# Environment

The Asahi Kasei Group will contribute to the achievement of a carbon neutral and sustainable world by reducing the environmental impact of our business activities and improving the environment around the world through our businesses.

### Environmental Management

We have established a group-wide management system in recognition of environmental initiatives as important management tasks.

### Climate Change

We implement measures that deal with climate change by reducing greenhouse gas emissions and developing innovative technologies.

### Pollution and Natural Resources

We strive to use natural resources and energy efficiently throughout the entire life cycle of our products, as well as achieve resource circulation in society.

### Water Resource Preservation

We strive to enhance water use efficiency in our business activities while contributing to the conservation of water resources worldwide.

### Biodiversity

We work towards the sustainable use of biological resources in our business activities while taking biodiversity into account.

### Environmental Contribution Products

We define products that help improve the environment throughout their entire life cycle as environmental contribution products, and we are making efforts in this area.

# Environmental Management

## Policy

As expressed in our Group Vision that includes "harmony with the natural environment," the Asahi Kasei Group places high priority on environmental initiatives. The Group Policy regarding global environmental measures is shown below.

### The Asahi Kasei Group's Global Environmental Policy

#### 1. Building a low-carbon society

(1) Taking into account Japan's Plan for Global Warming Countermeasures and Nippon Keidanren's "Proposal on Japan's long-term growth strategy under the Paris Agreement," the Asahi Kasei Group aims for greenhouse gas emissions related to its business activities to meet reduction targets by 2030.

(2) The Asahi Kasei Group will promote energy conservation across the full range of our business activities with the aim of preventing global warming and conserving limited resources.

(3) The Asahi Kasei Group will develop a plan to reduce $CO_2$ (Scope 3) emissions from its supply chain.

(4) The Asahi Kasei Group will help create a low-carbon society incorporating our proprietary technologies, contributing to the reduction of global greenhouse gas emissions by providing products, technologies, and services to the global market.

#### 2. Preserving water resources

The Asahi Kasei Group will contribute to preserving global water resources through our water purification membrane module business, water recycling service business, and the sale of water quality monitoring equipment and wastewater treatment products. It will measure the quantity of its water intake while striving to maintain and improve the efficiency of its water usage.

#### 3. Recycling

The Asahi Kasei Group will promote the reduction of environmental impacts and the efficient utilization of resources and energy throughout the entire life cycle in its business activities in order to contribute to a circular economy. Specifically, it will promote the 3Rs of reduction, reuse, and recycling, and increase the usage of resources and energy with lower environmental impacts as well as renewable resources and energy.

### 4. Achieving harmony with nature

The Asahi Kasei Group will give due consideration to the conservation of natural capital and biodiversity, and promote the reduction of environmental impacts of its business activities. We will also monitor and carefully manage our use of land and biological resources.

### 5. Overseas plants

The Asahi Kasei Group will create monitoring items that enable environmental management practices equivalent to those at its plants in Japan.

### 6. Supply chain

The Asahi Kasei Group will proactively collaborate with members of its supply chain to undertake the abovementioned activities.

## Management framework

The Group's global environmental measures are part of our Responsible Care program, and we have established a management system based on ISO 14001 requirements.
See below for the Responsible Care (RC) promotion framework.

› Asahi Kasei Group's Responsible Care Program

## Targets and results

Based on the Asahi Kasei Group's Global Environmental Policy, we promote activities with the following indicators and targets. Regarding climate change measures, we have set greenhouse gas reduction targets to be met by fiscal 2030.

### Quantitative indicators and targets of global environmental measures

#### 1. Low-carbon society

**GHG emissions**

By 2050, carbon neutral
By 2030, emissions reduction of 30% or more (from fiscal 2013)

**Clean power generation**

Maintain use of biomass fuel at 60% or more by energy content in mixed combustion at the biomass power plant in Nobeoka

### 2. Energy management target

**Management target**

Improve unit energy consumption by an annual average of at least 1% over a 5-year period

### 3. Water resource preservation activity target

Our target is shown in the response to question W8.1a of the CDP Water Security Questionnaire 2021 posted on the Water Resource Preservation page.

› Click here to read our response concerning CDP Water Security 2021 (353.8KB)

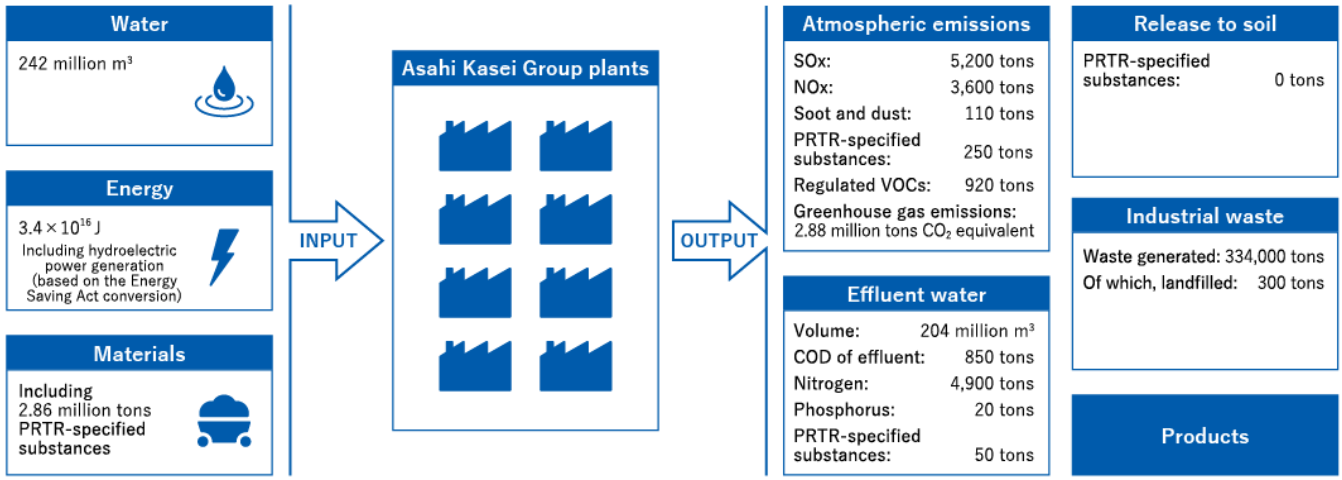
Concerning water resources, we are considering setting a new target.

Details of activities and achievements for fiscal 2020 are posted here.

› FY2020 Responsible Care Targets and Achievements

## Environmental impacts

The diagram below describes the environmental impacts of business activities at Asahi Kasei Group plants.




**Asahi Kasei Group (domestic) Main Environmental Impacts (FY2020)**

## Violations of Environmental Laws and Regulations, Fines, etc.

There were no violations or fines related to environmental laws and regulations in fiscal 2020.

# Climate Change

Responding to Climate Change | Disclosure based on TCFD Recommendations

› Click here to read our response concerning CDP Climate Change 2021 (589.3KB)

## Asahi Kasei Group's Carbon Neutrality Policy

In accordance with its Group Mission, the Asahi Kasei Group is committed to contributing to life and living for people around the world. The Asahi Kasei Group has long been aware that climate change is a global issue that will have a significant impact on both the natural environment and society, and we see it as our mission to use the scientific expertise we have cultivated since our founding to deal with this issue leveraging our combined strength.
In May 2021, the Asahi Kasei Group adopted a new policy for carbon neutrality.

