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SUSTAIN WISE

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ESG Trend Series Part 2

No water, No growth

EXECUTIVE **SUMMARY**

- Recent discussions have focused on potential power supply bottlenecks due to power-grid strains (caused by rising electricity demand) and permitting delays. However, water constraints, which directly affect power generation and data center operations, have received less attention. Water is essential for cooling nuclear/thermal power plants, and data centers require both water and electricity for cooling, making water a critical but often overlooked bottleneck for power supply and industrial growth.
- The expansion of AI data centers, the growth of water-intensive industries such as semiconductor manufacturing, and the growing reliance on thermal and nuclear power generation to meet industrial electricity demand will inevitably intensify water stress. Water is likely to impact power plant utilization rates as well as the production volume of copper — a key raw material in the semiconductor industry. While government budgets and infrastructure investments in water are increasing, regulations pertaining to the standards for discharging per- and polyfluoroalkyl substances (PFAS; widely used in the production of semiconductors and batteries) are becoming more stringent. As the water supply in water-stressed regions becomes tighter and industrial discharge water quality standards grow stricter, water reuse and treatment (for water quality improvement) should become ever more critical. In this context, companies like Xylem (XYL US) and Ecolab (ECL US) are of particular interest.
- Japan stands out as one of the most proactive countries in addressing water bottlenecks globally. Amid accelerating data center expansion and rising water demand for cooling, Japan is among the first to transition from policy discussions to actual implementation. Recognizing data centers as strategic infrastructure that drive regional economies, the country is officially considering allowing industrial water supply for data centers that meet certain criteria, shifting away from the traditional general-purpose water supply model. At the same time, environmental regulations, including PFAS discharge standards, are being strengthened, making improvements in water use efficiency (WUE) and water reuse essential.
- In this context, Japan has accumulated world-class expertise in full-cycle water management, including cooling, wastewater treatment, and water reuse. Ebara (6361 JP) should benefit directly from the expansion of water supply & infrastructure through its pumps and cooling systems (essential for data centers and semiconductor manufacturing). Kurita Water Industries (6370 JP), a leading provider of ultra-pure water, wastewater treatment, and reuse solutions, is well-positioned to capitalize on stricter water quality standards and greater demand for improved water efficiency. As a key solution provider addressing the water bottlenecks in Japan's data center and semiconductor industries, a structural growth opportunity has emerged for the firm.

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PART 01

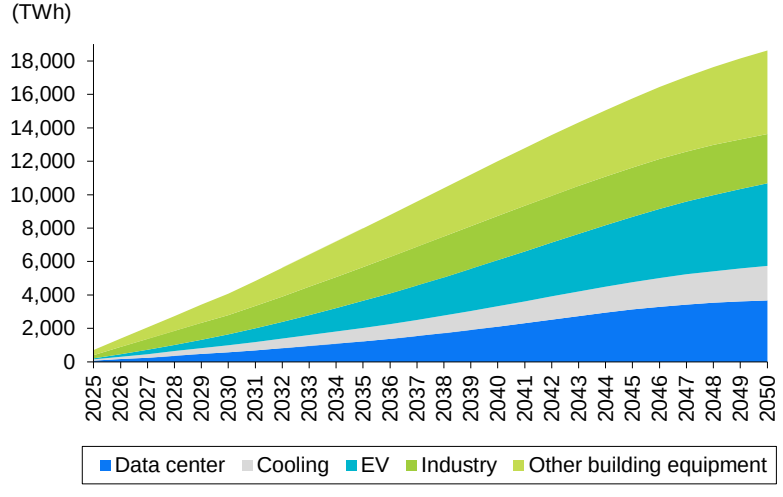
Why does water deserve attention now?

1) Why does water deserve attention now?

Water constraints—the hidden bottleneck in power supply

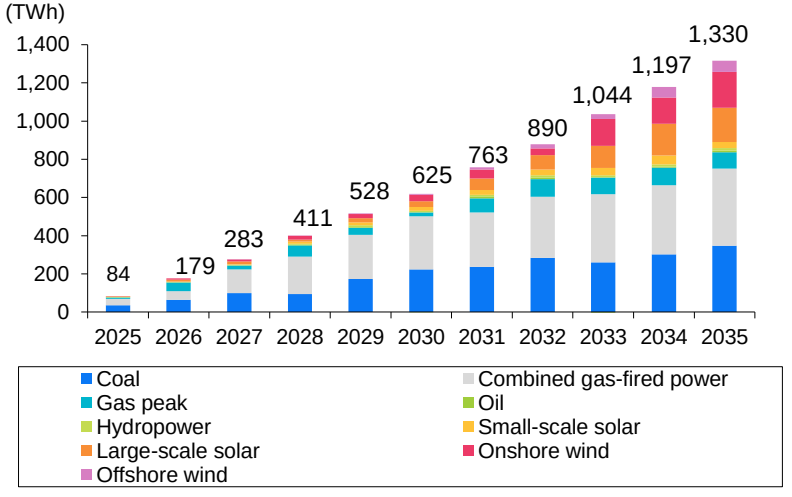
- Electricity demand should keep growing on expansion of AI data centers, rising industrial production, the growing adoption of EVs, climate change-induced heatwaves, and population growth.
- Water is essential for cooling, steam generation, and as a power source in electricity production. In thermal power plants, water is heated to produce steam that drives turbines.
- If the water supply is limited, power plants may be forced to shut down, negatively impacting manufacturing output. Nevertheless, water constraints remain largely absent from discussions about power bottlenecks.
- Additional power demand from data centers should be met primarily by coal and gas-fired power plants in the near term, highlighting the need to address water supply risks in the power sector.

Key drivers of increasing global electricity demand



Source: BNEF, Samsung Securities

Coal & gas meet additional power demand from data centers

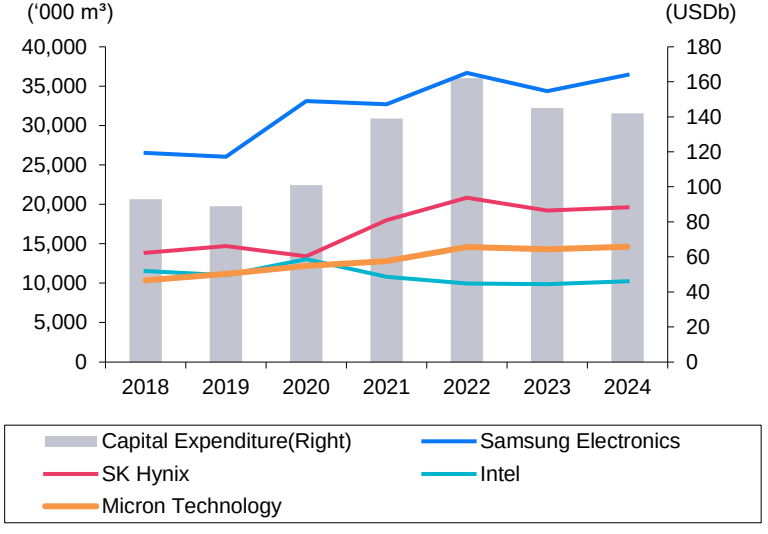


Source: BNEF, Samsung Securities

Shifting industrial structure: Water-intensive industries on the rise

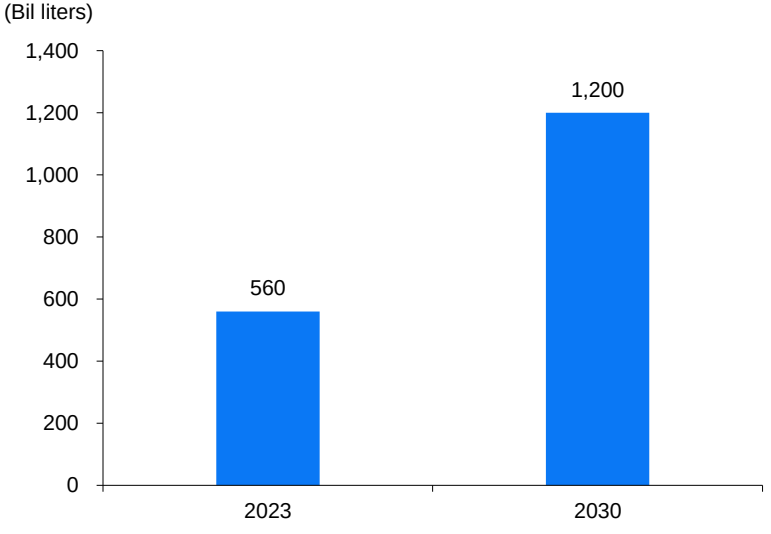
- The Global Commission on the Economics of Water (GCEW) projects that global water demand will exceed supply by 40% by 2030, primarily due to water-intensive industries (*eg,* semiconductor manufacturing) and the construction of more AI data centers.
- The global expansion of semiconductor fabs and data centers should further increase water consumption.

Global semiconductor industry capex vs water consumption



Note: Water consumption refers to the amount of water not returned to the source
Source: Impax, Bloomberg, Samsung Securities

Data center water consumption to more than double

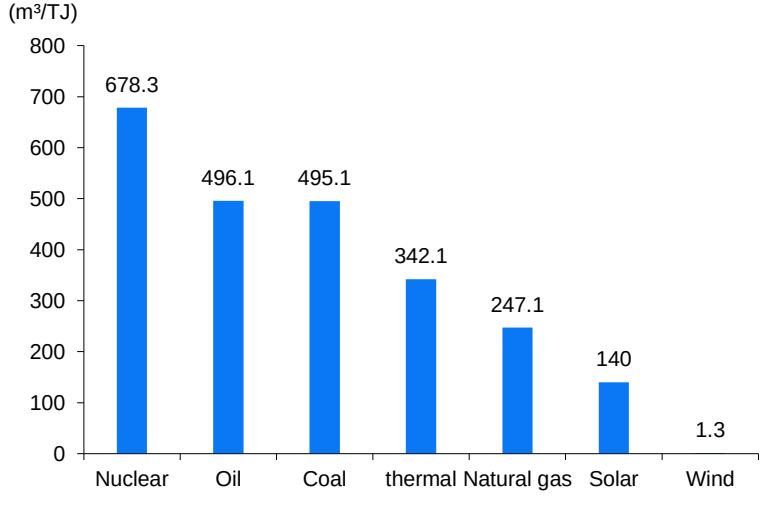


Source: IEA, Samsung Securities

Growth in carbon free energy sources exacerbates water stress

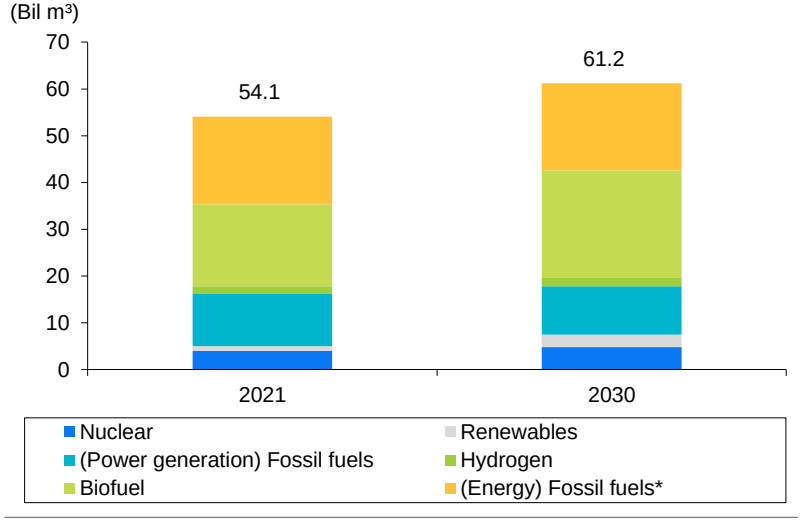
- As demand for electricity rises, the importance of carbon free energy sources (*eg,* nuclear, hydrogen, hydropower) is growing.
- In particular, nuclear power consumes more water than solar or wind power.
- By 2030, nuclear power generation should increase water withdrawals by 23.7b m³ and water consumption by 7.1b m³.
- The transition to a digital economy should further increase water consumption due to the expansion of nuclear power plants to meet electricity demand.

Water footprint* per unit of electricity and heat production by power generation/energy source



Note: *Total amount of water used throughout the entire process from raw material production to manufacturing
Source: Water Footprint Network, Samsung Securities

Water consumption projections based on existing global policy scenarios



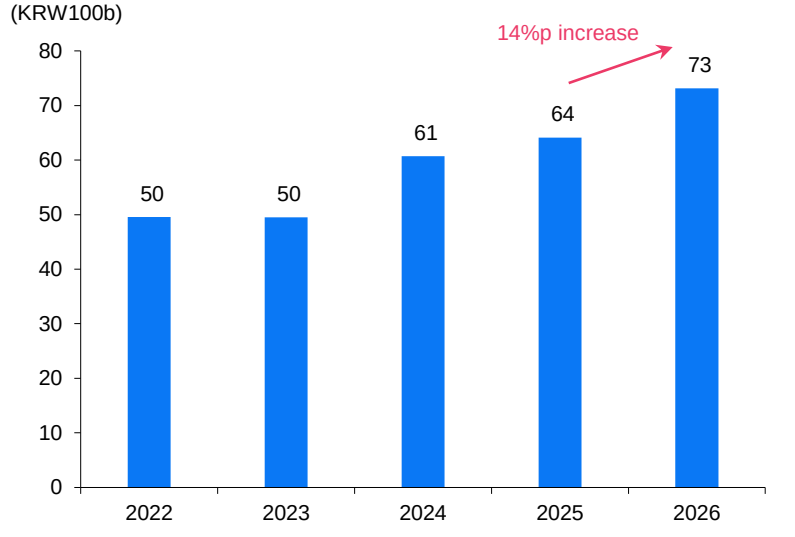
Note: The STEPS scenario is a conservative forecast scenario that considers energy transition measures currently being implemented or developed in each country. Fossil fuels include oil, coal, and natural gas
Source: : EIA, Samsung Securities

1) Why does water deserve attention now?

Rising government budgets and infra investments in water

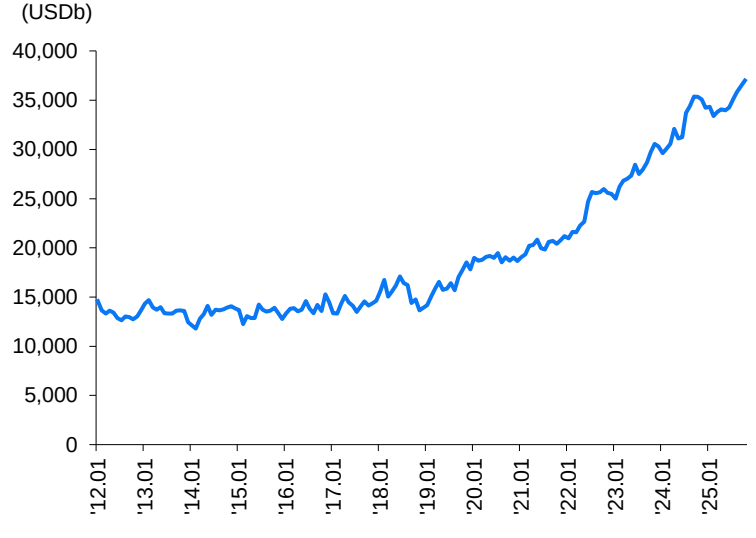
- Korea: The Ministry of Climate, Energy, and Environment has allocated a record-high budget of around KRW7.3t for water management, including expansion of regional water supply systems and customized industrial water supply for industrial parks.
- Korea: The Water Reuse Act should be revised in 2H26 to allow the government to install and operate water reuse facilities, potentially leading to stricter regulations to promote the use of reclaimed water. A new budget of KRW1.1b has been earmarked for monitoring PFAS (per- and polyfluoroalkyl substances; see Appendix, page 44).
- US: Private and public sector spending on water supply infrastructure for non-residential use is increasing. Texas, for example, plans to allocate a USD20b water fund to support new water supply projects, aging infrastructure upgrades, and water reuse initiatives.

