



Sustainability
Progress Report
2024

◆◆ Spiber



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Introduction

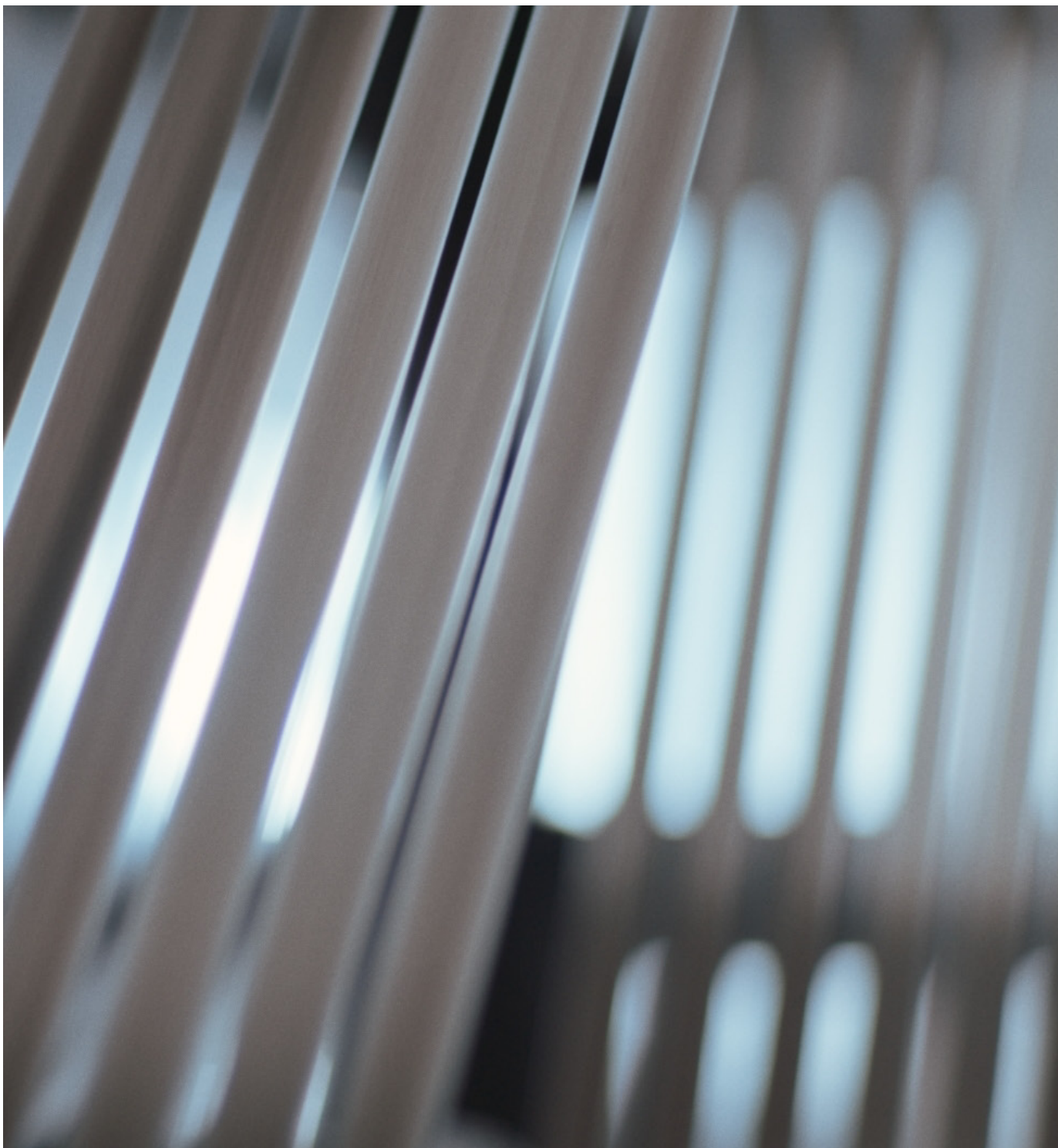
Impact = Innovation + Integrity

Sustainability is central to Spiber's mission. Faced with the reality of a world with limited resources, we are devoted to developing new materials which we believe can have transformational impact on society.

In 2022 we published our first [Sustainability Impact Report](#), which outlines our strategy towards maximizing our potential for positive impact and defines the ambitions and targets we aim to achieve in our journey moving forward. This is our second annual progress update after our [Progress Report 2023](#), which shares how far we have come towards those goals, using our concept of 'Impact = Innovation + Integrity' as a framework to encompass the topics that are most material to our business and our stakeholders.