### Greenhouse gas (GHG) emission targets for the Asahi Kasei Group

**2050** : Carbon neutral

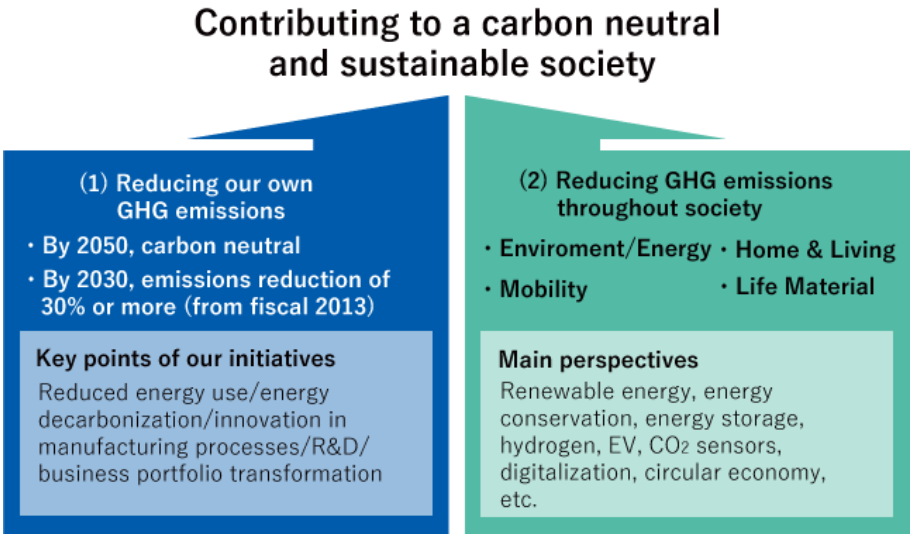
**2030** : Emissions reduction of 30% or more (from fiscal 2013)*

* Scope 1 (direct GHG emissions) and
Scope 2 (indirect emissions use of electricity, heat, and steam supplied by other companies), absolute quantity

While our former target was to reduce GHG emissions relative to sales (emissions intensity), we have changed to an absolute reduction target to clarify our path toward the goal of becoming carbon neutral.

### Initiative Policy

In addition to reducing GHG emissions from our own business activities, we believe that it is also important to help to reduce GHG emissions in society through our diverse array of technologies and businesses to deal with climate change. In April 2021, we launched a Green Solution Project reporting directly to the President, and we are working to create new businesses for a carbon neutral society.
Regarding "Care for Earth," we are committed to addressing climate change issues group-wide, both in terms of (1) reducing the amount of GHGs emitted by our own business activities and (2) helping to reduce GHGs throughout society through our businesses and technologies.



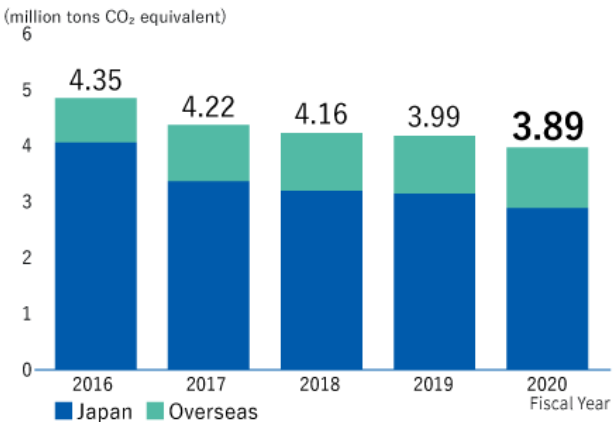

Key Points of Effort for Carbon Neutrality

- Asahi Kasei Group Responsible Care Principles
- The Asahi Kasei Group's Global Environmental Policy

## Reducing GHG Emissions

### Scope 1 and 2 GHG emissions

All production sites (excluding sites of Sage Automotive Interiors, Inc. outside North America) of Asahi Kasei Corp. and its consolidated subsidiaries under management control are subject to calculation of Scope 1 and Scope 2 GHG emissions of the Asahi Kasei Group, and GHG emissions from generation of electricity and steam sold outside the Asahi Kasei Group are included.
In fiscal 2020, our Scope 1 GHG emissions were 2.99 million tons of $CO_2$-eq, and Scope 2 GHG emissions were 0.9 million tons of $CO_2$-eq, bringing the total of Scope 1 and 2 to 3.89 million tons of $CO_2$-eq. This is a reduction in GHG emissions of approximately 24% compared to the 5.11 million tons of $CO_2$-eq released in the baseline year of 2013.

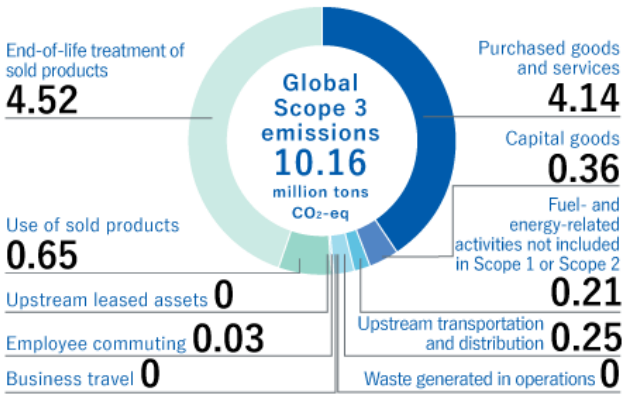



GHG emissions

- Global greenhouse gas emissions by segment (ESG Data)
- Overseas greenhouse gas emissions by fiscal year (ESG Data)

### Global Scope 3 emissions

The domestic Japanese portion of Scope 3* emissions has been calculated for all operations except for companies with insignificant emissions. In fiscal 2017 we began including Scope 3 emissions of overseas operations in our calculation.




Global GHG emissions

* Scope 3 emissions: Greenhouse gases emitted indirectly by a company throughout its supply chain. The methods for calculating Scope 3 emissions from Category 1 is described in Environmental data.

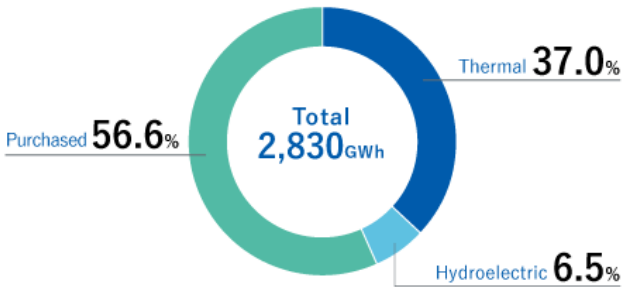
› Scope 3 emissions by fiscal year (ESG Data)

## Efforts to Reduce $CO_2$ Emissions

### Renewable energy

The Asahi Kasei Group has 9 hydroelectric power generation plants in the Nobeoka Region, which provided approximately 6% of the total electricity we used both in Japan and overseas in FY2020. Generation of the equivalent amount of power at thermoelectric plants would result in approximately 80 thousand tons* of $CO_2$ emissions annually.
Furthermore, our biomass power generation facility in Nobeoka started operation in August 2012.

* Using Japan's Ministry of Economy, Trade and Industry and Ministry of the Environment standard of 445g $CO_2$/kWh.