Korean government water management budget increases



Source: Ministry of Climate, Energy and Environment, Samsung Securities

Total construction spending: Water supply in the US



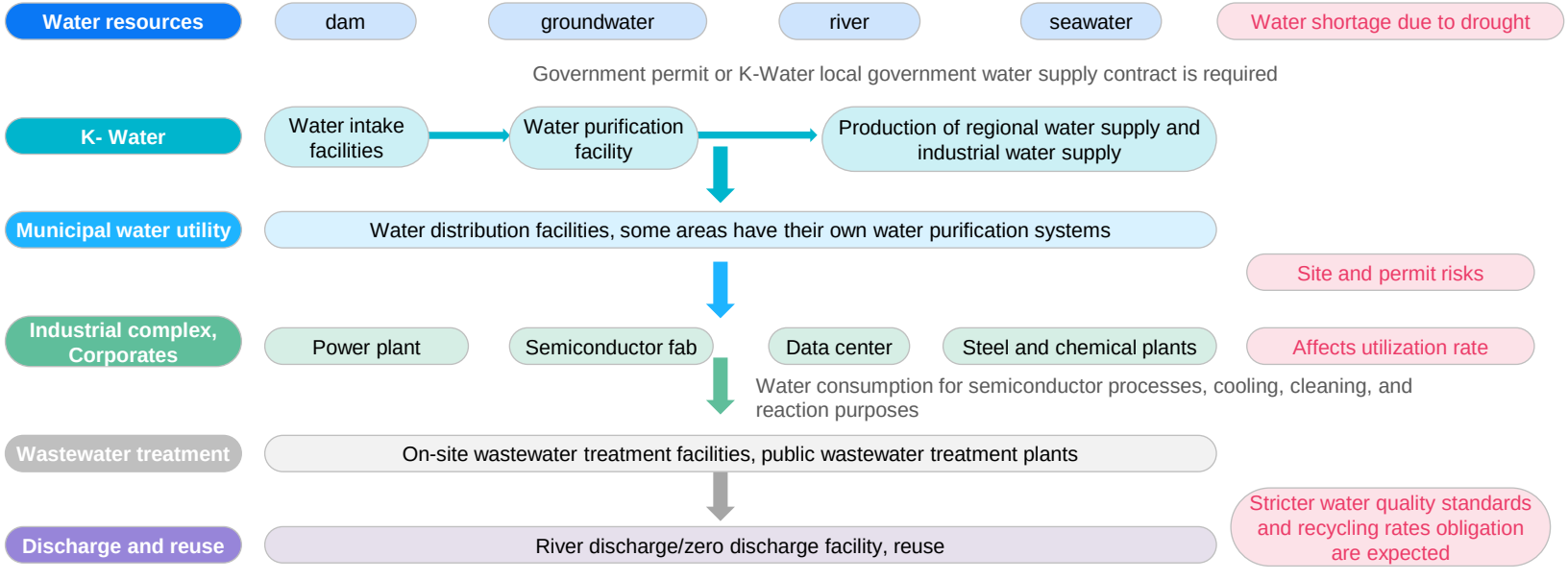
Note: This refers to the scale of capex investment in water infrastructure by the private sector, the national government, local governments, and utilities, including water purification plant construction and expansion, water pipe and transmission pipe replacement, recycled water production facilities, and industrial water supply, Source: FRED, Samsung Securities

1) Why does water deserve attention now?

Stricter water permitting and effluent standards

- Water withdrawals require government permits, and water quality standards are becoming more stringent. For example, regulations on total phosphorus (T-P) in public wastewater treatment plant discharges are expected to be revised.
- Water supply stability affects a power plant's capacity factor, data center server performance, and semiconductor production, making it a key factor in corporate competitiveness.

Domestic water supply system in Korea and potential water risks to industries



Source: Samsung Securities

Litigation risks and more PFAS regulations

- Regulations on PFAS, a class of carcinogenic pollutants, are tightening in the US and Europe. The EU and Japan should implement PFAS regulations starting in 2026.
- US companies face increasing litigation risks. For example, 3M announced a plan to phase out its PFAS business, which generated 2022 sales of USD1.3b (3.7% of its sales).
- The introduction of PFAS regulations should require additional capex for water utilities, potentially costing up to USD1b to implement treatment technologies (*eg,* adsorption-based systems, ion exchanges, and membrane filtration; see Appendix, page 45) to ensure compliance with water quality standards for wastewater discharge.
- As regulations expand, demand for water testing and purification technologies should grow, creating investment opportunities in the water treatment sector.

Global issues and litigation cases related to water risks

Company	Details
Tesla	• Gigafactory plant in Brandenburg*, Germany, shut down for six months due to water dispute lawsuit resulting in construction delays (Aug 2021) • * One of the areas with the lowest rainfall in Germany
Google	• In Sep 2024, Chile's environmental court partially withdrew approval due to local opposition to aquifer use and concerns about water resource depletion. It caused construction delays of a Chilean data center
Chemours	• Sued over Ohio River contamination from West Virginia plant's PFAS emissions • Altamira, Mexico plant halted titanium dioxide production for 1 month due to drought (May-Jun 2024) causing a loss of USD26m
DuPont, Chemours, Corteva	• In Aug 2025, agreed to pay approximately USD2b in remediation and mitigation funds to settle New Jersey PFAS lawsuits
3M	• Apr 2024, agreed to pay up to USD12.5b to support clean-up of PFAS contamination in US public water systems

Source: Bloomberg Intelligence, 3M, Dupont, press reports, etc., Samsung Securities

PFAS regulation trends

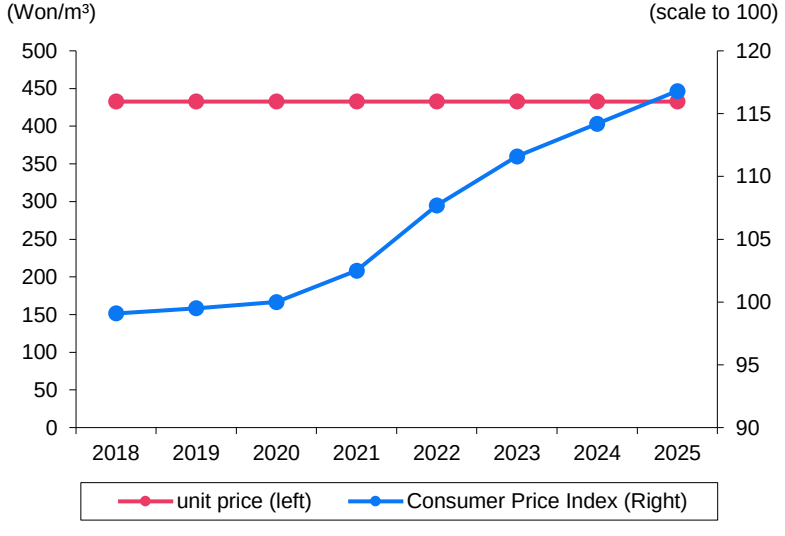
Country	Details
US	• The Clean Water Act regulates the discharge of pollutants, including PFAS, into US waters • Water quality standards for perfluorooctanoic acid (PFOA) and perfluorooctanesulfonic acid (PFOS) to be introduced by 2031 • California prohibits the manufacture, distribution, and sale of cosmetics and textiles with added PFAS (since 2025)
EU	• From 2026, to limit level of 20 individual PFAS to 100 nanograms/L • By Dec 2027, the Water Framework Directive must be translated into national law and PFAS must be added to the list of contaminants
Japan	• Include PFAS in water quality standards from Apr 2026
Korea	• Plans to establish water quality standards for PFAS by 2028 • Strengthen the monitoring system for PFAS in water purification plants/water supply facilities, and review introduction of water quality standards and discharge water regulations

Source: EU Commission, press reports, etc., Samsung Securities

Water tariffs to rise

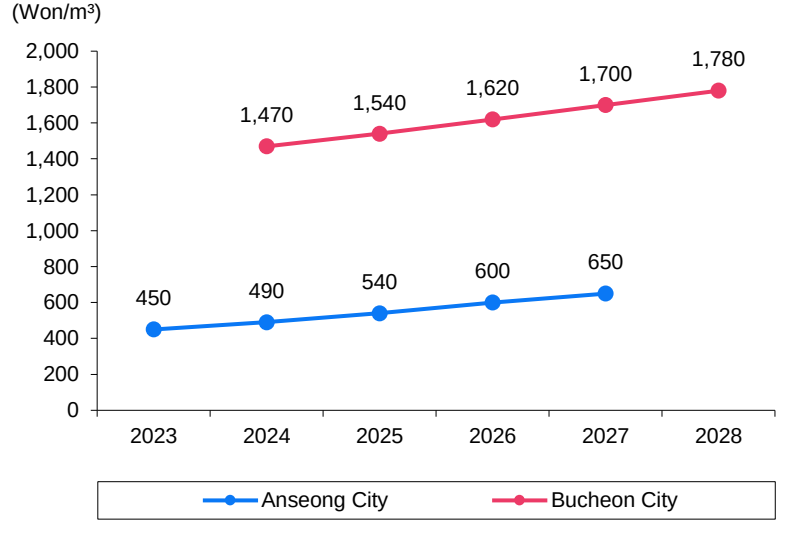
- While the consumer price index in Korea has risen 17.8% since 2018, regional water tariffs have remained frozen for years. Local governments are now gradually increasing water rates.
- Electricity costs for water utilities (Korea Water Resources Corporation) surged 65% over 2021-2024, putting upward pressure on regional water tariffs.
- Around 60% of data centers are located in the Seoul Metropolitan Area (SMA). Gyeonggi Province, which hosts 37 data centers across 26 municipalities, has plans to raise water tariffs to cover rising costs and fund infra improvements. Such tariff hikes should prompt firms to make water-related investments.

Water tariffs vs consumer price index



Note: Consumer Price Index rebased at 100 on 2020
Source: K-Water, Samsung Securities

Local government water tariffs to increase gradually



Note: Bucheon City's industrial/manufactured water tariffs, Anseong City's general water tariffs (industrial water rates integrated with general water rates)
Source: Bucheon City Hall, Anseong City Hall websites, Samsung Securities

PART
02

Impact, by industry

2) Impact, by industry

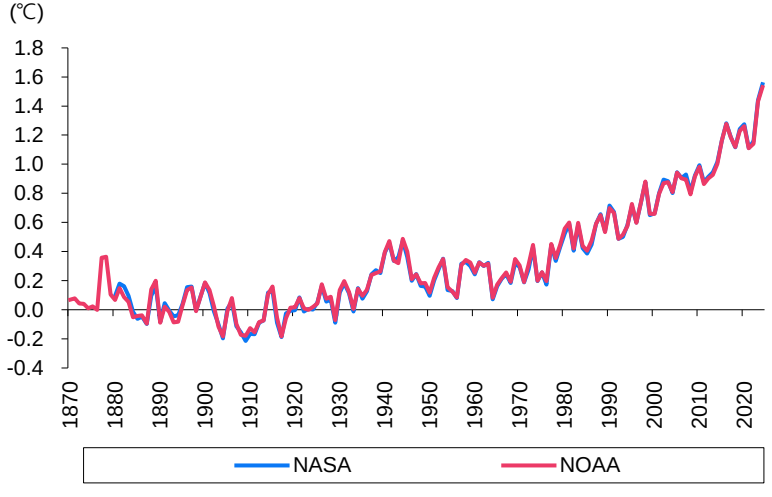
Climate change increases droughts and heatwaves, impacting water supply

- Climate change is altering rainfall patterns and increasing aridity, leading to a reduction in water supply. This poses risks to power generation and the transportation of raw materials. In 2022, extreme heatwaves caused water levels in the Rhine River in Germany to drop significantly, restricting the transport of raw materials (such as coal, chemicals, and grains) via barge.

  * In Jun 2022, freight rates on the Rhine River increased from EUR20 to EUR110 per tonne.

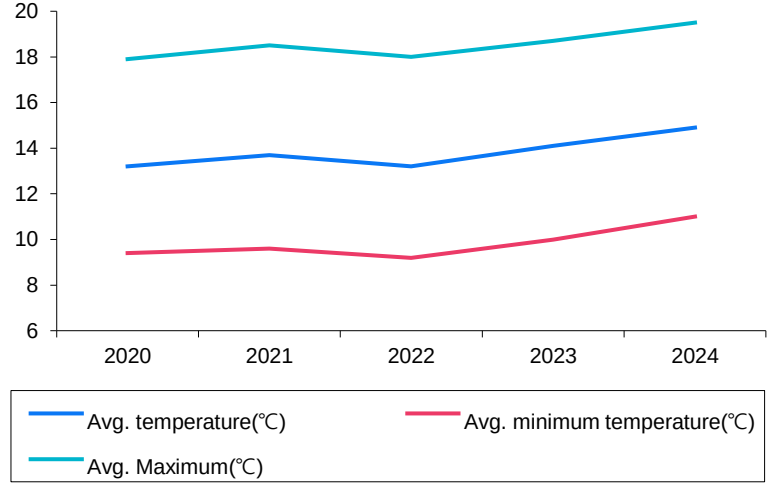
- In 2022, China also experienced a drought in the Yangtze River area, which reduced hydropower generation. This negatively impacted the production of EV batteries and solar panels by companies in Sichuan Province.
- Average temperatures in Korea and worldwide continue to rise, and droughts and heatwaves are expected to become more frequent.

Global average temperature steadily rising



Source: NOAA, NASA, Samsung Securities

Temperature in Korea on the rise



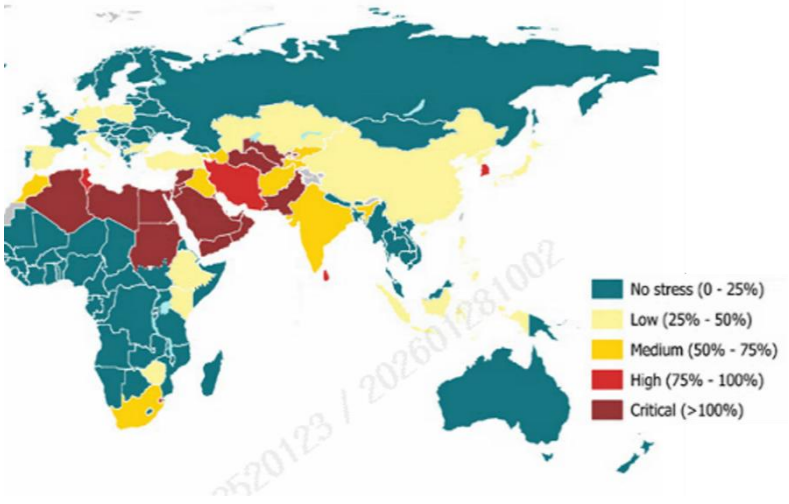
Note: Data for 2020-2024 in South Korea
Source: Korea Meteorological Administration, Samsung Securities

2) Impact, by industry

Water-intensive industries concentrated in water-stressed regions

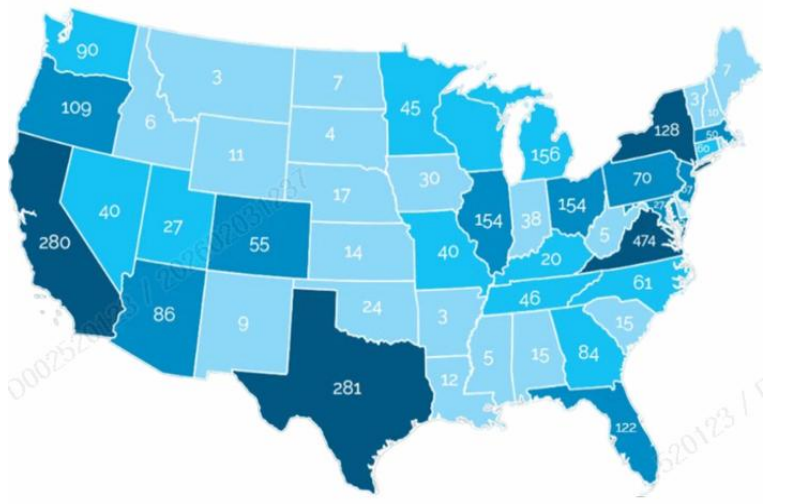
- Korea sources 97% of its domestic water supply from dams and rivers, facing challenges in securing water resources due to high river runoff rates and the concentration of rainfall during the summer months.
- In Korea, data centers are increasingly being built in the SMA, while semiconductor clusters are concentrated in southern Gyeonggi Province (Yongin, Pyeongtaek). The existing supply from nearby dams is insufficient to meet projected water demand in those areas.
- In the southwestern US (*eg*, California, Arizona, Nevada, Texas), water stress is high due to high temperatures, chronic droughts, and strict groundwater regulations. These regions are also home to concentrations of data centers, semiconductor facilities, and gas power plants.

