

Fundamental Stance and Policy

The Oji Group works in concert under the direction and supervision of the Board of Directors to put into practice the basic policy of the Oji Group Environmental Charter.

Oji Group Environmental Charter (established January 1997, revised June 2006)

Basic Policy

The Oji Group Environmental Charter requires the Oji Group to help create a truly enriched and sustainable society by developing business activities that harmonize with the environment from a global perspective. The Charter calls for the Oji Group to make autonomous efforts to achieve further environmental improvement, and aggressively drive its forest recycling, paper recycling, and global warming countermeasures forward.

Environment Action Program 2020, established April 2015	FY2018 Results and Activities
1. Ceaseless Efforts to Achieve a Zero-environmental Burden We will aim for zero-environmental burden in each and every operational procedure by further promoting environmental awareness-raising and bringing together capabilities of technology, operation and planning.	
1) Zero-emission Zero environmental incidents · Elimination of environmental incidents (violations for exceeding environmental regulatory standards)	Environment incidents (violations for exceeding environmental regulatory standards): 4 No penalties were imposed for regulatory violations. * Breakdown of violations in excess of environmental regulatory standards. Waste water: pH (two incidents) and coliform bacteria count; atmospheric: odor
Zero product liability incidents · Elimination of product liability incidents	Product liability incidents: Zero (none since 1998)
Promotion of effective utilization of wastes · Reduction of wastes and promotion of effective utilization of wastes [Japan] Effective utilization rate of at least 99% in FY2020 [Overseas] Effective utilization rate of at least 95% in FY2020	[Japan] Effective waste utilization rate: 98.3% [Overseas] Effective waste utilization rate: 89.6%
Management of wastewater and exhaust gases with consideration of ecosystem · Compliance with environment-related laws/regulations, reduction of environmental load substances and management of wastewater and exhaust gases with consideration of ecosystem	Measures to reduce SOx, BOD, COD, and SS emission intensity year-on-year: 1% or more for all measures undertaken with a target of reducing VOCs below the FY2010 level of 0.56 kg/million yen: 0.31 kg/million yen*
Reduction of greenhouse gases · Promote energy conservation and fuel conversion, and reduce GHG emission intensity during product manufacturing by more than 10% in FY2020 compared to FY2013.	Measures undertaken with a target of reducing GHG emission intensity by at least 8.7% compared to 2013: reduction rate of 9.0%
2) Forest recycling / paper recycling Forest recycling · Target of forest certification acquisition: 100%	Rate of forest certification acquisition [Japan] 100% (excluding profit-sharing forests) [Overseas] 85%
Paper recycling · Promotion of paper collection and further expansion of waste paper usage	Measures contributing to achieving the Japan Paper Association target of a 65% recovered paper utilization ratio: 64% recovered paper utilization ratio
2. Responsible Raw Materials Procurement We will comply with safety and legal guidance based on the Oji Group Partnership Procurement Policy to manufacture our products.	
Wood raw materials and pulp · Procurement complying with laws/regulations and considering environment and society by means of third party audit	All traceability reports for procured chips and pulp underwent audit by a third party organization and no indications were made.
Raw materials and chemicals · Compliance with safety-related laws/regulations and appropriate management to follow voluntary standards	Zero violations of laws and regulations relating to raw material and chemical safety
3. Sustainable Forest Management We will promote sustainable forest management to aim for the protection of forest functions and the lasting utilization of forest resources.	
Sustainable forest management through the use of forest certifications · Preservation of forests' multi-functions including conservation of biodiversity	Preserved and nurtured endangered and other species and continued implementation of forest conservation such as thinning as biodiversity preservation measures
Active promotion of lumber business · Contributions to recovery of the domestic forestry business and restoration of forests	The Group collaborated with a wide range of stakeholders both inside and outside the Group from mountain forest managers in Japan to wood product users and supplies raw materials including lumber, plywood, paper, and biomass fuel.
Expansion of forest certified products · Expand forest certified products	Sales volume of forest certified products: 2,993,000 t (FY2017 result: 1,387,000 t)

SOx: Sulfur oxides; BOD: Biochemical oxygen demand; COD: Chemical oxygen demand; SS: Suspended solids; VOC: Volatile organic compounds
 * kg/million yen = Emissions/Sales
 Environmental performance data covers 113 consolidated Group companies involved in production (285 business sites). The data collection period for both Japan and overseas is in principle the fiscal year.

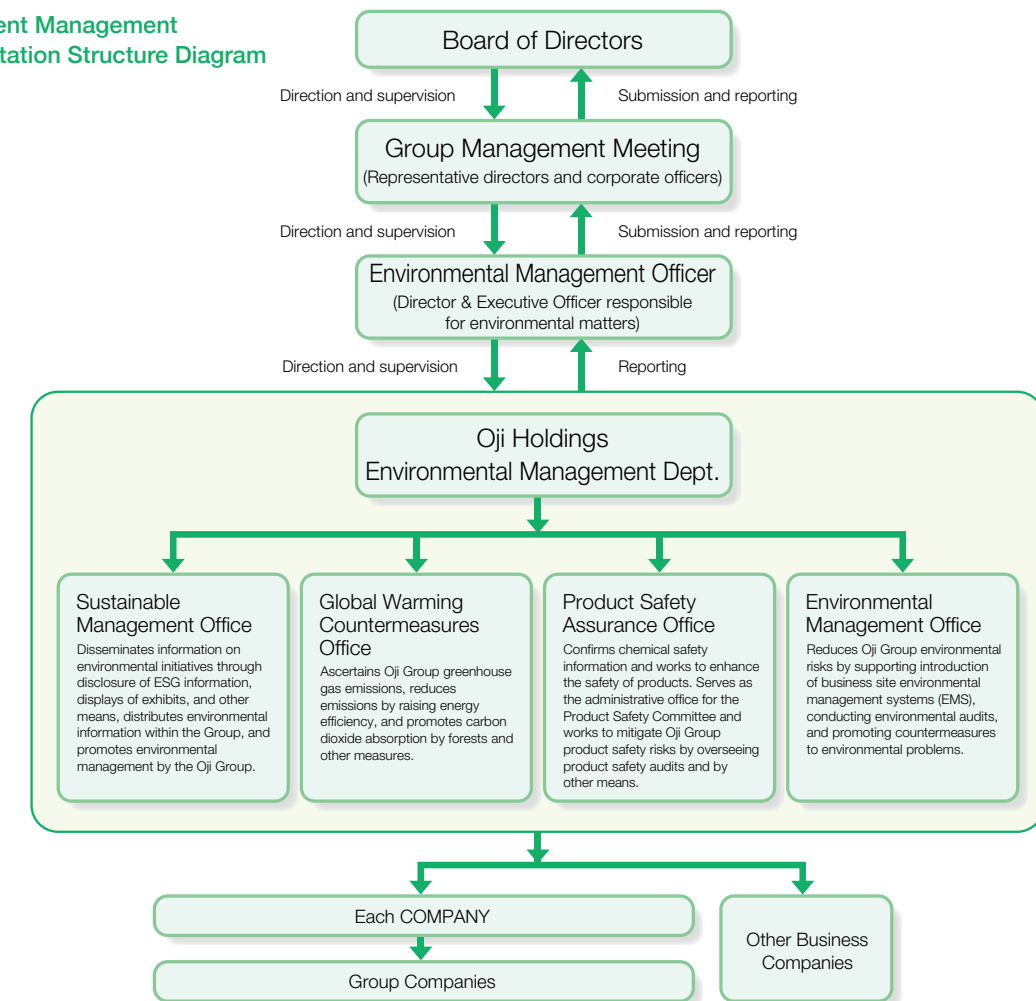
Environment Management Implementation Structures

The Oji Holdings Environmental Management Department oversees and manages Group environmental governance and carries out environmental management.

The four subsidiary organizations of the Environmental Management Department identify Group-wide risks and opportunities in the areas of their responsibility. These organizations manage and mitigate risks by disseminating information to the Group via committees and other bodies for each risk affecting Each COMPANY, Group companies, and so on.

The Environmental Management Department oversees and manages these risks, reports on a monthly basis to the Director of the Board and Executive Officer responsible for environmental matters including climate change, and submits and reports on issues to the Group Management Meeting once each year. Additionally, significant risks are reported to the Board of Directors pursuant to decisions by the environmental management officer.

Environment Management Implementation Structure Diagram




Collaboration with External Organizations

Oji Holdings has been participating in the Carbon Disclosure Project (CDP), an NGO with an extensive database of environmental information relating to climate change countermeasures, water, and forests, since 2012. The Group responds to CDP questionnaires in all three categories: climate change, water resources, and forests.

The Group is a member of the Japan Business Federation (Keidanren), Japan Paper Association (JPA), and other industry organizations, participates in committees that address climate change countermeasures, forest conservation, and reduction of environmental burdens, and works to set and achieve targets relating to environmental issues for each organization.

We also support the intent of the Japan Water Forum (JWF), an NPO that collaborates with diverse related parties including not only those in Japan but also United Nations organizations, international organizations, development banks, national and municipal governments, private companies, researchers, and NGOs of other countries. We have been participating in JWF as its member since its establishment in 2004.

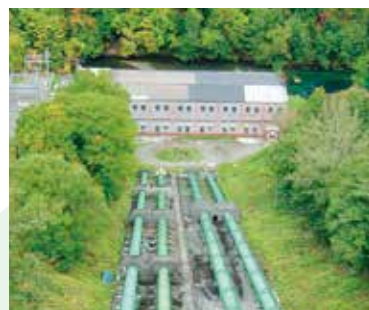
 [Official website of Japan Water Forum](http://www.waterforum.jp/en/about_us/jwf_members/)
http://www.waterforum.jp/en/about_us/jwf_members/

Relationship Between Business and the Environment

The Oji Group has made “Harmony with Nature and Society” a part of its management philosophy. To achieve this, the Group undertakes a variety of measures that give consideration to the environment, society, and the economy throughout its business activities from procurement of raw materials to sale of products with the aim of establishing a sustainable society.



