# 3.2 Climate Change Strategy

## 3.2.1 Basic Approach

The Fujifilm Group has set $CO_2$ emissions reduction targets toward 2030 to create of a carbon neutral society aimed at by the Paris Agreement. Along with $CO_2$ emissions reduction across the entire product lifecycle (from material procurement, product manufacturing, transportation, use and disposal), we are continuing to actively reduce $CO_2$ emissions in society through providing our products and services. At the manufacturing stage, we direct our efforts at using lower carbon energy sources, including adopting and utilizing renewable energy, in addition to the promotion of energy saving and efficient energy usage.

Targets and Progresses of Climate Change

Long-term target: Reduce the Fujifilm Group's $CO_2$ emissions by 30% by FY2030 (compared to the FY2013 level)
Progress: 22% reduction at the end of FY2018 (compared to the FY2013 level)
Mid-term target: Reduce the Fujifilm Group's $CO_2$ emissions by 30% by FY2020 (compared to the FY2005 level)
Progress: 27% reduction at the end of FY2018 (compared to the FY2005 level)
Short-term Target: Reduce the Fujifilm Group's $CO_2$ emissions by 1% by FY2019 (compared to the FY2018 level)

Long-term targets are set down in SVP2030 and certified as Science Based Targets by the SBT Initiative.

Renewable Energy Usage Targets:

- Converting 50% of purchased electric power to renewable energy-derived power by FY2030
- Converting 100% of purchased electric power to renewable energy-derived power aiming at zero $CO_2$ emissions from our energy consumption by converting using fuels to hydrogen in our in-house cogeneration systems by FY2050.
- This target was certified as being in line with the purpose of the RE100 by the Climate Group, an international NPO; we joined the RE100 in April 2019.

Renewable Energy (Electric Power) Consumption

Unit: MWh

| | FY2014 | FY2015 | FY2016 | FY2017 | FY2018 |
|---|---|---|---|---|---|
| Renewable energy consumption | 22,978 | 46,675 | 102,552 | 101,435 | 96,100 |

## 3.2.2 Major Activities

At Fujifilm Group, the Energy Strategy Promotion Committee has been working group-wide to maximize efficiency in energy usage and to seek in the energy purchase based on lower carbon resources. We have been working to reduce environmental impact through our products and services, based on internal rules concerning Design for Environment.

We are directed efforts to the active introduction of renewable energy, both in Japan and other countries, including the introduction of wind power-generated electricity at FUJIFILM Manufacturing Europe B.V. (Netherlands), installation of a photovoltaic power facility at its Kumamoto Plant (Japan) and installation of a new large-scale photovoltaic power facility at Fujifilm Printing Plate (China) Co., Ltd., in FY2018.

In January 2019, the Fujifilm Group established a renewable energy usage target, and the Group plans to continue pursuing further energy conservation and introducing renewable energy sources to meet its CSR targets for the year 2030 as laid out in SVP2030.

## 3.2.3 Strategy and Management for the Climate Change

At the Fujifilm Group, the Energy Strategy Promotion Committee has been working group-wide to maximize efficiency in energy usage and to seek further $CO_2$ emissions reductions at the procurement stage. We are promoting these measures proactively throughout the Group. We are utilizing the carbon pricing scheme (price of $CO_2$ emissions) to evaluate risks and opportunities for climate change, and are now examining impact probabilities and future measures.

At the manufacturing stage, we promote $CO_2$ emissions reduction measures that include improvements to efficient energy usage, conversion to renewable energy-derived electric power, conversion of natural gas and heavy oil used in our in-house cogeneration systems to hydrogen sources (after FY2030). At the procurement stage, we are reducing the input of material resources by a more sophisticated scheme for reusing and recycling them. In response to the physical risks accompanying the climate change, we are introducing risk countermeasures for product supplies in procurement and manufacturing in various countries.

Furthermore, we are contributing to reducing $CO_2$ emissions on a global scale by promoting design for the environment and providing, disclosing and introducing appealing products and solutions that have a high $CO_2$ reduction efficiency through the FUJIFILM Holdings Environment Conscious Certification System (established in May 2018).

### Information Disclosure Based on TCFD

In December 2018, the Fujifilm Group announced that it would endorse the recommendations issued by the Task Force on Climate-related Financial Disclosures (TCFD).

Furthermore, we are participating in the TCFD support program of the Ministry of the Environment and have started a scenario analysis on climate change.

| Governance | Risk Management |
|---|---|
| • Deliberate on climate change risks and opportunities at the ESG Committee (chaired by the President) to reflect them in our management, and report to the Board of Directors.<br>[Examples]<br>・Establish a target for renewable energy use and endorse the TCFD recommendations.<br>・Join RE100, the global corporate leadership initiative. | • Monitor the levels of $CO_2$ emitted by each business and through the product lifecycle with the global system.<br>• Analyze factors affecting energy efficiency and $CO_2$ emissions at the Energy Strategy Promotion Committee.<br>• Identify water risks using indexes for “water stress,” “water usage” and “relation to business” at all sites. |
| **Strategy** | **Index and Target** |
| • Establish Sustainable Value Plan 2030 (SVP 2030) with FY2030 as its long-term goal.<br>• Identify risks and countermeasures.<br>[Physical risks]<br>・Determine raw materials procurement and factory production stoppages caused by abnormal weather (floods etc.).<br>・Establish Business Continuity Plans (BCPs) to decentralize raw materials suppliers and production sites.<br>[Transition risks]<br>・Evaluate financial risks of the carbon pricing scheme and promote the introduction of renewable energy.<br>・Converting to 100% renewable energy at FUJIFILM Manufacturing Europe B.V. in the Netherlands, etc.<br>• Develop and distribute products that mitigate and address climate change making use of the internal certification system for environmentally conscious products<br>・Energy-saving multifunction devices, data archive storage system, process-less thermal CTP plates, etc.<br>• Convert not only purchased electric power but any fuels used by in-house cogeneration systems into renewable energy using new technologies such as hydrogen, and aim for zero $CO_2$ emissions.<br>・Clarify our approach to a non-carbon society through RE100, the international initiative, and promote infrastructure development as a consumer. | • Target for reducing $CO_2$ emissions (Certified by Science Based Targets).<br>・Reduce $CO_2$ emissions by 30% across the entire product lifecycle by FY2030 (compared to the FY2013 level).<br>• Renewable energy usage target<br>・Convert 50% of purchased electric power to renewable energy-derived power.<br>・Convert 100% of purchased electric power to renewable energy-derived power. (Aim at zero $CO_2$ emissions from energy such as electricity, fuels, etc.)<br>• Water usage reduction target<br>・Reduce the amount of water used in production by 30% by FY2030 (compared to the FY2013 level). |