Korea, is a high water-stressed region



Source: UN WATER, Samsung Securities

US data centers located in water-stressed areas



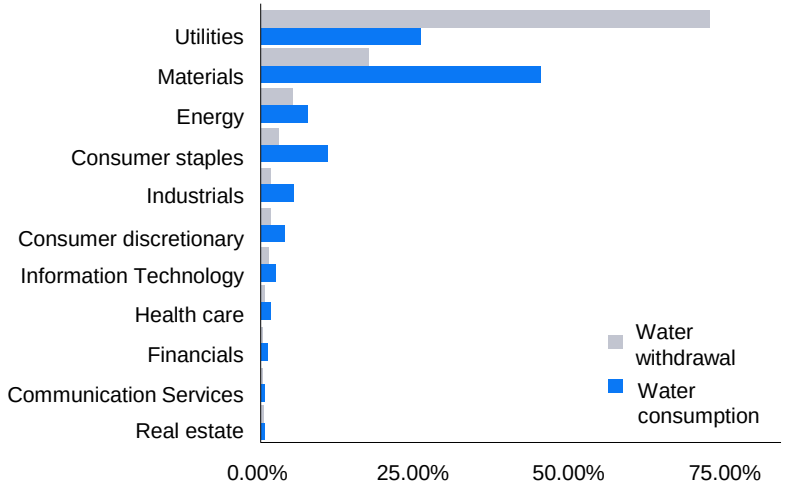
Source: Datacenter map, Samsung Securities

2) Impact, by industry

① Power generation: Highest water withdrawal and consumption among sectors

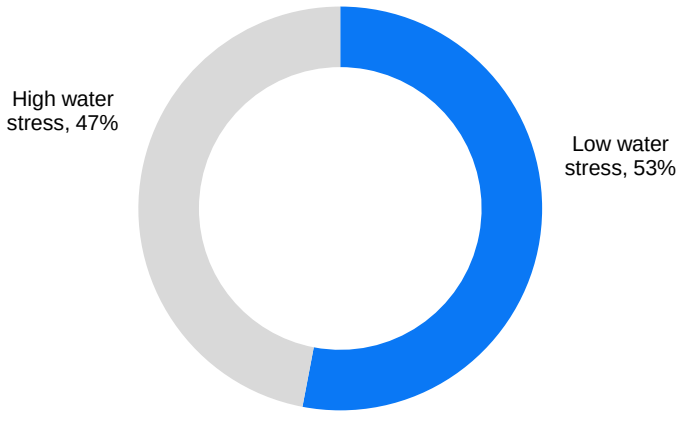
- Power generation from coal, oil, and natural gas involves their burning to produce heat. Water is used to generate steam, which drives turbines, and this steam must then be cooled.
- For nuclear power generation, cooling water circulates through pipes inside the reactor to remove the heat generated by nuclear fission.
- Hydropower relies on falling water to generate electricity. During droughts, when water is scarce, power generation decreases.
- The shortfall in hydropower generation is typically made up by other power sources, most of which (such as natural gas and coal-fired power plants) require water for cooling.

Water withdrawal and water consumption, by industry



Note: Refer to Glossary of terms in Appendix on page 42
Source: Clarity AI, Samsung Securities

47% of global thermal power plants in high water-stressed areas



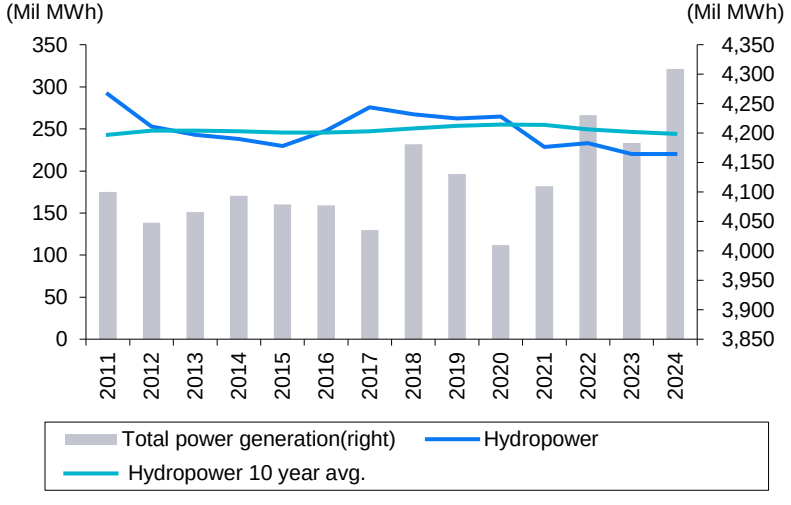
Source: World Resources Institute, Samsung Securities

2) Impact, by industry

① Power generation: Droughts and heatwaves affect energy production and mix

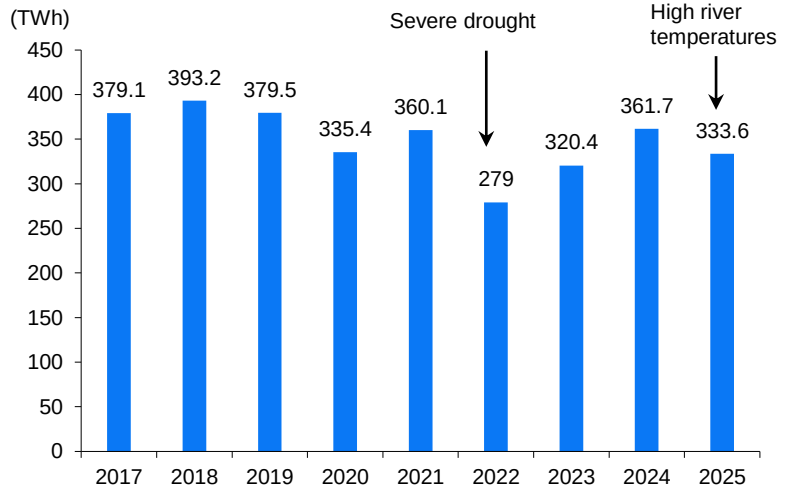
- In the US, droughts have reduced hydropower generation, increasing the need for flexibility in terms of power generation mix.
- In 2022, European energy company SSE adjusted its operating margins due to lower-than-expected hydropower generation caused by limited water availability.
- In 2025, heatwaves forced the shutdown of nuclear power plants in Switzerland and France. In August, high river temperatures caused a 500 MW reduction in electricity production at nuclear reactors in eastern France.
- Due to climate change-induced power plant outages, electricity production at European thermal power plants is projected to decrease 19% over 2031-2060 (WRI).

US hydropower generation declining



Source: EIA, Samsung Securities

French nuclear power generation declines



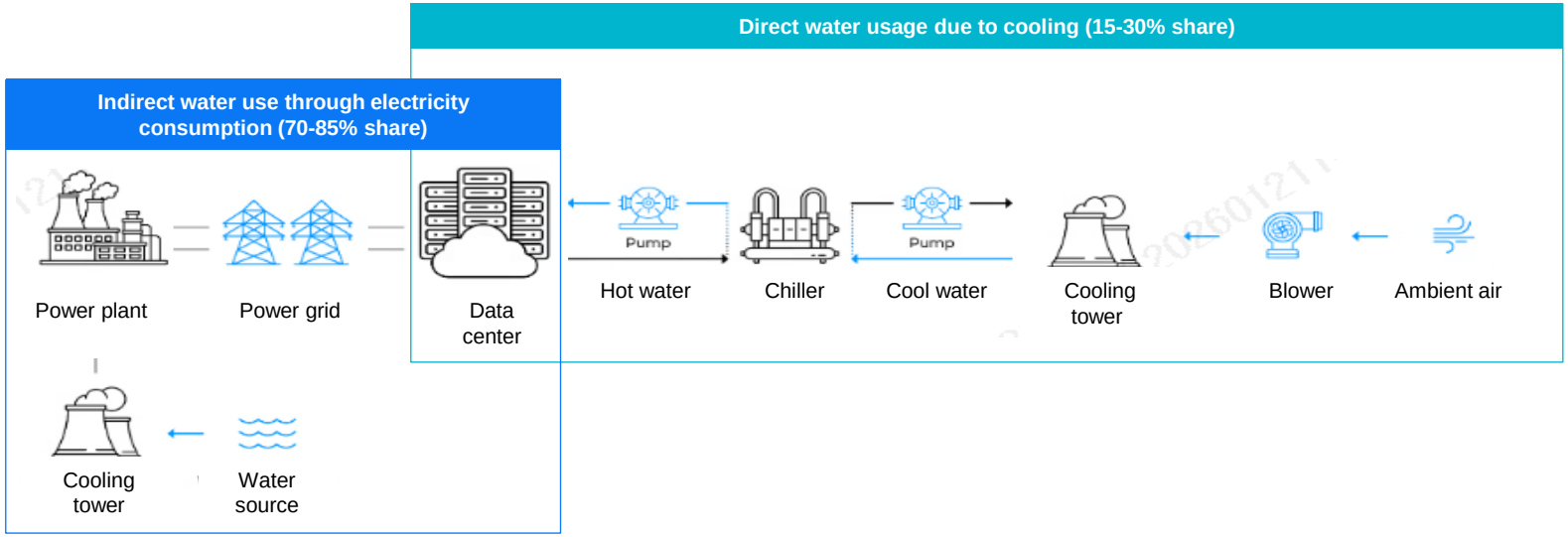
Source: RTE, Samsung Securities

2) Impact, by industry

② Data centers: Dual bottleneck in power and water

- Efficient thermal management is essential for data centers, and cooling systems account for more than 40% of their total electricity consumption.
- Data centers are water-intensive (directly and indirectly) due to the water used to cool servers and routers (Scope 1), the cooling water required by power plants that supply them with electricity (Scope 2), and the ultra-pure water used in the manufacturing of semiconductors that go inside data centers (Scope 3).

Data centers: Direct and indirect water consumption

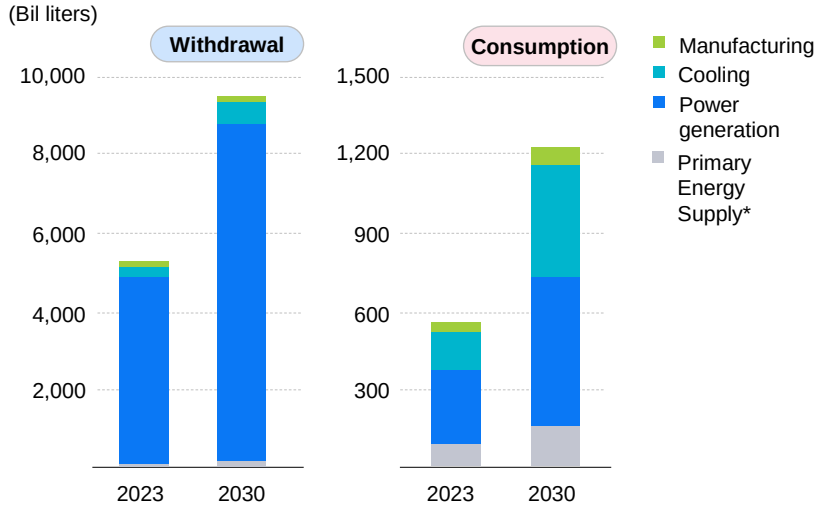


Note: Scope 1 refers to direct usage, while Scope 2 and 3 refer to indirect usage.
Source: Roland Berger, Samsung Securities

② Data centers: Water consumption for cooling projected to double

- In 2023, US data centers consumed 64b liters of water for cooling, with projections indicating that the figure will more than double by 2028 (Lawrence Berkeley National Laboratory, 2024).
- Most data centers rely on evaporative cooling systems, which use water evaporation to lower temperatures—this method is energy-efficient but water-intensive.
- A shift towards cooling technologies that use water more efficiently appears necessary in the long term.

Data center water consumption to double



Note: *including oil, gas, coal, and hydrogen; Manufacturing: Semiconductor manufacturing for data
Source: IEA, Samsung Securities

Data center cooling methods

Technologies	Details
Air cooling	• Sends cold air to racks/servers and returns hot air • High power consumption, almost no water for cooling
Evaporative	• Air cooling by water evaporation, power consumption is less than air cooling, but high water usage
Direct-to-chip	• Direct heat recovery to the cooling plate near the CPU • Intermediate power and water usage
Hybrid (air+liquid)	• Mainly dry, only assisted by evaporation during heatwaves • Medium power consumption, medium to high water consumption
Immersion	• Directly removes heat by immersing servers in insulating liquid • Long-term solution for data centers with low power consumption and almost no water usage
Closed-loop cooling	• Reuse of both recycled wastewater • Reduce freshwater use by up to 70%

Source: Samsung Securities

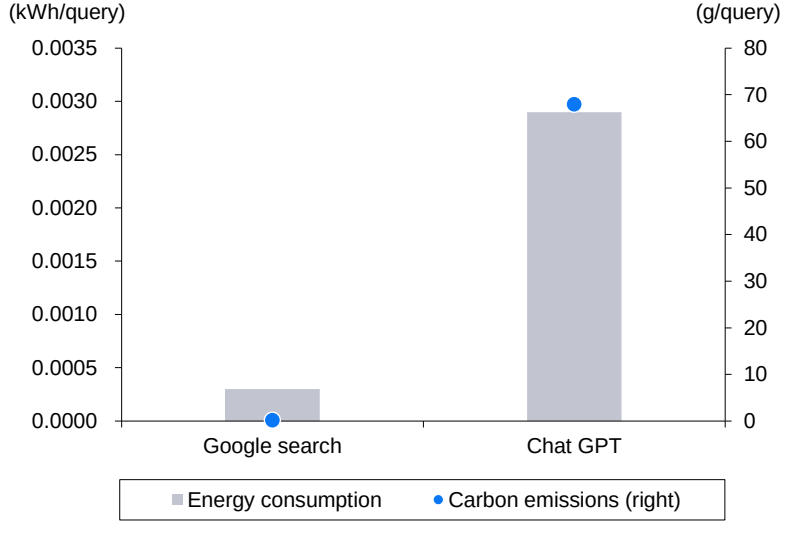
② Data centers: Big tech's water consumption on the rise

- AI search engines require on average 10x more electricity than Google search, leading to significant indirect water consumption.

* According to research from UC Riverside and UC Colorado, generating a 100-word ChatGPT response consumes 519 ml of water.