Group forest in Japan



Hydroelectric power plant



Confidential document processing facility (Oji Materia Co., Ltd. Edogawa Mill)



A Japanese Sarufutsu Itou with breeding coloration
Photo provided by Yo Chirai



Overseas forest plantation



Biomass power generation



Biomass fuel



Promoting use of waste paper



A fairy pitta
Photo provided by Ecosystem Trust Society

Forest Recycling (Sustainable Forest Management) (p. 68)

Mitigation and Adaptation to Climate Change (p. 62)

Paper Recycling (p. 72)

Conservation of Biodiversity (p. 74)

Procurement

Manufacturing

Sales (Consumption)

Regional Contribution Activities

Responsible Raw Materials Procurement (p. 76)

Domestic and Foreign Laws and Regulations and Green Procurement
EU REACH Regulation
EU RoHS Directive
Chem SHERPA GADSL
etc.

Confirmation of the safety of raw materials



An FSC™ certification audit

Reduction of Environmental Burden Effective Resource Utilization (p. 64)



Environmental audits

Eco- and Socially Friendly Products (p. 71)



FSC™ Certified Products
FSC™ C018118



Resource and energy conservation, and products that contribute to disasters (beds made from corrugated board and other products)

Contribution to Local Communities (p. 75)



Oji Forest Nature School



Forest Picture Book Contest and Environmental Class

Measures Against Climate Change

Policies on Energy Use

Seeking to create a virtuous cycle between the environment and economy with energy conservation and a shift to non-fossil energy (renewable and waste-derived fuels) as core measures.

Generally, the paper and pulp industry is regarded as one of the energy-intensive industries as it uses heat (steam) in its pulping process, in which pulp is made from woodchips, and also in the process of making pulp dispersed in water into sheets and drying them, in addition to electricity for operating production facilities and machines.

Energy Conservation

The Oji Group has positioned energy conservation measures as a crucial topic and takes continuous measures to address it.

Conserving energy is important not only because it reduces energy costs, but also as a part of fulfilling our corporate social responsibility to undertake environmental measures.

The Group conducts energy conservation patrols at Mills to identify steam leaks and facilities that can be



An energy conservation control at the Oji Paper Kasugai Mill. The patrol confirms that there is no waste caused by air leaks.

shut down, to check equipment, and take other measures. Additionally, the Group is steadily conserving energy by switching to energy efficient equipment.

Use of Non-Fossil Fuels

As the problem of climate change grows more serious, reducing GHG emissions is an urgent task, and the Group needs to reduce consumption of fossil energy such as petroleum and coal. The Oji Group has successfully reduced GHG emission intensity by using renewable fuels*¹ such as black liquor,*² waste fuels such as wood residue, bark, and RPF.*³

The Group will continue to pursue a virtuous cycle between the environment and the economy, recognizing that it is our mission to use energy in a way that provides both economic and environmental effects.

*¹ Renewable fuels Organic energy and resources derived from renewable biological sources (such as wood) other than fossil resources.

*² Black liquor (black vegetative waste fluid) Black liquor refers to the black vegetative waste fluid that remains after removing wood fibers in woodchips in the process of making pulp from woodchips (kraft pulping process). Its components include lignin and hemicellulose.

*³ RPF (Refuse Paper & Plastic Fuel) RPF is a type of waste-derived fuel (WDF). It is a solid fuel made from refuse paper and plastics. It attracts attention as a method of thermal recycling of wastes including plastics and paper that is difficult to recycle.



*⁴ Greenhouse gases

Reduction of GHG*⁴ Emission Intensity

Reduction of GHG Emission Intensity

The Group is reducing GHG emission intensity by raising production efficiency, conserving energy, and using renewable and waste fuels. A target for cutting GHG emission intensity by FY2020 was set in FY2015.

GHG Emission Intensity Reduction Target

Reduce GHG emission intensity (t-CO₂e/production t) in conjunction with product manufacturing by at least 10 percent compared to the FY2013 level by FY2020.*⁵

*⁵ Not including GHG emissions from the electric power business and transportation using Group vehicles.

Results

The FY2020 reduction target set in FY2018 was achieved and emissions intensity was reduced. Scope 1, 2, and 3*⁶ results are set forth below.

Reduction Target Progress

	FY2018			FY2019
	Target	Results	Assessment	Target
Reduction in GHG emission intensity compared to FY2013	8.7%	9.0%	Target Achieved	9.4%

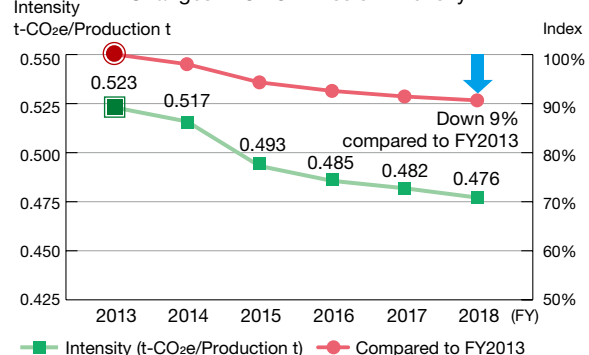
GHG Emissions Volume*⁷ Unit: Thousand t-CO₂e

	FY2018	FY2017	Year-on-Year Change	Remarks
Scope 1	6,394	6,595	-3.0%	FY2018 figures have been assured by a third party
Scope 2	1,442	1,349	6.9%	
Scope 1+2	7,836	7,944	-1.4%	
Scope 3	3,923	3,836	3.9%	

*⁶ (1) Business sites of consolidated companies are included in the total, but non-production sites (primarily the main building, sales offices, and other sites that perform managerial and administrative work and sites where GHG and environment impact are extremely low) are excluded.
 (2) Emissions relating to the electric power business (supply of electricity or heat to other companies) and transport by Group-owned vehicles are included.
 (3) Emissions of carbon dioxide (CO₂) generated in conjunction with the use of fossil fuels do not include emissions relating to the supply of electric power or heat to other companies.
 (4) Unit calorific value and emissions factors are calculated by using the following laws and international standards.
 Japan: Act on Rationalizing Energy Use (Energy Conservation Act), Act on Promotion of Global Warming Countermeasures (Global Warming Act), and base emissions factors of individual electric power companies.
 Overseas: IPCC 2006 Guidelines for National Greenhouse Gas Inventories IEA CO₂ emission factors by country in 2010
 (5) Emissions from fuels derived from biomass (black liquor, wood, etc.) that are subject to the Global Warming Act are calculated.
 (6) Since unit calorific values for non-fossil fuels emphasize comparability to reduction targets, the factors set in the FY2013 reporting are used.
 (7) Scope 3 indicates only Category 1 (emissions relating to purchased goods and services).

A star mark ★ indicates that FY2018 figures have been assured by KPMG AZSA Sustainability Co., Ltd.

Changes in GHG Emission Intensity



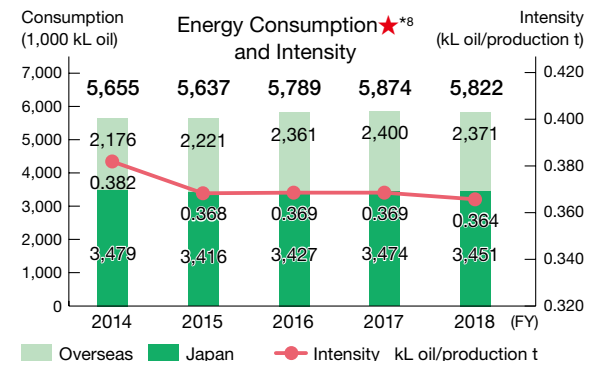
■ Intensity (t-CO₂e/Production t) ● Compared to FY2013

Energy Consumption and Intensity

In 2018, the Oji Group implemented energy-saving measures that reduced energy consumption by more than 50,000 kL oil*⁷ (equivalent to the reduction of more than 100,000 tons of GHG emissions).

In recent years, the Group's energy consumption is increasing slightly, in part reflecting facility expansion and enhancement for higher product quality and added-value, but energy consumption and intensity has been declining. We will continue to save energy in an uncompromising manner.

*⁷ Energy consumption converted to a crude oil equivalent.



*⁸ Energy consumption in conjunction with the manufacture of products is calculated excluding the following energy use.

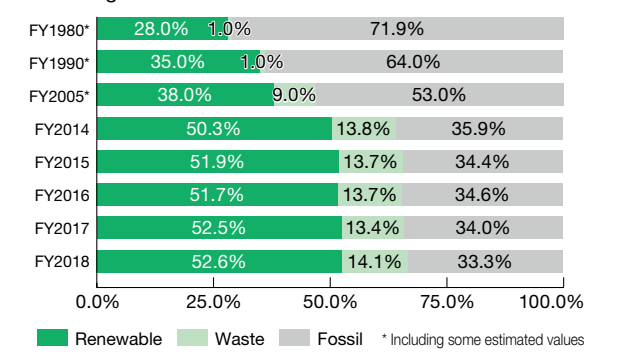
- Business sites of consolidated companies are included in the total, but non-production sites (primarily the main building, sales offices, and other sites that perform managerial and administrative work and sites where GHG and environment impact are extremely low) are excluded.
 - Consumption relating to the electric power business (supply of electricity or heat to other companies) and transport by Group-owned vehicles is excluded.
 - Energy relating to the supply of electric power or heat to other companies is excluded from fossil fuel and non-fossil fuel derived energy.
 - Unit calorific values are calculated by using the following laws and international standards.
 Japan: Act on Rationalizing Energy Use (Energy Conservation Act) and Act on Promotion of Global Warming Countermeasures (Global Warming Act)
 The energy conversion of electric power from in-house hydropower generation uses 3.6 GJ per 1,000 kWh
 Overseas: IPCC 2006 Guidelines for National Greenhouse Gas Inventories
 - Since unit calorific values for non-fossil fuels emphasize comparability to reduction targets, the factors set in the FY2013 reporting are used.
- A star mark ★ indicates that FY2018 figures have been assured by KPMG AZSA Sustainability Co., Ltd.

