

Awash with Opportunity Pt 1: Water Supply Solutions Providers

We shine a light on c.155 companies developing the solutions needed for a more sustainable and resilient water system. Key takes: (1) Global water security is projected to worsen, and policymakers are already responding; (2) We divide companies along 2 themes: supply and quality – this note (Pt. 1) maps the former. (3) A selection of names we highlight include Itron (smart water solutions), Thermax (zero liquid discharge systems) and Kuraray (water reuse).

Now is the time for investors to consider the water availability/supply theme, for three reasons. (1) Worsening water scarcity and stress due to climate change; (2) Regulatory tailwinds for water availability solutions; (3) Recent examples demonstrating the materiality of water supply risks.

One company's water risk may be another's opportunity. Our [previous research](#) indicated that surface and groundwater supply are the ecosystem services most material to company performance. The materiality of water supply risks to companies highlights the need for corporates to invest in solutions. Companies who provide such solutions may therefore see tailwinds as physical and regulatory risks increase in significance.

Two dimensions of water security: Adequate Quantities and Acceptable Quality. To inform our taxonomy of water security-related names, we use the UN Water definition of water security to draw out two dimensions of a resilient water system: (1) Access to **adequate quantities** of water (examined in this note); and (2) Access to **acceptable quality** of water (to follow in a second note). We then break these two dimensions out into multiple sub-categories, e.g., Desalination, Geospatial Analysis, Smart Water Solutions (Chart 1) and map companies against each one.

We highlight companies providing solutions within the "Adequate Quantities" theme. Examples of companies developing the solutions needed for a more sustainable and resilient water system include Itron and Eltek (smart water solutions, including leak detection) H2O Innovation and Kuraray Co. Ltd (advanced solutions for water reuse), Thermax Ltd. (zero liquid discharge systems) and AECOM (water supply, watershed restoration and desalination), with more listed within this note. Solutions providers within the 'Acceptable Quality' bucket will be published in a second note. For the full database of the c. 155 corporates we think provide solutions to either securing adequate water supply and/or adequate water quality, please reach out to JEF ESG.

Relevant resources from JEF ESG

[Biodiversity & Nature: Investors Must Focus on Corporate Dependencies on Water](#)

[The UN 2023 Water Conference - A Single Water Action Agenda](#)

[Key Takeaways from the 2023 UN Water Summit](#)

[INVITE–Solutions Series: 374Water \(SCWO\), A Solution for Sustainable Waste Mgmt](#)

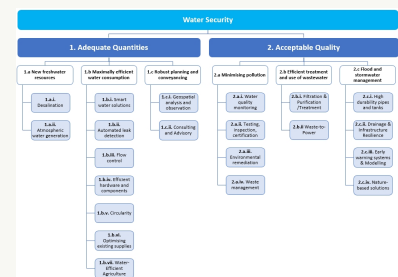
[Advanced Drainage Systems ESG Briefing: Bullish on Active Wastewater Treatment](#)

[Using Cutting Edge Data and Science to Assess Water Constraints in Mining](#)

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For the full database of the c. 155 corporates we think provide solutions to either securing adequate water supply and/or adequate water quality, please reach out to JEF ESG.

Chart 1 - JEF ESG's 'Working Taxonomy' of investment opportunities to emerge from water security issues



Source: Jefferies Research

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Water Security - One company's risk is another's opportunity

The UN has warned that 'vampiric overconsumption', industrial demand and global heating will lead to worsening water security in the future.

While numerous companies are exposed to this risk, many listed corporations are developing the solutions that will underpin a more sustainable and resilient water system.

In this note, we shine a light on these solutions providers. To inform our taxonomy of water security-related names, we use the UN Water definition of *water security*:

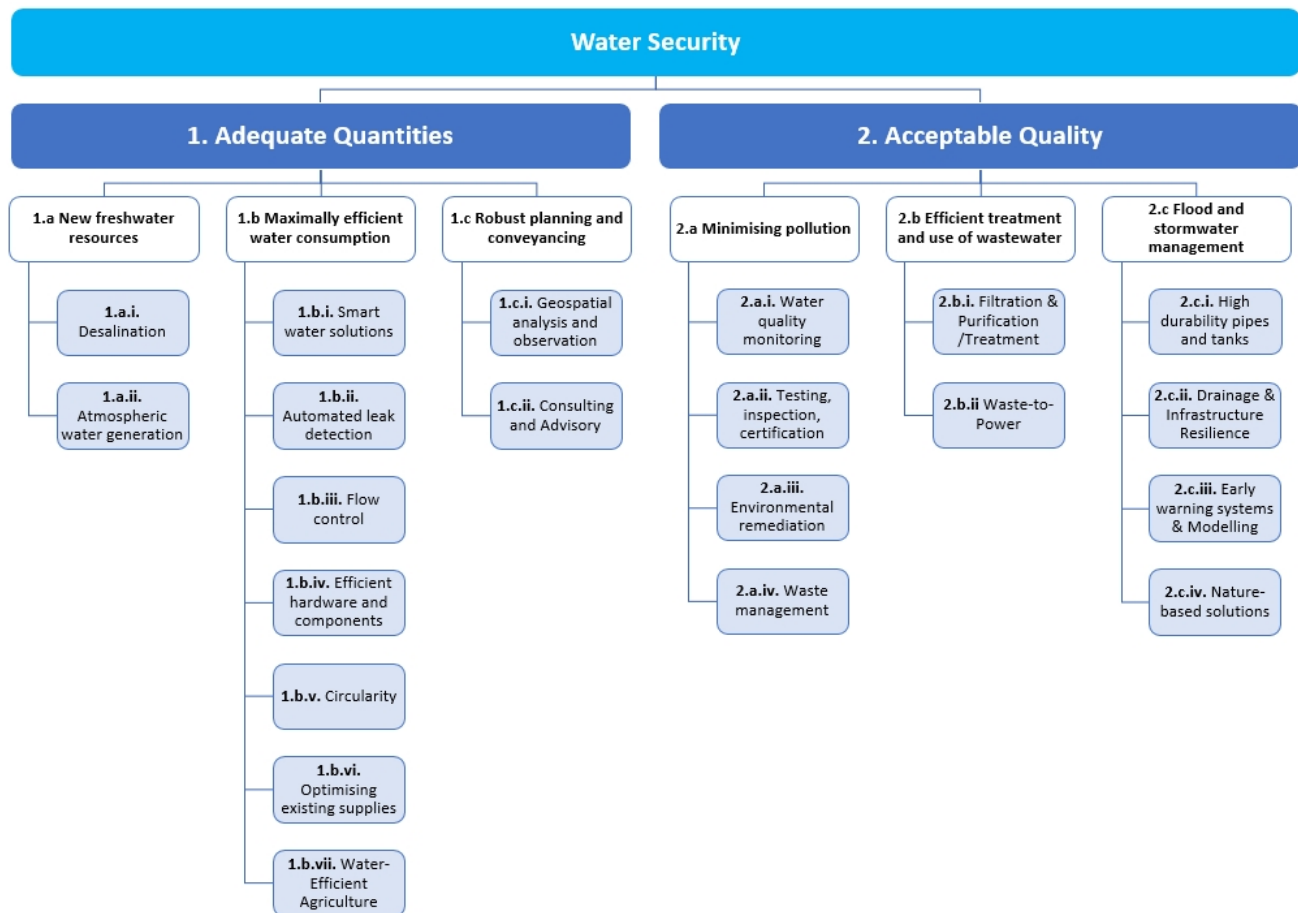
"The capacity of a population to safeguard sustainable access to adequate quantities of acceptable quality water for sustaining livelihoods, human well-being, and socio-economic development, for ensuring protection against water-borne pollution and water-related disasters, and for preserving ecosystems in a climate of peace and political stability."

