Water Infrastructure and Resiliency

Industry Report and Investment Case

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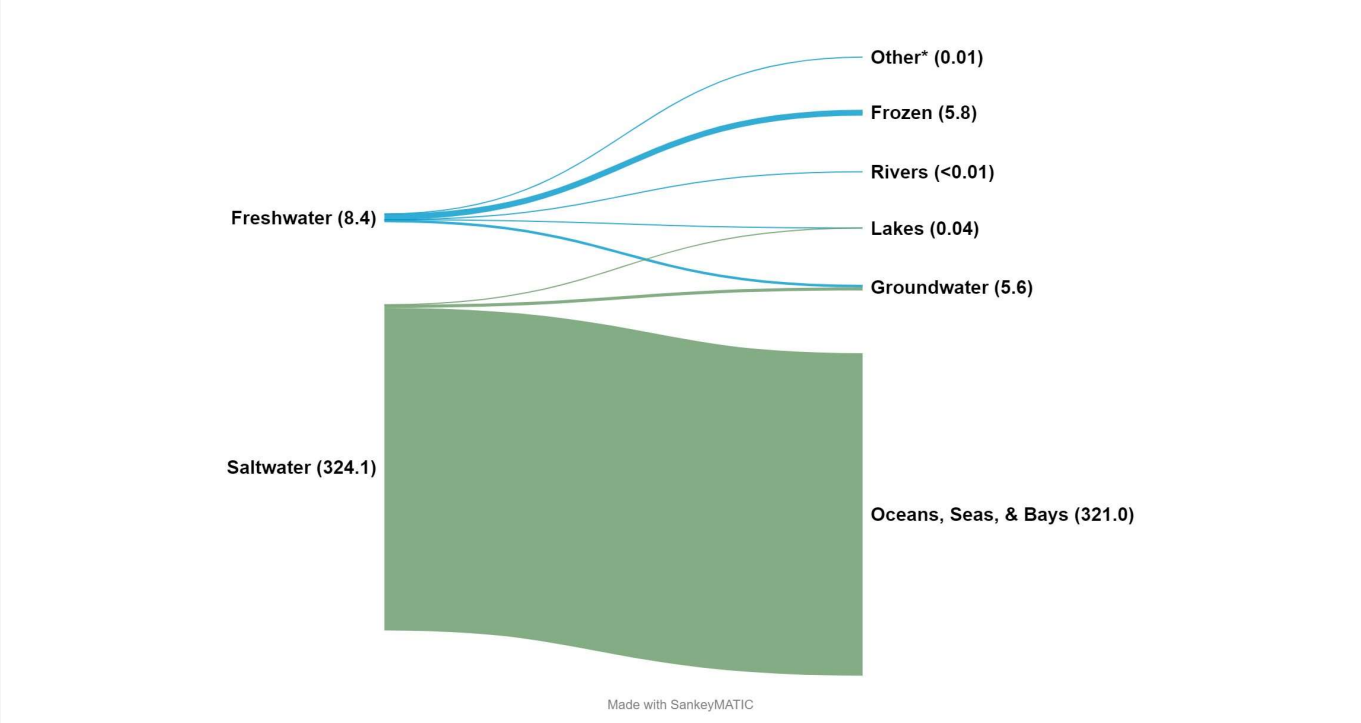
Ron Pernick, *Clean Edge*

Sara Mehle, *Nasdaq*

Water Industry Overview

Clean water is a scarce and vital resource. While Earth has an estimated 332,500,000 cubic miles of water and liquid covers more than 70% of the planet's surface, most of this water resides in the ocean as salt water. A mere 3.5% is believed to be freshwater – and less than 1% of water globally is in traditional freshwater sources like lakes, rivers, and groundwater[1]. Even among these freshwater water sources, only a fraction is usable due to contamination, depth, and saltwater intrusion. So, with the world's population at 8 billion and counting, along with the growing implications of massive droughts and climate disruption, there is increasingly less freshwater accessible to each of us. The Organization for Economic Cooperation and Development predicts that by 2050, water use will rise by 55%, leaving 40% of the global population in water-stressed regions[2]. Nations, businesses, and individuals alike need to do more with less.

Global Distribution of Water (Million Cubic Miles)



Source: USGS, 2019[1]

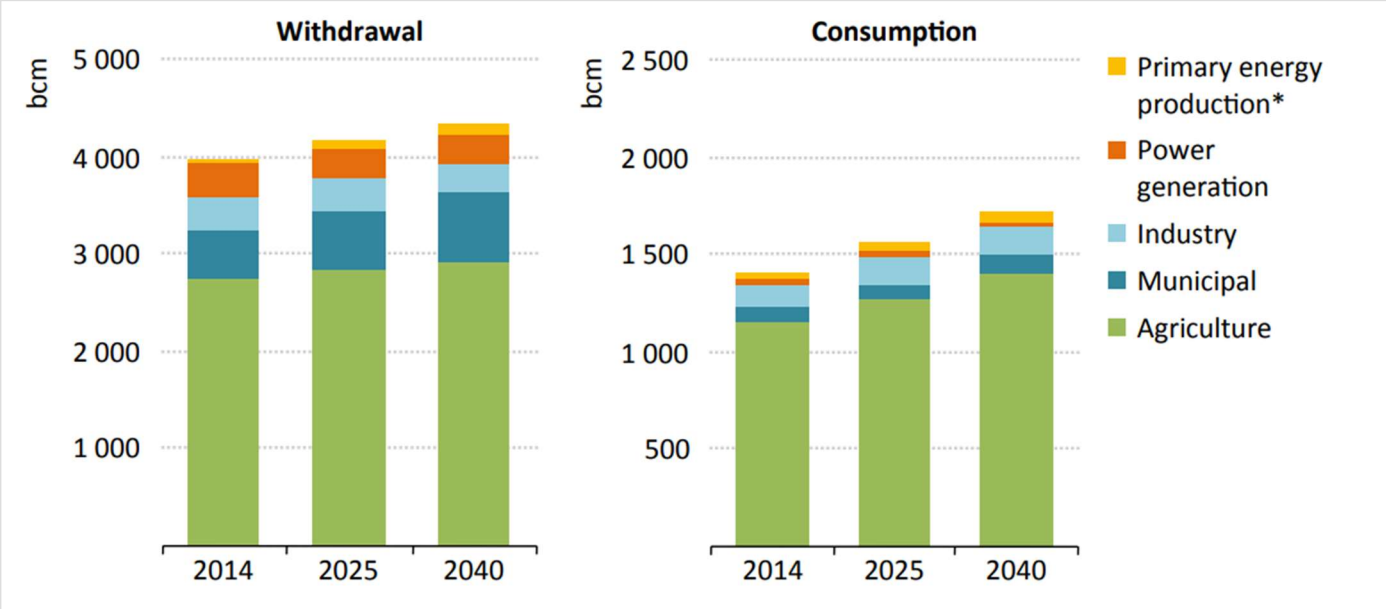
*Other includes soil moisture, water vapor, swamp water, and biological water