Electricity sources, FY2020 (global)

## Using Renewable Electricity in the Homes Business

As part of its efforts to address climate change, Asahi Kasei Homes joined the RE100 Initiative on September 10, 2019, aiming to achieve sustainable urban living with both decarbonization and resilience.
Asahi Kasei Homes is targeting procurement of 100% of the electricity consumed by for its business activities from renewable energy sources, and is on track to achieve this in 2025, significantly sooner than the initial outlook of 2038.

## Domestic energy saving in logistics

The Asahi Kasei Group promotes environmentally friendly railway shipment.
Product shipments for our operations in Japan amounted to some 1.1 billion ton-kilometers in fiscal 2020—an 7% decrease from fiscal 2019—generating approximately 88 thousand tons of $CO_2$ emissions—a 1% increase. In cooperation with the transport firms contracted for shipment, a wide range of measures are employed to reduce energy consumption and alleviate the environmental effects of physical distribution.
We have received Eco-Rail Mark certification in recognition of our preferential shipment of products by rail, an ecological mode of transport which results in lower $CO_2$ emissions for a given weight and distance than many other means of transportation.

The Eco-Rail Mark

- $CO_2$ emissions from product shipment (ESG Data)

## Domestic promotion of low emission vehicles

The Asahi Kasei Group is phasing in low-pollution vehicles for use in marketing and within plant grounds. In fiscal 2020, some 95% of company-owned vehicles were low-pollution vehicles.

- Low-pollution vehicles (ESG Data)

## Asahi Kasei green bond

Please see here for more details.

- Asahi Kasei green bond (218.0KB)
- Annual Reporting (fiscal 2020) (96.1KB)

# Climate Change

Responding to Climate Change | Disclosure based on TCFD Recommendations

## Climate Change Initiatives (Disclosure based on TCFD* Recommendations)

Carbon dioxide emissions have increased significantly since the industrial revolution, and in particular during the 20th century with its major population growth. The global scientific consensus is that carbon dioxide accumulation is causing climate change. The climate change is progressing slowly but steadily, and we recognize that worldwide cooperation and the implementation of specific measures to address it is an urgent issue.

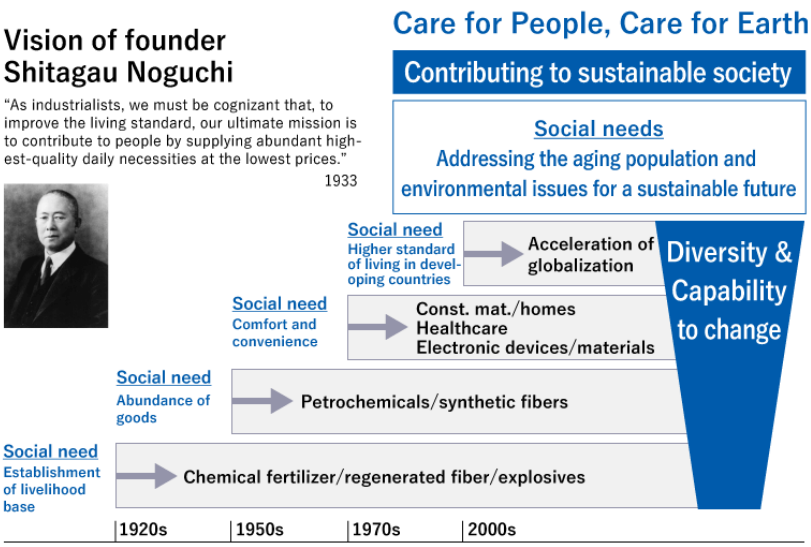
In the century since our founding, we have developed our business in response to the needs of society. Now that climate change measures have become a social necessity, we are committed to Care for Earth as part of our management strategy to contribute to the global environment.

As the impact of climate change on business is of great concern to investors and other related parties, companies need to be clear about its potential impact and maintain an ongoing dialogue with them.

Based on the framework provided by the TCFD recommendations, we examined the shifts that are expected to occur as a result of climate change and their impact on our businesses from various perspectives in the business sectors of Material, Homes, and Healthcare. As a result, although the financial impact of climate change is expected to be significant in the medium term, the financial risk to the company as a whole was found to be limited due to a diversified business portfolio that mitigates risk and creates opportunities. We also identified the potential to benefit from these new opportunities through our various businesses and technologies.

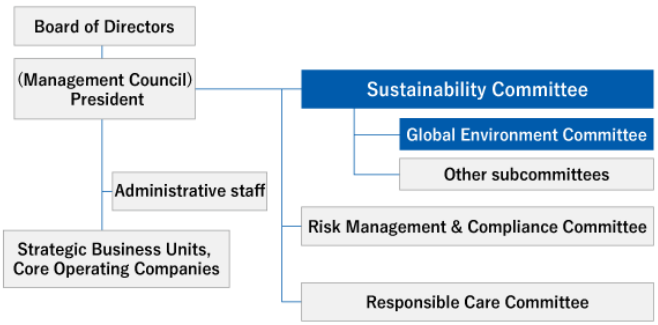
We will contribute to the realization of a sustainable society, making further effort to be an organization in harmony with the environment while reducing the risk of climate change and developing new business opportunities through adapting mitigation measures.

* TCFD: Task Force on Climate-related Financial Disclosures, established and announced by the Financial Stability Board (FSB) in 2017.



## Governance

Measures to tackle climate change are an important management issue and we consider it one of the central themes of our management strategy. In our current Medium-term Management Initiative, "Care for Earth" is one of the pillars along with "Care for People." The progress of their implementation is discussed at the Management Council and the Board of Directors.
For example, to reduce GHG emissions from our business activities, in May 2021, the Board of Directors decided to target emissions reduction by 30% or more by 2030 compared to fiscal 2013, and it set the goal of becoming carbon neutral (effectively zero emissions) by 2050. As important as reducing our own GHG emissions is reducing global GHG emissions by tens of billions of tons. We contribute to this through a system that promotes environmentally friendly products that do extremely well in life cycle assessments (LCA).
To accurately identify climate change issues group-wide and discuss countermeasures, the President chairs a Sustainability Committee to discuss related issues. In addition, the Executive Officer for Technology Functions heads the Global Environment Committee—a related subcommittee—to hold more thorough discussions on the global environment. Details concerning implementation from the Sustainability Committee are reported to the Board of Directors.




Sustainability Committee

- A venue to discuss Environmental, Social, and Corporate Governance (ESG) in general, including climate change
- Chair: Asahi Kasei President, Committee members: Executive Officer for Technology Functions, Executive Officer for Business Management Functions, Executive Officers for the 3 business sectors

Global Environment Committee

- A venue to discuss issues of climate change and plastic waste
- Chair: Executive Officer for Technology Functions, Committee members: Presidents of SBUs, Senior General Manager of the Production Center, Senior General Manager of Corporate Production Technology, Senior General Manager of Corporate Research and Development, etc.

