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H₂O giant Suntory explores advancing with hydrogen

Sustainable Japan Network

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The beverage giant Suntory Holdings Ltd., together with nine other companies and Yamanashi Prefecture, held a ceremony on Oct. 11 to mark the start of a demonstration experiment at a large-scale power-to-gas (P2G) system for using renewable electricity to produce hydrogen fuel at Green Hydrogen Park — Hakushu.

This Yamanashi Model P2G System has started to supply green hydrogen to the Suntory Minami Alps Hakushu Water Plant. It also aims to use the hydrogen at the Suntory Hakushu Distillery. The system could produce 2,200 tons of hydrogen annually if operated nonstop, enabling a reduction in carbon dioxide emissions of 16,000 tons.

Since Japan formulated the world's first national hydrogen policy in 2017, the Basic Hydrogen Strategy, hydrogen has been considered one of the key energy sources for realizing a decarbonized society.

In line with this strategy, Suntory has been exploring ways not only to achieve its own decarbonization but also to collaborate with broader stakeholders to advance decarbonization of society.

The company's environmental vision toward 2050 sets the goal of achieving net-zero emissions of greenhouse gases across its entire value chain, but Masaaki

Fujiwara, its chief sustainability officer, believes that the new hydrogen solution has the potential to achieve much besides its 2050 goals.

The Suntory Green Hydrogen Vision, announced this June as part of a medium- to long-term plan for utilizing hydrogen, links hydrogen to the fundamental corporate slogan of "Sustained by Nature and Water."

For the company, a maker of consumer goods focused on beverages, water is the lifeline of its business activities. Fujiwara said, "As hydrogen is an energy source that is born from water and returns to water, I strongly felt that we could contribute to the implementation of hydrogen solutions in society."

Through the use of the Yamanashi Model P2G System and its green hydrogen at Suntory's production sites, the initiative aims to build a hydrogen supply chain using water and renewable energy, both produced in Yamanashi.

The system is supported by companies from a variety of industries that possess the necessary expertise and key technologies. For instance, Fujiwara said, fiber manufacturer Toray produces the polymer membranes essential for hydrogen generation.

He also emphasized, "Yamanashi Prefecture has been playing a significant role." The prefecture has long focused on renewable energy, leveraging its abundant water resources for hydroelectric power and its ample sunshine for solar power. "They also established a hydrogen strategy early on. The local leadership was



Newly developed high-efficiency, low-pollution experimental hydrogen boilers supplying the Suntory Minami Alps Hakushu Water Plant SUNTORY

exceptionally strong," Fujiwara said. This robust trust relationship with the local government underpins the project's stable advancement.

In Phase 1 of the Suntory Green Hydrogen Vision, green hydrogen will be used at the Hakushu Water Plant, serving as a heat source for the beverage sterilization process. Suntory also aims to use it as a heat source in the direct-fired distillation of whisky at the Suntory Hakushu Distillery, drawing attention as an example of decarbonizing whisky production.

"Pumping up ground water fostered in Suntory's Natural Water Sanctuary within

the prefecture and electrolyzing it using renewable energy generated in the prefecture to create hydrogen — I believe we can call this a completely locally produced energy for local consumption," Fujiwara said. The company conducts water-source conservation areas called Suntory Natural Water Sanctuaries at 26 locations across its production sites, including Hakushu.

In solar power generation, surpluses can occur because demand fluctuates depending on factors such as the time of day and weather. Fujiwara pointed out that using this surplus at the hydrogen plant will increase the efficiency of the use of solar

power.

Fujiwara said the data obtained through the demonstration experiment will be essential for clarifying the profitability of the hydrogen produced by the system and determining appropriate pricing for future commercialization.

In Phase 2, starting in 2027, the company plans to work with its partners to create and operate the entire value chain of green hydrogen, from production to sales, with an aim to expand the initiative beyond the two plants. The potential sales destinations are within Yamanashi Prefecture, as well as the Tokyo metropolitan area.

The future outlook for hydrogen utilization at Suntory's own facilities is also diverse. "At our production sites, we are considering the use of hydrogen for mobility, such as long-distance transport trucks, on-site shuttle buses and forklifts," Fujiwara said. The company also aims to roll out the technology through the framework of the Central Japan Hydrogen and Ammonia Association, starting with using hydrogen as a heat source at the Suntory Chita Distillery in Aichi Prefecture while aiming to introduce hydrogen at the Suntory Takasago Plant in Hyogo Prefecture in the early 2030s.

To further spread the use of hydrogen, ways to transport and distribute it must be established. For this, Suntory is engaging Tomoe Shokai, a company headquartered in Tokyo that has expertise in providing total solutions for gas products and services.

