fell below solar power for the first time in July 2022⁸.

However, it was not just hydropower that was affected. The energy company EDF was forced to cut its output at nuclear power stations on the Rhône and Garonne rivers due to a lack of river water to cool the reactors⁹, while German power plants warned of a coal shortage as shipping was disrupted on the Rhine¹⁰.

So, what then of the solutions? If we consider nuclear as an example, energy companies need to be looking at alternative cooling methods such as 1) air-cooling systems or 2) closed loop systems where the same water is circulated continuously. Those that are investing in these sorts of technologies are building their resilience against future droughts, which we believe makes them a more attractive proposition for investors.



The solutions ecosystem

The nuclear industry is not alone in having potential solutions available to their water challenges. The following are just a few of those that are exciting the water industry.

Water treatment

Membrane filtration is a basket of technologies that uses semi-permeable filters to remove contaminants from water and wastewater. These can be engineered so that certain substances pass through while others are blocked based on their size, shape, and electrical charge.

Another approach to treating water is advanced oxidation. These chemical processes use reactive chemicals like hydrogen peroxide or ozone to break down contaminants in water and wastewater.

There's also UV disinfection. This uses ultraviolet light to kill pathogens in water and wastewater. It can be used in isolation or as a secondary step to reduce the amount of chemicals used in primary disinfection processes.

Finally, there's biosolids management. Biosolids are a nutrient-rich by-product of the wastewater treatment process which can be treated and then used as a fertiliser for agriculture, landscaping and other purposes.

Smart water systems

These use digital technologies such as sensors, data analytics and control systems to optimise water management and improve the efficiency and sustainability of water and wastewater systems.

One example is recycled water systems. These are designed to collect, treat, and distribute wastewater so that it can be reused for the likes of irrigation, industrial processes, and toilet flushing.

Another is integrated water resource management (IWRM). This discipline aims to consider the interlinkages between water, society, and the environment, and typically involves a combination of demand management, supply management and water quality management strategies.

⁷ [bbc.co.uk - Europe's drought the worst in 500 years - report](https://www.bbc.co.uk/news/health-61484444)

⁸ [spglobal.com - Droughts rattle Europe's hydropower market, intensifying energy crisis](https://www.spglobal.com/commodities/enewsletters/2022/07/20-droughts-rattle-europes-hydropower-market-intensifying-energy-crisis)

⁹ [theguardian.com - EDF cuts output at nuclear power plants as French rivers get too warm](https://www.theguardian.com/environment/2022/jul/20/edf-cuts-output-at-nuclear-power-plants-as-french-rivers-get-too-warm)

¹⁰ [reuters.com - Low Rhine water level to hit output at two German coal plants](https://www.reuters.com/business/energy/german-power-plants-warn-coal-shortage-2022-07-20/)

Many water utilities and companies are starting to recognise the importance of IWRM. Indeed, water companies have an important role to play in bringing these innovations into practical use, as they are the ones that can provide the sustained investment that is needed.

The BlueBay fixed income investment team has engaged extensively with water companies in recent years, and the difference is clear between those that are adopting progressive practices and those that are not so advanced on the journey. The ones that we invest in tend to be the ones that are investing the most in innovative technology.

Comparing national water infrastructures

Access to clean water and sanitation is a massive problem in developing countries but developed ones are not immune either. Our discussions with international water companies reflect that there is significant variance in the quality of water management across countries in the developed world.

The US, for instance, has many cities and water systems with ageing pipes and infrastructure. The American Society of Engineering gave the country's drinking water infrastructure a C- grade in its 2021 report card, citing issues such as lead contamination, inadequate treatment facilities, and ageing pipes and distribution systems¹¹.

“Despite operating a well-respected regulatory framework overall, the UK has suffered from a lack of investment and struggles with an ageing infrastructure as a result.”

Much of Europe tends to have a much better infrastructure in place, with France probably one of the most attractive in class. Many European countries operate public-private partnerships that have proven effective at unlocking the potential of both sectors.

However, the UK stands in contrast to Europe and has significant challenges. Despite operating a well-respected regulatory framework overall, the UK has suffered from a lack of investment and struggles with an ageing infrastructure as a result.

