



PRESS RELEASE (2026/10/19)

AI helps reveal what sustainability issues companies emphasize

Kyushu University researchers analyzed 1,623 annual securities reports from 340 Japanese food and beverage companies to uncover which environmental, social and governance issues they emphasize

Fukuoka, Japan—Every loaf of bread has a carbon footprint, a supply chain, and a workforce behind it. As climate change, food safety, and labor rights attract growing attention, corporate disclosures on environmental, social, and governance (ESG) issues are becoming increasingly important. But what do companies disclose, and have their priorities changed?

A team at Kyushu University developed an AI-based method to assess how closely corporate disclosures align with the ESG issues that matter financially to each industry. Applying it to Japan's food and beverage sector, the team found that firms place greater emphasis on social-related topics, while environmental disclosure remains relatively limited. Priorities also shifted as reporting requirements changed. The study was published in [*Corporate Social Responsibility and Environmental Management*](#) on September 16, 2026.

"High-quality ESG disclosure helps stakeholders assess business performance and risks," says Siyu Shen, a graduate student at Kyushu University's [*Graduate School of Economics*](#) and the paper's first author. "Yet counting mentions, or judging whether the language sounds positive or negative, tells us little about how seriously a company treats those issues."

Measuring what matters with AI

Determining which issues matter most requires an industry-specific benchmark. The team turned to the [*Sustainability Accounting Standards Board*](#) (SASB), which identifies financially material sustainability issues by industry. The researchers focused on Japan's food and beverage industry, where reliance on agricultural raw materials and global supply chains makes ESG risks relevant to costs and stability. They analyzed 1,623 annual securities reports filed by 340 publicly listed companies between 2020 and 2024.

To handle that volume of data, the team used Text Match Pre-Trained Transformer (TMPT), a multilingual AI model designed for semantic text matching. TMPT first locates passages in each report that relate in meaning to ESG issues. Rather than matching exact words, it captures concepts expressed in different ways, grouping words like "greenhouse gas (GHG) emissions" and "CO₂ emissions" under the same issue.

The model then rates semantic relevance. A statement giving the exact tons of emissions a company cut, for instance, scores higher than a general pledge to work toward carbon neutrality. These scores allow the researchers to systematically compare, by company, year, and ESG issue, how closely disclosures address the issues SASB identifies as financially material.

“Another advantage of TMPT is that it uses zero-shot analysis,” explains Professor [Hidemichi Fujii](#) from Kyushu University’s [Faculty of Economics](#), who also supervises Shen. “It doesn’t require researchers to manually write prompts or provide subjective guidance, making the analysis more standardized and reproducible.”

Social issues lead, while GHG emphasis climbs after 2022

The analysis revealed that Japanese food and beverage companies place greater emphasis on social issues, particularly product quality and customer welfare, while giving less attention to environmental issues, such as water and energy management, and governance issues, such as supply chain management.

Disclosure priorities shifted after 2022, with GHG emissions showing the sharpest increase, followed by human capital and supply chain management. The rise in GHG disclosures was significantly greater among companies on Japan’s Prime Market, especially in 2023–2024. This timing coincided with the new climate reporting requirements aligned with the [Task Force on Climate-related Financial Disclosures](#) (TCFD), a framework for reporting climate-related financial risks and opportunities, for Prime Market-listed companies.

“Our findings show that clear, industry-specific disclosure requirements from regulators can influence which ESG issues companies prioritize,” Shen adds. “We also hope this study helps firms identify material sustainability topics and allocate their limited disclosure resources more effectively.”

The team suggests that the framework can be extended to other industries and countries. They plan to further refine its accuracy by developing a human-coded benchmark, incorporating sustainability reports, and assessing the depth and credibility of corporate disclosures.