Fujiwara expressed a desire to take on the challenge of adding new value to hydrogen from various perspectives. "For example, hydrogen is a substance with high antioxidant capacity. We could leverage such functionality to develop new products. On the other hand, what happens if hydrogen is used in cooking? Compared to gas, hydrogen allows cooking at higher combustion temperatures. At the



The Suntory Green Hydrogen Vision is the group's mid- to long-term plan for utilizing hydrogen. SUNTORY

same time, since water vapor is generated when hydrogen burns, moisture in ingredients can remain unchanged," he said. He believes that promoting these new values is key to accelerating the widespread use of hydrogen: "Through market development, we will be working to create new demand for hydrogen."

Fujiwara also emphasized that wider and deeper collaboration with more companies from other industries will be essential not only for the production and distribution of hydrogen but also for developing markets and demand for this new energy and creating new products and services.

The company is an outsider to the conventional energy industry, but it has a strength in its closeness with the public as a manufacturer of consumer goods. Fujiwara believes this will help it communicate the current state of the energy transition to the public and raise social awareness of new energies.

Suntory is a member of the Sustainable Japan Network, a group of companies that cooperate with this newspaper to spread information about sustainability in Japan. You can also be part of the network; scan the QR code for more details.

SUNTORY



SoftBank takes on net-zero emissions challenge

Mission: Sustainability

OSAMU INOUE
RENEWS

SoftBank Corp., one of Japan's three largest telecommunications carriers, was not included in the climate change category of CDP's 2024 A List, although rivals NTT Inc. and KDDI Corp. were. All three have pledged to achieve carbon neutrality and net-zero emissions, setting goals to reduce Scope 1 and 2 greenhouse gas emissions to net zero by 2030. SoftBank was the first to set a target that also includes Scope 3 supply-chain emissions by 2050, but the targets that KDDI and NTT Docomo set later aimed to achieve them 10 years earlier. Yet SoftBank's commitment to sustainability cannot be measured by rankings alone.

Dow Jones and FTSE4Good

In November 2024, SoftBank received the Grand Prize in the Nikkei SDGs Management Awards for the second consecutive year — the first company to do so. Around the same time, it ranked first again in the Nikkei GX500 list for green transformation initiatives, thanks to a sharp increase in renewable energy use to 61% in fiscal 2024.

SoftBank also earned international recognition. It was included for the third consecutive year in the Dow Jones Best-in-Class World Index and for the fifth year in the FTSE4Good Index Series, where it earned the highest score among Japanese companies. "Our CDP climate change rating was an A- from 2021 to 2023, and we were expecting an A in 2024," said Masato Ikeda, head of SoftBank's CSR Division. "But a change in the response format led to a misunderstanding, resulting in a B rating."

Executive Vice President Fumihiro Aono, who oversees sustainability strategy,



SoftBank plans to power the Hokkaido Tomakomai AI Data Center with renewable energy. SFTBANK CORP.

said that since President and CEO Junichi Miyakawa took office in 2021, "we have placed sustainability at the center of management." Miyakawa's strong sense of crisis over AI's growing energy demand was what sparked this companywide focus on decarbonization.

Green data centers

In May 2021, soon after Miyakawa took the helm, SoftBank committed to reducing Scope 1 and 2 emissions to net zero by fiscal 2030 and shifting entirely to renewable energy. About 60% of its emissions come from 230,000 wireless base stations, so the company began accelerating their transition to renewables through long-term power purchase agreements via its subsidiary SB Power Corp.

By 2023, SoftBank had signed a 20-year contract to procure 2 billion kilowatt-hours of renewable energy annually and set a road map to reach 100% effective use of renewables by 2030. A key part of this plan is the large-scale Tomakomai AI Data Center in Hokkaido, scheduled to open by 2026. The facility will be powered entirely by renewable energy generated in Hokkaido and eventually expand to over 300 MW — enough to power 100,000 households. Additional centers are planned across Japan, each using locally sourced renewable energy.

This attitude of prioritizing green energy procurement over business convenience demonstrates SoftBank's genuine commitment to carbon neutrality.

Distributed AI processing

SoftBank is also working to reduce overall power consumption, especially in its supply chain. In fiscal 2023, 95% of its total emissions were Scope 3, mainly from smartphone-related components and materials. To address this, it collaborates with the SoftBank Group's subsidiary Arm Ltd., whose chip designs are used in nearly all smartphones, to improve energy efficiency.

SoftBank is also cooperating with Nvidia Corp. and other major players through the AI-RAN Alliance, which it helped establish. The goal is to create a distributed AI processing network that connects data centers and base stations, reducing communication delays and power use.

"If AI processing can be done by base stations that run on renewable energy, it will



AI-RAN antennas are being developed by SoftBank with international partners SFTBANK CORP.

help reduce smartphone power consumption," Ikeda said. "We expect AI-RAN not only to enhance processing power but also to cut network energy use."

