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Recent trends in biodiversity conservation

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With regard to biodiversity conservation, the new global goal the Kunming-Montreal Global Biodiversity Framework (GBF) and the National Biodiversity Strategy (2023-2030) call for an integrated response to the twin crises of the climate crisis and biodiversity loss and the realization of nature-positive (nature restoration). In order to achieve the fundamental social reforms required for this purpose, efforts to incorporate biodiversity conservation measures into social and economic activities have begun.

In this paper, we will first introduce recent trends in biodiversity conservation, including international movements, public-private movements in Japan, and international framework-building movements at the private level, and second, the progress of efforts in the paper industry to date.

Finally, I would like to reorganize these trends from the perspective of integrating them with climate change countermeasures and incorporating them into socio-economic systems, and introduce my views on future measures at the corporate level, such as the importance of establishing a system to reconsider all business activities from the perspective of biodiversity conservation, and specific initiatives for the time being.

CFP calculation rules for copying paper and printing paper for products compliant with the Green Purchasing Law

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In order to build a carbon-neutral society, it is necessary to create a market where decarbonized and low-carbon products are selected, and visualization of CO_2 emissions per product through carbon footprint of products (CFP) is considered essential as a foundation for such a market. In 2023, the Japanese government released the cross-industry CFP guidelines for individual businesses to calculate their CFP, and launched a project to provide support to organizations that formulate product-specific calculation rules based on these guidelines.

As the Ministry of the Environment is considering the introduction of CFP calculation as a criterion for the Green Purchasing Law, Japan Paper Association decided to participate in the above-mentioned support project and formulate comparable CFP calculation rules for copy paper and printing paper among the paper products compliant with the Law.

The CFP calculation rules for paper and paperboard products were established by Japan Paper Association in 2010, and were reviewed in line with the government's CFP guidelines. Basically, we followed the 2010 CFP calculation rules, but reviewed the contents to make the rules comparable, and added new items such as biomass-derived carbon, mass balance, etc. We report the outline of the review.

CDP Water Security Initiatives by Companies in Japan

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CDP is a non-profit organization managed by a British charitable institution that scores companies based on the results of environmental questionnaires they distribute.

In recent years, the number of companies responding to CDP has been increasing, and the scoring results are utilized by investors and other stakeholders in the market. This report presents the trends in corporate responsiveness to water from the CDP Water Security 2023 Report. The findings show that companies responding for the first time in 2023 are currently less advanced in their water initiatives in many aspects compared to those that have been responding continuously. Therefore, it is expected that they will strengthen their actions in the future.

Flow of Noise Control Measures for Factories and workplaces

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In recent years, a variety of manufacturing companies have made efforts to improve the quietness of their equipment, yet the issue of noise remains an unresolved challenge. The triggers for noise-related problems are diverse; for example, noises that were not previously considered problematic in areas solely surrounded by farmland became a source of noise pollution with the construction of factories and subsequent residential developments due to changes in urban planning. Furthermore, there has been an increasing focus on enhancing the work environment for employees within factories and workplaces, leading to a heightened concern for ambient noise.

In addressing noise control, one of the benchmarks for measures outside the premises is the environmental standards for noise set by the Ministry of the Environment. These standards, based on the provisions of Article 16, Paragraph 1 of the Basic Environment Law, define the "desirable standards to be maintained for the preservation of the living environment and the protection of human health concerning conditions related to noise," with specific standard values designated for regions by prefectural governors. Additionally, for noise affecting workers, the Ministry of Health, Labour and Welfare has developed "Guidelines for the Prevention of Noise-Induced Disorders," with reviews conducted at various meetings. While adherence to these standards is crucial, it is noted that noise issues may still arise, such as in cases where peak frequency characteristics are observed, even when these standards are met.

Thus, in factories and workplaces, noises generated during operations or consistently by equipment often become problematic, necessitating careful observation of their generation processes and propagation paths, as the strategies for addressing them differ based on the objectives set. Effective noise control requires thorough site surveys, estimations through calculations, and the proper planning and execution of measures.

This paper discusses the procedures and approaches for noise control in factories and workplaces, aligned with the noise prevention planning steps of the Architectural Institute of Japan, including (1) investigation of planning conditions, (2) determination of sound source characteristics, (3) creation of sound propagation path diagrams, (4) calculation of noise levels at affected points, (5) setting of target conditions, (6) consideration of calculation margins, (7) planning of control measures, and (8) explanation of various control measures and their effects.