From this we draw out two challenges that sit at the heart of the water security crisis that companies are looking to solve:

- Access to **adequate quantities** of water ("supply"); and
- Access to **acceptable quality** of water ("quality").

We then breakdown these two core investment themes into a range of sub-sectors (Chart 1), which form the structure of our tables of companies with exposure to these opportunities (Tables 1-12).

Chart 2 - JEF ESG's 'Working Taxonomy' of investment opportunities to emerge from water security issues



Source: Jefferies Research

In this report, we highlight companies providing solutions within the **adequate quantities** theme, with solutions providers within 'Acceptable Quality' to be published in a second note. See below for a brief explanation of each sub-category in the adequate quantities theme.

1.a. New Freshwater Resources

- **1.a.i. Desalination:** Generally refers to removing salt from seawater to render it potable - an alternative to surface and groundwater abstraction
- **1.a.ii. Atmospheric Water Generation:** Producing potable water by condensing water vapour from surrounding air - another alternative to surface and groundwater abstraction

1.b. Maximally Efficient Water Consumption

- **1.b.i. Smart Water Solutions:** Technologies such as 5G and IoT enable efficient monitoring and management system which can boost water loss prevention, improve portable water supply, and increase overall efficiency
- **1.b.ii. Automated Leak Detection:** Water transmission pipelines regularly lose an average of 20-30% of transmitted water, increasing to 50% in certain older systems (El-Zaheb, 2019). The main reason for this is leakages. Automated solutions address many of the inefficiencies in traditional leakage management.
- **1.b.iii. Flow Control:** Flow controls restrict water flow to a certain rate, enabling delivery of specific amounts of water (i.e., no more than necessary) to particular areas
- **1.b.iv. Efficient Hardware and Components:** Effective, well-maintained equipment and components are key to reducing operational inefficiencies in the water system

- **1.b.v. Circularity:** Increased water reuse allows for less abstraction from surface and groundwater sources
- **1.b.vi. Optimising Existing Supplies:** Operation, modernization and expansion of existing water supply systems boosts resource efficiency and availability
- **1.b.vii. Water-Efficient Agriculture:** Agriculture accounts for 70% of freshwater use globally (Source: World Bank). Reducing the agriculture sector's reliance on freshwater would free up supplies for reallocation elsewhere.

1.c. Robust Planning and Conveyancing

- **1.c.i. Geospatial Analysis and Observation:** GIS technology allows for improved water resource planning and decision-making, for example through improved watershed analysis and/or modelling of the effects of extreme weather events on water availability and drought resilience.
- **1.c.ii. Consulting, Conveyancing and Advisory Services:** As water scarcity increases, and regulatory scrutiny on water consumption heightens, consultants and other parties with specialist expertise may see increased demand for their services.

Why now?

We think it is time for investors to better understand the investment opportunities to emerge from the need to secure access to adequate quantities of water. There are three main drivers behind why investors should consider this investment theme:

1. Water scarcity and stress due to climate change
2. Regulatory tailwinds for water availability solutions
3. Recent examples demonstrating the materiality of water supply risks and, therefore, the need for corporates to invest in solutions.

We go into each in more detail below.

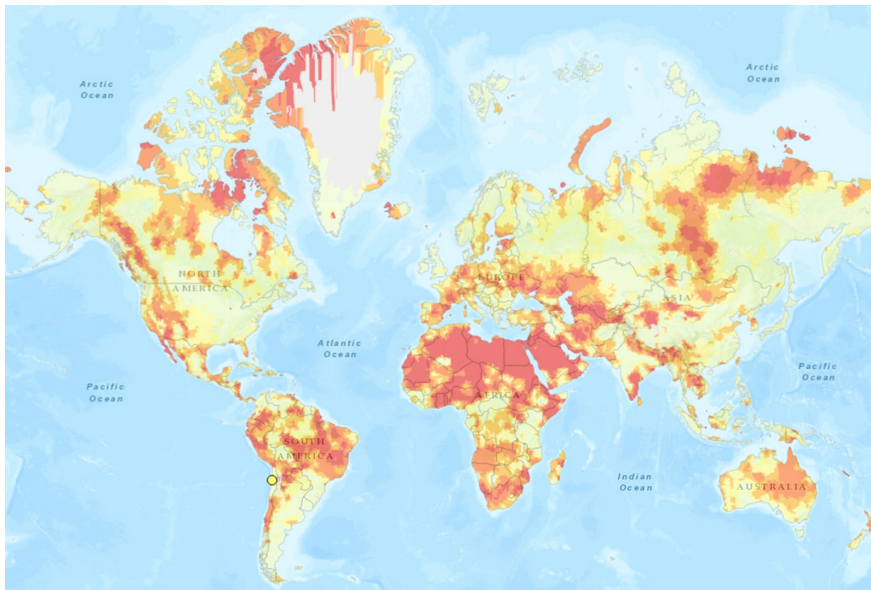
1. Water scarcity and stress due to climate change and population growth

Climate change affects global water availability via increased extreme weather events (floods and droughts), sea-level rise and saltwater contamination of coastal aquifers, and changes in snow cover, lake and river ice and permafrost. Per IPCC AR6, the increased frequency and the severity of agricultural/ ecological droughts over the last decades in the Mediterranean and western North America can be attributed to anthropogenic warming.

According to one projection cited by the Global Commission on the Economics of Water, 2/3 of global land will experience a reduction in terrestrial water storage by 2070, by which time the land area subject to extreme-to-exception hydrological droughts could more than double (Pokhrel et al., 2021) (Exhibit 2). Parts of South America, Mediterranean Europe and North Africa are all projected to suffer unprecedented and extreme drought conditions by 2050 (Satoh et al., 2022).

Population growth and changes in per capita food, feed, fibre, timber and energy consumption are an additional driver of water stress and scarcity. Blue water withdrawals, driven mainly by increased freshwater and land use for agriculture, have increased from 500 km³ in 1900 to over 4000 km³ in 2022 (Ritchie and Roser, 2022b; Müller Schmied et al., 2021; Boretti and Rosa, 2019; UNESCO and UN, 2019).

Exhibit 1 - Global Drought Frequency Probability



Source: WWF Water Risk Filter, Jefferies Research

Indicator definition, from WWF: "The Standardized Precipitation and Evaporation Index (SPEI) is a multi-scalar drought index applying both precipitation and temperature data to detect, monitor and analyze different drought types and impacts in the context of global warming. This risk indicator was computed using the monthly time series of the SPEI 36-month time scale and applying the relative frequency approach – the ratio of the number of months when index is below or equal to events of moderate magnitude (SPEI < -1) to the total number of possible outcomes, considering the last 10 years (August 2011 – July 2021) as reference period."

