

# Japan Paper Association Sustainability Report 2025



Production

## Japan Paper Association

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1. Preface	p. 1
2. Snapshot	p. 2
3. Value Creation Model of the Pulp and Paper Industry	p. 4
4. Japan Paper Association Basic Principles for Sustainability	p. 5
5. The Challenge to Sustainability	p. 6
6. Overview of Activities of the Japan Paper Association	p. 20
7. Initiatives for Sustainability in the Pulp and Paper Industry	p. 24



# 1 Preface

The Japan Paper Association launched activities in 2020 with its member companies to contribute to the realization of the international goals, SDGs, which aim to achieve a sustainable and better world by the year 2030.

In 2020, we compiled the industry's policies and initiatives into "Towards 2030," and in 2021, we published the first sustainability report of the pulp and paper industry in Japan, which publicized the industry's initiatives both domestically and internationally. The content of the report has been updated and enhanced every year, and now we are pleased to publish the 2025 edition.

In FY2022, the SDGs Committee in the Japan Paper Association played a central role in developing the principles of action that the Japan Paper Association and its member companies should pursue in order to achieve their sustainable development, and in April 2023, we established the "Japan Paper Association Basic Principles for Sustainability" consisting of six principles and disseminated the stance of the Japanese pulp and paper industry both domestically and internationally.



Wood, the starting raw material for our paper production, is not only a renewable resource, but also an excellent resource that absorbs and fixes CO<sub>2</sub>, the main cause of global warming, and generates and releases oxygen, which is essential for us to live. The pulp and paper industry has naturally long embodied the concept of a circular economy, "circulate raw materials and products while maintaining their highest value, and regenerate nature," by establishing the material cycle of wood resources through planting, growing, using, and planting again, as well as by circulating wood fibers in advanced recovered paper recycling systems that utilize, recover, and reuse manufactured paper and paperboard products.

Meanwhile, the environment surrounding the pulp and paper industry remains challenging. Declining demand for paper and paperboard persists due to reduced personal consumption amid advancing digitalization and rising prices for various goods. This is compounded by increased burdens from rising material costs, labor expenses, and logistics costs, which are weighing down profits. Furthermore, external factors such as the United States' conservative tariff policies and the stagnation of the Chinese economy contribute to an uncertain global economy that in no small way impacts Japan's pulp and paper industry. Moreover, natural disasters caused by climate change occurring worldwide are not only causing economic losses but also threatening the safety and health of human life. It goes without saying that addressing these issues has become an urgent challenge for the industrial sector. Amidst rapidly changing social conditions, we in the pulp and paper industry must continue our efforts and evolution toward sustainable development and contributing to society.

We, the pulp and paper industry, are committed to fulfill our mission to provide a stable supply of materials and products that support industrial activities and people's lives, while materializing the principles set forth in the "Japan Paper Association Principles for Sustainability," such as taking into consideration the natural environment including the challenge of decarbonization for a carbon-neutral society and the biodiversity conservation, promoting respect for human rights, and strengthening governance. Furthermore, we are advancing the development of paper materials as alternatives to plastics, expanding the applications of advanced materials such as cellulose nanofibers (CNF) utilizing our accumulated wood fiber utilization technologies, and developing new-generation fuels such as Sustainable Aviation Fuel (SAF). Through these efforts, we aim to further enhance our biorefinery technologies that contribute to realizing a sustainable society.

The target year for the SDGs, 2030, is just around the corner. The year 2050, when the international community aims for a carbon-neutral world, is also not far away. As an essential industry that supplies products indispensable to our daily lives, we in the pulp and paper industry are committed to contributing to economic growth and the realization of a sustainable society.


Japan Paper Association  
Chairman

*J. Nozawa*



## Overview of the pulp and paper industry in Japan

### Production & economic activities

#### Supply of essential products

Annual production of paper and paperboard (2023) <sup>*1</sup>	Percentage to the world's production volume (2023) <sup>*1</sup>	
<b>22.02 million tons</b>	<b>5.4%</b>	
Paper and paperboard consumption per capita (2023) <sup>*1</sup>	Value of manufactured goods shipped (2022) <sup>*2</sup>	
<b>173.3 kg per capita</b>	<b>7.8 trillion yen</b>	

### Environment & energy

<h4>CO<sub>2</sub> emissions from production activities, reduction of CO<sub>2</sub> emissions</h4> <p>Reduction of CO<sub>2</sub> emissions originating from fossil energy (compared to FY2013)</p> <p><b>5.45 million tons</b></p> <p>Progress rate compared to the reduction target for FY2030 (7.16 million tons)</p> <p><b>76.1%</b></p> <p>CO<sub>2</sub> emissions from production activities</p> <p><b>13.38 million tons</b></p> 	<h4>Effective use of resources, effective utilization rate of waste</h4> <p>Composition ratio of renewable energy</p> <p><b>44.8%</b></p> <p>Reduction rate of final waste disposal (compared to FY2000)</p> <p><b>88.8%</b></p> <p>Effective utilization rate of waste</p> <p><b>98.5%</b></p> 
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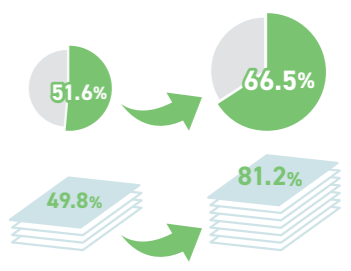
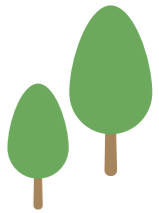
#### Reduction of environmental impact

Emissions reduction rate of volatile organic compounds (VOC)<sup>\*3</sup> (compared to FY2000)

**92.3%**




### Forest resources & natural capital

<h4>Absorption of CO<sub>2</sub></h4> <p>Increase in area of afforestation in Japan and abroad over 34 years (compared to FY1990)</p> <p><b>263,000 ha</b>              ≈ 370,000 soccer court surfaces              ≈ Area of Saga Prefecture</p>  <p><b>370,000 Soccer court surfaces</b></p> 	<h4>Resource circulation<sup>*4</sup></h4> <p>Recovered paper utilization rate</p> <p><b>66.5%</b></p> <p>Recovered paper recovery rate</p> <p><b>81.2%</b></p> 
<h4>Preservation of biodiversity</h4> <p>Percentage of companies that have positioned it in their management plan</p> <p><b>83.3%</b></p> <p>Percentage of legality-confirmed wood used</p> <p><b>100%</b></p> 	

### Social responsibility

#### Job creation and retention, promotion of D&I

Number of employees <sup>*5</sup>	Percentage of female employees <sup>*5</sup>	
<b>69,602</b>	<b>16.5%</b>	
Intensity rate for occupational accidents <sup>*6</sup>	Number of paper, paperboard, and pulp manufacturing establishments in Japan <sup>*7</sup>	
<b>0.06</b>	<b>359 locations</b>	

<sup>\*1</sup> Source: RISI Annual Review  
<sup>\*2</sup> Source: 2023 Annual Business Survey, Ministry of Economy, Trade and Industry (scope: all establishments).  
<sup>\*3</sup> VOC stands for Volatile Organic Compounds, a generic term for organic compounds that are volatile and become gaseous in the atmosphere. It includes a wide variety of substances such as toluene, xylene, and ethyl acetate.  
<sup>\*4</sup> Source: Yearbook of Current Production Statistics, Ministry of Economy, Trade and Industry, and Trade Statistics, Ministry of Finance (coverage is nationwide).  
<sup>\*5</sup> Survey by the Japan Paper Association (scope of coverage: employees including temporary and part-time employees of 31 regular member companies and their consolidated subsidiaries in Japan).  
<sup>\*6</sup> Intensity rate is an index that represents the severity of occupational accidents (scope includes JPA's member companies and cooperating companies).  
<sup>\*7</sup> Source: 2024 Annual Business Survey - Tabulation Across Industries, Statistics Bureau of Japan (<https://www.stat.go.jp/data/kkj/kekka/index.html>). The number of establishments is the number of enterprises in the manufacture of "pulp" (Industry Group No. 141) and "paper (including 'handmade Japanese paper')" (Industry Group No. 142) in Japan.

# 3 Value Creation Model of the Pulp and Paper Industry

## The pulp and paper industry is an essential industry\*1 that contributes to a sustainable society.

### Supply of products that support economic development and social life through production activities

The pulp and paper industry produces and supplies many essential products\*2 that support industrial activities and home life, such as newsprint, printing paper, corrugated container, toilet paper, and industrial paper.

In recent years, we have been contributing to climate change issues through the development and production of products that utilize renewable wood resources, including efforts to develop new materials such as cellulose nanofibers\*3 and other plastic substitutes like paper straws.

### Contribution to environmental conservation through appropriate management of natural capital, such as forest resource circulation and recovered paper recycling

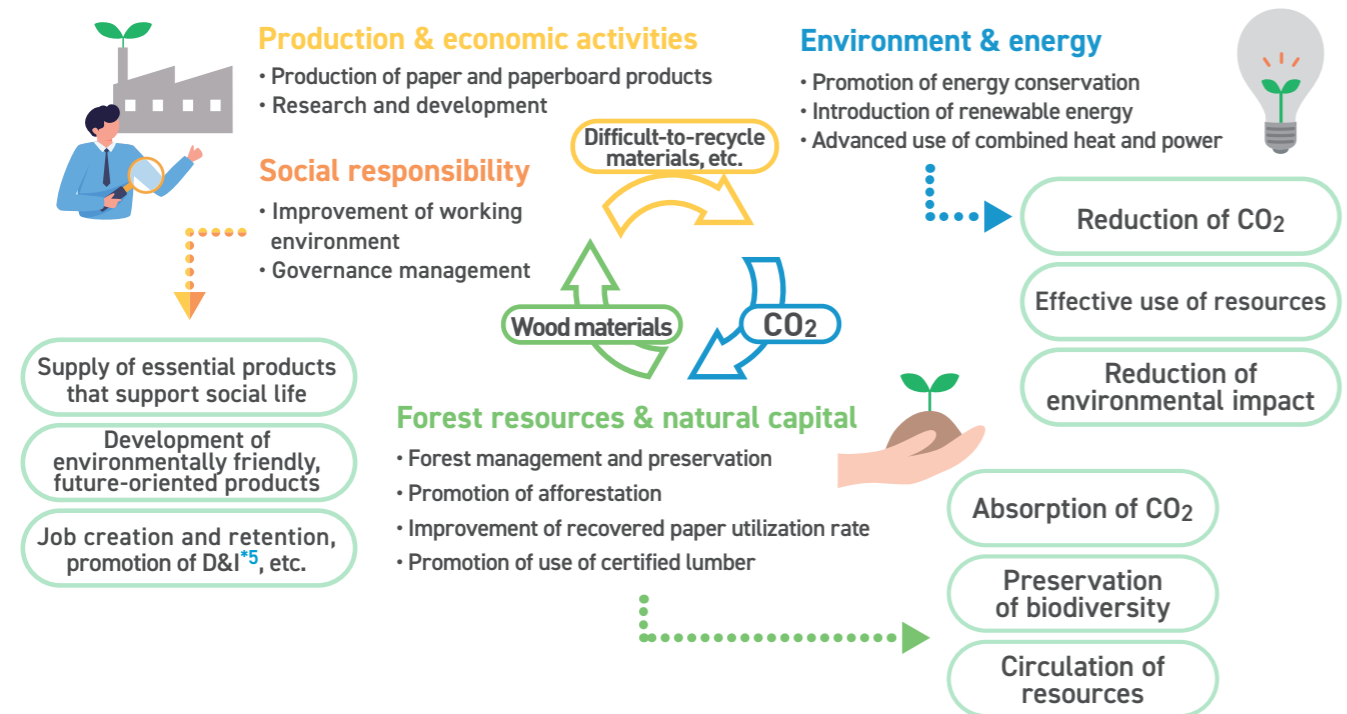
The raw material for paper is wood, a renewable resource. For this reason, the pulp and paper industry has focused on sustainable forest management. Through these efforts, we are contributing to environmental conservation such as preserving the biodiversity that forests nurture and adapting to climate change by absorbing CO<sub>2</sub>.

