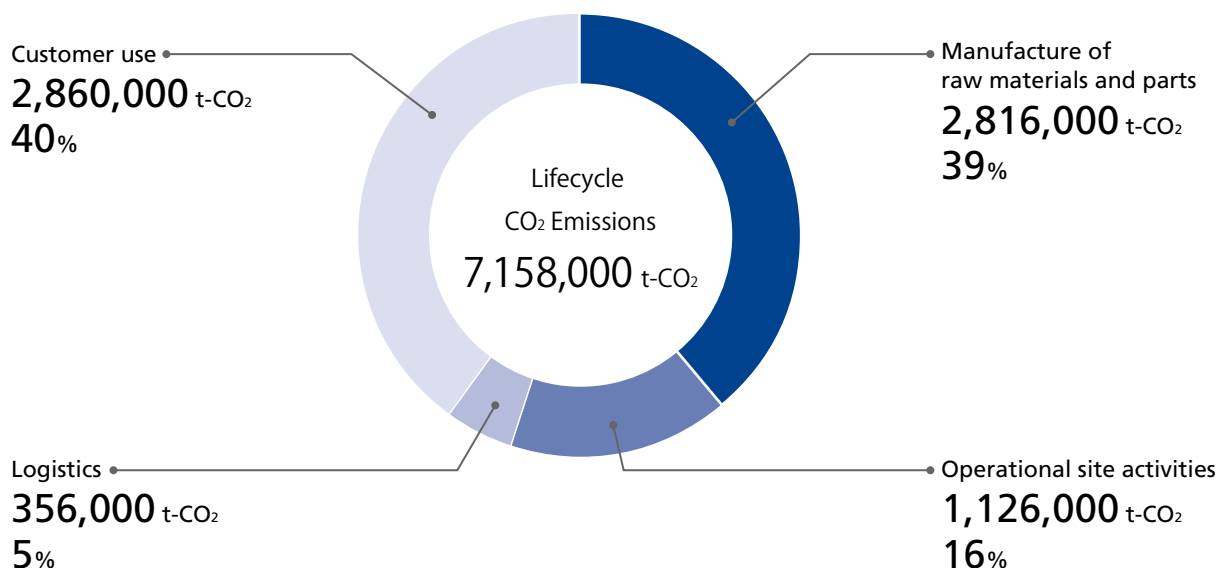# Protecting and Conserving the Global Environment



Canon Eco Technology Park (Japan) — working toward advanced resource circulation (→P79)

We are tackling environmental issues such as climate change, resource depletion, pollution, and biodiversity loss on a global scale. To help leave a prosperous planet for future generations, Canon is taking various Group-wide initiatives. As a global corporation working in harmony with the environment, Canon will continue to deepen its connection to the earth based on the principle of *kyosei*.

**Canon Group Lifecycle GHG Emissions in 2018 ($CO_2$ Equivalent)**



Customer use
**2,860,000** t-$CO_2$
**40**%

Manufacture of
raw materials and parts
**2,816,000** t-$CO_2$
**39**%

Lifecycle
$CO_2$ Emissions
**7,158,000** t-$CO_2$

Logistics
**356,000** t-$CO_2$
**5**%

Operational site activities
**1,126,000** t-$CO_2$
**16**%

# Management Approach

Contributes to a development of a sustainable society throughout the product lifecycle.

## Materiality and Environmental Aspects

`GRI102-11`  `GRI102-15`  `GRI103-1`  `GRI103-2`

In order to promote environmental assurance activities efficiently and effectively, companies must first understand the characteristics of their own business activities, their impact on the environment, and social needs such as the Sustainable Development Goals (SDGs). They then need to clarify priority initiatives. Every year, Canon identifies the major issues of material significance through the materiality analysis described below.

First, Canon analyzes how our business activities relate to global environmental issues and needs. We then assign them a level of priority based on the relative interests of stakeholders and the relative impact on our business activities.

In the analysis of a stakeholder survey conducted in 2018, we found out that "reuse and recycling of used products" was the issue of greatest interest to stakeholders, followed by "management of chemical substances contained in products," "management of air emissions and prevention of pollution," "management of raw material use," and "reduction of energy consumption."

Considering next the issue of relative impact on our business activities, we recognize that issues relating to resource circulation and the prevention of global warming, such as "reuse and recycling of used products" and "management of raw material use" have a major impact on our business activities in terms of product competitiveness, costs and other factors, which is why we give them high priority.
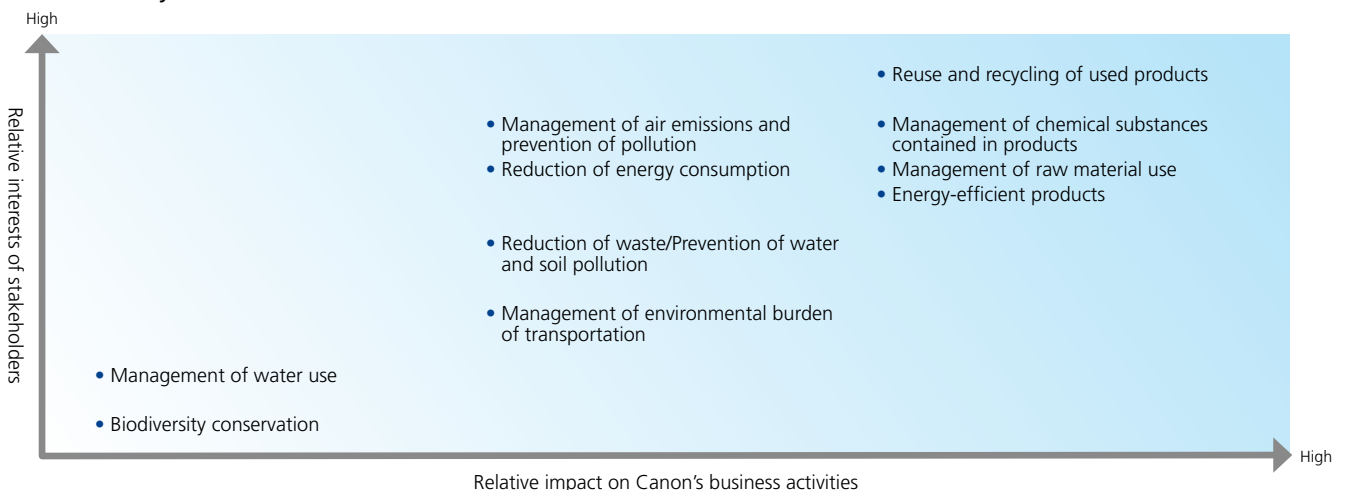
Also, the issue of the "management of chemical substances contained in products" is one to which Canon assigns a high level of priority because of its potential links to health issues and environmental pollution and the resulting global trend toward stricter and more extensive regulation of chemical substances. We recognize it as a social issue within our corporate responsibility where more efficient communication of information along the supply chain is important.

We recognize the importance of initiatives relating to the "management of air emissions and prevention of pollution" in regions where the Canon Group has operations. We continue to ensure to meet the targets and emissions standards that we have set in this area along with "reduction of energy consumption."

As for "biodiversity conservation," while the relative interest of stakeholders is not as high, there are elements that are directly and indirectly related to various aspects of our business. So we consider this a material issue to address.

We recognize the importance of carrying on with initiatives concentrated in four areas that we have identified of material concern: (1) contributing to a low-carbon society; (2) contributing to a circular economy; (3) eliminating hazardous substances and preventing pollution; and (4) contributing to a society in harmony with nature. By continuing and developing activities in these areas throughout product lifecycle, we are committed to an ongoing response to the material topic of protecting and conserving the global environment.

### Materiality Matrix



High

Relative interests of stakeholders

- Reuse and recycling of used products
- Management of air emissions and prevention of pollution
- Reduction of energy consumption
- Management of chemical substances contained in products
- Management of raw material use
- Energy-efficient products
- Reduction of waste/Prevention of water and soil pollution
- Management of environmental burden of transportation
- Management of water use
- Biodiversity conservation

Relative impact on Canon's business activities    High

## Relationship with SDGs

By pursuing environmental initiatives in our four material areas, we are contributing to the attainment of the Sustainable Development Goals (SDGs), adopted by the United Nations in 2015, together with our customers and business partners. Our approach, which takes account of the whole product lifecycle, covers the following activities:

**17 PARTNERSHIPS FOR THE GOALS** — Strengthen the means of implementation and revitalize the global partnership for sustainable development

### Contributing to a Low-Carbon Society

**13 CLIMATE ACTION** — Take urgent action to combat climate change and its impacts

**7 AFFORDABLE AND CLEAN ENERGY** — Ensure access to affordable, reliable, sustainable and modern energy for all

We take various initiatives, such as the improvement of energy efficiency and reduced $CO_2$ emissions across the whole product lifecycle, utilization of renewable energies reflecting the particular character of the region, and activities to support customers and society to reduce their environmental burden. Through these initiatives, we are contributing to the attainment of goals 7 and 13 of the SDGs.

### Contributing to a Circular Economy

**12 RESPONSIBLE CONSUMPTION AND PRODUCTION** — Ensure sustainable consumption and production patterns

**6 CLEAN WATER AND SANITATION** — Ensure availability and sustainable management of water and sanitation for all

We promote more compact and more lightweight products, remanufacturing, re-use and recycling of consumables to achieve an advanced resource circulation process. Moreover, we tackle efficient water utilization and waste recycling at operational sites. Through these initiatives, we are contributing to the attainment of goals 6 and 12 of the SDGs.

### Eliminating Hazardous Substances and Preventing Pollution

**12 RESPONSIBLE CONSUMPTION AND PRODUCTION** — Ensure sustainable consumption and production patterns

**6 CLEAN WATER AND SANITATION** — Ensure availability and sustainable management of water and sanitation for all

We manage chemical substances by getting our suppliers to follow Canon's green procurement standard. Also, we proactively establish frameworks to manage chemical substance information more effectively in the supply chain. Moreover, we reduce chemical substances used in our own production process and control air, water and soil emissions. Through these initiatives, we are contributing to the attainment of goals 6 and 12 of the SDGs.

### Contributing to a Society in Harmony with Nature

**15 LIFE ON LAND** — Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and stop biodiversity loss

Based on our Biodiversity Policy, we take initiatives to conserve ecosystems globally. A typical initiative is the Canon Bird Branch Project, which highlights the Cycle of Life through various activities focusing on wild birds. Moreover, based on our Basic Policy of the Procurement of Timber Products, we procure timber products from a sustainable supply chain. Through these initiatives, we are contributing to the attainment of Goal 15 of the SDGs.

## Continuous Risk/Opportunity Appraisal

The environmental issues facing the world are constantly evolving. For instance, the Intergovernmental Panel on Climate Change (IPCC) issued a special report in October 2018 in which it stated that, as a result of the increasingly clear impact of global warming, the warming, by atmospheric temperatures from the pre-industrial period to the year 2050, would now need to be limited not to less than 2°C, but to less than 1.5°C. For business activities, this raises the risk of reinforced regulation for energy efficiency, but at the same time presents an opportunity to enhance corporate image by proactively disclosing information on $CO_2$ emission reduction initiatives.

The importance of resource recycling is once more being underlined, not only by the implementation of the European Union's Circular Economy Package, but also by worldwide debate over the marine pollution caused by microplastics, and with the Chinese National Sword Policy to ban imports of plastic waste, this kind of movement has now extended to Southeast Asian countries. These developments raise the risk of countries introducing tougher requirements to make products resource-efficient and to collect and recycle used products. At the same time, it offers the opportunity to increase competitiveness by benefiting from advanced recycling technology.

Canon has designated the risks and opportunities in various fields outlined in the table below. In the process, Canon undertook continuous monitoring of external trends based on information from specialist institutions and government agencies. Climate data whose disclosure is recommended by the Task Force on Climate-related Financial Disclosures (TCFD) were also taken into consideration.

The designated risks and opportunities, and the results of the materiality analysis mentioned above are input into the Canon Group's medium-term plan and are also reflected in environmental targets and measures. All business divisions, operational sites, and Group companies operate a PDCA cycle in the environmental management system to ensure appropriate risk management and utilization of opportunities. The results of each organization's environmental performance, together with its business results and other performance indicators, are reflected in the consolidated performance evaluation and reported to top management.

Meanwhile, as an overall environmental target, Canon has set a target to achieve an average improvement of 3% per year in the product lifecycle $CO_2$ emissions improvement index per product. We are promoting our environmental initiatives to achieve this target, bearing in mind the consistency from a long-term perspective with $CO_2$ reduction goals in major countries.

### Risks and Opportunities in Four Areas of Materiality

| | Risks | Opportunities |
|---|---|---|
| Contributing to a Low-Carbon Society | **Risks by transformation:**<br>• Strengthened energy-efficiency regulation and associated compliance costs<br>• Increased business costs due to delay in applying economic measures for emissions control<br>• Missed opportunities due to delay in adapting to low-carbon product demand<br>**Physical risks:**<br>• Negative impacts on operation due to increasing severity of cyclones, floods and other extreme weather events<br>**Reputational risks:**<br>• Worsening external evaluation due to insufficient information disclosure | • Expanded opportunities for sale of energy-efficient products<br>• Contribution to a low-carbon society in the value chain through supplying IT solutions and making sale of energy-efficient industrial products<br>• Reduced energy costs through increased efficiency in production and transportation<br>• Expanded opportunities for use of renewable energy through lower associated costs<br>• Enhanced corporate image through proactive disclosure of activity results |
| Contributing to a Circular Economy | • Increased procurement costs of raw material due to resource constraints<br>• Increased business costs due to delayed response to recycling regulations<br>• Missed sales opportunities due to delay in introduction of highly resource-efficient products<br>• Increased costs for collection and recycling of used products in various regions<br>• Impairment of stable water supply and negative impacts of operation due to extreme weather events | • Business cost reduction through improved resource efficiency<br>• Enhanced competitiveness through 3R design and development of advanced recycling technology<br>• Enhanced corporate image through showcasing of our advanced approach to resource circulation |
| Eliminating Hazardous Substances and Preventing Pollution | • Increased chemical substance management costs due to reinforced and expanded regulations<br>• Disruption of parts supply chain due to suppliers being ordered to suspend operations on grounds of non-compliance with local regulations | • Supplying safe products and confidence to the market, and maintaining competitiveness through reliable chemical substance management<br>• Cost reduction by introducing more efficient management process across the supply chain<br>• Enhanced corporate image through contribution to international standardization, etc. |
| Contributing to a Society in Harmony with Nature | • Decreasing supply and price increase of printing paper due to dwindling forestry resources<br>• Restraints on business activities due to disturbed balance of local ecosystems | • Applicable usage of our products and technologies to conservation of ecosystem<br>• Enhanced corporate image through contribution to local communities |

# Environmentally Conscious Management

## Canon's Approach to Environmental Assurance

Based on our corporate philosophy of *kyosei*, Canon's approach to environmental assurance centers on maximizing resource efficiency to harmonize our environmental and economic activities. The EQCD concept, which stands for environment (E), quality (Q), cost (C), and delivery (D), forms part of our basic policy on environmental assurance, which we define as a qualification for product manufacturing.

In 2008, we formulated our environmental vision, Action for Green, based on the Canon Group Environmental Charter. Our vision for the future is a society that achieves a beneficial balance between enriched lifestyles and the global environment. With this vision in mind, the Canon Group is working with its customers and business partners to create products that combine high functionality with minimal environmental impact across the entire product lifecycle.

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### Canon Group Environmental Charter

**Corporate Philosophy:** *Kyosei*

Achieve corporate growth and development while contributing to the prosperity of the world and the happiness of humankind.

**Environmental Assurance Philosophy**

In the interest of world prosperity and the happiness of humankind, pursue maximization of resource efficiency, and contribute to the creation of a society that practices sustainable development.

**Fundamental Policies for Environmental Assurance**

Seek to harmonize environmental and economic interests in all business activities, products and services (the EQCD concept); offer products with lower environmental burden through innovative improvements in resource efficiency, and eliminate anti-social activities that threaten the health and safety of mankind and the environment.