Data contained within this report covers our activities throughout the 2023 calendar year unless otherwise noted (with some activities covered up to September 2024), including those undertaken at our headquarters and R&D facilities in Japan, at our polymer production facility in Thailand, and through our strategic partnership in the US.

Read our latest disclosures in accordance with the GRI standards [here](#)



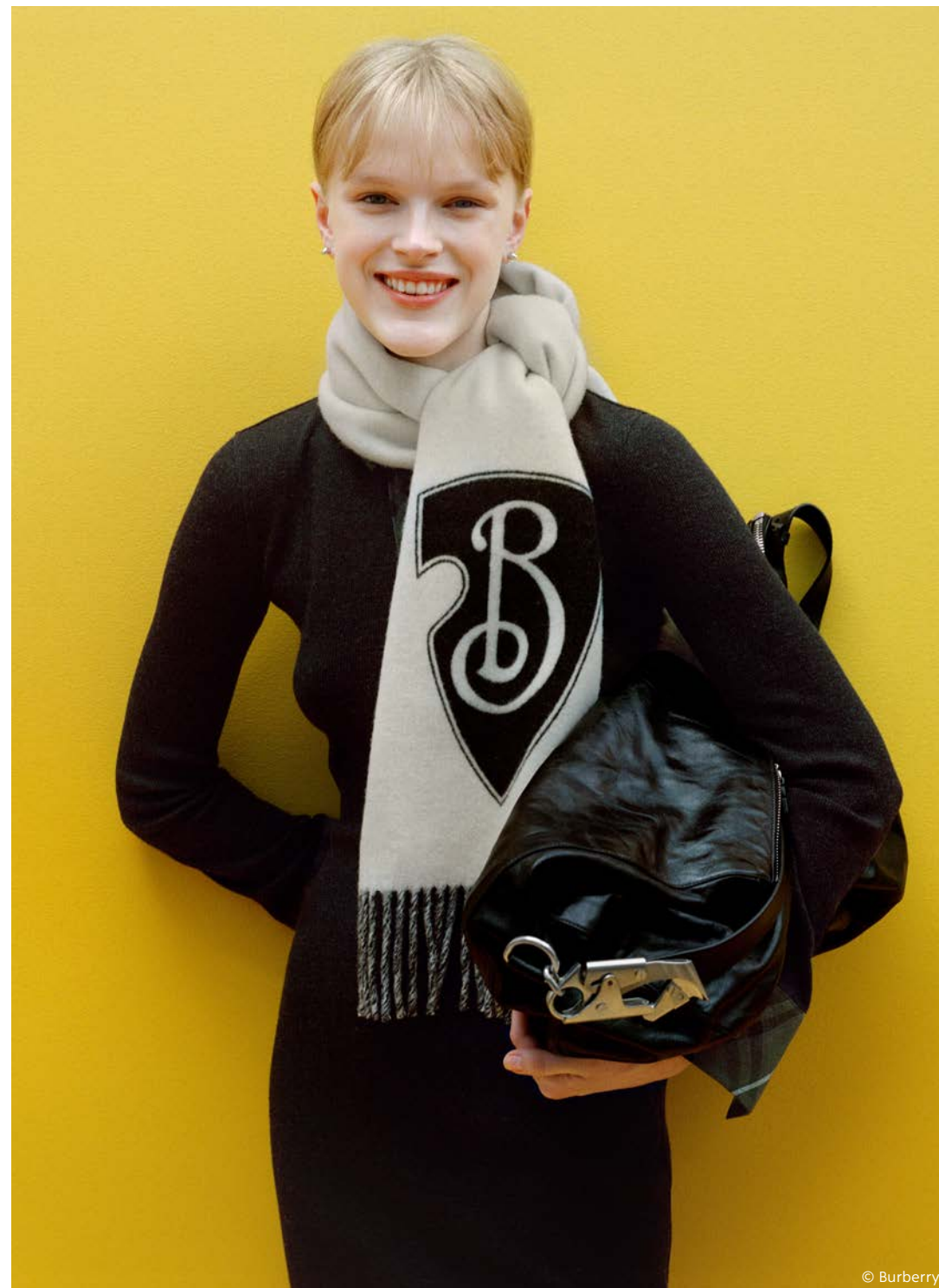
Impact

We strive to play our part in ushering a shift towards the adoption of better materials by continuing to hone our understanding and use of proteins. In order to bring about this shift, we are committed to further scaling up the production of our fibers to provide alternative, sustainable textile materials to customers globally. We believe we can maximize our positive impact on the environment and society by expanding our capacity to produce these materials so that they can be adopted across a variety of industries.