In addition, the pulp and paper industry has created a process where used paper (recovered paper) is collected and turned into paper again. As a producer of paper and also a consumer of recovered paper, the pulp and paper industry is making further efforts to use as much recovered paper as possible and to further improve its recycling technologies.

### Proactive efforts to counter global warming through the effective use of energy

The pulp and paper industry actively utilizes biomass energy such as by-products of pulp production from wood (black liquor), wood waste, and paper sludge, as well as combustible waste such as RPF, and plays a role in the effective use of energy and resource recycling in the papermaking process.

In this way, the pulp and paper industry is working to reduce the use of fossil fuels, which are considered a cause of global warming, and in January 2021, we were among the first to declare that we would achieve virtually zero CO<sub>2</sub> emissions by 2050, and we are working toward the development of a carbon neutral\*4 industry.



\*1) Essential industries are industries that supply products essential to people's lives.  
 \*2) Essential products are products that are essential to people's lives.  
 \*3) Cellulose nanofiber is a material made from wood fibers micronized to the nano-order (one millionth of a millimeter), and is an excellent material that is transparent, light, strong, resistant to deformation, and has a high thickening effect.  
 \*4) Carbon neutral means that the total CO<sub>2</sub> emissions minus CO<sub>2</sub> absorption/removal is zero (neutral).  
 \*5) D&I stands for Diversity & Inclusion, which means respecting and acknowledging each individual and making the most of their good points, regardless of external attributes such as gender, age, disability, and nationality, as well as internal attributes such as lifestyle, work history, and sense of values.

# 4 Japan Paper Association Basic Principles for Sustainability

## Japan Paper Association Basic Principles for Sustainability

Through efforts to resolve environmental, social, and governance issues, the Japan Paper Association and its member companies will help to achieve a sustainable society where the environment and business can co-exist in harmony and the industry will achieve self-driven sustainable growth.

**Principle 1: Responsible supply of safe and secure products**  
 Strive for continuous innovations and stably supply safe, secure, and superior products that support daily life.

**Principle 2: Preservation and regeneration of the global environment**  
 Identify the impacts of business activities on climate change, biodiversity, etc. and reduce the burden of such impacts. Actively promote environmental initiatives by developing technologies and appropriately managing natural capital, promoting resource recycling, and forging proactive partnerships among industries.

**Principle 3: Respect for human rights**  
 Comply with international standards, laws, and regulations relating to human rights and respect the human rights of all people.

**Principle 4: Enhancement of working environments and promotion of diversity and inclusion**  
 To preserve employee health and safety, promote further enhancement of work environments aimed at eliminating serious accidents and engage in efforts contributing to improvement of employees' living standards. Respond flexibly to changing social circumstances and contribute to the achievement of a diverse and inclusive society.

**Principle 5: Governance**  
 Strengthen governance by establishing and reinforcing internal controls and ensuring rigorous compliance, and engage in fair and highly transparent corporate management.

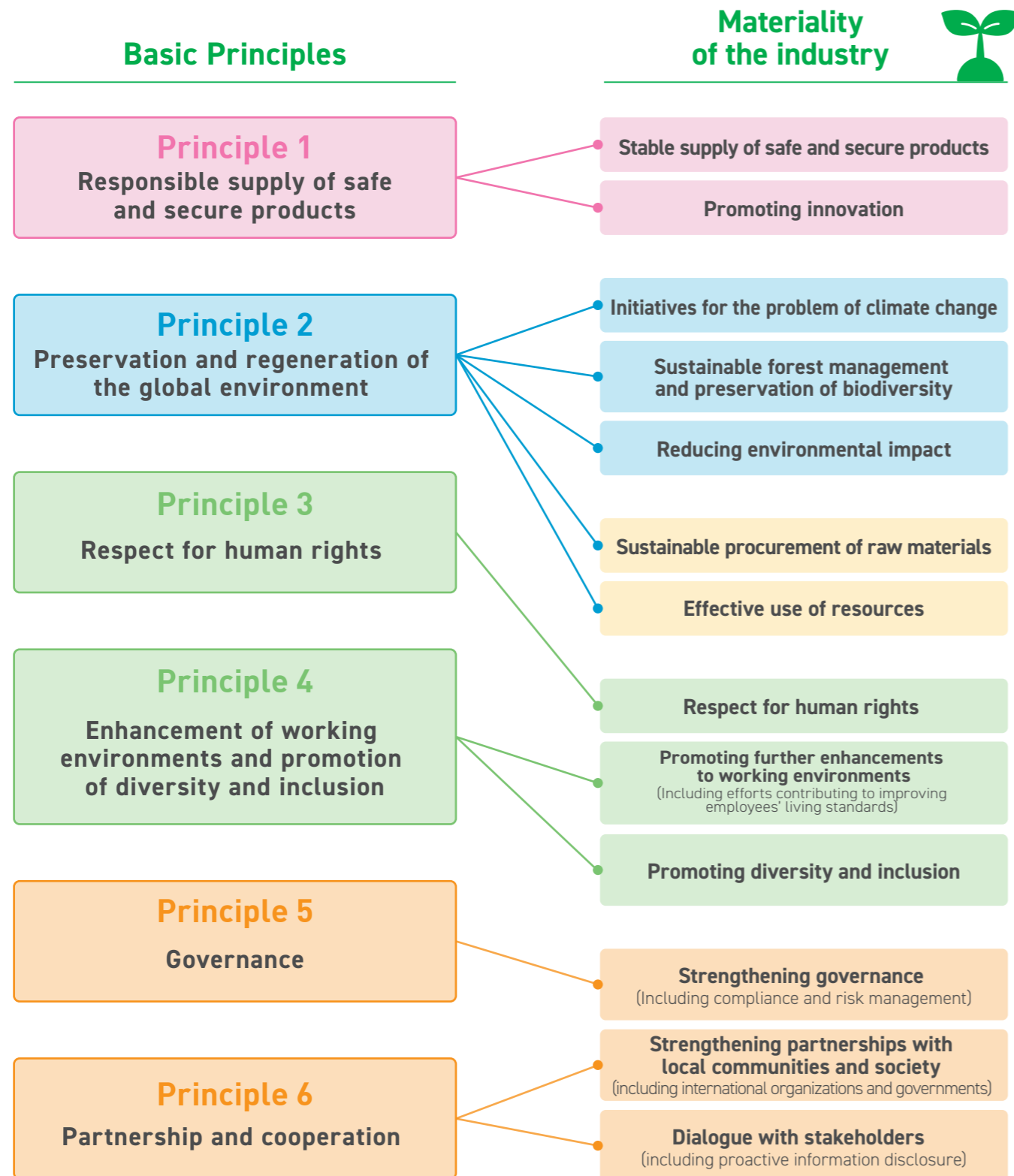
**Principle 6: Partnership and cooperation**  
 Strengthen partnerships with international organizations, governments, local communities, etc. and strive to overcome challenges through proactive information disclosure and dialogue with stakeholders.

We will fulfill our social responsibilities through our business activities by putting these principles into practice and continually improve our efforts by regularly and objectively assessing and verifying them. We will also strive to communicate top management's commitment and proactive messages to shaping a sustainable society.

# 5 The Challenge to Sustainability



## Japan Paper Association Basic Principles for Sustainability and materiality\*1 in the pulp and paper industry



\*1) Materiality refers to events that have a significant impact on the value creation of a company, industry, etc., and are matters that the concerned parties (companies, industries, etc.) place importance on and respond to in order to solve social issues. Materiality of the industry refers to the 13 materialities analyzed and organized in the "Towards 2030" report by the Japan Paper Association (<https://www.jpaa.gr.jp/sustainability/report/towards2030.html>). (Updated August 2, 2024)

## Goals and progress toward improving sustainability

Materiality	Principle No.	Goals	FY2024	Remarks
Stable supply of safe and secure products	Principle 1	Conform to voluntarily established standard values from a hygienic standpoint with regard to paper and paperboard intended to come in contact with foodstuffs (permissible elution limit of heavy metals: 1µg/ml or less)	100%*2	From the voluntary standards of "Voluntary Standards on Paper and Paperboard Intended to Come into Contact with Food"
Initiatives for the problem of climate change	Principle 2	Reduce energy-derived CO <sub>2</sub> emissions by 38% by FY2030 compared to FY2013	Reduction of 5.45 million tons (progress rate 76.1%)	From the target of the "Carbon Neutrality Action Plan"
		Aim for virtually zero CO <sub>2</sub> emissions from production activities by 2050	13.38 million tons	From the target of the "Long-Term Vision 2050"
		Increase the afforested area to 650,000 ha by FY2030	538,000 ha	From the target of the "Carbon Neutrality Action Plan"
Sustainable forest management and preservation of biodiversity	Principle 2	For domestic and overseas forests owned or managed by the company, clearly position the preservation of biodiversity in the management and operation plan.	83.3% (10 out of 12 companies)	From the follow-up survey in the "JPA's Action Guidelines on the Preservation of Biodiversity"
		Use only legally harvested wood. Also falls under Materiality "Sustainable procurement of raw materials"	100%	From the monitoring project in the "Code of Conduct of the Japan Paper Association for Issues on Illegal Logging"
Reducing environmental impact		Work to ensure that the VOC reduction rate does not worsen compared to FY2010 results	Reduction of 92.3%	From a follow-up survey on volatile organic compounds (VOCs)
Sustainable procurement of raw materials		Strive to achieve the goal of 65% recovered paper utilization rate by FY2025	66.5%	From the target in the "Environmental Action Plan"
Effective use of resources	Principle 2	Reduce the volume of final disposal of industrial waste to 60,000 tons by FY2025	61,000 tons	From the target in the "Environmental Action Plan"
		Strive to maintain the current effective utilization rate of waste (FY2019 result: 98.4%)	98.5%	From the target in the "Environmental Action Plan"
Promoting further enhancements to working environments (including efforts contributing to improving employees' living standards)	Principle 4	Zero fatalities at workplaces of member companies and their group companies	0 case	From the goals of the "Action Plan for Prevention of Industrial Accidents"

\*2) The target group consisted of 4 companies and 5 establishments that were sampled and surveyed by the Japan Paper Association.

# Principle 1 Responsible Supply of Safe and Secure Products

## Stable supply of safe and secure products



**Goal** Conformity to voluntarily established standard values for paper and paperboard intended to come in contact with foodstuffs from a hygienic standpoint.  
(maximum allowable elution limit of heavy metals present in paper and paperboard: 1µg/ml or less (as lead))

Pursuant to the Ministry of Health, Labour and Welfare's directive to establish voluntary standards to ensure the safety of paper containers and packaging for food products, the Japan Paper Association established the "Voluntary Standards on Paper and Paperboard Intended to Come into Contact with Food" in May 2007 and implemented it in October of the same year.

In addition, the Japan Paper Association prepared a Negative List (NL)\*2 based on domestic and international regulations and hazard information, and has been updating the list annually to keep it in line with subsequent changes in regulations and hazard information. Furthermore, the chemical substance information retrieval system "JPA Chemi-net" has been established and operated, and member companies register chemical substances used in the manufacture of papermaking chemicals for use in confirming safety information.

As of December 2025, approximately 3,700 substances are registered in NL, and approximately 2,200 substances are registered in JPA Chemi-net.