## Strategies: Analysis of Opportunities and Risks

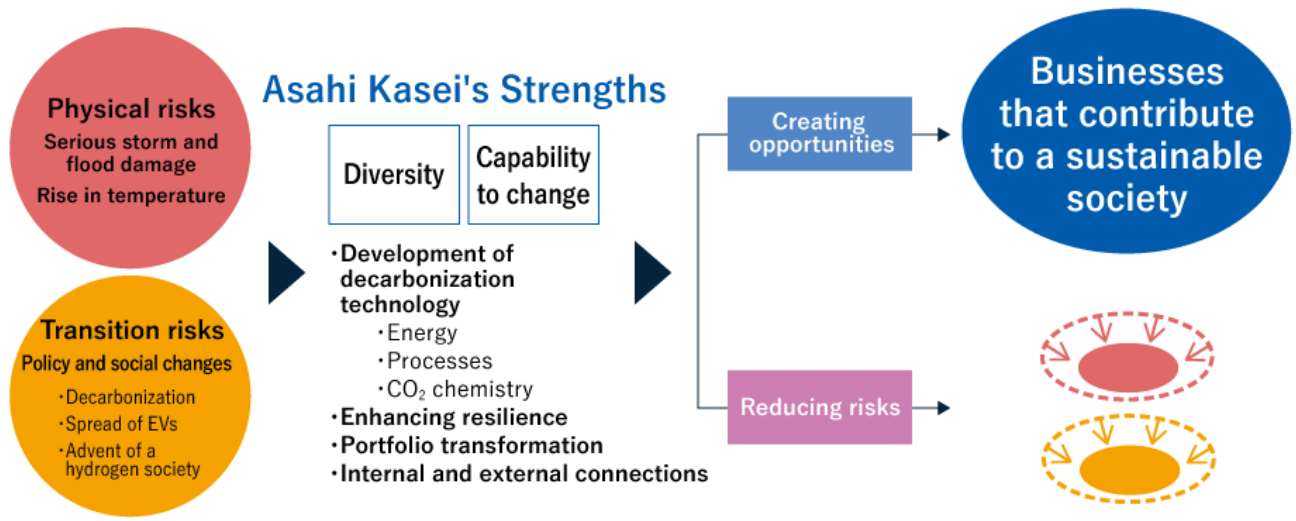
■Underlying assumptions
A variety of scenarios could unfold regarding climate change depending on the implementation of prevention measures. We examined two standard scenarios, one where average global temperature rises by 4° C, and one where it rises by less than 2° C. Without sufficient steps to curb global warming, global temperatures rising by 4° C we consider a "physical risk" involving intense heat and severe storms. A scenario where the temperature rises by less than 2° C we consider a "transitional risk." It would involve social changes geared toward curbing global warming including technological innovation and tightened regulations.
For each of these, we referred to various documents and examined the impact on the business from a 2050 perspective in the business sectors of Material, Homes, and Health Care.
The Asahi Kasei Group's growth model adapts its business portfolio in response to the business environment, reducing risks from climate change and maximizing opportunities through changes to our portfolio. In this analysis, in keeping with the intent of TCFD's recommendations, we show that the current state of our business would be at risk in light of the view from 2050.

| Opportunities | | | |
|---|---|---|---|
| | **Important changes** | **Main opportunities** | **Principal initiatives** |
| **Global temperatures rising by 4° C** | Serious storm and flood damage | ・Increasing need for disaster-resilient housing | Greater emphasis on resilience in housing building and urban development<br>・Hardware/software<br>・Unit homes/community |
| | Higher incidences of heat stroke and infectious diseases | ・Increased demand for existing medicines, new medicines, and the critical care business | ・Provision of emergency medicines and medical equipment for infectious diseases and heat stroke<br>・Provision of consumables, equipment, and services for biopharmaceutical manufacturing processes |
| **Global temperatures rising by less than 2° C** | Decarbonization | ・Promotion of the spread of Net Zero Energy Houses (ZEH)* through government policies | ・Decarbonization of homes and communities |
| | Spread of electric vehicles (EVs) | Increase in EV-related demand<br>・Battery components<br>・Materials for reducing vehicle weight | ・Provision of components and systems for next-generation mobility<br>・Strengthening of collaboration with automobile and battery manufacturers |
| | Advent of a hydrogen society | ・Increased demand for water electrolysis that utilizes renewable energy | ・Utilization of alkaline water electrolysis system |

* ZEH: Houses with a net energy consumption of zero or less as a result of advanced insulation and energy saving combined with power generation such as solar

| Risks | | | |
|---|---|---|---|
| | Important changes | Main risks | Principal countermeasures |
| Global temperatures rising by 4° C | Serious storm and flood damage | "Physical" production risks<br>・Suspension of production due to plant damage<br>・Disruption of raw material supply network due to suppliers suffering from disasters | ・Continuous revision of BCP and reinforcement of preemptive response (review inventory levels, consider switching to multiple suppliers/locations, etc.) |
| | Rise in temperature | "Human" production risks<br>・Deterioration of working environment and productivity at construction sites | ・Promotion of industrialization and utilization of IT in housing construction |
| Global temperatures rising by less than 2° C | Decarbonization | ・Rise in cost due to stricter regulations*<br>(manufacturing and raw material costs)<br>・Changes in materials needs<br>(decarbonization requirements, necessary specifications) | ・Expansion in utilization of renewable energy, etc.<br>・More efficient energy use; development and commercialization of industrial processes for decarbonization<br>・Decarbonization of raw materials |

* Example: If the amount of GHG emissions in FY2020 is approximately 4 million tons, and this is multiplied by a carbon tax of 10,000 yen/t, this would total approximately ¥40 billion per year.




What we are aiming for

## Risk management

In the annual review of our Medium-term Management Initiative, we consider the climate-related opportunities and risks for each of our businesses, and then assess and address the situation group-wide. A sustainable perspective that includes climate change is one of the decision-making criteria we use when determining our business portfolio, including the allocation of management resources.
We also confirm the sustainability of capital investments as they relate to GHG emissions.
Regarding our emissions performance, the emissions of the entire Asahi Kasei Group are calculated once per year. Progress towards our goals is managed by the Sustainability Committee and the Board of Directors.

## Metrics and goals

Our GHG emissions goal and target are as follows.

By 2050, carbon neutral
By 2030, emissions reduction of 30% or more (from fiscal 2013)
Even in the midst of the COVID-19 pandemic, there was no significant reduction in global GHG emissions. Because we believe we must further accelerate our efforts to achieve a sustainable society, we announced a new GHG emissions target on May 25, 2021 and switched our target from one based on emissions intensity (emissions/sales) to one based on a reduction in absolute emissions. Besides reducing GHG emissions from our own business activities, we believe that it is important to help reduce GHG emissions throughout society using our diverse array of technologies and businesses, and we will make group-wide efforts to deal with global warming.

› Please refer to our "Reducing GHG Emissions" for changes in GHG emissions.