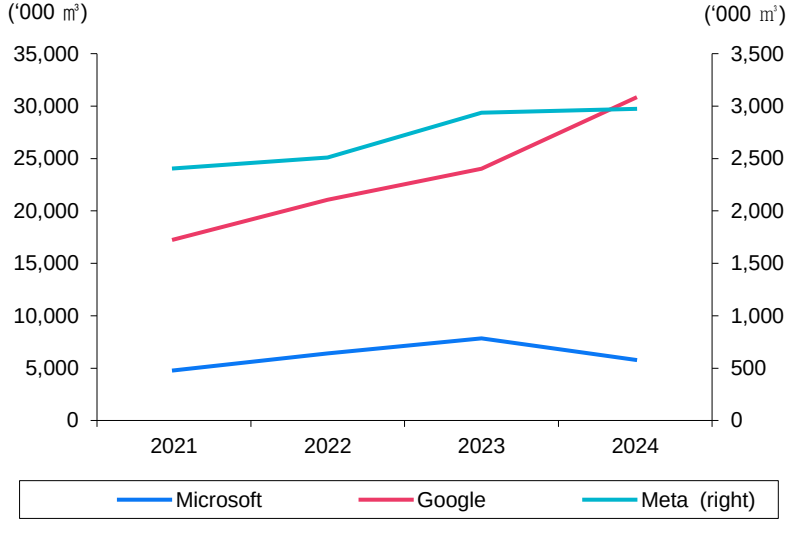
- Extreme heat waves raise ambient temperatures, placing greater strain on data center cooling systems. Drought conditions pose a risk of restricting data center operations.
- Google strategically builds facilities in regions with abundant water and access to hydropower, such as Dalles (Oregon). Microsoft has adopted zero-water cooling technologies.

Energy consumption and carbon emissions, per query



Source: Kanoppi, Samsung Securities

Major big tech's Increasing water consumption



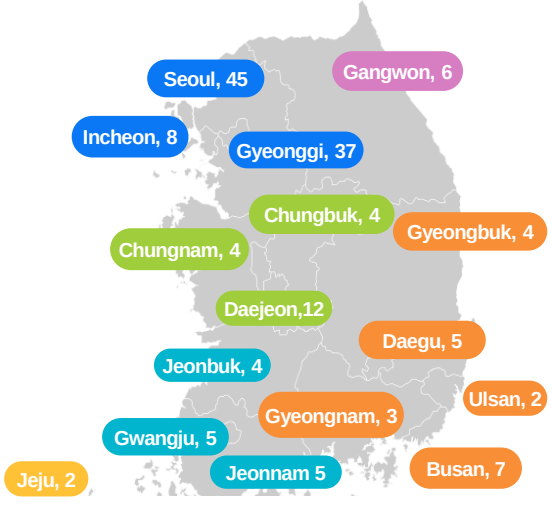
Source: Each company's website, Samsung Securities

2) Impact, by industry

② Data centers: Expanding regulations on water usage and reporting

- Major countries are introducing regulations on data center water usage, prompting global companies to manage water usage effectiveness (WUE) metrics. Microsoft and Meta have shown improving WUE trends.
- Korean data centers are primarily located in the western SMA due to access to the power grid. Currently, there are no regulations in Korea regarding water usage by data centers.
- Public disclosure and management of WUE metrics are not yet widespread in the Korean data center industry. Kakao has adopted WUE metrics, along with power usage effectiveness (PUE) in the construction of its data center in Ansan to monitor and improve water efficiency. (See Appendix on page 42.)

Data center distribution in Korea, by region



Note: : 72.9% of private data centers are located in the metropolitan area, and 58.8% of all data centers are located in the metropolitan area
Source: Korea Data Center Association , Samsung Securities(('Korea Data Center, Supply Cycle Begins', published on October 13, 2025)

Data center water usage regulations

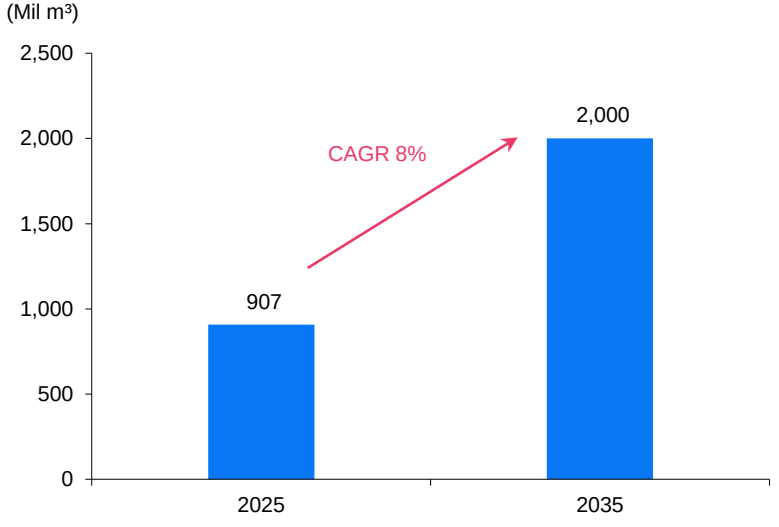
Country	Details
US	• California (SB 58) proposed tax credits for data centers that adopt sustainable practices, such as using water-efficient cooling systems and using at least 70% carbon-free energy. AB 93 proposed allowing local jurisdictions to impose water efficiency standards as a permitting condition • Nevada proposed banning the use of evaporative cooling at new data centers
EU	• Proposed revising energy efficiency guidelines for large data centers (over 500 kW) to report water usage (scheduled for 2026)
China	• Data Center Green Development Action Plan (2024-2030) targets to achieve a PUE of 1.5 (or lower) by 2025 • Data center water use efficiency (WUE) target is also included.
Singapore	• Data center operators are required to gradually raise the temperature of their data centers to 26ºC or higher to reduce cooling demand and power consumption

Source: EU Commission, S&P global, Samsung Securities

③ Semiconductors: Water supply constraints impact chip supply stability

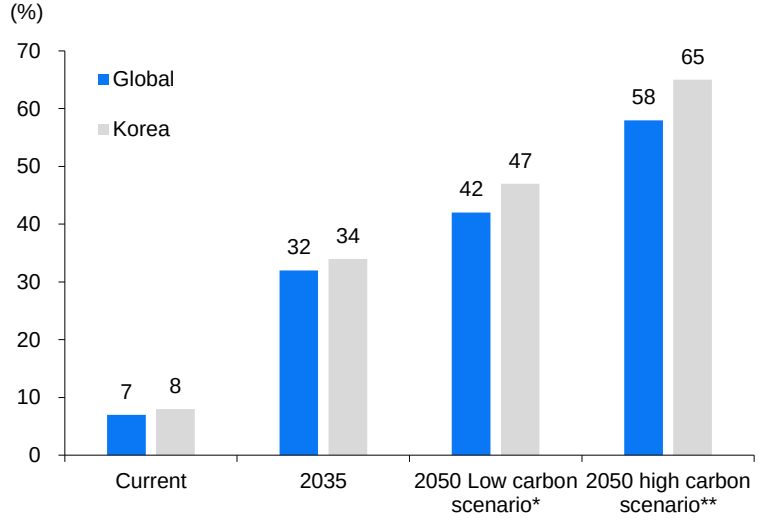
- In semiconductor manufacturing, ultra-pure water is used to rinse away microscopic particles (that could cause defects) and dilute chemicals between processing steps.
- The semiconductor industry typically consumes around 10m gallons of ultra-pure water daily. Water shortages can disrupt production and affect the mining and transportation of raw materials like copper.
- According to PwC, by 2035, 32% of global semiconductor production will rely on copper that is at risk of supply disruptions from extreme weather events and droughts.
- Northern Chile, a major region for copper supply chains, has been in a drought since 2010. Water availability in the region has decreased by about 37% over the past 30 years, and is projected to drop by up to 50% by 2060.

Water use forecast for global semiconductor industry



Source: IDTechEx, Samsung Securities

Portion of semiconductor production affected by copper supply chain risks



Note: *Global average temperature increases of less than 2 ℃
**Global average temperature increases by 4.4 ℃
Source: PwC, Samsung Securities

③ Semiconductors: Water impacts capex and opex

- When establishing new fabs, water supply and wastewater treatment capacity have become a part of the permitting requirements. This has led to some projects being delayed or relocated, resulting in higher water-related capital expenditures and operational costs.

Examples of water-related financial impacts on Global semiconductor companies

Company	Details	Water stress exposure of assets	Asset holdings in water-stressed areas
TSMC	• The worst drought in Taiwan in 2020-2021 limited the supply of ultrapure water • Additional capex of hundreds of billions of won incurred for water transportation and recycling and Increased costs (opex)	• 4 in total (9% of total) • 4 with very high water stress (9%)	
Intel	• New fab expansion in Arizona (US), an arid area • Hard to get groundwater and industrial water use permits • Approved with conditions that include plans for water reuse and supplementation projects with state/local governments • Large-scale water resource infrastructure investment in addition to fab investment	• 66 in total (31% of total) • 46 with very high water stress (32%) • 20 with high water stress(13%)	
Samsung Electronics	• Continued expansion of ultra-large semiconductor lines • Need for strengthened regional management due to rapid increase in water usage • Expansion of water reuse and water circulation conditions at industrial complex level • Increased capex by building on-site water reuse facilities	• 66 in total (31% of total) • 49 with very high water stress (23%) • 17 with high water stress(8%)	
SK hynix	• A large-scale semiconductor cluster in Yongin needed Yongin City's permission to withdraw 265,000 tons of industrial water per day in 2021. Construction was delayed due to opposition from Yeoju City, which will be responsible for supplying industrial water. Scheduled to be resolved in 2022 and completed in 2027	• 9 in total (30% of total) • 3 with very high water stress (10%) • 6 with high water stress(20%)	

Note: Asset exposure is limited data obtained by Bloomberg
Source: company' website, Bloomberg, Samsung Securities

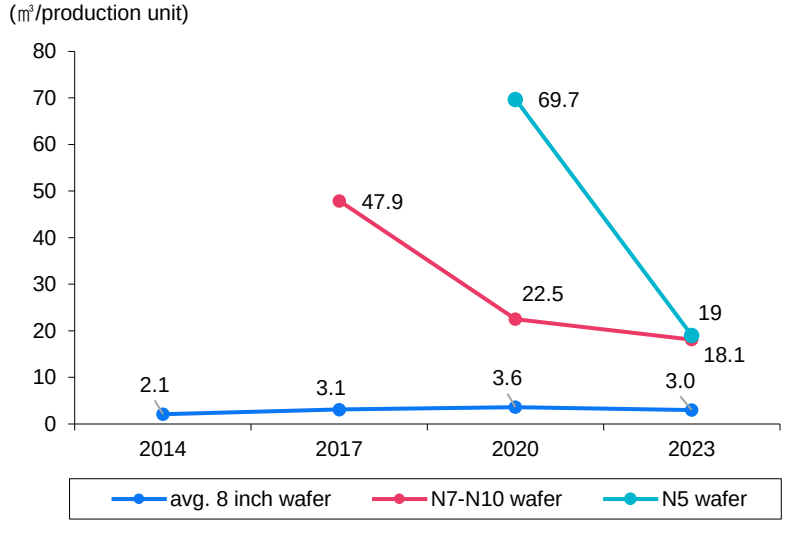
③ Semiconductors: TSMC enhances water recycling to mitigate risks

- TSMC, a leading Taiwanese foundry, estimates that USD550m-625m of revenue could be at risk from water scarcity (Bloomberg Intelligence).
- The company quantifies and discloses the negative environmental impact of its water usage*, and has set a 'water positive' goal** by 2040. It has also achieved a water recycling rate of over 85%.

  * The environmental cost associated with its water consumption is estimated at TWD5,843m. **Aiming to return more water to nature than it consumes

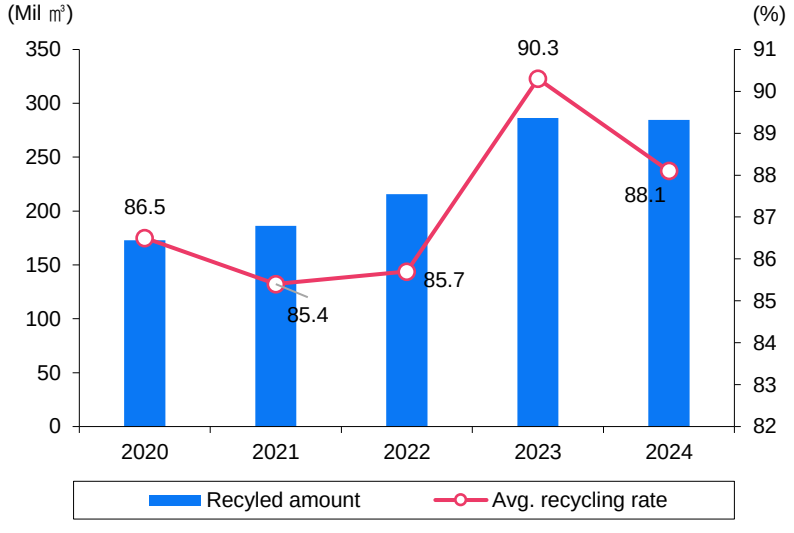
- In 2025, TSMC plans to invest over USD65b in three production facilities in Phoenix, Arizona (including capex for wastewater recycling systems) in order to achieve a 90% recycling rate.

TSMC: Water footprint, by product



Note: Water Footprint - Water usage per unit of product
Source: TSMC, Samsung Securities

TSMC: Water recycling rate



Source: TSMC, Samsung Securities

PART 03

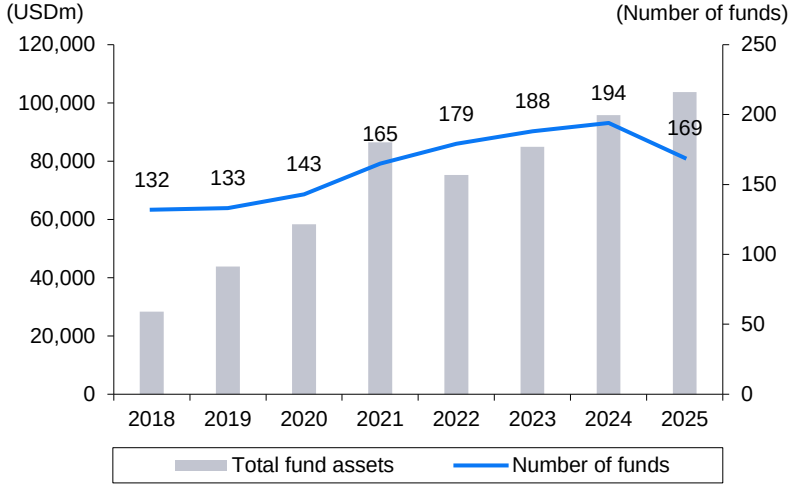
Water: A growing investment theme

3) Water: A growing investment theme

The rise of water funds and blue bonds

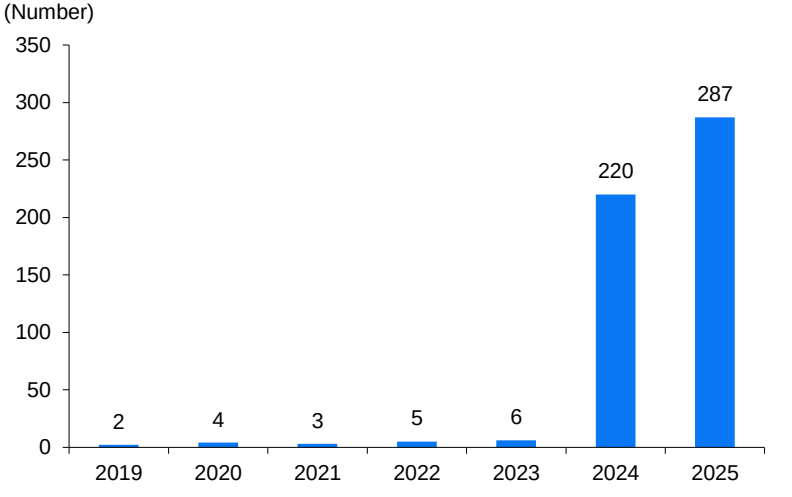
- Water-related fund AUM has grown steadily, up from USD58b in 2020 to USD97b in 2025, and blue bonds have seen rapid growth (USD1.4b in 2023 to USD80b in 2024).
- Blue bonds are a subset of green bonds. Blue bond issuers primarily allocate the proceeds in water supply and wastewater treatment projects.
- *Standard Chartered issued sustainable bonds in 2024, allocating USD120m to water and wastewater treatment projects and USD53m to water supply infrastructure projects.
- Drivers behind the growth of blue bonds are increased awareness of natural risks and their link to climate adaptation. The rising frequency of droughts and extreme weather events due to climate change is having impacts on investments in water infrastructure and treatment.