### Initiatives of the Japan Paper Association

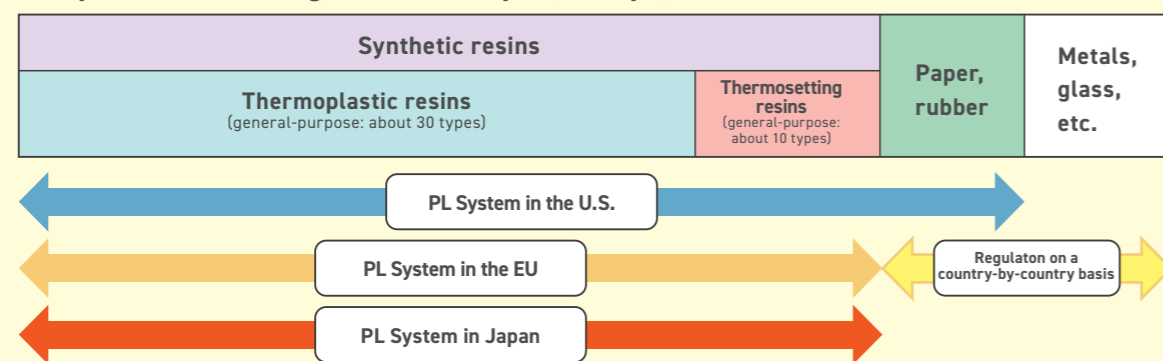
#### Creation of a voluntary Positive List

The Positive List (PL) is a list of chemical substances that have been confirmed as safe. By limiting the substances used in paper and paperboard that come into contact with food to those listed in the PL, it is possible to ensure the safety of products derived from raw materials.

In Europe and the United States, the legislative frameworks for PL management have been established. In Japan, a PL system targeting synthetic resins was enacted in June 2020 and it became fully effective in June 2025, following a five-year transitional period.

The Japan Paper Association is also currently preparing to begin voluntary implementation of the PL system.

#### Comparison of the Regulations in Japan, Europe, and the United States \*3



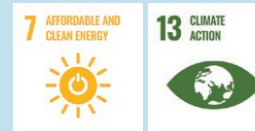
\*1) The SDGs icons on pages 8-19 display the SDGs goals corresponding to each materiality (see page 6 of this report) as organized by the Japan Paper Association.

\*2) Negative list is a list of substances whose use is prohibited or restricted. In the NL system, any chemicals not listed in the NL are permitted for use.

\*3) Source: Ministry of Health, Labour and Welfare, "Overview of amendments to the Food Sanitation Act"

# Principle 2 Preservation and Regeneration of the Global Environment

## Initiatives for the problem of climate change



**Goal** Reduce energy-derived CO<sub>2</sub> emissions by 38% by FY2030 compared to FY2013

The Japan Paper Association has been working voluntarily to reduce greenhouse gas (GHG) emissions since early on, and has completed its "JPA's Committed Action Plan on the Environment" from FY2008 to FY2012 with results exceeding targets.

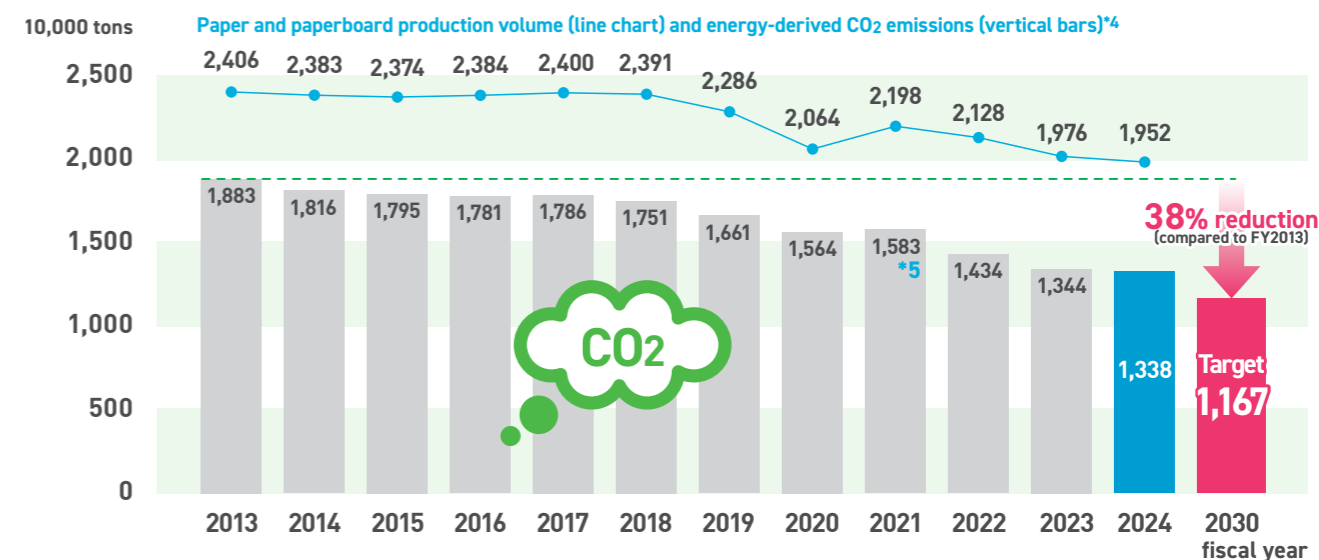
Under the "Carbon Neutrality Action Plan," we have set a reduction target of "reducing energy-derived CO<sub>2</sub> emissions in FY2030 by 38% from the FY2013 level," and we have been working steadily to achieve this goal. Also, in 2021, we declared to aim to establish a carbon neutral industry by 2050 as the "Countermeasures against Global Warming aiming at Net Zero GHG emission from Paper Industry - Long-Term Vision 2050."

We have been able to reduce CO<sub>2</sub> emissions steadily because of the switch to biomass fuels and fuels with lower carbon intensities, the adoption of more energy-efficient equipment, and a review of our production processes as the major factors. We will continue to switch to carbon-neutral biomass fuels in the future.

### Strategic Pillars of Reduction

- 01 Proactive introduction of the latest energy-saving equipment and technologies
- 02 Fuel conversion from fossil energy to renewable energy at on-site power generation facilities
- 03 Proactive adoption of innovative energy-related technologies

#### Trends and reduction targets for energy-derived CO<sub>2</sub> emissions



\*4) Source: "Carbon Neutrality Action Plan," Japan Paper Association

\*5) Recovery from the COVID-19 pandemic led to an increase in paper and paperboard production (+6.5% YoY), which also led to an increase in CO<sub>2</sub> emissions (+1.2% YoY).

# Principle 2 Preservation and Regeneration of the Global Environment

## Initiatives for the problem of climate change



### Goal Virtually zero CO<sub>2</sub> emissions in production activities by 2050 (guideline: reduce 21 million tons of CO<sub>2</sub> emissions from FY2013 levels)

- As mentioned earlier, the Japan Paper Association declared its goal of establishing a carbon neutral industry by 2050 through its "Long-Term Vision 2050."
- In our "Long-Term Vision 2050," we set a target (guideline) of reducing CO<sub>2</sub> emissions by 21 million tons, including CO<sub>2</sub> from waste as well as fossil energy, to virtually zero in our production activities, and we will further contribute to the realization of a carbon neutral society through additional efforts to reduce CO<sub>2</sub> emissions outside of our production activities.

#### Initiatives of the Japan Paper Association

### Overview of the "Countermeasures against Global Warming aiming at Net Zero GHG emission from Paper Industry - Long-Term Vision 2050"

In support of the "Carbon Neutrality by 2050" declaration announced by the government in October 2020, we formulated our "Long-Term Vision 2050" in January 2021, aiming to preserve a sustainable global environment and realize a decarbonized society as a pulp and paper industry, and to realize a carbon neutral industry with virtually zero greenhouse gas emissions expressed as CO<sub>2</sub> equivalent.

The "Long-Term Vision 2050" sets forth the following three areas in which the pulp and paper industry can make further contributions in the future, based on a vision of an uncertain future in the year 2050 and the shape and direction in which the industry should be heading.

#### Efforts toward a carbon neutral industry

##### 1 Zero CO<sub>2</sub> emissions in production activities through promotion of energy conservation and fuel conversion

- Proactive introduction of the latest energy-saving equipment and technologies
- Expanding the ratio of renewable energy used in on-site power generation facilities
- Promotion of innovative technology development related to papermaking
- Proactive adoption of innovative energy-related technologies<sup>\*1</sup>

#### Virtually zero CO<sub>2</sub> emissions in production activities

Reduction of 21 million tons of greenhouse gas emissions, including not only fossil energy but also waste-derived CO<sub>2</sub> (base year: FY2013)

#### Efforts to contribute to a carbon-neutral society

##### 2 Reduction of CO<sub>2</sub> emissions over the life cycle through development of environmentally friendly materials

- Social implementation of cellulose nanofibers
- Use of paper material products as an alternative to fossil-based plastic packaging materials
- Conversion from fossil-based products to bioplastic materials and biochemicals

##### 3 Expanding contribution as a CO<sub>2</sub> sink through afforestation

- Promotion of sustainable forest management
- Promotion of forest tree breeding with high environmental adaptability and fast growth

#### Additional CO<sub>2</sub> reduction outside of production activities

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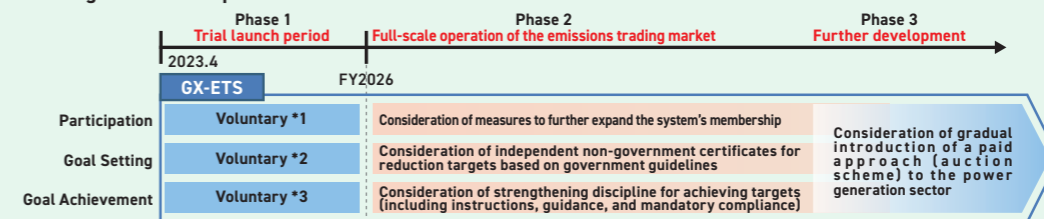
#### Japan's GX Policy - Aiming to provide value for reforming Japan's social structure toward carbon neutrality-

GX stands for "Green Transformation." GX involves transforming the entire economic and social system to achieve emission reductions and enhance industrial competitiveness, treating efforts to achieve carbon neutrality by 2050 and Japan's greenhouse gas emission reduction targets for 2030 as opportunities for economic growth.

In May 2025, the amended GX Promotion Act was enacted, mandating participation in the emissions trading system for businesses emitting CO<sub>2</sub> above a certain threshold, effective from fiscal year 2026. The trial implementation in Phase 1, initiated in fiscal year 2023, was voluntary and based on the leadership of participating companies. Setting and adhering to reduction targets were also left to the voluntary efforts of the businesses.

In Phase 2, commencing in fiscal year 2026, businesses with direct CO<sub>2</sub> emissions averaging 100,000 tons or more over the preceding three fiscal years will be subject to the program. Each business will submit its emission targets to the Minister of Economy, Trade and Industry, who will then allocate free emission allowances to each company based on those targets. Targeted businesses are required to trade emission allowances on the market established and operated by the GX Acceleration Agency to manage any surplus or deficit of their allocated allowances, striving to keep emissions within these allowances.

#### < Outline of the gradual development of the GX-ETS >



\*1 Companies accounting for over 50% of Japan's greenhouse gas emissions (732 companies as of December 11, 2025) are participating. \*2 Targets consistent with carbon neutrality by 2050 (the emission target in FY2030 and the interim target in FY2025) are disclosed. \*3 If emissions trading is not used to achieve the target, this intention should be disclosed (Comply or Explain). Source: "Direction of Consideration for the Full-Scale Launch of an Emissions Trading Scheme," Carbon Pricing Expert Working Group, Cabinet Secretariat

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#### Outline of the Seventh Strategic Energy Plan

Since the Sixth Strategic Energy Plan was approved by the Cabinet in October 2021, the energy landscape surrounding Japan has undergone significant changes in just over three years.

Amid heightened demands for economic security due to Russia's invasion of Ukraine and escalating tensions in the Middle East, dramatic changes are underway, including anticipated increases in electricity demand driven by the advancement of DX and GX. Against this backdrop, countries worldwide are expanding diverse and realistic approaches while maintaining ambitious goals for achieving carbon neutrality.

In Japan, the Seventh Strategic Energy Plan aims to achieve both stable energy supply and decarbonization. To this end, it seeks to maximize the introduction of renewable energy as a primary power source while pursuing a balanced power supply mix that avoids excessive dependence on any single power source or fuel.

Furthermore, to achieve a resilient energy supply and demand structure capable of withstanding energy crises, the plan calls for maximizing the use of power sources that contribute to energy security and have high decarbonization effects, such as renewable energy and nuclear power, while advancing through energy conservation and fuel conversion in manufacturing.