**EQCD Concept**

E: Environment (environmental assurance) ......... Companies are not qualified to manufacture goods if they are incapable of environmental assurance.

Q: Quality ......... Companies are not qualified to market goods if they are incapable of producing quality goods.

C: Cost
D: Delivery ......... Companies are not qualified to compete if they are incapable of meeting cost and delivery requirements.

1. Optimize the organizations for prompting the Canon Group's global environmental efforts, and promote environmental assurance activities for the Group as a whole.
2. Assess the environmental impact of entire product lifecycles and explore ways to minimize environmental burden.
3. Promote the research and development of technologies and materials essential for environmental assurance and share the achievements with society.
4. Comply with all applicable laws in each country/region and other requirements the Canon Group agrees upon with stakeholders, and promote energy and resource conservation and elimination of hazardous substances in all corporate activities.
5. In procuring and purchasing necessary resources, give priority to materials, parts and products with lower environmental burden.
6. Establish an Environmental Management System (EMS) and establish and periodically review environmental objectives and targets to prevent environmental pollution and damage, and steadily reduce environmental burden.
7. Actively disclose to all stakeholders information on environmental burden and keep them updated on the progress of environmental measures.
8. Raise the environmental awareness of employees and educate them to take the initiative in environmental protection.
9. Maintain close relationships with governments, communities, and other interested parties, and actively support and participate in environmental protection activities.

23 March, 2007

Chairman & CEO
Canon Inc.

Canon Group Environmental Charter

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### Canon Environmental Vision

## *Action for Green*

Through technological innovation and improved management efficiency throughout all of its corporate activities, Canon aims to achieve sustainable corporate growth while also realizing a society that promotes both enriched lifestyles and the global environment.

To this end, Canon offers greater value using fewer resources throughout the entire product lifecycle —Produce, Use, Recycle— to achieve highly functional products with minimal environmental burden. Canon continues to expand these activities with its customers and business partners.

Canon will contribute to a future that promotes both enrichment and the environment through technological innovation.

Canon Environmental Vision

# Environmental Targets and Achievements

## Overall Target, Product Targets and Operational Site Targets

Canon takes account of environmental impacts at each stage of the product lifecycle and works to reduce them. This applies not just to our own development, production and marketing activities but also includes the production of raw materials and components by suppliers, the transport of products to retail outlets, and even customer use, disposal and recycling.

To gauge our progress in reducing these impacts over the entire product lifecycle, we convert each type of environmental impact to $CO_2$ equivalents, and, using these as benchmarks, we set an overall target for our Medium-Term Environmental Targets to achieve an average improvement of 3% per year in the lifecycle $CO_2$ emissions improvement index per product.

We have broken down the overall target into product targets and operational site targets. We have established a product target of an average 3% improvement per year in the raw materials and usage $CO_2$ emissions improvement index per product, and operational sites have unit improvement targets covering energy consumption, total waste generation, water usage, and emission of controlled chemical substances. We will continue working toward these targets.

## Achievement of Medium-Term Environmental Targets

In 2018, we achieved our target of improving lifecycle $CO_2$ emissions per product by an average 3% per year, recording an average improvement of 5.0% (2008–2018) thanks to the ongoing efforts of our business units throughout the entire product lifecycle. This represents an improvement of 37.7% compared to 2008.

### Lifecycle $CO_2$ Emissions Improvement Index per Product



* Indexed to 2008 = 100
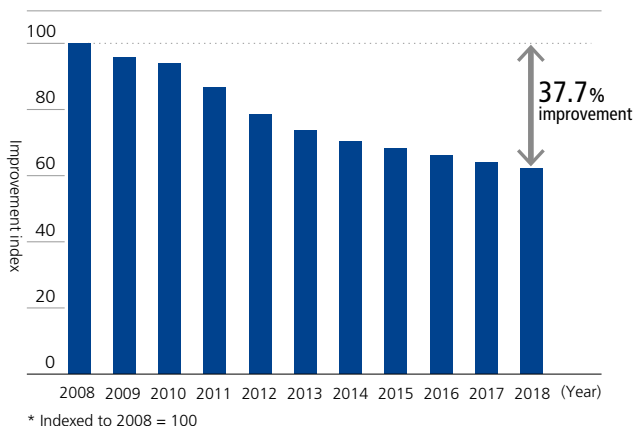
## Achievement of Medium-Term Environmental Targets from a Long-Term Perspective

A 3% average yearly reduction in product lifecycle $CO_2$ emissions, which is the overall target set in 2008, would mean a roughly 50% reduction from 2008 levels by the year 2030. We recognize this to be in line with the level of reduction called for by the Paris Agreement. We will continue to undertake target reviews from a long-term perspective as a way of checking our contribution to the realization of a low-carbon society.

## Achievement of Product Targets

In 2018, due to continuing efforts to make products more compact, lightweight, and energy efficient, we achieved an average annual improvement of 3.0% (2008–2018) in raw materials and usage $CO_2$ emissions per product, compared to a target of 3%.

## Achievement of Operational Site Targets

An overview of the achievement of operational site targets is as follows:

■ Energy consumption per basic unit at operational sites

The Facilities Management Headquarters is the primary driver of energy-reduction activities. In 2018, energy consumption per basic unit improved by 5.6% over the previous year, exceeding the 1.2% improvement target.

■ Total waste generation per basic unit

As a result of such initiatives as reducing waste at manufacturing sites and recycling waste generated internally at manufacturing sites, we met our target of a 1.0% improvement with a 6.0% reduction in total waste generation over 2017.

■ Water usage per basic unit in production

Water usage per basic unit in production declined by 2.4% compared to 2017 thanks to efforts to improve water management including more efficient water use and greater reuse of wastewater. This exceeded our target of a 1.0% improvement.

■ Emissions of controlled chemical substances per basic unit

We achieved a 6.8% improvement over 2017 in emissions of controlled chemical substances per basic unit, attaining our target of a 1.0% improvement, by reducing chemical substances used in manufacturing processes and reusing materials.

## Environmental Targets and Achievements

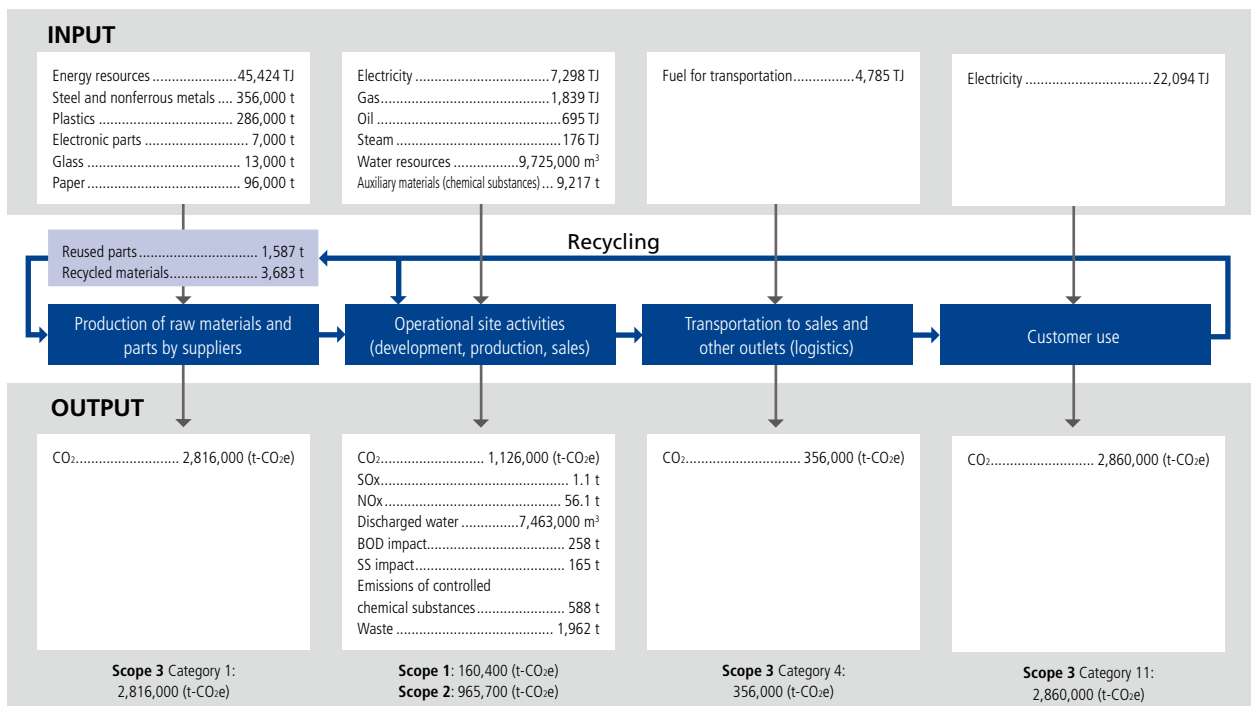| | 2018–2020 Medium-Term Environmental Targets | 2018 Achievements | 2019–2021 Medium-Term Environmental Targets |
|---|---|---|---|
| Lifecycle | 3%-per-year average improvement in lifecycle $CO_2$ emissions improvement index per product | Avg. improvement: 5.0% p.a. (2008–2018) | 3%-per-year average improvement in lifecycle $CO_2$ emissions improvement index per product |
| Products | 3%-per-year average improvement in raw materials and use $CO_2$ emissions improvement index per product | Avg. improvement: 3.0% p.a. (2008–2018) | 3%-per-year average improvement in raw materials and use $CO_2$ emissions improvement index per product |
| | **2018 Environmental Targets** | **2018 Achievements** | **2019 Environmental Targets** |
| Operational Sites | 1.2%-per-year improvement in energy consumption per basic unit at operational sites (excluding marketing sites) (compared to 2017) | 5.6% improvement over 2017 | Improve energy consumption per basic unit at operational sites (excluding marketing sites) by 1.2% (compared to 2018) |
| | Improve total waste generation per basic unit at operational sites (excluding marketing sites) by 1% (compared to 2017) | 6.0% improvement over 2017 | Improve total waste generation per basic unit at operational sites (excluding marketing sites) by 1% (compared to 2018) |
| | Improve water usage per basic unit for production by 1% (compared to 2017) | 2.4% improvement over 2017 | Improve water usage per basic unit in production by 1% (compared to 2018) |
| | Improve emissions of controlled chemical substances per basic unit at operational sites (excluding marketing sites) by 1% (compared to 2017) | 6.8% improvement over 2017 | Improve emissions of controlled chemical substances per basic unit at operational sites (excluding marketing sites) by 1% (compared to 2018) |

## Overview of Environmental Impacts

The resources (input) that Canon used in its business activities over the entire product lifecycle and emissions into the global environment (output) are as shown in the following figures.

Total lifecycle $CO_2$ emissions in 2018 were approximately 7.16 million tons, a decrease of roughly 0.26 million tons compared to 2017. This figure reflected initiatives at all stages of the product lifecycle, from the manufacture of raw materials and components by suppliers through activities at development, production and sales sites to logistics operations and customer use.

## 2018 Material Balance

**INPUT**

Energy resources ......................45,424 TJ
Steel and nonferrous metals .... 356,000 t
Plastics .................................... 286,000 t
Electronic parts ........................... 7,000 t
Glass ........................................ 13,000 t
Paper ........................................ 96,000 t

Electricity ...................................7,298 TJ
Gas...........................................1,839 TJ
Oil .............................................. 695 TJ
Steam ........................................... 176 TJ
Water resources .................9,725,000 $m^3$
Auxiliary materials (chemical substances) ... 9,217 t

Fuel for transportation................4,785 TJ

Electricity ................................22,094 TJ

Recycling

Reused parts .............................. 1,587 t
Recycled materials...................... 3,683 t

| Production of raw materials and parts by suppliers | Operational site activities (development, production, sales) | Transportation to sales and other outlets (logistics) | Customer use |
|---|---|---|---|

**OUTPUT**

$CO_2$...........................2,816,000 (t-$CO_2$e)

$CO_2$........................ 1,126,000 (t-$CO_2$e)
SOx................................................ 1.1 t
NOx ............................................. 56.1 t
Discharged water ...............7,463,000 $m^3$
BOD impact.................................... 258 t
SS impact...................................... 165 t
Emissions of controlled
chemical substances...................... 588 t
Waste ........................................ 1,962 t

$CO_2$............................ 356,000 (t-$CO_2$e)

$CO_2$...........................2,860,000 (t-$CO_2$e)

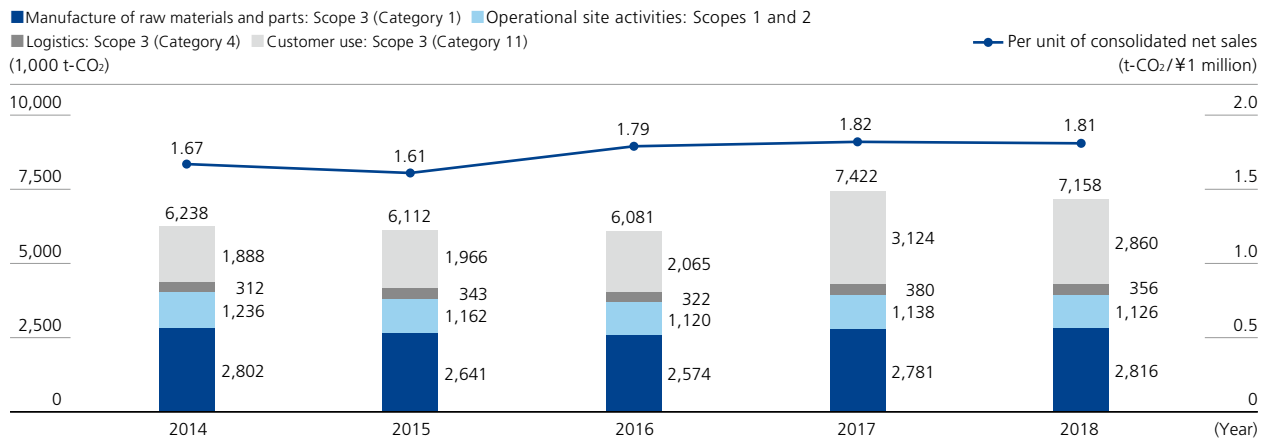| **Scope 3** Category 1: 2,816,000 (t-$CO_2$e) | **Scope 1**: 160,400 (t-$CO_2$e) <br> **Scope 2**: 965,700 (t-$CO_2$e) | **Scope 3** Category 4: 356,000 (t-$CO_2$e) | **Scope 3** Category 11: 2,860,000 (t-$CO_2$e) |
|---|---|---|---|

\* Scope 1: Direct GHG emissions (combustion of city gas, LPG, light oil, kerosene, non-energy derived GHG, etc.)
Scope 2: Indirect GHG emissions (consumption of electricity, steam, etc.)
Scope 3: Supply chain-related GHG emissions (production of purchased goods and services [Category 1], upstream transportation and distribution [Category 4], use of sold products [Category 11])
Calculation of categories 1, 4, 11 from Scope 3 of the GHG Protocol

## Lifecycle GHG Emissions ($CO_2$ Equivalent)

■ Manufacture of raw materials and parts: Scope 3 (Category 1)  ■ Operational site activities: Scopes 1 and 2
■ Logistics: Scope 3 (Category 4)  ■ Customer use: Scope 3 (Category 11)
(1,000 t-$CO_2$)

● Per unit of consolidated net sales
(t-$CO_2$/¥1 million)



* Figures for 2017 onwards include data for Canon Medical Systems.

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**Basic Approach to $CO_2$ Calculations**

Canon compiles data for greenhouse gas (GHG) designated under the Kyoto Protocol (revised version). Past data may be revised due to improvements in the precision of data collection.