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For more information about this research, see “Do Firms Disclose Financially Material ESG Risks? Evidence From Japanese Food and Beverage Firms Using a Text Match Pretrained Transformer,” Siyu Shen, Chao Li, Jun Xie, Hidemichi Fujii, Alexander Ryota Keeley, Shunsuke Managi, *Corporate Social Responsibility and Environmental Management*, <https://doi.org/10.1002/csr.70990>

About Kyushu University

Founded in 1911, [Kyushu University](#) is one of Japan's leading research-oriented institutions of higher education, consistently ranking as one of the top ten Japanese universities in the Times Higher Education World University Rankings and the QS World Rankings. Located in Fukuoka, on the island of Kyushu—the most southwestern of Japan’s four main islands—Kyushu U sits in a coastal metropolis frequently ranked among the world’s most livable cities and historically known as Japan’s gateway to Asia. Its multiple campuses are home to around 19,000 students and 8,000 faculty and staff. Through its [VISION 2030](#), Kyushu U will “drive social change with integrative knowledge.” By fusing the spectrum of knowledge, from the humanities and arts to engineering and medical sciences, Kyushu U will strengthen its research in the key areas of decarbonization, medicine and health, and environment and food, to tackle society’s most pressing issues.

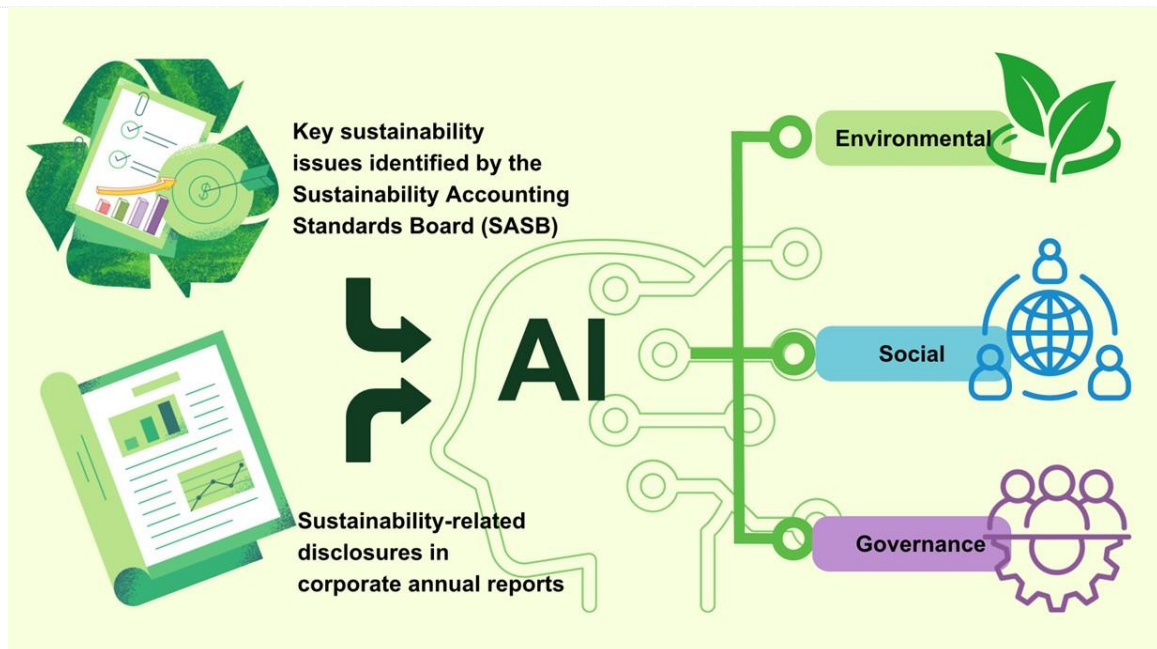


Fig. 1. AI helps reveal what sustainability issues companies emphasize. Kyushu University researchers analyzed 1,623 annual securities reports from 340 Japanese food and beverage companies to uncover which environmental, social and governance issues they emphasize.

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