Moving toward 2040, it is essential to prioritize economically rational measures. While maintaining the S+3E principles (Safety, Energy Security, Economic Efficiency, Environment), efforts will advance to minimize cost increases associated with decarbonization. This includes promoting energy conservation, transitioning away from fossil fuels, and developing technologies such as CCUS (Carbon Capture, Utilization, and Storage) and CDR (Carbon Dioxide Removal).

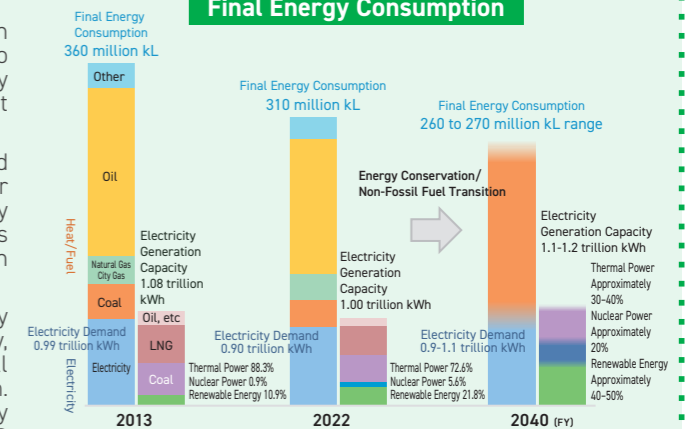
#### The Fundamental Principle of S+3E

Safety Ensuring safety is the top priority

Energy Security	Economic Efficiency	Environment
Projected energy self-sufficiency rate of 30-40% by FY 2040 (12.6% in FY 2022)	Internationally competitive prices	Aiming for ambitious reduction targets (compared to FY2013) consistent with the global 1.5°C goal: FY2035: -60%, FY2040: -73%

Source: Agency for Natural Resources and Energy, "10 Questions to Understand Japan's Energy Situation Today"

#### Final Energy Consumption



(Note) The left graph shows final energy consumption, while the right graph shows electricity generation. Electricity demand is calculated by subtracting transmission and distribution losses and on-site electricity consumption. Source: Agency for Natural Resources and Energy, "Outline of the Seventh Strategic Energy Plan"

\*1) If CO<sub>2</sub> emitted from biomass boilers is recovered by CCS/CCUS (technology for capture, storage, and effective utilization of carbon dioxide), it becomes a "negative emission" (absorption of CO<sub>2</sub> from the atmosphere).

# Principle 2 Preservation and Regeneration of the Global Environment

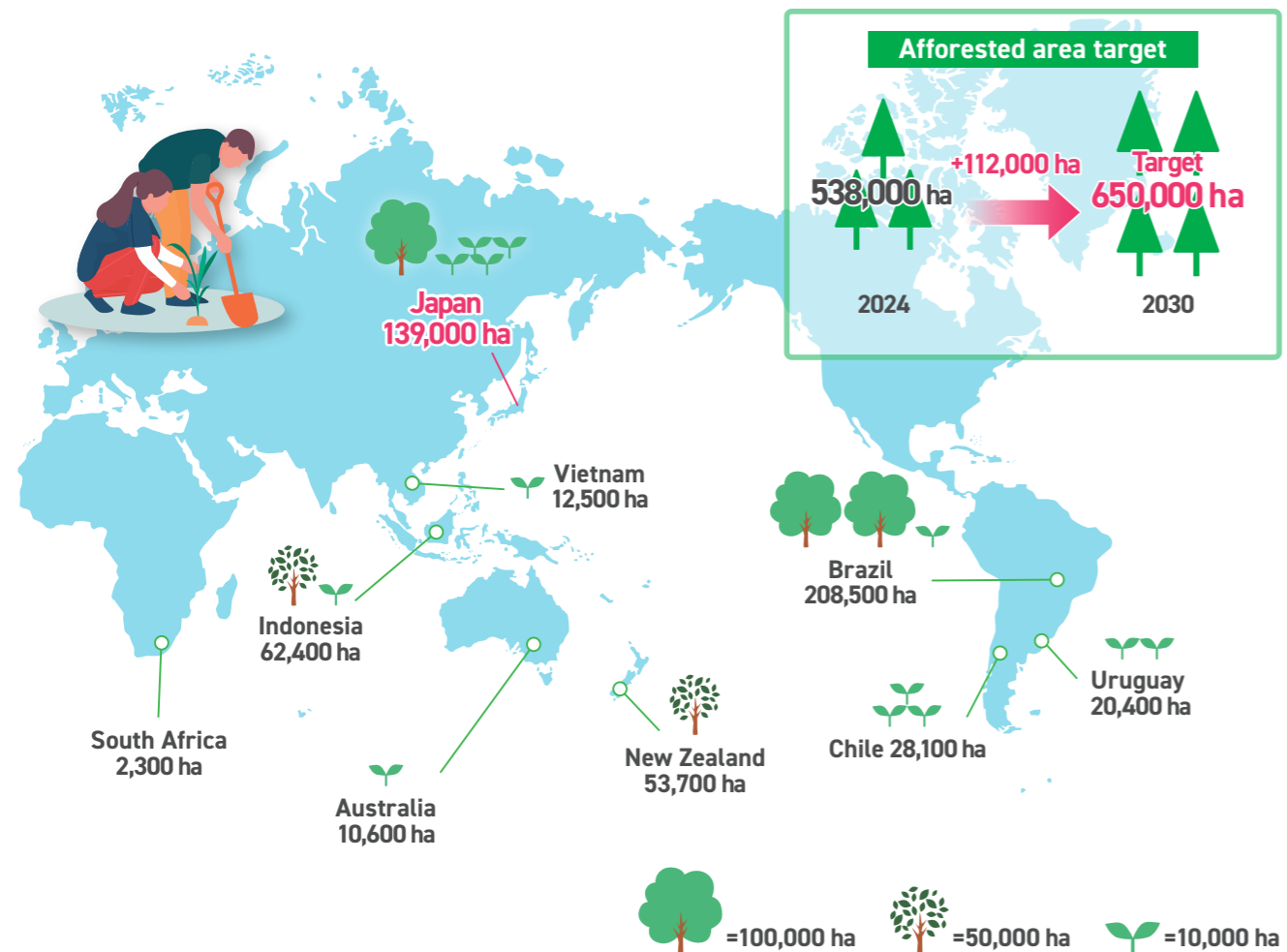
## Initiatives for the problem of climate change



**Goal** Increase the afforested area in Japan and abroad by 375,000 hectares to 650,000 hectares by FY2030 compared to FY1990

- In addition to reducing fossil energy-derived CO<sub>2</sub> emissions, as a pulp and paper industry that uses wood, a renewable resource, as raw material, we are also working to expand CO<sub>2</sub> sinks.
- In 2020, our "Carbon Neutrality Action Plan" revised the target for the increase in the size of carbon sinks to 650,000 ha, an increase of 375,000 ha from the FY1990 level, by FY2030.
- For its implementation, in addition to actively promoting sustainable forest management in order to increase the amount of CO<sub>2</sub> absorbed in the afforested areas, efforts will be made to select the most suitable tree species for planting, develop breeding of seedlings with high growth potential, and implement effective fertilizer application.
- In FY2024, the total increase in afforested area was 263,000 ha, which is equivalent to about 370,000 soccer courts, or about the same area as Saga Prefecture.

### Domestic and international afforested area of the JPA's member companies



## Sustainable forest management and preservation of biodiversity



**Goal** For domestic and overseas forests owned or managed by the company, clearly position the preservation of biodiversity in the management and operation plan.

- Home to many plants and animals, forests are the core of biodiversity, and the pulp and paper industry, which uses these forests as a source of raw materials, is closely related to biodiversity. For this reason, we believe that it is certainly a social obligation for the pulp and paper industry to be proactive in the preservation of biodiversity.
- Thus, given the extreme importance of biodiversity preservation to the pulp and paper industry, the Japan Paper Association formulated the "JPA's Action Guidelines on the Preservation of Biodiversity" in 2014, and has been implementing these guidelines.
- The Action Guidelines set forth guidelines for a total of 21 items in five areas, such as "sustainable forest management" and "responsible raw material procurement," and we have been promoting member companies' initiatives through follow-up surveys since FY2014.

Percentage of companies that position biodiversity preservation in their management and operation plans.

**83%**  
(FY2024)



### Column

#### EU Deforestation Regulation (EUDR): Regulation (EU) 2023/1115 on deforestation-free products

The main cause of the global forest loss is considered to be the structural changes in forests, such as the conversion of forests to agricultural use.

Concerning such a circumstance, the EU Deforestation Regulation (EUDR) was enacted to tackle climate change and preserve biodiversity, by imposing due diligence obligations on companies to ensure that relevant products placed on the EU market or exported from the EU were **not produced on agricultural land that has been subject to deforestation (deforestation-free\*)** (Effective June 29, 2023).

The EUDR will apply to relevant products that contain, have been fed with or have been made using relevant commodities, namely **oil palm, cattle, wood, coffee, cocoa, rubber, and soya, including leather, chocolate, furniture, paper and paperboard**. Relevant commodities and relevant products may be placed or made available on the EU market or exported from the EU, only if all the following conditions are fulfilled: (a) they are deforestation-free; (b) they have been produced in accordance with the relevant legislation of the country of production; and (c) they are covered by a due diligence statement.

The due diligence needs to include information, documents and data such as **'the geolocation of all plots of land where the relevant commodities that the relevant product contains, or has been made using, were produced, as well as the date or time range of production,'** and **'adequately conclusive and verifiable information that the relevant products are deforestation-free.'**

Initially, the regulation was scheduled to take effect on December 30, 2024, for non-SMEs (SMEs: micro, small and medium-sized enterprises) and June 30, 2025, for SMEs. However, due to numerous concerns raised from all over the world regarding the disclosure of detailed geographic information on raw material production sites, delays in establishing information systems and guidelines, and issues of fairness between intra-European and extra-European companies, the application of this regulation was postponed by one year. Subsequently, on October 21, 2025, the European Commission submitted an amended proposal limiting due diligence implementation to upstream operators only, citing reasons such as the need to reduce the burden on IT systems, and establishing a six-month grace period before substantive application. Furthermore, on December 4, 2025, a trilogue meeting between the European Commission, the European Parliament, and the Council of the EU was held, reaching a provisional agreement on the amended proposal, including a further one-year delay to the start of the EUDR's application. This amended proposal was formally adopted by the European Parliament on December 17 of the same year.

#### \*What is deforestation-free?

'Deforestation-free' is defined as follows: After December 31, 2020,

- the relevant products were produced on land that has not been subject to **deforestation**, and
- in the case of relevant products made using wood, the wood has been harvested from the forest without inducing **forest degradation**.

<b>Deforestation</b>	The conversion of forest to agricultural use, whether human-induced or not
<b>Forest degradation</b>	The conversion of 'primary forests' or 'naturally regenerating forests' into 'plantation forests' or 'into other wooded land,' or 'primary forests' into 'planted forests'

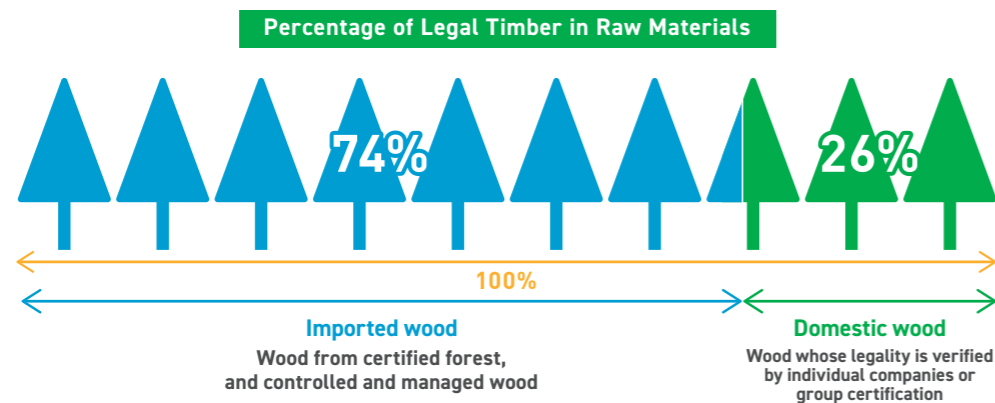
# Principle 2 Preservation and Regeneration of the Global Environment

## Sustainable forest management and preservation of biodiversity



### Goal Use only legally harvested wood. Also falls under Materiality "Sustainable procurement of raw materials"

- Forests play an important role in supplying wood, maintaining ecosystems, and preventing global warming, among others.
- In 2006, the Japan Paper Association formulated the "Code of Conduct of the Japan Paper Association for Issues on Illegal Logging" as a measure to combat illegal logging and illegal wood trade, which undermine the sustainable fulfillment of forest functions, and has since been taking action to address these issues.
- In addition, the Japan Paper Association confirms the certification method used by its member companies to verify the legality of wood, in accordance with the Forestry Agency's guidelines. As a result, the amount of legal wood used reached 100% of the total amount of wood raw material collected in FY2024, and no illegally logged wood is used.