## 3.2.4 Data Related to Climate Change Measures

### GHG Emissions (Scope 1, 2)

| | | Unit | FY2014 | FY2015 | FY2016 | FY2017 | FY2018 |
|---|---|---|---|---|---|---|---|
| Total direct GHG emissions (Scope 1) | Total emissions | t $CO_2$e (metric tons $CO_2$ equivalents) | 671,000 | 662,000 | 635,000 | 604,000 | 594,000 |
| Total indirect GHG emissions (Scope 2) | Total emissions | t $CO_2$e (metric tons $CO_2$ equivalents) | 663,000 | 606,000 | 569,000 | 530,000 | 512,000 |

Scope 1: $CO_2$ emissions in fuel.
Data coverage is for 100% of total sales
The above Scope 1 & 2 data have been verified by the third party organization: SGS Japan, Inc.

### $CO_2$ Emissions (Scope 1, 2, 3)

| | FY2016 | FY2017 | FY2018 |
|---|---|---|---|
| $CO_2$ Emissions (kt- $CO_2$/year) | 4,639 | 4,360 | 4,082 |
| Scope 1 | 14% | 14% | 15% |
| Scope 2 | 12% | 12% | 13% |
| Scope 3 | 75% | 74% | 73% |

### FY2018 Results of GHG Scope 3 Emissions for Fujifilm Group

Unit: %

| Purchased goods and services | Capital goods | Fuel and energy-related activities | Upstream transportation and distribution | Waste generated in operation | Business travel | Employee commuting | Upstream leased assets | Downstream transportation and distribution | Processing of sold products | Use of sold products | End-of-life treatment of sold products | Downstream leased assets |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 55.9 | 7.7 | 1.9 | 0.3 | 0.3 | 1.2 | 0.6 | — | 11.4 | 1.8 | 2.9 | 4.0 | 12.1 |

### FY2018 Results for Fujifilm Group

Unit: kt-$CO_2$/year

| | Procurement | | Manufacturing | | Transportation | Use | | Disposal | Total |
|---|---|---|---|---|---|---|---|---|---|
| | 1,720 | | 1,105 | | 340 | 428 | | 86 | 3,680 |
| Items | PET, TAC, etc. | 303 | Gas | 514 | 340 | Medical equipment | 52 | 86 | |
| | Aluminum | 1,207 | Petroleum | 79 | | Minilab | 27 | | |
| | Copiers/Printers/ Fax machines | 210 | Electricity | 512 | | Copiers/Printers/ Fax machines | 359 | | |
| | | | | | | Others | 6 | | |

* Trading emissions are allocated to Use and Disposal.

### $CO_2$ Emissions*

Unit: kt- $CO_2$/year

| | | FY2014 | FY2015 | FY2016 | FY2017 | FY2018 |
|---|---|---|---|---|---|---|
| R&D/ Manufacturing/ Office | Japan/Manufacturing | 921 | 894 | 853 | 782 | 761 |
| | Japan/Nonmanufacturing | 27 | 30 | 33 | 32 | 30 |
| | Overseas/Manufacturing | 346 | 308 | 268 | 278 | 274 |
| | Overseas/Nonmanufacturing | 40 | 37 | 50 | 43 | 40 |
| | Group total | 1,333 | 1,269 | 1,204 | 1,134 | 1,105 |
| Vehicle | | 33 | 31 | 31 | 31 | 29 |
| Total | | 1,366 | 1,299 | 1,235 | 1,165 | 1,135 |

* Calculation method: Calculation of $CO_2$ emission by energy usage specified in the Act on the Rational Use of Energy. Emission coefficient by electric power utility used for purchased power.

### 2018 $CO_2$ Emission by Region* (R&D/Manufacturing/Office)

Unit: kt-$CO_2$/year

| | | |
|---|---|---|
| Japan | | 791 |
| Overseas | Americas (USA, Canada & Brazil) | 152 |
| | Europe (Netherlands, Germany, Belgium, UK & France) | 51 |
| | China | 78 |
| | Asia excl. China & Oceania (Australia, South Korea, Singapore, etc.) | 33 |
| Group total | | 1,105 |

* Calculation method: Calculation of $CO_2$ emission by energy usage specified in the Act on the Rational Use of Energy. Emission coefficient by electric power utility used for purchased power in Japan, and emission coefficient released by IEA for each country used for other countries.

### Annual Changes in Total $CO_2$ Emissions in Domestic Logistics*

Unit: t- $CO_2$/year

| | FY2014 | FY2015 | FY2016 | FY2017 | FY2018 |
|---|---|---|---|---|---|
| Total $CO_2$ emissions | 45,633 | 50,229 | 49,761 | 47,100 | 45,846 |

* Total $CO_2$ emissions are calculated as the amount of $CO_2$ emitted by FUJIFILM Logistics Co., Ltd. in its logistics activities for the Fujifilm Group companies. Since FY2006, we shifted calculation method to the method based on revised Energy Conservation Law (travel distance of empty cars not included in calculations, etc.).