Until 2014, figures used in Japan for $CO_2$ emission factors for electricity were published by Japan's Ministry of the Environment and the Federation of Electric Power Companies of Japan. Outside Japan, figures used in regions were published by the International Energy Agency. From 2015, figures provided by individual electricity supply companies are used, but publicly disclosed region-specific figures are used when figures are not provided by electricity supply companies. (Please refer to Operational Sites Covered in the Environmental Section on page 92)

For figures on customer use, electricity consumption of products shipped in a given year is calculated based on the average lifetime and printing volume, and converted to the $CO_2$ equivalent using $CO_2$ emission factors for electricity which are calculated in the same way as the above methods. Other $CO_2$ emission factors use coefficients from the Carbon Footprint Communication Program of the Japan Environmental Management Association for Industry (JEMAI).

**Third-Party Verification of GHG Emissions (Converted to $CO_2$)**

Third-party verification has been obtained for $CO_2$ emissions data appearing in "2018 Material Balance" and "Lifecycle GHG Emissions ($CO_2$ Equivalent)," and for each data in "Scope 3 GHG Emissions in 2018."

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## Scope 3 GHG Emissions in 2018

(1,000 t-$CO_2$e)

| Category | Scope | 2018 | Calculation Method |
|---|---|---|---|
| 1 | Purchased goods and services | 2,816 | Calculated by multiplying the weight of each material input (including any inputs emitted as waste) by the emission factor for each material/process. |
| 2 | Capital goods | 492 | Calculated by multiplying the total amount of each asset category of purchased capital goods by the emission factor for each asset category. |
| 3 | Fuel- and energy-related activities not included in Scope 1 or Scope 2 | 96 | Calculated by finding the total for fuel and electricity usage at each operational site and then multiplying it by the emission factor from fuel extraction to burning and power generation. |
| 4 | Upstream transportation and distribution | 356 | Logistics from the supplier to Canon manufacturing sites is calculated by finding the average transport distance and transport volume and then multiplying this by the emission factor for transportation. |
| | | | Logistics from manufacturing site to customer's warehouse is calculated by multiplying the emission factor of transportation by logistics performance data. |
| 5 | Waste generated in operations | 1 | The total weight of waste generated by material and disposal process at each operational site is derived and then multiplied by the end-of-life treatment emission factor. |
| 6 | Business travel | 49 | The emission factor for each transportation method is multiplied by the total payment amount for each transportation method. |
| | | | For business travel using a personal vehicle, the total payment amount is converted to fuel usage and then multiplied by the emission factor of fuel consumption. |
| 7 | Employee commuting | 130 | The emission factor for each transportation method is multiplied by the total payment amount for each transportation method. |
| | | | For commutes by private vehicle, total fuel usage is derived from amounts paid and then multiplied by the emission factor for fuel combustion. |
| 8 | Upstream leased assets | 0 | $CO_2$ emissions from leased buildings and vehicles are applicable, but both are included in Scope 1 and Scope 2. |
| 9 | Downstream transport and distribution | 52 | Average transport distance and weight of transported products is calculated for each region and multiplied by the emission factor of transportation. |
| 10 | Processing of sold products | 0 | Emissions from production by outsourcing partners of intermediate products used in sale of Canon-branded products are included in Category 1. |
| 11 | Use of sold products | 2,860 | Lifetime energy usage is calculated for each product and then multiplied by the average electricity emission factor. |
| 12 | End-of-life treatment of sold products | 223 | Sold products are categorized by material and then the emission factor of end-of-life treatment is multiplied by each based on the volume of materials used. |
| 13 | Downstream leased assets | 0 | Leased assets such as multifunction devices are included in Category 11 above together with sold products |
| 14 | Franchises | 0 | Not applicable |
| 15 | Investments | 0 | Not applicable |
| Scope 3 | | 7,074 | |

## Global Environmental Promotion System

Canon Group companies around the world are working as one in carrying out environmental assurance activities to achieve our environmental targets and realize the above-mentioned environmental vision. Led by the Global Environment Center (GEC) under the supervision of the Executive Vice President of Canon Inc., who serves as the director in charge of the environment, we carry out environmental activities in a global system that unites product operations, manufacturing sites and marketing companies worldwide. The GEC reports each month to its director about all environmental activities to gain approval and receive instructions on any required improvements.

### Global Environmental Promotion System
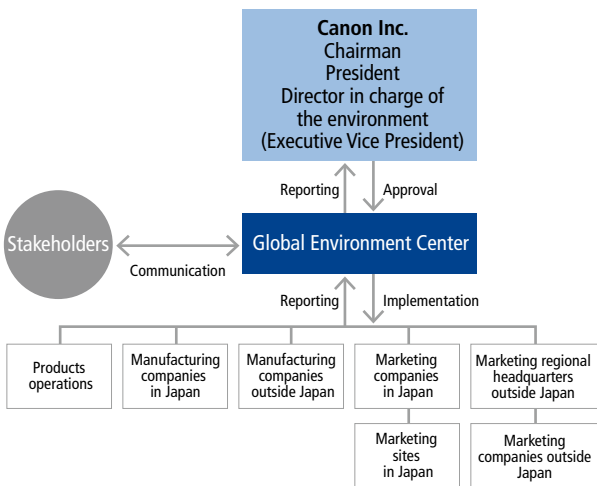


## Environmental Management System

The Canon Group has established an environmental management system (EMS) covering its operational sites in Japan and outside Japan as a mechanism for continually improving the quality and efficiency of environmental assurance activities according to ISO 14001 standards.

This EMS promotes environmental assurance activities (Do), which are linked with activities of each division (products operations, operational sites, and Group companies). In turn, we set annual and medium-term environmental targets (Plan) and establish action plans and important measures to achieve those targets, which are reflected in our business activities. Moreover, we carry out "Environmental audit programs" to check the progress of initiatives as well as any issues to be addressed in each division, and "Environmental performance evaluations," to assess our environmental performance (Check). We then work to continually improve and enhance our environmental assurance activities (Act). By implementing the PDCA cycle for

environmental assurance activities of each division, we achieve continual improvement and reinforcement and advance the environmental assurance activities of the entire Canon Group.

The Global Environment Center ensures the smooth management of this system by gathering information on environment-related laws and regulations, establishing environmental policies and rules for the entire Group, and planning and managing evaluation methods for environmental assurance activities.

Manufacturing and sales companies in Japan and outside Japan obtain ISO 14001 consolidated certification as an objective third-party evaluation of EMS effectiveness. As of 2018, ISO 14001 consolidated certification covers Canon Inc. as well as 129 Group companies in 40 countries and regions around the world.

The acquisition of consolidated Group certification has supported efficient environmental management within the Canon Group. Under this system, the Global Environment Center oversees the environmental assurance activities of the entire Group. Following management review, it submits a report on the progress of relevant activities for the approval of the Chairman and the President of Canon Inc. and the Executive Vice President, who is responsible for environmental matters.

Reference: ISO 14001 Certifications Obtained
https://global.canon/en/environment/data/pdf/canon-list-e.pdf

### Canon's Environmental Management System
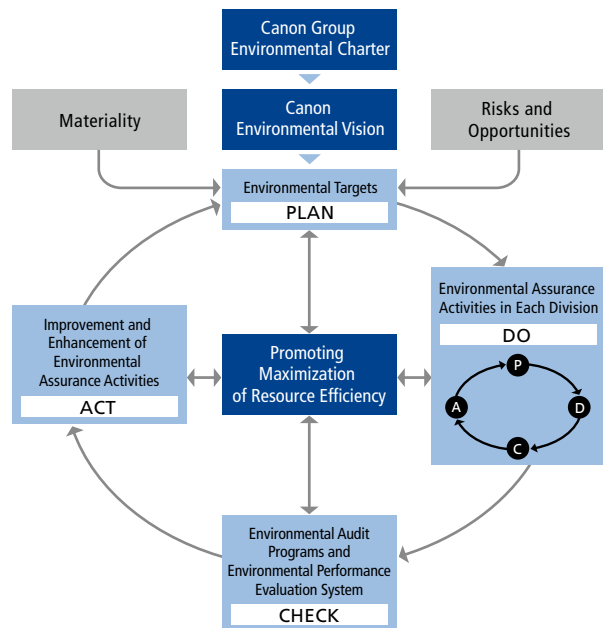
## Product Development System Using LCA Methodology

Canon's environmental initiatives are not limited to its manufacturing processes, but undertaken over the entire product lifecycle. Lifecycle assessment (LCA) methodology has been introduced in the product development stage to help reduce environmental impacts throughout the product lifecycle. Canon has established an LCA development management system that can centrally manage all processes from product development to information disclosure. This system ensures that $CO_2$ emissions can be calculated from the development and design stages, which we use when manufacturing products as we move toward our environmental targets.

### Flow Chart of Environmentally Conscious Design Using LCA Methodology
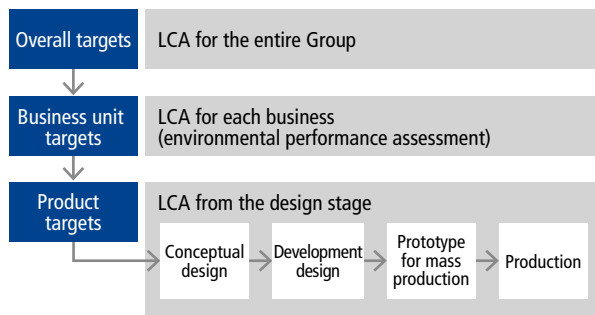


Reference: Canon's Life Cycle Assessment
https://global.canon/en/environment/lca/index.html

## Product Environmental Assessments

At the product realization stage, Canon conducts an environmental assessment to check whether a product meets product environmental legal requirements and other requirements applicable for products and has achieved the necessary environmental performances.

In the first step of the assessment, an environmental performance target is assigned to the product at the product planning stage. Before the decision is made to realize the product and initiate mass production, Canon evaluates whether this target has been met, and ascertains whether the product also satisfies the applicable legal and other requirements.

## Environmental Assurance Activities in Cooperation with Suppliers

In addition to its own environmental initiatives, Canon gives attention to the operations of partners that supply parts and materials. Canon has established Canon Green Procurement Standards, which outline its environment-related requests to suppliers. Suppliers must comply with these standards to do business with Canon.

Specifically, we view a supplier's environmental management as consisting of two interrelated elements: Management of business activities and Management of parts and materials. We require that the supplier must operate effective environmental management in each of the four frameworks labeled A – D in the diagram below. If a supplier is found to have a negative impact on the environment, we immediately demand corrective action be taken and check the status of improvements made.

Canon has manufacturing bases around the globe. Through steady efforts such as these initiatives, we are striving to prevent pollution and lessen the environmental impact throughout the supply chain.

Reference: Green Procurement
https://global.canon/en/procurement/green.html

### Requirements of the Canon Green Procurement Standards

## Stronger Risk Management within Supply Chain (Preventing Pollution)

It was already Canon practice to check suppliers regarding the organization and environmental performance of their business activities and any corrective measures taken. Now, it has further strengthened its risk management to help prevent pollution in its supply chain.

For example, in order to ensure compliance with strengthened regulation of operating sites, we are taking measures to boost information gathering and analysis activities regarding laws and regulations on wastewater and emissions in emerging countries. We are also reinforcing risk management in plating processes, where there is a relatively high risk of environmental pollution associated with wastewater treatment as a certain volume of heavy metals is used. As some of our plating contractors, who constitute tier-two suppliers, lack an in-house wastewater treatment facility and subcontract services to a wastewater treatment provider, Canon now also verifies the compliance status of these subcontractors. Expanding the scope of risk management in this way helps ensure that pollution is prevented in advance.

### Canon Recognized as "Five-Star Green Supply Chain" Company

The Canon Group was certified as a "Five-Star Green Supply Chain" company by the China Environmental United Certification Center* (CEC), an influential body that assesses companies' activities based on the Ministry of Environmental Protection of the People's Republic of China (currently the Ministry of Ecology and Environment of the People's Republic of China)'s policy of "promoting green supply chain management through green procurement and production." In addition to practicing green procurement, the CEC recognizes our efforts to build trust with suppliers as part of establishing a green supply chain satisfying the highest compliance standards.

The five-star Certificate of Green Supply Chain Assessment

* The China Environmental United Certification Center, approved by China's Ministry of Environmental Protection to certify product ecolabels on behalf of the country. The Center is also China's first third-party organization to perform green supply chain rating certifications.

## Environmental Audits and Environmental Performance Evaluations

In order to check the current status of environmental initiatives, Canon primarily uses two systems: internal environmental audits that ascertain the effectiveness of environmental management systems, and an environmental performance evaluation system that measures progress toward targets and achievement.

### Internal Environmental Audits

Internal environmental audits composed of headquarters environmental audits performed by the Global Environment Center, and operational site environmental audits and product environmental audits conducted by the audit divisions of operational sites and products operations. Mutual cross-site audits are also carried out in certain locations.

Results of internal environmental audits conducted throughout the year are compiled by the Group audit management section of the Global Environment Center, and reported to the Chairman, President and Executive Vice President in management reviews.
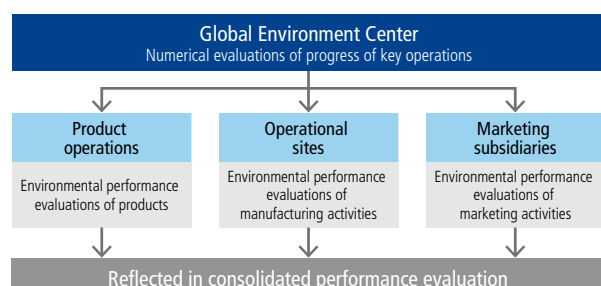
In 2018, the audits found no major nonconformity or violations. From the perspective of continual improvement and prevention, we are taking steps to rectify even minor findings in operations management.

### Environmental Performance Evaluations

Through environmental performance evaluations, the outcomes of the environmental activities at individual product operations, operational sites and sales companies are evaluated and scored twice yearly. These are incorporated in consolidated performance evaluations along with business performance.

The Global Environment Center sets the environmental evaluation criteria and carries out the evaluations, which account for approximately 10% of the overall consolidated performance evaluation. Environmental evaluation indicators include compliance with laws and company rules, achievement of environmental targets, improvements in the environmental performance of products, and environmental communication, among others. Results are announced to the Group every six months.

### Environmental Performance Evaluation Process

| Global Environment Center |
|---|
| Numerical evaluations of progress of key operations |

| Product operations | Operational sites | Marketing subsidiaries |
|---|---|---|
| Environmental performance evaluations of products | Environmental performance evaluations of manufacturing activities | Environmental performance evaluations of marketing activities |

| Reflected in consolidated performance evaluation |
|---|

### Canon Hi-Tech (Thailand) Awarded Green Industry Level 5

Under the Green Industry Project operated by the Thai Ministry of Industry, Canon Hi-Tech (Thailand) has been certified as a company engaged in continuous environmental activity in the whole of its supply chain that has contributed to sustainable industrial development. Canon Hi-Tech (Thailand) demonstrated the network extension throughout a green supply chain by supporting their business partners entering into accredited green industry processes, in addition to establishing an environmental management organization and process internally. In addition, Canon Hi-Tech (Thailand) is the first firm from the electric and electronics industry to receive the top rating award of Level 5.

## Environmental Education

Canon's environmental education programs provide an awareness training program to all employees, and a specialized training program for employees engaged in specific types of work.

The awareness training program is aimed at giving employees full recognition of the importance of environmental assurance activities as well as the policies, targets, and rules of their own divisions, while the specialized training program is aimed at enhancing the capabilities of employees involved in environmental assurance activities.

The specialized training program consists of product environment, operational site environment and environmental audit sections. Of these, product environment training involves detailed programs to enhance the abilities of those responsible for product environmental assessments, product surveys and integrated management of chemical substances.

These educational programs are designed to enable employees to receive needed training at a time that suits their schedule and in the format that best suits the purpose, whether e-learning, group discussion, group work, or other method.

In particular, among the specialized environmental training programs, Canon is reinforcing its education course for risk management globally, and has been using training materials in English and Chinese since 2016. As of the end of 2018, employees involved in related operations had completed this training program (total of 3,414 participants).

Since 2017, we have also provided recycling training as part of the hands-on factory training for newly hired technicians and engineers. At Canon Ecology Industry, practical training in recycling is given, including instruction in how to disassemble multifunctional office equipment.