Increase in water fund* AUM



Note: *Funds with water-related investment objectives in their fund name and investment prospectus, as of the end of December 2025.
Source: Bloomberg, Samsung Securities

Water projects are covered by ESG bond

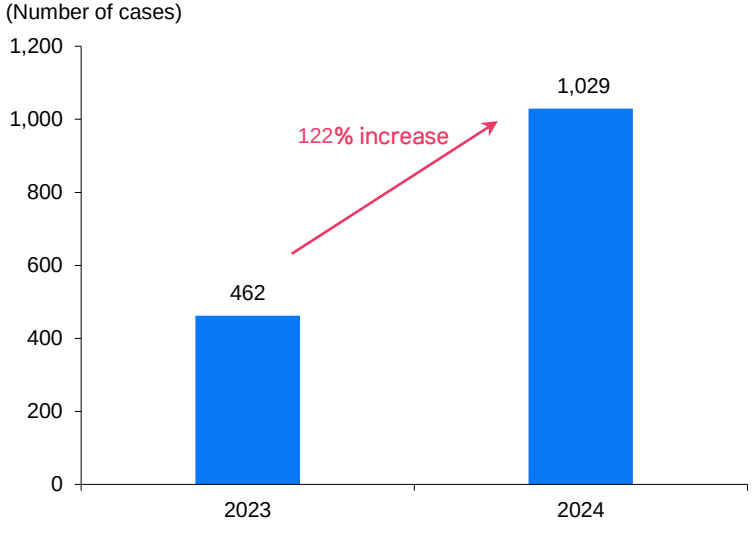


Note: Includes bonds that include 'Aquatic', 'Aquaculture', or 'Conservation' in the ESG project subcategory
Source: Bloomberg, Samsung Securities

Growing investor demand for water-related disclosures

- Global investors are increasingly demanding transparency on water-related risks.
- Key areas of interest include: whether companies operate in water-stressed regions and their water withdrawal/consumption volumes.
- Norges Bank Investment Management (NBIM) expects companies to: 1) integrate water management into their policies, strategies, and risk management frameworks; and 2) enhance water efficiency and reuse.

Investors' growing demand for water-related diclosure



Source: CDP, Samsung Securities

EU Sustainability Reporting Standard (ESRS) Water reporting

Requirement	Details
Policy	• Policies related to water: Disclosure of water resource management and conservation policies • Include operation sites in areas with water-stress that are not covered by water-related policies
Action plan, resources	• Key water-related actions: Key actions to manage water risks, impacts, and opportunities • Resource allocation details: detailed description of the financial resources, budget, and investment and details of measures related to water-stressed areas
Target	• Setting and disclosing water-related targets: disclosure of water usage, water usage in water-stressed areas – in cubic meters (m^3), water withdrawals, discharges, recycled/reused amounts, storage, water intensity, *etc.*

Source: European Commission, Samsung Securities

3) Water: A growing investment theme

Water industry value chain

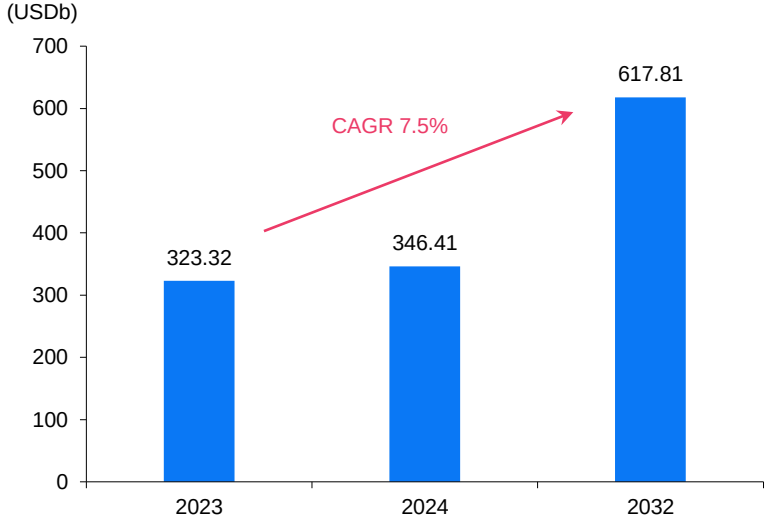
- The water industry value chain includes water intake and supply, distribution and wastewater collection, water and wastewater treatment, and related businesses, such as equipment manufacturing (pumps, valves, pipes, filters, membranes), infrastructure construction, and operation and maintenance (O&M) services.
- As water stress intensifies, the supply of clean water is becoming limited and effluent water quality standards are being tightened. Companies must invest in water reuse and water quality improvement.
- Water treatment is expected to be a long-term investment opportunity. The global water treatment solutions market is projected to grow to USD617.8b by 2032.
- Of note, the growth of the data center and semiconductor industries and the stricter regulations on industrial wastewater discharge should boost demand for wastewater treatment, water reuse, and water efficiency technologies (smart metering, monitoring systems).

Water-related investment categories

Categories	Details	Key companies
Water utilities	• Water supply, sewage infrastructure, wastewater management	• American Water Works, Veolia
Water-related technologies and equipment	• Manufacturing and installing water equipment for water intake, transportation, and distribution	• Xylem, Pentair
Treatment, measurement technologies	• Improving treatment, purification, and measurement	• Ecolab
Water efficiency	• Reducing water consumption at the production stage and improving wastewater treatment	• Geberit

Source: Bloomberg, Samsung Securities

Global water treatment solutions market forecast



Source: Bloomberg Intelligence, Samsung Securities

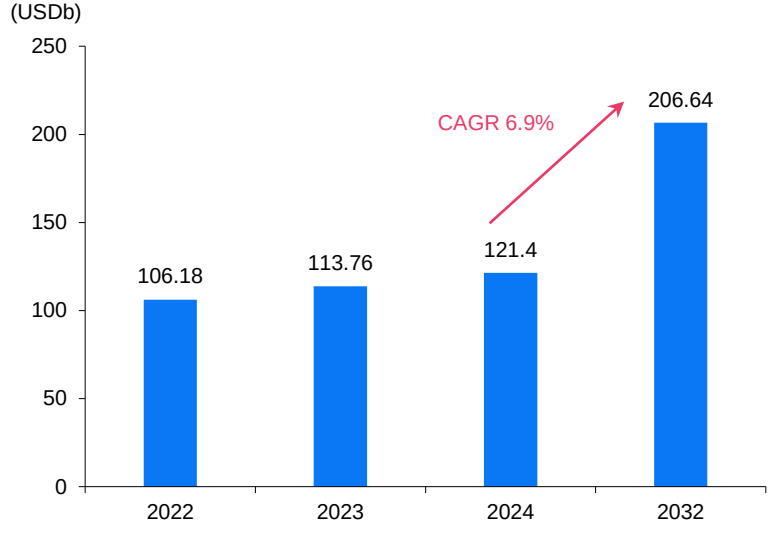
3) Water: A growing investment theme

Global water treatment market overview and outlook

- North America leads the global water treatment market with a 38.2% market share (2025), driven by: the adoption of smart water management systems, advances in membrane filtration technologies, and increasing interest in water reuse.
- Japan is a structurally strong market due to government-led infra investments (*eg*, upgrades to drainage pumps in response to heavy rain and typhoons).

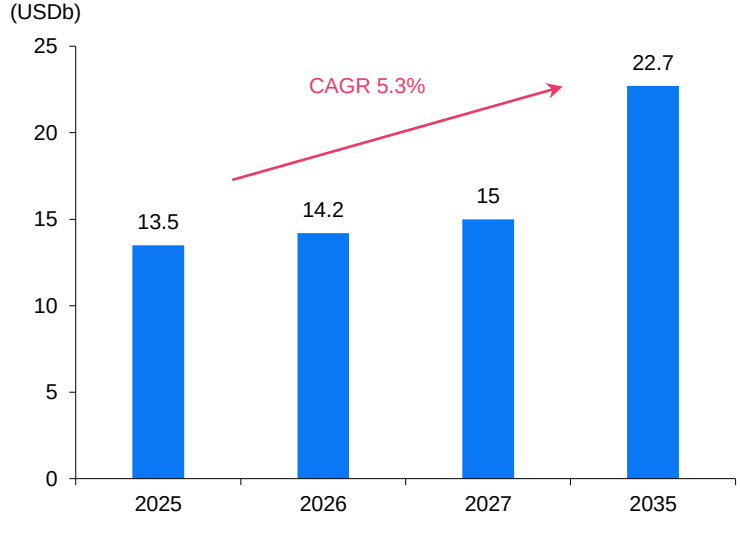
  *Tokyo Metropolitan Government's 2025–2029 environmental plan focuses on water quality management and treatment technologies.
- Japanese water treatment companies outperformed the Tokyo Stock Exchange (Topix) in 2025: *eg*, Ebara rose 56%, outperforming the Topix by 27%pts.

US water treatment market



Note: The average annual growth rate is calculated from 2024 to 2032.
Source: Fortune business insight, Samsung Securities

Japan's water treatment market



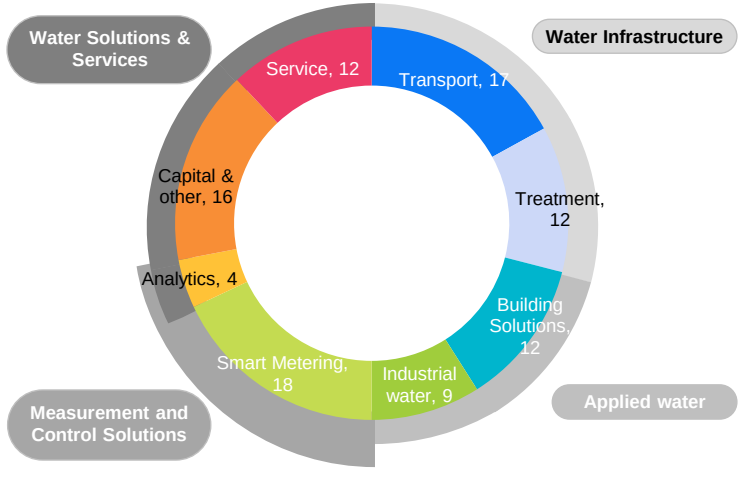
Note: The average annual growth rate is calculated from 2025 to 2035.
Source: Bloomberg, Samsung Securities

3) Water: A growing investment theme

Key US water companies: 1) Xylem (XYL US)

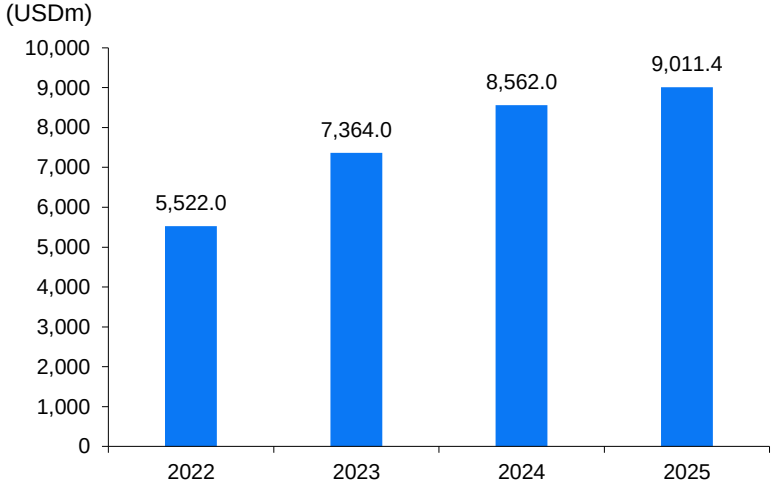
- Xylem is a global leader in water-related equipment, software, and services. It offers end-to-end solutions: water intake → conveyance → treatment → reuse → monitoring
- It has a market cap of USD31b (as of Feb 10). Sales are on the rise, up 7.8% y-y in 3Q25 and up an estimated 5.2% y-y in 4Q25.
- Business segments include water infrastructure (pumps, filters, *etc*.), applied water treatment (industrial water treatment), measurement and control solutions (sensors, meters), and water solutions and services (O&M, installation). It should benefit from water stress and regulatory trends, as demand for water-efficient and water management technologies should rise.
- It is one of the most frequently included US companies in the EU ESG fund category known as Dark Green Funds (Article 9) , which is also positive from an ESG investment perspective.

Xylem: Sales portion, by business(%)



Source: XYLEM 10K, Samsung Securities

Xylem: Sales



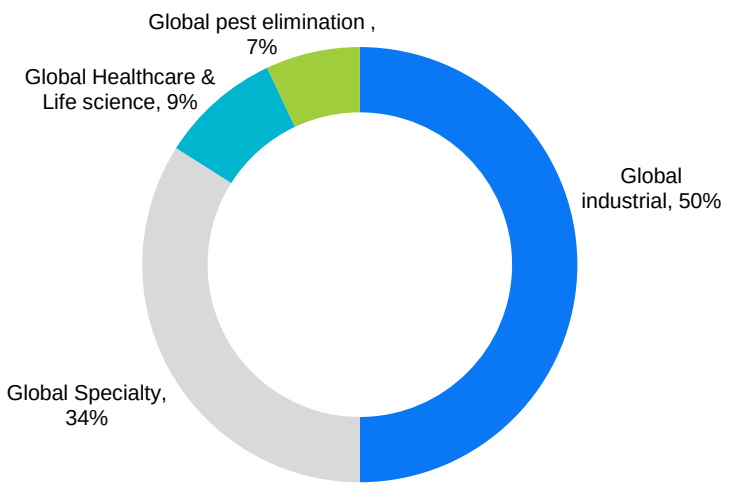
Note: Include estimates for 4Q25
Source: Bloomberg,, Samsung Securities

Key US water companies: 2) Ecolab(ECL US)

- Ecolab provides water treatment and hygiene solutions for commercial and industrial clients, and key clients are data centers and semiconductor makers.
- It has a market cap of USD85b (as of Feb 10). Sales grew 4.2% y-y in 3Q25 and an estimated 4.7% y-y in 4Q25.
- It acquired Ovivo's *(a leading company in the field of ultra-pure water technology for semiconductor manufacturing) electronics business in 2025 to strengthen its growth potential.