### Annual Changes in Amount of $CO_2$ Reductions and Reduction Rates through Transportation Efficiency Improvements* (Domestic distribution)

| | FY2014 | FY2015 | FY2016 | FY2017 | FY2018 |
|---|---|---|---|---|---|
| Amount of $CO_2$ reductions (tons of $CO_2$/year) | 11,404 | 12,692 | 15,790 | 13,156 | 12,927 |
| $CO_2$ reduction rate (%) | 20.0 | 20.2 | 25.4 | 21.8 | 22.0 |

$$CO_2 \text{ reduction rate (\%)} = \frac{\text{Amount of } CO_2 \text{ reductions}}{\text{Total } CO_2 \text{ emissions} + CO_2 \text{ reductions}}$$

* In the FY2018, we enforced our activities for $CO_2$ reductions in collaboration with a specified consigner. Major reduction initiatives, which proved effective, include starting modal shifts (road transport to sea transport) in FY2017, as well as improving carrying efficiency by double stacking during transport and enhancing gasoline mileage by eco-driving. The amount was a total figure of each facility's $CO_2$ reduction measure.

### Annual Changes in Domestic Transport Volume*

Unit: million tons/kilometer

| | FY2014 | FY2015 | FY2016 | FY2017 | FY2018 |
|---|---|---|---|---|---|
| Transportation volume | 181 | 190 | 190 | 168 | 155 |

* Range of transportation volume is calculated within the range of ownership in compliance with reporting under the Act on the Rational Use of Energy.

## 3.2.5 Energy Consumption

Annual Changes in Energy Consumption*1

Unit: TJ

| | | FY2014 | FY2015 | FY2016 | FY2017 | FY2018 |
|---|---|---|---|---|---|---|
| Japan | Electric power, purchased electric power | 6,766 | 6,718 | 6,583 | 6,032 | 5,760 |
| | Heavy oil, etc.*2 | 2,171 | 2,040 | 1,569 | 1,299 | 1,110 |
| | Gas*3 | 8,432 | 8,495 | 8,609 | 8,348 | 8,507 |
| | Renewable energy | 6 | 1 | 1 | 1 | 4 |
| Overseas | Electric power, purchased electric power | 5,621 | 5,121 | 4,805 | 4,863 | 4,904 |
| | Heavy oil, etc.*2 | 39 | 33 | 30 | 24 | 23 |
| | Gas*3 | 1,784 | 1,756 | 1,787 | 1,779 | 1,698 |
| | Renewable energy*4 | 76 | 291 | 874 | 844 | 788 |
| Total | | 24,895 | 24,454 | 24,256 | 23,190 | 22,796 |

*1 Per unit calorific value is based on the Energy Conservation Act.

*2 Total of heavy oil A, heavy oil C, kerosene, light oil and gasoline

*3 Total of natural gas, liquefied natural gas (LNG), city gas, butane and liquefied petroleum gas (LPG)

*4 FUJIFILM Manufacturing Europe B.V. (EF) classified its energy usage as renewable energy because the supply of wind-generated power has been 100% since FY2015.

Breakdown of Consumption of Heavy oil, etc. (FY2018)*

Unit: thousand kiloliters

| | Heavy oil | Kerosene | Light oil | Gasoline |
|---|---|---|---|---|
| Japan | 26.5 | 1.1 | 0.1 | 0.0 |
| Overseas | 0.0 | 0.0 | 0.6 | 0.0 |
| Group total | 26.5 | 1.1 | 0.7 | 0.0 |

*Consumption in manufacturing only

## 3.2.6 Products Responding to Climate Change

The Fujifilm Group is developing products that have a low impact on the environment. We try to design products that not only reduce their environment impact by themselves but that also contribute to reducing greenhouse gas emissions in society. We believe that developing products to address climate change issues is the first step to resolving environmental issues in society as well as to creating business opportunities.

For further details, please refer to *3.4 Product Stewardship (Design for the Environment.)*

# 3.3 Recycling of Resource

## 3.3.1 Basic Approach

Since our establishment, the Fujifilm Group has been actively recycling resources, through reducing water usage, recycling and reusing water, recovering and reusing resources (e.g. silver), and establishing a recycling system for multifunction devices and copiers, etc. We are conducting efforts to use resources effectively and reduce waste through measures which take into account the total lifecycle of a product, by considering the 3Rs (reduce, reuse, recycle) in the product design, reducing loss at the manufacturing stage, collecting, reusing and recycling used products, and recycling or converting into valuables.

## 3.3.2 Response to Water Risks

In the production of the motion picture and photographic film that had formed the mainstay of its business operations since its foundation, the Fujifilm Group had made extravagant use of clean water. For this reason, the Group has taken early steps in reducing water use and in water recycling. In face of the recent growth in the interest focused on water risks as an important international issue, the Group is implementing further steps for the reduction and efficient use of water resources. Due to the concern over the possible expansion of areas stricken by water shortage issues, the Group created a matrix system for water risk evaluation in 2014 that uses conditions in “water stress regions” and “impact on businesses based on water usage” as its two indicators, and has engaged in continual evaluation of water risks for all business operations under the Group. At the same time, Fujifilm contributes to issues on water treatment in society by providing its product and services, including filtration materials.