# Pollution and Natural Resources

## Policy

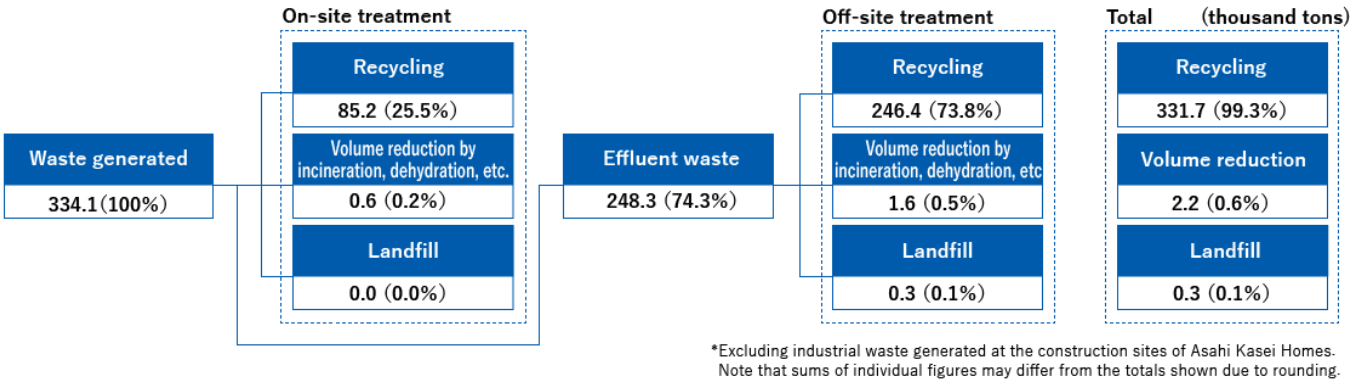
Recycling is a major plank of the Asahi Kasei Group's Global Environmental Policy, and we work to efficiently utilize resources and energy and to reduce the environmental burden throughout the entire life cycle in our business activities. In order to contribute to a circular economy, we have worked to reduce industrial waste, reduce the burden of chemical substances, prevent air and water pollution, and use resources effectively.
We are also contributing to the creation of a circular economy to achieve a carbon neutral and sustainable world as part of our focus on Care for Earth, under our "Cs+ for Tomorrow 2021" medium-term management initiative (fiscal 2019–2021).

› Sustainability Vision - Asahi Kasei Group Vision > Sustainability with a View Toward 2050

## Reducing industrial waste

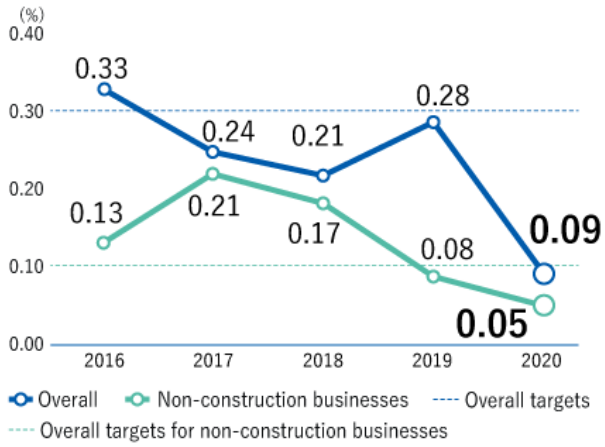
The Asahi Kasei Group is working to reduce the amount of industrial waste for final disposal through the "3-Rs" of reduction, reuse, and recycling.
In fiscal 2020, 334.1 thousand tons of industrial waste was generated, of which 34.7 thousand tons was specially managed industrial waste.
We adopted targets of (1) an overall final disposal rate of 0.3% or less and (2) a final disposal rate for non-construction companies of 0.1% or less of the total amount of industrial waste generated. As a result, we achieved our overall 2020 targets, with a final disposal rate of 0.1% and a final disposal rate for non-construction companies of 0.1%. We will continue to promote the reduction of final disposal rates through sorting and the selection of disposal sites.
We have also worked towards the goal of zero landfill waste plastic by fiscal 2021, and we have already reduced it to zero tons as of fiscal 2020, thus achieving our fiscal 2021 goal.
Waste containing PCBs* is stored under strict control in stainless steel vessels. Plans for disposal are advancing, including for waste with minimal amounts of PCBs. We are also systematically advancing plans to identify the electrical equipment currently in use that contains PCBs, and to implement early replacement.
We enhanced our management of off-site treatment of industrial waste by expanding the use of electronic manifests. We also performed periodic on-site inspections of consigned firms to ensure that proper treatment is performed in accordance with sound systems of control.

* PCBs(polychlorinated biphenyls) are persistent and pose a risk to the living environment and human health. Their manufacture and use are essentially prohibited in Japan.

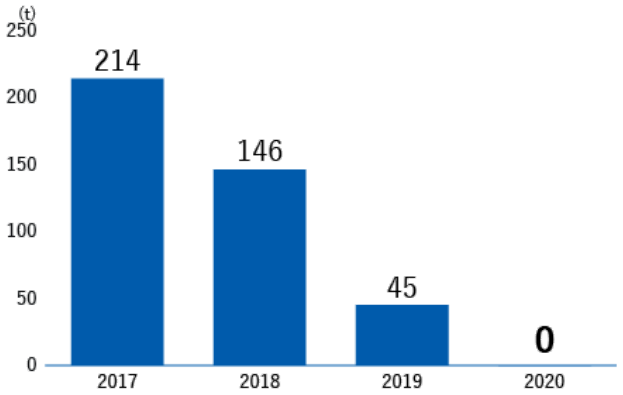



*Excluding industrial waste generated at the construction sites of Asahi Kasei Homes.
Note that sums of individual figures may differ from the totals shown due to rounding.

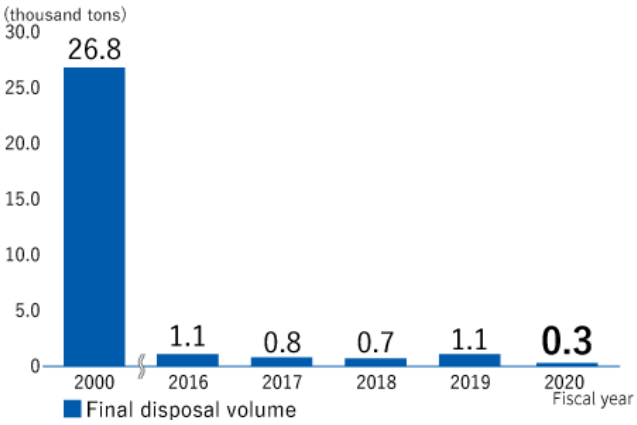
FY2020 flow of industrial waste




Final disposal rates (overall, non-construction-related)




Landfill volume of plastic waste



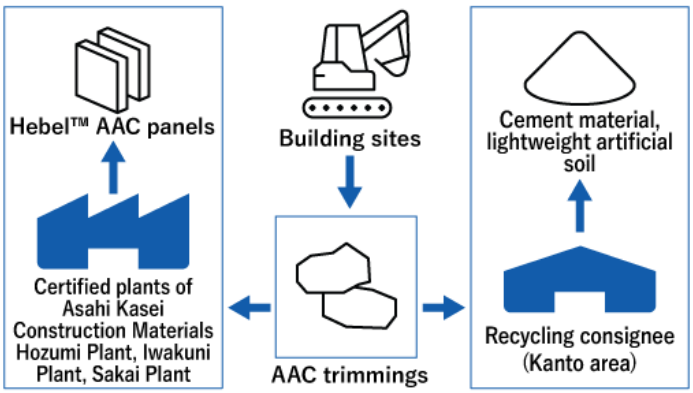

Final disposal volume


FY2020 final disposal by category of waste*

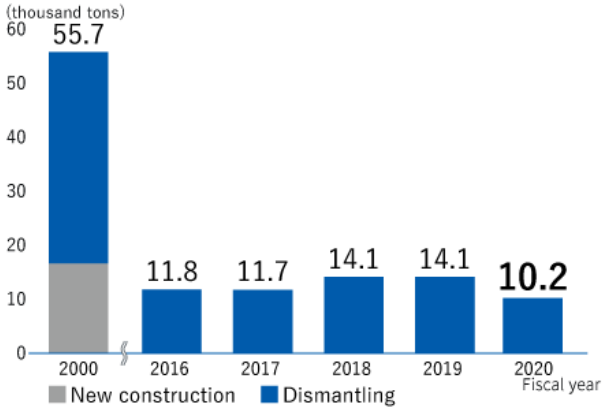
* Excluding waste generated at the construction sites of Asahi Kasei Homes