## Environmental Awards and Environmental Exhibition

### Cultivation of Outstanding Practice Across Whole Organization and Employee's Environmental Awareness Raising

To promote improved staff awareness and activities in relation to the environment, Canon started holding an internal exhibition introducing good practices of environmental activities from Japan in 2003. The exhibition went global in 2008, when good practices of overseas activities were also included. And in 2009, the exhibition developed into the environmental award system, in which top management awarded outstanding environmental activities. The exhibition and the award system have served to activate internal development of exceptional environmental activities and proven to be valuable opportunities to raise employees' environmental awareness. Started in 2013, the simultaneous holding of a virtual exhibition on the Group intranet has allowed Group employees unable to attend the exhibition to easily access the event, which has helped to cultivate best practices across the entire organization.

Meanwhile, every year, the design team and global environment team together create and distribute posters to Group companies around the world. These posters help raise employee awareness about the environment globally.



Top management judges entries at the Environmental Awards ceremony



Original environmental awareness-raising poster

## Environmental Communication

### Information Disclosure to Stakeholders, Education and Awareness

Canon has been vigilant in disclosing environmental information to a diverse range of stakeholders.

Besides the publication of this report, Canon actively uses a range of media and platforms to inform stakeholders about its environmental activities, including its official environment website, various exhibitions and other events.

Canon also promotes environmental education and awareness activities for the benefit of people in regional communities, providing environmental outreach classes for elementary students and environmental programs run in cooperation with regional organizations. Canon has held a total of 171 outreach classes on toner cartridge recycling since 2011 for more than 8,800 participants. In 2017, this program was accredited by the Tokyo Organising Committee of the Olympic and Paralympic Games as "Tokyo 2020 Official Programme (Sustainability)."

Meanwhile, Canon Group companies worldwide have been switching off their lights to participate in the global environmental event, Earth Hour*, since 2016.

* Earth Hour is a global lights-off event started by the WWF (World Wildlife Federation) in 2007.

Reference: Environmental Outreach Classes
https://cweb.canon.jp/ecology/delivery-class/index.html
(Japanese website only)


An environmental outreach class

### Start of Information Transmission at Canon Eco Technology Park

The Canon Eco Technology Park, which opened in February 2018, is not only a cutting-edge recycling plant, but also serves as a focal point of the environmental activities of the Canon Group. The facility offers a plant field trip course that includes Canon's automated toner and ink cartridge recycling systems and a showroom introducing Canon's wide variety of environmental activities such as the Canon Bird Branch Project, along with information panels, videos, and hands-on contents. In this way, it is not only a place where customers can come to observe our operations, but also serves as an environmental education center for elementary school pupils and other groups from the general public. Our educational programs include environmental seminars where participants can take part in experimental sorting of materials by magnetism, weight, size and other properties, and observational visits to see in action the recycling technology they have learned about in the seminars. In doing so, participants get to see the knowledge they have acquired in science lessons being applied in practice for the benefit of recycling.

Reference: Canon Eco Technology Park
https://global.canon/ja/environment/ecotechnopark/index.html (Japanese website only)
(For inquiries on educational visits and related matters, please contact us through the website shown above.)


Learning about the environment at the Canon Eco Technology Park showroom

## Environmental Regulatory Compliance and Response to Complaints

As a result of implementing an environmental management system coordinated across the Group, Canon came through 2018 without a single legal violation or accident that seriously impacted the environment. The Canon Group also did not incur any fines. Operational sites received complaints about issues such as facilities generating noise and foul odors emitted by factories, all of which were resolved satisfactorily via appropriate measures.

# Contributing to a Low-Carbon Society

Canon is working toward the realization of a low-carbon society through initiatives to reduce $CO_2$ emissions and improve energy efficiency throughout the product lifecycle.

## Canon's Initiatives and Their Relation to Sustainable Development Goal (SDGs) Targets

| Contributing to a Low-Carbon Society Climate Change, Energy  13 CLIMATE ACTION  7 AFFORDABLE AND CLEAN ENERGY | | |
|---|---|---|
| • Designing energy-efficient products | Target 13.2 | Target 7.3 |
| • Improving energy efficiency at operational sites | Target 13.2 | Target 7.3 |
| • Increasing use of renewable energy | Target 13.2 | Target 7.2 |
| • Reducing $CO_2$ emissions from logistics | Target 13.2 | Target 7.3 |

\* Target 7.2: Increase substantially the share of renewable energy in the global energy mix
  Target 7.3: Double the global rate of improvement in energy efficiency
  Target 13.2: Integrate climate change measures into national policies, strategies, and planning

## $CO_2$ Reduction in Product Development

### Energy-Saving Designs for Medical Equipment

The Canon Group is driving forward energy-efficient design across a wide range of product types. One example from the field of medical equipment is the Xario g-series, a new diagnostic ultrasound system from Canon Medical Systems. In addition to Canon's unique high-resolution imaging, it features high-speed automated startup in just 2 seconds and batteries allowing continuous use for up to 8 hours, while newly adopted features including cable-free ECG electrodes and a foot switch provide enhanced mobility. Additionally, the Xario 200G, launched in April 2018, achieves a 29% reduction in electric power consumption compared to previous models. These products not only improve the quality of medical treatment but also contribute to protecting the environment.



Xario g-series diagnostic ultrasound system
Xario 200G (left)
Xario 100G (right)

### Energy-Saving Designs for Office Equipment

The multifunction office device imageRUNNER ADVANCE Gen3 3rd Edition is fitted with a range of features that contribute to increased efficiency in office operations, including a human sensor that activates automatic recovery from sleep mode and reduced waiting time for sleep mode recovery. Meanwhile, the imageRUNNER ADVANCE C5550F III pursues energy-efficient design through features such as on-demand fixing technology, a newly developed main controller, and a newly developed toner designed for optimal melt characteristics. These features enable it to achieve approximately 47% reduction in $CO_2$ emissions during customer use compared to the imageRUNNER ADVANCE C5250F. It thus manages to combine improved product functions with reduced $CO_2$ emissions. Meanwhile, the A4 monochrome laser multifunction device Satera MF521dw boasts a sleep mode recovery time of 4 seconds or less, approximately 50% faster than the previous Satera MF511dw model. In this way, it not only contributes to more efficient office operations, but also realizes a reduction of approximately 17% in TEC value.\*

\* TEC value: An environmental indicator for the typical amount of electricity consumed by a product while in normal operation during a one-week period.
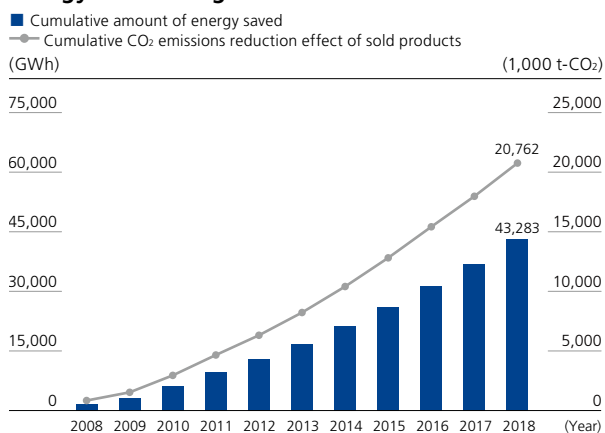


imageRUNNER ADVANCE C5500F III Series (left)
Satera MF521dw (right)

Thanks to energy-saving technologies used in office equipment, between 2008 and 2018 Canon products achieved cumulative energy savings of 43,283GWh (equivalent to a reduction of 20,762,000 tons of $CO_2$).

Reference: Environmental Technologies
https://global.canon/en/technology/support05.html

### Energy/$CO_2$-Saving Effects of Office Products

■ Cumulative amount of energy saved
━●━ Cumulative $CO_2$ emissions reduction effect of sold products



(GWh)                                                    (1,000 t-$CO_2$)
75,000                                                    25,000
60,000                                              20,762    20,000
45,000                                        43,283    15,000
30,000                                                    10,000
15,000                                                    5,000
0                                                         0
2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018  (Year)

* Covered products: Electrophotographic multifunction devices and laser printers for offices (excluding production printers).
* Energy-saving effect using the average energy (electricity) consumed by products sold in 2007 as a baseline.
* Cumulative yearly effect assumes that products sold in each year are used for 5 years.
* $CO_2$ emissions factors are calculated by using the weighted average of sales per region based on emission factors published by the Federation of Electric Power Companies (in Japan) and the International Energy Agency (outside Japan).

## Contributing to $CO_2$ Reduction Across the Whole of Society

In addition to reducing $CO_2$ through hardware measures such as launching energy-efficient products, we are deploying a range of IT solutions to improve the efficiency of work operations, reduce the movements of people and objects, and realize savings in the consumption of resources and energy. This also promotes $CO_2$ reduction in the office and in society as a whole. For example, the computerization of paper documents through the use of multifunction devices and scanners not only allows more efficient document management, but also contributes to savings in paper resources used and storage space required, enabling customer enterprises to reduce resource consumption and $CO_2$ emissions. By delivering to society a range of IT solutions in addition to its individual products, Canon will continue contributing to reducing $CO_2$ emissions across the whole of society.

## Helping Customers Reduce Their Environmental Impact
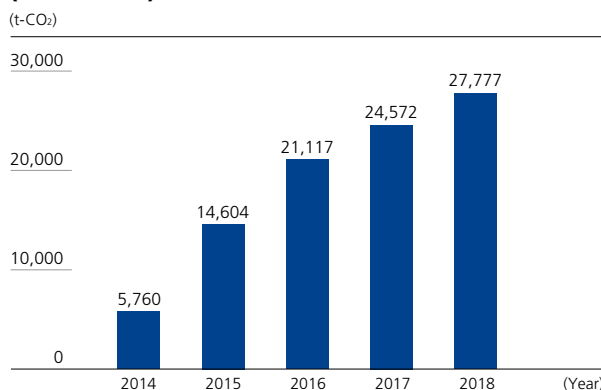
### Using the Carbon Offset Program (Japan)

Canon promotes initiatives that help customers reduce their $CO_2$ emissions.

To enable customers to select products with lower $CO_2$ emissions, we strive to disclose relevant information and are also in the process of obtaining carbon footprint (CFP) certification under the Japan Environmental Management Association for Industry's CFP communication program.

Additionally, by utilizing the Carbon Offset Program making use of CFP* promoted by the Ministry of Economy, Trade and Industry, we have been able to realize products with practically zero lifecycle $CO_2$ emissions. With some of these products, such as the imageRUNNER ADVANCE series and the imagePRESS production printers, customers can report to the authorities, based on the Act on Promotion of Global Warming Countermeasures (Japan), that they do not produce the $CO_2$ emissions that would ordinarily be expected from use of the products.

Carbon offsets linked to customer demand from when we began using this system in 2014 until 2018 totaled 27,777 t-$CO_2$.

### Carbon Offsets Linked to Customer Demand (Cumulative)

(t-$CO_2$)



30,000                                        27,777
                                    24,572
20,000                    21,117
            14,604
10,000
      5,760
0
   2014    2015    2016    2017    2018    (Year)

* Carbon offset program enables one's GHG emissions that are difficult to reduce to be offset wholly or partially by cuts in emissions or amounts absorbed by other parties.

Reference: Products qualifying for Carbon Footprint (CFP) Declaration (Japanese website only)
https://canon.jp/ecology/products/cfp/index.html
Reference: Canon's carbon offset initiatives (Japanese website only)
https://cweb.canon.jp/ecology/carbon-offset/index.html
Reference: Products certified under Carbon Offset Program making use of carbon footprints (Japanese website only)
https://cweb.canon.jp/ecology/products/cfp-certified/index.html

## CO₂ Reduction Through Initiatives at Operational Sites

Canon created the Energy Cost Reduction Working Group in 2014 as a horizontally integrated organization to take Group-wide action on reducing energy consumption. In an approach whose key concept is the 5Gs*, the group has worked to reduce energy consumption by undertaking a thorough-going review of operating conditions at production facilities, for instance by cutting out excess use of pressurized air and cooling water and adjusting air conditioner settings. Measures that prove effective are adopted for horizontal rollout to Japan and overseas production sites. Meanwhile, staff from a dedicated department at Head Office carry out energy-efficiency diagnosis on visits to production sites and suppliers all over the world. There, they check the operating status and settings of production equipment and then use their observations to make improvements to the operating efficiency of facilities and equipment and provide staff with relevant on-site training. In the four years since the launch of this

initiative, it has resulted in a Group-wide energy saving of 95,650KL (crude oil equivalent).

To take one example, Fukushima Canon experiences fluctuations in thermal demand due to fluctuating levels of production. It responded with an improvement measure to reduce from three to two the number of refrigerator installations used to supply cooling water, which achieves a yearly reduction of 2,033MWh in electric power consumption.

Canon Prachinburi (Thailand) promoted improvements in electric power consumption and cost through measures to visualize the relevant figures for each production area and analyze the differences. Also, by changing the temperature of the cooling water from the chiller, an approximate 1,174MWh saving in electric power consumption was achieved.
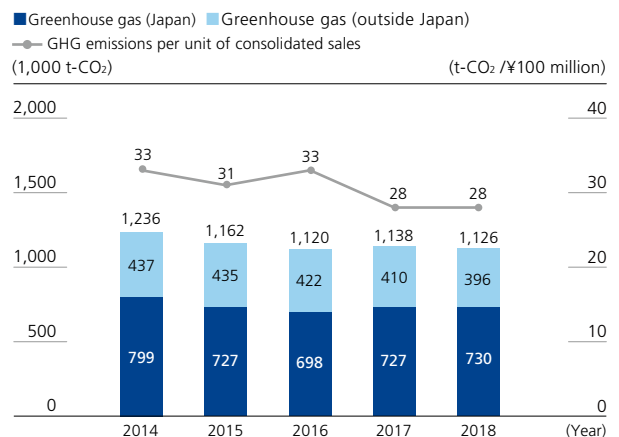
* The 5Gs is an operational improvement methodology for problem-solving. It adds theory "genri" and principle "gensoku," which are the foundation of decision making, to the well-known 3Gs — visit the actual site "genba" in person and recognize the actual facts "genjitsu" through the actual parts or things "genbutsu." The 5Gs takes its name from the five Japanese terms, all of which start with the letter g.

### System of Energy Cost Reduction Working Group
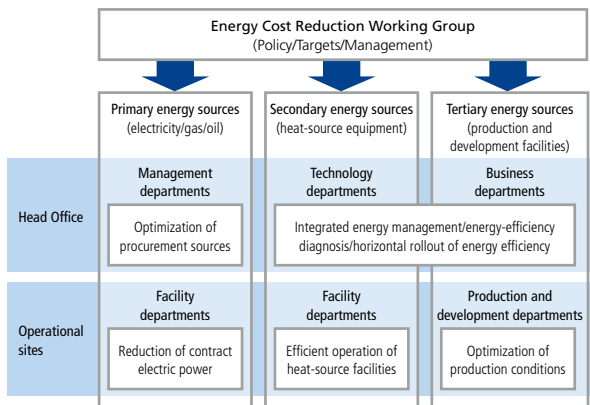


In 2018, thanks to a rigorous program of energy conservation measures across operational sites in Japan and overseas, led by the activities of the Energy Cost Reduction Working Group, we achieved a year-on-year reduction in greenhouse gas emissions of 12 kt-$CO_2$ to 1,126 kt-$CO_2$.