Geological CO_2 Storage Technology Research and Development, and the Deployment in Japan

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Carbon capture and storage (CCS) is considered to be one of the few feasible technologies for reducing global anthropogenic carbon dioxide (CO_2) emissions. The first pilot CO_2 storage project was carried out at Nagaoka, Niigata Prefecture in 2003. It took almost 20 years to step into the deployment stage from research and development. This talk presents an overview of CCS activities in Japan, including a concept for the middle and small-scale sources to reduce CO_2 emissions and to purse carbon neutrality.

About a "Pro-Growth Carbon Pricing Concept"

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Based on the GX Promotion Act (enacted May 2023), the Japanese government adopted the "GX Promotion Strategy" in July 2023. The strategy sets forth necessary policies to be implemented to achieve 150 trillion yen of public and private investments to realize GX (green transformation), a transition from a fossil fuel-oriented economic and industrial structure since the Industrial Revolution to a clean energy-oriented one.

To promote the GX investment as described above, a "Pro-Growth Carbon Pricing Concept" will be embodied and implemented as soon as possible.

1) Government support for advance investment by issuing new government bonds
2) Introduction of carbon pricing to incentivize early GX investment
   (1) Full-scale operation of emissions trading system in high emission industries [from FY2026].
   (2) Introduction of a GX-Surcharge on fossil fuel supply [from FY2028]
   (3) Allowance auctioning to be phased in gradually to power generation companies [from FY2033]
3) Strengthen financial support through public-private partnership (e.g. blended finance with the GX Promotion Agency)

The GX League is a framework in which a group of internationally competitive companies that are boldly taking on the challenge of transitioning to carbon neutrality will drive GX. As of FY2024, more than 700 companies have participated in the league.

These companies have been making significant efforts to reduce emissions, upholding their own targets of emission reductions not only for FY2030 but also for FY2025, and have also decided to participate in an emissions trading system currently being operated on a trial basis. Moreover, active discussions on and proposals for rulemaking, which is difficult for individual companies to undertake, have been held regarding areas such as emissions reductions throughout the supply chain and the input of green products into the market.

Characteristics of Artificial Atone Produced from Boiler Ash and Its Treatment Methods

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Approximately 32.4% of Japan's total power generation is derived from coal thermal power and biomass thermal power plants, producing about 12 million tons of combustion ash annually. While this ash is primarily used as a raw material for cement, its application as recycled aggregate material in civil engineering has not significantly expanded. To promote its utilization, we successfully endowed artificial stone made from combustion ash with multifunctional properties. This functional artificial stone exhibits high resistance to soil liquefaction, making it effective as lightweight embankment material. Its water absorption makes it suitable for construction during rainy conditions. Additionally, it possesses water purification capabilities, protecting residential and industrial areas from groundwater contamination. The nutrient ion adsorption properties enhance plant compatibility, benefiting green spaces and aquatic vegetation. Furthermore, the production process absorbs carbon dioxide, contributing to carbon neutrality. This environmentally friendly technology enhances resource recycling and is expected to mitigate natural disaster damage while improving living environments. This functional civil engineering material has already been proven effective as subgrade material, base course material, and backfill material, and it is expected to further contribute to mitigating natural disaster damage and improving living environments in the future.

Forest consulting service "Mimamori"
- Forest information analysis and data utilization using remote sensing -

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Kokusai Kogyo, known as a pioneer of Japanese civil aviation, led the industry as a pioneer of aerial photogrammetry after World War II, and is currently contributing to society as a leading company in geospatial information technology. One of the services we provide is "Shinmamori."

The starting point of our service is "forest measurement and analysis." We can also take photographs from the sky and measure on the ground using aircraft, drones, and satellites, which are our specialties. We provide a variety of measurement services according to purpose and use. The acquired data is "analyzed" using our own technology, and in addition to forest resource analysis such as estimating the number of trees and tree height, it is possible to extract existing road networks, analyze microtopography, and analyze collapse locations. On the other hand, due to changes in the legal system and tax system, the preparation of forest land registers is now essential. Therefore, this service supports the preparation of registers in accordance with the Forestry Agency's manual, and also supports local governments in solving various issues in the operation of the forest management system that began in 2019.

As you know, forests have many functions, and in addition to being used for the forestry industry, they are also useful for disaster prevention if properly managed, are valuable places for maintaining biodiversity, and have recreational functions.　Another feature of Shinma Mori is that it can propose zoning to realize better utilization methods.

It is possible to visualize and share forest resources, and the greatest feature of Shinma Mori is that it provides consulting on how to make advanced use of them. We support you on the level of how to use forest information and ultimately how to make effective use of forests.