A vivid illustration of this has been the problems the UK has encountered with sewage. The UK relies on a system called combined overflows, in which rainwater and sewage drains through the same pipes. When the sewers are overwhelmed, such as during periods of heavy rain, they discharge the excess into rivers¹².



What exactly is socio-hydrology?

Sharing some similarities with integrated water resource management (IWRM), socio-hydrology is a relatively new field which emerged in the early 2010s. It involves the integration of hydrological, ecological, and social sciences to better understand how human activities and water-related processes interact and affect each other.

This is because water management decisions are not solely technical – they are also influenced by social, cultural, economic, and political factors. Socio-hydrology seeks to understand how water management decisions are made and takes social and cultural factors into account by involving stakeholders in decision-making.

In practice, this might mean understanding the drivers of water demand in different contexts. From there you can seek to reduce water use through behavioural change campaigns, incentive schemes and/or water pricing mechanisms.

Alternatively, it might mean identifying social and political factors that lead to conflicts over water resources and developing strategies for resolving them.

In 2022, Channel 4's Dispatches programme alleged that water companies were illegally dumping sewage from unpermitted pipes¹³. But, whether legal or not, the broader problem of insufficient sewer capacity has meant ongoing controversy, with sewage visibly being washed up on beaches around the country. Indeed, within the first four days of 2023, 328 water pollution alerts had been issued around the British coastline¹⁴. We believe that investment is needed to improve capacity and reduce discharges.

¹¹ [infrastructurereportcard.org - Drinking-Water-2021.pdf](https://infrastructurereportcard.org/Drinking-Water-2021.pdf)

¹² news.co.uk - The sewage problem in Britain's rivers explained, and its impact on the environment

¹³ channel4.com - Britain's Water Scandal: Dispatches

¹⁴ independent.co.uk - 'Blatant disregard' for UK beaches as 320 raw sewage warnings since start of 2023

The BlueBay fixed income investment team has had ongoing engagement with the UK's water companies for many years but the 2022 allegations prompted us to reach out once again. We wanted to understand which were taking these challenges seriously – after all, the water companies are remunerated (or penalised) according to achieving good quality water supply, sanitation, and drainage services.

Despite these challenges, UK water companies do have their merits as an investment proposition. They typically purchase a significant portion of their energy needs through long-term fixed price contracts, providing some insulation against short-term fluctuations. The regulatory framework will also allow them to raise prices in future years to recoup any costs.

We've taken a robust approach by investing in the two UK water companies that we believe to have the most progressive practices. Both lead the field in innovation and environmental performance, receiving the maximum four stars in the Environment Agency's 2021 performance metrics.

Although we think more highly of European infrastructure than the UK's, not every company is commendable. In 2022 we divested from Aqualia, a Spanish water and wastewater company with a global footprint and strong coverage in emerging markets. It screened fairly well but its carbon intensity was high for the sector and it had among the weakest targets for reducing emissions (only 50% renewables by 2030). Despite our engagement with management, where we stated that their targets lacked ambition, there was no commitment to improve.



Severn Trent: key credentials

- Achieved the maximum four stars from the Environment Agency's Environmental Performance Assessment metrics in six of the last 10 years.
- Goal of 15% leakage reduction by 2025. Achieved 3.5% between 2020 and 2022.
- Aim of 3.5% per-capita water-consumption reduction by 2025. Achieved 1% between 2020 and 2022.
- Target of 46% reduction in carbon emissions by 2031 (scope 1 and 2). Achieved 25% between 2020 and 2022.
- Aim to improve biodiversity on 5,000 hectares of land by 2027. Already achieved 4,696 hectares between 2020 and 2022.
- One of the lowest gearing ratios in the sector and a history of operational outperformance.

Sources: Environment Agency, Severn Trent Sustainability Report 2022, RBC BlueBay Asset Management analysis



What makes for an attractive issuer?

When we look at water issuers, we're trying to gauge which will be the most impactful. We're looking for the technological leaders – the ones that are of a decent size and are able to allocate substantial research and development spending to these innovations. In emerging markets, socio-hydrology also comes more into play. We're seeking to understand if water companies are communicating with local communities and building resilience through their infrastructure. At a more granular level, the following are some of the metrics that we evaluate water companies against:

Non-revenue water

This is a measure of the volume of water that's lost to leaks, theft or waste. Water loss is a big problem in the UK, US and a number of emerging market countries – the UK, for example, loses over one trillion litres of quality drinking water per year on average¹⁵.