### Greenhouse Gas Emissions at Operational Sites

■ Greenhouse gas (Japan)  ■ Greenhouse gas (outside Japan)
— GHG emissions per unit of consolidated sales
(1,000 t-$CO_2$)                    (t-$CO_2$ /¥100 million)



### Cumulative Energy Saving Through Working Group Activities
(KL: crude oil equivalent)
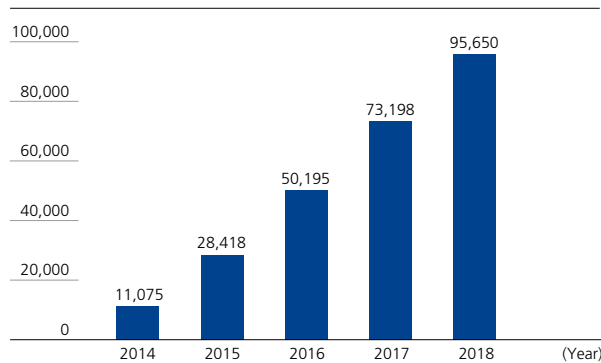


* Canon's calculation of total greenhouse gas emissions calculation of energy-derived greenhouse gas $CO_2$, and non-energy derived greenhouse gases PFCs, HFCs, $SF_6$, $N_2O$, methane, and $NF_3$. Through 2014, conversion to $CO_2$ is made using annual coefficients for each region. Coefficients supplied by Japan's Ministry of the Environment and the Federation of Electric Power Companies of Japan are used for site activities in Japan, and coefficients supplied by the International Energy Agency (IEA) are used for site activities in regions outside Japan. From 2015, $CO_2$ conversion coefficients from the Electric Power Council for a Low Carbon Society are used, and where coefficients are not provided by electric power companies, publicly provided coefficients by region are used. As the latest $CO_2$ conversion coefficients become public after compilation of $CO_2$ data for the report, the data is adjusted retroactively in future reports.
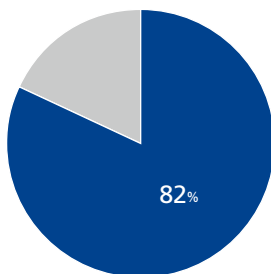* Figures for 2017 onwards include Canon Medical Systems.

## Increasing Use of Renewable Energy
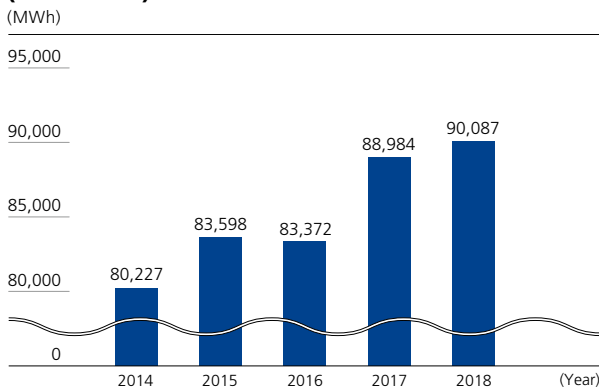### Use of Renewable Energy Suited to Regional Characteristics

As of the end of 2020, Canon aims to derive from renewable sources at least 300MWh of the energy it uses at sites in Japan, and at least 85,000MWh of the energy it uses at sites outside Japan. We are currently working to expand the use of renewable energy, especially in Europe, while keeping regional renewable energy uptake status and economic feasibility under consideration. Océ -Technologies in the Netherlands employs a geothermal HVAC system that uses the temperature differential with groundwater to power heating and cooling systems.

As a result of these initiatives adapted to local conditions, total renewable energy consumption by Canon Group companies worldwide in 2018 was 90,087MWh, an increase of about 1,100MWh compared with 2017. Canon Group companies in Europe sourced about 30% of total energy needs from renewable sources. Of total energy consumed, electric power accounted for around 35%. Of this electric power, generation from renewable sources has reached around 82%.

**Share of Energy from Renewable Sources in Electric Power Consumption (Europe)**

82%

**Expansion of the Use of Renewable Energy (Worldwide)**

(MWh)

| Year | Value |
|------|-------|
| 2014 | 80,227 |
| 2015 | 83,598 |
| 2016 | 83,372 |
| 2017 | 88,984 |
| 2018 | 90,087 |

## CO₂ Reduction in Logistics

In order to reduce $CO_2$ emissions from the logistics process, Canon has undertaken several initiatives: modal shifts that utilize transport modes with a lower environmental impact, improving loading efficiency by downsizing of products and packaging, diversion or direct-shipment from production sites, and shortening routes by consolidating distribution centers. Modal shift initiatives have also been extended to the field of industrial equipment. As one example, after successfully resolving issues associated with the effects of vibration and heat, we have switched from truck to rail for the distribution of parts for flat-panel display (FPD) lithography equipment. This has brought about a large reduction in the volume of $CO_2$ generated by logistics. In addition to these initiatives, to further improve transport efficiency, instead of the traditional one-way transport of containers with cargo, we have been actively pursuing Container Round Use (CRU), which includes not just containers within the Canon Group, but also containers imported by other companies for us to export. We are working with carriers and container transporters to expand the initiative. Also in our overseas sites such as Vietnam we have been promoting the same initiative.

### Overview of Container Round Use

**Before**

Cargo — Import

Empty

Empty

Export — Cargo

**After**

Cargo — Import

Export — Cargo
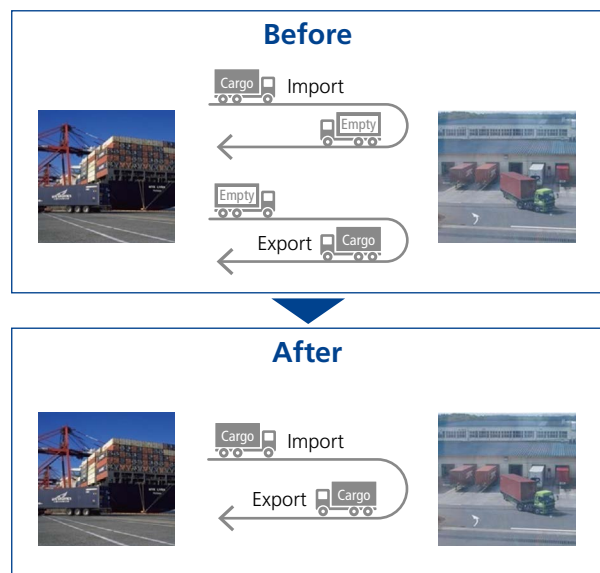
# Contributing to a Circular Economy

Canon pursues reductions in resource consumption and product-to-product recycling with the aim of contributing to the development of a circular economy.

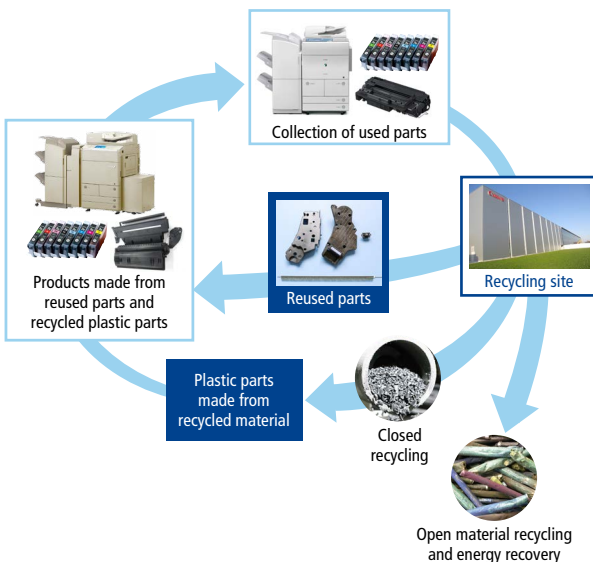## Canon's Initiatives and Their Relation to Sustainable Development Goals (SDGs) Targets



Contributing to a Circular Economy

| Initiative | Targets | |
|---|---|---|
| • Designing more compact and more lightweight products | Target 12.2 | Target 12.5 |
| • Remanufacturing products | Target 12.2 | Target 12.5 |
| • Recycling consumables | Target 12.2 | Target 12.5 |
| • Reducing waste through prevention, reuse and recycling | Target 12.4 | Target 12.5 |
| • Using sustainable water resources | Target 6.3 | Target 6.4 |

\* Target 12.2: Achieve sustainable management and efficient use of natural resources
Target 12.4: Achieve environmentally sound management of chemicals and all waste throughout their lifecycle, in accordance with agreed international frameworks, and significantly reduce their release to air, water, and soil Target 12.5: Substantially reduce waste generation through prevention, reduction, recycling, and reuse
Target 6.3: Improve water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials, and substantially increasing recycling and safe reuse globally
Target 6.4: Substantially increase water-use efficiency
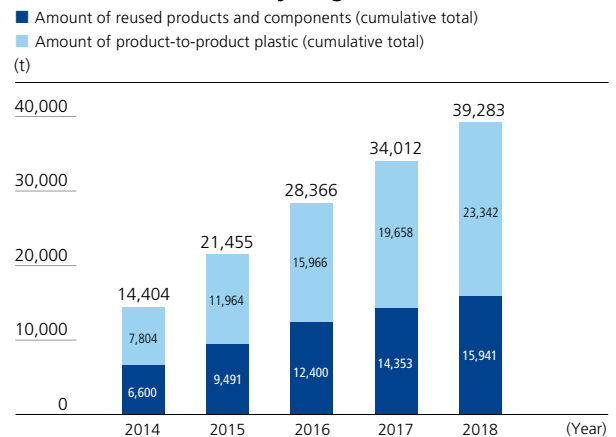
## Resource Recycling at Canon

Canon pursues product-to-product recycling—in other words, recycling used products into new ones. In particular, we have emphasized such initiatives as closed-loop recycling of toner cartridges and the remanufacturing of office multifunction devices—collecting them post-use and making them into products with good-as-new quality. Currently, Canon has five sites conducting recycling, in Japan, Europe (two sites), the United States, and China. We are continuing initiatives aimed at circulating resources within the same regions where they are consumed.

### Flowchart of Canon's Circular Economy



Collection of used parts

Products made from reused parts and recycled plastic parts

Reused parts

Recycling site

Plastic parts made from recycled material

Closed recycling

Open material recycling and energy recovery

In the last five years, we have taken 23,342 tons of plastics from used products for recycling as raw materials, and another 15,941 tons of products and parts were reused directly.

### Product-to-Product Recycling Amounts

■ Amount of reused products and components (cumulative total)
■ Amount of product-to-product plastic (cumulative total)
(t)



| Year | Reused products and components | Product-to-product plastic | Total |
|---|---|---|---|
| 2014 | 6,600 | 7,804 | 14,404 |
| 2015 | 9,491 | 11,964 | 21,455 |
| 2016 | 12,400 | 15,966 | 28,366 |
| 2017 | 14,353 | 19,658 | 34,012 |
| 2018 | 15,941 | 23,342 | 39,283 |

### Canon Recycling Sites Worldwide



Canon Dalian Business Machines, Inc. (China)

Canon Virginia, Inc. (Americas)

Canon Giessen GmbH
Canon Bretagne S.A.S. (Europe)

Canon Eco Technology Park
Canon Ecology Industry Inc. (Japan)
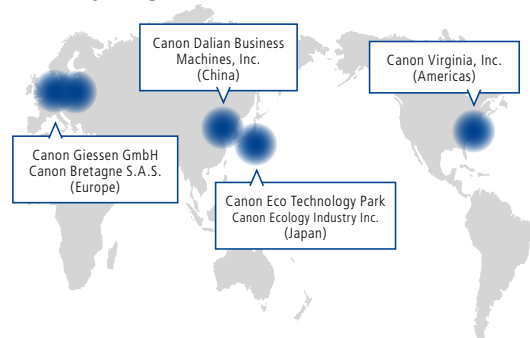
## State-of-the-Art Automated Recycling Plant Built at Canon Eco Technology Park

In February 2018, we opened the Canon Eco Technology Park. Based on a "clean and silent" design concept which overturns the traditional image of recycling operations, the facility features advanced systems to boost recycling efficiency further. The Canon Automated Recycling System for Toner Cartridges (CARS-T) is a process whereby used toner cartridges are crushed and the materials automatically separated for recycling of the main component, high-impact polystyrene (HIPS). The sorting purity of the recycled plastic reaches 99% or greater* with the intensive use of various separation technologies at the different stages of the process. With the Canon Automated Recycling System for Ink Cartridges (CARS-I), a camera-based automatic sorting process is used on the used ink cartridges. The process line is automated, yielding an integrated process for the recycling of ink cartridges from disassembly and pulverization to washing. Separated materials are reused for ink cartridge components, materials for pallets used in logistics, or in stationery products. Any resources that cannot be recycled through product-to-product recycling are diverted to material recycling or thermal recovery processes to help maximize resource efficiency.

* 99% or greater based on Canon's in-house sorting method
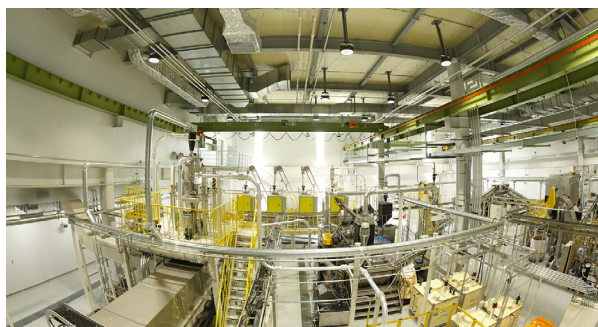

CARS-T


CARS-I

## Product Development Aimed at Efficient Use of Resources

### Recycling-Conscious Design

There is an emerging global trend toward the recycling and reusing of resources due to concerns about natural resource depletion. Canon gives careful consideration to collection and recycling of end-of-life products from the design and development stage, through the use of Lifecycle Assessments (LCA) and the Product Assessment System.

To assist these efforts in the design stage we formulated the Environmentally Conscious Design Guidance, which covers an array of considerations, including product-related environmental laws and regulations, Green Public Procurement standards, and environmental label standards in the countries where we sell our products.

The Environmentally Conscious Design Guidance contains a wide variety of design guidelines relating to such matters as recycling-conscious design by making products longer-lived, and easier to maintain, ease of disassembly, ease of sorting materials following disassembly, and information disclosure.

### Designing Smaller and Lighter Products

Canon strives to make its products smaller and lighter to help reduce the consumption of resources in the form of raw materials.

In the PIXMA series of inkjet printers, optimization of the internal mechanical layout and the continuation of other downsizing technologies enable the new TS8200 series model, launched in 2018, to achieve approximately 35% compacter dimensions than the previous MG7100 series model (2013). We are also moving ahead with compact and lightweight design in the imagePROGRAF series of large-format inkjet printers. In the new TM-305 model (2018), a redesign of the printer's internal parts layout succeeds in reducing weight by approximately 13% compared to the previous iPF785 model (2014).

In the SLR camera, meanwhile, the optical design of super-telephoto, large-diameter lens models for professional use are completely retooled, while the adoption of an electric focusing ring optimizes the mechanical structure. The EF400mm f/2.8L IS III USM model realizes high resolution at the same time as reducing weight by a substantial 25% or greater compared to the previous EF400mm f/2.8L IS II USM model.

Reference: Eco-Conscious Technology for Inkjet Printers
https://global.canon/en/environment/products/ij-printer.html

## Remanufacturing of Multifunction Devices

Canon remanufactures used multifunction devices. We collect used devices and break them down into parts, which are washed and cleaned using optimal techniques. Following strict reuse standards, we replace any parts that show wear or deterioration. The production line and inspection processes used are on a par with those for devices made only with new parts. When a remanufactured device is shipped, it is guaranteed to offer the same level of quality as a new product.

We market remanufactured devices from the imageRUNNER ADVANCE series under the Refreshed series brand in Japan and under the EQ80 series brand in Europe. To take the example of the imageRUNNER ADVANCE 6265-R, a remanufactured monochrome multifunction device, reused parts account for 86.6% of its gross weight.


Remanufacturing in progress


Logos for remanufactured products (left: Japan; right: Europe)

## Toner Cartridge Closed-Loop Recycling

In 1990, Canon launched its Toner Cartridge Collection and Recycling Program, the first such program in the industry. The program is continuing operating today.

Returned used toner cartridges are brought to Canon recycling sites, where they are sorted by model and the reusable parts are picked out. Washing and maintenance are performed as needed, and the parts are then reused in new products. Parts that cannot be reused are crushed and separated by material using physical characteristics such as electrostatic properties and specific gravity.