Membrane Bioreactor(MBR) using Kubota Submerged Membrane Unit
-Solving Problems in Paper and Pulp Mill Wastewater Treatment-

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Since pulp and paper mills use a large amount of water and have various processes depending on the content of production, wastewater treatment in paper mills is difficult to manage and has a large impact on the environment.

KUBOTA　Submerged Membrane Unit is a membrane filtration equipment for membrane　bioreactor(MBR). We hope that KUBOTA Submerged Membrane Unit which used in wastewater treatment in various fields, will contribute to solving various issues of activated sludge treatment and lead to the reduction of environmental impact in pulp and paper mills and contribute to the formation of a sustainable society.

Recycling combustible waste using aerobic fermentation drying method

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The Mitoyo Biomass Recycling Center in Mitoyo City, Kagawa Prefecture, is recycling combustible waste using Japan's first aerobic fermentation and drying method.

The aerobic fermentation drying method uses the power of aerobic fermentation of microorganisms to decompose food waste, flowers, etc. contained in combustible waste discharged from general households, etc., and ferment it, which causes the microorganisms to generate heat. The fermentation heat dries paper, plastic, and other materials that microorganisms cannot decompose, and by sorting them, they are recycled as raw materials for solid fuel.

The solid fuel produced is used by paper companies and other organizations as an alternative fuel to coal.

In Mitoyo City, Kagawa Prefecture, the recycling rate increased to 64% after introducing this method. In terms of CO2 reduction, we have achieved a CO2 reduction of approximately 10,000 tons due to both the elimination of incineration and the effect of substituting solid fuel for coal.

We will introduce the history of the introduction of the aerobic fermentation drying method, the processing flow, and its characteristics, and introduce the decarbonization effect of turning combustible waste into fuel and future prospects.

A Report on the 2nd International Lignin Symposium

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The Lignin Society was founded on November 1, 2018. This foundation was accompanied by holding the annually domestic 64th Lignin Symposium, which corresponded to the 1st annual conference for the Lignin Society, as an international conference, the 1st ILS in September 13-15, 2019 at Hokkaido University, Sapporo, Japan. It was decided that the annually domestic Lignin Symposium would be held as the ILS every five years. The 2nd ILS was thus held in September 7-10, 2024 at Kyoto Institute, Library and Archives, Kyoto, Japan. Totally 192 (including 59 students and 45 attendants from abroad (12 countries)) participated in 3 keynote speeches and 107 presentations (35 oral and 72 poster). Dr. Hou-min Chang (North Carolina State University, Raleigh, NC, USA), Dr. Vincent Chiang (North Carolina State University, Raleigh, NC, USA), and Dr. Toshiaki Umezawa (Kyoto University, Uji, Kyoto, Japan) gave the keynote speeches and received the Meritorious Achievement Award from the Lignin Society. The 3rd ILS was scheduled to be held in Tokyo in 2029.

A Report on the 64th National Conference of the Pulp and Paper Industry on Safety and Health

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Japan Paper Association

Japan Paper Association (JPA) held the 64th National Conference of the Pulp and Paper Industry on Safety and Health in person at Otsu-city in September 2024. The conference had about 300 participants from member companies and cooperating companies.

The conference took place over two days, and the program of the first day include plenary session, special lecture, and social gathering. In the second day, six breakout sessions were held, and each session had three presentations of case studies and group discussion. In the group discussion, each group (consisting of six to eight participants) discussed preset theme and set action targets. At the end of the group discussion, the contents of the discussion and the action targets were presented, and information was shared with the entire participants.

Reduction of chlorine dioxide consumption during ECF bleaching of hardly bleachable hardwood kraft pulp

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We applied peroxymonosulfuric acid treatment to ECF bleaching of kraft pulp prepared from plantation hardwoods, which are hardly to be cooked, and compared the reduction in chlorine dioxide usage between hardly and easily bleachable pulps. Using H_2SO_5 of 3.0 kg per ton of pulp reduced the chlorine dioxide usage. The total chlorine dioxide consumption was reduced by 2.65 kg per ton of pulp for an easily bleachable eucalyptus pulp, and by an average of 4.93 kg for the pulps from three species of acacia woods that are hardly to be bleached. We confirmed in the laboratory experiments the hypothesis that the effect on the reduction of chlorine dioxide usage by introducing peroxymonosulfuric acid treatment should be greater for hardly digestible/bleachable acacia pulps than for easily digestible/bleachable eucalyptus pulp.