Targets and Progresses on Water

Long-term target: Reduce the amount of water the Fujifilm Group uses for production by 30% by FY2030 (compared to the FY2013 level)
Progress: 15% reduction at the end of FY2018 (compared to the FY2013 level)

Mid-term target: Reduce the amount of water the Fujifilm Group uses for production by 15% by FY2020 (compared to the FY2013 level)
Progress: 15% reduction at the end of FY2018 (compared to the FY2013 level)

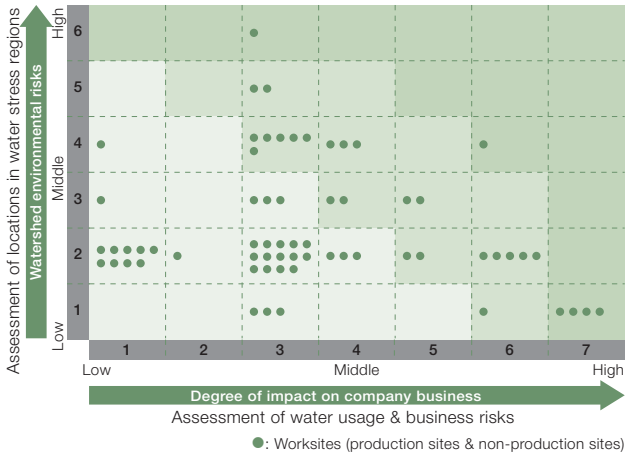
Short-term Target: Reduce the amount of water the Fujifilm Group uses for production by 1% by FY2019 (compared to the FY2018 level)

Water Usage

| | Unit | FY2014 | FY2015 | FY2016 | FY2017 | FY2018 |
|---|---|---|---|---|---|---|
| Clean water | million $m^3$ | 9.0 | 8.9 | 8.3 | 8.1 | 8.0 |
| Groundwater | million $m^3$ | 40.6 | 39.6 | 37.4 | 35.6 | 34.5 |
| Rainwater and others | million $m^3$ | 0.2 | 0.2 | 0.2 | 0.2 | 0.3 |

* Data coverage is for 100% of total sales. The above data has been verified by the third party organization: SGS Japan, Inc.

## Assessment Map of the Impact of Water Resources on Company Business

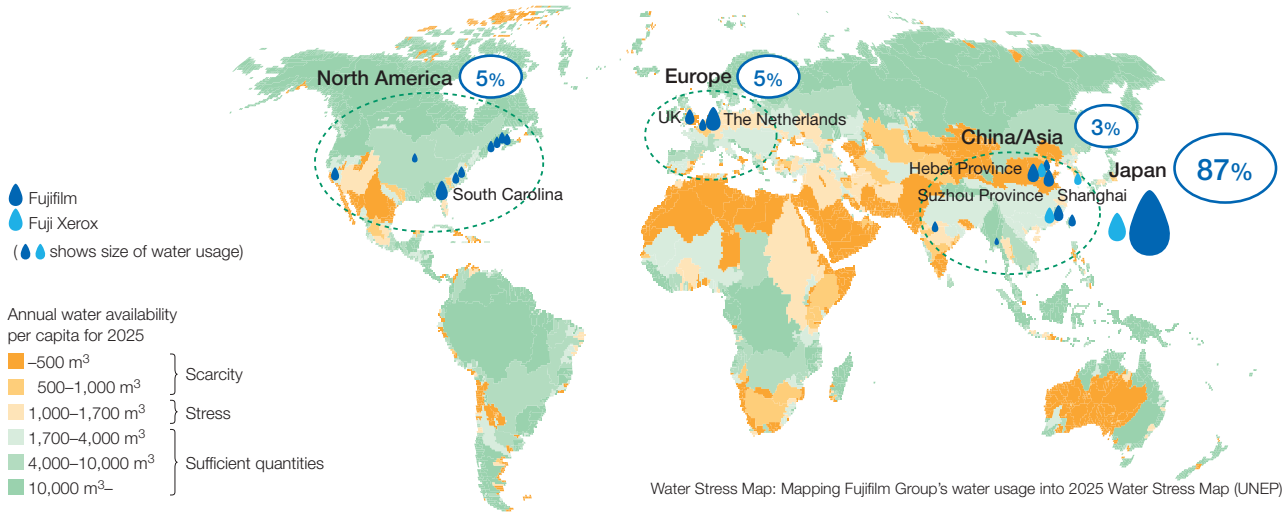



## FY2018 Water Usage by Region

Unit: %

| | Japan | Americas | Europe | China, Asia/Oceania |
|---|---|---|---|---|
| Water usage | 87 | 5 | 5 | 3 |
| Water discharge | 88 | 5 | 4 | 3 |

## 2025 Water Stress Map and 2018 Fujifilm Group's Water Usage




Water Stress Map: Mapping Fujifilm Group's water usage into 2025 Water Stress Map (UNEP)

## Participation in Initiatives

FUJIFILM Europe GmbH has been participated in the international nongovernmental organization, WaterAid since 2012.

## 3.3.3 Measures to Reduce Waste

The Fujifilm Group is proceeding more effective use for resources and reduction of waste, not only at the manufacturing stage but over the entire product lifecycle as well. In addition to the emphasis on recycling and conservation of resources at the product design stage, reductions in the waste generated at the manufacturing stage are underway in Japan, North America, Europe and China, in ways that suit each region. In Japan, from FY2011 we have been promoting group-wide optimization, including extracting valuables from waste and improving the quality of recycling, not only at our production sites but over our entire business operations including offices and warehouses. In Americas, the regional headquarters promote this effort of group-wide optimization with other sites, too.

Since fiscal 2016, the amount of waste disposed of by incineration or in landfill has been increasing because of the increase in waste liquids resulting from our new business expansion and difficulties in recycling plastics in Asia. We are working for the entire Group to reduce the amount of waste liquids by improving processes and by recycling plastics to achieve our SVP2030 targets.

### Targets and Progresses on Waste

Long-term target: Reduce the amount of waste generated by the Fujifilm Group by 30% by FY2030 (compared to the FY2013 level)
Progress: 5% reduction at the end of FY2018 (compared to the FY2013 level)

### Waste Generation

Unit: ton

| | FY2014 | FY2015 | FY2016 | FY2017 | FY2018 |
|---|---|---|---|---|---|
| A Total waste output volume*1 | 75,300 | 72,200 | 80,100 | 79,300 | 81,100 |
| B Total wastes used, recycled or sold | 65,600 | 63,100 | 65,500 | 64,500 | 64,700 |
| Total waste output volume*2 (A – B) | 9,700 | 9,100 | 14,600 | 14,800 | 16,400 |

* Data coverage is for 100% of total sales.
* The above data has been verified by the third party organization: SGS Japan, Inc.
*1 Processed by external service providers and simple incineration or landfill disposal on sites.
*2 Simple incineration or landfill disposal by external service providers and on sites.