The primary material of toner cartridges is the high-impact polystyrene (HIPS) used primarily for the housing. HIPS can be used repeatedly to make new toner cartridges a unique feature of Canon's closed-loop recycling process.

We conduct used toner cartridge collection in 23 countries and regions (with a cumulative collection volume of about 408,000 tons as of the end of 2018) for recycling at four sites*, in Japan, the United States, France, and China (recycling in the same region where the product is used).

Thanks to our recycling initiatives, as of 2018 we have achieved a cumulative reduction in the use of new resources of approximately 285,000 tons.

* Toner cartridge recycling sites
  Japan: Canon Ecology Industry
  United States: Canon Virginia
  France: Canon Bretagne
  China: Canon Dalian Business Machines

### Used Toner Cartridge Collection Volume (Cumulative)
(10,000t)
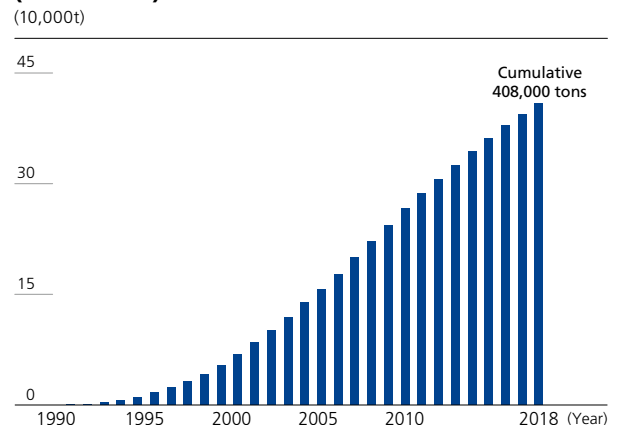
## Collection and Recycling of Ink Cartridges

Canon has been collecting and recycling used ink cartridges since 1996. As of the end of 2018, Canon's collecting program was operational in 35 countries and regions worldwide, and the total volume of cartridges that had been collected up to the end of 2018 reached 2,241 tons.

In Japan, Canon is part of the Ink Cartridge Satogaeri (Homecoming) Project, a joint program by printer manufacturers to collect cartridges via boxes placed in post offices, libraries, and other local government facilities. Schools also collect cartridges through activities related to the Bellmark Campaign.

Outside Japan, we place cartridge collection boxes in large retail stores, affiliate sales outlets, shopping malls, companies, schools, libraries, train stations, Canon service stores, Canon showrooms, and other locations, depending on the circumstances in each country or region.

Reference: Ink Cartridge Satogaeri Project (Japanese website only)
https://cweb.canon.jp/ecology/satogaeri/index.html
Reference: Collection activities related to the Bellmark Campaign (Japanese website only)
https://cweb.canon.jp/ecology/bellmark/index.html

**Used Ink Cartridge Collection Volume (Cumulative)**
(t)
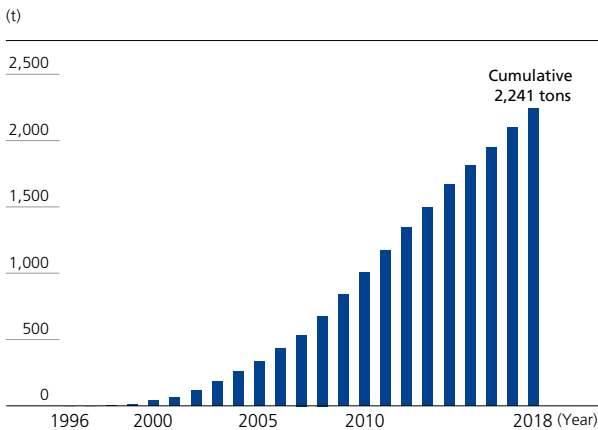


* Data scope is worldwide. Figures include cartridges for large-format inkjet printers and compact photo printers.

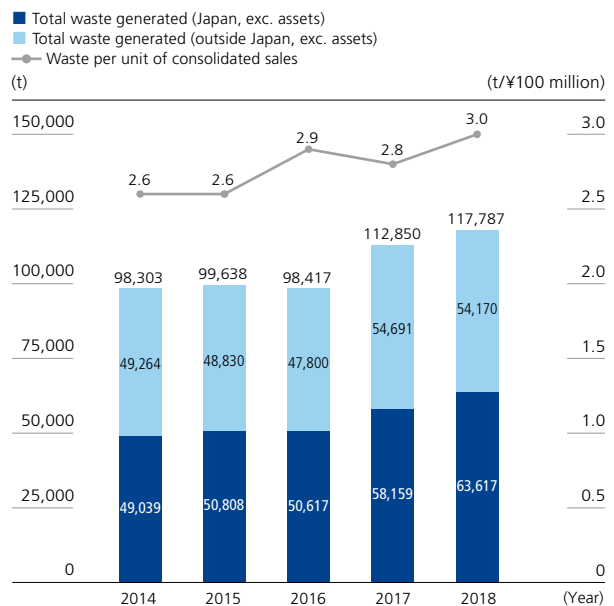## Initiatives to Reduce Waste at Operational Sites

### Reducing Waste

Canon is working hard to reduce the amount of waste it generates. Efforts include increasing recycling through sorting and collection and minimizing initial waste generation.

In particular, we have sought to determine which factors most significantly affect waste generation for each division and each production process. Based on these findings, by an actual versus forecast comparison, we have implemented a number of ongoing initiatives to curb waste generation.

Meanwhile, in response to growing public concern over plastic contamination of the oceans, we have begun a campaign to reduce the use of disposable plastics, for instance in the straws and cups issued at staff canteens and elsewhere. Measures include switching to substitute materials and encouraging staff to bring their own multi-use utensils.

In 2018, we worked at all operational sites to reduce waste generation and promote internal recycling. However, due partly to the effect of a change in waste treatment methods at some sites, total waste generation increased by 4,937 tons year on year to 117,787 tons.

**Total Waste Generated**
■ Total waste generated (Japan, exc. assets)
■ Total waste generated (outside Japan, exc. assets)
── Waste per unit of consolidated sales



* Figures for 2017 onwards include data for Canon Medical Systems.

## Initiatives Related to In-House Waste Recycling and Outside Resource Recovery

Canon actively works to reduce the amount of waste originating from its operations and to reuse or recycle waste where possible, appropriately disposing of any waste that can be neither reused nor recycled in accordance with the law.

Our various operational sites employ a range of in-house recycling schemes, including reprocessing waste plastic from injection molding or recycling it for other items.

Even in the case of waste that must be sent outside the company, we make sure it does not enter landfills*. Rather, we contract with companies that reprocess waste into materials. In 2018, contracted companies processed 114,817 tons of waste from Canon back into materials.

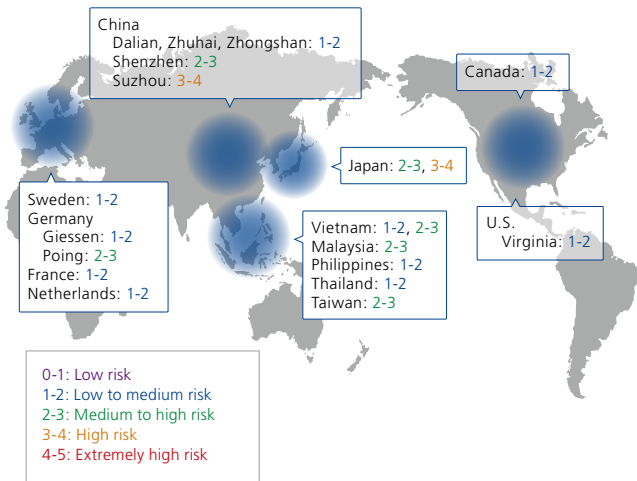* Except for some general waste generated by business activities that is disposed of under government oversight.

## Adapting to Regulations on the Import of Waste Plastics and Similar Materials Spread Widely in Asia

In January 2018, China introduced a ban on the import of waste plastics and used paper under the National Sword policy. Subsequently, moves to adopt the import ban have spread to southeast Asian nations, notably Malaysia and Thailand. To curtail as far as possible the generation of waste plastics, used paper, and other waste materials outsourced, Canon works with production sites to further improve the accuracy of separation processes and to expand in-house recycling through in-process recycling measures. We will also be making efforts to improve material yield so as to reduce material wastage as part of initiatives across the whole of the supply chain.

## Aiming for Sustainable Water Resources

### Water Risk in Regions Where Canon Production Sites Are Located

Canon assesses locations to confirm available water intake volume before establishing operational sites and facilities. We use the AQUEDUCT water-risk mapping tool provided by the World Resources Institute* for quantitative evaluation and reconfirmation of water risk in regions where production sites are located.

### Water Risk (Quantitative) in Regions Containing Major Production Sites

China
Dalian, Zhuhai, Zhongshan: 1-2
Shenzhen: 2-3
Suzhou: 3-4

Canada: 1-2

Japan: 2-3, 3-4

Sweden: 1-2
Germany
  Giessen: 1-2
  Poing: 2-3
France: 1-2
Netherlands: 1-2

Vietnam: 1-2, 2-3
Malaysia: 2-3
Philippines: 1-2
Thailand: 1-2
Taiwan: 2-3

U.S.
Virginia: 1-2

0-1: Low risk
1-2: Low to medium risk
2-3: Medium to high risk
3-4: High risk
4-5: Extremely high risk

* Results using World Resources Institute (WRI) AQUEDUCT mapping tool
* Result of assessment "physical risk quantity" for region containing production site

The results of our evaluations show that no regions where Canon has production sites are considered to be extremely high risk.

Approximately 40% of the water resources consumed by Canon are utilized in the production process. Particularly the lens and semiconductor manufacturing processes require large quantities of water, making it a crucial element in our operations. By improving the efficiency of our water use, we are working to reduce its environmental impact.

* World Resources Institute: WRI is an independent institute based in the United States that conducts policy research and provides technical assistance concerning environmental and development issues around the world.
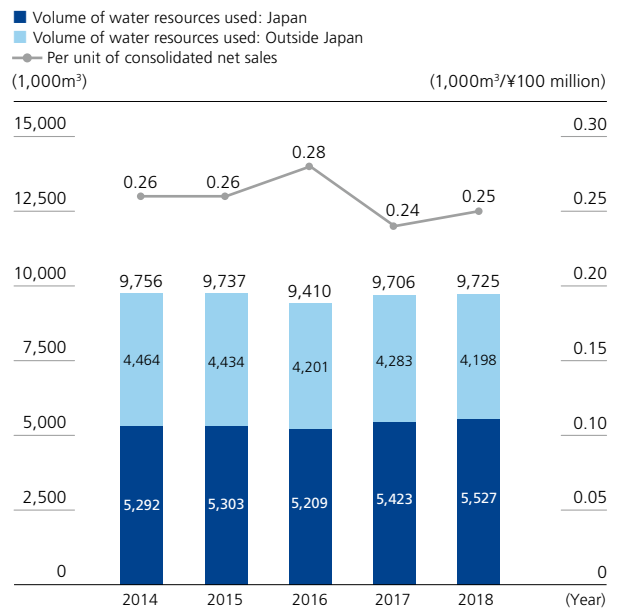
### Reducing Water Usage

Canon collects water data by intake source (public water system, industrial water system, or groundwater) and manages water resources carefully so as not to exceed intake limits for the different regions in which it operates. We also set and manage targets for the volume of water used in production, and constantly strive to reduce water usage by improving production processes and raising water-usage efficiency at each operating site.

### Water Recycling at Production Sites

Canon promotes the recycling of water resources. The Kitsuki Plant of Oita Canon Materials Inc. is located on Beppu Bay, home to precious natural resources and habitats. In consideration of the impact on the ecosystem, the plant employs a closed wastewater system that discharges nothing but rainwater.

In 2018, we worked at all operational sites to reduce water consumption and promote recycling. Nevertheless, total water consumption showed a slight year-on-year increase of 19 TCM to 9,725 TCM.

### Use of Water Resources

■ Volume of water resources used: Japan
■ Volume of water resources used: Outside Japan
── Per unit of consolidated net sales

(1,000m³)                                (1,000m³/¥100 million)

| Year | Japan | Outside Japan | Total | Per unit |
|------|-------|---------------|-------|----------|
| 2014 | 5,292 | 4,464 | 9,756 | 0.26 |
| 2015 | 5,303 | 4,434 | 9,737 | 0.26 |
| 2016 | 5,209 | 4,201 | 9,410 | 0.28 |
| 2017 | 5,423 | 4,283 | 9,706 | 0.24 |
| 2018 | 5,527 | 4,198 | 9,725 | 0.25 |

* Figures for 2017 onwards include data for Canon Medical Systems.
* Figures of volume of water resources used for 2018 onwards obtain third party verification.

# Eliminating Hazardous Substances and Preventing Pollution

Canon thoroughly manages chemical substances in products and those used in manufacturing processes to prevent environmental pollution and adverse effects on people's health.

## Canon's Initiatives and Their Relation to Sustainable Development Goal (SDGs) Targets

| Eliminating hazardous substances and preventing pollution | | |
|---|---|---|
| • Managing chemicals contained in products, meeting international standards | Target 12.4 | |
| • Managing chemical substances in production processes | Target 12.4 | |
| • Reducing discharges into the air, water and soil | Target 12.4 | Target 6.3 |
| • Green supply chain | Target 12.4 | |

\* Target 12.4: Achieve the environmentally sound management of chemicals and all waste throughout their lifecycle, in accordance with agreed international frameworks, and significantly reduce their release to air, water, and soil
Target 6.3: Improve water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials, and substantially increasing recycling and safe reuse globally

## Canon's Approach to Managing Chemical Substances

Canon strictly manages chemical substances in products as well as those used in manufacturing processes. Our basic approach to management involves confirming products do not contain regulated chemical substances that exceed the prescribed standard and production sites do not emit regulated chemical substances that exceed the prescribed standard.

## Management of Chemical Substances in Products

Canon has built a Group-wide environmental assurance system for managing chemical substances in products. Taking the laws and major environmental-labeling requirements around the world into consideration, we established in-house standards in line with the most stringent regulations in the world.

Specifically, our management system classifies chemical substances into three categories: "prohibited substances," which cannot be used in products; "use-restricted substances," for which we are working to find alternatives by specific deadlines; and, "controlled substances," the amount of which should be monitored.

### Compliance with Additional Restriction of Substances Under the European Union's RoHS (Restriction of Hazardous Substances) Directive

Following the amendment of the European Union's RoHS Directive, from July 22, 2019, the use of 4 phthalates (DEHP, BBP, DBP, DIBP) will be restricted in electrical and electronic equipment sold on the EU market. These substances are in general use as plasticizers for improved flexibility and moldability, for instance in the covering of electric power cables.

As part of its Green Procurement system, Canon has identified products containing the phthalates and has been preparing for the new regulation by working with parts suppliers on evaluations and studies and investigation of alternatives. These activities mean that customers will be able to continue using our products with complete confidence after the amendment of the RoHS Directive.

The phthalates are known to have the property of migration, which means that matter can be transferred to other products on contact. Canon is responding by ensuring compliance with industry guidelines throughout the supply chain.

### Proactive Contribution to International Standards for Transmitting Information on Chemical Substances

To manage chemical substances appropriately, it is important to share information on the chemical substances contained in materials, parts, and products accurately and efficiently along the supply chain from upstream to downstream, and to ensure compliance with all applicable regulations.

In the past, companies each employed their own survey formats to request the suppliers for the information about chemical substances in products,

which meant that suppliers were requested to respond to their customers multiple times in different formats even with regard to the same parts or chemicals. This situation incurred substantial burden on and costs to the entire supply chain. Furthermore, using such a variety of survey formats gave rise to concerns about the decreased reliability of data as it was communicated across the supply chain.

Amid such circumstances, the Ministry of Economy, Trade and Industry (Japan) decided to sponsor chemSHERPA (chemical information SHaring and Exchange under Reporting PArtnership in supply chain) as a common platform for sharing information, facilitating the seamless transmission of information between companies to confirm compliance with regulations on chemical substances in products.