'Base stations in the sky'

SoftBank's innovation extends beyond the ground. Since 2017, it has been developing high-altitude platform stations (HAPS) — "base stations in the sky" flying in the stratosphere. Powered by solar energy, they can cover a 200-kilometer range with lower power use than ground stations. In 2023, SoftBank conducted the world's first successful 5G connectivity test from the stratosphere and is now working to commercialize the technology.

The company is also exploring next-generation batteries through its SoftBank Next-generation Battery Lab, founded in 2021. In collaboration with U.S.-based Enpower Greentech Inc., it successfully verified a lithium-metal battery with more than double the energy density of conventional models.

SoftBank participates as a founding member of the Energy Transition Initiative — Center for Global Commons (ETI-CGC), a platform led by the University of Tokyo that brings together businesses to discuss policies for Japan's decarbonization.

"We haven't reached an answer yet," Ikeda said. "But achieving net-zero emissions is only possible if everyone works together. It's not something we can accomplish alone."

Even amid uncertainty, SoftBank continues to push forward with innovation and collaboration. Its approach may well become a driving force for Japan's sustainable future.

Scan the QR code to read the full version of SoftBank's article, which was originally published on Oct. 25 in Sustainable Japan Magazine.



ESG/SDGs

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Academic experts on environmental and economic policies gathered in Tokyo recently to discuss the importance of using their expertise more to find solutions to climate change.

Hundreds attended the 30th symposium of the Society for Environmental Economics and Policy Studies on Sept. 19, either in person or online. The event featured discussions between experts and business executives about past actions and future steps needed to support a sustainable society.

"There is more scope for cooperation among industries, governments and academic fields," Toshihide Arimura, a professor of political science and economics and the director of the research institute for environmental economics and management at Waseda University, said in the opening speech. He said the potential of social science has not been fully taken advantage of in solving environmental issues.

Ayano Ihara, a principal at Boston Consulting Group and an expert on carbon neutrality and climate change, said Japanese companies need academic input to better understand consumers' preferences in order to effectively market green products.

"Companies must experiment to identify consumers who are willing to pay premiums for green products," Ihara continued. "To that end, they need to have more contact with experts and advice from them who have expertise on the issue."



Symposium attendees SEEPS

Environmental policy experts gather on finding better solutions

Ihara pointed out that data show Japanese consumers are less conscious of environmental issues and that this affects product marketing. Some U.S. and European companies make stupendous investments to develop green materials and improve consumer perceptions, she said.

A survey conducted by BCG indicates that the primary reason Japanese consumers are reluctant to purchase environmentally friendly products is insufficient information about options. The January 2025 study of 3,300 people showed that 22% of those in their mid to late teens, as well as those in their 50s and 60s, had changed their actions after learning about climate change and global warming — higher percentages than other age groups. Also, 60% of respondents in their 60s are interested in climate issues, the highest percentage among all generations. Ihara said this generation has the strongest concern about what the future holds for their children and grandchildren.

She also said that although Japanese companies have developed the capability to manufacture environmentally friendly products, they lack effective strategies to market them and need better ways to clearly communicate their benefits.

At the panel discussion, a female panelist stressed that the Japanese financial industry — including banks, brokerage houses and investment companies — needs more experts on environmental economics. Those who deal with sustainability finance do not always have sufficient expertise, as their positions change too often under the job rotation systems common in Japan, she said.

"It would be wonderful if the financial world had more people who studied environmental economics," she said, adding that the country needs a kind of system where the business world interacts with experts in economics or environment studies.

She also said she expects academics to convince corporate executives to act on environmental issues by explaining the long-term effects of lower carbon emissions.

Overseas financiers often conduct joint research with universities, elevating their expertise and improving their advisory services to customers. "It would be won-



Opening remarks by Toshihide Arimura THE SOCIETY FOR ENVIRONMENTAL ECONOMICS AND POLICY STUDIES (SEEPS)

derful if academia and financial firms (in Japan as well) could do something together to create values," she said.

Japan's green transformation policy started against a backdrop of global agreement on becoming carbon neutral by 2050. During a policy speech at the Diet in 2020, then-Prime Minister Yoshihide Suga pledged net-zero carbon emissions by 2050. The government later released a policy on investing a total of ¥150 trillion (\$1 trillion) in green transformation projects.

She said the government's drive for green transformation accelerated after Russia invaded Ukraine in 2022, raising concerns over energy security, including imported fossil fuels. According to the Agency for Natural Resources and Energy, Japan has an energy self-sufficiency rate of 15.3%, the lowest among the Group of Seven nations. By comparison, the United States and Canada have rates of over 100%.

The government is set to encourage sustainability finance that will help fossil fuel companies shift their energy sources to zero-emission and renewable sources, in tandem with the carbon pricing mechanism that will start in 2026, creating a new market for trading companies' carbon emissions. So far, Japan has issued a limited amount of sustainable bonds, worth ¥2.5 trillion.

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