2. Regulatory tailwinds for water availability solutions

US

The Inflation Reduction Act and Bipartisan Infrastructure Law together include \$15.4bn to enhance resilience to drought, particularly in the Colorado River Basin (\$4.6bn from the IRA). The Biden-Harris Administration's stated aims for the funding include:

- Immediately reducing water demand throughout the Colorado River System, through incentives for voluntary water conservation
- Maximising water resources, by investing in infrastructure upgrades and long-term strategies to improve water efficiency, desalination, reuse, storage, and recycling

The Infrastructure Investment and Jobs Act (IIJA) is a significant expansion of funding (\$55bn) aimed at spurring water projects across the US. While mostly concentrated on improving water *quality*, the provisions also include:

- \$1.15bn over 5 years for feasibility studies and construction of water storage, groundwater storage and conveyance projects, including small-scale storage and groundwater projects
- \$1bn over 5 years for water recycling and reuse projects, as well as a competitive grant program for large-scale water recycling and reuse programmes
- \$250mm over 5 years to be awarded through competitive grants to public water systems, to increase resilience to natural hazards, extreme weather, and cyber attacks

France

Emmanuel Macron presented his "Water Plan" on the 30th of March, in the face of persistent drought conditions in France. According to Macron, 2,000 French municipalities experienced water supply problems last year, of which 340 were supplied by tankers and 200 with bottled

water. The plan set out around 50 measures to share, reuse and save water, with the objectives of promoting conservative water use, optimising water availability, and preserving water quality. Some highlights:

- A "progressive water pricing system" to reduce "comfort" usage (beyond the first few cubic metres essential for daily life)
- -10% target on water withdrawals across all sectors by 2030
- A phase-out of authorizations for abstraction beyond sustainable levels for watershed

UK

The UK published its 'National Policy Statement for water resources infrastructure' on April 17th. Highlights include:

- £1.6 billion of new, accelerated investment by water companies to spend on infrastructure to tackle pollution and increase water resilience
- New plans to restrict the use of 'forever' chemicals (PFAS) found in rivers and seas
- Increasing permit charges on water companies to fund more EA water company inspections, with new inspection targets
- Streamlining the planning process for water supply infrastructure

International

The recent UN Water Summit, the first of its kind for 50 years, is an additional indicator of renewed interest from policymakers in the water theme. See our previous work on the Summit for further details ([The UN 2023 Water Conference - A Single Water Action Agenda](#); [Key Takeaways from the 2023 UN Water Summit](#)).

EU Taxonomy

The incoming taxonomy criteria for economic activities that contribute substantially to the "sustainable use and protection of water and marine resources" (open for consultation until May 3) includes a number of water scarcity solutions, including:

- Manufacture, installation and associated services for leakage control technologies (e.g. control valves, pressure transmitters, flow meters and communication devices)
- Nature-based solutions for flood and drought risk management
- IT/OT data-driven solutions for leakage reduction

The taxonomy aims to afford aligned corporates with a stronger ability to attract public/blended finance, lower cost of capital vs. peers, greater investor interest, etc. Investors may therefore wish to seek companies whose solutions fit into these buckets and align with the EU's detailed criteria.

3. Case studies: Water supply risks are material, creating the need for solutions

We set out two case studies in which water scarcity, specifically, has impacted company valuations. Both involve sectors with a highly material dependency on water-related ecosystem services - see our note [Biodiversity & Nature: Investors Must Focus on Corporate Dependencies on Water](#) to understand how we came to this conclusion and how our methodology can be used for portfolio-level risk assessment.

a) Ence Energía y Celulosa SA | HOLD (ENC SM | €3.60 | PT: €4.20 | % to PT: +17%)

On the 20th of July 2022, regional authorities ordered ENCE to temporarily stop industrial operations at its Pontevedra pulp facility after certain ecological parameters in the flow of the Lerez River, from which Ence draws water for production, fell below minimum levels due to the ongoing dry weather in the region.

Our Pulp, Paper and Packaging Analyst, **Cole Hathorn**, noted that this was a €31m drag on EBITDA in 3Q22, and €16m in 4Q22. Approximately c.20% impact to FY2022 EBITDA. In response, ENCE has developed an innovative solution for drought situations that allows it to regenerate the water from mills' effluent and that from the adjacent public waste water treatment plant (WWTP) to minimize the river water consumption when its flow level drops.

See Cole's previous notes for further details ([First View: Positive 515kT Pontevedra Pulp Mill Ruling: Expect Shares Higher](#); [First View: 4Q22 EBITDA Broadly In-Line; Special Dividend Supportive](#); [3Q22 Recap: Pulp Robust Despite Downtime & Further Opportunities in Energy](#)).

b) Constellation Brands, 2018

Constellation Brands' planned construction of a \$1.4bn brewery in Mexicali (Mexico) for the brewing of beer for export - including for Corona, Modelo and Pacifico - was rejected by way of plebiscite, on grounds of severe water shortages in the already arid region. 76.1% of voters cast ballots against the brewery's construction.

Constellation Brands shares fell by more than 10% on the news.

Providers of solutions to adequate water availability/supply

We have used a combination of analysis of water-themed fund holdings, using Morningstar, and our own research, to put together a list of companies that provide solutions that enhance access to water availability and supply.

For the full database of 155 corporates exposed to 'water security' (availability + quality), please reach out to JEF ESG.

1.a.i. Desalination

Table 1 - Companies with exposure to Desalination

								1.a.i. Desalination	
Security Name	Ticker	Mkt Cap	AMS GeoRe	APAC GeoRe	EUR GeoRe	MEA GeoRe	Country of listing	Water solution offered	
LG Chem Ltd.	051910-KRX	59,838,398	17.45%	59.47%	22.15%	0.94%	SOUTH KOREA	RO membranes and technical services for the desalination market	
Energy Recovery, Inc.	ERII	1,388	6.83%	19.73%	4.71%	68.73%	UNITED STATES	Pressure-exchanger technology that reduces the energy cost required for desalination	
Beijing Enterprises Water Group Limited	371-HKG	19,691	0.00%	99.48%	0.52%	0.00%	HONG KONG	Segments: 1) Sewage, Reclaimed Water and Construction: construction and operation of sewage and reclaimed water treatment plants, the construction of a seawater desalination plants and the provision of construction services for comprehensive renovation projects; 2) Water Distribution Services: distribution and sales of piped water and the provision of related services; 3) Technical and Consultancy Services: consultancy services related to sewage treatment and construction for comprehensive renovation projects, the sales of machinery, as well as the licensing of technical knowledge related to sewage treatment.	
AECOM	ACM	11,362	75.61%	12.28%	8.75%	3.36%	UNITED STATES	Drinking water treatment and supply, Indirect and potable reuse, Tunnels, conveyance, collection and distribution, Brackish and seawater desalination, Biosolids, energy recovery and optimization, Industrial water, Wastewater treatment, Watershed and ecosystems restoration, management and planning, Dams and hydropower, Flood and coastal resilience, Irrigation, Mining, Disaster response and recovery	
DuPont de Nemours, Inc.	DD	32,350	36.89%	46.26%	10.92%	5.93%	UNITED STATES	Water filtration and desalination. Technologies include Ultrafiltration (UF), Nanofiltration(NF), Reverse Osmosis (RO) Ion Exchange (IX), Electrodeionization (EDI), Membrane Degasification, Biofouling Prevention, Membrane Bioreactor Systems (MBR), Membrane Aerated Biofilm Reactor Modules (MABR) and Closed Circuit Reverse Osmosis (CCRO)	
Sulzer AG	SUN-SWX	2,578	35.94%	26.08%	26.21%	11.78%	SWITZERLAND	Desalination, water supply, water transport, flood control, water and wastewater treatment, dewatering services	
Thermax Limited.	500411-BOM	269,883	8.56%	82.35%	6.76%	2.33%	INDIA	Provider of water treatment, wastewater treatment/ recycle and Zero Liquid Discharge solutions, sewage treatment/recycle and desalination plants	
Hitachi Zosen Corporation	7004-TKS	145,363	4.53%	70.23%	16.03%	9.20%	JAPAN	Providing desalination, water, industrial wastewater and sewage treatment services, waste-to-power and waste-to-value, and after-sales services (such as maintenance) for water and wastewater treatment systems	
Azelio AB	AZELIO-OME	142	16.67%	19.14%	60.11%	4.07%	SWEDEN	Energy solutions for wastewater treatment, desalination, and water purification	
Toray Industries	3402-TKS	2,433	77.69%	7.24%	12.53%	2.55%	JAPAN	Provider of water treatment membrane products, from reverse osmosis (RO) membranes used in desalination, to ultrafiltration (UF) and microfiltration (MF) membrane modules for water supply purification, and membrane bioreactor (MBR) modules used to treat wastewater	
Parker Hannifin	PH-USA	49,866	56.07%	21.16%	16.16%	6.61%	UNITED STATES	Motion and control technology specialist; provides water filtration and purification systems as well as desalination	
Consolidated Water Co. Ltd	CWCO-USA	541	67.79%	6.32%	21.68%	4.21%	UNITED STATES	Developer and operator of water supply and treatment plants and water distribution systems; provider of potable water from seawater	