Use of Non-Fossil Fuels

Since 1980, we have been using non-fossil fuels.

In 1980, the fossil fuel ratio was 71.9 percent. However, fuel conversion has been promoted through the installation of waste boilers and efforts to improve the yield of black liquor renewable fuel and in 2018 the fossil fuel ratio reached 33.3 percent.

Changes in Calorific Structure*⁹ (ratios on a calorific basis)



*⁹ Each ratio is calculated based on the energy consumption calculation method. The energy input from the electric power business and the supply of electricity or heat to other companies is included.

Absorption and Fixation of CO₂ Through Sustainable Forest management

Target

The Group promotes absorption and fixation of carbon dioxide by supporting sustainable forest management including expanding forest plantations and preserving company-owned forests to contribute to achieving an 80 percent GHG reduction by 2050, the long-term target set by the government of Japan.

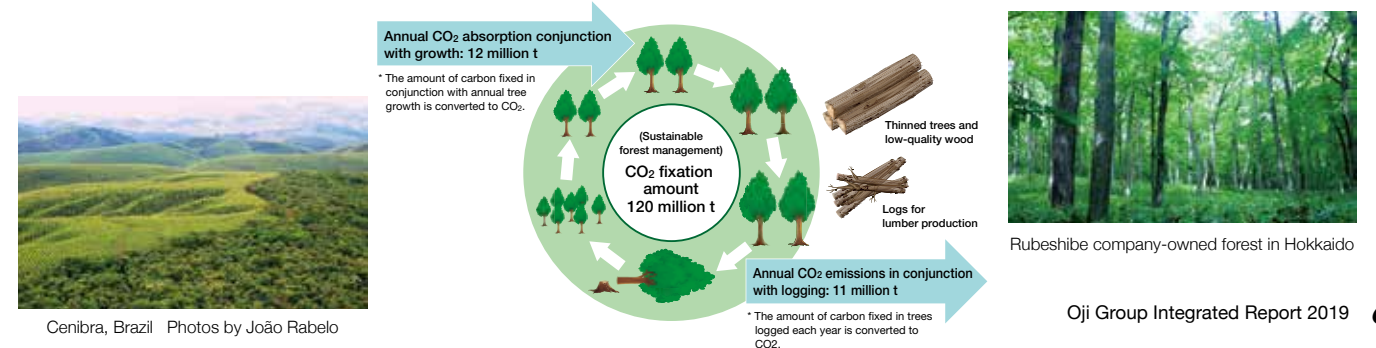
Status of Domestic and Overseas Company-Owned Forests and Forest Plantations

The Oji Group owns and manages the largest area of forests (190,000 hectares) among private companies in Japan. Overseas, the Group has planted forests in six countries with a total area of 250,000 hectares. This means that the Group owns a total of 440,000 hectares of forests all over the world with an area approximately twice as large as that of Tokyo. Overseas forest plantations include management of forest that protect forest ecosystems, wildlife, and so on and conservation forest for protection of water sources and prevention of sediment runoff. Area under management including forest plantations is 380,000 hectares.

The Group spends approximately 9.0 billion yen annually for ongoing forest management in order to practice sustainable forest management that takes into consideration the environment, economy, and society.

Status of CO₂ Absorption and Fixation

Forests absorb CO₂ in the atmosphere and perform photosynthesis, storing and fixing the carbon trunks, branches, and so on. Approximately 12 million tons of CO₂ is absorbed each year in conjunction with the growth of the Group's 440,000 hectares of forests in Japan and overseas, and timber equivalent to this absorption amount is sold inside and outside the Group and used internally for lumber products. The Group's forest in Japan and overseas currently hold a total of 120 million tons of CO₂.



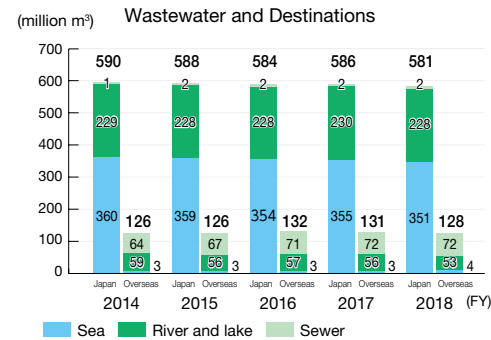
Reduction of Environmental Burden

The Oji Group recognizes that the reduction of environmental burdens is an important task for achieving a sustainable society. The Group sets its own management values that are stricter than the regulatory values for waste water and exhaust gas, strives to strictly comply with laws and regulations, and works to control emissions of substances of environmental concern in wastewater and chemical substances in exhaust gases, reduce and effectively use waste, and prevent pollution.

Wastewater Purification

Management of Compliance with Regulatory Values

Substances of environmental concern in wastewater generated in conjunction with business activities are reduced to below regulatory standards through the use of physical and chemical treatment before water is released into various waterways. Releases of wastewater into waterways are managed through measurement of pollutants and continuous measurement pursuant to laws and other means. In cases where voluntary standards are exceeded, suspension of operations and other measures are taken for the prevention of pollution.



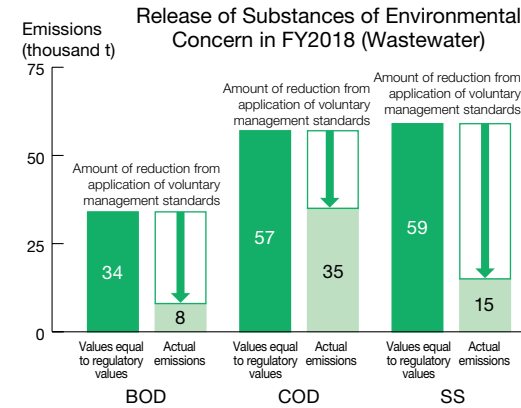
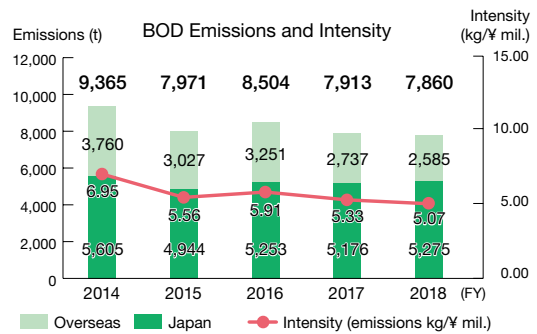
A comparison of annual emissions in cases where substances of environmental concern were released at values equal to environmental regulatory values indicates that the Group's actual emissions decreased in FY2018.

Status of Reductions in Substances of Environmental Concern in Wastewater

The Group is reinforcing recovery of raw materials from wastewater generated from business activities, which contributes to reducing the amount of waste generated, as a means of addressing substances of environmental concern at the source. In addition, coagulation and precipitation through pressure flotation and the addition of chemicals, neutralization, activated sludge, biofilm treatment, and other measures are employed depending on the type of substance of environmental concern.

BOD, COD, and SS emissions intensity have been trending downward since FY2014.

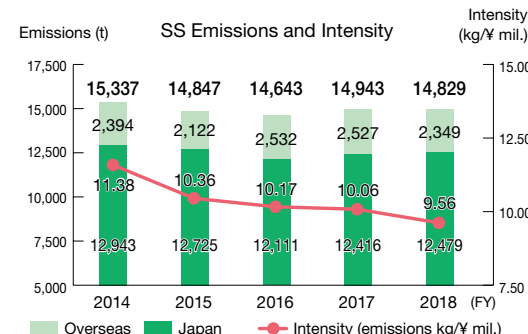
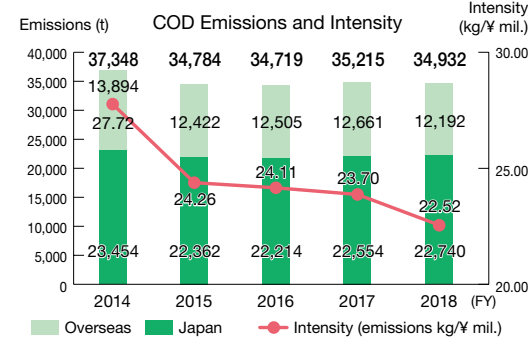
To achieve the FY2019 targets, further operational improvements in wastewater treatment were implemented and measures were taken to reduce substances of environmental concern at overseas business sites in the same manner as domestic sites.



Wastewater Treatment Targets and Results

The FY2018 targets for wastewater treatment were 1% year-on-year reductions in BOD, COD, and SS emissions intensity. All targets were achieved.

Intensity Per Unit of Sales Revenue	FY2018			FY2019
	Target	Results	Assessment	Target
BOD kg/¥million	No more than 5.23	5.07	Target Achieved	No more than 5.02
COD kg/¥million	No more than 23.46	22.52	Target Achieved	No more than 22.29
SS kg/¥million	No more than 9.96	9.56	Target Achieved	No more than 9.46



Curtailing Emissions of Chemical Substances in Exhaust

Management of Compliance with Regulatory Values

The Oji Group owns a number of thermal-fired electric power generating plants. The electric power and thermal energy obtained through direct combustion of fossil fuels, waste fuels, and renewable fuels is used internally and provided to local communities.

The Group has set voluntary management standards that are stricter than the regulatory values with regard to the atmospheric release of the chemical substances produced through direct combustion. In cases where voluntary standards are exceeded, suspension of operations and other measures are taken for the prevention of pollution.

Exhaust Purification Targets and Results

The FY2018 targets for exhaust purification were as follows.

- Reduce SOx emissions intensity by 1 percent compared to the previous year
- Reduce VOC emissions intensity to below the FY2010 level (plants that handle volatile organic compounds)

Both targets were achieved.