The global water market attracts investors for many reasons: water is a critical resource, revenue streams are consistent and reliable, and greater innovation and growth are required. Like food and shelter, our very life depends upon it. Due to its vitally important nature, the water demand remains consistent despite economic fluctuations. This means utilities can generally rely on steady revenue streams. But while providing reliable returns, the water industry also needs both technological and financial model innovation. Many clean technology companies and utilities are unveiling new solutions to collect, conserve, and treat water. These new technologies and a robust infrastructure market should ensure stable market growth as this stressed resource continues to flow into homes and industry.

The Essential Nature of Water

Freshwater availability is increasingly at risk due to the triple threat of population growth, climate change, and water resource contamination from industrial and agricultural processes. Economically productive areas that have historically been able to rely on consistent water sources, like the western U.S., now face severe restrictions. Many sectors are investing in conservation to ensure that less water is wasted. About a third of North American utilities (31%) have implemented a water conservation program, and 32% have a fully developed drought management or water shortage contingency plan[3]. Despite heightened awareness of total water use, growing global populations will continue to drive increased demand. According to the World Resources Institute, domestic (residential) use is the fastest-growing sector, rising more than 600% between 1960 and 2015[4]. While population growth drives municipal use, economic development will continue to bolster industrial demand, particularly in developing nations. Many industries rely on large volumes of water; producing metals, wood products, textiles, and electricity are all water-intensive processes. Power generation and municipal sectors withdraw high volumes of water, but much of this water, unlike in industry or agriculture, is returned to the source after treatment. Consumption represents the portion of water withdrawn and not returned to the source, most commonly due to evaporation, runoff, or contamination. Agriculture will likely remain the most significant water user, in both withdrawal and consumption, through 2040 (see chart below).

Water Withdrawals and Consumption, Growth by Sector, 2014-2040



Source: International Energy Agency, 2016[5]

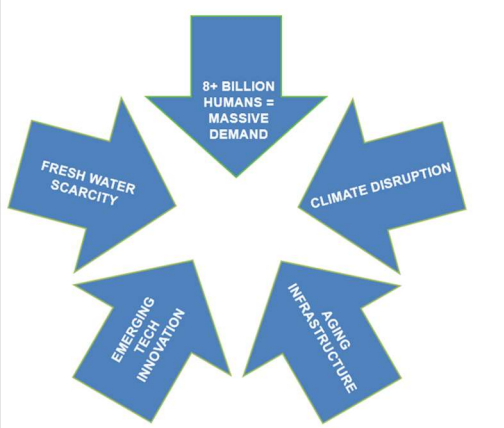
* Primary energy production includes fossil fuels and biofuels.

Note: The figure shows actual withdrawal and consumption for 2014 and projected figures for 2025 and 2040.

Water utilities can rely on steady or rising demand for decades to come. At the same time, many utilities must make significant investments to ensure the reliability of both treatment and distribution systems. Recent M&A (mergers and acquisitions) activity reflects the size of the opportunity, as a number of water players combine to pursue scale and secure key market positions. In 2023 alone, Xylem acquired Evoqua Water Technologies (both water and wastewater treatment technology companies) for $7.5 billion; water treatment solutions provider Solenis acquired Diviersey, a cleaning and disinfection company, for $4.6 billion[6]; and engineering/infrastructure firm Tetra Tech, with a large water industry footprint, purchased UK-based RPS Group for $690 million[7]. This marks the continuation of M&A in the water sector, with acquisitions expected to continue in the coming years.