Source: Factset, Jefferies Research

1.a.ii. Atmospheric Water Generation

Table 2 - JEF ESG is aware of only one listed company with exposure to atmospheric water generation

								1.a.ii. Atmospheric Water Generation	
Security Name	Ticker	Mkt Cap	GeoRev %	GeoRev %	GeoRev %	GeoRev %	Country of listing	Water solution offered	
Water Technologies International, Inc.	WTII-USA	0	100.00%	0.00%	0.00%	0.00%	UNITED STATES	Through GR8 Water, producer of commercial atmospheric water generators	

1.b.i. & 1.b.ii. Smart Water Solutions and Automated Leak Detection

Companies providing smart water solutions and automated leak detection

1.b.i. Smart water solutions and 1.b.ii. Automated Leak Detection								Water solution offered
Security Name	Ticker	Mkt Cap	GeoRev %	GeoRev %	GeoRev %	GeoRev %	Country of listing	
ENGIE SA.	ENGI-PAR	37,070	11.62%	6.70%	78.67%	3.01%	FRANCE	Managing water and wastewater bills, identifying sites with abnormally high water usage and conducting water efficiency studies (Via ENGIE Impact's Water Management services)
Ecolab Inc.	ECL	47,502	62.14%	14.38%	20.88%	2.60%	UNITED STATES	Water use reduction services for corporates, including auditing, consulting, engineering, advanced chemistries, digital technologies and site-based assessments
Tetra Tech, Inc.	TTEK	7,540	78.35%	7.39%	14.26%	0.00%	UNITED STATES	Providing water operational technology (OT) and cybersecurity, data analytics, planning, as well as maintenance and improvements to existing water supply infrastructure; supplying water, treating stormwater and wastewater; flood control and restoration tools; watershed protection.
Etek Ltd	ELTK	24	15.35%	19.92%	9.19%	55.54%	UNITED STATES	Providing flow control solutions, smart water management and leak detection
Xylem Inc.	XYL	18,457	48.83%	20.45%	27.06%	3.65%	UNITED STATES	Designing, manufacturing and providing smart solutions and hardware for water and wastewater applications addressing the full-cycle of water from collection, distribution, and use to the return of water to the environment. Products include water and wastewater pumps, treatment and testing equipment, industrial pumps, valves, heat exchangers, and dispensing equipment
Itron, Inc.	ITRI	2,456	73.94%	4.25%	14.13%	7.68%	UNITED STATES	Providing solutions to measure, manage and analyze energy, gas and water usage, including metering systems, standard meters, next-generation smart metering products and services and disaster relief
Badger Meter, Inc.	BMI	3,532	90.18%	2.93%	5.08%	1.81%	UNITED STATES	Smart water solutions, including flow measurement, water quality and control products
Applied Industrial Technologies, Inc.	AIT	5,129	96.27%	3.73%	0.00%	0.00%	UNITED STATES	Specialty flow control and automation solutions
Keyence Corporation	6861-TKS	14,582,733	18.39%	64.42%	13.18%	4.00%	JAPAN	Manufacturer of sensors, machine vision systems, and other factory automation products, including for monitoring of liquid pressure
Halma plc	HLMA-LON	8,272	42.34%	16.44%	37.70%	3.51%	UNITED KINGDOM	Smart solutions including acoustic leak detection that can be combined with cellular connectivity and digital early warning systems for sewer blockages and sewer overflows
Bentley Systems, Incorporated Class B	BSY	12,184	53.21%	18.33%	18.44%	10.02%	UNITED STATES	Decision-support software for the design, planning, and operation of water distribution systems
Flowserve Corporation	FLS	4,310	49.22%	19.21%	18.48%	13.09%	UNITED STATES	Manufacturer of fluid motion and control products
Cisco Systems,	CSCO	208,846	57.83%	15.57%	17.24%	9.37%	UNITED STATES	Smart water solutions, including flood monitoring, water quality monitoring, condition-based monitoring for water and wastewater systems, advanced metering infrastructure and IoT readiness for water systems
Evoqua Water Technologies Corp	AQUA	5,961	85.55%	8.22%	6.23%	0.00%	UNITED STATES	Provider of aerobic and anaerobic wastewater treatment, carbon and resin, clarifiers and separators, covers and liners, digital water systems, disinfection systems, filtration systems and high purity water systems (to be acquired by Xylem)
ADT, Inc.	ADT	6,465	100.00%	0.00%	0.00%	0.00%	UNITED STATES	Smart leak detection and alarms
Autodesk, Inc.	ADSK	42,615	41.80%	20.12%	24.67%	13.41%	UNITED STATES	Water infrastructure software, including for optimised drainage design, stormwater, wastewater and flood modelling, water distribution modelling, asset management and cloud-based operational analytics
Rockwell Automation	ROK-USA	32,067	54.04%	22.89%	19.84%	3.24%	UNITED STATES	Automated water and wastewater treatment solutions provider
Emerson Electric Co.	EMR-USA	65,149	70.40%	10.53%	19.07%	0.00%	UNITED STATES	Industrial automation and controls for water and wastewater
Veolia Environnement SA	VIE-PAR	20,851	12.43%	15.12%	64.58%	7.88%	FRANCE	Drinking water supply, treatment and distribution, wastewater treatment solutions, waste collection, waste-to-energy processing, hazardous waste processing.

