

April 3, 2025

Kirin and Hitachi begin joint research on the creation of forest-based carbon credits

TOKYO, April 3, 2025 - Kirin Holdings Company, Limited and Hitachi, Limited concluded a joint research agreement in March 2025 with the aim of creating forest-based carbon credits.¹ By utilizing Kirin's "Rapid propagation system of plants" and Hitachi's "Remote monitoring technologies and digital measurement, reporting, and verification (MRV)² technologies," we aim to create high-quality forest-based carbon credits, while also working to reduce greenhouse gas (GHG) emissions and achieve biodiversity conservation through the protection of afforestation areas. In this way, we will contribute to the realization of a decarbonized society and the conservation of the natural environment.

1. The right to trade greenhouse gas emission reductions.
2. Referring to the measurement, reporting and verification of GHG emissions and absorption. Ministry of the Environment.

Background

According to the *Emissions Gap Report 2023* published by the United Nations Environment Program (UNEP), the total global GHG emissions in 2022 reached a record high of approximately 57.4 billion tons.³ The total carbon absorption of forests, which contributes to the reduction of GHG in the atmosphere, is also on the decline in Japan,⁴ and one of the causes is thought to be the slowing of tree growth due to the aging of forests. Maximizing the carbon sequestration capacity of forests is required for the transition to a decarbonized society. In addition, in recent years, there has been a growing trend to disclose information such as the impact of a company's business on the natural environment in line with the framework of the Task Force on Nature-related Financial Disclosures (TNFD),⁵ and there is a need for initiatives that balance decarbonization and biodiversity conservation. Against this background, Kirin and Hitachi have focused on forest-based carbon credits and have started joint research to address social issues.

3. Ministry of the Environment, 2024: *White Book of the Environment, the Recycling Society, and Biodiversity* www.env.go.jp/policy/hakusyo/r06/html/hj24010203.html (in Japanese)
4. Ministry of the Environment: *Greenhouse Gas Emissions and Absorption in FY2022* (Summary) www.env.go.jp/content/000216815.pdf (in Japanese)
5. Taskforce on Nature-related Financial Disclosures: An international organization that is developing a framework to help private companies and other organizations properly assess and disclose the risks and opportunities related to natural capital and biodiversity.

Issues

In the field of forest-based carbon credits, there is a problem of "junk credits"⁶ that are not subject to proper MRV, and there is a growing demand for forest-based carbon credits with a high level of integrity. In addition, because the procedures for applying for credits are complex, there is a need for efficient and highly transparent forest management and credit creation.

Furthermore, with regard to the production of seedlings, which is one form of appropriate forest management, as the producers age, their number continues to decline, and has been below 1,000 for more than 10 years.⁷ As it takes a long time to propagate seedlings using traditional grafting and cuttings, there is an urgent need to develop more efficient seedling production technology.

6. Carbon credits for which the effect of GHG reduction is uncertain.
7. Forestry Agency: Current State of Seedling Production Business www.rinya.maff.go.jp/j/kanbatu/syubyou/syubyou.html (in Japanese)
"Number of Seedling Production Businesses by Management Type and Trends in Seedling Production Area" 2012-2022. www.rinya.maff.go.jp/j/kanbatu/syubyou/attach/pdf/syubyou-48.pdf (in Japanese)

Overview of Joint Research

A joint research agreement was signed in March 2025 with the aim of creating high-quality forest-

based carbon credits and conserving biodiversity by combining Kirin’s “Rapid propagation system of plants” with Hitachi’s “Remote monitoring technology and digital MRV technologies”.

Kirin will establish a method for producing seedlings that can be produced more efficiently in a shorter period of time than conventional grafting and cutting techniques using its “Rapid propagation system of plants.” Hitachi will utilize “Remote monitoring technologies and digital MRV technologies” to develop a method for quantitatively evaluating carbon sequestration, and to create an unalterable database and automatically generate application reports. In the future, we will begin planning for a demonstration test to evaluate carbon sequestration and biodiversity in the field.