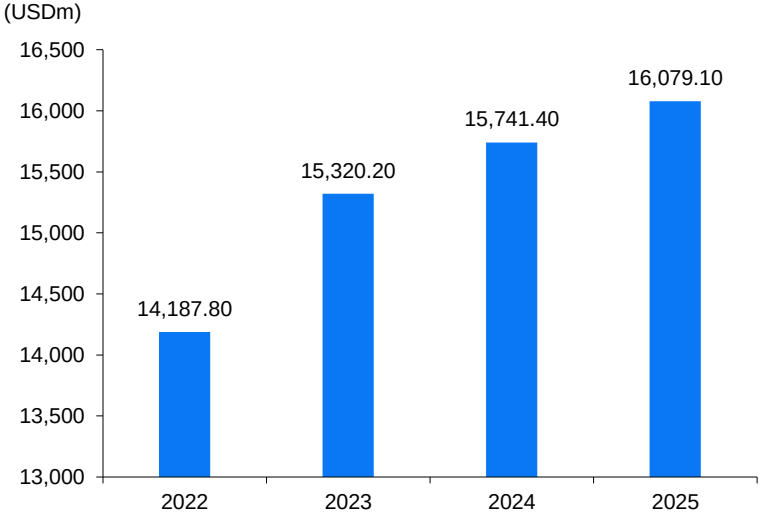
  * By providing circular water treatment solutions for semiconductor manufacturing processes, Ovivo should help reduce freshwater consumption significantly.

Ecolab's sales in 2024, by division



Source: Ecolab, Samsung Securities

Ecolab: Sales



Note: Includes estimates for 4Q25
Source: Bloomberg, Samsung Securities

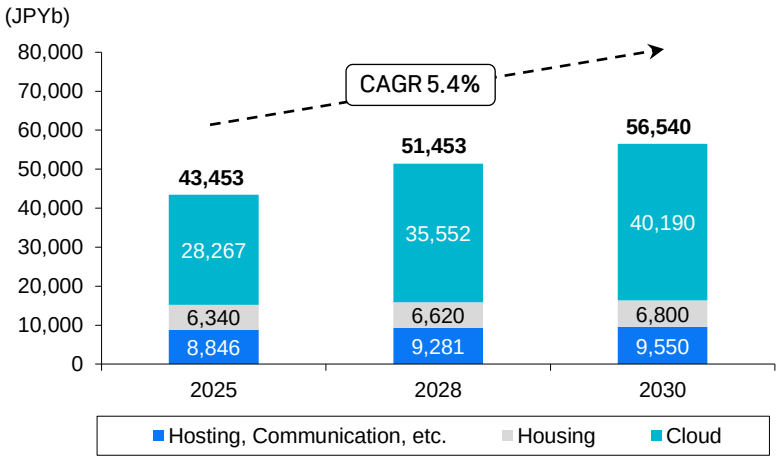
PART 04

Case study: Japan’s water market

Why Japan? The most proactive country in addressing water scarcity bottlenecks

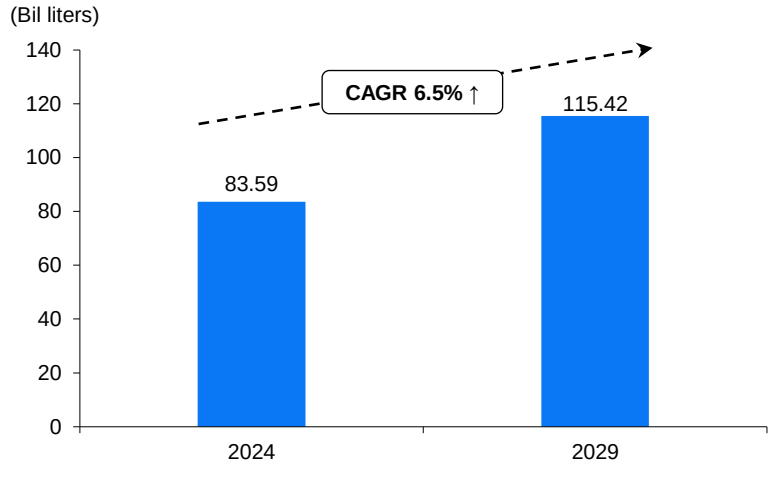
- **Japan's water consumption should rise due to expansion of the data center service market**
  - Japan's data center service market is projected to grow from JPY4.3t in 2025 to JPY5.6t by 2030 (JEITA). High-density servers driven by AI and cloud computing are increasing cooling demand structurally. As a result, Japan's data center water consumption is expected to rise from 83.6b liters in 2024 to 115.4b liters by 2029 (CAGR of 6.5%).
  - It means that water use is no longer an operating expense issue but a core infrastructure variable, affecting site selection and expansion speed.
- **Policy and regulatory adjustments are already in full swing.**
  - Japan has already put in place strict regulations on river water intake, groundwater extraction, water quality standards, and reuse. Increased water demand is directly translating into permitting and policy issues.
  - The Japanese government recognizes data centers as strategically important infrastructure with significant economic impacts. It is officially reviewing the possibility of supplying industrial water to data centers that meet certain criteria.
  - Japan is the fastest responder to global water constraints: data center demand growth → growing severity of water supply constraints → policy-driven water supply system reform

Japan data center services market size



Source: JEIITA, Samsung Securities

Water consumption increases due to the growth of data centers



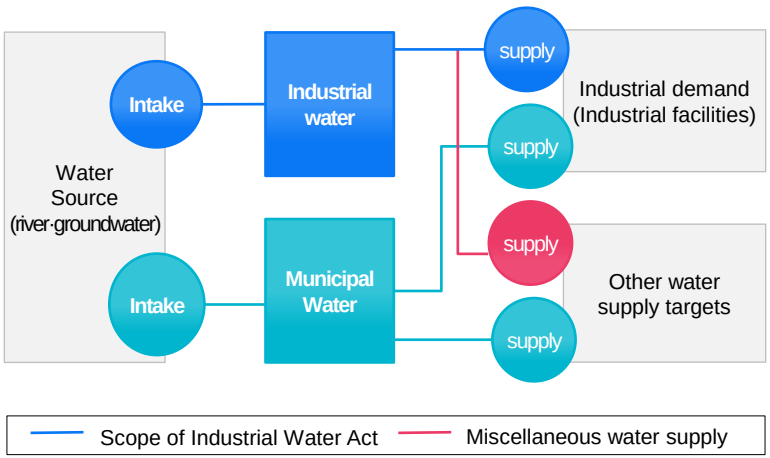
Source: Mordor Intelligence, Samsung Securities

4) Case study: Japan's water market

Industrial water supply for data centers under consideration

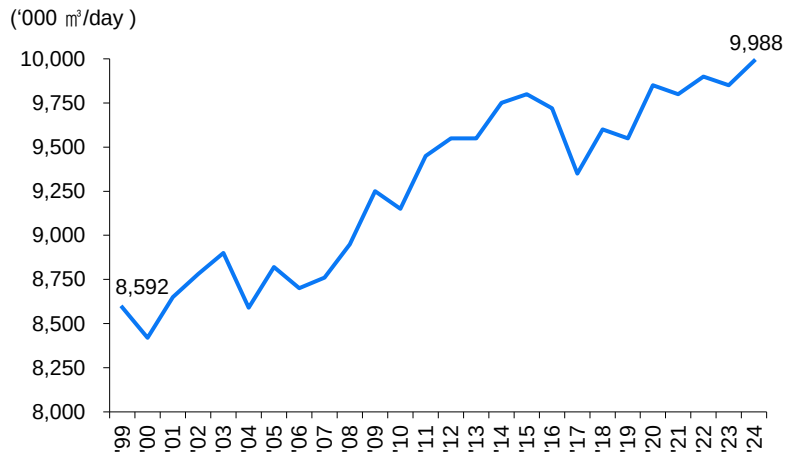
- **Stable operation of data centers is crucial from industrial and regional economic perspective.**
  - The establishment of new data centers involves significant investments (*eg*, server replacement), which has a substantial ripple effect on the local economy. Their stable operations are essential as they serve as a foundation for regional growth.
  - With the increasing use of AI, there is a growing need for servers with higher processing capabilities, power consumption, and heat generation. Air cooling systems have limitations in managing heat dissipation, leading to a projected increase in demand for liquid cooling systems (which offer superior cooling performance).
- **Supplying industrial water to certain data centers under consideration**
  - In Japan, data centers are not legally classified as industrial facilities, so they can only be supplied with non-industrial water. This creates a risk of operational disruptions for data centers.
  - To ensure stable operations, the government is considering supplying industrial water to data centers that meet specific conditions: *eg*, located in areas prioritized for business promotion, contribute to regional economic activity (Source: Ministry of Economy, Trade and Industry, 19th Industrial Water Policy Subcommittee, Dec 2, 2025).

Japan's water supply system



Source: Japan's Ministry of Economy, Trade and Industry, Samsung Securities

Surplus in industrial water production



Source: Japan's Ministry of Economy, Trade and Industry, Samsung Securities

4) Case study: Japan's water market

Environmental regulations for data centers continue to be tightened

Category	Sub-category	Regulation	Details
E (Environment)	Power and energy regulation	Energy rationalization and transition to fossil fuels	Energy usage rationalization, planning, and regular reporting systems for large-scale energy users (designated businesses/factories, *etc*.). Data centers are subject to designation due to their high power consumption, and require a usage management/reporting system that includes tenants.
		Tokyo Cap and Trade Program(Tokyo location)	Tokyo Metropolitan Government operates a system imposing mandatory energy reduction for large-scale construction and facilities (large energy consumption) Direct impact on data centers and large building-type DCs in Tokyo.
	Greenhouse Gas and Carbon Regulation	Global Warming Countermeasures Promotion Act	The basic law of Japan's greenhouse gas reduction policy includes a reporting (mandatory) system for large-scale emitters (direct Emissions calculation based on direct emissions and electricity use, reporting practice issues)
	Water and water intake regulations	River Act water intake permit	In principle, permission from the river management office is required to use river water (cooling water, *etc*.). Large-scale water withdrawal is a project risk.
		Regulations on groundwater extraction for building use	Groundwater extraction for building purposes in designated areas is subject to penalties for unauthorized extraction.
		Industrial Water Law series regulations	Japan operates an industrial water law system to address the issue of ground subsidence caused by industrial groundwater extraction.
		Water Pollution Prevention Act	Cooling and process water (including hazardous substances) regulation issues with management of wastewater discharged from business establishments.
		Sewerage Act	Even in the case of discharge into public sewers, there are regulations regarding water quality testing and management
		PFAS regulation	A roadmap for strengthening drinking water standards for PFOS/PFOA has been clarified. A Water quality standards are scheduled to be raised in April 2026. Data centers are subject to regulation in the cooling and water treatment processes. There is possibility of an environmental "risk premium" due to local water issues.

* PFAS PFAS refers to the entire family of perfluorinated compounds, which are carcinogenic pollutants and fluorinated compounds, and PFOS and PFOA are representative substances of PFAS that are subject to global regulation due to their strong toxicity and persistence.

4) Case study: Japan's water market

Water reuse becomes essential

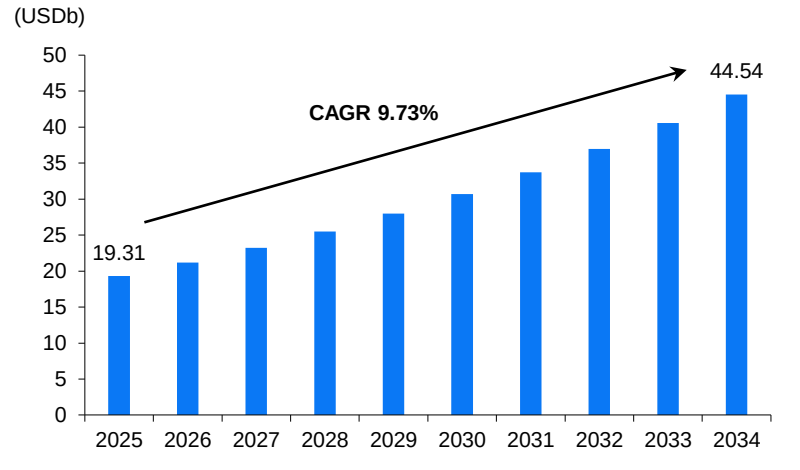
- **Stricter environmental regulations impose costs across the entire water cycle (from intake → use → discharge).**
  - With tighter intake regulations, using river water requires obtaining water rights (permits) under the River Law, leading to increased permitting and capacity expansion consultation costs. To prevent the pollution of public water bodies and underground water, regulations are imposed on wastewater discharged from business facilities. As discharges becomes more restricted, investments in purification equipment (water treatment capex) should increase.
- **Water security risks are increasing, leading to a growing demand for water reuse.**
  - From Apr 2026, per- and polyfluoroalkyl substances (PFAS) will be subject to mandatory regulatory limits. According to the OECD, Japan set a provisional target of 50 ng/L for combined PFOS and PFOA in 2020, and plans to upgrade this to a mandatory water quality standard (with testing and compliance obligations) by Apr 2026. This will increase water security risk premiums for large water-consuming industries such as data centers and power plants. Companies are focusing on internal water recycling strategies.
  - Additionally, AWS has announced plans to expand the use of reclaimed water in the US from 24 sites in 2024 to over 120 sites by 2030. A key method involves reusing condensate (water generated during the evaporative cooling process).

PFAS standards around the world

Regulators	PFOS target	PFOA target
WHO	100ng/L provisional guideline	100ng/L provisional guideline
US EPA	4ng/L	4ng/L
Canada	600ng/L	200ng/L
Germany	100ng/L provisional target value	100ng/L provisional target value
Japan	Provisional target of 50 ng/L for PFOS and PFOA (combined)	

Source: Japan Environment Agency, Samsung Securities

Water reuse market



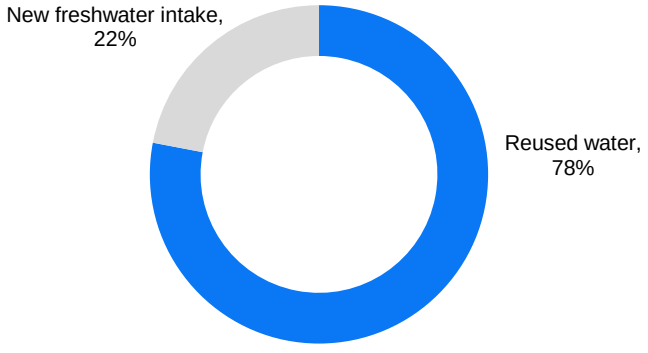
Source: Precedence intelligence, Samsung Securities

4) Case study: Japan’s water market

Accumulation of world-class water reuse technologies

- **Japan's industrial water structure is centered on "reused water."**
  - According to Japan's Ministry of Economy, Trade and Industry (METI), reused water accounts for 78.0% of total freshwater use in the industrial sector, totaling 117.84m m³ per year (based on facilities with 30 or more employees). The primary use of freshwater is for cooling, which accounts for 72.2% of total freshwater consumption of 109.07m m³.
  - The fact that reused water accounts for nearly 80% of the water used in industries that rely heavily on cooling indicates that Japan has accumulated significant expertise in the design and operation (O&M) of water reuse systems.
- **Accumulation of policy references: Water reuse and construction of reuse-friendly buildings mandatory**
  - Japan has several notable water reuse initiatives. Fukuoka, for example, issued an ordinance in 2003 requiring building owners to install water reuse facilities (institutionalizing water reuse).
  - Additionally, buildings in Fukuoka (over 5,000 m² in floor area) and Tokyo (over 10,000 m²) are required to use reused water or rainwater for toilet flushing and landscape irrigation.
  - Japan has been building water reuse facilities since the 1980s, with notable large-scale commercial projects such as Tokyo Ariake (30,000 m³/day, since 1996) and Yokohama Minatomirai (32,000 m³/day, since 1997).