Source: Factset, Jefferies Research

1.b.iii. Flow Control

Table 3 - Companies providing flow control solutions

1.b.iii. Flow Control								Water solution offered
Security Name	Ticker	Mkt Cap	GeoRev %	GeoRev %	GeoRev %	GeoRev %	Country of listing	
Tetra Tech, Inc.	TTEK	7,540	78.35%	7.39%	14.26%	0.00%	UNITED STATES	Providing water operational technology (OT) and cybersecurity, data analytics, planning, as well as maintenance and improvements to existing water supply infrastructure; supplying water, treating stormwater and wastewater; flood control and restoration tools; watershed protection.
Etek Ltd	ELTK	24	15.35%	19.92%	9.19%	55.54%	UNITED STATES	Providing flow control solutions, smart water management and leak detection
Watts Water Technologies, Inc. Class A	WTS	5,265	70.22%	2.91%	25.21%	1.66%	UNITED STATES	Providing plumbing, heating, and water quality solutions for residential, industrial, municipal, and commercial usages. Product portfolio comprises residential and also commercial flow control products e.g. backflow preventers, water pressure regulators, temperature and pressure relief valves, and thermostatic mixing valves. Water quality products include point of use and point of entry water filtration, conditioning, and scale prevention systems.
Franklin Electric Co., Inc.	FELE	4,105	82.01%	6.66%	7.49%	3.85%	UNITED STATES	Manufacturing and distribution of products and systems for the movement and management of water (and fuel). Products include pumps, motors, drives, and controls
Applied Industrial Technologies, Inc.	AIT	5,129	96.27%	3.73%	0.00%	0.00%	UNITED STATES	Specialty flow control and automation solutions
Keyence Corporation	6861-TKS	14,582,733	18.39%	64.42%	13.18%	4.00%	JAPAN	Manufacturer of sensors, machine vision systems, and other factory automation products, including for monitoring of liquid pressure
Flowserve Corporation	FLS	4,310	49.22%	19.21%	18.48%	13.09%	UNITED STATES	Manufacturer of fluid motion and control products
Rotork plc	ROR-LON	2,686	27.06%	33.25%	31.90%	7.79%	UNITED KINGDOM	Manufacturer of industrial flow control equipment
Nordson	NDSN-USA	16,656	57.10%	16.96%	23.08%	2.86%	UNITED STATES	Provider of tempered water systems and precision fluid dispensing systems and equipment
Ilex	IEX-USA	22,807	47.34%	23.95%	20.76%	7.96%	UNITED STATES	Providers of fluid and metering technologies such as industrial water pumps, valves and flow meters, as well as water testing solutions
Parker Hannifin	PH-USA	49,866	56.07%	21.16%	16.16%	6.61%	UNITED STATES	Motion and control technology specialist; provides water filtration and purification systems as well as desalination
Emerson Electric Co.	EMR-USA	65,149	70.40%	10.53%	19.07%	0.00%	UNITED STATES	Industrial automation and controls for water and wastewater
Zurn Elkay Water Solutions	ZWS-USA	926	0.00%	0.00%	0.00%	0.00%	UNITED STATES	Designs, procures, manufactures, and markets a range of clean water solutions for drinking water, hygiene, and sustainable water management. Product portfolio includes water controls, safety systems, water distribution and drainage, drinking water, plumbing, and hygienic, environmental and site works products for public and private spaces

Source: Factset, Jefferies Research

1.b.iv. Efficient Hardware and Components

Table 4 - Companies who manufacture and/or maintain efficient hardware or components for water systems

1.b.iv. Efficient hardware and components								Water solution offered
Security Name	Ticker	Mkt Cap	GeoRev %	GeoRev %	GeoRev %	GeoRev %	Country of listing	
Pentair plc	PNR	8,813	73.99%	12.05%	11.85%	2.11%	UNITED STATES	Domestic water softening and filtration, Filtration components including pressure and storage tanks, membrane filtration, brine tanks, commercial filtration hardware, pumps that recirculate water within an HVAC loop
Northwest Pipe Company	NWPX	284	100.00%	0.00%	0.00%	0.00%	UNITED STATES	Largest manufacturer of engineered welded steel pipe water systems in North America
Eastern Water Resources Development & Mgmt Public Co. Ltd.	EASTW-BKK	8,252	0.00%	100.00%	0.00%	0.00%	THAILAND	Supplying water to seven provinces in the eastern seaboard of Thailand; providing consultancy services for clean water production and water distribution, as well as maintenance of water pipelines and related equipment
Cia de Saneamento do Parana SA - Sanepar Pfd	SAPRA-BSP	5,481	100.00%	0.00%	0.00%	0.00%	BRAZIL	Water distribution, collection, and provision of sewage treatment infrastructure; collecting and processing of solid waste; consulting services and technical assistance
Eltek Ltd	ELTK	24	15.35%	19.92%	9.19%	55.54%	UNITED STATES	Providing flow control solutions, smart water management and leak detection
Xylem Inc.	XYL	18,457	48.83%	20.45%	27.06%	3.65%	UNITED STATES	Designing, manufacturing and providing smart solutions and hardware for water and wastewater applications addressing the full-cycle of water from collection, distribution, and use to the return of water to the environment. Products include water and wastewater pumps, treatment and testing equipment, industrial pumps, valves, heat exchangers, and dispensing equipment
Watts Water Technologies, Inc. Class A	WTS	5,265	70.22%	2.91%	25.21%	1.66%	UNITED STATES	Providing plumbing, heating, and water quality solutions for residential, industrial, municipal, and commercial usages. Product portfolio comprises residential and also commercial flow control products e.g. backflow preventers, water pressure regulators, temperature and pressure relief valves, and thermostatic mixing valves. Water quality products include point of use and point of entry water filtration, conditioning, and scale prevention systems.
KSB SE & Co. KGaA	KSB-ETR	927	17.50%	26.34%	46.51%	9.65%	GERMANY	Manufacturing pumps and valves, including for fresh water, waste water, water reuse and flood control
Tsurumi Manufacturing Co., Ltd.	6351-TKS	56,458	18.44%	81.56%	0.00%	0.00%	JAPAN	Providing water pumps and water treatment equipment
Gorman-Rupp Company	GRC	644	75.87%	12.75%	8.22%	3.15%	UNITED STATES	Manufactures pumps for municipal, water, wastewater, sewage, industrial, construction, petroleum, fire, and OEM markets
Spirax-Sarco Engineering PLC	SPX-LON	8,425	33.25%	24.86%	34.01%	7.88%	UNITED KINGDOM	British manufacturer of steam management systems and peristaltic pumps and associated fluid path technologies
Geberit AG	GEBN-SWX	17,611	3.16%	3.83%	90.18%	2.83%	SWITZERLAND	Manufacturer of high-performance sanitary products, e.g. faucets and flushing systems, traps and drains
METAWATER Co.Ltd.	9551-TKS	83,768	9.70%	88.60%	1.30%	0.40%	JAPAN	Design, construction, repair, maintenance and operation management of mechanical and electrical equipment for water purification plants, sewage treatment plants and waste treatment facilities
Franklin Electric Co., Inc.	FELE	4,105	82.01%	6.66%	7.49%	3.85%	UNITED STATES	Manufacturing and distribution of products and systems for the movement and management of water (and fuel). Products include pumps, motors, drives, and controls
Interpump Group S.p.A.	IP-MIL	5,203	28.65%	14.53%	53.02%	3.80%	ITALY	Producer of high and very high pressure water pumps. Two segments: 1) water jetting segment manufactures high- and ultra-high-pressure pumps; 2) hydraulic segment manufactures power take-offs, cylinders, componentry engineering, hydraulic distributors, valves, and hoses and fittings
W.W. Grainger, Inc.	GWV	32,779	85.31%	12.97%	1.25%	0.48%	UNITED STATES	Business-to-business distributor of maintenance, repair and operating (MRO) services including pumps, plumbing and test equipment
Orion Engineered Carbons SA	OEC	1,547	35.76%	17.95%	42.48%	3.80%	UNITED STATES	Specialises in carbon black, including for use in pipes for water transportation
Regal Rexnord Corporation	RRX	8,684	75.58%	9.67%	12.02%	2.73%	UNITED STATES	Provider of components for water and wastewater systems, including AC drives and controls, bearings, mechanical drives and motors
Advanced Drainage Systems, Inc.	WMS	6,519	97.47%	0.00%	1.98%	0.55%	UNITED STATES	High performance and durability pipes
Chart Industries, Inc.	GTLS	4,756	60.96%	14.66%	17.62%	6.75%	UNITED STATES	Provider of contaminant removal, oxygenation, pH adjustment, oxidation and odor control solutions
Clean Harbors, Inc.	CLH	7,412	100.00%	0.00%	0.00%	0.00%	UNITED STATES	Environmental remediation; treatment technologies for liquid and semi-liquid hazardous and non-hazardous wastewater
Ebara Corporation	6361-TKS	545,209	19.89%	73.63%	0.00%	6.48%	JAPAN	Provider of water treatment plants, as well as engineering, construction, operations, and maintenance services for hydroelectric power plants