### Annual Changes in Valuable Resources*

Unit: thousand tons/year

| | FY2014 | FY2015 | FY2016 | FY2017 | FY2018 |
|---|---|---|---|---|---|
| Japan | 34.0 | 34.0 | 34.1 | 30.3 | 26.9 |
| Overseas | 27.2 | 30.1 | 24.5 | 42.1 | 30.6 |
| Group total | 61.2 | 64.1 | 58.6 | 72.4 | 57.4 |

* Valuable resources sold to the third party.

### Main Recycling Methods for Waste Products

| Waste product | Recycling method | Waste product | Recycling method |
|---|---|---|---|
| Plastics (sorted) | Pallets, pipes, clothing, heat insulation materials | Mixed flammable waste products | Solid fuels, electricity and hot water production |
| Plastics (mixed)/Filters | Blast furnace fuel | Fluorescent lamp | Glass wool |
| Magnetic tape | Blast furnace fuel, tatami mat material, heat insulation materials | Batteries | Zinc, smelt iron |
| Aluminum hydroxide | Aluminum sulfate | Left over food, raw garbage, organic sludge | Fertilizer, animal feed |
| Inorganic sludge, polishing agent | Cement, roadway material, construction materials | Documents, empty boxes | Recycled paper |
| Organic solvent | Paint thinner | Iron, aluminum, copper, etc. | Smelt metal |
| Acids and alkalines | Neutralizer | | |

Annual Changes in Container and Packaging Material* Used

Unit: thousand tons/year

| | FY2014 | FY2015 | FY2016 | FY2017 | FY2018 |
|---|---|---|---|---|---|
| Packaging material reduction rate | 15.5 | 15.2 | 15.6 | 15.6 | 16.3 |

* Total of corrugated paper boxes, paper materials, paper containers, metal materials, plastic molds, plastic film/sheet and glass used.

Annual Changes in Reduction in export Packaging Material Weight* (Cumulative total)

Unit: %

| | FY2014 | FY2015 | FY2016 | FY2017 | FY2018 |
|---|---|---|---|---|---|
| Packaging material reduction rate | 9.3 | 10.5 | 12.7 | 17.5 | 17.8 |

* Packaging material reduction rate (%) = $\frac{\text{Weight reduced}}{\text{Total material weight + weight reduced}}$

* Total weight of export packaging materials handled by FUJIFILM Logistics in FY2018 was 1,250.65 tons. Weight was reduced by 270.24. tons, with yearly reduction rate of 17.8%.

## 3.3.4 Improve the Efficiency of Resource Use

The Fujifilm Group develops and offers a wide range of products such as chemical products, functional materials, optical devices, office equipment, and medical equipment, etc. For this reason, in FY2016, we formulated the Assessment Method of Material Input per Unit (resource material input weight per converted production volume) that utilizes the “Converted Production Volume (production volume of each product converted using the energy used during production)” which is authorized by the Energy Saving Act in Japan. We started to use this method in FY2017. For multifunction devices and copiers, we collect customers’ used products and reuse or recycle them. The program aims to utilize resources as effectively as possible with “Zero Landfill” as our goal. Since FY2016, we are promoting the planning for new products that emphasize the use of reused parts.

Fuji Xerox New Resource Reduction by Using Reuse Parts*
(Total for Japan, the Asia-Pacific Region, and China)

Unit: tons

| | FY2014 | FY2015 | FY2016 | FY2017 | FY2018 |
|---|---|---|---|---|---|
| New Resource Reduction | 2,916 | 3,273 | 3,809 | 3,730 | 2,967 |

* The total amount of new resource reduction in the production stage by using reuse parts.

# 3.4 Product Stewardship (Design for Environment)

## 3.4.1 Basic Approach

Based on the Fujifilm Group Green Policy, we are working to implement Design for Environment in all new and re-designed products. We set environmental quality targets at the product development stage, then we conduct product assessment in the design and development stage in order to understand the level of achievement against our set environmental targets. The assessment results and requirements from the market are then reflected in the targets for future product development. This approach is applied not only to the development of materials and standalone equipment, but also to software and solution development in a bid to reduce the environmental impact on society as a whole. Along with the objective and quantitative appraisal of environmental impact by means of Life Cycle Assessment, we proactively demonstrate our environmental consideration through environmental labels.

Development and promotion of environmentally conscious products and services
URL: https://www.fujifilmholdings.com/en/sustainability/vision/greenpolicy/eco_products.html

## 3.4.2 Standards of Design for Environment

The Fujifilm Group manages Design for Environment following the two standards below.

### 1) Design for Environment standard

- Materials and equipment

The Design for Environment for products considers the entire lifecycle of all products including procurement, manufacturing, transportation, use and disposal. We also set targets concerning environmental quality from the perspective of climate change mitigation (reduced power use, etc.), the Reduce, Reuse & Recycle principle of resource saving and recycling, risk reduction of chemical substances, and biodiversity. The degree of target achievement is then assessed once a product has been developed. All our products are developed through this cycle of Design for Environment.

- Software, Service, and IT Solutions

In the area of software and service solutions, our environmental focus is on resource conservation, energy conservation, transportation reduction, space saving, and time saving in customers' sites. We are working to create products that can contribute to environmental impact reduction throughout the whole of society.

### 2) Life Cycle Assessment (LCA)

The Fujifilm Group is developing products with less environmental impact through objective and quantitative environmental impact assessment utilizing Life Cycle Assessment (LCA) in the product development stage, in addition to implementation of the Design for Environment standards.

