

With the Environment



Maxell Group sees global warming and other global environmental issues as an urgent issue. To resolve this issue, we have introduced a company-wide environmental management system and are promoting Group-wide initiatives.

■ Environmental Management

With the adoption of SDGs and the Paris Agreement, companies are required to contribute even more toward the realization of a sustainable society. In this context, Maxell Group must also contribute significantly to global environmental conservation as well as increase corporate value.

Maxell Group is committed to implementing measures to prevent global warming in accordance with the Environmental Conservation Action Guidelines^{*1}. Maxell Group's activities are conducted through the operation of an environmental management system, with top management serving as the president. In addition to ensuring compliance with laws and regulations such as the REACH regulations and RoHS directives, and to steadily implementing countermeasures and strengthening compliance, we are upgrading our efforts to focus on activities aimed at achieving environmental results based on ISO14001 2015 edition.

In addition, the Financial Stability Board (FSB) recently launched the Task Force on Climate-related Financial Disclosures (TCFD), worried about the risks and opportunities that climate change poses to businesses and financial markets.

Maxell Group also announced its endorsement of TCFD recommendation (October 2021) and will proceed with scenario analysis.

^{*1} Environmental Conservation Action Guidelines:
https://www.maxell.co.jp/csr/csr2/csr_guideline.html (in Japanese only)

■ Formulation of Maxell Group Long-Term CO₂ Emissions Reduction Plan

Previously, CO₂ emissions were calculated using fixed values for CO₂ emission factors in order to visualize the reduction efforts at individual business sites. However, in recent years, the acceleration

of global warming countermeasures is being required world-wide, and we have switched to a calculation method based on the GHG Protocol, which is the de facto standard. Maxell Group has been promoting energy-saving activities with the goal of reducing CO₂ emissions by 30% by 2030 compared to fiscal 2013. In view of the status of raising social-wide CO₂ reduction targets, we have decided to raise the target to a 50% reduction. Currently, we are continually working to formulate action plans through 2030 and increase the feasibility of specific measures.

In January 2019, we participated in the Climate Change Initiative (JCI)^{*2} and will promote additional measures to achieve virtually zero CO₂ by 2050.

^{*2} Climate Change Initiative (JCI): <https://japanclimate.org/english/>

■ Maxell Group Environmental Action Plan for Fiscal 2021

Based on the belief that environmental activities and contributes to business performance are integrated operations, Maxell Group uses indicators (on a per-unit sales basis: costs/sales) for which the earnings results of environmental activities are visible. We also strive to raise motivation by managing the index (per unit of production: consumption/production) in conjunction with indicators where improvement efforts are visible. In fiscal 2019, the basic unit worsened compared to the previous fiscal year due to the sluggish economic activities in the second half of the fiscal year due to the impact of the Novel CoronaVirus infectious disease. In fiscal 2020, we achieved our target thanks to our efforts to improve profitability and reduce expenses in line with the Coronavirus situation, which counteracted the worsening performance of the previous year. In particular, the energy consumption per unit of net sales has reached almost the same level as in fiscal 2018, which was the lowest ever. We will continue to strive for improvement activities in fiscal 2021.

There were no serious environmental-related accidents, fines, or complaints in fiscal 2020. In addition, following the enforcement of the Fluorocarbon Emissions Control Law, we carried out statutory inspections, and as a result, the amount of CFC leaks was at a level that did not require reporting.

Quantitative Action Targets^{*3}

Assessment: ■ Achievement of targets ■ Achievement rate of 95% or more ■ Achievement rate less than 95%