Source: Factset, Jefferies Research

1.b.iv. Efficient Hardware and Components (Cont.)

Table 5 - Companies who manufacture and/or maintain efficient hardware or components for water systems

1.b.iv. Efficient hardware and components								
Security Name	Ticker	Mkt Cap	GeoRev %	GeoRev %	GeoRev %	GeoRev %	Country of listing	Water solution offered
Hitachi Zosen Corporation	7004-TKS	145,363	4.53%	70.23%	16.03%	9.20%	JAPAN	Providing desalination, water, industrial wastewater and sewage treatment services, waste-to-power and waste-to-value, and after-sales services (such as maintenance) for water and wastewater treatment systems
Wartsila Oyj Abp	WRTIV-HEL	5,116	35.30%	28.48%	29.41%	6.82%	FINLAND	Provider of ballast water treatment systems and waste and wastewater treatment services for the marine industry
Keshun Waterproof Technologies Co., Ltd. Class A	300737-SHE	14,371	0.00%	100.00%	0.00%	0.00%	CHINA	Waterproof materials e.g. waterproofing membrane and waterproof coating, as well as waterproof engineering construction (waterproofing helps prevent flooding)
H2O Innovation Inc	HEO-TSE	241	84.65%	3.99%	6.03%	5.34%	CANADA	Provider of 1) membrane technologies and engineering expertise to deliver equipment and services to municipal and industrial water, wastewater, and water reuse customers; 2) specialty chemicals, consumables and engineered products for the global water treatment industry, and 3) contract operations and associated services for water and wastewater treatment systems
Generac	GNRC-USA	7,594	74.39%	6.56%	14.18%	4.86%	UNITED STATES	High performance pumps
The Middleby Corporation	MIDD-USA	10,471	73.83%	22.44%	2.91%	0.82%	UNITED STATES	Water filtration parts provider
Idex	IEX-USA	22,807	47.34%	23.95%	20.76%	7.96%	UNITED STATES	Providers of fluid and metering technologies such as industrial water pumps, valves and flow meters, as well as water testing solutions
Ingersoll Rand Inc	IR-USA	31,779	67.46%	14.02%	12.00%	6.52%	UNITED STATES	Producer of hardware for wastewater and water treatment systems
Eaton	ETN-USA	3,680	98.89%	0.59%	0.38%	0.15%	UNITED STATES	Provider of customized water and wastewater solutions, including pumps and controls
Ceco Environmental Corp	CECO-USA	53	100.00%	0.00%	0.00%	0.00%	UNITED STATES	Provides engineered technologies to the energy, environmental, and fluid handling and filtration industrial segments, including in water and wastewater management

Source: Factset, Jefferies Research

1.b.v. Circularity

Table 6 - Companies enabling greater circularity in the water system

1.b.v. Circularity								
Security Name	Ticker	Mkt Cap	GeoRev %	GeoRev %	GeoRev %	GeoRev %	Country of listing	Water solution offered
AECOM	ACM	11,362	75.61%	12.28%	8.75%	3.36%	UNITED STATES	Drinking water treatment and supply, Indirect and potable reuse, Tunnels, conveyance, collection and distribution, Brackish and seawater desalination, Biosolids, energy recovery and optimization, Industrial water, Wastewater treatment, Watershed and ecosystems restoration, management and planning, Dams and hydropower, Flood and coastal resilience, Irrigation, Mining, Disaster response and recovery
Thermax Limited.	500411-BOM	269,883	8.56%	82.35%	6.76%	2.33%	INDIA	Provider of water treatment, wastewater treatment/ recycle and Zero Liquid Discharge solutions, sewage treatment/recycle and desalination plants
China Everbright Water Ltd.	U9E-SES	3,058	0.00%	99.93%	0.07%	0.00%	SINGAPORE	Chinese provider of municipal and industrial wastewater treatment, water supply, water recycling, raw water protection, and environmental remediation services
H2O Innovation Inc	HEO-TSE	241	84.65%	3.99%	6.03%	5.34%	CANADA	Provider of 1) membrane technologies and engineering expertise to deliver equipment and services to municipal and industrial water, wastewater, and water reuse customers; 2) specialty chemicals, consumables and engineered products for the global water treatment industry, and 3) contract operations and associated services for water and wastewater treatment systems
AQT Water SA	AQT-WAR	6	0.00%	0.00%	100.00%	0.00%	POLAND	Environmental protection, wastewater treatment, surface water purification, rainwater recycling and management
Kuraray Co. Ltd	3405-TKS	271	100.00%	0.00%	0.00%	0.00%	JAPAN	Activated carbon specialist, with applications for municipal drinking water, water reuse, wastewater, environmental remediation, wastewater treatment, PFAS filtering, water and ultrapure water processing (through Calgon Carbon)