Reduction Target Progress

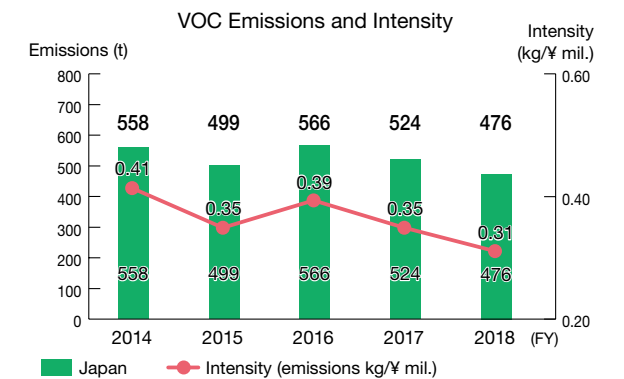
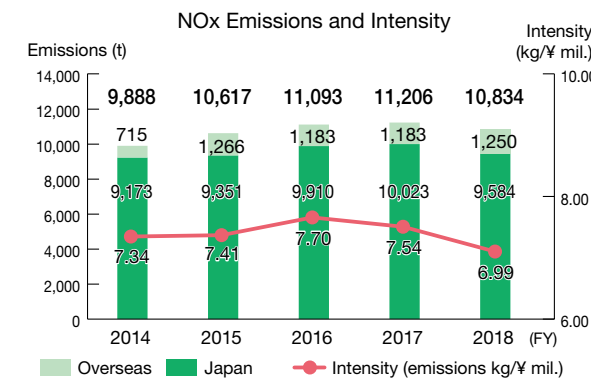
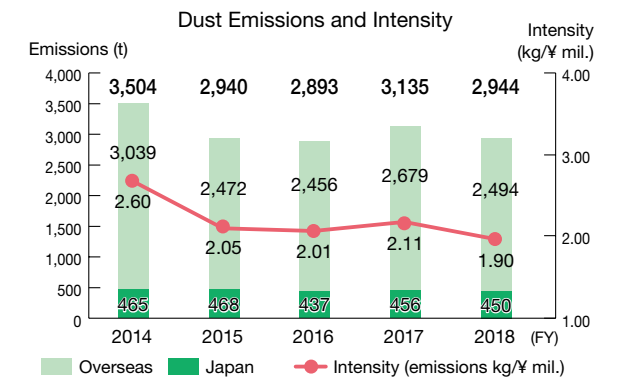
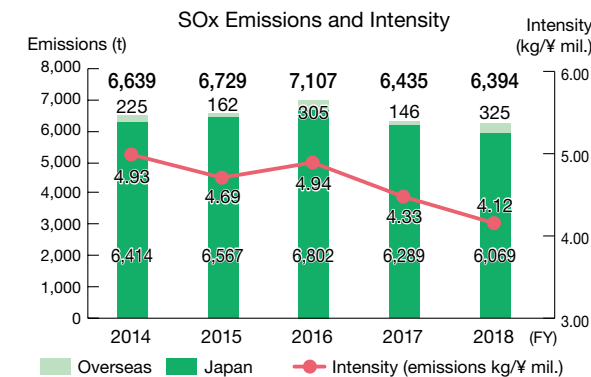
Intensity Per Unit of Sales Revenue	FY2018			FY2019
	Target	Results	Assessment	Target
SOx Kg-SO ₂ conversion/¥ million	No more than 4.29	4.12	Target Achieved	No more than 4.08
VOC Kg/¥ million	No more than 0.56	0.31	Target Achieved	No more than 0.56

Note: SOx emissions are calculated by converting to SO₂. VOC emission intensity covers Japan only.

Status of Reductions in Chemical Substances in Exhaust

Emissions of chemical substances and dust are reduced through technological advances in combustion boiler structure, desulfurization facilities, dust collection facilities, and other areas and use of operational technologies.

The Group makes continuous operational improvements and performs rigorous management of equipment for reducing substances of environmental concern and will continue to implement measures for the prevention of pollution and work towards achieving the FY2019 targets.



SOx: Sulfur oxides; NOx: nitrogen oxides; BOD: Biochemical oxygen demand; COD: Chemical oxygen demand; SS: Suspended solids; VOC: Volatile organic compounds; kg/million yen units: Emissions/sales

Effective Use of Waste

Compliance with laws and regulations

The Group did not commit any regulatory violations and was not subject to any penalties in relation to the storage and management (labeling, sorting, etc.) of waste, proper internal disposal, outsourcing (contracts, manifests), or other aspects of waste handling.

Target for Effective Use of Waste

A target for the effective use of waste was set for FY2020, and the Group is taking measures for the effective use of waste.

Progress in Effective Use

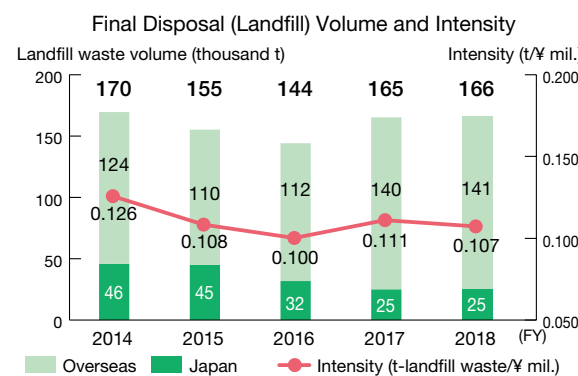
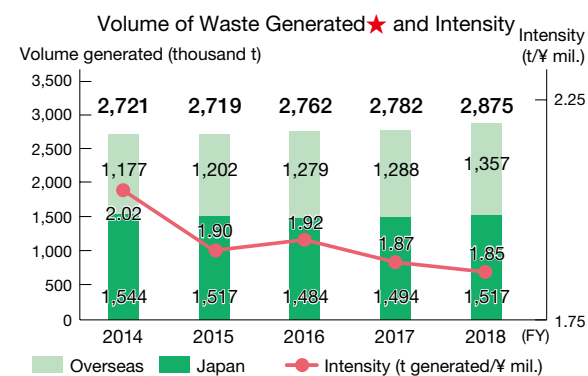
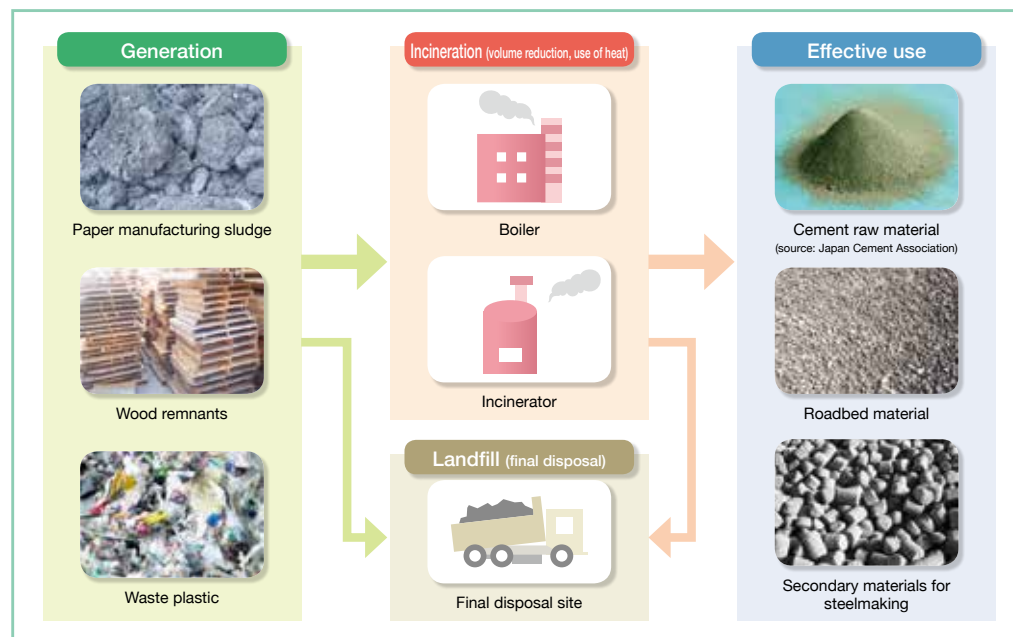
	FY2016	FY2017	FY2018	FY2020 Target
Japan	97.9%	98.3%	98.3%	At least 99%
Overseas	91.2%	89.1%	89.6%	At least 95%

Status of Reduction and Effective Use of Waste

Waste includes paper manufacturing sludge generated during paper manufacturing stages, remnants produced during processing, and ash produced during fuel combustion. Such waste is appropriately treated to make it harmless and is used effectively.

In Japan, ash is used primarily as a raw material in cement and roadbed material. Overseas, paper manufacturing sludge is used as fertilizer and for other applications.

Going forward, the Group will work to reduce the amount of waste generated and to expand effective utilization.



A star mark ★ indicates that FY2018 figures have been assured by KPMG AZSA Sustainability Co., Ltd.

(1) Business sites of consolidated companies are included in the total, but non-production sites are excluded.
 (2) The volume of waste generated includes valuable materials (general waste is not included).
 (3) Intensity is the volume of waste generated divided by sales.

The Oji Group takes measures to recycle water and identify regions with high water-related risks and is working to reduce water consumption. In addition, water consumption and water consumption intensity are incorporated into annual plans and periodic management is performed.

Water Resources

Assessment of water risks

The Oji Group uses WRI Aqueduct*1 to assess water risks in projects, new business, and existing business.

In existing businesses, the Group identifies relationships between water stress levels and water resource inputs at all manufacturing sites of consolidated subsidiaries.

The Group will continue building production systems that incorporate countermeasures against the risks of drought and water disasters.