No.	Action Targets	Classification ^{*4}	FY2020			FY2021
			Goal	Actual	Assessment	Goal
1	Net sales ratio of eco-friendly, CSR/CSV products (%)	Japan / Overseas	95	100	■ ■ ■	100
2	Percentage of eco-friendly, CSR/CSV products registered using new assessments (%)	Japan / Overseas	100	100	■ ■ ■	100
3	"Eco mind" education enrollment rate (%)	Japan / Overseas	90	100	■ ■ ■	100
4	"Eco mind" education participation rate (%)	Japan / Overseas	100	100	■ ■ ■	100
5	Maintenance of zero emissions (annual) (target: manufacturing bases) (Quantity of final disposal: fewer than five tons; final disposal rate: less than 1%)	Japan	20	20	■ ■ ■	21
6	Per unit of production × 10 ⁻³ (kL/million yen)	Japan / Overseas	416	386	■ ■ ■	405
		Plants in Japan	395	337	■ ■ ■	351
	Per unit of net sales × 10 ⁻² (%)	Domestic and overseas plants	172	155	■ ■ ■	168
		Plants in Japan	161	138	■ ■ ■	144
	Per employee and surface area (kL/person and km ²)	Offices in Japan and overseas	18	18	■ ■ ■	22
7	Per unit of production × 10 ⁻⁴ (t/million yen)	Plants in Japan and overseas	482	409	■ ■ ■	470
	Per unit of net sales × 10 ⁻⁴ (%)	Plants in Japan and overseas	789	788	■ ■ ■	974
	Recycling rate (%)	Plants in Japan and overseas	70.0	74.0	■ ■ ■	70.0
8	Per unit of production × 10 ⁻² (m ³ /million yen)	Plants overseas	600	488	■ ■ ■	600
	Per unit of net sales × 10 ⁻⁴ (%)	Plants overseas	540	407	■ ■ ■	525

Overseas plants: MDCN, WME, MTM, MEL (MMS), SLEI

^{*3} Quantitative action targets: Maxell Izumi, Ube Maxell Kyoto, and Maxell Kureha are not included.

^{*4} Classification: Domestic production and sales at overseas plants are translated into yen at fixed exchange rates.

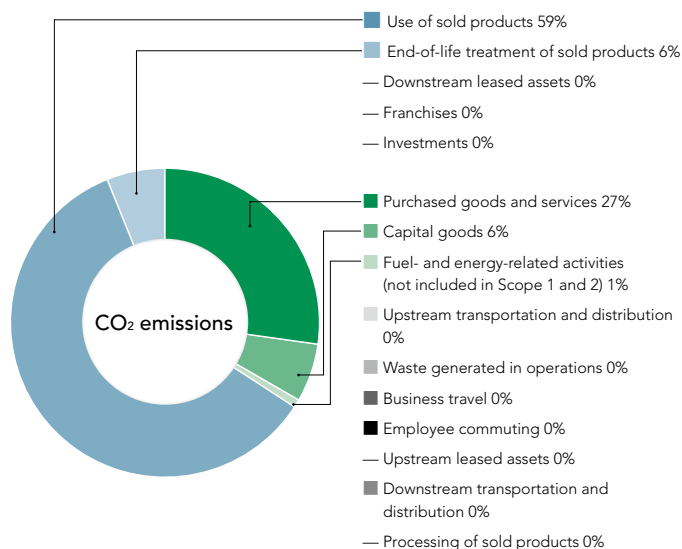
With the Environment

■ Scope 3

Maxell Group calculates CO₂ emissions for the entire supply chain, including Scope 3. Scope 3 is indirect emissions other than Scope 1 and 2. In calculating emissions, results are tabulated in accordance with the Ministry of the Environment and the Ministry of Economy, Trade and Industry's Basic Guidelines for Calculating Greenhouse Gas Emissions Throughout the Supply Chain.

CO₂ emissions during product use, which account for more than half of the total, will be reduced by promoting energy-saving designs.

Breakdown of Scope 3 CO₂ Emissions by Category



Accomplishments and Progress of Environmental Activities

■ Prevention of Global Warming

Maxell Group is working to conserve electricity by visualizing power consumption patterns, operating efficiently through the control of equipment demand, upgrading air conditioning and lighting, installing green curtains, and conducting light-down activities. In fiscal 2020, we succeeded in reducing CO₂ by more than 400 tons at the Kawasaki Works, in particular, by replacing energy-saving products with boilers and managing the optimal amount of steam used in the recovery of solvents.