Our progress

Increased adoption of Brewed Protein™ materials

In September 2024, Burberry used our materials to create a scarf product that was commercially available at a global scale. We are delighted to see our materials being incorporated in iconic products made by fashion and luxury brands with esteemed heritage and cultural significance. We are determined to continue our efforts towards expanding uptake of our materials with committed partners that are supporting us in materializing our positive impact on the planet and society. See more information regarding the product [here](#).



Our progress

Increased productivity

We are on track with production at our Thai production plant and are adjusting volume based on business needs. Starting in 2023, we began cutting and crimping our fibers in-house at our facility in Tsuruoka, Japan, a process which was previously outsourced to a partner. The insourcing of this production process has made it easier to consider optimal processing conditions and has made it possible to consistently produce higher quality products while shortening supply lead times.



Our progress

Developing various formats of Brewed Protein™

Spiber's materials have the potential to be applied to formats beyond staple fibers for textiles, and we have been able to make steady progress towards making these ready for their respective markets.

Animal fur alternative

Spiber has received positive feedback from customers regarding our Brewed Protein fur materials and continues to develop new items.

Leather alternative and waterproofing film

Spiber is partnering with Komatsu Matere, a Japanese leader in synthetic fiber high-level post-processing, to develop new products by leveraging the strengths of both companies to further expand the range of new applications and development areas for Brewed Protein materials.

Food proteins

After passing the proof-of-concept stage for a number of food protein types, we are now in the process of scaling up using our existing production platform. Additionally, our application for pre-market approval for novel ingredients to be used in food is underway.



A word from KOMATSU MATERE Co., Ltd

Since our founding over 80 years ago, Komatsu Matere has remained deeply committed to material development, continuing our tireless efforts to create materials that meet our customers' needs. In response to significant changes in market demand, we have worked to create new added value that combines technology and sensitivity, as reflected in our corporate motto: "Art in Technology".

In today's world, sustainability has become a global issue that can no longer be ignored, and since 2015 our company has been pursuing joint development initiatives with Spiber that focus on efforts to co-create a more sustainable society.

Spiber, which develops the "Brewed Protein™" structural protein material, has become a promising partner for us as we advance our environmental management processes. By combining our proprietary technology for permeable waterproof film and synthetic leather with "Brewed Protein™"—a material expected to reduce environmental impact by avoiding petroleum and animal-based ingredients—we aim to realize the development of new sustainable materials.

komatsumateRe



Innovation

Our vision is to expand the range of sustainable materials through our technological innovation, closed loop systems, and key partnerships.

Innovation is the beating heart of our business. We are committed to continuing to develop and push Brewed Protein™ materials to do more for a wider range of industries. Given that innovation is not possible without the talented people who drive our efforts, we are firmly committed to helping our team thrive and reach their full potential during their time at Spiber.

1. Greenhouse gas emissions and energy

Commitments

Create a mitigation plan by 2024 to reduce emissions intensity to 10 kg CO₂ equivalent per kg Brewed Protein™ fiber by 2029

Progress

We have launched a project with a cross-functional team which reports to the Representative Executive Officer to assess feasibility and impact of a wide variety of emissions reduction initiatives. The project is on track to have action plans defined by the end of 2024.



2. Circularity

Commitments

Identify potential non-edible feedstocks

1. Develop processes to utilize various types of agricultural waste and by-products as feedstock
2. Replace at least 50 tonnes (dry weight) of sugarcane sugar with non-edible, biomass-based sugar as feedstock annually for Brewed Protein™ polymer production in Thailand by 2026

Progress

We have run successful trial batches using bagasse-derived sugar at our production facility in Thailand. We plan to increase use of bagasse-derived sugar in our commercial production to meet our targets.

We will be sharing more concerning this initiative in our upcoming report regarding the BioCircular Materials Alliance.



3. Diversity, Equity and Inclusion in the workplace

We achieved our goal of forming an official DEI Team under our Human Resources section in 2023. We have been making steady progress on DEI goals as listed below.

Commitments

Progress

1. Bring the ratio of women in management positions (senior manager level and above) at the Spiber Group to at least 30% by 2025

Spiber is developing a list of candidates to increase the number of women in senior management positions. In parallel, we are also evaluating what prevents women from taking up such positions as compared to their male counterparts. In order to set these promising candidates up for success in their new roles, we plan to introduce a support system that will include training and the provision of educational materials for both the candidates and their mentors.