【Technologies to be used to create high-quality forest-based credits and the role of each company】

| | Kirin | Hitachi |
|-----------------------------|--|---|
| Technologies to be utilized | <ul style="list-style-type: none"> • “Rapid propagation system of plants” cultivated through experience in the agribio business^{8,9} | <ul style="list-style-type: none"> • Digital Technology¹⁰ for MRV of environmentally friendly projects that utilize remote monitoring technology, blockchain, etc. |
| Undertaking | <ul style="list-style-type: none"> • Development of efficient methods for producing seedlings (propagation methods) • Study of methods for evaluating biodiversity | <ul style="list-style-type: none"> • Development of a quantitative evaluation method and digital system for carbon sequestration to create forest-based carbon credits • Study of methods for evaluating biodiversity |

8. Kirin Research and Development: “From seed potato production to space farms! Kirin’s ‘mass plant propagation technology’ is attracting attention in a variety of fields” https://rd.kirinholdings.com/domain/result/story_014.html (in Japanese)
9. Kirin Research and Development: “Developing a technology to mass-produce Japanese black pine saplings, and contributing to the regeneration of coastal protective forests in the Tohoku disaster area” https://rd.kirinholdings.com/domain/result/report_021.html (in Japanese)
10. Hitachi News Release, October 30, 2023 “Full-scale verification begins for digitization of J-Credits promoted by the Ministry of the Environment” www.hitachi.co.jp/New/cnews/month/2023/10/1030a.html (in Japanese)

【A mechanism for creating high-quality credit】



【Future Prospects】

Kirin and Hitachi will promote further joint research themes that leverage the strengths of both companies, and by creating high-quality forest-based carbon credits, aim to simultaneously address a variety of social issues, including biodiversity conservation, contributions to forest businesses, GHG reduction (promotion of decarbonization), and improvement of the global environment. In addition to promoting activities aimed at implementing demonstration tests, we will also continue to search for collaborative partners for demonstration tests and implementation.

The Kirin Group aims to overcome the challenge of climate change and build a decarbonized society through its *Kirin Group Environmental Vision 2050*. Kirin aims to not only achieve net zero GHG emissions across its entire value chain by 2050, but also to go beyond its value chain to contribute to a decarbonized society. Kirin will work to create carbon credits and address climate change while maintaining forests using Kirin's "Rapid propagation system of plants." (March 24, 2025, Company Release, Carbon Credit Policy
(https://www.kirinholdings.com/en/newsroom/release/2025/0324_02.html)

Hitachi is promoting initiatives to achieve carbon neutrality by 2050 based on its long-term environmental goals outlined in *Hitachi Environmental Innovation 2050*. In addition, Hitachi will lead the search for a solution to global environmental issues through its social innovation business and contribute to the realization of a sustainable society where the preservation of the global environment and quality of life are compatible.

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<https://www8.hitachi.co.jp/inquiry/hitachi-ltd/hqrd/news/en/form.jsp>

About Kirin Holdings Company, Limited

Kirin Holdings Company, Limited is an international company that operates in the Food & Beverages domain (Food & Beverages businesses), Pharmaceuticals domain (Pharmaceuticals businesses), and Health Science domain (Health Science business), both in Japan and across the globe.

Kirin Holdings can trace its roots to Japan Brewery which was established in 1885. Japan Brewery became Kirin Brewery in 1907. Since then, the company expanded its business with fermentation and biotechnology as its core technologies, and entered the pharmaceutical business in the 1980s, all of which continue to be global growth centers. In 2007, Kirin Holdings was established as a pure holding company and is currently focusing on boosting its Health Science domain.

Under the [Kirin Group Vision 2027](#) (KV 2027), a long-term management plan launched in 2019, the Kirin Group aims to become A global leader in CSV*, creating value across our world of Food & Beverages to Pharmaceuticals. Going forward, the Kirin Group will continue to leverage its strengths to create both social and economic value through its businesses, with the aim of achieving sustainable growth in corporate value.

* Creating Shared Value. Combined added value for consumers as well as for society at large.

Joy brings us together



HITACHI

About Hitachi, Limited

Hitachi drives Social Innovation Business, creating a sustainable society through the use of data and technology. We solve customers' and society's challenges with Lumada solutions leveraging IT, OT (Operational Technology) and products. Hitachi operates under the 3 business sectors of "Digital Systems & Services" - supporting our customers' digital transformation; "Green Energy & Mobility" - contributing to a decarbonized society through energy and railway systems, and "Connective Industries" - connecting products through digital technology to provide solutions in various industries. Driven by Digital, Green, and Innovation, we aim for growth through co-creation with our customers. The company's revenues as 3 sectors for fiscal year 2023 (ended March 31, 2024) totaled 8,564.3 billion yen, with 573 consolidated subsidiaries and approximately 270,000 employees worldwide. For more information on Hitachi, please visit the company's website at <https://www.hitachi.com>.

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Information contained in this news release is current as of the date of the press announcement, but may be subject to change without prior notice.