## Reducing industrial waste from construction materials and housing businesses

Asahi Kasei Construction Materials recycles trimmings of Hebel™ autoclaved aerated concrete (AAC) panels in its own plants and others, utilizing its certification for "wide-area recycling"* which permits the transport of waste from different construction sites. Asahi Kasei Homes is also reducing the volume of waste as well as implementing sorted waste collection at housing construction sites. With these measures, waste for final disposal has been reduced to zero at new construction sites.




Recycle flow for trimmings of Hebel™ AAC panels

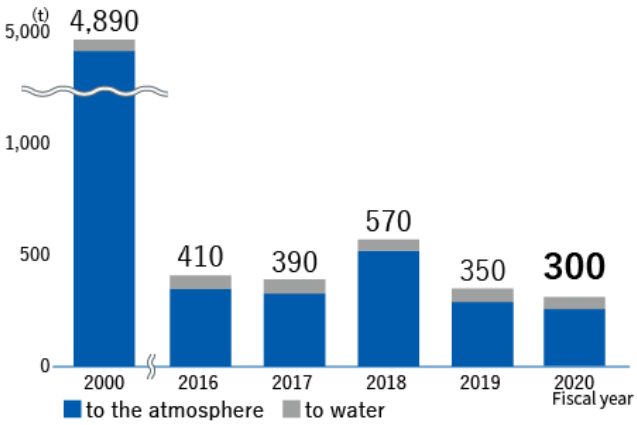



Final disposal industrial waste generated at construction sites

* Certificate for wide-area recycling: For certain parties, who perform recycling in a wide-area, Japan's Minister of the Environment eliminates the need to obtain separate waste transport permits for each local area.The system was established to promote further recycling of industrial waste.

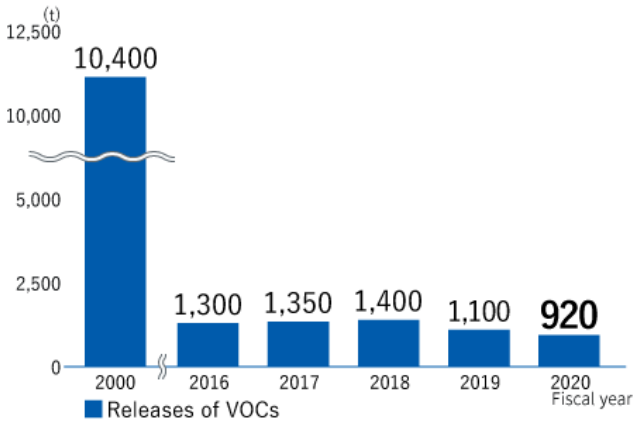
## Reducing emissions of chemical substances

The Asahi Kasei Group works to reduce the release of chemicals substances specified in the PRTR[1] Law and other chemical substances which we have voluntarily designated for reduction with priority based on the degree of hazardousness and amount of release. As shown in the graphs below, releases of PRTR-specified substances and VOC[2] emissions were reduced by 94% and 91%, respectively from fiscal 2000. We will continue to enhance control of operation and equipment to prevent any accidental release.




Notes:
・No releases to soil.
・The number of PRTR-specified substances changed in FY2010 due to a regulatory revision.

Releases of PRTR-specified substances



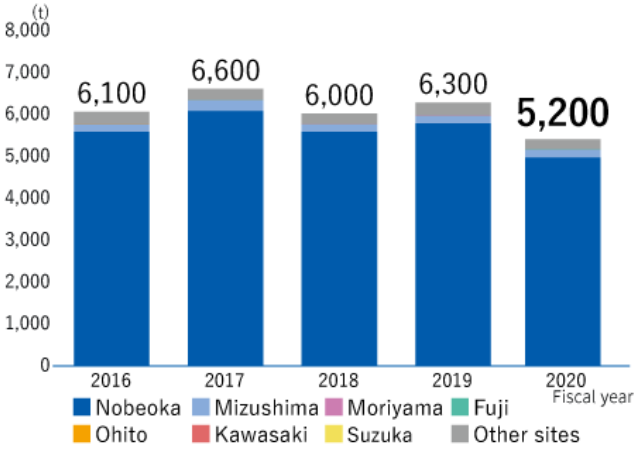

Releases of VOCs

1 PRTR : Pollutant release and transfer register. Under the PRTR Law, releases to the environment and off-site transfers of specific hazardous chemical substances must be monitored and recorded for each production facility and operating site. Results are reported to the government, which publishes aggregated results.

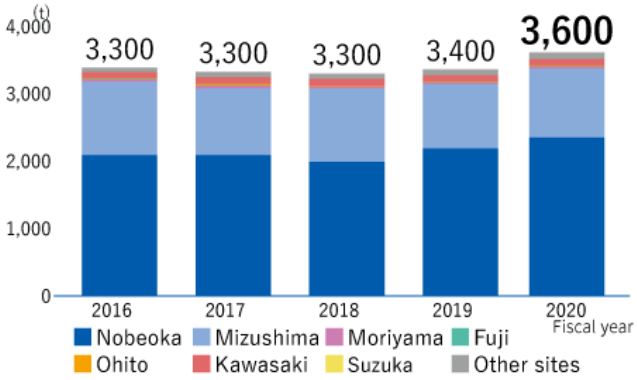
2 VOC : Volatile organic compound. Although the term generally applies to any organic compound which is in gaseous state at the time of release, regulations for the control of their release exclude methane and some fluorocarbons which do not form oxidants.

## Air pollution

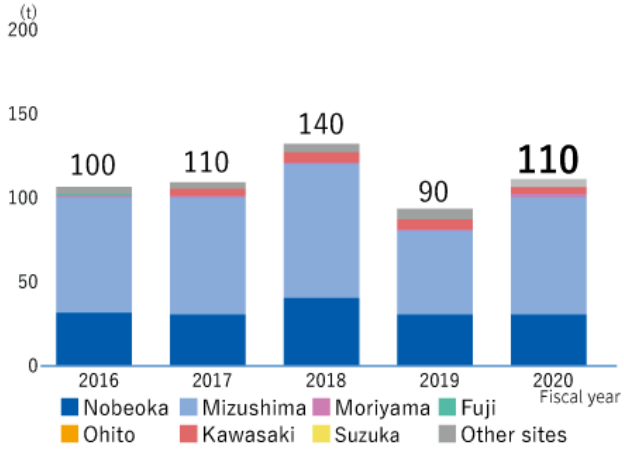
The Asahi Kasei Group works to control emissions and prevent spills in order to avoid the pollution of air, water, soil, and groundwater. Measures to prevent noxious odors include the installation of exhaust gas absorption equipment and increasing the capacity of our wastewater treatment facilities. To prevent soil pollution, we perform tests and take appropriate measures in accordance with the Soil Contamination Countermeasures Act and related regulations. Substances covered by the Air Pollution Control Act are managed within regulatory standards.