Recycled water as portion of Japan's industrial water



Source: Japan's Ministry of Economy, Trade and Industry, Samsung Securities

Scale of commercial reclaimed water facilities in major Japanese cities

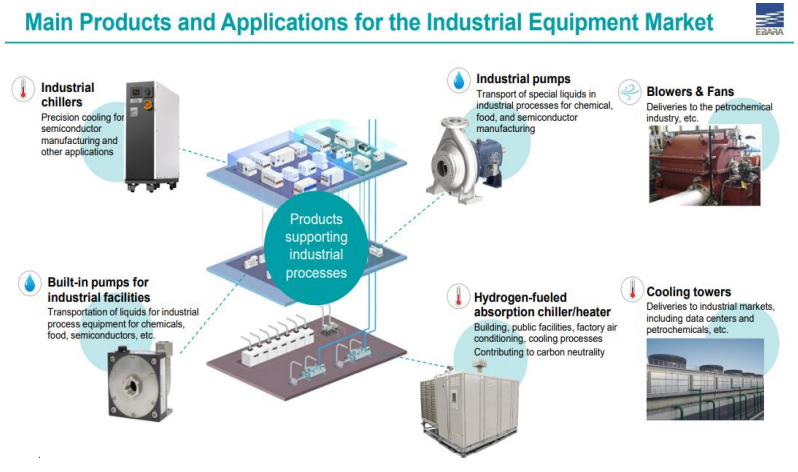
Region	Year of operation	Recycled water treatment capacity
Tokyo Ariake	• 1996	• 30,000 m³/day
Yokohama Minato Mirai	• 1997	• 32,000 m³/day
Fukuoka	• 1980s~	• Approximately 10,000 m³/day
Osaka	• 1990s~	• Approximately several thousand to ten thousand m³/day

Source: OECD, Samsung Securities

Key Japanese companies: 1) Ebara (6361 JP)

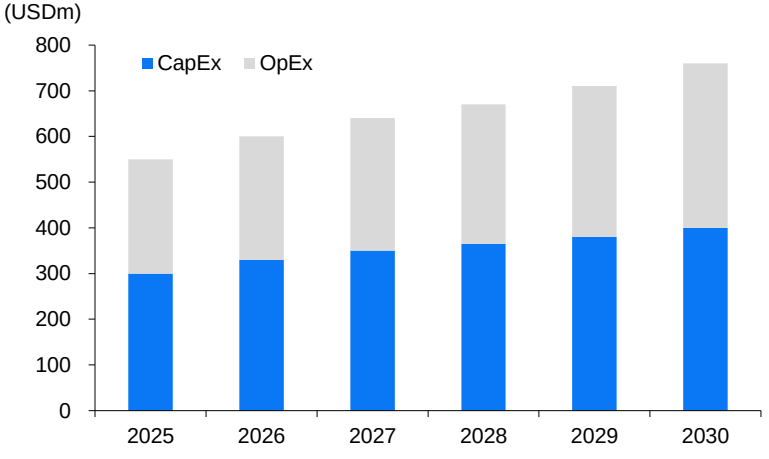
- **Beneficiary of increased investment in water infrastructure (acquisition, circulation, and treatment)**
  - Data centers are an industry that must manage the entire water cycle in-house: ① intake → ② circulation → ③ cooling → ④ wastewater → ⑤ reuse. A critical component in this process is the pump system. Ebara is a global leader in industrial, high-pressure, and large-capacity pumps, supplying standard equipment used for transporting freshwater, wastewater, and cooling water.
  - The construction of new data centers is likely to drive demand for durable and high-efficiency pumps used in cooling water and wastewater treatment systems. This trend creates both initial capex and ongoing operation and maintenance (O&M) revenue opportunities.
- **As environmental regulations tighten, demand for "reuse and advanced wastewater treatment" facilities should grow**
  - Globally, there is a trend toward stricter regulations on industrial water intake and wastewater discharge standards. The focus is moving from relying on new water sources to reusing existing water sources.
  - Wastewater recovery and reprocessing systems are becoming essential for data centers, and Ebara specializes in pumps for wastewater treatment plants and high-load, continuous operation environments.

Ebara: Main industrial lineup



Source: Ebara, Samsung Securities

US data center water capex and opex outlook



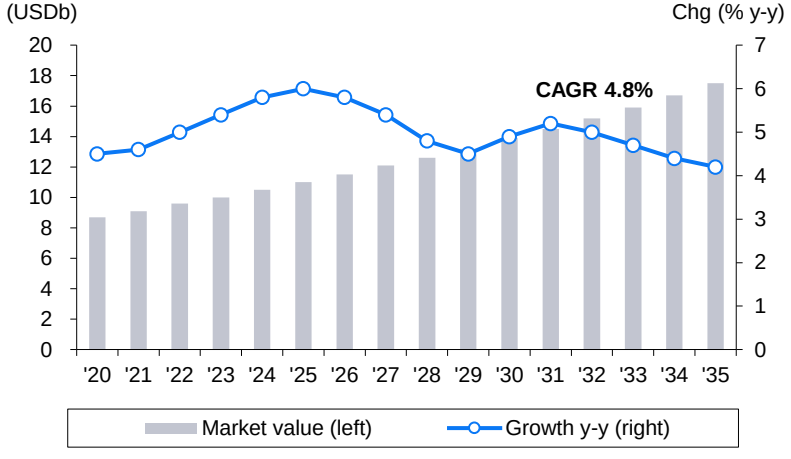
Source: Bluefield Research, Samsung Securities

4) Case study: Japan's water market

Key Japanese companies: 2) Kurita Water Industries(6370 JP)

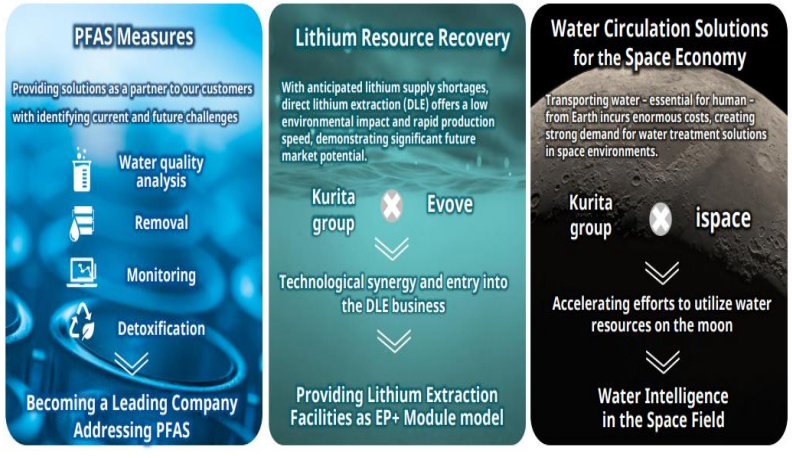
- **Beneficiary of growing demand for high-purity and reuse water treatment systems**
  - Data centers require high levels of water quality management to ensure cooling efficiency and equipment longevity. In particular, AI and GPU servers are vulnerable to even minor contamination, making ultra-pure water (UPW) precision water treatment a critical requirement.
  - Kurita offers integrated solutions for ultra-pure water and reuse water treatment, providing a one-stop service that includes equipment, water treatment, and control technologies. With a strong track record in the semiconductor and display industries, Kurita can easily extend its technology to data centers.
- **Revenue structure stabilizing thanks to O&M and chemical sales growth**
  - A key aspect of water regulation is maintaining continuous compliance with water quality standards. Data centers operate 24/7, requiring constant monitoring, chemical dosing, and operational management.
  - Kurita is not just an engineering, procurement, and construction (EPC) company. It also provides water treatment operation services (O&M) and chemical treatment solutions. This creates a customer lock-in structure that often leads to long-term contracts once adopted.

Ultra-pure water treatment system market



Source: Fact.MR, Samsung Securities

Plans to expand new water treatment business



Source: Kurita Industries, Samsung Securities

PART
05

Appendix

Appendix

Valuation Table(1)

(USDb)		Ebara (6361 JP)	Kurita Water Industries (6370 JP)	Xylem (XYL US)	Ecolab (ECL US)
Market Cap.		17	6	31	86
Sales	2022	5,210.8	2,549.0	5,522.0	14,187.8
	2023	5,414.9	2,665.2	7,364.0	15,320.2
	2024	5,725.9	2,684.3	8,562.0	15,741.4
	2025E	6,433.4	2,783.4	9,202.7	17,292.3
	2026E	6,869.4	2,918.9	9,617.5	18,138.4
	2027E	7,301.9	3,029.9	10,131.8	19,005.6
Operating Profit	2022	540.1	214.9	622.0	1,562.5
	2023	613.5	285.6	652.0	1,992.3
	2024	647.2	205.3	1,009.0	2,802.4
	2025E	821.6	361.9	1,732.2	3,294.3
	2026E	946.0	398.9	1,897.9	3,676.2
	2027E	1,036.6	432.0	2,090.9	4,008.1
Net profit	2022	386.4	148.9	355.0	1,091.7
	2023	429.9	202.2	609.0	1,372.3
	2024	471.7	133.3	890.0	2,112.4
	2025E	579.8	248.2	1,334.1	2,408.4
	2026E	669.9	273.5	1,473.6	2,726.7
	2027E	740.0	296.0	1,621.8	2,997.3
EBITDA	2022	724.3	490.7	941.0	2,501.2
	2023	803.1	511.6	1,184.0	2,915.9
	2024	845.4	564.3	1,677.0	3,737.8
	2025E	1,065.7	579.2	2,132.5	4,364.1
	2026E	1,213.5	619.4	2,315.9	4,728.0
	2027E	1,306.2	653.3	2,496.7	5,072.5
Net Debt	2022	(2.6)	357.4	1,254.0	8,427.9
	2023	(50.9)	311.4	1,729.0	7,813.9
	2024	(151.9)	3.6	1,349.0	7,025.9
	2025E	295.8	(61.6)	(5.1)	6,579.6
	2026E	125.7	(251.8)	(505.4)	5,847.9
	2027E	5.1	(366.2)	(861.9)	5,039.6

Note: As of February 23, 2026
Source: Bloomberg, Samsung Securities

Appendix

Valuation Table(2)

(USDb)		Ebara (6361 JP)	Kurita Water Industries (6370 JP)	Xylem (XYL US)	Ecolab (ECL US)
EPS	2022	(0.6)	(9.5)	(16.9)	(3.0)
Growth rate(%)	2023	11.0	35.7	42.6	25.8
	2024	9.6	(34.1)	30.6	54.1
	2025E	24.0	89.0	48.9	14.7
	2026E	15.7	10.6	10.6	14.2
	2027E	12.7	9.9	10.8	10.8
ROE (%)	2022	15.0	7.1	10.6	15.1
	2023	15.7	9.3	8.9	18.0
	2024	16.2	6.1	8.6	25.1
	2025E	16.8	10.8	11.0	23.1
	2026E	17.1	11.3	11.5	24.1
	2027E	15.1	11.7	12.4	24.3
P/E (x)	2022	8.6	33.7	39.1	33.2
	2023	12.8	24.3	31.4	38.1
	2024	15.9	25.4	27.8	33.6
	2025E	28.7	24.3	23.3	35.9
	2026E	24.8	21.9	21.1	31.4
	2027E	22.0	20.0	19.0	28.3
P/B (x)	2022	1.2	2.3	5.7	5.7
	2023	1.9	2.1	2.7	7.0
	2024	2.4	1.5	2.6	7.6
	2025E	4.5	2.6	2.5	8.0
	2026E	4.0	2.4	2.4	7.3
	2027E	3.7	2.2	2.3	6.6
EV/EBITDA (x)	2022	4.7	11.0	22.5	19.9
	2023	6.9	10.3	24.8	22.1
	2024	8.8	6.0	17.8	19.7
	2025E	16.2	10.7	14.7	21.3
	2026E	14.1	9.7	13.3	19.5
	2027E	13.0	9.0	12.2	18.0

Note: As of February 23, 2026
Source: Bloomberg, Samsung Securities

Appendix.

Definition of Key Terms

Definition of water withdrawal, consumption, and discharge

Terms	Details
Withdrawal	• Total amount of water drawn from surface water or groundwater for usage
Discharged	• Total amount of water discharged into the natural environment or public sewage system after usage
Consumption	• Water usage that is not returned to the source, resulting in loss to the atmosphere due to evaporation, or when it is incorporated into products or plants and cannot be reused, and is primarily used in water availability impact analysis

Source: Samsung Securities

WUE (Water Usage Effectiveness): Water use efficiency index

Category	Details
Definition	• Annual data center water usage is divided by annual energy usage T • The ideal WUE value is closer to '0' • WUE has limitations in that it does not take into account the water source (water recycling amount)
Cases	• Amazon (AWS), Meta, Microsoft, and Equinix disclose their WUEs annually, and their WUEs are gradually decreasing. • Data centers in Korea began to disclose their water withdrawal volumes in their 2024 sustainability reports. • Kakao's data center withdrew 6,320 tons of water, SK's Pangyo data center withdrew 60,253 tons, and Naver's data center withdrew 193,854 m^3 of water (all water sources are municipal water).
Overview	• The global top level WUE is 0.4L/kWh • The Korean average WUE is 1.8L/kWh

Source: Each company's sustainability report, Mordor Intelligence, Samsung Securities

Appendix.

Types of water and key regulations in Korea

Types of water in Korea

Type	Details
Municipal water	• A water supply system that installs and supplies water intake, water supply, water purification, water transmission, and drainage facilities to supply drinking and domestic water • The supply target is general consumers including residents and businesses
Industrial water	• Water intake, water purification (or treatment) to supply industrial water supply system with sewerage, drainage and water supply facilities (industrial (for the purpose of supply only)) • The supply target is industrial complexes, factories, *etc*
Sewerage water	• A facility and equipment installed to remove, treat or utilize sewage • Includes all facilities for treating or reusing sewage

Source: National Law Information Center, Samsung Securities

Major laws related to industrial water

laws	Details
Water Environment Conservation Act	• Define industrial wastewater treatment, discharge standards, permits, and discharge allowances
Water Supply And Waterworks Installation Act	• Applicable when installing and operating industrial water supply facilities
River Act	• When directly collecting water from a river, a river water use permit is required.
Sewerage Act	• Applicable when sending factory wastewater to a sewage treatment plant (public sewage treatment facility)
Groundwater law	• Large-scale well development requires groundwater development and use permits.
Environmental Pollution Facilities Act	• Integrated environmental permits apply to large-scale businesses * Thermal power and other power generation industries, steel manufacturing, basic chemical manufacturing, semiconductor manufacturing, Automobile parts manufacturing industry, *etc*

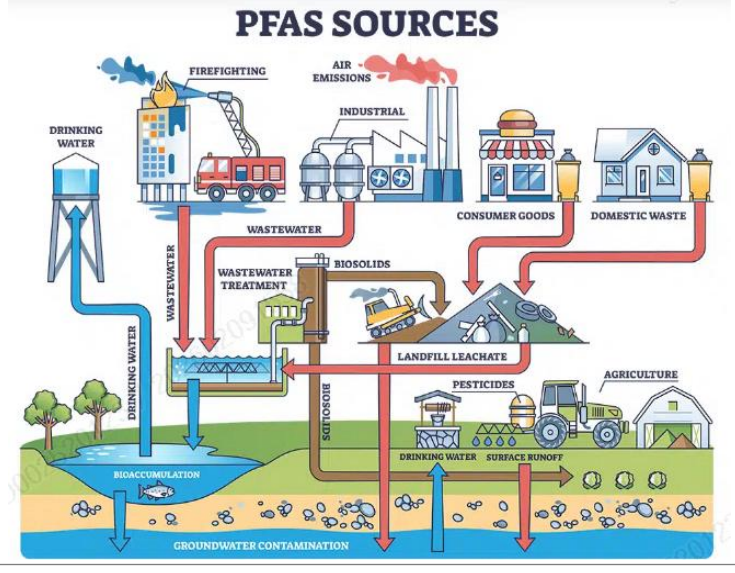
Source: National Law Information Center Samsung Securities

Appendix.