LCA is also used to assess the progress of efforts for the Group target, which is to reduce $CO_2$ emissions throughout the lifecycle of all Fujifilm Group products by 30% compared to FY2013 (reference year).

## 3.4.3 "Green Value Products" Certification Program – A New System to Create Environmentally Conscious Products

As a new means to create products with environmental consideration, the Fujifilm Group started the Fujifilm Group "Green Value Products" certification program in FY2018 to certify products incorporating outstanding environmental consciousness. The environmental consideration standards and their operation are made common across the group so that the degree of ecological performance improvement is quantified through the standards set for each product and service. The products and services are then classified as Silver, Gold, or Diamond to indicate the improvement degree. This also helps clarify the environmental issues to be addressed next for further reduction of environmental impact.

| Level | Certification criteria |
|---|---|
| Diamond | Products and services that use their respective industries' innovative technologies to substantially contribute to reducing environmental impact |
| Gold | Products and services that reduce environmental impact at their respective industries' highest level |
| Silver | Products and services that reduce environmental impact at their respective industries' standard level or greater |

## 3.4.4 Result of Design for Environment

<table>
<tr><td rowspan="2">Certification of the Fujifilm Group Green Value Products</td><td colspan="3">Number of certified products and services in FY2018: 92</td></tr>
<tr><td colspan="3">• Process-less CTP plates: Resource saving, closed loop recycling, water saving<br>• Inkjet digital press, VOC reduction by water-based ink, reducing paper usage, energy-savings<br>• High capacity magnetic tape: Contribution to $CO_2$ emissions reduction<br>• Document products (Multifunction devices and copiers): Resource recycling and energy saving in usage</td></tr>
<tr><td rowspan="5">$CO_2$ emissions reduction in the entire product lifecycle</td><td colspan="3">Target: Reduce $CO_2$ emissions in the entire product lifecycle by 30% by FY2030, compared to the FY2013 level.<br>FY2018 results: 331 thousand tons reduction Progress: 22%</td></tr>
<tr><td>Environmental effects</td><td>Product stages</td><td>Measures to reduce environmental impact</td></tr>
<tr><td>Managing chemical substances in products<br>Resource conservation<br>Recycling</td><td>Procurement<br>Disposal</td><td>• Elimination or reduction of potentially hazardous substances usage<br>• Usage of biomass materials (recyclable materials)<br>• Document products (Multifunction devices & copiers): Promotion of activities that aim to maximize resource reuse and recycling while eliminating resource disposal by collecting used products from customers. The percentage of used document product recycling in FY2018 was more than 99.5%, our Zero Landfill standard, and the figure in Japan was 99.9%. The reduced consumption of resources was 2,967 tons.<br>• Promotion of recycling of leftover aluminum from PS/CTP plate production, building and enhancement of used PS/CTP plate collection and recycling system (Graphics Systems business).</td></tr>
<tr><td>$CO_2$ emissions reduction in the production stage</td><td>Production stage</td><td>• Promotion of change of fuel from heavy oil to gas (Japan)<br>• Usage of methane gas generated from waste landfills (the US)<br>• Wind-power procurement (Netherlands)<br>• Installation of solar power generators (the US, UK, China, etc.)<br>• Development and installation of energy-saving technologies, such as waste heat and steam recycling (Production sites in Japan, Europe, the US, China, etc.)<br>• Reduction of energy not directly related to production, review of air conditioning operations, minimization of operating equipment, review of production process (production sites in Japan, Europe, the US, China, etc.)<br>• Wheeling self-generated power in the Group's factories to 15 sites (Japan)<br>• Reduction of peak consumption by utilizing storage batteries (Japan)<br>• Buying in renewable energy (Japan, etc.)</td></tr>
<tr><td>Logistic streamlining</td><td>Transportation</td><td>• Optimization of logistic routes<br>• Increase in loading efficiency<br>• Promotion of modal shift<br>• Weight reduction and downsizing of packaging<br>• Promotion of eco driving<br>• Component procurement through milk run (China)</td></tr>
<tr><td>Product energy saving, resource saving</td><td>Usage</td><td>• Multifunction (copying, printing, and fax) devices with reduced power consumption (Document)<br>• Energy-saving medical diagnosis equipment (Medical)<br>• Fully process-less CTP plates that do not require developer (Graphics Systems)</td></tr>
<tr><td rowspan="2">Environmental impact reduction in product usage at customers' sites</td><td colspan="3">Target: Contribute to 50 million tons $CO_2$ emissions reduction by FY2030.<br>FY2018 results: Contribution amount was 7.43 million tons. Progress: 15%</td></tr>
<tr><td colspan="3">• High capacity magnetic tape (energy saving in storing archival data)<br>• Process-less thermal CTP plates (no film development process)<br>• Multifunction devices (offering products and solutions)<br>• Medical IT systems</td></tr>
</table>

## 3.4.5 Disclosing Environment-Related Information for Products

The Fujifilm Group actively discloses environment-related data in order to fully inform our customers, while aiming to achieve higher environmental quality for all products.

### 1) Environmental Labels

The environmental labels indicate products with low environmental impact. We actively use the label as a part of environmental information disclosure. We use the following labels:

| | | |
|---|---|---|
| Type I:<br>Third party certification<br>(ISO14024) | A third party certifier defines and operates product classification and judgment criteria for environmental certification. In response to a company's request, the certifier examines the product and permits use of their mark if the product meets their criteria. The certified product can then display the mark, which encourages consumers to choose products that support environmental protection. | • Eco Mark<br>• Energy Star Program |
| Type II:<br>Self-declared environmental claims<br>(ISO14021) | This is a program by manufacturers to promote the environmental quality of their products, services, and systems to the market through self-declaration. No third-party judgment is involved. Environmental quality is demonstrated by labels attached to products and descriptions in instruction manuals, promotional materials, and CSR reports. | • Green Value Products<br>• Resource Recycling Product label<br>• PLATE to PLATE aluminum recycling label |
| Type III:<br>Environmental Product Declarations<br>(ISO14025) | Quantitative data about a product's environmental impact calculated by the Life Cycle Assessment (LCA) method is published by means of the Internet, etc. The data can be utilized by consumers for their green purchasing or procurement. The quantitative data can also help the company to understand their products' environmental impact quantitatively and thereby motivate themselves toward further environmental load reduction. | • EcoLeaf<br>• Carbon footprint |

### 2) Safety Data Seat (SDS)/Article Information Seat (AIS)

To ensure customers' safety when handling chemical and photographic products other than developer and related products, the Fujifilm Group publishes safety information on the chemical substances contained in the products and handling precautions.