SOx emissions




NOx emissions




Soot and dust emissions

## Effective resource use

As indicated by the Osaka Blue Ocean Vision at the G20 summit in 2019, the issue of marine plastic waste will require global cooperation to solve. In order to understand how marine microplastics are generated, we are working in collaboration with Kyushu University and participating in awareness-raising activities with industry groups dealing with proper use and disposal of plastics. It is important to make effective use of used plastic resources, so we also promote the 3Rs (Reduce, Reuse, Recycle).

## Initiative for Achieving a Circular Economy

As part of our sustainability efforts, which are symbolized by the SDGs (Sustainable Development Goals), we are working with academia and other companies to achieve a circular economy.
For the material recycling of polyethylene, we have launched the "BLUE Plastics" project* with the technical support of IBM Japan, Ltd. We are striving to make a circular economy a reality through collaboration with recycling company Toyama Kankyo Seibi; Mebius Packaging Co., Ltd., which specializes in molding and final product processes; and brand owner Lion Corporation.


* Overview of the "BLUE Plastics" Project
The "BLUE Plastics" project was launched by Asahi Kasei Corp. to create a digital platform that promotes resource recycling. IBM Japan will support the construction of the digital platform by utilizing blockchain technology that runs on the IBM Cloud. Blockchain technology is an irreversible database technology that maintains a continuous record of operations, which ensures traceability as it is accessible to all parties involved and cannot be altered. Toyama Kankyo Seibi, Mebius Packaging Co., Ltd., and Lion Corporation, which together specialize in the collection, pelletizing, molding, and conversion of waste into final products, will collaborate using IBM Japan's blockchain technology to accelerate the achievement of a circular economy.

# Water Resource Preservation

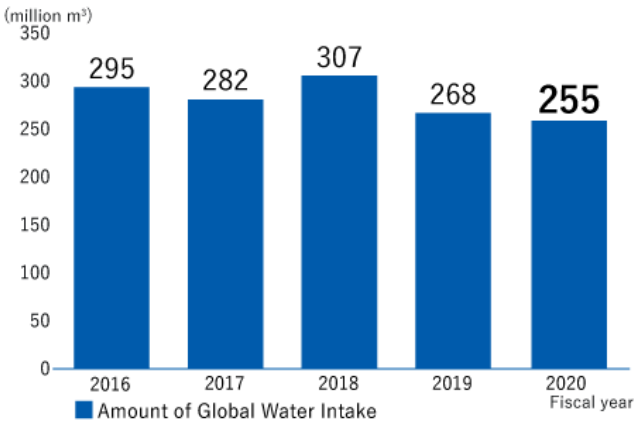
› Click here to read our response concerning CDP Water Security 2021 (353.8KB)

## Policy

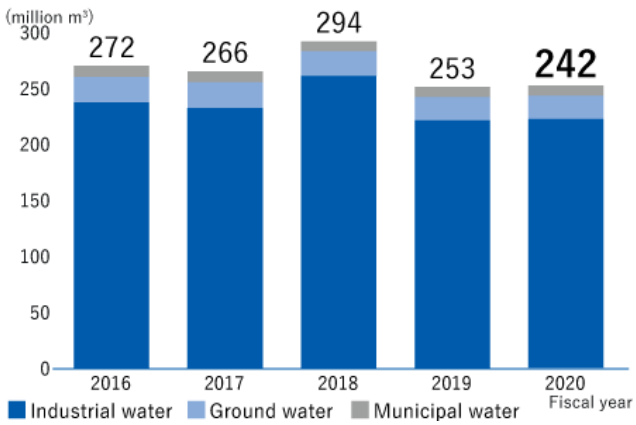
Asahi Kasei Group's business is intrinsically related to water resources. Ensuring their future viability is one of our societal missions and a prerequisite for the continuity of our business. We will contribute to the conservation of water resources around the world through our domestic and overseas water purification membrane module business, water recycling service business, seawater desalination business, the development of sludge reduction products for wastewater treatment, and the expansion of our surface oil detector series. We also have a policy of ascertaining the quantity of our water intake while striving to maintain and improve the efficiency of our water usage.

## Reducing water use

The Asahi Kasei Group endeavors to reduce the amount of water used in our plants and to make efficient use of water by recycling it.
The targets of the Group's water resource conservation activities are shown in Answer W8.1a in the CDP Water Security 2021 shown above.



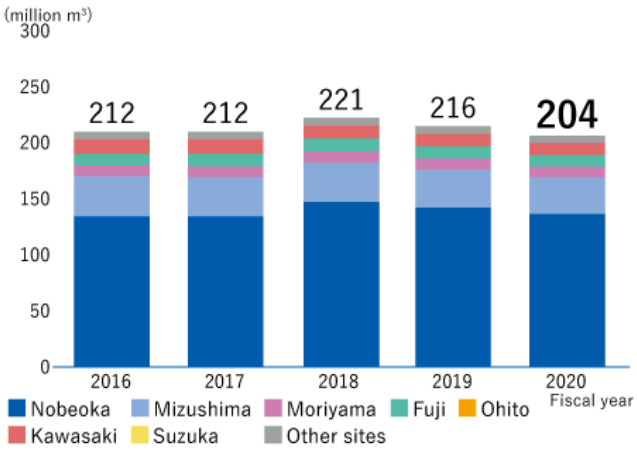

Amount of Global Water Intake



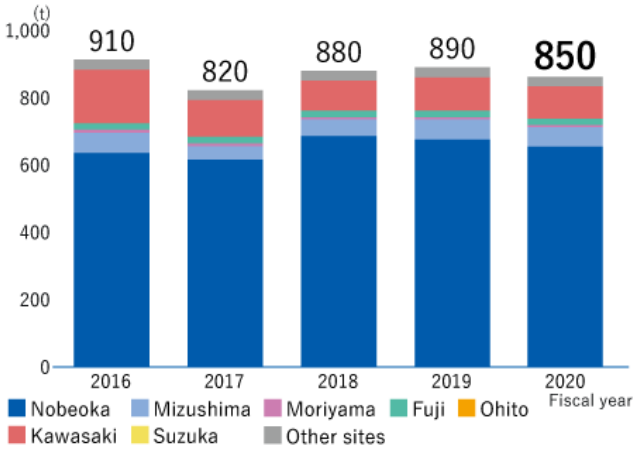

Amount of Water Intake by Source (domestic)

## Prevention of water pollution

The Asahi Kasei Group thoroughly manages emissions and prevents leakage so as not to contaminate bodies of water or groundwater.
In 2012, we issued our Guidelines on Wastewater Management. In addition to affirming our commitment to wastewater management based on this, we are also working on enhancing the capacity of wastewater treatment facilities and other equipment. Items regulated by the Water Pollution Prevention Act are managed within those standards.
In fiscal 2020, there were neither instances of leakage as related to the Water Pollution Prevention Act nor violations or fines related to environmental laws and regulations.