PFAS—Definition and overview

- PFAS are known for their resistance to water, oil, and heat. They are widely used in industrial and consumer products. Due to their potential health risks, including cancer and endocrine disruption, global regulations are increasingly being implemented.
- These substances are commonly found in automobiles, electronics, textiles, and cosmetics. Once ingested by humans, PFAS can remain in the body for 3.8 to 5.4 years, and can persist in the environment for over 41 years.
- There are over 15,000 types of PFAS, with perfluorooctanoic acid (PFOA) and perfluoroctane sulfonic acid (PFOS) being among the most well-known.
- PFAS are present in industrial and municipal wastewater, entering wastewater treatment plants and public sewage systems.

PFAS Sources



Source: Armology, Samsung Securities

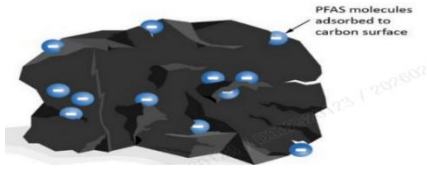
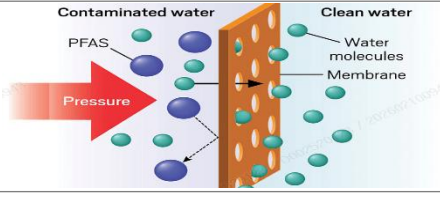
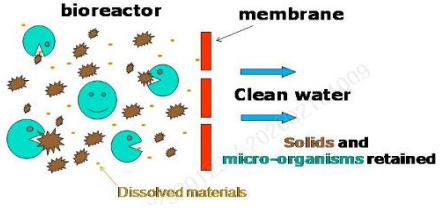
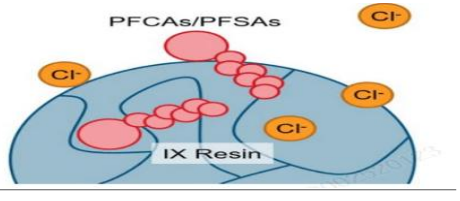
PFAS: Types and applications, by industry

Sector	PFAS type	application
Semiconductor	• PFOS	Materials used in the core process of semiconductor chip manufacturing
Electronics	• PVDF, PTFE	Insulators, cell phones, computers, speakers, *etc*
Energy	• PFAA	battery electrolyte
Automobile	• PTFE	Wiring/cables, sealants, bearings, emulsifiers
Construction	• PTFE, PVDF	Roof waterproofing membranes, varnishes, concrete, tiles,
Cosmetics, personal hygiene	• PTFE, POTS	Floss, sunscreen, shampoo, nail polish
Leather, clothing, carpet	• PFOA, PTFE	Outdoor clothing/equipment, water-repellent coated paper and leather

Source: The Scientist, Samsung Securities

Appendix.

Key removal technologies for PFAS

Type	Technology	Characteristics	
Absorption	• Granular activated carbon (GAC) • Powdered activated carbon (PAC)	Carbon filters are an economical technology that can remove PFOA at low cost. It is suitable for treating water with low PFAS concentrations with a removal efficiency of 70-90%. Most common and commercialized technology	
Membrane filtration	• Reverse osmosis (RO) • Nanofiltration(NF)	Reverse osmosis (RO) is the most efficient and accurate membrane filtration technology Physical separation of PFAS through RO filter is very efficient in removing PFAS. But it is characterized by high cost	
Biological treatment	• Activated sludge • Membrane separation bioreactor (MBR)	Activated sludge: supplies oxygen to sewage so that aerobic microorganisms can break down organic matter and purify pollutants MBR: Advanced treatment technology combining biological treatment (aerobic microbial decomposition) and membrane (membrane filtration) technology. Simultaneous removal of other contaminants rather than complete removal	
Ion exchange	• IX Resin	Ion exchange (IX) resins primarily convert negatively charged PFAS into positively charged anions. It has strengths and high removal efficiency.	

Source: NEWater, Samsung Securities

Appendix.

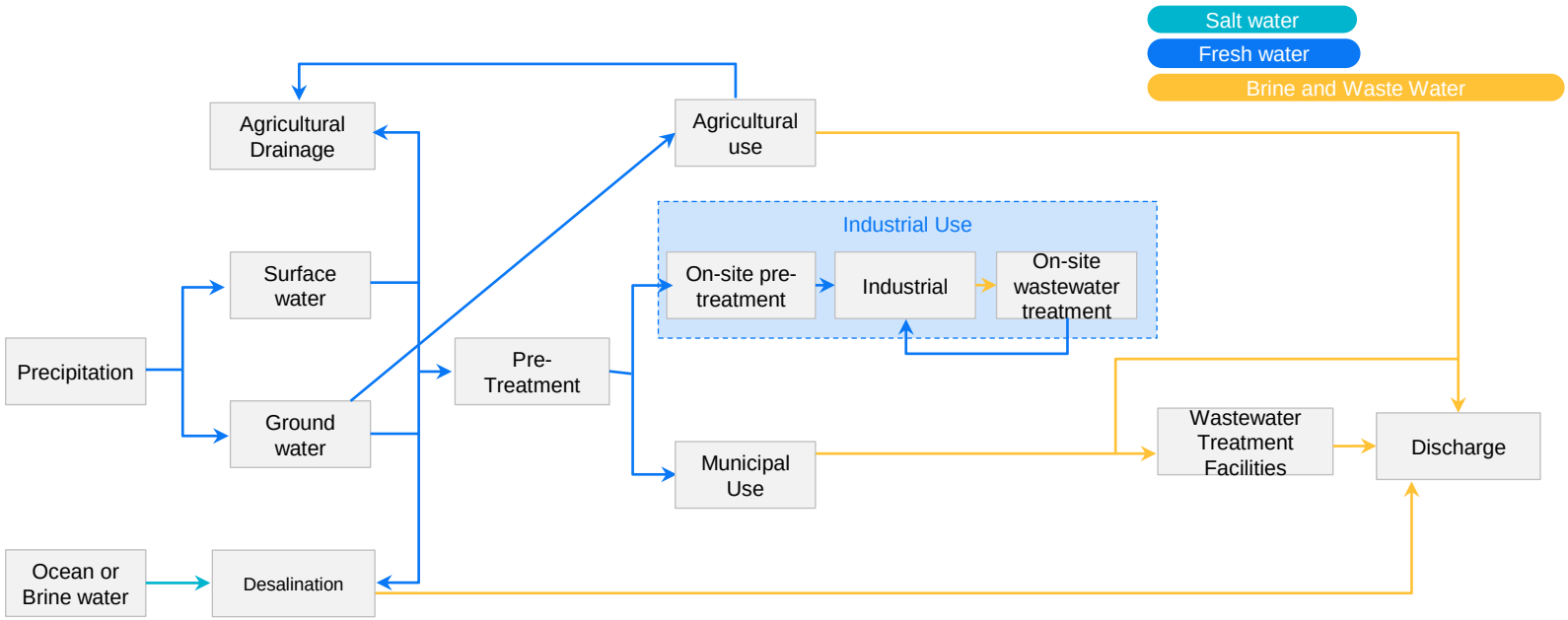
Data center cooling systems

Technology	Details	Strength	Weakness	PUE	WUE
Air-cooled	Sends cold air to the rack/server and returns hot air	Simple structure, extensive construction and operation experience	When rack power density increases, cooling is limited. GPU zones are hot. It is difficult to cool even with fan acceleration	Medium	High
ACC (Air-cooled chiller + dry cooler)	After generating cold water in a chiller, server is cooled by air/coil.	Minimizing on-site water use is possible	Power burden, reduced summer efficiency noise heat island sensitivity, site constraints	Low	High
DEC (Direct evaporative cooling)	Lower the outside temperature by evaporating water, supply cooling directly	Power efficiency due to reduced compressor operation	Increased water use is essential Humidity, outdoor air quality risk	High	Low
IEC (Indirect evaporative cooling)	Separate external air evaporation and air in server	Reduce direct inflow of outside air, mitigate contamination and corrosion risks, and secure power efficiency.	Complex facility, high capex. Water usage may increase (cooling towers, *etc*.)	Improvement	Low
Hybrid (Outdoor/Dry + Summer Evaporation Assist)	Focus mainly on external air, only evaporation assisted during heat waves	While suppressing WUE throughout the year, peak response capability (PUE/WUE balanced) remains	Driving logic and control are important	Average	Average
Direct water cooling (D2C, Direct-to-Chip)	Heat dissipation with cooling plate near CPU/GPU chip	AI high-density heat resistance, reduced hot spots, and overcoming air cooling limitations	Leak detection, piping, materials, and water quality management required High operational difficulty	Improvement	Low
Immersion	Immerse the server in insulating liquid	Very high heat removal performance	The operating method has changed significantly	Improvement	High
Cooling tower-based water cooling (Waterside)	Cooling tower releases heat to the atmosphere	Excellent cooling performance and efficiency	Structural increase in water use Blowdown/drift management required	Improvement	Low
Precooling (Outside air cooling/economizer)	Cooling without outside air chiller	Reduce electricity costs	Climate dependence (summer, humid environment restrictions) Condensation and corrosion control required	Improvement	High

Source: Bloomberg, Samsung Securities

Water cycle and usage

- Around 97.5% of the world's water is saltwater, with freshwater accounting for only 2.5%. Of this freshwater, 68.6% is stored in glaciers and ice caps, 30% is groundwater, and the remaining 1.3% consists of surface water and other sources (*eg*, lakes, rivers, and precipitation).
- The primary sources of water available for human use are surface water and groundwater. It is used primarily for agriculture (70%), followed by industry (20%), and domestic use (12%), according to UNESCO.

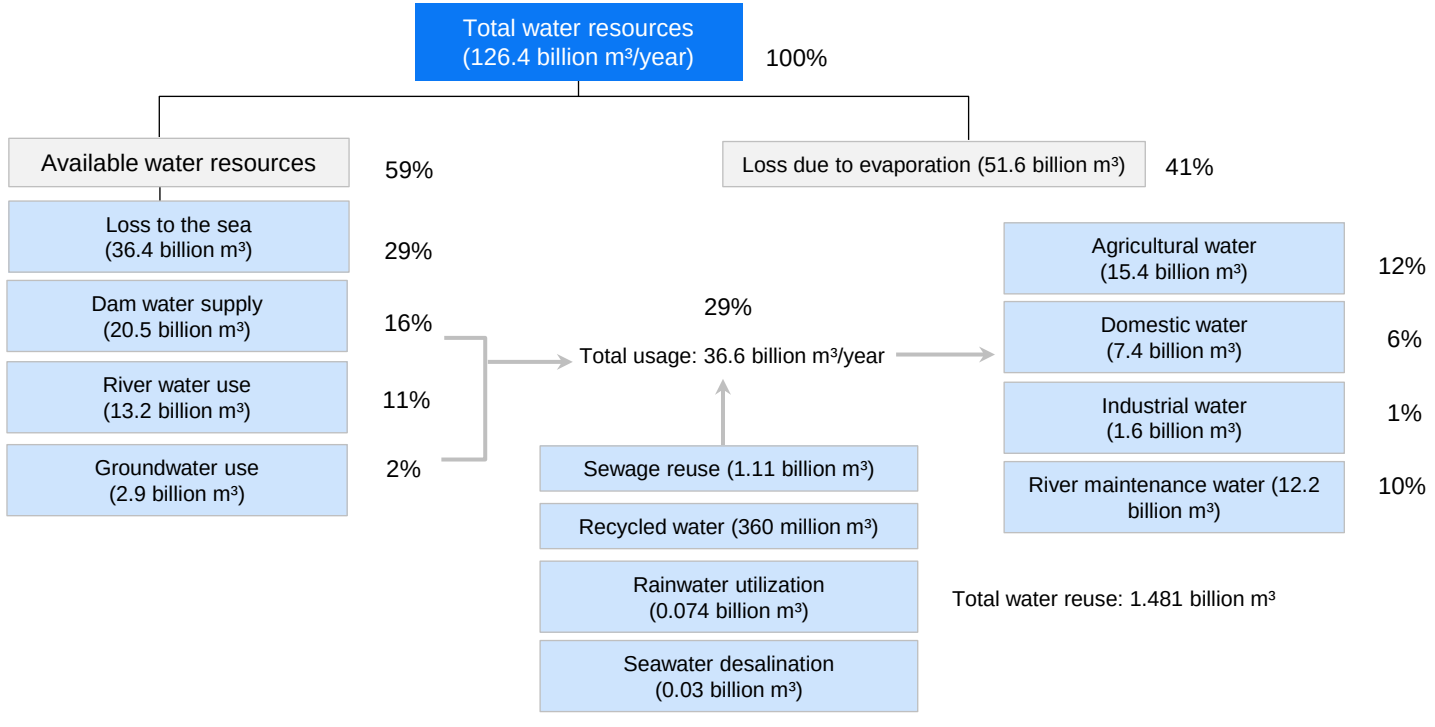


Source: BNEF, Samsung Securities

Appendix.

Korea's water resources and utilization

- In Korea, water resources available for usage are allocated for agricultural, residential, or industrial purposes.

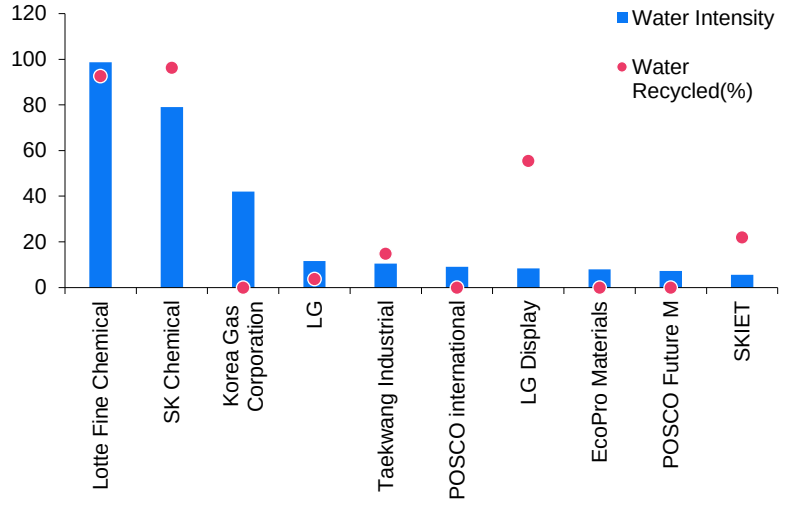


Source: Ministry of Climate, Energy and Environment, , Samsung Securities

Water intensity and recycling rates of Kospi 200 companies

- Among the Kospi 200 companies with available disclosure data, the sectors with the highest water usage relative to sales include materials, industrials, and utilities.
- The top companies in terms of water consumption are Posco Holdings, LG Chem, Samsung Electronics, and SK Hynix, all of which operate in water-intensive industries.

KOSPI200 Companies with high water intensity*



Note: * Total water usage (1,000 m³) * 1,000 / Sales (million won)
Source: Bloomberg, Samsung Securities

KOSPI 200 companies with high water consumption

Company	Sector(GICS)	Water consumption ('000 m³)
POSCO Holdings	Materials	89,505.8
LG Chemical	Materials	50,271.1
Samsung Electronics	Information Technology	36,431.0
SK Hynix	Information Technology	19,623.0
CJ Logistics	Industrials	17,873.3
CJ CheilJedang	Consumer staples	13,886.0
OCI Holdings	Materials	11,759.7
Hyundai Motor Company	Consumer Discretionary	10,220.1
LG Energy Solution	Industrials	8,297.0
Korea Petrochemical	Materials	8,065.9

Note: Limited to companies with publicly disclosed data.
Source: Bloomberg, Samsung Securities

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