Water Risk Assessment

Overall water assessment (water stress level)	FY2018								
	Number of business sites	Input volume (thousand m ³)	Production volume (thousand t)	Sales (¥100 mil.)		Assets (¥100 mil.)			
Low (<10%)	73	270,459	37%	6,764	42%	14,928	96%	19,004	97%
Low to medium (10-20%)	110	348,002	47%	6,061	38%				
Medium to high (20-40%)	90	120,280	16%	2,882	18%				
High (40-80%)	7	1,947	0.3%	160	1%	582	4%	676	3%
Extremely high (>80%)	5	203	0.0%	105	1%				
Total	285	740,889	100%	15,972	100%	15,510	100%	19,680	100%

* Total sales and total assets of companies with manufacturing sites rated as highly water-stressed (40%-100%)
 Assessed using the WRI Aqueduct (3.0) Water Risk Atlas Baseline Water Stress

*1 Global maps and information indicating status of water risks in each region announced by the World Resources Institute (WRI)

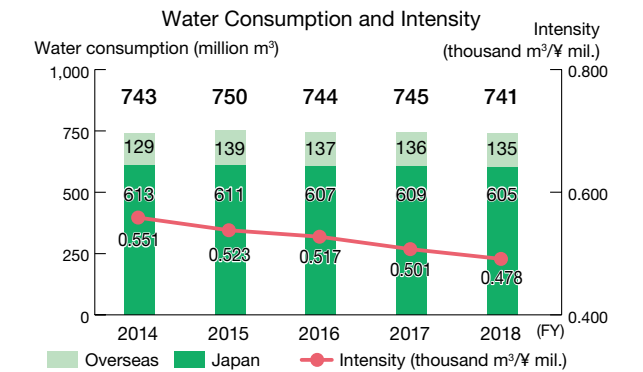
Water Usage Intensity Reduction Target and Results

The FY2018 targets for intensity and reduction rate were achieved. The Group is working towards achieving a target of a 1 percent year-on-year reduction in FY2019 as well.

Reduction Target Progress

	Thousand m ³ / ¥ Million	FY2018		FY2019
		Target	Results	Assessment
Intensity per unit of sales revenue	No more than 0.496	0.478	Target Achieved	No more than 0.473
Rate of change from previous year	%	At least 1%	4.7%	Target Achieved

In FY2018, the cost of reducing water risks was 6,983 million yen and investments including R&D were 891 million yen.



Reduction of water consumption and status of effective utilization through recycling

The Group takes measures to effectively use and reduce consumption of water at manufacturing sites. Measures to reduce use of tap water include installation of water-save faucets at business sites and headquarters departments.

Water recycling

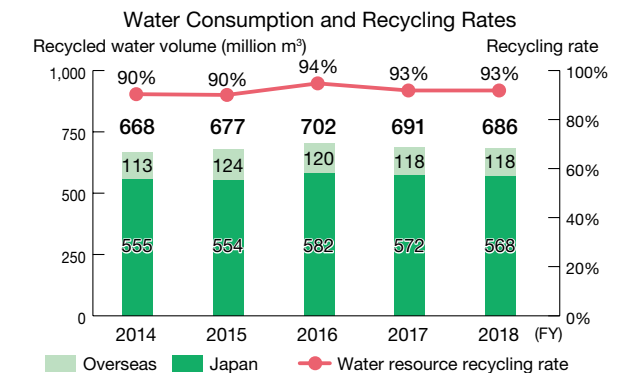
Oji Group companies engaged in the pulp and paper business use a large amount of water. They reduce water consumption by recycling water that has been taken in and reusing it in the manufacturing process. The water recycling rate exceeds 90 percent.

Water conservation at CENIBRA (Brazil)

Recovery and effective utilization of cooling water

Oji Fibre Solutions (New Zealand)

New installation of water treatment facilities that enable recycling of previously unused wastewater generated in various manufacturing processes and other measures



Paper is essential in our day-to-day lives. It is used in a wide range of situations for various applications such as newspapers, notebooks, copy paper, tissues, toilet paper, corrugated containers, and packaging materials. Approximately 60 percent of the raw material used for these types of paper is wastepaper, and the remaining 40 percent comes from trees. The Oji Group is working on “forest recycling” for the purpose of sustainable use of resources and contribution to the environment.

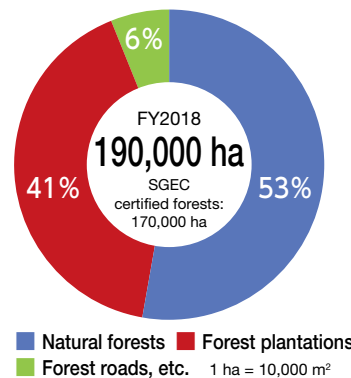
► Company-Owned Forests in Japan

The Group owns forests in approximately 650 locations throughout Japan extending from Hokkaido to Kyushu. The area of those forests is 190,000 hectares, equal to the size of Osaka Prefecture. Protecting the forest leads to protecting the rich nature and land of Japan.

Company-Owned Forests in Japan

The Oji Group owns and manages 190,000 hectares of forests in Japan. This total area is among the largest of all forests owned by private corporate entities. The Group initially owned forests for producing raw materials for paper, but policy was subsequently changed to production of raw wood for lumber and environmental contribution through forest management.

At present, the area of company-owned forest plantations in Japan is approximately 80,000 hectares, constituting 41 percent of all company-owned forests. The Group plants Sakhalin fir, larch, and other varieties in Hokkaido, and cedar, Japanese cypress, and other trees on Honshu and southward. The average age of these trees is about 60 years and are approaching the time for harvesting. The Oji Group manages its forests sustainably by utilizing forest resources (harvesting mature trees and replanting trees to rejuvenate forests) while also continuing tending operations such as thinning (enhancing resources for future generations).



Breakdown of Forest Plantations (41%)

	Cedar	Japanese cypress	Spruce, Sakhalin fir	Red pine	Larch	Other
Unit: ha	14,000	11,000	24,000	10,000	14,000	4,000
	7%	6%	14%	5%	7%	2%

Breakdown of Natural Forests (53%)

	Softwood	Hardwood
Unit: ha	24,000	77,000
	13%	40%



Forest plantations (Engaru mountain forest, Hokkaido)



Natural forests (Rubeshibe mountain forest, Hokkaido)

Fundamental Policy concerning Company-Owned Forests Management

Those who use trees have the responsibility to plant trees

- 1** The Group grows Ezo spruce, Sakhalin fir, larch in Hokkaido and cedar, Japanese cypress, and Japanese red pine on Honshu to create highly-profitable forests.
- 2** Forest plantations that have matured are rejuvenated by replanting after harvest. Natural forests are maintained and improved through selective cutting and thinning.
- 3** The Group is contributing to society through the development of forests that perform public functions including CO₂ fixation, water source conservation, national land conservation, and preservation of biodiversity.

Forest plantations and Natural Forests

Forest plantations are created for the purpose of wood production by planting seedlings and performing maintenance such as thinning. Natural forests are formed when trees germinate and grow through the power of nature.

Harvesting

Felling all trees in the harvest area within a forest that has reached the age suitable for harvesting (cutting age). Hardwood and other trees are left standing, however, as buffer zones in consideration of the environment on ridge lines and in valleys.

Selective Cutting

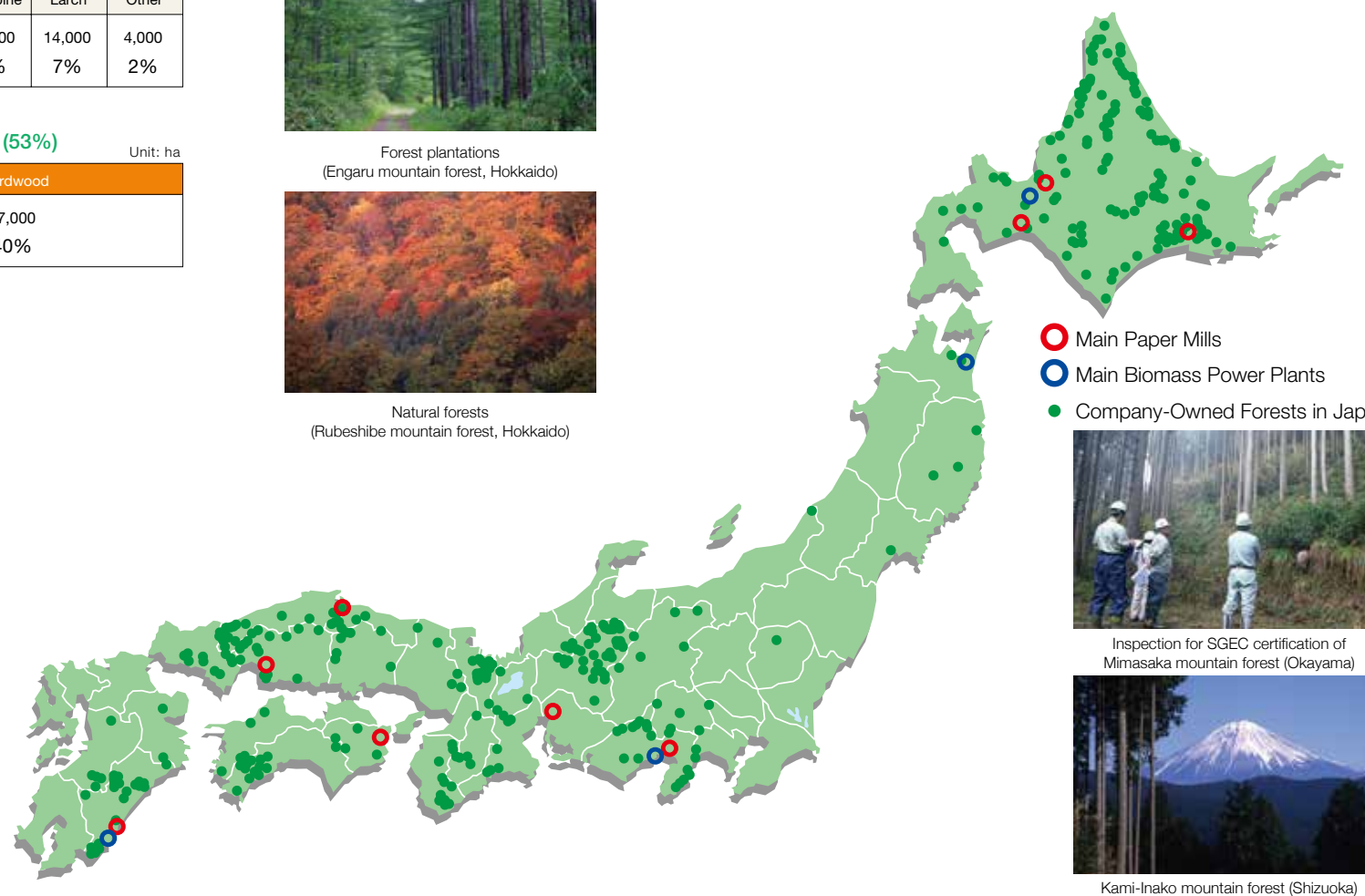
Felling trees at or below the annual growth volume that have been carefully selected and cutting age trees within a natural forest. Trees are selected for removal to enable the forest to rejuvenate naturally.