In addition, the Ono, Fukuchiyama, and Kobuchizawa business sites conduct solar power generation, generating approximately 3,041 MWh annually.



Domestic CO₂ emissions in fiscal 2020 increased by 1.9% compared to the previous fiscal year, while overseas emissions decreased by 8.8%. Overall, emissions decreased by 3.2%.

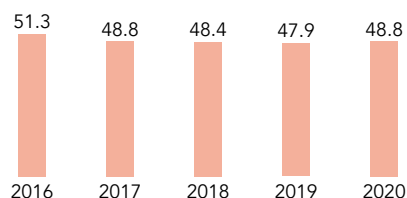
Japan's medium-term greenhouse gas reduction target has been raised from a 26% reduction to a 46% reduction in 2030 compared to fiscal 2013. Against this target, Maxell Group's fiscal 2020 results were 37.3% lower than in fiscal 2013.

In addition, in fiscal 2016, businesses added a system for evaluating the division of companies according to the Energy Conservation Act. For the fourth consecutive year, Maxell Frontier (formerly Maxell Joei Tech) received an S-rank rating as an outstanding operator for six consecutive years.

CO₂ Emissions (Scope 1, 2*)

Domestic

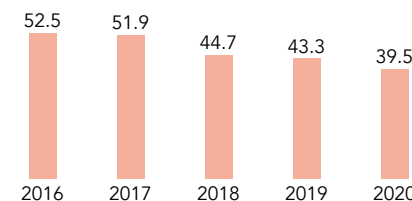
(kt-CO₂)



*1 Scope 1: Direct emissions due to fuel incineration, etc. at business sites
Scope 2: Indirect emissions from purchased electricity, etc.

Overseas**

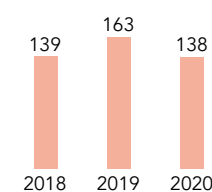
(kt-CO₂)



*2 Power/CO₂ conversion factors: Domestic 0.36, UK 0.487, Malaysia 0.656, China 0.745, Indonesia 0.726 (all units are t-CO₂/MWh)

Energy Consumption per Unit Sales

(×10⁻² (%))



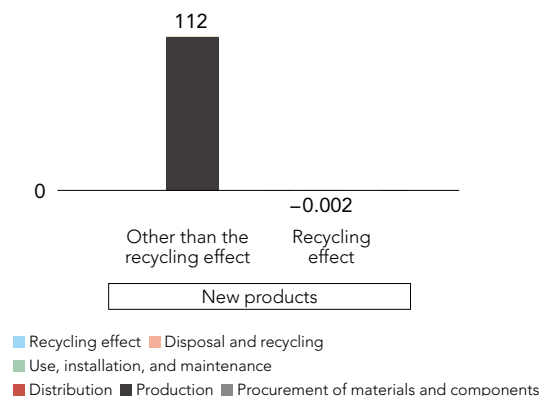
Accomplishments and Progress of Environmental Activities



■ Visualization of Environmental Performance through LCAs

We made efforts to visualize environmental performance in terms of CO₂ emissions, waste, and water consumption based on life cycle assessments (LCAs) for all solid-state batteries currently being developed. There are no comparative products due to differences in shape, performance, and application. As a result, CO₂ emissions, waste, and water consumption throughout the entire life cycle, from materials manufacturing to production, distribution, use, and disposal, have been clarified, and we will use this clarification to improve environmental value in the future based on this.

CO₂ Emissions of All Solid-State Batteries (New Products)
(kg)



■ Reduction of the Environmental Burden through Environment-Friendly Products

Maxell Group quantitatively evaluates and utilizes the environmental impact at each stage of the life cycle in accordance with environmentally conscious design assessment items at the design stage of new products, and registers products that exceed certain standards as “environmentally conscious products.” In fiscal 2020, we registered a total of 25 products, including laser light source liquid crystal projectors and various optional parts, lens units for in-vehicle cameras, silicon

double-sided adhesive tapes, various tapes for UV peeling-type dicing tapes, and all-solid-state batteries.