### Column

#### Amendments of the Clean Wood Act (The Act on Promotion of Use and Distribution of Legally-harvested Wood and Wood Products)

The amended Clean Wood Act, which came into effect on April 1, 2025, incorporates four major points and is designed to encourage business operators to strengthen their efforts by providing them with enforceable provisions.

##### 1. Obligation to verify legality, etc. by 'upstream' and 'waterfront'\* timber-related businesses

Since it is important to prevent illegal logging at an early stage of the supply chain, it has become mandatory for sawmills and importers to collect the information and verify legality of raw material, and to prepare and keep its records.

\* 'Upstream' timber-related businesses: log traders, sawmills, etc.  
\* 'Waterfront' timber-related businesses: importers

##### 2. Obligation to provide information by material producers and sellers

In order to facilitate legality verification, material producers and sellers are now required to provide information such as logging reports.

##### 3. Classifying retailers into timber-related businesses

Retailers are additionally classified into timber businesses, in order to promote understanding of the importance of using legal timber down to the consumer level.

##### 4. Other measures:

penalties related to 1 and 2 above, measures to prevent the use of illegally harvested timber, and mandatory periodic reporting  
The amended Act has stipulated guidance, advice, recommendations, making the information public, orders, and penalties for violation of orders by the cabinet minister in charge have been stipulated regarding 1 and 2 above.

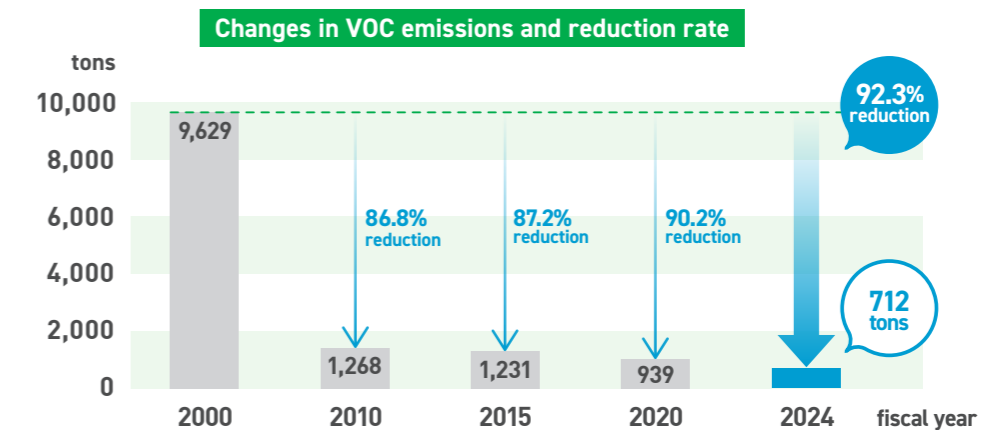
The monitoring project that the Japan Paper Association has long been engaged in is currently in discussions with the Forestry Agency to have its efforts recognized as compliant with the timber legality verification method.

## Reducing environmental impact



### Goal Work to ensure that the VOC\*1 reduction rate does not worsen compared to FY2010 results

- Following the enactment of the Air Pollution Control Law in April 2006, the Japan Paper Association has specified "risk management of chemical substances" in its Environmental Action Plan as a response to environmental risk issues, and has been working to reduce emissions of volatile organic compounds (VOCs).
- In fiscal year 2010, we achieved a reduction of over 80%, significantly exceeding the government target of a 30% reduction compared to fiscal year 2000. Furthermore, follow-up surveys conducted annually have confirmed that this level has been maintained over the subsequent 14 years through fiscal year 2024.
- We will continue our efforts to reduce all VOC emissions and to maintain and improve the reduction rate by substituting chemicals with fewer VOC components and strengthening management of manufacturing processes.



### Initiatives of the Japan Paper Association

#### Environmental measures

##### Measures for hazardous air pollutants

The Japan Paper Association has established a "Plan for Voluntary Control of Hazardous Air Pollutants" covering three substances of formaldehyde, chloroform, and benzene, and has achieved strict voluntary control targets for each of these substances by introducing alternative chemicals and promoting process improvements.

##### Flue gas treatment

We are working on measures to control sulfur oxides (SOx) and nitrogen oxides (NOx) generated from heavy oil and coal used as fuel, which are considered to be one of the causes of acid rain.

##### Soot and dust control

Soot and dust generated from recovery boilers was a problem for a while, but it has now been solved by enhancement of wet scrubbers (a device that removes soot and dust from flue gas by spraying it with water) and electrostatic precipitators.

##### Odor control

Odors have been a common occurrence at chemical pulp (especially kraft pulp) mills. Since there are individual differences in perception, we believe that simply complying with laws and agreements is not enough. Therefore, we thoroughly investigate the sources of odor emissions, and at the same time, implement the most appropriate odor countermeasures for each source, such as collecting and burning the odor.

\*1) VOC stands for Volatile Organic Compounds, a generic term for organic compounds that are volatile and become gaseous in the atmosphere. It includes a wide variety of substances such as toluene, xylene, and ethyl acetate.

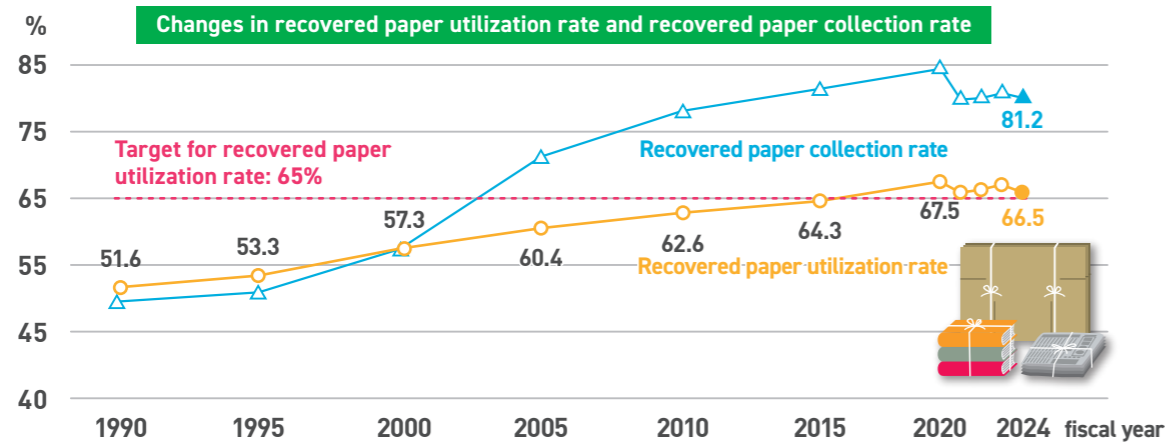
# Principle 2 Preservation and Regeneration of the Global Environment

## Sustainable procurement of raw materials



### Goal Strive to achieve the goal of 65% recovered paper utilization rate by FY2025

- Paper is an indispensable commodity in modern society, and at the same time, it supports industry and culture from the side. With the development of society and the economy as well as the improvement of lifestyle and culture, the uses of paper are diversifying, and it is being used more and more in various fields. In addition, the value of recovered paper is becoming increasingly important from the perspective of securing raw materials.
- Japan's recovered paper utilization rate is among the highest in the world. In order to further improve this world-class utilization rate, it is essential that the pulp and paper industry, the recovered paper industry, as well as consumers, the consumer industries, and local government work together to make strong efforts.
- Specifically, we will continue to focus on expanding the use of recovered paper as a raw material for printing and information paper, improving the collection rate of recovered office paper, and implementing energy-saving and fuel conversion measures to reduce CO<sub>2</sub> emissions from the recycling process of recovered paper.



\* The difference between the recovered paper collection rate and the recovered paper utilization rate indicates the collected recovered paper not utilized domestically is exported mainly to the Asian region and effectively recycled as high-quality recovered paper in the international market.

### Initiatives of the Japan Paper Association

#### "Handmade Postcard Contest"

##### Experiencing recycling using daily use paper such as milk cartons

The Japan Paper Association holds the "Handmade Postcard Contest," inviting entries of postcards made from recycling used paper such as milk cartons into one-of-a-kind picture postcards. Schools participate in this contest as part of a class to learn about recycling, and students also work on the contest as part of extracurricular activities such as their summer holiday independent study at home.

This contest began in 2004, and in its 21<sup>st</sup> year in 2024, it received 2,876 entries from across Japan. Amid growing interest in the SDGs, the contest continues to grow each year into a major event attracting participation from numerous elementary school students nationwide.

By having participants actually experience the recycling process of recycling "paper" from "paper" through making postcards, this event provides a good opportunity for children and the adults around them to learn how paper is made and to think about the recycling of resources.



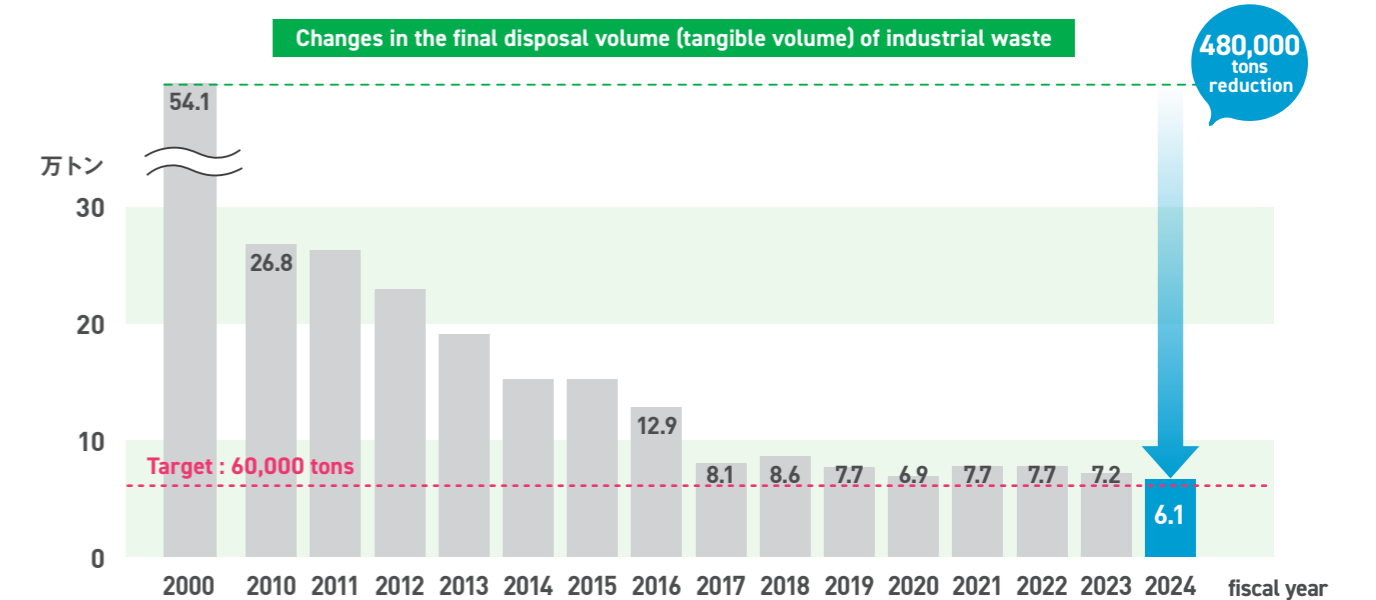
The 21<sup>st</sup> Annual (FY2024) Individual Section - Grand Prize  
"It Bloomed Again This Year!!"  
Airi Tomita (3<sup>rd</sup> Grade)

## Effective use of resources



### Goal Reduce the volume of final disposal of industrial waste to 60,000 tons in tangible form by FY2025

- The majority of waste generated by paper mills is sludge, with other waste materials including wood waste, paper waste, and waste plastic. Most of them are incinerated, much of which is used to generate energy for the mills. The remaining ash is also effectively used as a raw material for cement and other purposes.
- The pulp and paper industry set a numerical target to reduce final waste disposal to 130,000 tons by FY2020, and achieved the goal by reducing the volume to 69,000 tons in FY2020.
- Since FY2021, we have set a new numerical target of reducing final waste disposal to 60,000 tons by FY2025, and we are continuing to make efforts to reduce waste.