Thinning

Work performed to alleviate overcrowding in forest plantations while the trees are growing. In natural forests, selection and removal of trees to promote second-forest growth.

Re-planting

Tree planting in areas that have been harvested to develop the next generation of forests.



Oji Group's Forests in Japan

Total Area **190,000 ha**

Forest Certification **Certification acquisition rate for approx. 170,000 ha excluding profit-sharing forests: 100%**

SGEC License Codes
SGEC-FM: JAFTA-002, JAFTA-008, JAFTA-012
SGEC-CoC: JAFTA-W025

Acquisition of SGEC Forest Certification

SGEC*1 forest certification is a forest certification program*2 unique to Japan that is operated by the Sustainable Green Ecosystem Council (SGEC). The Oji Group began acquiring SGEC forest certification in December 2003 with the Kami-Inako mountain forest in Shizuoka. To date, we have acquired SGEC forest certification for 330 company-owned forests in Japan, excluding profit-sharing forests, with a total area of 173,000 hectares. It is the largest area of certified forests among those of private companies in Japan. In FY2016, SGEC signed a mutual recognition agreement with the Programme for the Endorsement of Forest Certification (PEFC), an international organization. This has made SGEC forest certification an internationally viable certification program.

*1 Sustainable Green Ecosystem Council

*2 Forest certification

Forest certification is aimed at sustainable forest management. An independent, third-party organization certifies a forest by examining it to see whether it is managed well in accordance with specific standards.

Sustainable Forest Management and Social and Environmental Contributions

Forests are closely related to our lives. It is important to maintain extensive forests in Japan while making effective use of them.

The Oji Group considers it necessary to encourage cooperation among people engaged in mountain forest management and users of lumber. Accordingly, the Group provides raw material including lumber, plywood, paper, biomass fuels, and other products to companies both inside and outside the Group as a part of efforts to revitalize Japan's forestry industry and ensure a stable supply of domestic lumber.

The Group also manages forests by giving full consideration to environmental contribution as the social responsibility of a company that owns forests. The Group takes initiative to ensure that Group forests meet a range of functions, including support for activities to protect Japanese huchen, fairy pitta, and other endangered species and hosting the Oji Forest Nature School.

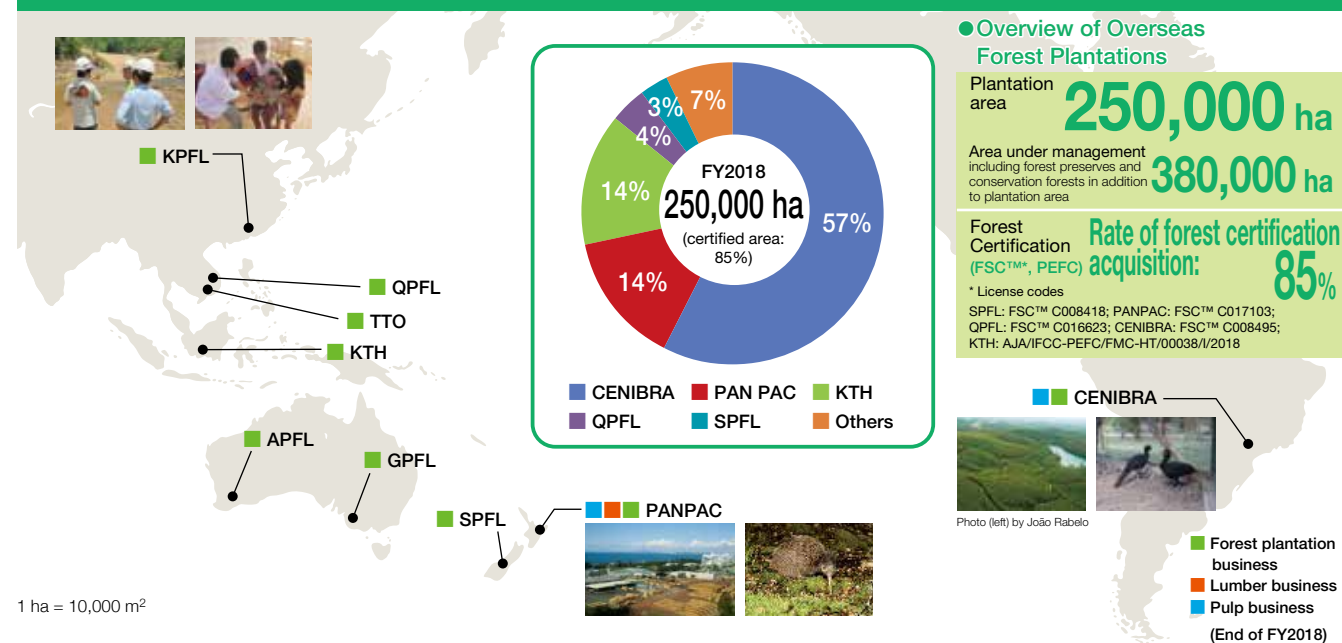


Integrated Report p. 74 Initiatives for Conservation of Biodiversity
p. 75 Contribution to Local Communities

Forest Recycling: Overseas Forest Plantations

The Oji Group conducts the forest plantation business in nine areas in six countries. As of the end of FY2018, the total area of overseas forest plantations was 250,000 hectares. The area under management in the overseas forest plantation business including forest preserves for the protection of forest ecosystems and wildlife and conservation forests for water source conservation and prevention of soil runoff is 380,000 hectares. To ensure appropriate forest management from the perspectives of society, economy, and the environment, the Group leverages the forest certification programs and acquired forest certification for 85 percent of forests as of the end of FY2018. The overseas forest plantation business secures wood raw materials, absorbs and fixes CO₂, and creates jobs and industry, contributing to the creation of truly enriched and sustainable local communities.

Overview of Overseas Forest Plantation Business: Pursuing Sustainable Forest Management

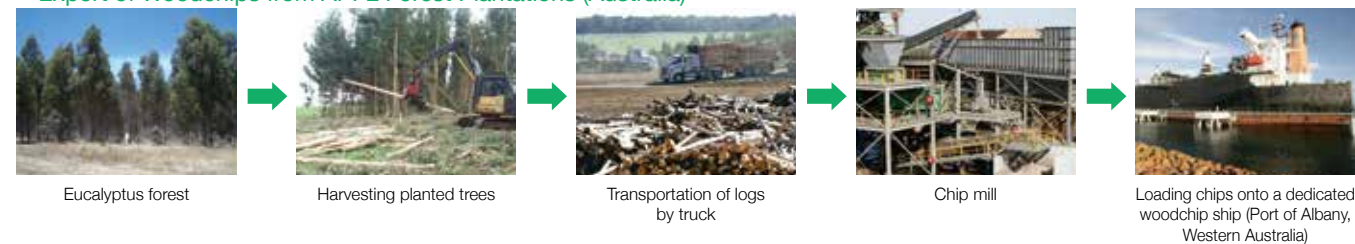


Use of Plantation Wood

At Oji Group forest plantations, planted trees that are ready to be harvested are processed into papermaking raw materials (woodchips) and lumber products. Woodchips are locally processed into pulp or transported to Japan on dedicated woodchip ships.

Integrated Report p. 76 Responsible Raw Materials Procurement

Export of Woodchips from APFL Forest Plantations (Australia)



Community-Based Forest Plantation Activities

CENIBRA in Brazil procures, processes, and sells logs and woodchips and manufactures and sells pulp. CENIBRA is active in various community contribution programs including supporting higher incomes for farm workers by leasing land that is suitable for farming, entering into partnership agreements with local beekeepers, and dispatching doctors and educators to local communities.



A beekeeper tending bees on land owned by CENIBRA

Utilization of Forest Certification Programs

The Oji Group also manufactures FSC™ certified products using only woodchips that meet the requirements of FSC™ such as FSC™ certified wood and properly controlled wood.*1 Controlled wood must meet requirements to be used in FSC™ certified products. The requirements are also specified in the Wood Raw Material Procurement Guidelines (p. 76).

*1 FSC™ Requirements

Not coming under, or confirmed to be unlikely to come under, any one of the five categories below.

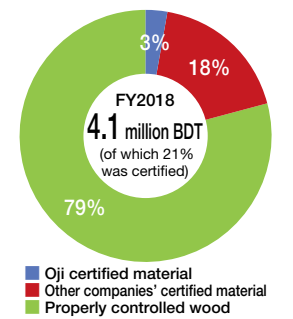
- 1 Illegally harvested wood;
- 2 Wood harvested in violation of traditional and human rights;
- 3 Wood from forests in which high conservation values are threatened by management activities;
- 4 Wood from forests being converted to plantations or non-forest use; and
- 5 Wood from forests in which genetically modified trees are planted.

Suppliers with FSC™ CoC*2 certification must be audited by a third party, and by utilizing these certification systems it is possible to ensure wood raw material traceability and the management systems (such as internal training) of suppliers. The results of these audits are available on the Web.

Properly Controlled Woodchips

The volume of woodchips imported in FY2018 was 4.1 million BDT (bone dry tons), all of which was derived from planted trees including sawmill residue. The certification ratios for imported woodchips were 3% for the Oji Group and 18% for other companies, making a total of 21%.

The remaining 79% was derived from properly controlled wood.