Applying the IEC62474* international standard, the chemSHERPA data scheme enables the management of compliance verifications for chemical substance regulations for each material and part. It is expected to enable more effective verifications as well, since revisions to regulations are updated in a timely manner.

Having previously collected and managed information on chemical substances contained in products in line with IEC62474, Canon completed the introduction of chemSHERPA in 2017. Since its introduction by Canon, around 99% of survey replies have been made through chemSHERPA. This has led to increased workplace efficiency. Some suppliers have also adopted pre-filled survey replies that contain some of the required information. This shift to a more standardized approach contributes further to operational efficiency.

Meanwhile, for suppliers who have difficulty with the reply process, guide manuals in Japanese, English and Chinese have been prepared to promote the progressive global adoption of chemSHERPA.

* IEC62474: Material Declaration for Products of and for the Electrotechnical Industry. International standards issued by the IEC (International Electrotechnical Commission) in March 2012 aiming to streamline the material declarations on chemical substances and compositions contained in the products of the electrotechnical industry in the global supply chain.

## Managing Chemical Substances Used in Manufacturing Processes

The chemical substances handled during manufacturing at Canon include "controlled chemical substances" regulated in terms of safety such as negative impact on human health, the environment, and flammable risk. Canon separates these substances into three categories: A) Prohibited substances; B) Emission reduction substances; and C) Regulated substances. In turn, effective measures are in place for each category.

Prohibited substances are defined as those prohibited under the Chemical Weapons Convention, the Stockholm Convention, the Montreal Protocol and the Convention concerning Safety in the Use of Asbestos, as well as specified greenhouse gases (PFC/HFC/SF₆), other soil and groundwater pollutants, and substances that significantly impact people's health.

Greenhouse gases other than PFC/HFC/SF₆, greenhouse gases identified by the IPCC as having global warming potential (GWP), volatile organic compounds (VOCs) and other substances specified by Canon are designated as emission reduction substances.
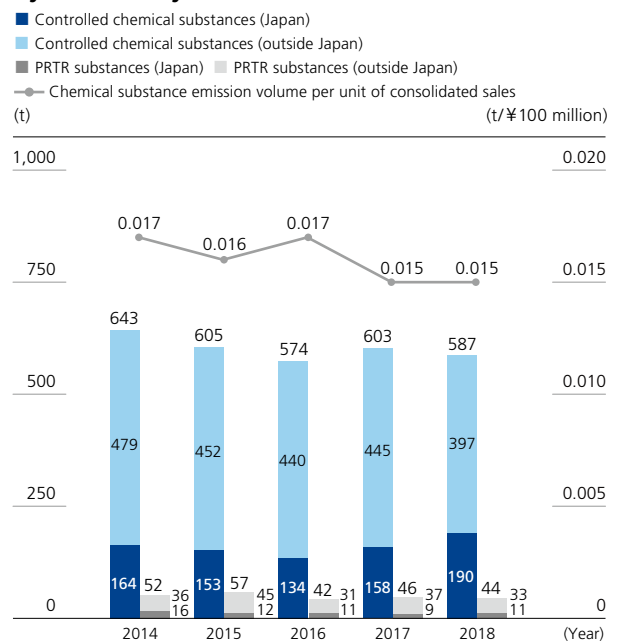
Regulated substances are chemical substances with defined compliance requirements, including compliance with reference values and the ascertainment of usage and storage quantities.

## Reducing Use and Emissions of Controlled Chemical Substances

Canon engages in various initiatives at its operational sites to reduce emissions of controlled chemical substances, including reducing the consumption and re-use of them through improvement of production processes.

Total emissions of controlled chemical substances in 2018 amounted to 587 tons, a year-on-year decrease of 16 tons, which was achieved through activities to reduce chemical substances used in the production process and measures to promote re-use.

**Emissions of Controlled Chemical Substances and Amount of Chemical Substances Designated by the PRTR System***

- ■ Controlled chemical substances (Japan)
- ■ Controlled chemical substances (outside Japan)
- ■ PRTR substances (Japan)
- ■ PRTR substances (outside Japan)
- ─●─ Chemical substance emission volume per unit of consolidated sales

(t)     (t/¥100 million)



| Year | 2014 | 2015 | 2016 | 2017 | 2018 |
|---|---|---|---|---|---|
| Emission volume per unit | 0.017 | 0.016 | 0.017 | 0.015 | 0.015 |
| Total | 643 | 605 | 574 | 603 | 587 |
| Controlled (outside Japan) | 479 | 452 | 440 | 445 | 397 |
| Controlled (Japan) | 164 | 153 | 134 | 158 | 190 |
| PRTR (Japan) | 52 | 57 | 42 | 46 | 44 |
| PRTR (outside Japan) | 36/16 | 45/12 | 31/11 | 37/9 | 33/11 |

* PRTR System: Pollutant Release and Transfer Register System, a notification system for the transfer and release of chemical substances.
* Controlled chemical substances exclude regulated substances.
* Figures for 2017 onwards include data for Canon Medical Systems.

## Reducing Emissions into the Atmosphere and Waterways and Preventing Pollution

Canon alleviates the environmental impact of its operational sites by reducing emissions of $NO_x$[1] and $SO_x$[2], which are major causes of air pollution and acid rain; reducing discharges of phosphates and nitrogen compounds, which cause the eutrophication of water environments; and, reducing BOD[3] and SS[4], which indicate an environmental impact in water areas.

To prevent air pollution, when installing or updating equipment that uses fuel, we opt for fuels that minimize generation of air pollutants (such as sulfur oxide, nitrogen oxide and soot), and have banned the use of heavy oil in principle.

Furthermore, we have designated ozone-depleting substances and persistent organic pollutants cited in the Stockholm Convention on Persistent Organic Pollutants as banned substances.

With regard to wastewater, each operational site sets standard values based on local laws and regulations. Also, control values are set at 80% of the standard values as management standards at each site. we regularly check the status of compliance with management standards.

[1] Nitrogen oxides (NOx)
A major cause of air pollution, acid rain and photochemical smog, NOx is generated when the nitrogen in fuels is oxidized or when nitrogen in the atmosphere is oxidized during high-temperature combustion.

[2] Sulfur oxides (SOx)
A major cause of air pollution and acid rain, SOx is generated when fossil fuels, such as oil and coal, are burned.

[3] Biochemical oxygen demand (BOD)
BOD is the amount of oxygen consumed when microorganisms degrade organic matter in water. Larger figure shows worse water quality.

[4] Suspended solids (SS)
A collective term used for substances of less than 2mm in diameter that float in the air and do not dissolve.

## Soil and Groundwater Remediation Status

Canon places high priority on soil and groundwater protection. In line with this, we established the Canon Group's Basic Policy on Soil and Groundwater Pollution and implement comprehensive measures based on it. In the unlikely event that soil or groundwater pollution is found at one of our operational sites, cleanup and remedial actions are carried out in close accordance with all relevant laws.

Also, our standard when acquiring new land is to conduct a preliminary soil examination and carry out any other necessary procedures, such as soil remediation, before making the purchase. We also monitor the chemical substances used at each site, remaining fully aware of the national and regional standards where each site is located in order to implement countermeasures according to the situation at each location.

Going forward, we will continue with the above initiatives and carry out monitoring and reporting of operational sites with completed remediation in a timely manner.

## PCB Waste Management

In accordance with relevant laws, Canon strictly manages polychlorinated biphenyl (PCB), which damages living organisms and the environment.

As of December 2018, 13 operational sites were storing PCB waste. In terms of highly concentrated PCB waste, there are 5 capacitors and transformers and 1,922 fluorescent ballasts in storage.

This PCB waste is processed sequentially by Japan Environmental Storage & Safety Corporation (JESCO).

## Status of Soil and Groundwater Clean-up Activities*

| Operational Site | Substances | Measures |
|---|---|---|
| Shimomaruko | Trichloroethylene, etc. | Water quality measurement |
| Utsunomiya parking lot 1 | Fluorine and its compounds, etc. | Pumping, water quality measurement |
| Toride | Trichloroethylene, etc. Hexavalent chromium and its compounds | Pumping, excavation and elimination, water quality measurement |
| Bando | 1,1-dichloroethylene, etc. | Pumping, covering, water quality measurement |
| Nagahama Canon | Hexavalent chromium and its compounds | Covering, water quality measurement |
| Canon Components | Mercury and its compounds | Covering |

* Reports are made to the authorities concerning sites where purification is in progress.

# Contributing to a Society in Harmony with Nature

We launched the Canon Bird Branch Project, which highlights the "Cycle of Life," as one of the various activities based on our Biodiversity Policy that we promote worldwide.

## Canon's Initiatives and Their Relation to Sustainable Development Goal (SDGs) Targets

| Contributing to a Society in Harmony with Nature  15 LIFE ON LAND | • Biodiversity Policy, Basic Policy on the Procurement of Timber Products | Target 15.2 | Target 15.5 |
|---|---|---|---|
| | • Canon Bird Branch Project | Target 15.5 | |
| | • Preservation of natural habitats and biodiversity | Target 15.5 | |
| | • Forest preservation, tree-planting initiatives | Target 15.2 | |

\* Target 15.2: Promote the implementation of sustainable management of all types of forests, halt deforestation, restore degraded forests and substantially increase afforestation and reforestation globally
  Target 15.5: Take urgent and significant action to reduce the degradation of natural habitats, halt the loss of biodiversity and, by 2020, protect and prevent the extinction of threatened species

## Canon's Biodiversity Policy

Canon recognizes biodiversity as essential for a sustainable society. We carry out various activities to conserve and protect biodiversity under our Biodiversity Policy, which applies to the entire Canon Group.

### Biodiversity Policy

**Basic Policy**
Canon fully recognizes biodiversity as an important basis for a sustainable society, and promotes activities that contribute to biodiversity conservation.

**Action Guidelines**
• Canon strives to conserve biodiversity with consideration for various regional characteristics from a global perspective.
• Canon actively works to reduce the impact on biodiversity associated with various business activities, and to conduct social-contribution activities that lead to biodiversity conservation.

**Specific Actions**
• "Utilization of Canon technologies and products for biodiversity conservation"
Support for biodiversity conservation activities and projects
• "Consideration for biodiversity centered on operational sites"
Ascertaining the impact of our business activities on biodiversity, and conservation of animal and plant habitats around operational sites
• "Contribution to the realization of a community rich in biodiversity"
Promotion of biodiversity conservation activities and educational activities in collaboration with local communities

## Initiatives to Support Continuous Use of Sustainable Forestry Resources within Value Chain

To help support biodiversity, Canon promotes the use of sustainable forestry resources as the raw materials for paper production within the value chain. We have set procurement policies favoring the purchase of paper products derived from sustainably sourced wood pulp. Moreover, the office paper we sell is made under forest certification schemes or using environmentally conscious raw materials.

### Basic Policy on the Procurement of Timber Products

1. Use sustainable forest materials
   In its procurement of timber products, the Canon Group uses materials supplied from forest resources managed exclusively for use as timber products.

2. Trace the origin of forest resources used
   We seek the cooperation of business partners to ensure the traceability of products throughout the manufacturing process, from the harvest of raw materials onward.

3. Confirm evidence of traceability
   Canon works with its business partners to ensure the traceability of materials used in Canon products (or OEM products) and their packaging that are subject to timber product regulations in each country.

## Group Initiatives to Conserve Biodiversity
### Canon Bird Branch Project

Biodiversity refers to the way living things interact as they coexist on earth. Within this sphere, birds occupy the top position in a local ecosystem pyramid of plants, insects, and small animals, symbolizing the cycle of life. In line with this concept, Canon promotes the Bird Branch Project as a symbol of the activities it conducts based on its Biodiversity Policy.

As part of the Bird Branch Project, a wild bird habitat has been created at Canon Global Headquarters in Tokyo, where birdlife is monitored with network cameras and regular bird census are conducted. Canon Group plants at Toride, Susono and Oita and the Kawasaki Office have also joined the Bird Branch Project and conduct bird census at their sites in collaboration with the Wild Bird Society of Japan. Similarly, overseas sites in France, the Netherlands and elsewhere are collaborating in activities with local partners. Meanwhile, at the Canon Medical Systems Nasu Headquarters, which joined the Bird Branch Project in 2018, we are working together with employees and members of the local community on activities to protect biodiversity around the concept of building a company that coexists with nature.

We plan to increase the number of operational sites participating in the project in Japan and overseas as part of our efforts to conserve and protect biodiversity.

CANON BIRD BRANCH PROJECT
BIODIVERSITY INITIATIVES

Reference: Canon Bird Branch Project website
https://global.canon/en/environment/bird-branch/index.html
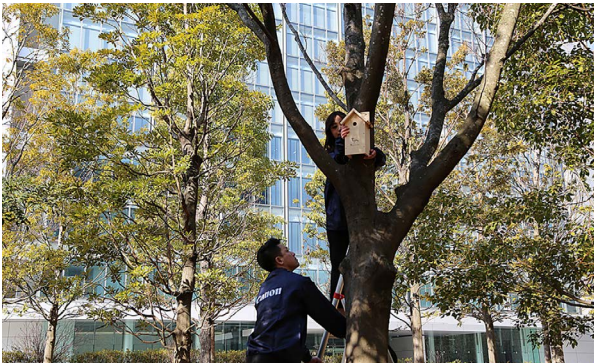

Installing a nesting box at Canon's Kawasaki Office

### Canon Canada Branch Out

Canon Canada celebrated the fifth anniversary of Branch Out in 2018. The program gives employees at all levels the opportunity to help create green spaces and sustainable environments in their local communities. Branch Out began as a tree-planting program in 2014, but has evolved to include a wide range of sustainability activities, including cleaning up parks, rivers and shorelines, removing invasive plant species, restoring habitats and constructing turtle shelters. All employees from Canon Canada's 13 offices, from Toronto to Quebec City and Vancouver, are encouraged to participate, sparing a few hours from their work schedule to volunteer. Over the past five years, employees have volunteered more than 8,000 hours in 45 locations across the country. Their achievements so far include planting more than 33,000 trees, removing 2,600 m³ of non-native vegetation and restoring nearly 650 m² of shoreline.


Clearing invasive plant species

### Working with the Local Community to Restore Seaweed Beds (Thailand)

With the collaboration of the Marine and Coastal Resources Research and Development Center and local communities, Canon Hi-Tech (Thailand) worked on a project to protect the marine ecosystem by restoring coastal seaweed beds in the Sattahip District of Chonburi Province. A 200-strong team made up of 150 Canon employees and 50 local government employees and community members took part in an operation to restore seaweed beds using a total of around 10,000 individual plants.


Action to protect the marine ecosystem

# Data Summary

## Data on CO₂
### Total GHG Emissions by Scope

(t-CO₂)

|  | 2014 | 2015 | 2016 | 2017 | 2018 |
|---|---|---|---|---|---|
| Scope 1 | 176,894 | 169,974 | 164,769 | 174,342 | 160,439 |
| Scope 2 | 1,059,561 | 992,380 | 955,338 | 963,185 | 965,720 |

* Figures for 2018 obtain third party verification.

## Data on Energy
### Energy Consumption by Region in 2018

(TJ)

|  | Electricity | Gas | Oil | Other (steam, wide area heating and air conditioning) |
|---|---|---|---|---|
| Japan | 4,625 | 1,429 | 251 | 36 |
| Americas | 407 | 155 | 6 | 0 |
| Europe | 342 | 169 | 409 | 65 |
| Asia and Oceania (except Japan) | 1,924 | 87 | 29 | 75 |
| Total | 7,298 | 1,839 | 695 | 176 |

* Electricity includes the amount generated by renewable energy sources.
* Figures obtain third party verification.