Drivers of Growth

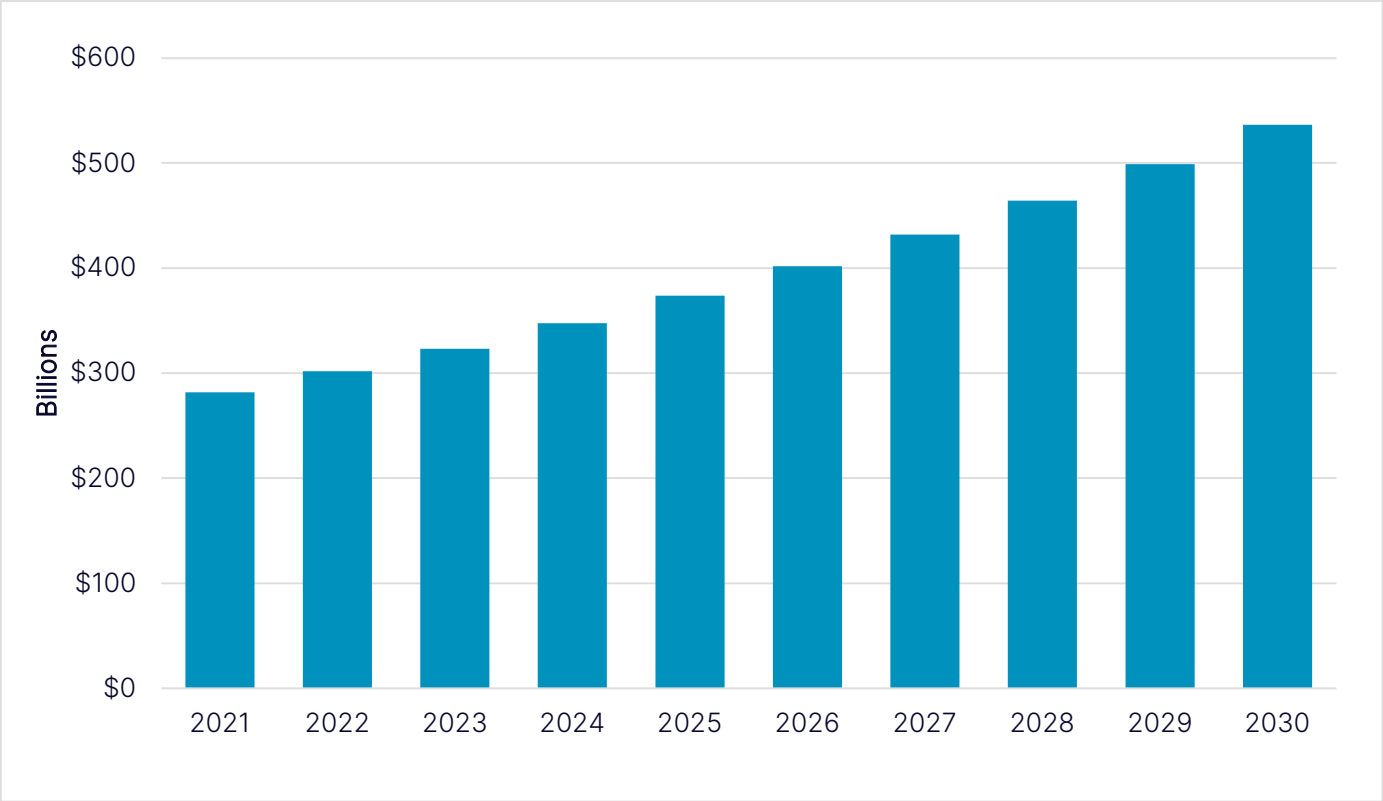
Growth in the water sector is multi-faceted, and drivers vary by region. Larger cities and increased population mean urban water supplies will be stretched further while rural areas battle higher distribution costs. Some areas may face unprecedented flooding, while other areas face extreme drought. The major drivers of the sector are:



Source: Clean Edge, Inc.

- Growing Demand . The world population is more than 8 billion and growing. Since the 1980s, global water demand has been increasing by about 1% per year due to economic expansion and population growth. This trend is expected to continue until at least 2050 when global water demand will be 20 to 30% higher than it is today[8].
- Aging Infrastructure . Infrastructure is at the forefront of water industry discussions. In many parts of the world, distribution networks are aging, leading to significant losses through leaks, breaks, and contamination. Utilities must invest heavily over the next decade to replace degraded infrastructure and avoid service disruptions. Lead service lines are a particular issue for older cities, with 68% of North American water utilities implementing lead line replacement programs as of 2023[3].
- Emerging Tech Innovation . Many utilities are interested in automation of their treatment systems, which can reduce costs and increase uptime. As treatment requirements become stricter and labor costs rise, utilities will invest in innovative systems to reduce long-term costs, and the treatment market is projected to grow steadily over the next decade. Fortune Business Insights, a market research consulting firm focused on disruptive technology markets, projects a 7.5% compound annual growth rate for the water treatment market through 2030, with the global market reaching $536.41 billion[9]. The U.S. market will lead this expansion, with investment from federal, state, and local governments and an increasingly large pool of private funds. Developing economies will require improved distribution and treatment, stoking a massive investment in the centralized infrastructure market. Decentralized solutions will also likely become more common, creating additional opportunities for startups and innovative new technologies. These emerging technologies will enable water collection from alternative sources, like fog or treated wastewater, and generally provide greater resilience.

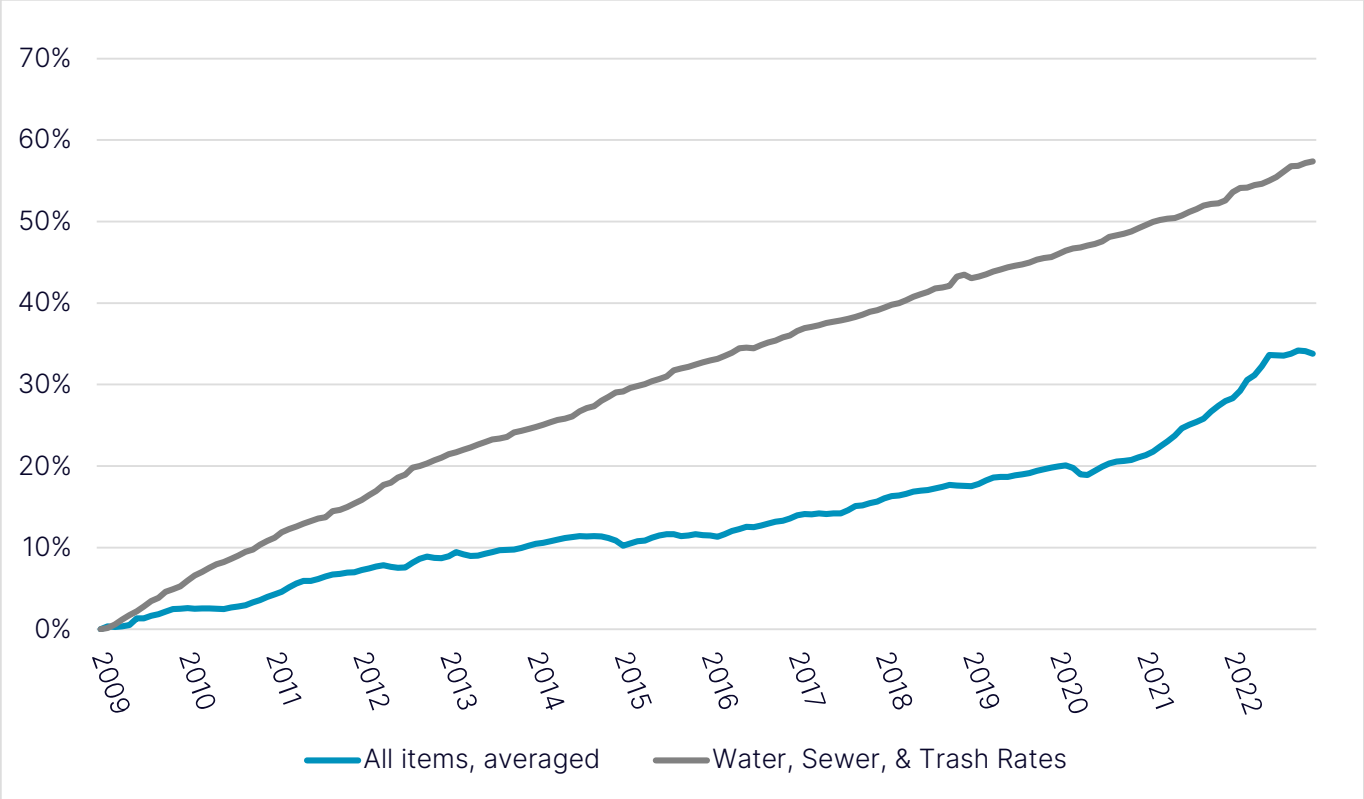
Global Water and Wastewater Treatment Market Value, 2021-2030