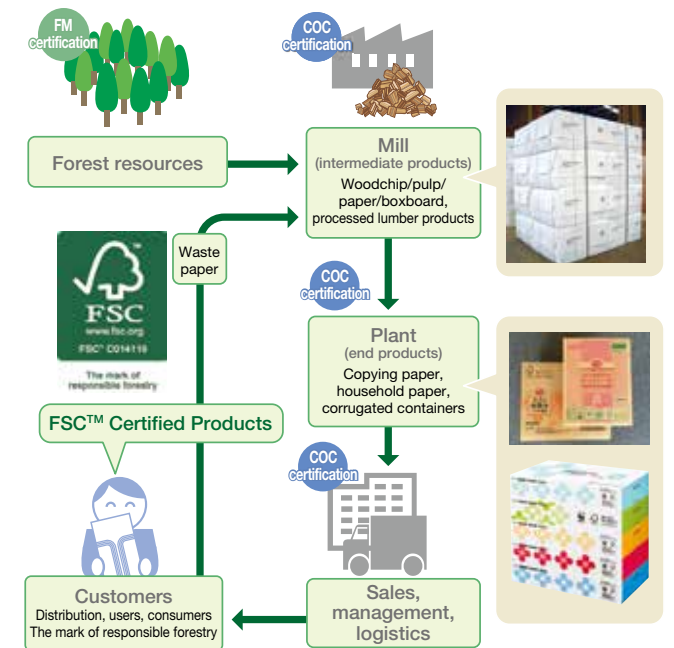
FSC™ Certified Products: Provision of Eco-Friendly Products

The Oji Group has acquired FSC™-FM certification*3 for its overseas forest plantations and FSC™-CoC certification for the Group's manufacturing and processing operations.

The advantage of acquiring integrated certification from forests to converting plants is that it enables the Group to offer a wide range of FSC™ certified products including intermediate products such as woodchips and pulp as well as end products such as photocopying paper and paper for household use. In addition, photocopying paper and corrugated containers are recycled as waste paper. Refer to the FSC™ website for detailed information on the status of certification acquisition.

*2 CoC certification: Confirmation of management on processing and distribution of produced wood
CoC: Chain of Custody

*3 FM certification: Confirmation of forest management
FM: Forest Management



Paper is essential in our day-to-day lives. It is used in a wide range of situations for various applications such as newspapers, notebooks, copy paper, tissues, toilet paper, corrugated containers, and packaging materials. Approximately 60 percent of the raw material used for these types of paper is wastepaper, and the remaining 40 percent comes from trees. The Oji Group is working on “paper recycling” for the purpose of sustainable use of resources and contribution to the environment.

Oji Group Paper Recycling Results

The Oji Group uses approximately 4.08 million tons of waste paper each year, the largest amount and about 24 percent of the 17 million tons of total waste paper use in Japan. The breakdown of waste paper use by the Group is as follows: about 50 percent waste corrugated containers and about 20 percent each of waste newspaper and waste magazines. In addition, recovered paper utilization ratio* in FY2018 was 64 percent, an increase of 2.5 points in the past 10 years as a result of various efforts to use waste paper as a resource.

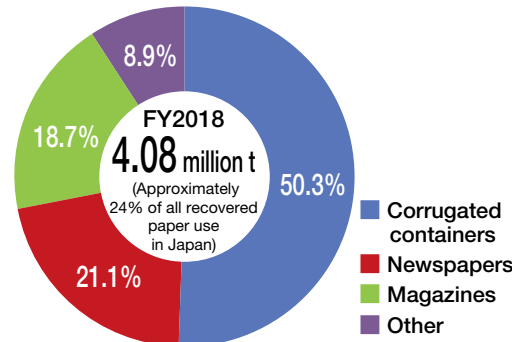
The Oji Group seeks to achieve a recovered paper utilization ratio of 65 percent by FY2020, which is part of the Environmental Action Plan of the Japan Paper Association. To this end, the Group promotes the collection of waste paper as a raw material to expand the use of recovered paper further.

* Recovered paper utilization ratio = Volume of recovered paper ÷ Total volume of fibrous raw material (total consumption of waste paper, wood pulp, and other fibrous raw material)

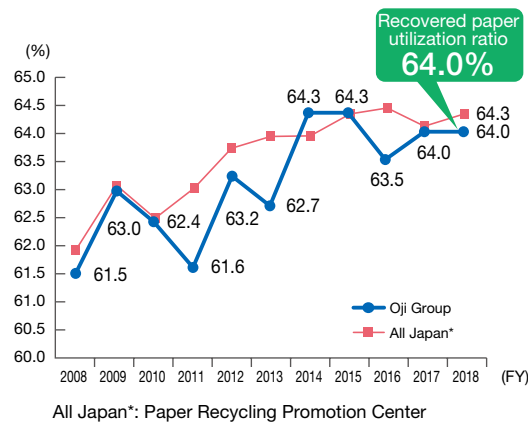
Collection of recovered paper from households



FY2018 Recovered Paper Use Results



Changes in Recovered paper utilization ratio (FY2018)



Reduction of Environmental Burdens by Promoting Recovered Paper Recycling

Paper is a material that is highly suitable for recycling, and therefore, it is important that paper be reused (paper recycling) rather than disposed of as waste. Paper (recovered paper) recycling contributes to (i) securing stable supplies of papermaking raw materials, (ii) effective utilization of resources, (iii) sustainable use of forest resources, and (iv) reduction of waste.

Following a period of rapid economic growth, there is a period when waste becomes an environmental problem. To address this issue, government, trade organizations, and the papermaking industry cooperated to build sorting, collection, and recycling mechanisms that led to the current wastepaper recycling system. In 2018, the combined recovered paper utilization ratio for paper and paperboard was 64.3 percent and the collection rate was 81.5 percent, putting Japan at the highest levels in the world.

(Source: Japan Paper Association)

The Significance of Recovered Paper Recycling

- (i) **Securing stable supplies of papermaking raw materials**
Wastepaper is a valuable resource generated within Japan and is the primary raw material for papermaking, accounting for more than 60 percent of all raw materials.
- (ii) **Effective utilization of resources**
Recovered paper recycling enables the repeated use of wood resources (pulp) that were previously used.
- (iii) **Sustainable use of forest resources**
By recycling wastepaper, the volume of new wood resources (pulp) used can be reduced.
- (iv) **Reduction of waste**
By recycling wastepaper, the volume of paper that must be disposed of as waste is reduced.

Various Measures to Promote the Use of Wastepaper

The Oji Group is working to promote various uses of waste paper, such as thorough sorting of waste paper at offices and factories within the group, a used paper wholesaler as a supplier, and an awareness campaign on paper recycling in cooperation with local residents and industry groups.

1) Enhancing the quality of wastepaper

The inclusion within wastepaper of specially processed paper and foreign substances that are not suitable as papermaking materials (collectively referred to as prohibited materials) is a cause of product problems. It is necessary that such prohibited materials be excluded before collection. Accordingly, the Group cooperates with wastepaper dealers, who play a central role in wastepaper logistics, to eliminate prohibited materials included in wastepaper discarded by households and businesses and strives to raise the recovered paper utilization ratio and manufacture high-quality paper products.

2) Increasing the use of waste paper

- Use of difficult-to-process paper: The Group is installing special-purpose facilities to process paper tubes, laminated paper, and other difficult-to-process paper for use as a raw material.
- Use of confidential documents: In consideration of the maintenance of confidentiality and issues of information leaks, confidential documents were incinerated in the past, but the Group performs confidential dissolution processing in fully secure facilities for use as a raw material.

Prohibited Materials

Paper products that are not suitable for use as papermaking materials	
Scented paper, paper with an odor	Paper packaging and corrugated containers used for detergent, soap, incense, and so on
Sublimation transfer paper, thermal expansion paper	Thermal paper, iron print paper, 3D copy paper (for Braille and so on)
Waxed corrugated containers, waxed corrugated board	Corrugated containers that contained imported produce, processed seafood, and so on
Soiled paper	Paper that contains food remnants or oil
Materials other than paper	
Stones, glass, metal, earth and sand, wood, cloth, plastic, and others	

Source: Paper Recycling Promotion Center



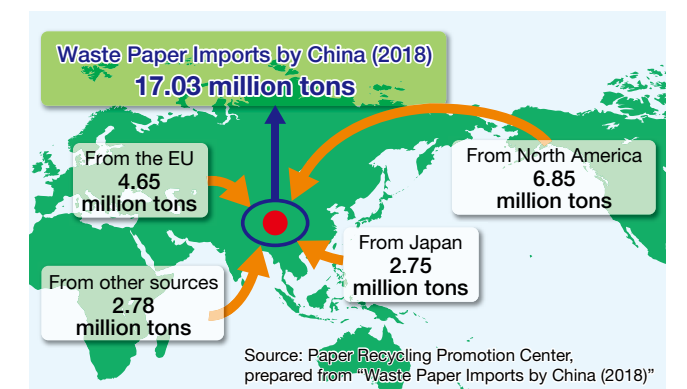
Difficult-to-process waste paper (paper tubes)



A confidential document processing facility (Oji Materia Edogawa Mill)

International Trends in Waste Paper Recycling

China is the world's largest importer of wastepaper, importing 17.03 million tons in 2018. Imports come from North America, the EU, and Japan, which shipped 2.75 million tons, approximately 20 percent of the total, to China. In conjunction with the tightening of environmental regulations, China has announced a policy of banning the import of all solid waste including wastepaper starting at the end of 2020. As a result, the global wastepaper supply and demand will enter a period of major change. The Oji Group is deepening collaboration with wastepaper dealers, who play a major role in wastepaper recycling, to stabilize procurement prices while maintaining and stabilizing waste paper recycling systems.



Column: "A Corrugated Container Travel Journal: Cardboard to Cardboard," a Pamphlet Introducing an Overseas Site

The Oji Group issued a pamphlet with information on the corrugated container business in Malaysia. Fuyuki Shimazu, a corrugated container artist who collects corrugated containers from around the world, observed GSPP, the Oji Group's largest site in Southeast Asia, and created a report from a unique perspective on the process starting with scenarios where corrugated containers are used and collected in Malaysian cities to the creation of new containerboard at the plant from recovered waste paper.



Initiatives for Conservation of Biodiversity

The Oji Group engages in activities for protecting and nurturing endangered species, recovering ecosystems, and other activities by working together with governments, administrative authorities, environmental NPOs, academics, local residents, and other parties.