### Column

#### Act Concerning Sophistication of Recycling Business, etc. to Promote Resource Circulation

To promote integrated resource circulating efforts, including decarbonization and ensuring the quality and quantity of recycled resources, the Act Concerning Sophistication of Recycling Business, etc. to Promote Resource Circulation (hereinafter referred to as the Act Concerning Sophistication of Recycling Business) came into effect on May 29, 2024, as a law concerning reporting and publication of the status of implementation of recycling, establishment of an authorization system for sophistication of recycling businesses, and other matters.

Under the Act Concerning Sophistication of Recycling Business, business entities are obligated to strive to 1) design products that are easy to separate and dispose of separately so that recycling is not difficult, and 2) use recycled resources in products and engage in resource recycling that meets demand.

The pulp and paper industry has set the recovered paper utilization rate target at 65% and aims to achieve efficient resource recycling and waste reduction through such initiatives as expanding recycling of by-products through industry collaboration, promoting volume reduction of organic waste and its conversion into fuel, and promoting research and surveys for the development of new applications.

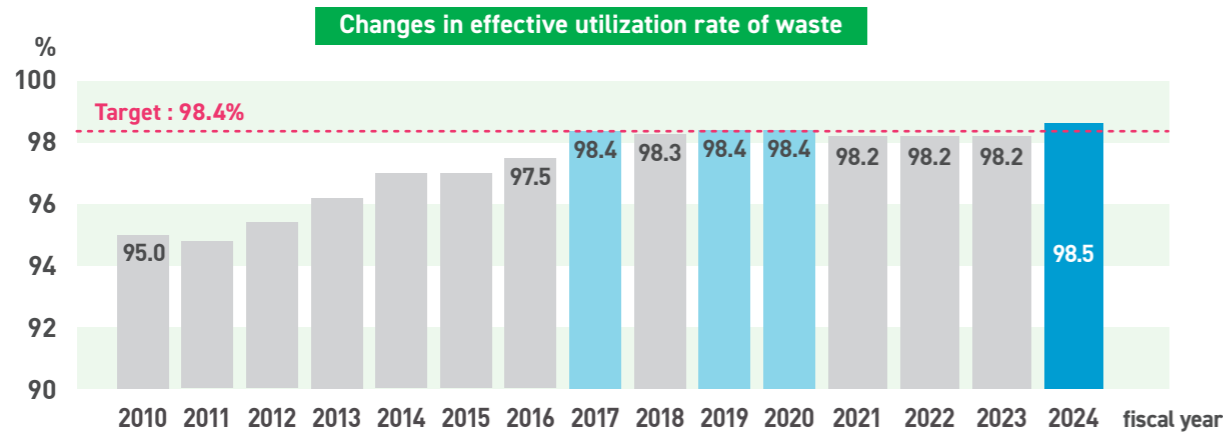
# Principle 2 Preservation and Regeneration of the Global Environment

## Effective use of resources



### Goal Strive to maintain the current effective utilization rate of waste (FY2019 result: 98.4%)

- In addition to reducing the final disposal volume of industrial waste as mentioned above, the Japan Paper Association has set the industry's own target of maintaining the current rate of effective utilization (FY2014 results: 97.0%), and has been working toward the realization of a recycling-oriented society.
- In the "Environmental Action Plan" revised in October 2020, we set the target year to FY2025 in line with the government's 4<sup>th</sup> Fundamental Plan for Establishing a Sound Material-Cycle Society, and raised the new target value to 98.4%.
- In order to achieve the new goals, we will continue our efforts under the three policies of "expanding recycling of by-products through industry-wide collaboration," "promoting volume reduction of organic waste and its conversion to fuel," and "promoting research and surveys for the development of new applications."



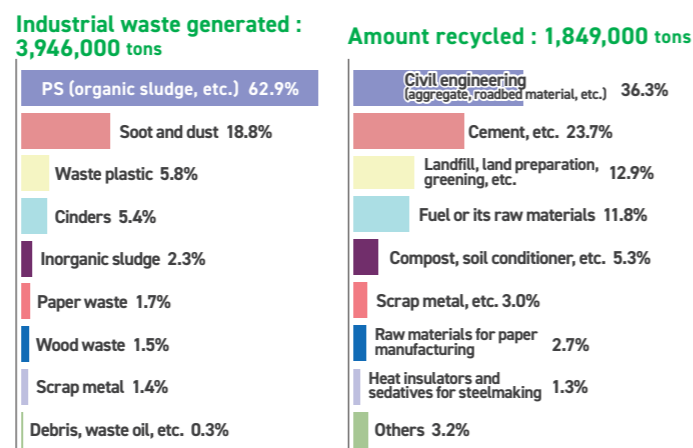
### Initiatives of the Japan Paper Association

#### Efforts for effective utilization of waste

The pulp and paper industry has been promoting initiatives to reuse incinerator ash, paper sludge ash, and other waste materials as soil conditioners and roadbed materials. The Japan Paper Association has also conducted annual follow-up surveys on the waste management measures stipulated in its "Environmental Action Plan," and has compiled and published responses from its member companies on the volume of industrial waste generated, volume reduced, volume recycled, final disposal volume, effective utilization rate, and other data.

The results of the FY2024 survey are shown in the figure on the right.

We will continue to work with member companies to reduce and reuse waste.



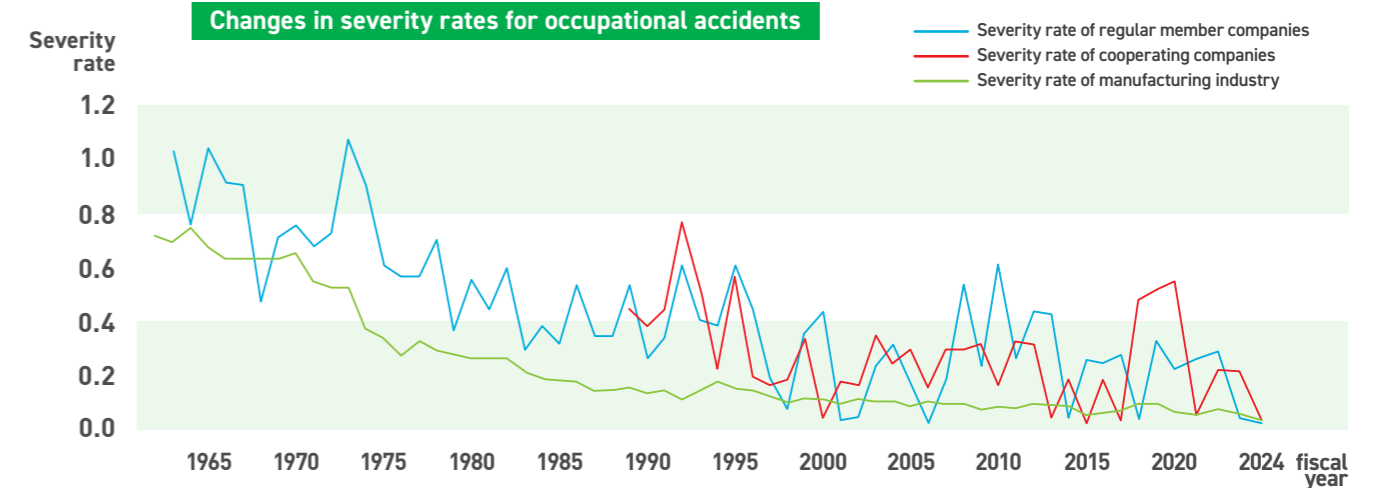
# Principle 4 Enhancement of working environments and promotion of diversity and inclusion

## Promoting further enhancements to working environments (Including efforts contributing to improving employees' living standards)



### Goal Achieve zero fatalities at member companies and group company workplaces

- To protect the safety and health of all colleagues in the pulp and paper industry and to create a better working environment, the Japan Paper Association is engaged in a variety of cross-industry and cross-sector initiatives, including the sharing of information on best practices and accident case studies from member companies and various educational activities.
- The JPA's Action Plan for Prevention of Industrial Accidents formulated in February 2018 with the goal of eliminating fatalities was amended in October 2024 to further improve occupational health and safety in our industry.
- In 2024, for the first time since the record-keeping of safety statistics commenced in 1962, both member companies and cooperating companies achieved zero fatal accidents. The "severity rate," which indicates the severity of accidents, also reached the same level as the manufacturing industry average.



### Initiatives of the Japan Paper Association

#### Occupational Safety & Health

##### National Pulp and Paper Safety and Health Convention

This event has been held annually since 1961, reaching its 65<sup>th</sup> anniversary in 2025. It consists of safety and health awards, lectures, and section meetings. In 2025, it was held over two days, from September 11 to 12, in Hiroshima City, Hiroshima Prefecture, gathering approximately 340 participants from across the nation.

##### Safety and health award

The purpose of this award is to contribute to the improvement of safety and health standards and the eradication of accidents in the pulp and paper industry by recognizing workplaces and contractors that have excellent safety and health performance and serve as models for others. In addition to the awards presented by the Japan Paper Association, we also recommend the "Green Cross Award" given by the Japan Industrial Safety and Health Association, and the "Outstanding Safety Supervisor Commendation" given by the Minister of Health, Labor and Welfare.

##### Educational activities

We provide safety lectures, plant tours of different industries, and educational materials for managers and staff in charge of safety and health at member companies.



65<sup>th</sup> National Pulp and Paper Safety and Health Convention

# 6 Overview of Activities of the Japan Paper Association

## Japan Paper Association Website (<https://www.jpa.gr.jp>)



## Public Relations



### Shiodome Summer School Workshop

We participated in the Shiodome Summer School 2024 event for elementary school students hosted by Nippon Television, offering experiences in paper making and paper craft. Approximately 700 participants took part in total.

<https://www.jpa.gr.jp/jpahub/details/etc/001.html>



### Dispatch Lessons

We visit elementary schools around the country to teach basic knowledge about paper and the recycling process. Students can enjoy learning through observation, experiments, and quizzes.

[https://www.jpa.gr.jp/about/pr/school\\_visit/](https://www.jpa.gr.jp/about/pr/school_visit/)



### Love Letter Event

In today's world where digital communication via smartphones and social media is the norm, we hold events to help people rediscover the appeal of paper through the experience of writing letters.

<http://kamitsubu.com/campaign/loveletter/2025/>



### University Cafeteria Tray Advertisement

By displaying promotional advertisements on trays used in university cafeterias, we implemented a campaign to promote understanding of the pulp and paper industry among university students and raise awareness that it is a sustainable industry. This initiative was carried out at 24 major university campuses in Tokyo and Kansai areas.

## Owned Media [JPA HUB] (<https://www.jpa.gr.jp/jpahub/>)



To convey information about paper's environmental advantages and educational benefits to a broad audience, including not only industry stakeholders but also general consumers, we launched our owned media platform called "JPA HUB" in December 2024. Through interviews with experts from various fields, we will provide positive content on "the relationship between the pulp and paper industry and the environment" and "the benefits of paper (e.g., educational benefits)," thereby building recognition for paper and the industry.