Source: Fortune Business Insights, 2023[9]

- Fresh Water Scarcity . It's estimated that 2 billion people live without access to safely managed drinking water, and around 800 million don't have basic drinking water services[10]. Water scarcity is one of the most acute impacts of the climate crisis, potentially displacing 700 million people by 2030 and leading to political conflicts[11]. Scarcity will drive up the value of water as populations increase globally and freshwater supplies are stretched. Planning for emergency sources of clean water and improving the resilience of distribution networks will also raise water prices, continuing the trend from the last decade. In 2023, 11% of North American water utilities cited challenges meeting their long-term water supply needs[3]. The average price of water for a four-person household in the U.S. increased 61% between 2010 and 2019[12], and utility rate increases have continued to outpace inflation in recent years[13].

Water, Sewer, and Trash Rates Compared to CPI, 2009-2022



Source: U.S. Bureau of Labor Statistics, 2023[13]

- Climate Disruptions . July 2023 set a record for the highest-ever monthly average temperature (16.95°C)[14], following the hottest June in recorded history[15]. As the planet warms, weather patterns will be drastically altered. This means less water where we've grown to rely on it and more where we didn't plan on it. Industries that use large amounts of water are threatened by changing precipitation patterns, especially in agricultural regions. California, for example, was gripped by a severe multi-year drought in recent years, leading to water use restrictions and wildfires[16]. While the drought has eased in California this year, relying on the rain is an increasingly risky game. Droughts plague an estimated 55 million people worldwide[17], and extreme flood events are increasingly frequent. Extreme weather impacts drinking water treatment, which cannot source water reliably in droughts, and wastewater treatment, which must deal with stormwater surges. This issue will drive increased investment in developing alternative sources of water, as well as in the improvement of the reliability of existing distribution networks.

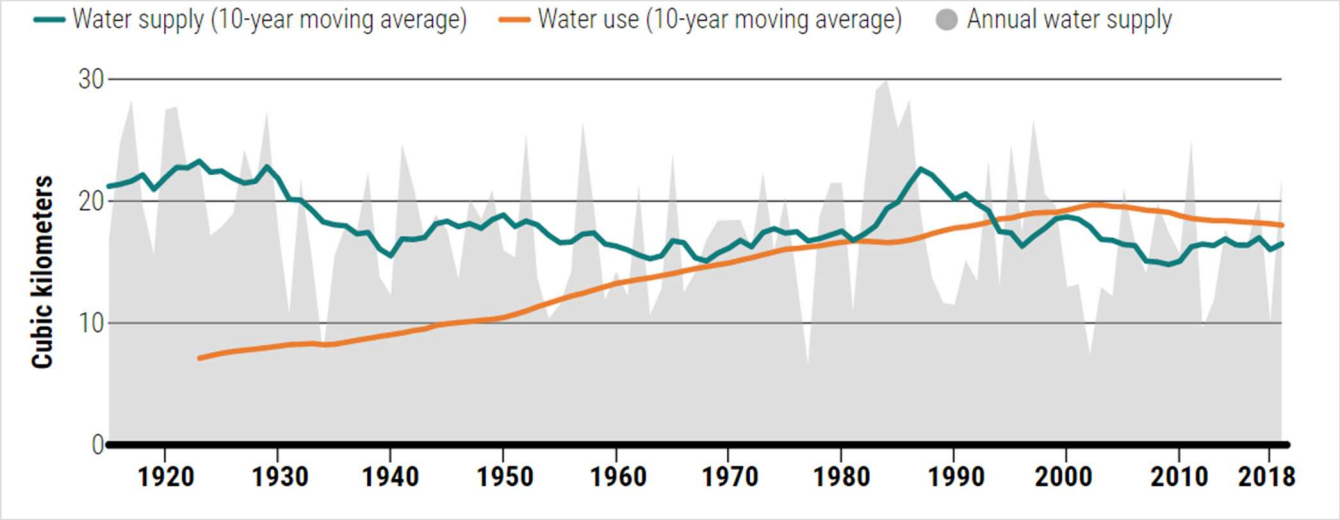
Agriculture's Water Use

Agriculture currently accounts for an average of 72% of global freshwater consumption[18]. The U.S. has a highly mechanized agriculture sector, producing more food with less labor and land. But it also requires lots of water, much of which is lost through evaporation and runoff in traditional irrigation; those impacts can be greatly reduced through smart irrigation technologies, remote monitoring, or even full automation of indoor farms. These technologies and water-smart changes to farming practices will be necessary as aquifers and lakes dry on a warming planet. Despite a clear need to conserve, water allocation in agricultural regions seems counter to that goal, especially in the drought-stricken western U.S.