Conservation activity for Kiwi (Pan Pac)

Pan Pac Forest Products, an Oji Group company, conducts activities for protecting the kiwi, a rare bird species, by collaborating with the Ministry for the Environment of New Zealand, citizen volunteers, and other parties. For these activities, the company has designated land of an area of approximately 40 hectares as a kiwi sanctuary for protecting kiwi chicks. Chicks and eggs in the surrounding area are captured and collected, and chicks that are captured or hatched from the collected eggs are nurtured in the sanctuary before being returned to the wild.

In June 2019, Pan Pac was named Community Corporate Sponsor of the Year at a national kiwi conference held by Kiwis for kiwi, a kiwi protection organization.



Sarufutsu Itou Conservation Activities (Sarufutsu company-owned forest in Hokkaido)

In 2009, Oji Holdings established the Sarufutsu Itou Conservation Council with a local NPO, administrative bodies, researchers, and others for the purpose of protecting the Japanese huchen, or the sea-run taimen (Hucho perryi), an endangered species that lives in the river zone of the Sarufutsu mountain forest in Sarufutsu village, Hokkaido. An area of 2,600 hectares including the river zone was designated a conservation area, and conservation activities are conducted.



A Japanese Sarufutsu Itou with breeding coloration Photo provided by Yo Chirai
1 ha = 10,000 m²

Restoration of Ecosystems and Protection of Rare Species (CENIBRA)

One of the largest overseas forest plantations of the Oji Group is owned by CENIBRA, which operates the eucalyptus plantation and pulp businesses in Brazil. CENIBRA owns and manages a 150,000 hectares forest plantation and 100,000 hectares forest reserve. In accordance with the Brazilian Forest Law, natural forests as well as steep slopes and areas around water sources such as wetlands are left unharvested to preserve biodiversity. In cases where natural forest in the preserve is lost due to erosion, wildfire, or other such events, the company plants indigenous species of trees so that the environment can recover (restoration of natural forest).

Diverse wildlife species are observed in the forest plantations of CENIBRA. The symbol of the company's biodiversity initiatives is the Macedonia Farm, a 560-hectare area that is registered as a natural forest reserve (RPPN*). In this forest, the company has been engaged in activities for breeding the Mutum (a relative of the curassow), an endangered bird species, and returning them to the wild, jointly with an NPO since 1990. CENIBRA also provides environmental education related to forests and biodiversity to schools and local communities and conducts wide-ranging monitoring surveys of flora, fauna, and water resources in the forest on a regular basis.

*RPPN: Reserva Particular do Patrimônio Natura



Measures to Protect the Fairy Pitta (Koyagauchi company-owned forest in Kochi Prefecture)

The fairy pitta is a migratory bird with multiple body colors and a body length of around 20 centimeters. It is listed as a class IB endangered species on the Red List of the Ministry of the Environment.

In August 2016, Oji Holdings concluded an agreement to protect the fairy pitta with the Ecosystem Trust Society at the 260 hectares of company-owned forest, which is adjacent to the fairy pitta sanctuary of the organization.



(Photo provided by Ecosystem Trust Society)

Contribution to Local Communities

Oji Forest Nature School


The Oji Forest Nature School was first held in 2004 through collaboration with the Japan Environmental Education Forum. It is an environmental education program for children that provides opportunities to experience nature by using forests owned by the Oji Group and Group mills. The program deepens understanding of the connections among forests, people, and industry and is an important opportunity to convey the Group's attitudes and approaches to environmental preservation to future generations.



Hands-On forest development in a company-owned forest

Forest Picture Book Contest and Environmental Class

Since 2015, Oji Holdings has hosted the Forest Picture Book Contest with WWF Japan. To provide children with a catalyst for creating picture books, Oji Holdings conducts an environmental class on the Oji Group's sustainable forest management.

 [Website of WWF Japan Forest Picture Book Contest website](http://team-morrie.com/shinrin-ehon/index.html)
<http://team-morrie.com/shinrin-ehon/index.html> (in Japanese)



An environmental class

Protecting and Nurturing Forests for Thriving Oceans

The 69th Oji Paper Tomakomai Mill Tree Planting Festival was held on May 22, 2019 at the Ojiyama company-owned forest in Tomakomai Takaoka. The festival has been held since 1950 based on the idea that preservation and nurturing of forests leads to thriving oceans. Since 1995, the festival has been held with the Tomakomai fishery cooperative.

In 2018, a total of about 100 persons including mill employees and other involved persons, members of the fishing association, local co-op, Tomakomai River Office of the Tomakomai fishery cooperative, Muroran Development and Construction Department, Hokkaido Regional Development Bureau as well as personnel from the Tomakomai fishery cooperative and others participated as a part of implementation of the Tomakomai fishery cooperative. A total of 1,150 seedlings (500 red pine and 650 Japanese oak) were planted on a 0.65 ha area that was damaged by strong winds in October 2015.

The participants hope that the planted seedlings will grow into beautiful trees and will continue protecting them in the future.




Participants planting seedlings

Responsible Raw Materials Procurement

The Oji Group established the Oji Group Partnership Procurement Policy that confirms the safety and lawfulness of raw materials throughout the supply chain, and strives to expand CSR procurement that gives due consideration to the environment and society. With regard to wood raw materials, compared to other procurement raw materials, there are many matters that require confirmation such as illegal logging and biodiversity, so the Group established the Wood Raw Material Procurement Guidelines under the Oji Group Partnership Procurement Policy. The policy and guidelines have been translated into English and are distributed to suppliers around the world.

Oji Group Partnership Procurement Policy (established in 2007 and revised in 2012 and 2018)

 Integrated Report p. 43 Forest Resources and Environment Marketing Business: ESG and SDG Topics

Wood Raw Material Procurement Guidelines (established 2005)

The Oji Group has established the Wood Raw Material Procurement Guidelines for its wood raw materials procurement.

The Guidelines stipulate that the Group shall: (1) expand procurement of wood from certified forests; (2) increase use of plantation trees; (3) utilize unused wood effectively; (4) verify that procurement is in compliance with laws and is environmentally friendly and socially responsible, and; (5) disclose information.

To ensure raw material traceability as specified in (4)-2 in particular, production sites of raw materials going back to sources of wood raw materials, forest management methods, and the avoidance of wood obtained through illegal logging are included among the confirmation items. In this way, the Group procures only raw materials produced from well-managed forests.

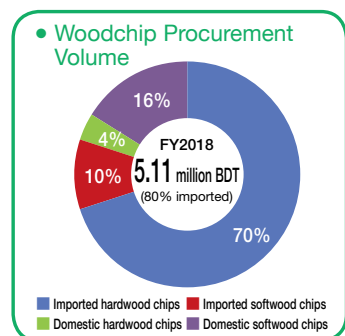
- ### Wood Raw Material Procurement Guidelines
- (1) Expand procurement of wood from certified forests
 - (2) Increase use of plantation
 - (3) Utilize unused wood effectively
 - (4) Verify that procurement is in compliance with laws, environmentally friendly, and socially responsible
 - 1 Implement monitoring of supplies
 - 2 Ensure raw material traceability
 - a) Production place of raw materials (logging site, forest manager, differentiation between plantation and natural forests, etc.),
 - b) Forest management method (compliance with applicable forest laws and forest management standards, etc.),
 - c) Acquisition of forest certification,
 - d) Avoidance of wood obtained through illegal logging,
 - e) Avoidance of genetically modified (GMO) wood,
 - f) Avoidance of logging in forests that are recognized publicly as forests with high conservation value,
 - g) Avoidance of raw materials associated with major social conflicts,
 - h) Adherence to protection of human rights and labor rights
 - (5) Information disclosure

Confirmation of Traceability

Woodchip procurement volume in FY2018 was 5.11 million BDT (bone dry tons). Of that amount, 80 percent was imported.

The Group obtained a total of 1,154 traceability reports including 511 on the entire volume of domestic woodchips,

261 on imported woodchips covering all ships, and 382 on the entire volume of purchased pulp, verifying that the Group conducted procurement in accordance with the Wood Raw Material Procurement Guidelines.



An FSC™-FM certification audit (QPFL in Vietnam) (FSC™-C016623)



A third-party audit report on traceability reports

Supplier Monitoring

The Oji Group visits local suppliers every year to check logging permits and related documents and inspect the actual logging areas and forests, monitors the status of compliance with the Wood Raw Material Procurement Guidelines, and verifies traceability. Through these monitoring activities, we have built good relationships with our suppliers.



A supplier meeting (monitoring)

Confirmation of Raw Material (Chemical) Safety and Provision of Information to Customers

The Group confirms the safety of the chemicals (including materials) during the selection phase of procurement in an effort to improve product safety. The Group also provides information to customers.

Provision of information to customers

The Group responds to customer inquiries based on safety information for various chemicals verified using the Pre-use Evaluation System and the Information Updating System. Responses to customer inquiries are made using Research Reports,*1 Article Information Sheets (AIS),*2 Safety Data Sheets (SDS)*3 and other information.

*1	Research Reports	Reports that respond to detailed individual inquiries by tracing back to the chemicals used.
*2	Article Information Sheet (AIS)	A document that summarizes laws and regulations relating to products and key handling points.
*3	Safety Data Sheet (SDS)	A document provided pursuant to laws and regulations concerning special products that contain substances designated in laws and regulations in amounts exceeding certain thresholds.

Confirmation of the Safety of Chemicals Used

The safety of chemicals used is ensured by means of a Pre-use Evaluation System and Information Updating System.

[Pre-use Evaluation System]

When considering the use of a new chemical, the Oji Group conducts a pre-use assessment by checking laws and regulations, hazard information, and green procurement by major industry associations, etc. using proprietary pre-use evaluation sheets and makes a determination whether the chemical can be used.

[Information Updating System]

Chemical substance management regimes are being strengthened in Japan and overseas, and accordingly, the Group regularly updates evaluation sheets and information by regularly evaluating chemicals in use and confirms their safety.