## Activities of the SDGs Committee in Fiscal Years 2024–2025

The Japan Paper Association SDGs Committee conducts study sessions and lectures featuring external speakers as part of its support for member companies through information sharing on sustainable management, thereby fostering a bottom-up approach to sustainability within the industry.

- Lecturer: Tomoki Oshika (Professor, Waseda University School of Commerce (Faculty of Commerce)), Subject: "Non-Financial Information Disclosure and Corporate Value – Why Sustainability-Related Financial Information?"
- Lecturer: Tetsuro Uesugi (Hibiya Amenis Corporation), Subject: "The ABINC Corporate Forest Certification System - Supporting Nature-Positive Management"
- Lecturer: Shigeki Aoki (Professor, Department of Market Strategy, Faculty of Business Administration, Komazawa University), Subject: "Sustainable Branding: Moving Beyond Consumer Issues to Solve Social and Environmental Challenges"
- Lecturer: Akihiro Inatsugi (Bridgestone Corporation), Subject: "Bridgestone's Initiatives Toward Achieving Sustainability"
- Information Sharing by the Japan Paper Association's Technology and Environment Department: "Current Considerations Regarding the Emissions Trading System in Japan"
- Lecturer: Masashi Suzuki (PARCO Digital Marketing Co., Ltd.), Hyuma Ikemoto (Daimaru Matsuzakaya Department Stores Co., Ltd.), Subject: "Introduction of J. Front Retailing's Sustainability Initiatives and Supplier Engagement Methods"

## International Activities

With the advance of globalization of the forest industry (pulp and paper, timber, etc.), it has become critically important that the forest industry of countries and regions around the world work together under shared common understanding on issues such as illegal logging and paper recycling. As a pulp and paper industry association of Japan, the third largest paper producing country, the Japan Paper Association is actively engaged in exchanges of information and views with overseas counterpart associations so as to address global issues.

### Activities in FY2025

#### 1. Participation in the ICFPA (International Council of Forest and Paper Associations) Annual Meeting, the 12<sup>th</sup> CEO Roundtable Meeting, the ICFPA-FAO-ACSFJ Joint Meeting, and the FAO-ACSFJ

- Date: May 5 and 6, 2025
- Location: New York, USA
- Participants: ① ICFPA Annual Meeting: 19 participants from 12 countries/regions  
② 12<sup>th</sup> CEO Roundtable Meeting: CEOs, presidents from 5 companies in 4 countries, and ICFPA members including industry association chairpersons/presidents  
③ ICFPA-FAO-ACSFJ Joint Meeting and FAO-ACSFJ: 30 participants from 13 countries/regions



#### 2. The 8<sup>th</sup> Asian Pulp and Paper Industry Conference for Sustainable Development

- Date: October 15–17, 2025
- Location: Tokyo, Japan
- Participants: Approximately 170 attendees from 10 pulp and paper industry organizations in the following countries/regions: Japan, China, Chinese Taipei, South Korea, Indonesia, Myanmar, Malaysia, Philippines, Thailand, Vietnam
- Theme: Challenges for Sustainability and Innovation in the Pulp and Paper Industry
- Keynote speech: "New Circulation of Nature and Economy Connected by Forests" (Kazuhiro Chiba, Ph.D., President of Tokyo University of Agriculture and Technology)



#### 3. Information and opinion exchange meeting with the China Paper Association (CPA)

- Date: June 5, 2025
- Meeting format: Online
- Participants: Five representatives from CPA, including Chairman Zhao; four representatives from the Japan Paper Association, including President Ogawa

# Overview of Activities of the Japan Paper Association

## On-Campus Lectures at Universities

Through its SDGs Committee activities, the Japan Paper Association has been reaching out to professors researching SDGs and sustainability since fiscal year 2023. By conducting on-campus lectures and classes, we aim to dispel misconceptions such as the idea that paper consumption leads to deforestation while promoting PR activities to ensure university faculty and students gain a correct and deep understanding of the pulp and paper industry's initiatives.

### Lecture Content

- Overview of Japan's pulp and paper industry, types of paper products, and trends in domestic demand for paper and paperboard.
- As part of the Japanese pulp and paper industry's environmental initiatives, the history of environmental issues since 1970s and current efforts toward building a sustainable society, including an overview of the Basic Principles for Sustainability, the Environmental Action Plan, and the Carbon Neutrality Action Plan.
- Presentation of misconceptions such as the idea that paper consumption leads to deforestation and negative articles/expressions about paper, explaining why these are factually incorrect, and detailed explanation of the pulp and paper industry as a circular industry.

### Lecture Materials (Excerpt)

#### JPA's Long-Term Vision 2050

■ In January 2021, Japan Paper Association formulated **Long-Term Vision 2050** in which the paper industry will **reduce CO<sub>2</sub> emissions to net zero by 2050** in its production activities.

**1) Efforts toward a carbon-neutral industry**

- Zero CO<sub>2</sub> emissions from production activities by promoting energy efficiency and fuel conversion

➔ **Net zero CO<sub>2</sub> emissions from production activities**

**2) Efforts toward contributing to carbon-neutral society**

- Reduce CO<sub>2</sub> emissions from product life cycles by developing environment-friendly materials
- Expand contribution in afforestation as a source of CO<sub>2</sub> absorption

➔ **Additional CO<sub>2</sub> reduction besides production activities**

#### Misconceptions in the Paper Industry

◆ JPA's survey on the issue regarding the falsified reporting of recovered paper content (2008)

1 Q1: Does paper consumption correlate with deforestation?  
⇒ Yes: 73.8%

2 Q2: What is a main cause of deforestation?  
⇒ No.1: Urban development, No.2: Illegal logging, No.3: Paper consumption, No.4: Slash-and-burn agriculture, No.5: Conversion of forest to agricultural use

◆ JPA's survey of familiarity with environmental friendliness of paper making and products (2019)

Questionnaire: Are you familiar with the following facts?

Fact	Yes	No
No illegally logged wood is used for papermaking.	23.0%	77.0%
Pulp and paper mills use wastes and wastewater which are generated in the pulping process as fuels for biomass energy.	23.4%	76.6%
About 60% of raw materials for paper is recovered paper.	36.9%	63.1%
Sources for pulpwood chips are residual wood such as thinned wood and leftovers from sawmills.	36.2%	63.8%
Paper industry is committed to forest plantation and sustainable forest management around the world.	42.6%	57.4%

#### Raw Material for Paper Making

■ The Japanese pulp and paper industry greatly contributes to the effective use of resources including waste reduction, by recycling recovered paper as a raw material for papermaking.

■ Approximately 67% of the raw materials for paper and paperboard produced in Japan are recovered paper (2024). Recovered paper is an important raw material essential to the production of paper and paperboard.

■ The wood used as raw material for pulp includes trees from plantation forests for papermaking, sawmill residues, low-grade lumber from natural/artificial forests such as thinned wood and insect damaged wood, and reclaimed (reused) wood.

■ All pulp and pulpwood (wood) used by the Japanese pulp and paper industry is forest certified or equivalent, and is sourced from sustainably managed forests.

Composition of fibrous raw materials for papermaking (2024, weight %)

Recovered Paper	64.6%
Wood Pulp	33.3%
Others (0.1%)	

Composition of wood used as raw material for pulp (2024)

Wood type	Ratio
Sawmill residues	19.3%
Low-grade lumber	5.9%
Planted trees	73.6%
Reclaimed (reused) wood	1.2%

#### Energy Composition of Japanese Paper Industry

■ The pulp and paper industry uses various energy sources, with a high proportion of renewable energy used. For example, Kraft pulp (KP) mills that produce pulp from wood chips use black liquor, a biomass fuel.

■ Other mills that utilize recovered paper as raw material (no black liquor is produced) use various non-fossil fuels, including renewable biomass fuels such as waste wood and bark, waste tires, and waste-derived fuels such as RPF.

■ Particularly, since FY2004, there has been a rapid shift from heavy oil to biomass fuels and waste-derived fuels, resulting in a sharp decline in the proportion of heavy oil and an increase in the proportion of other fuels.

■ The proportion of fossil fuels in energy use has been reduced to 43.5% (FY2023) from 65.5% in FY1999.

Total Energy : 17.5% reduction  
Fossil Energy : 38.8% reduction

Energy sources in FY1999: Heavy oil 33.3%, Coal 14.1%, Gas 8.8%, Biomass 17.7%, Waste 17.7%, Black liquor 11.4%, Waste tires, etc. 9.3%, Waste energy 9.3%.

Energy sources in FY2023: Biomass 19.5%, Waste 19.5%, RPF 12.2%, Heavy oil 9.9%, Coal 9.4%, Gas 7.9%, Waste energy 6.7%, Biomass 6.7%, RPF 6.7%, Waste 6.7%, Waste tires, etc. 6.7%, Waste energy 6.7%.

#### Progress in Energy-derived CO<sub>2</sub> Reduction

■ In April 2022, JPA enhanced its target on fossil energy-derived CO<sub>2</sub> reduction from 21% to 38% (base year FY2013) with a view to achieving the Long-Term Vision 2050.

■ The energy-derived CO<sub>2</sub> emissions of JPA members in FY2024 were 13.40 million tons, which is 29% reduction compared to FY2013 (progress rate: 75.8%).

CO<sub>2</sub> Emissions (million tons)

Fiscal year	CO <sub>2</sub> Emissions (million tons)
2010	18.83
2015	18.83
2020	13.38
2021	15.84
2024	13.40
2050	0

Base year FY2013 (18.83 Mt)  
FY2021 (15.84 Mt): 16% Reduction compared to FY2013  
FY2024 (13.38 Mt): 29% Reduction compared to FY2013 (Progress rate: 76.1%)  
FY2030 Target: 11.67 Mt: 38% Reduction compared to FY2013  
FY2050: Carbon neutrality

#### Initiatives to Expand Forest Plantation Area

■ Japanese pulp and paper industry has expanded overseas forest plantation area, although the overseas plantation area declined since 2011 because pulp and paper companies lost their motivation for being engaged in afforestation projects to secure raw materials for papermaking.

■ However, the incentive to expand forest plantation area is now increased again since the role of forests in preserving the global environment has recently been reconsidered and new value creation by developing new materials from forest-based raw materials have also been actively promoted.

■ Japanese pulp and paper industry has restarted to strive to expand forest plantations, by setting the target of expanding the domestic and overseas forest plantation area to 650,000 hectares by 2030.

1,000 ha

Year	Domestic	Abroad
1990	275	
1995	322	
2000	351	
2005	367	
2010	401	647
2015	424	629
2020	428	548
2024	534	530
2030	530	550

## Summary of Student Feedback

### 1. Reflections and Discoveries from the Lecture

- With the trend toward paperless practices, I sometimes felt a bit guilty about using paper and wondered if I should stop. However, after learning that paper is produced with consideration for the environment, I decided I would continue using it.
- Learning that approximately 67% of paper raw materials comes from recycled paper, along with sawmill residues, low-grade wood, and thinned wood, and that black liquor produced during pulping is utilized as an energy source, strongly impressed upon me that the pulp and paper industry is a model industry for resource circulation.
- I gained an understanding that the pulp and paper industry actively promotes diverse initiatives aimed at reducing environmental impact, such as material recycling and energy conservation. These efforts extend beyond mere environmental consideration, and I felt they fully embody elements that make the pulp and paper industry re-evaluated as a sustainable industry in terms of corporate social responsibility and ESG.

### 2. Realization as Consumers

- While paper production requires tree harvesting, controlled logging enriches forests and enhances ecosystem services. I felt that consumers should make decisions not based solely on the one-sided view that 'forests are decreasing,' but by considering forest management as well as its advantages and disadvantages.
- I feel a sense of unease about how, once something is labeled as 'environmentally friendly,' public opinion and the media tend to become one-sided and biased. To truly consider what constitutes a sustainable choice, we need to reflect not only expert opinions but also the perspectives of actual users and everyday consumers.
- I was reminded that we consumers ourselves must deepen our understanding of the potential inherent in paper as a material and the industrial structure behind it, and how it is crucial to make conscious choices about sustainability in our daily lives. Moving forward, I want to adopt an attitude of not blindly accepting information from media sources, but rather verifying data and facts for myself and considering what the true causes and factors are really lying behind things.