In the Colorado River basin (including parts of Wyoming, Colorado, Utah, Nevada, New Mexico, Arizona, and California), agricultural water rights disincentivize conservation based on how much water was previously put

to beneficial use. Farmers and ranchers who no longer use their full water claim may end up on what's known as the Decennial Abandonment list, effectively losing those water rights[19]. This "use it or lose it" mentality drives the overallocation of water to agriculture in water-stressed regions, leaving less for other uses. Since average water use has outstripped supply in the Colorado River Basin since the 1990s (see timeline below), hard decisions must be made about allocation. In 2023, three states that withdraw significant amounts from the Colorado River (California, Arizona, and Nevada) struck a deal to reduce their use by 3 million acre-feet over the next three years, impacting agriculture dramatically[20]. According to the *New York Times*, 79% of the water used in the Colorado River Basin goes toward agriculture, and more than half of that (1.064 billion gallons annually) is used for livestock[21]. Given projections of future water availability, it is becoming increasingly clear that conservation in the agriculture sector, particularly for meat production, is critical[22].

Water Supply and Use in the Colorado River Basin, 1920-2018



Source: Science, 2021[22]

California supplies more than half the nation's produce, and its water bill reflects that. Water demand in southern California drastically outpaces supply, with 80% of the U.S. agricultural water flowing to California farms[23]. Having undergone historic droughts recently, California has become a pioneer in using non-traditional water sources. The state has invested significant amounts in both desalination and indirect potable water reuse, essentially pumping treated wastewater into aquifers to be withdrawn for use six months later. These "toilet-to-tap" systems are economical, averaging $1,800 per acre-foot compared to $3,000 for desalinated water[24]. While U.S. agriculture is threatened by water risk, these technologies are even more necessary in more water-stressed regions. Island nations are already facing the dire consequences of rising sea levels contaminating freshwater sources and arable land. Storms are also more intense and more frequent, damaging crops and infrastructure[25]. Water insecurity threatens food security, driving home the imperative for next-generation agriculture.

Breakthrough Opportunities

As noted throughout the report, there are many opportunities for growth in the water market. Several trends and technologies that highlight this growth include:

- Next-Generation Agriculture . Around the world, companies are experimenting with controlled agriculture, including indoor or vertical gardening. This highly controlled environment has been shown to maximize yields and dramatically reduce water usage. However, the technology is still limited in the types

of produce that can be grown (primarily leafy greens, strawberries, and tomatoes). It also does little to conserve the significant amounts of water used for livestock production, particularly in cattle-raising and arid western states. In Texas, for example, withdrawals for livestock make up about 14% of the state's total water withdrawals[26]. Most of this water isn't consumed by the cows themselves but is used to irrigate fields of feed crops like corn and alfalfa. Precision agriculture is another breakthrough in conservation, using technology on existing farmland to pinpoint water, fertilizer, and pest control applications. The World Economic Forum estimates that by 2030, 80-150 million farmers could benefit from precision agriculture, saving 50-180 billion cubic meters of water[27].

- Filtration Process Breakthroughs . As industrial processes expand in both the developed and developing world, water sources risk becoming more contaminated, leading to stricter environmental regulations and enforcement of discharge standards. The textile industry, which produces about 20% of industrial water pollution worldwide[28], will be significantly impacted by new regulations. Industries and wastewater utilities must invest in advanced treatment solutions to prevent pollution and avoid costly fees. Treatment solutions include biomimetic filtration membranes, which can treat wastewater from industries as diverse as semiconductors and landfill management[29]. Other filtration technologies and processes include reverse osmosis, ultrafiltration, and nanomembranes. Many of these technologies are being utilized by the desalination sector, which is expanding and growing in popularity, particularly in coastal and desert regions. Saudi Arabia has one of the largest desalination plants in the world, the 1.05 million cubic meters-per-day plant at Ras al Khair. After canceling plans to privatize several desalination plants, the country has announced the phased opening of six new plants by 2024, raising total output to 14 million cubic meters per day in 2025[30].
- Water Reuse (Toilet to Tap) . Water use multiple times, including "toilet-to-tap" and greywater systems, is becoming more popular in many water-stressed regions. As of 2023, 3.7% of North American water utilities have fully implemented a direct potable reuse system (toilet-to-tap), with an additional 4.4% of utilities actively developing a direct potable reuse project[3]. The largest of these facilities is the Orange County Water District's $490 million facility in California, with a capacity of 100 million gallons a day[31]. Another major innovator in this arena is Singapore's NEWater plants, which treat wastewater to drinking water standards through membrane filters and UV disinfection. The five existing plants produce up to 40% of the nation's current water supply, and this percentage is projected to grow to 55% by 2060[32]. Greywater recycling systems (which do not invoke the "ick" factor or incur the costs of toilet-to-tap systems) are more common, making use of less contaminated "greywater" from laundry or handwashing to irrigate lawns or gardens. While these distributed systems are frequently installed in commercial buildings, residents in the U.S. West are latching on to the trend, seeing water savings of up to 40% at the household level[24].
- Leak Management . A significant issue for aging water infrastructure is water loss via leakage. In the U.S. alone, at least 6 billion gallons of water are lost to aging, leaky pipes daily, with a further 1 trillion gallons lost in households yearly[33]. Many companies are working to address the issue, utilizing increased data from smart meters to identify leaks and tighten distribution infrastructure. While many water utilities aim to be full-cost operations, covering all future investments with the revenue gained from utility services, most cannot afford these upgrades at the current rates. The American Water Works Association (AWWA), a nonprofit scientific and educational association dedicated to water quality and supply, presents an annual survey of North American water professionals in its State of the Water Industry report. To prepare for future expenditures, 78% of utility respondents to the 2023 survey said they intended to raise water rates in the coming year; only 20.1% of respondents indicated they were "fully able" to cover the service[3].
- Wastewater to Resources . Due to fertilizer runoff from farms and other anthropogenic sources, high levels of nitrogen and phosphorus enter wastewater treatment plants. If left untreated, these nutrients cause potential algal blooms and the death of marine life and can render municipal water supplies