Source: Factset, Jefferies Research

1.b.vi. Optimising Existing Supplies and Infrastructure

Table 7 - Companies with exposure to existing water supplies

1.b.vi. Optimising existing infrastructure and supplies								Water solution offered
Security Name	Ticker	Mkt Cap	GeoRev %	GeoRev %	GeoRev %	GeoRev %	Country of listing	
Miura Co., Ltd.	6005-TKS	412,208	4.67%	95.04%	0.21%	0.07%	JAPAN	Boiler manufacturer that also engages in water filtering and softening, freshwater provision for ships, ballast water management systems and environmental pollution monitoring and reporting
Organo Corp.	6368-TKS	158,782	0.49%	98.99%	0.39%	0.13%	JAPAN	Provider of industrial wastewater treatment, pure and ultrapure water, tap water and sewage treatment
SIC Environment Holdings Ltd.	BHK-SES	502	0.00%	100.00%	0.00%	0.00%	SINGAPORE	Provider of water treatment, solid waste treatment, and water supply
Nephros, Inc.	NEPH-USA	15	100.00%	0.00%	0.00%	0.00%	UNITED STATES	Development and sale of high performance water solutions to the medical and commercial markets in the United States
Clearford Water Systems Inc	CLIRF-USA	--	98.28%	1.46%	0.20%	0.06%	UNITED STATES	Designs and constructs communal water and wastewater infrastructure systems, as well as providing engineering services
United Utilities	UU-LON	7,296	0.00%	0.00%	100.00%	0.00%	UNITED KINGDOM	UK's largest listed water and wastewater company
Pennon Group	PNN-LON	2,221	0.00%	0.00%	100.00%	0.00%	UNITED KINGDOM	Water supplier and wastewater treatment provider (UK)
Primo Water	PRMW	--	0.00%	0.00%	0.00%	0.00%	UNITED STATES	Water supplier, through dispensers. Offers refill and exchange services
Sound Global	967.HKG.HKD-EEA	6,428	86.26%	7.26%	4.68%	1.79%	N/A	Chinese provider of water and wastewater services
Athens Water Supply and Sewerage Company S.A.	EYDAP-ATH	714	0.00%	0.00%	100.00%	0.00%	GREECE	Supplying and refining water, provision of sewerage services and waste management in the region of Attica (Greece)
Thessaloniki Water and Sewerage Company SA	EYAPS-ATH	123	0.00%	0.00%	100.00%	0.00%	GREECE	Supplying water to the Thessaloniki area (Greece), collecting urban wastewater and conveying it to wastewater treatment centres, providing telecom services through water supply and sewerage networks
Original Engineering Consultants Co., Ltd.	4642-TKS	6,230	0.00%	100.00%	0.00%	0.00%	JAPAN	Engineering consulting in the fields of water supply, sewerage works, sanitation and solid waste treatment
NJS Co., Ltd.	2325-TKS	22,457	0.00%	97.91%	0.00%	2.09%	JAPAN	Providing water supply and sewerage systems, stormwater and solid waste management, conservation services for rivers, asset diagnosis and maintenance, risk management
York Water Company	YORW	660	100.00%	0.00%	0.00%	0.00%	UNITED STATES	Supplying, purifying and distributing water, as well as collecting, conveying and treating wastewater
Artesian Resources Corporation Class A	ARTNA	546	100.00%	0.00%	0.00%	0.00%	UNITED STATES	Distributing and selling water (including drinking water) and providing wastewater and sewerage services, as well as designing, engineering and constructing water and wastewater infrastructure
American States Water Company	AWR	3,440	100.00%	0.00%	0.00%	0.00%	UNITED STATES	Providing operations, maintenance and construction management services for water distribution, wastewater collection and treatment.
SJW Group	SJW	2,457	100.00%	0.00%	0.00%	0.00%	UNITED STATES	Processing, distribution, wholesale and retail sale of water
American Water Works Company, Inc.	AWK	29,427	100.00%	0.00%	0.00%	0.00%	UNITED STATES	Distributing and selling water and providing wastewater treatment services
Inversiones Aguas Metropolitanas S.A.	IAM-SGO	549,000	100.00%	0.00%	0.00%	0.00%	CHILE	Providing technical and operating services related to water service management; controlling staking in Aguas Andinas (Chilean water supplier)
Essential Utilities, Inc.	WTRG	11,847	100.00%	0.00%	0.00%	0.00%	UNITED STATES	Providing drinking water and wastewater treatment infrastructure and services

Source: Factset, Jefferies Research

1.b.vi. Optimising Existing Supplies and Infrastructure (Cont.)

Table 8 - Companies with exposure to existing water supplies

1.b.vi. Optimising existing infrastructure and supplies								Water solution offered
Security Name	Ticker	Mkt Cap	GeoRev %	GeoRev %	GeoRev %	GeoRev %	Country of listing	
Eastern Water Resources Development & Mgmt Public Co. Ltd.	EASTW-BKK	8,252	0.00%	100.00%	0.00%	0.00%	THAILAND	Supplying water to seven provinces in the eastern seaboard of Thailand; providing consultancy services for clean water production and water distribution, as well as maintenance of water pipelines and related equipment
Cia de Saneamento do Parana SA - Sanepar Pfd	SAPR4-BSP	5,481	100.00%	0.00%	0.00%	0.00%	BRAZIL	Water distribution, collection, and provision of sewage treatment infrastructure; collecting and processing of solid waste; consulting services and technical assistance
TTW Public Company Limited	TTW-BKK	35,112	0.00%	100.00%	0.00%	0.00%	THAILAND	Producing and selling treated water in Thailand
Guangdong Investment Limited	270-HKG	50,995	0.00%	100.00%	0.00%	0.00%	HONG KONG	Supplying water, sewage treatment and waterworks construction services in China and Hong Kong
Vidler Water Resources, Inc.	001NP2-E	--	100.00%	0.00%	0.00%	0.00%	UNITED STATES	Private water asset development, to solve current or projected water shortages or quality issues for end users and or provide water assets for real estate project developers; permitting and constructing water pipeline projects; water storage projects
China Water Affairs Group Limited	855-HKG	10,610	0.00%	100.00%	0.00%	0.00%	HONG KONG	Providing city water and sewage treatment services, water supply pipe networks, and water meters
AECOM	ACM	11,362	75.61%	12.28%	8.75%	3.36%	UNITED STATES	Drinking water treatment and supply, Indirect and potable reuse, Tunnels, conveyance, collection and distribution, Brackish and seawater desalination, Biosolids, energy recovery and optimization, Industrial water, Wastewater treatment, Watershed and ecosystems restoration, management and planning, Dams and hydropower, Flood and coastal resilience, Irrigation, Mining, Disaster response and recovery
Veolia Environnement SA	VIE-PAR	20851	0.1243	0.1512	0.6458	0.0788	FRANCE	Drinking water supply, treatment and distribution, wastewater treatment solutions, waste collection, waste-to-energy processing, hazardous waste processing.

Source: Factset, Jefferies Research

1.b.vii. Water-Efficient Agriculture

Table 9 - Companies enabling greater water efficiency in the agriculture sector

1.b.vii. Water-Efficient Agriculture								Water solution offered
Security Name	Ticker	Mkt Cap	GeoRev %	GeoRev %	GeoRev %	GeoRev %	Country of listing	
AECOM	ACM	11,362	75.61%	12.28%	8.75%	3.36%	UNITED STATES	Drinking water treatment and supply, Indirect and potable reuse, Tunnels, conveyance, collection and distribution, Brackish and seawater desalination, Biosolids, energy recovery and optimization, Industrial water, Wastewater treatment, Watershed and ecosystems restoration, management and planning, Dams and hydropower, Flood and coastal resilience, Irrigation, Mining, Disaster response and recovery
Corteva	CTVA	--	98.28%	1.46%	0.20%	0.06%	UNITED STATES	Biological solution for drought-stressed crops
Deere & Company	DE	113,148	75.09%	6.72%	16.02%	2.17%	UNITED STATES	Precision agriculture solutions
AGCO Corporation	AGCO	9,350	41.87%	5.93%	49.25%	2.95%	UNITED STATES	Precision agriculture solutions
Jain Irrigation Systems Limited	500219-BOM	21,736	29.61%	44.94%	23.37%	2.09%	INDIA	Providing drip irrigation systems and other water-saving irrigation technologies

Source: Factset, Jefferies Research

1.c.i. Geospatial Analysis and Observation

Table 10 - Companies providing geospatial analysis solutions for the water system

1.c.i. Geospatial analysis and observation								Water solution offered
Security Name	Ticker	Mkt Cap	GeoRev %	GeoRev %	GeoRev %	GeoRev %	Country of listing	
Fugro NV	FUR-AMS	1,338	25.71%	21.70%	38.16%	14.43%	NETHERLANDS	Provider of geo-intelligence and asset integrity solutions
Intel	INTC-USA	131,681	28.71%	60.70%	7.66%	2.93%	UNITED STATES	Geospatial Analytics for Water Management