### Use of Renewable Energy by Region in 2018

|  | Electric power (MWh) | Geothermal power (TJ) |
|---|---|---|
| Japan | 259 | 0 |
| Americas | 6,654 | 0 |
| Europe | 77,894 | 18 |
| Asia and Oceania (except Japan) | 196 | 0 |
| Total | 85,003 | 18 |

## Data on Waste
### Recovery Volume by Type of Waste in 2018

(t)

| Type of Waste | Type of Recovery Treatment | Recovery Amount |
|---|---|---|
| Paper | Cardboard, paper used by office equipment, toilet paper, raw material for paper products, building board, roadbed materials, etc. | 24,103 |
| Plastics | Raw materials for plastic products and other applications, roadbed materials, cement materials, fuels, blast furnace reducing agents, soil improvement agents, etc. | 22,401 |
| Metals | Raw materials for metals, roadbed materials, etc. | 31,393 |
| Oils, acids and alkalis | Cement materials, fuels, roadbed materials, reuse of oils, chemicals and solvents, etc. | 12,272 |
| Sludge | Cement materials, construction materials, aggregates, metal materials, organic fertilizers, compost, etc. | 7,945 |
| Wood | Construction boards, bedding for plants, pulp materials, fuels, fertilizers, etc. | 5,669 |
| Glass and ceramics | Glass materials, roadbed materials, cement, metal materials, etc. | 360 |
| Others | Combustion aid, roadbed materials, soil improvement agents, iron-making materials, metal materials, etc. | 10,673 |
| Total |  | 114,817 |

### Landfill Amount of General Waste Generated by Business Activities

(t)

|  | 2014 | 2015 | 2016 | 2017 | 2018 |
|---|---|---|---|---|---|
| General landfill waste generated by business activities | 2,382 | 2,188 | 2,343 | 2,105 | 1,962 |

## Atmospheric Emissions
### SOx and NOx Emissions

(t)

|  | 2014 | 2015 | 2016 | 2017 | 2018 |
|---|---|---|---|---|---|
| SOx | 0.7 | 0.7 | 0.6 | 1.2 | 1.1 |
| NOx | 67.8 | 65.6 | 62.1 | 61.7 | 56.1 |

## Data on Water Resources
### Total Wastewater Discharge

(1,000m³)

|  | 2014 | 2015 | 2016 | 2017 | 2018 |
|---|---|---|---|---|---|
| Japan | 4,084 | 4,122 | 4,108 | 4,491 | 4,377 |
| Outside Japan | 3,751 | 3,744 | 3,433 | 3,306 | 3,086 |

### Wastewater Amount by Discharge Route in 2018

(1,000m³)

|  | Rivers | Sewerage System | Total |
|---|---|---|---|
| Japan | 996 | 3,381 | 4,377 |
| Outside Japan | 693 | 2,393 | 3,086 |
| Total | 1,689 | 5,774 | 7,463 |

### 2018 Water Quality Data

(t)

|  | 2018 |
|---|---|
| SS | 165 |
| BOD | 258 |

### Water Consumption in 2018 by Type

(1,000m³)

|  | Public Water | Industrial Water | Groundwater | Total |
|---|---|---|---|---|
| Japan | 1,632 | 2,530 | 1,365 | 5,527 |
| Outside Japan | 3,227 | 726 | 244 | 4,198 |
| Total | 4,859 | 3,256 | 1,609 | 9,725 |

### Use of Recycled Water and Recycling Rate in 2018

|  | Recycled Water (1,000m³) | Recycling Rate (%) |
|---|---|---|
| Japan | 1,472 | 26.6 |
| Outside Japan | 87 | 2.1 |
| Total | 1,559 | 16.0 |

* Figures obtain third party verification.

## Data on Chemical Substances
### Substances Canon No Longer Uses

|  | Substance Eliminated | Date Eliminated |
|---|---|---|
| Ozone-Depleting Substances | Chlorofluorocarbons (CFCs), 15 types | December 1992 |
|  | 1,1,1-Trichloroethane | October 1993 |
|  | Hydrochlorofluorocarbons (HCFCs), 34 types | October 1995 |
| Greenhouse Gases[1] | Perfluorocarbons (PFCs) | December 1999 |
|  | Hydrofluorocarbons (HFCs) | December 1999 |
| Soil Contaminants | Trichloroethylene | December 1996 |
|  | Tetrachloroethylene | December 1996 |
|  | Dichloro methane (for cleaning) | December 1997 |
|  | Dichloro methane (for thin film coating)[2] | October 2003 |

[1] Excludes use in semiconductor manufacturing
[2] Discontinued use in Japan in December 2001

## Amount of Chemical Substances in 2018

(t)

|  | Amount |
|---|---|
| Japan | 8,146 |
| Outside Japan | 1,071 |
| Total | 9,217 |

## VOC Emissions in 2018

(t)

|  | VOC Emissions |
|---|---|
| Japan | 156 |
| Outside Japan | 254 |
| Total | 410 |

## 2018 List of Chemical Substances Subjected to the PRTR Act

(kg)

| Statutory No. | Name of Substance | Emissions Volume | | Transfer Volume | | |
|---|---|---|---|---|---|---|
| | | Atmosphere | Public Water | Sewerage System | Waste | Recyclables |
| 7 | N-butyl acrylate | 1 | 0 | 0 | 0 | 55,333 |
| 20 | 2-aminoethanol | 269 | 43 | 2 | 13,476 | 13,128 |
| 31 | Antimony and its compounds | 1 | 0 | 0 | 0 | 130 |
| 53 | Ethylbenzene | 781 | 7 | 0 | 8,237 | 15,100 |
| 71 | Ferric chloride | 0 | 0 | 0 | 2 | 167,679 |
| 80 | Xylene | 7,969 | 9 | 0 | 7,849 | 145,612 |
| 125 | Monochlorobenzene | 1,807 | 0 | 0 | 9,679 | 48,381 |
| 128 | Methyl chloride | 4 | 0 | 0 | 0 | 0 |
| 150 | 1,4-dioxane | 441 | 0 | 0 | 0 | 642 |
| 202 | Diphenylamine | 0 | 0 | 0 | 0 | 62 |
| 232 | N,N-dimethylformamide | 288 | 0 | 0 | 0 | 366 |
| 240 | Styrene | 259 | 0 | 0 | 0 | 135,949 |
| 259 | Tetraethylthiuram disulfide | 0 | 0 | 0 | 0 | 0 |
| 296 | 1,2,4-trimethylbenzene | 196 | 0 | 0 | 20 | 13,511 |
| 298 | Tolylene diisocyanate | 0 | 0 | 0 | 0 | 334 |
| 299 | Toluidin | 1 | 0 | 0 | 0 | 0 |
| 300 | Toluene | 12,690 | 34 | 0 | 2,028 | 70,094 |
| 306 | Hexamethylene diacrylate | 0 | 0 | 0 | 0 | 83 |
| 308 | Nickel | 299 | 0 | 298 | 2 | 1,555 |
| 309 | Nickel compounds | 0 | 0 | 0 | 11 | 2,767 |
| 343 | Pyrocatechol | 10 | 0 | 0 | 0 | 3,320 |
| 349 | Phenol | 72 | 0 | 0 | 2 | 2,618 |
| 374 | Hydrogen fluoride and its water-soluble salts | 5 | 23 | 1,200 | 0 | 542 |
| 395 | Water-soluble salts of peroxodisulfuric acid | 0 | 0 | 38 | 1 | 4,837 |
| 408 | Poly (oxyethylene) octylphenyl ether | 0 | 0 | 0 | 0 | 950 |
| 412 | Manganese and its compounds | 0 | 0 | 0 | 0 | 226 |
| 438 | Methylnaphthalene | 118 | 0 | 0 | 0 | 670 |
| 448 | Methylenebis (4,1-phenylene) diisocyanate | 1 | 0 | 0 | 0 | 16,022 |

# Environmental Accounting

Calculations performed according to the Environmental Accounting Guidelines (2005 edition) issued by Japan's Ministry of the Environment.

## Environmental Conservation Costs

(Billions of yen)

| Category | | Details of Key Activities | 2018 Investment | 2018 Cost |
|---|---|---|---|---|
| (1) Business Area Cost | | | 2.37 | 8.39 |
| Details | 1. Pollution Prevention Cost | Air, water and soil pollution prevention, etc. | 1.43 | 4.32 |
| | 2. Global Environmental Conservation Cost | Prevention of global warming, energy conservation, efficient logistics, etc. | 0.86 | 1.72 |
| | 3. Resource Circulation Cost | Efficient resource use, waste reduction, sorting, recycling, etc. | 0.09 | 2.35 |
| (2) Upstream / Downstream Cost | | Green procurement initiatives, product recycling*1, etc. | 0.11 | 7.10 |
| (3) Administration Cost | | Environmental education, environmental management system, tree planting, information disclosure, environmental advertising, personnel, etc. | 0.04 | 3.95 |
| (4) R&D Cost*2 | | R&D for reducing environmental impact | 0.0 | 0.0 |
| (5) Social Activity Cost | | Contributions to organizations, sponsorships, memberships, etc. | 0.01 | 0.13 |
| (6) Environmental Remediation Cost | | Soil remediation | 0.0 | 0.04 |
| (7) Other | | Other environmental protection-related costs | 0.02 | 0.0 |
| Total | | | 2.55 | 19.61 |

*1 In connection with the recycling of used products, expenses for product collection, storage, sorting, shipment, etc.
*2 Expenses for basic research on environmental technologies

## Environmental Conservation Benefit

| Details of Benefit | | Environmental Protection Indices Index | Index Value |
|---|---|---|---|
| Benefit Related to Business Area Cost | Benefit related to resources input into business activities | Energy conservation (t-CO₂) | 38,189 |
| | Benefit related to waste or environmental impact originating from business activities | Recycled resources volume (t) | 114,817 |
| Benefit Related to Upstream / Downstream Cost | Benefit related to goods and services produced from business activities | Product energy conservation amount (1,000 t-CO₂)*3 | 2,945 |
| | | Recovery of used products (t)*4 | 65,840 |

*3 CO₂ reduction resulting from energy-conservation technologies in electrographic multifunction devices and laser printers.
*4 Amount of recovered copying machines, cartridges, etc. (including outsourced material recycling and thermal recovery)

## Economic Benefit Associated with Environmental Conservation Activities

(Billions of yen)

| Details of Benefit | | 2018 |
|---|---|---|
| Revenue | Sales revenue from waste recycling | 2.43 |
| Cost Reduction | Reduction in energy costs from energy conservation | 1.83 |
| | Reduction from green procurement | 0.0 |
| | Reduction in waste handling costs from resource conservation and recycling | 1.52 |
| Total | | 5.78 |

## Benefit of Upstream / Downstream Costs

(Billions of yen)

| Details of Benefit | 2018 |
|---|---|
| Lower energy costs from reduced product energy consumption*5 | 75.90 |
| Profit from used product recycling | 5.99 |

*5 Calculated as the reduction in energy consumption of electrographic multifunction devices and laser printers sold in 2018 (excluding production printers) × 12 yen/kWh (economic effect for the customer).

# Product Standards Compliance

## 2018 Standards Compliance for Environmentally Conscious Products

| | Law on Promoting Green Purchasing (Japan) | Eco Mark (Japan) | International ENERGY STAR® Program |
|---|---|---|---|
| Copying Machines / Multifunction Devices (MFDs) | 30/30 (100%) | 30/30 (100%) | 30/30 (100%) |
| Laser Printers | – | – | – |
| Inkjet Printers | 11/11 (100%) | 8/11 (73%) | 11/11 (100%) |

* Values show the number of models meeting specifications out of the number of models on sale in Japan, with the compliance ratio in parentheses.
* No new laser printers were released for sale in 2018.

## 2018 Standards Compliance for Consumables

| | Law on Promoting Green Purchasing (Japan) | Eco Mark (Japan) |
|---|---|---|
| Toner Cartridges | – | – |
| Ink Cartridges | 40/40 (100%) | 40/40 (100%) |

* Values show the number of models meeting specifications out of the number of models on sale in Japan, with the compliance ratio in parentheses.
* No new toner cartridges were released for sale in 2018.

# Operational Sites Covered in the Environmental Section

| Name | Location |
|---|---|
| **Canon Inc. (15 operational sites)** | |
| Headquarters | Tokyo |
| Yako Office | Kanagawa |
| Kawasaki Office | Kanagawa |
| Tamagawa Office | Kanagawa |
| Kosugi Office | Kanagawa |
| Hiratsuka Plant | Kanagawa |
| Ayase Plant | Kanagawa |
| Fuji-Susono Research Park | Shizuoka |
| Utsunomiya Plant | Tochigi |
| Toride Plant | Ibaraki |
| Ami Plant | Ibaraki |
| Utsunomiya Optical Products Plant | Tochigi |
| Optics R&D Center | Tochigi |
| Oita Plant | Oita |
| Tsukuba Parts Center | Ibaraki |
| **Marketing Headquarters in Japan** | |
| Canon Marketing Japan Inc. | Tokyo |
| **Manufacturing Subsidiaries in Japan (24 companies)** | |
| Canon Electronics Inc. | Saitama |
| Canon Finetech Nisca Inc. | Saitama |
| Fukui Canon Materials Inc. | Fukui |
| Top Business Machines Co., Ltd. | Shiga |
| Canon Precision Inc. | Aomori |
| Canon Chemicals Inc. | Ibaraki |
| Oita Canon Inc. | Oita |
| Miyazaki Canon Inc. | Miyazaki |
| Canon Optron, Inc. | Ibaraki |
| Canon Components, Inc. | Saitama |
| Nagahama Canon Inc. | Shiga |
| Oita Canon Materials Inc. | Oita |
| Canon Semiconductor Equipment Inc. | Ibaraki |
| Canon Ecology Industry Inc. | Ibaraki |
| Ueno Canon Materials Inc. | Mie |
| Fukushima Canon Inc. | Fukushima |
| Canon Mold Co., Ltd. | Ibaraki |
| Hita Canon Materials Inc. | Oita |
| Canon ANELVA Corporation | Kanagawa |
| Canon Machinery Inc. | Shiga |
| Canon Tokki Corporation | Niigata |
| Nagasaki Canon Inc. | Nagasaki |
| Canon Medical Systems Corporation | Tochigi |
| Canon Electron Tubes & Devices Co., Ltd. | Tochigi |

| Name | Location |
|---|---|
| **Manufacturing Subsidiaries Outside Japan (20 companies)** | |
| Canon Virginia, Inc. | U.S.A. |
| Canon Giessen GmbH | Germany |
| Canon Bretagne S.A.S. | France |
| Canon Inc., Taiwan | Taiwan |
| Canon Opto (Malaysia) Sdn. Bhd. | Malaysia |
| Canon Electronics (Malaysia) Sdn. Bhd. | Malaysia |
| Canon Hi-Tech (Thailand) Ltd. | Thailand |
| Canon Dalian Business Machines, Inc. | PRC |
| Canon Zhuhai, Inc. | PRC |
| Canon Vietnam Co., Ltd. | Vietnam |
| Canon Zhongshan Business Machines Co., Ltd. | PRC |
| Canon (Suzhou) Inc. | PRC |
| Canon Finetech Nisca (Shenzhen) Inc. | PRC |
| Canon Machinery (Malaysia) Sdn. Bhd. | Malaysia |
| Canon Prachinburi (Thailand) Ltd. | Thailand |
| Canon Business Machines (Philippines), Inc. | Philippines |
| Océ Technologies B.V. | The Netherlands |
| Océ Printing Systems GmbH. & Co. KG | Germany |
| Axis Communications AB | Sweden |
| Canon Electronics Vietnam Co., Ltd. | Vietnam |
| **Marketing Headquarters Outside Japan** | |
| Canon U.S.A., Inc. | U.S.A. |
| Canon Europe Ltd. | United Kingdom |
| Canon Europa N.V. | The Netherlands |
| Canon (China) Co., Ltd. | PRC |
| Canon Australia Pty Ltd. | Australia |

| Other Companies Subject to Reporting (80 companies) |
|---|
| In Japan (21) |
| Outside Japan (59) |

\* The scope of third-party verification of GHG includes the 130 companies covered in Canon's consolidated ISO certification and one other company not included in consolidated certification, all listed above.
\* Figures for 2017 onwards include data for Canon Medical Systems.