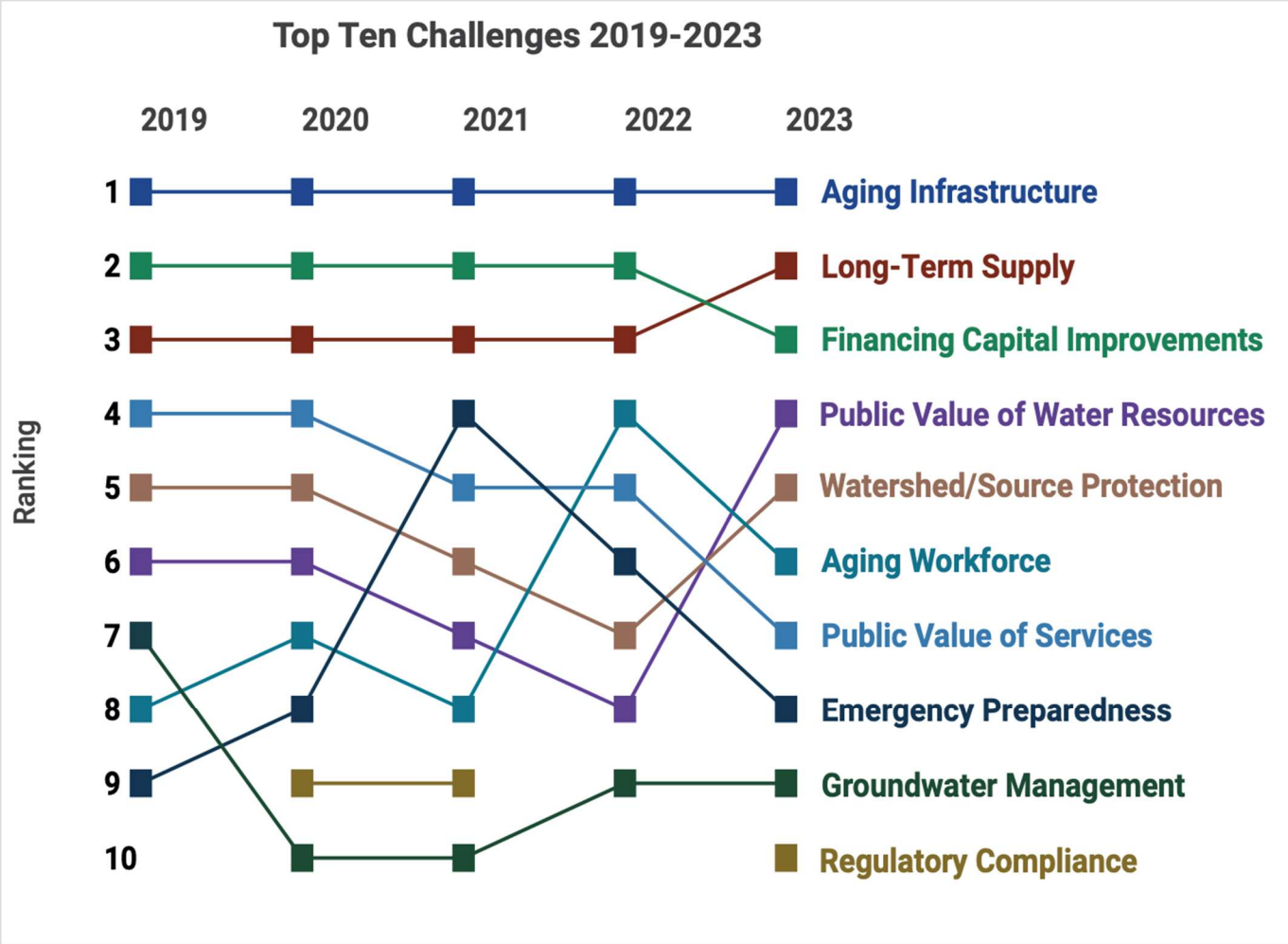
undrinkable. Treatment of nitrogen and phosphorus adds cost to treatment plant operations as additional steps in the treatment process, adding footprint, time, and energy. However, there is an economic incentive in capturing nutrients from wastewater – as the global supply of mineable phosphorus falls[34], treatment plants can sell these elements for fertilizer. Anaerobic digestion of wastewater, particularly sewage from livestock or municipal sources, can also produce biogas, a substitute for fossil fuel-derived methane.

- Big Data & Climate Mitigation **.** Reliable data about global water supply is as scarce as the resource itself. However, modern technology enables the next generation of monitoring and response to water crises. A recently published *Science* article used satellite imagery, climate data, and hydrologic models to show a statistically significant decline in 53% of lakes worldwide between 1992 and 2020. This leaves one in four people residing in a drying lake basin at risk of running out of water[35]. Big data is used to verify the problems and help mitigate the effects of climate change. A notable example is in the Mekong Delta, a large rice-growing region of Vietnam, where climate change, pollution, and saltwater intrusion have reduced freshwater availability. As a result, the Vietnamese government plans to limit freshwater irrigation from canals starting in 2030. A group of farmers is joining forces with Tra Vinh University in the Phu Can cooperative, experimenting with different farming methods, including water-level sensors, automated irrigation, and alternate wetting and drying of their fields[36]. To prevent the taps from running dry for water-stressed cities or entire industries, the water market will need to collect, disseminate, and respond to data about water.
- Infrastructure Investment Models **.** Historically, water markets have been underfunded. Many utilities are raising rates to encourage conservation and pay for infrastructure improvements, as well as seeking alternative funding sources. Water is favorable to ESG investors because it allows investment into infrastructure. Historical underfunding of infrastructure by the public sector has necessitated and accelerated private infrastructure investment. By investing in resilient infrastructure and targeting strong ESG goals, investors participate in a positive transition to public-private partnerships and greater capital availability for infrastructure projects. There has also been a recent rise in debt financing. Investment in "green bonds", those connected to environmental projects, edged out fossil fuel bonds for the first time in the first half of 2023, totaling $350 million compared to $235 million invested in coal, oil, and gas projects[37]. Another stream of domestic funds could be the $35 billion in the Drinking Water and Wastewater Infrastructure Act passed in 2021. This legislation promises to boost state funds and finance the replacement of lead drinking water pipes nationwide[38]. These sources of capital may finally shore up the deficit in water valuation and lead to more equitable distribution.