# 3.5 Management of Chemical Substance

## 3.5.1 Basic Approach

Because the Fujifilm Group manufactures a wide range of products including chemical products, functional materials, optical devices, office equipment, and medical equipment, we have established management rules for the different assembly and manufacturing processes of our products from two perspectives: management of the handling of chemical substances and management of information on chemical substances in our products. We have implemented global operations management across the Group and we have established a system to acquire accurate information on the laws and regulations in each country and region around the world to start a prompt preparation in an early stage. This has allowed us to maintain comprehensive and efficient management of chemical substances.

## 3.5.2 Management of Chemical Substance

Based on international goals of minimizing the adverse effects of chemical substances on human health and the environment, the Fujifilm Group manages such substances according to the hazard risk and degree of permitted exposure during use. We assess the risks for all chemical substances handled, and stipulate handling methods within the permitted risk.

## 3.5.3 Safety Evaluation

It is important to assess the safety of chemical substances in order to handle them appropriately. Fujifilm built a facility to conduct safety tests on chemical substances in 1975. We evaluate safety in terms of the global environment and human health from the early development to commercialization of various chemicals, materials, and products. Using the Chemical Library where previous safety test results are stored, we utilize and employ materials of a high safety level developed in-house.

## 3.5.4 Promotion of Non-Animal Testing

From the viewpoint of animal welfare*, the Fujifilm Group is actively engaged in joint research and development in alternative methods for sensitization and corrosive tests to be used when assessing the safety of chemical substances. Our exclusive skin sensitization test, Amino acid Derivative Reactivity Assay (ADRA), was evaluated as skin sensitization more accurately than conventional methods and was included in the OECD Guidelines in June 2019. ADRA is now partially adopted for intra-company safety evaluations and we are also working to reduce the number of animal tests.

* 3Rs of animal protection (Replacement: Use of alternative method; Reduction: Reduction of the number of animals used; and Refinement: Relief of animal pain)

## 3.5.5 Management of Chemical Substances in Products

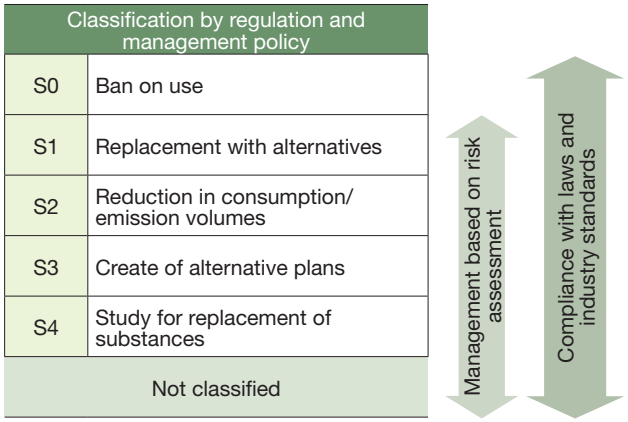
The Fujifilm Group has established standards for chemical substances contained in products and manages chemical substances in raw materials, parts, and members in collaboration with our business partners. We are taking a lead in initiatives in disseminating the mechanism of the chemSHERPA system, which distributes chemical substance information for products between companies. We have been participating since the creation of this system, and since it came into full operation we hold twice-yearly briefings for business partners. We individually respond to clients' consultations and contribute to improving chemical substance management throughout the supply chain.

## 3.5.6 Efforts in Hazardous Substance Management

The current chemical substance regulations permit usage of certain substances that may be regulated in the future, or those that may have a social impact. We voluntarily set up our own additional chemical substance classifications, defined as the "S category," to limit the usage of such chemical substances. For those substances classified within the S category due to their potential hazard level, each user department searches for safer alternative chemicals, and creates and implements plans to limit usage in products.

With regard to chemical substances contained in molded products, Fujifilm categorizes those restricted by laws and regulations as "L substances," and those for which we are obligated to transmit information by laws or industry standards as "I substances." This enables us to manage chemicals consistently in molded products made directly from chemical substances and in products comprising components and members that may contain specified substances.

New Classification Chart for Chemical Substance Management




## 3.5.7 Perfluorocarbons (PFC) Emissions/ Volatile Organic Compounds (VOC) Emissions

We are introducing measures to reduce perfluorocarbons (PFC), one of the greenhouse gases, according to the regulations in each country. We have set a target to reduce VOC emissions to less than half the previous year's level.

PFC and VOC Emissions

| | Unit | FY2014 | FY2015 | FY2016 | FY2017 | FY2018 |
|---|---|---|---|---|---|---|
| Direct PFC emissions | kg PFC/ metric tons produced | 0 | 0 | 1,257 | 62 | 112 |
| Direct VOC emissions | metric tons | 838 | 834 | 750 | 800 | 812 |

* Data coverage (ratio to total profit or total employees) is 100% of the production volume.
* PFC emissions data has been verified by a third-party organization, SGS Japan, Inc.; however, the production volume used in the calculations is out of certification.

### Response to the PRTR Law (Fujifilm and its domestic affiliates/Fuji Xerox and its domestic affiliates)

Fujifilm controls substances that must be reported under the PRTR Law (Pollutant Release and Transfer Register Law) and another substances on a voluntary basis, and has been endeavoring to reduce those emission. Data (usage volume, atmospheric emissions volume, emission into public water, volume going into sewage water, volume moved outside of facilities, and volume recycled) on substances used in amounts of one ton or more per year by Fujifilm and its domestic affiliates may be found on the following Fujifilm website.