Product recycling

Under the Act on the Promotion of the Effective Use of Resources, Maxell Ltd. joins JBRC and displays the recycle mark for lithium-ion batteries it produces and sells. Customers are enlightened and promoted the use of its collection and recycling system. Although we do not know the volume of batteries collected in-house, the volume of small lithium-ion batteries collected is increasing year by year through support of JBRC activities (collected 730 tons in JBRC Database in fiscal 2020 (160% compared to the previous year)).

In April 2019, the Ministry of the Environment approved a wide-area certification system for projectors for the purpose of promoting recycling. Hair dryers and electric razors are subject to the Small-Scale Home Appliance Recycling Law, and collection is conducted by each municipality.



Laser light source liquid crystal projector

■ Determining Transportation Energy Consumption per Unit of Production

Since Maxell Group handles a variety of products, we ascertain the basic unit of transportation energy based on production output for each manufacturing base. In fiscal 2020, the total of all sites decreased by 23% from the previous fiscal year. Maxell is not a specified consigner under the Act on the Rational Use of Energy.

	Production (millions of yen)	Use (10,000 ton-kilometers)	Per Unit (ton-kilometers/ millions of yen)
FY2018	58,919	1,138.1	193
FY2019	56,543	1,108.4	196
FY2020	60,112	909.9	151

■ Chemical Substance Management

Maxell Group manages the chemical substances used in its products in response to various international regulations, including the REACH regulations and RoHS directive. Specifically, we incorporate the latest information in our Control Standard for Handling Chemical Substances in Products, Parts and Materials* and promote thorough chemical management activities. Batteries are not subject to RoHS Directive, but we have been studying the use of mercury-free batteries, and the various types of primary and secondary batteries manufactured and sold by Maxell meet RoHS standards.

“Lead,” a substance subject to RoHS Directive, is a hazardous chemical substance. Therefore, risks such as soil contamination, marine contamination, and effects on human bodies have become issues. In recent years, ordinary home appliances have been made lead-free, but oxygen sensors, for which alternative technologies have not been established, are applicable to exemptions and lead is still being used. Through years of R&D, Maxell has commercialized a galvanic cell-type lead-free oxygen sensor with a long life and high reliability that is less susceptible to the effects of CO₂ and other acid gases by realizing lead-free galvanic cell oxygen sensors and at the same time developing a weakly acidic electrolyte that is ideal for lead-free negative electrodes.

In addition, the storage and treatment status of equipment using PCBs is controlled. In fiscal 2020, the Maxell Kyoto Works and Maxell Frontier Gifu Works handled high-concentration PCBs, and completed them before the deadline.

Equipment using PCBs waiting for treatment containing low concentrations and small amounts of PCBs will be processed sequentially in the future.

* Control Standards for Handling Chemical Substances:
https://www.maxell.co.jp/csr/chemical_control/index2.html (in Japanese only)

Accomplishments and Progress of Environmental Activities



Waste Reduction and Recycling

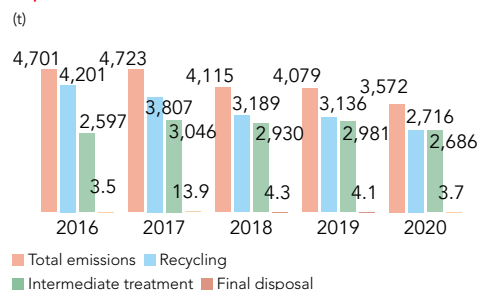
In order to achieve zero emissions*¹, Maxell Group is thoroughly implementing measures such as thoroughly sorting waste, promoting the use of valuable materials by sharing information at each business site, and expanding intermediate treatment within the Company. In the lithium-ion battery manufacturing process, for example, we sort the fractions and paint residuals generated in each process and pass them to the appropriate suppliers to recycle rare metals, such as cobalt, copper, and aluminum (213 tons in fiscal 2020). The Ono Works also recycles silver oxide (2.0 tons in fiscal 2020).

The amount of waste and recyclable materials the Group generated domestically in fiscal 2020 was 12.4% lower than the previous year. As a result of stepped-up recycling efforts, domestic manufacturing sites achieved zero emissions for 20 consecutive years.