The Rise of Resilient Infrastructure

Global water infrastructure desperately needs repair and expansion to improve the resiliency of water networks. The U.S. exemplifies the need for extensive upgrades and replacement of aging water treatment and distribution systems. Much of the nation's water distribution network was installed in the mid-20th century, with estimated lifetimes between 75 and 100 years. Large swaths of the nation's million-mile-long pipe network will need to be replaced in the next 25 years, and financing these updates is challenging. This is a growing concern among water industry professionals. In the 2023 AWWA State of the Water Industry report, the renewal and replacement of aging infrastructure ranked as the number one issue facing North American water professionals, as it has for the past decade, with the need to finance these improvements as their third-highest concern.

Top 10 Issues Facing the Water Industry, 2019-2023



Source: American Water Works Association 2023 State of the Water Industry Report[3]

The need to replace aging infrastructure will funnel money into this market, offering opportunities to improve resilience with technical updates like smart water meters or leak monitoring devices. Leaks are estimated to be responsible for 20% to 50% of water losses across North America[39]. To abate this loss, customers and utilities are embracing innovative conservation methods. Acoustic leak detection devices, for example, are designed to be used by utilities to locate leaks in distribution lines[40]. According to the 2018 U.S. Environmental Protection Agency (EPA) Drinking Water Infrastructure Needs Survey, 20-year projections of needed investments in the drinking water industry rose 86.3% between 1995 and 2015 and were last estimated at $472.6 billion[41]. In the 2023 State of the Water Industry survey, only 33.6% of North American utilities say they are “very able” or “fully able” to cover the total cost of providing services in the future. This forces utilities to seek alternate funding sources to update established infrastructure, including rate increases, bonds, and money from the federal Water Infrastructure Financing and Innovation Act (WIFIA) of 2014[3].

Utility 2023 Funding Sources

Ranking	Utility Funding Sources	% Mentions
1	Rate increases	66.9
2	Grants	58.9
3	State Revolving Funds	54.7
4	Bonds	51.0
5	Reserves	38.9
6	Operational savings	34.6
7	Water Infrastructure Finance and Innovation Act (WIFIA)	29.0

Source: American Water Works Association, 2023[3]

As utilities complete these major renovations and updates, many are considering ways to make their systems more efficient and resilient. According to the 2023 AWWA State of the Water Industry report, 72% of utilities have implemented or are developing a community risk and resilience assessment[3]. This leads many utilities to collect more granular data on their distribution networks. While analog metering is already standard, shorter collection intervals and automated analysis of this data are necessary to properly manage distribution systems. Automated meter reading and advanced metering infrastructure (AMI) make more frequent data collection at more locations possible, allowing utilities to better pinpoint leaks in the system. With more than 240,000 water main breaks each year in the U.S. alone[42], rapid response to leaks can save utilities thousands of dollars in wasted water. The smart water market ranked as the ninth most crucial issue for North American water and wastewater market growth in 2023[3]. Smart meter infrastructure can also allow utilities to recover quickly after natural disasters. Following Hurricane Irma in 2017, for example, the Provo Water utility in the Turks and Caicos Islands in the Caribbean was able to re-pressurize its system and start distributing water just four days after being knocked offline, thanks to data from its AMI system installed one year earlier[43].

Smart water management technologies also provide customers with information needed to implement more effective conservation strategies. The U.S. water market is responding to an influx of smart metering technologies. According to a 2023 report by Market.us, a consulting and customized market research company, the smart water management market will grow to $45.1 billion by 2032[44]. Leak management and pipeline monitoring are the fastest-growing sectors, and increasing urbanization and adoption of smart technologies will continue to drive this growth.

The smart water movement is about more than quantity, though – it's also about quality. With hundreds of potential contaminants in the water supply, collecting and sending samples for laboratory analyses can take days, leaving water utility plant operators unable to respond effectively to water quality changes. Water quality sensors allow for real-time monitoring and response to contamination. The 2014 water crisis in Flint, Michigan, is a stark reminder of what can happen when utilities are slow to respond to water quality data. The city's drinking water supply was contaminated with lead from corroded pipes after a change in the source water. The slowness of the response left thousands of residents sipping dangerous amounts of lead. Crises like these highlight the need for data-driven solutions – the total number of lead service lines is still unknown, according to the U.S. Government Accountability Office[45], although the EPA estimates there are between 6 and 10 million in the U.S.[46] Increased public awareness of water quality issues will continue to push the treatment market toward more advanced digital technologies.

PFAS and Other Emerging Contaminants

Water pollution is an ongoing issue worldwide, mainly for so-called "emerging contaminants" like microplastics, pharmaceuticals, and per and poly-fluoryl alkates (PFAS), known as "forever chemicals." With these contaminants now present in many water sources, industry and utilities alike must deal with the costs. Water utilities are concerned about treating these contaminants, with 20% of respondents to the 2023 AWWA survey stating they were extremely concerned about new PFAS regulations[3]. The three known ways to remove PFAS from water – granular activated carbon, ion exchange resins, and high-pressure membrane systems[47] –add expense, time, and energy to a treatment process. Additionally, the EPA estimates that 23 million households in the U.S. drink out of private wells that are not regulated by drinking water treatment standards[48]. A 2022 USGS study found PFAS contamination in 20% of private domestic wells and 60% of public supply wells[49]. Thousands of cases have been filed against the companies that manufacture these chemicals, including DuPont, Chemours, Corteva, and 3M[50]. In June 2023, 3M agreed to pay up to $10.3 billion to resolve multiple lawsuits regarding its manufacture of PFAS and contamination of water sources[51]. The total amount paid out in legal settlements could surpass the $200+ billion paid by Big Tobacco in the 1990's[50].