2. Create a Diversity, Equity and Inclusion policy, applicable to the Spiber Group, led by senior management

Spiber's company mission and vision inherently communicate a commitment to diversity, equity, and inclusion, hence having a DEI policy is a priority for the company to be in total alignment with which direction Spiber is going both in the short and long term. This is a goal that we wish to make steady and methodical progress on in order to avoid overlooking any important contexts or taking premature action. We will be able to report more progress on this next year.

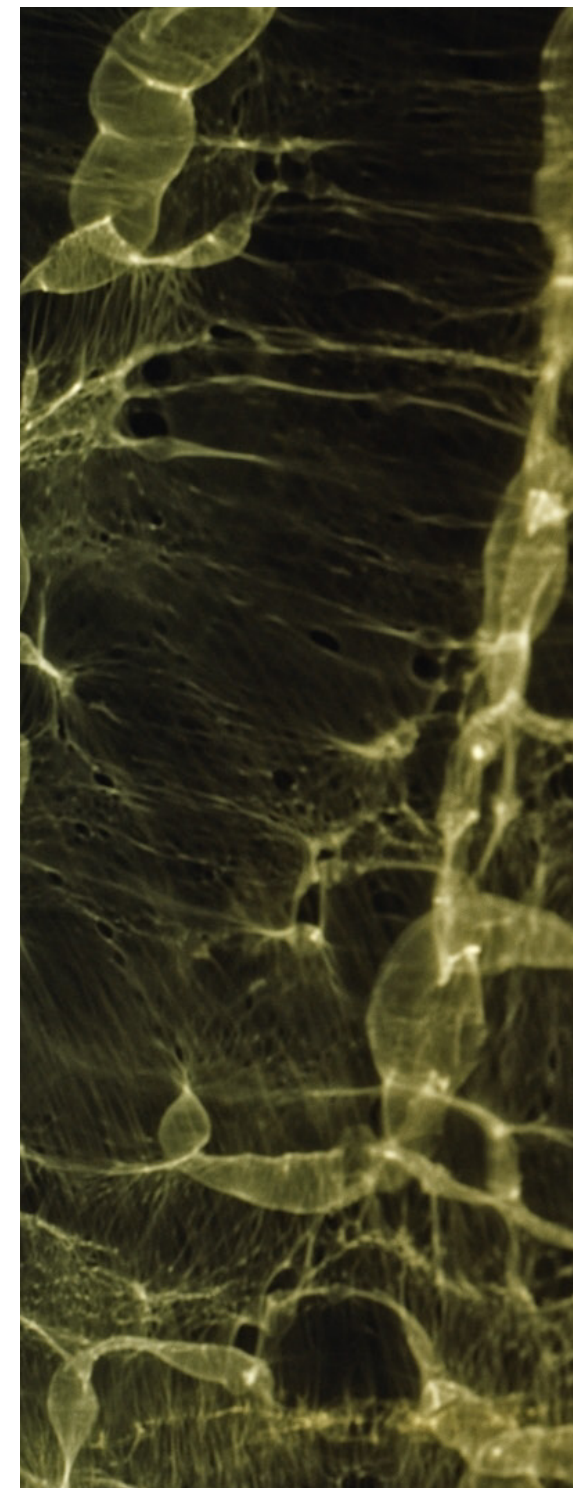
3. Provide DEI training to raise awareness and help create a more inclusive culture

We are beginning training at the senior management level so that trained leaders can disseminate the values of DEI to the entire organization. For this purpose, we are partnering with a third party to carry out objective evaluations of the trainees and conduct the program by the end of 2024.

4. Introduce a program for employees with disabilities to ensure equity of access to recruitment, career development, promotion, training, and other employment opportunities for all staff

The DEI Team worked with our Recruiting Team and included a [statement on inclusive hiring](#) on Spiber's Jobs page in addition to adding a list of possible accommodations for newly joining employees with disabilities in job descriptions.

5. Introduce DEI considerations to the recruitment process



Sustainable support systems

Healthcare leave

As Japanese labor laws do not require employers to provide sick leave, employees typically use their paid leave allowance in cases of sickness. Spiber is continually striving to balance interests, and is working towards offering our employees tools that go beyond only what is required by law.

In 2023, Spiber implemented a paid healthcare leave allowance for menstruating individuals, and it was well received within the company. In June 2024, the DEI Team conducted a survey about this new initiative to gather feedback about the system's accessibility and reception. Respondents who experience menstruation were asked questions about their experiences applying for and utilizing the leave system in order to identify potential improvements and generate further recommendations for improving employee well-being.