URL: https://www.fujifilm.co.jp/corporate/environment/preservation/site/atmosphere/prtr.html (in Japanese only)
URL: https://www.fujixerox.com/eng/company/csr/sr2018/environment/reduce.html

Annual Changes in Atmospheric Emissions of VOCs

Unit: hundred tons/year

| | FY2014 | FY2015 | FY2016 | FY2017 | FY2018 |
|---|---|---|---|---|---|
| Japan | 6.8 | 6.5 | 5.9 | 6.4 | 6.4 |
| Overseas | 1.6 | 1.8 | 1.6 | 1.6 | 1.7 |
| Group total | 8.4 | 8.3 | 7.5 | 8.0 | 8.1 |

Storage and Management of Devices/Equipment Containing PCBs* (FY2018)

| Types of equipment containing PCBs | Unit | Storing and managing amount | |
|---|---|---|---|
| | | Japan | Group total |
| High voltage transformers | Quantity | 8 | 25 |
| High voltage condensers | Quantity | 0 | 90 |
| PCB oil waste, etc. | kg | 1,000 | 1,000 |
| Sludge, etc. | $m^3$ | 0.0 | 0.0 |
| Fluorescent lamp stabilizers | Quantity | 12,821 | 12,871 |
| Low voltage condenser excluding fluorescent lamps | Quantity | 116,947 | 116,947 |
| Low voltage transformer | Quantity | 0 | 0 |
| Rags | kg | 973 | 973 |
| Other devices | Quantity | 121 | 121 |

*Excludes PCB in low concentration URL: https://www.fujifilm.co.jp/corporate/environment/preservation/site/pcb.html (in Japanese only)

Reductions in VOCs Atmospheric Emissions* (Fujifilm non-consolidated)

| Category | Name of substance | Reduction (tons) | Reduction rate in comparison to previous fiscal year (%) |
|---|---|---|---|
| Substances requiring reporting under the PRTR Law | Dichloromethane | 4 | 9 |
| Substances voluntarily controlled by the company | Methyl alcohol | 4 | 3 |
| | Ethyl acetate | 17 | 15 |
| | Methyl ethyl ketone | 8 | 22 |
| | Acetone | 0 | -1 |

*Reduction in volumes in FY2018 compared with actual levels in previous year

Annual Changes in Volume of Atmospheric Emissions

Unit: tons/year

| | | FY2014 | FY2015 | FY2016 | FY2017 | FY2018 |
|---|---|---|---|---|---|---|
| Sox emissions | Japan | 22 | 9 | 19 | 15 | 19 |
| | Overseas | 6 | 10 | 2 | 3 | 3 |
| | Group total | 28 | 19 | 21 | 18 | 22 |
| NOx emissions | Japan | 394 | 424 | 369 | 290 | 232 |
| | Overseas | 61 | 78 | 86 | 111 | 94 |
| | Group total | 455 | 502 | 455 | 401 | 326 |
| Soot particle emissions | Japan | 4.2 | 3.1 | 2.3 | 2.4 | 1.8 |
| | Overseas | 1.0 | 4.2 | 1.0 | 1.8 | 3.3 |
| | Group total | 5.2 | 7.3 | 3.3 | 4.2 | 5.1 |
| Atmospheric emissions of specified CFCs* | CFC-11 | 0.21 | 0.21 | 0.00 | 0.16 | 0.00 |
| | CFC-12 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 |

*Group total, below the limit of detection = 0

Annual Changes in Water Contaminant Burden & Emissions*1

Unit: tons/year

| | | FY2014 | FY2015 | FY2016 | FY2017 | FY2018 |
|---|---|---|---|---|---|---|
| Total amount of COD*2 | Japan | 82.3 | 82.1 | 69.0 | 54.5 | 67.1 |
| | Overseas | 57.0 | 67.3 | 55.5 | 49.6 | 27.2 |
| | Group total | 139.3 | 149.4 | 124.5 | 104.1 | 94.2 |
| Total amount of BOD*3 | Japan | 38.5 | 37.1 | 30.2 | 24.3 | 26.8 |
| | Overseas | 10.1 | 16.6 | 0.5 | 0.1 | 0.6 |
| | Group total | 48.6 | 53.7 | 30.7 | 24.4 | 27.4 |
| Total amount of nitrogen emissions | Japan | 223.3 | 232.3 | 170.9 | 181.7 | 167.2 |
| Total amount of phosphorous emissions | Japan | 5.3 | 4.2 | 1.4 | 2.7 | 1.8 |

*1 Effluent release into public water bodies
*2 COD (Chemical Oxygen Demand): An indicator of water pollution. COD indicates the amount of oxygen consumed when water-borne pollutants (primarily organic contaminants) are oxidized upon the introduction of an oxidant.
*3 BOD (Biochemical Oxygen Demand): BOD is a way to measure the degree of water pollution, and indicates how much oxygen in the water is being used by organisms to decompose contaminants by looking at the reduction in oxygen in the water.

### Surveying and remediating soil and underground water pollution (Fujifilm and its domestic affiliates/Fuji Xerox and its domestic affiliates)

The Fujifilm Group autonomously conducts environmental surveys on soil and underground water pollution. Regarding substances that are used at manufacturing facilities and that are subject to environmental limits set by regulations, the Group rigorously manages the usage and storage of such substances and monitors the concentrations of such substances in underground water. We are prepared to deal with any unforeseen pollution incidents in a timely fashion.

URL: https://www.fujifilm.co.jp/corporate/environment/preservation/site/leakage/ (in Japanese only)
URL: https://www.fujixerox.co.jp/company/csr/stakeholder/environment/target.html (in Japanese only)