How Can People Invest in Water?

The ISE Clean Edge Water™ Index (HHO™) tracks the performance of companies that derive a substantial portion of their revenues from the potable water and wastewater industry. Industry exposure includes:

1. Utilities and water distribution
2. Infrastructure (pumps, pipes, and valves)
3. Water solutions (purification and filtration)
4. Ancillary services such as consulting, construction, and metering

To be eligible for inclusion in the Index, a security must meet the following criteria:

- The issuer of the security must derive a substantial portion of their revenues from the potable and wastewater industry, according to Clean Edge
- Be listed on the Nasdaq Stock Market, the New York Stock Exchange, NYSE American, or the CBOE Exchange
- Have a minimum worldwide market capitalization of $100 million
- Have a minimum free float of 20%
- Have a minimum three-month average daily dollar trading volume (ADDTV) of $500,000
- One security per issuer is permitted
- Have "seasoned" for at least three months on an index-recognized market
- The issuer of the security may not have entered into a definitive agreement or other arrangement, which would likely result in the security no longer being index-eligible
- May not be issued by an issuer currently in bankruptcy proceedings
- The issuer of the security may not have annual financial statements with an audit opinion that is currently withdrawn

The Index is evaluated in March and September. The criteria are applied using market data as of the end of January and July. Securities meeting the criteria are included in the Index. Security additions and deletions are made effective after the close of trading on the third Friday in March and September.

As of July 31, 2023, the ISE Clean Edge Water Index (HHO) held 36 stocks, and its industry exposure was heavily weighted in Industrials (54.98%), Utilities (20.61%), and Healthcare (11.12%) according to the ICB classification. The remaining three ICB industries were Basic Materials (7.47%), Technology (4.16%), and Consumer Staples (1.66%).

Index Breakdown

ICB INDUSTRY	WEIGHT (%)
Industrials	54.98
Utilities	20.61
Health Care	11.12
Basic Materials	7.47
Technology	4.16
Consumer Staples	1.66

Source: Nasdaq, 7/31/2023

The ISE Clean Edge Water Total Return™ Index (HHOTR™) has demonstrated long-term alpha generation through security selection. It was able to outperform the Nasdaq U.S. Benchmark Total Return™ Index (NQUSBT™), the Nasdaq US Benchmark Industrials Total Return™ Index ("Industrials"), and the Nasdaq US Benchmark Utilities Total Return™ Index ("Utilities") industry indexes across the 3-, 5-, 7- and 10-year time horizons.

Total Return Statistics

	HHOTR (%)	NQUSBT (%)	INDUSTRIALS (%)	UTILITIES (%)
1Y	13.78	12.69	13.81	-5.66
3Y	61.36	44.67	41.48	22.87
5Y	93.90	72.27	56.50	49.71
7Y	172.14	132.92	116.47	67.00
10Y	254.44	215.63	195.87	144.46

Source: Nasdaq, 7/31/2013 – 7/31/2023

The ISE Clean Edge Water Total Return Index (HHOTR) also shows a distinguished value proposition with low-to-moderate correlations to the three Nasdaq benchmarks: NQUSBT (89.41%), Industrials (92.20%), and Utilities (65.77%).

Correlation with Benchmarks

	NQUSBT (%)	INDUSTRIALS (%)	UTILITIES (%)
HHOTR	89.41	92.20	65.77

Source: Nasdaq, 7/31/2013 – 7/31/2023

With 36 stocks in the ISE Clean Edge Water Total Return Index (HHOTR) (much lower than that of the benchmarks it's being compared to here), it should come as no surprise that it is slightly more volatile (than the three benchmarks). But higher volatility doesn't mean that it is riskier. The index's correlation measure and industry exposure suggest that it will be more like an Industrials than a Utilities sector index; its maximum drawdown is more in line with Utilities.

Annualized Volatilities

	HHOTR (%)	NQUSBT (%)	INDUSTRIALS (%)	UTILITIES (%)
1Y	21.00	19.23	19.97	19.05
3Y	19.81	18.77	19.62	17.31
5Y	23.95	22.21	24.02	22.52
7Y	21.46	19.61	21.32	20.25
10Y	20.06	18.04	19.62	18.72

Source: Nasdaq, 7/31/2013 – 7/31/2023

Historical Maximum Drawdown

HHOTR (%)	NQUSBT (%)	INDUSTRIALS (%)	UTILITIES (%)
-36.17	-34.84	-39.55	-36.19

Source: Nasdaq, 7/31/2013 – 7/31/2023

Conclusion

As highlighted in this research report, the global water market is governed by a looming threat of shortage and a rapid expansion in disruptive technologies. Drivers vary by region, but aging infrastructure renovation and replacement will dominate investment soon. Some other key takeaways include:

- As the demand for more accurate, granular water-use data rises, utilities and industries will turn to digital solutions, including smart meters and water quality sensors.
- Extreme weather and a rise in contaminants from industry will drive municipalities and individual consumers alike to find resilient ways to treat, store, and use water.
- Industries and municipalities will invest in alternative freshwater sources, such as wastewater recycling, desalination, and atmospheric water generation.
- Water will become an increasingly important part of ESG portfolios as investors seek to create positive impacts on water infrastructure and drive continued innovation in water efficiency.
- According to Fortune Business Insights and others, the water and wastewater treatment market outlook remains positive.

These developments and continued innovation in this sector create unique opportunities for investing in water. The ISE Clean Edge Water Index (HHO) provides access to U.S.-listed companies active in the global water market. Investors can gain exposure to the index through the First Trust Water ETF (FIW).

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