Spiber employee's experience on healthcare leave

My work primarily involves lab duties, which can be physically demanding, and I often find myself on my feet for extended periods of time. Healthcare leave has been invaluable for managing my well-being. It allows me to prioritize my health without feeling guilty about not being able to work to the best of my capabilities. In particular, menstrual leave has been a significant benefit, enabling me to rest and recover when needed. Even when I don't experience severe physical symptoms, using the leave helps me manage shifts in my temper caused by hormonal changes and helps me return to work feeling more refreshed and productive. Moreover, the system helps me communicate my needs more effectively to my team and helps them build empathy towards the experiences of menstruating individuals.

Kullathida Thonghubate

Researcher
Biotechnology Division



My monthly periods are very light, so I have never had to take healthcare leave. However, everyone experiences menstruation differently, with some facing significant discomfort, such as abdominal pain and nausea, just from sitting still, which they can do very little about. For those individuals, the ability to use this system to properly rest their bodies helps to reduce psychological stress and creates an environment where they can work more efficiently. I believe that this ultimately leads to an increase in overall company productivity.

Above all, I am proud and appreciative as an employee that Spiber is working to realize its philosophy of "sustainable human well-being" within the company environment, constantly questioning the existing norms of society and work styles, and striving to create a new and inclusive environment. I am excited to see Spiber moving towards the right direction in order to become a truly diverse, equitable and inclusive workplace.

Ayana Nakajima

Marketing & Communication Division





Integrity

We believe in creating operations that uphold our values—using resources wisely and embedding company values into our culture and ways of working. Our materials are supported by responsible operations and a commitment to low-impact renewable practices, and are founded on governance with shared core values and philosophies.

1. Greenhouse gas emissions and energy

Commitments

1. Measure and disclose our carbon footprint, including both direct emissions and those from our supply chain
2. Use 100% renewable electricity through direct use and support for construction of new facilities for renewable electricity generation aiming for 2025, and at the latest by 2027

Progress

Since 2023 we have been measuring and disclosing greenhouse gas emissions from our direct operations as well as from our upstream supply chain. In 2024 we have submitted a response to the CDP questionnaire for Small and Medium enterprises.

We have been purchasing iRECs in Thailand and non-fossil fuel certificates in Japan to cover 100% of our electricity usage since the beginning of 2023, and we are continuing to do so in 2024. We are excited to see the Thai government move towards incentivising investment in renewable energy with the introduction of its new "Utility Green Tariff" mechanism. This opens the possibility for Spiber to being able to use 100% additional renewable energy in Thailand in the future.¹

¹ Spiber is currently purchasing unbundled environmental attribute certificates (iRECs in Thailand and non-fossil fuel certificates with tracking in Japan). We acknowledge that use of such unbundled credits is not the most direct path to drive global reduction of greenhouse gasses ([source](#)), and we are actively following developments related to renewable energy procurement options with the intention to identify and transition to more impactful sources of renewable electricity in the future.



2. Sourcing

Commitments

1. Increase number of suppliers that adhere to our Sustainable Sourcing Policy, and increase traceability within our supply chains
2. Implement methods and activities to reduce social and environmental impact within our supply chains, and identify risks within supply chains through Human Rights Impact Assessment (HRIA) by Q2 2023

Progress

Over 96% of our upstream raw material suppliers have provided signed commitments to adhere to our Sustainable Sourcing Policy, and we are continuing to engage with the remaining suppliers to obtain their commitments as well.

In January 2024, we conducted an in-depth exploration of our upstream sugar supply chain in Thailand by visiting our supplier's sugar mill as well as Bonsucro-certified sugarcane farms in the surrounding area. During these visits, we observed the sugarcane harvest across farms of varying sizes and toured the sugar mill that supplies the liquid sugar integral to our fermentation process. This visit was also the setting for our Human Rights Impact Assessment, which included on-site interviews and questionnaires with farm and mill workers. The outcomes of this visit provided us with a comprehensive understanding of the sugarcane harvest and downstream processing, as well as essential insights for finalizing our Human Rights Impact Assessment of our sugar supplier. Additionally, we strengthened our relationship with the sugar supplier, laying the groundwork for future initiatives aimed at sustainability and socio-economic improvement. Our ongoing dialogue with key suppliers remains focused on monitoring and mitigating potential social or environmental impacts.