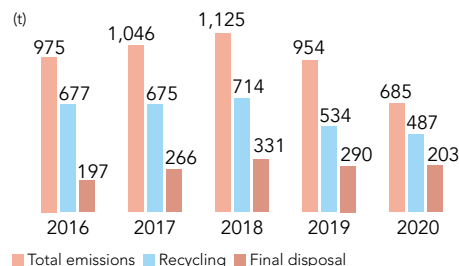
*1 Criteria for zero emissions (criteria for each business site): Final waste disposal amount less than five tons/year and final disposal rate less than 1%/year

Waste Situation

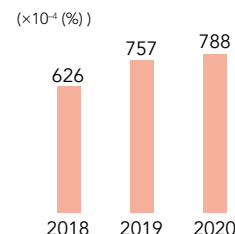
Japan



Overseas



Waste per Unit of Sales



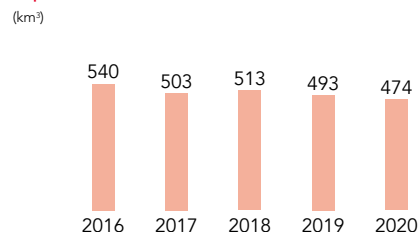
Water Consumption Reduction Activity

Maxell Group strives to conserve water resources by striving to reduce water consumption in the manufacturing process and by reusing water once used. For example, the Kyoto Works has remodeled the system to recover and reuse 100% of drain water in line with the increase in steam consumption associated with the increase in the electrode production of lithium-ion batteries. This has resulted in an annual saving of 34 km³ of water. Domestic Group business sites saw a 3.9% reduction compared to the previous fiscal year. However, Maxell Group as a whole saw a 7.4% reduction compared to the previous fiscal year due to heightened awareness of water conservation at overseas Group business sites with particularly high water risk*², resulting in a 17.1% reduction in water consumption and a significant reduction in consumption.

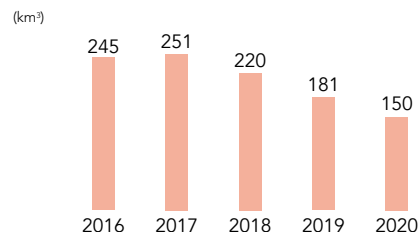
*2 WRI Aqueduct Water-Risk Assessment

Water Consumption

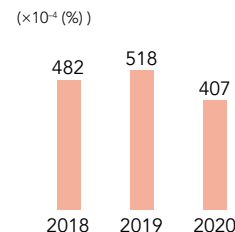
Japan



Overseas



Water Consumption per Unit of Net Sales



Biodiversity

Regarding biodiversity, we signed a letter of consent for the Private Sector Engagement Partnership for Biodiversity in fiscal 2018. In fiscal 2020, activities were refrained due to the impact of COVID-19, so we decided not to do any other than cleanup activities. However, in response to the worldwide problem of microplastics, we launched a new attempt to clean up marine plastics waste. We solicited volunteers from employees to collect 168 kg of garbage during two cleanups at the Nishikinohama Beach in Kaizuka City, Osaka Prefecture and the Kanzaki Seaside Resort in Maizuru City, Kyoto Prefecture. Our first target is 500 kg, and we will continue our activities in the future.

Furthermore, as a contribution to achieving the SDGs, we became an affiliated partner of the Blue Seafood Guide, an activity by Sailors for the Sea Japan. As part of this membership, we are working actively to incorporate Blue Seafood*³ items in the menus at our employee cafeterias. Currently, we provide Blue Seafood items at the Kyoto Works, Kawasaki Works, and Kobuchizawa Works. In addition to promoting local production for local consumption at the Kyoto Works, we are working to reduce food loss by increasing the accuracy of meal counts and conducting additional cooking while monitoring conditions.

*3 Blue Seafood: <https://sailorsforthesea.jp/>



Menu featuring Blue Seafood offered at the employee cafeteria of Maxell's Kyoto Works