### 3. Opinions, Suggestions, and Expectations for the Pulp and Paper Industry

- To dispel negative perceptions of the pulp and paper industry, it is crucial to provide clear explanations and public relations activities that convince more people that the industry engages in environmentally conscious operations. I find phrases like "Contains XX% recycled paper" printed on packaging paper for paper products to be highly effective. I believe that by increasing exposure to messages on product labels and in advertisements, public awareness and understanding can gradually improve.
- Paper possesses the strengths of "recyclability" and "renewability," and I believe it still holds significant potential as an environmentally friendly material. Therefore, I would like to see the pulp and paper industry continue to prioritize environmental considerations while also taking on challenges to expand the value and applications of paper.
- While rapid digitization has reduced opportunities to use paper products in daily life and learning compared to before, I hope the practice of learning with paper, which is gentle on the eyes and has a warm feel, continues in educational settings. Alongside the long-standing culture of origami, I think it's a wonderful initiative for everyone from children to the elderly to engage with paper products and use them to connect with one another.

## Impressions and Future Plans

- Prior to the course, a significant number of participants believed that using paper was harmful to the environment and contributed to deforestation. However, following this lecture, many commented that they had gained a clear understanding that the pulp and paper industry is a circular industry, and that their perspective on the industry had changed. We believe this demonstrates that participants correctly and deeply understood the initiatives undertaken by the pulp and paper industry.
- Beyond deepening their understanding of the industry, many comments emphasized the importance of consumers thinking and acting proactively. These included statements like "We need to become consumers who think for ourselves" and "In addition to information from the industry side, our attitude and opinions how we perceive and choose based on that information are becoming increasingly important."
- Many comments also highlighted the need for clear explanations and public relations that can convince more people, as well as expectations for challenges that expand the new value and uses of paper while advancing further environmental initiatives.
- It became clear that dialogue with stakeholders, including university lectures, is mutually beneficial. Therefore, we plan to implement similar initiatives at other universities and utilize them in our public relations activities.

# 7 Initiatives for Sustainability in the Pulp and Paper Industry

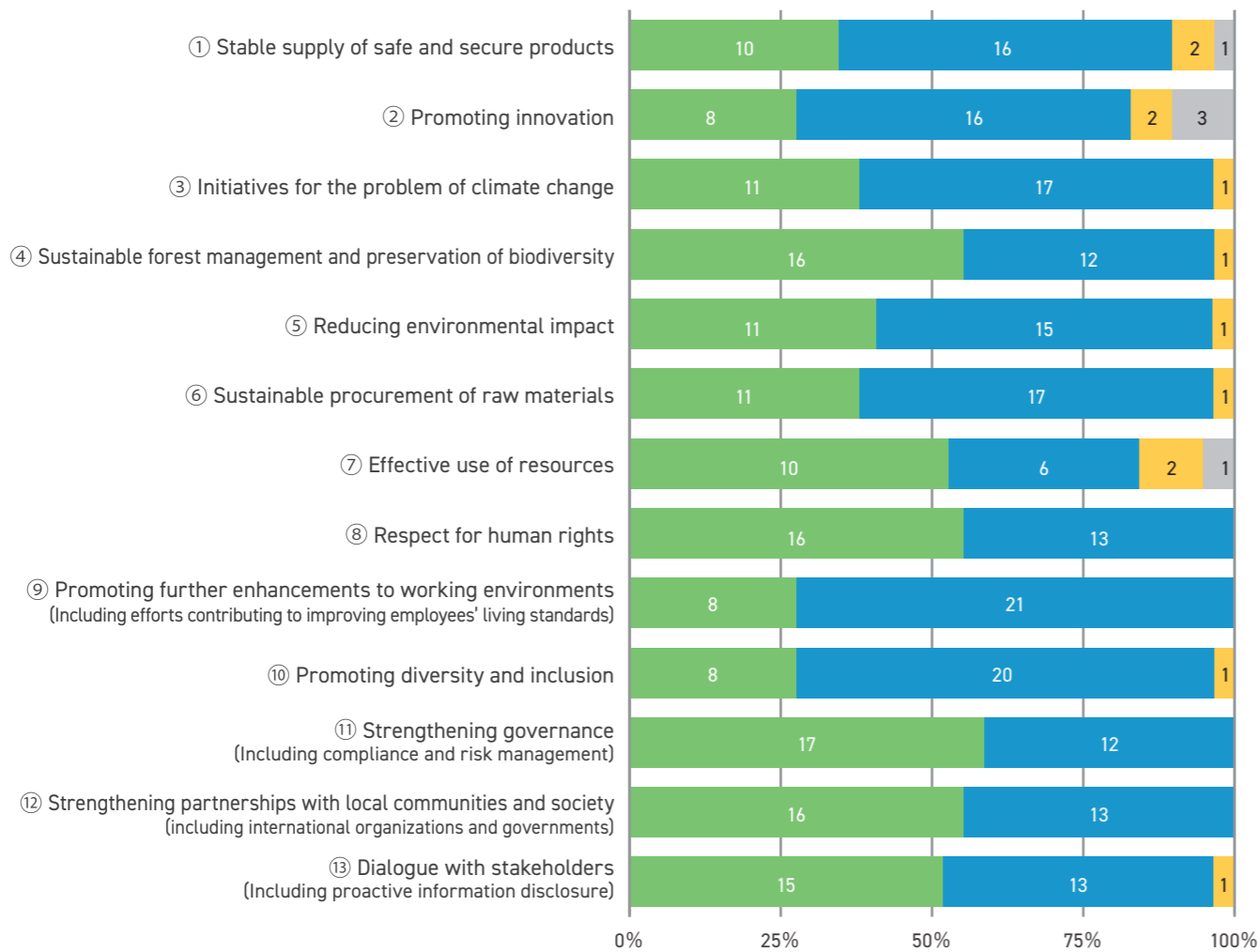
## Status of Member Companies' Initiatives for Each Materiality

The Japan Paper Association conducted a survey in fiscal year 2024 targeting its regular member companies to understand the present state of their initiatives for each materiality in line with the Japan Paper Association Basic Principles for Sustainability and issues that should be addressed.

### Survey Overview

- 1) Survey target : 31 regular members of the Japan Paper Association  
The state of initiatives for materiality issues as of the time of the survey (October 2024)
- 2) Survey period : October 3 to 31, 2024
- 3) Response rate : 93.5% (responses from 29 out of 31 regular members)

## Survey Results



- : Initiatives related to the materiality issue are being conducted and there is no particular major issue or concern.
- : Initiatives are being conducted but there are some issues or concerns.
- : Initiatives related to the materiality issue are not being conducted, but initiatives are scheduled or planned (within about the next three years).
- : Initiatives related to the materiality issue are not being conducted, and initiatives are not scheduled or planned (within about the next three years).

## Summary of Member Company Initiatives

- All companies are undertaking initiatives or formulating/considering plans regarding "Initiatives for the problem of climate change," "Reducing environmental impact," "Sustainable procurement of raw materials," "Respect for human rights," "Promoting further enhancements to working environments," "Promoting diversity and inclusion," "Strengthening governance," and "Strengthening partnerships with local communities and society."
- Meanwhile, the main challenges cited by member companies in implementing these initiatives include securing capital to conduct initiatives (budgets for deploying facilities/technologies, specialized personnel, etc.), establishing outside partnerships (with supply chain, government, academia, etc.) to implement initiatives, and developing internal systems for conducting initiatives.

## Future Initiatives of the Japan Paper Association

To promote initiatives within Japan's pulp and paper industry, the Japan Paper Association will provide the following support measures in addition to conducting regular surveys to review progress in the industry.

1. We will provide and share information through study sessions and compensate for the lack of specialized personnel by acting as a go-between with outside experts.
2. We will share case studies of companies (not limited to the JPA's members) involved in initiatives for various issues, and have them serve as references for carrying out initiatives.
3. Regarding issues such as a lack of capital for investing in facilities, etc., we will gather information related to trends in academia and government (subsidies, grants, joint projects, etc.) and share it with our member companies in collaboration with relevant JPA's committees.

### Initiatives by the Japan Paper Association

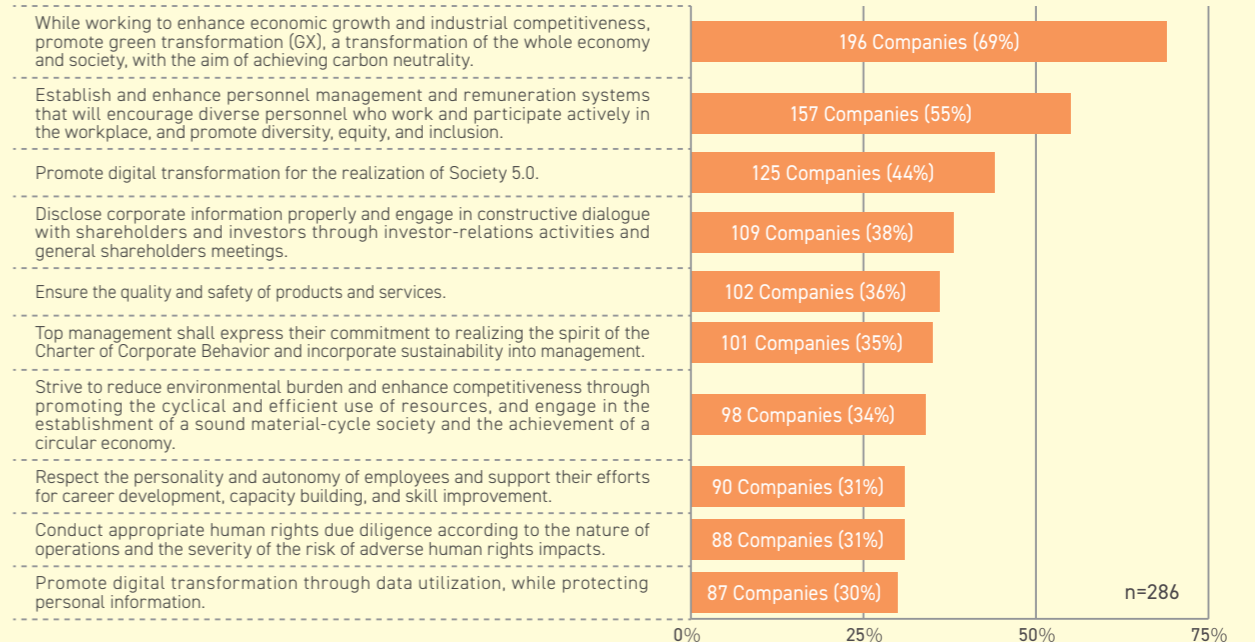
## Initiatives by the Japan Federation of Economic Organizations (Keidanren) and the Japan Paper Association to Achieve the SDGs

The Japan Federation of Economic Organizations (Keidanren) has revised its Charter of Corporate Behavior based on "Society 5.0 for SDGs," which aims to solve social issues and achieve sustainable growth through cutting-edge technologies and innovation in order to achieve the SDGs.

In a questionnaire conducted by Keidanren (the 3<sup>rd</sup> Questionnaire Survey on the Implementation of Keidanren Charter of Corporate Behavior), many companies responded that they aim to strengthen their efforts in the areas of promoting GX (Green Transformation) and DX (Digital Transformation), appropriate information disclosure, and realizing a circular economy, among the items listed in the Charter of Corporate Behavior.

The Japan Paper Association has long actively promoted initiatives related to carbon neutrality and the circular economy. Going forward, we will also support our member companies in addressing various aspects of materiality—such as promoting innovation and improving working conditions—through sharing information and best practices.

### Initiatives that member companies will focus on strengthening over the next three years as outlined in the Keidanren Charter of Corporate Behavior



Source: The 3<sup>rd</sup> Questionnaire Survey on the Implementation of Keidanren Charter of Corporate Behavior (January 16, 2024, Japan Federation of Economic Organizations (Keidanren))