Source: Factset, Jefferies

1.c.ii. Consulting, Conveyancing and Advisory Services

Table 11 - Companies providing water-focused consulting, conveyancing or advisory services

1.c.ii. Consulting, conveyancing and advisory services								Water solution offered
Security Name	Ticker	Mkt Cap	GeoRev %	GeoRev %	GeoRev %	GeoRev %	Country of listing	
Original Engineering Consultants Co., Ltd.	4642-TKS	6,230	0.00%	100.00%	0.00%	0.00%	JAPAN	Engineering consulting in the fields of water supply, sewerage works, sanitation and solid waste treatment
Gartner, Inc.	IT	25,173	67.59%	9.86%	14.61%	7.94%	UNITED STATES	Consulting for water utilities
Cia de Saneamento do Parana SA - Sanepar Pfd	SAPR4-BSP	5,481	100.00%	0.00%	0.00%	0.00%	BRAZIL	Water distribution, collection, and provision of sewage treatment infrastructure; collecting and processing of solid waste; consulting services and technical assistance
Costain Group PLC	COST-LON	155	0.00%	0.00%	100.00%	0.00%	UNITED KINGDOM	Advisory services, investment capability and maintenance and operations resources for water and wastewater treatment companies
Stantec Inc	STN-TSE	8,684	77.97%	11.74%	9.34%	0.95%	CANADA	Conveyancing, wet weather flow and urban stormwater management, wastewater treatment, water treatment
Vidler Water Resources, Inc.	001NP2-E	--	100.00%	0.00%	0.00%	0.00%	UNITED STATES	Private water asset development, to solve current or projected water shortages or quality issues for end users and or provide water assets for real estate project developers; permitting and constructing water pipeline projects; water storage projects
AECOM	ACM	11,362	75.61%	12.28%	8.75%	3.36%	UNITED STATES	Drinking water treatment and supply, Indirect and potable reuse, Tunnels, conveyance, collection and distribution, Brackish and seawater desalination, Biosolids, energy recovery and optimization, Industrial water, Wastewater treatment, Watershed and ecosystems restoration, management and planning, Dams and hydropower, Flood and coastal resilience, Irrigation, Mining, Disaster response and recovery
Bentley Systems, Incorporated Class B	BSY	12,184	53.21%	18.33%	18.44%	10.02%	UNITED STATES	Decision-support software for the design, planning, and operation of water distribution systems
Montrose Environmental Group Inc	MEG	1,003	100.00%	0.00%	0.00%	0.00%	UNITED STATES	Provider of environmental assessment, compliance, engineering, and design services, primarily to the U.S. federal government; removal of water contaminants including PFAS
Autodesk, Inc.	ADSK	42,615	41.80%	20.12%	24.67%	13.41%	UNITED STATES	Water infrastructure software, including for optimised drainage design, stormwater, wastewater and flood modelling, water distribution modelling, asset management and cloud-based operational analytics
Intertek	ITRK-LON	6,614	35.85%	35.51%	21.78%	6.86%	UNITED KINGDOM	Provider of water testing and quality analysis, as well as water-related consultancy and engineering services
Clearford Water Systems Inc	CLIRF-USA	--	98.28%	1.46%	0.20%	0.06%	UNITED STATES	Designs and constructs communal water and wastewater infrastructure systems, as well as providing engineering services
Centrica	CNA-LON	6,457	4.51%	5.67%	88.42%	1.40%	UNITED KINGDOM	Water efficiency and conservation programs

Source: Factset, Jefferies Research

Company Valuation/Risks

Ence Energia y Celulosa SA

We value ENCE based on SOTP, based on EV/EBITDA multiples for Pulp & Renewable Energy divisions. The key risks: 1) Global pulp S/D dynamics and the global pulp price cycle; 2) renewable energy prices & regulation; 3) raw material sourcing & operational disruption & 4) Pontevedra mill concession/closure

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I, Ahmed Farman, certify that all of the views expressed in this research report accurately reflect my personal views about the subject security(ies) and subject company(ies). I also certify that no part of my compensation was, is, or will be, directly or indirectly, related to the specific recommendations or views expressed in this research report.

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Investment Recommendation Record

(Article 3(1)e and Article 7 of MAR)

Recommendation Published	April 24, 2023 , 13:43 ET.
Recommendation Distributed	April 25, 2023 , 01:00 ET.

Explanation of Jefferies Ratings

Buy - Describes securities that we expect to provide a total return (price appreciation plus yield) of 15% or more within a 12-month period.

Hold - Describes securities that we expect to provide a total return (price appreciation plus yield) of plus 15% or minus 10% within a 12-month period.

Underperform - Describes securities that we expect to provide a total return (price appreciation plus yield) of minus 10% or less within a 12-month period. The expected total return (price appreciation plus yield) for Buy rated securities with an average security price consistently below \$10 is 20% or more within a 12-month period as these companies are typically more volatile than the overall stock market. For Hold rated securities with an average security price consistently below \$10, the expected total return (price appreciation plus yield) is plus or minus 20% within a 12-month period. For Underperform rated securities with an average security price consistently below \$10, the expected total return (price appreciation plus yield) is minus 20% or less within a 12-month period.

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Jefferies Franchise Picks

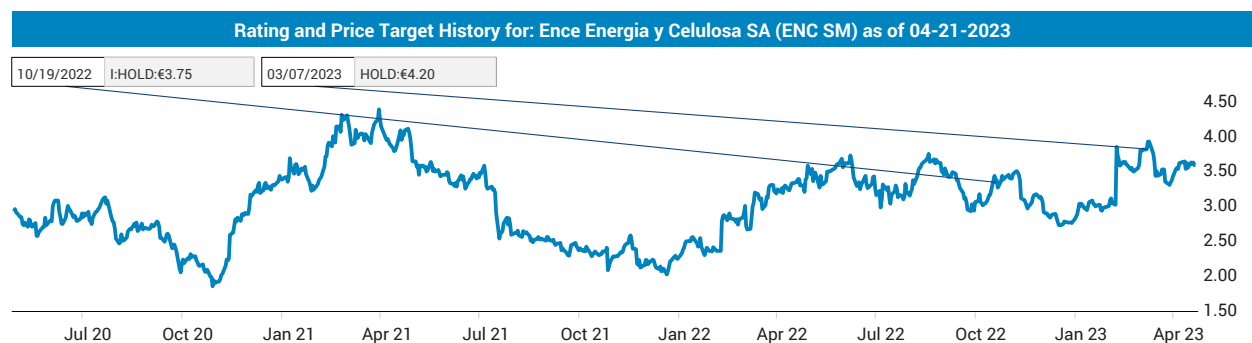
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Other Companies Mentioned in This Report

- Ence Energia y Celulosa SA (ENC SM: €3.64, HOLD)



Notes: Each box in the Rating and Price Target History chart above represents actions over the past three years in which an analyst initiated on a company, made a change to a rating or price target of a company or discontinued coverage of a company.

Legend:

I: Initiating Coverage

D: Dropped Coverage

B: Buy

H: Hold

UP: Underperform

Distribution of Ratings

			IB Serv./Past12 Mos.		JIL Mkt Serv./Past12 Mos.	
	Count	Percent	Count	Percent	Count	Percent
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