Water quality

Here we're looking at measures of chemicals, dissolved solids, contaminants and pathogens. The higher the levels, the greater the health risks.

Customer satisfaction

Almost all water companies disclose details of their customer satisfaction levels, allowing us to benchmark them and see where they're failing.



Financial performance

We're looking at revenue, expenses, debt levels and profitability. These metrics obviously matter to the companies' long-term viability.

Energy use and efficiency

This metric has become much more prominent in the last year. A number of companies use 100% renewable energy and are investing in their own wind and solar power to reduce energy consumption in water treatment plants. This has helped their environmental impact and contributes to reducing the impact of energy price shocks.

Water conservation

Here we're looking at the water savings achieved through conservation measures such as demand management programmes, leak detection, repairs, and water reuse.

The importance of tariffs

When governments are seeking to create a healthy ecosystem for water management, one of the most important considerations is the implementation of water tariffs.

These pricing mechanisms charge users based on the amount of water they consume. They not only cover the cost of provision and sanitation services but also investments in infrastructure and capacity. A study of Organisation for Economic Co-operation and Development (OECD) countries in 2020 found that putting the right price on water encourages people to waste less, pollute less and invest more in water infrastructure¹⁶.

“A study of OECD countries in 2020 found that putting the right price on water encourages people to waste less.”

Yet the OECD study also found that tariffs for water and wastewater services remain low and inconsistent. This fuels water inequality and exacerbates water's limited availability. Models which subsidise water services through public utilities or government agencies are probably unsustainable in the long term, particularly given growing demand for water and increasing pressure on water resources.

Things are improving - Western European countries and their water utilities are now much more likely to be using tariffs than emerging markets. From an investor's perspective, that gives us more predictability because any unforeseen costs can be recouped in future years.

For example, in 2022, European water companies' energy costs were almost double what they had budgeted for. But they have the flexibility to recover them through increased tariffs in 2023.

Innovative funding models

Of course, tariffs are not the only source of funding for water infrastructure and for mitigating the water crisis. The following are a few of the interesting models that are emerging.

Blue bonds

A type of debt instrument issued by governments, international organisations and private entities to finance projects promoting sustainable, water-related activities. A number are focused on oceans, while some are also being extended to provide social and economic benefits to coastal communities. For example, blue bonds can be issued to support the development of sustainable fisheries that provide livelihoods for locals.

¹⁵ [theguardian.com](https://www.theguardian.com) - Water firms in England and Wales lost 1tn litres via leaky pipes in 2021

¹⁶ oecd.org - Water - The right price can encourage efficiency and investment

They're still a nascent market – most of the European utilities are issuing more traditional green bonds for climate change mitigation but they're one to watch.

Ocean-based carbon credits

A new type of carbon credit that are created by sequestering carbon in the ocean. Organisations engaging in marine conservation might achieve this by restoring mangroves, seagrass beds or other blue carbon ecosystems. They can then sell the credits on carbon markets to companies wishing to offset their emissions.

Debt-for-nature swaps

A financial mechanism that involves forgiving a portion of a country's debt in exchange for the protection of its natural resources, including its oceans. They've been used to support marine conservation efforts in the Seychelles and Belize.

Impact investment funds

A growing number of funds that focus purely on investing in sustainable ocean-related projects such as sustainable fisheries, aquaculture (breeding, raising, and harvesting fish, shellfish, and aquatic plants), marine conservation and ocean energy. The key characteristic is that the investments are made with the specific intention to generate positive, measurable social-and-environmental impact, alongside a financial return.

Blended finance

An approach combining public and private financing to support sustainable ocean projects.



Moving the needle

There's no doubt that investors are moving the needle on these issues. Some of the most interesting investments from an ESG perspective now have a clear sustainability premium built into their valuations. Equally, the laggards are trading at a discount because many funds cannot hold them.

Whether it's mainstream utility companies, sustainable piping manufacturers or sanitation specialists, we're investing in the most innovative issuers with the most compelling approaches to our water challenges.

The more we can invest in this intelligent, targeted way, the better the chance we have of tackling all our global water challenges, as well as maximising our returns.

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Published May 2023



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