Amount of Wastewater (domestic)




Chemical Oxygen Demand (COD) Load

## Asahi Kasei products and technologies for water conservation

### Microza™ hollow fiber membrane filtration module

We are a top-tier supplier of water treatment membranes and filtration systems. Microza™ is a hollow fiber membrane we have developed for water treatment. It is used in more than 1,600 water purification plants and wastewater plants worldwide, including in the United States, China, Korea, Singapore, Thailand, Indonesia, and Middle Eastern countries. In fiscal 2017, Microza™ was adopted at a seawater desalination plant in Kuwait, helping to alleviate chronic water shortages.
Going forward, we will continue to work on global water and environmental issues with the aim of resolving various problems related to water resources.

› Microza™ hollow fiber membrane filtration module

### Saran™ Polyvinylidene Chloride Fiber

One important issue in wastewater treatment is reducing the amount of sludge generated, which is directly tied to decreasing its environmental impact. The Asahi Kasei Group conducts research and development into new commercial products that feature a unique technology using microorganism immobilized carrier that flows, making use of the characteristics of Saran™ fiber, which microorganisms inhabit easily.
Existing facilities can adopt these products by making simple improvements like installing screens, without requiring major modifications. This improves processing capabilities and reduces the amount of sludge generated.

› Saran™ fiber on the Asahi Kasei Home Products website

## Apolarm™ series environmental monitoring products

Asahi Kasei Technosystem's Apolarm™ Series detects a wide range of oil leaks, including floating oil (oil film and oil layers), sediment oil, and water-soluble oil. We will continue to expand our product line and protect the aquatic environment with oil detection devices for specific applications.

| | |
|---|---|
| **Apolarm C** | Oil layers of 3 mm or more trigger a capacitance shift and sound an alarm. |
| **Apolarm M** | A non-contact laser detector that can sense minuscule amounts of oil film on the water surface. |
| **Apolarm B** | Detects oil and organic solvents that have a greater specific gravity than water, causing them to sink. |
| **Apolarm F** | Detects leakage of fluorescent water-soluble oils. |

› Apolarm™ Series on the Asahi Kasei Technosystem website

# Biodiversity

## Policy

To ensure the sustainable utilization of living resources, the Asahi Kasei Group gives due consideration to reducing the impact of our business activities on biodiversity, and we have established guidelines for the preservation of biodiversity. Based on these guidelines, we have been working to understand the relationship between our business activities and biodiversity since 2010. In order to promote business activity mindful of biodiversity, we are working to raise awareness among personnel by various means including our Responsible Care (RC) education program.

## Investigation of impact on biodiversity by procurement

Regarding the impact of our business activities on biodiversity when there is a newly used raw material or a change in use of raw materials, we use a survey sheet on the relationship between business operations and biodiversity to examine the country of origin of raw materials, processers and manufacturers, and primary vendors (trading companies, etc.), in order to confirm the absence of any problem.

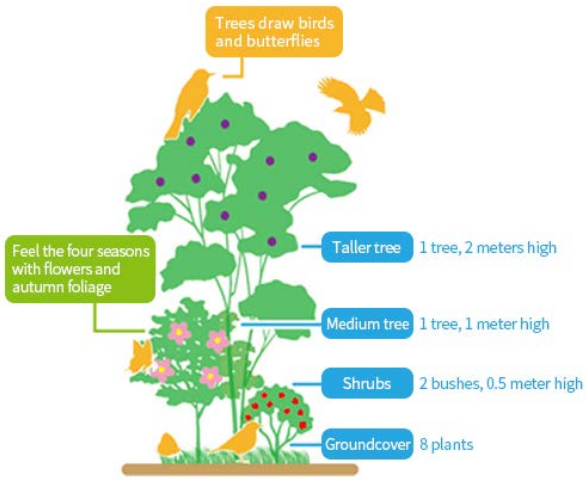
## Group-wide activities for biodiversity

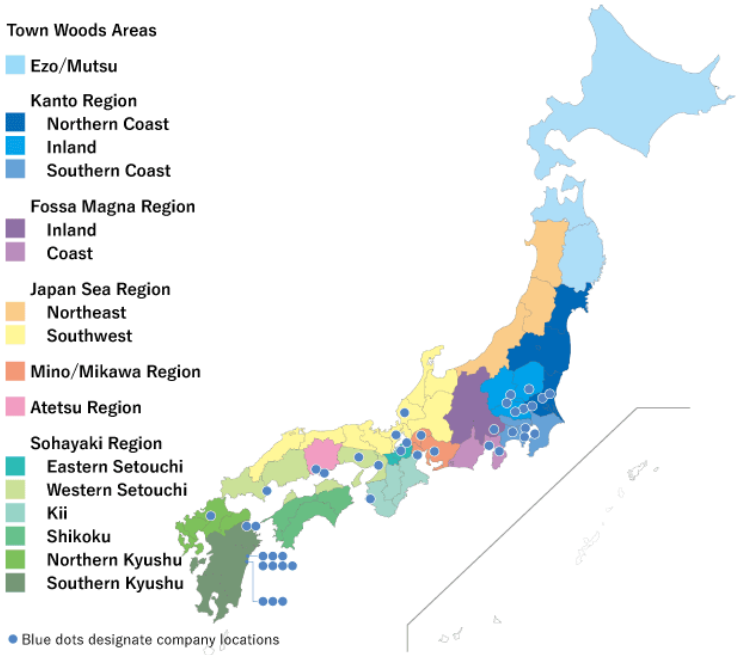
## What is the "Town Woods" Program?

We aim to increase value from the perspective of biodiversity while enhancing green spaces at Asahi Kasei Group operating sites in Japan. We will use Town Woods Pots as a tool to heighten understanding and awareness of the value of biodiversity among personnel.

## What are Town Woods Pots?

This new way of landscaping by Asahi Kasei Homes combines four layers of vegetation of varying heights: Tall, medium, short, and groundcover. While compact enough to integrate with urban residential areas, they increase the space for other plants and wildlife in artificial environments that otherwise have little greenery. Our Town Woods Program uses the phytosociological method to classify green spaces at operating sites throughout Japan, selecting the most suitable regional vegetation when creating the Town Woods plantings.

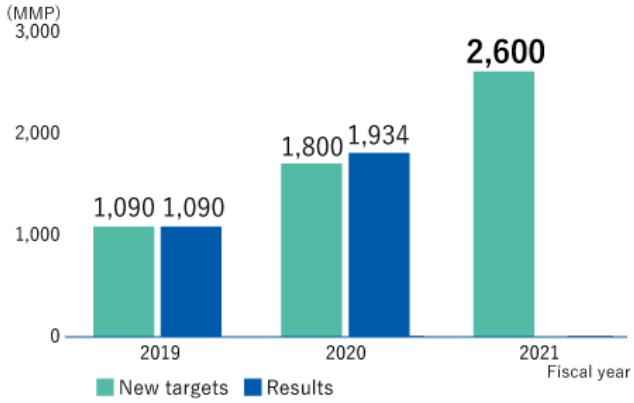



## Town Woods Project: (FY2019–2021) Phase 1 Targets and FY2020 Results

| | First Phase Targets (FY2019–2021) | FY2020 Results |
|---|---|---|
| Target I | Install Town Woods Pots at all 41 Asahi Kasei Group operating sites in Japan | Achieved goal of installing "Town Woods" pots at all 41 sites in Japan by FY2020 |
| Target II | Accumulate a total of 2,600 "Town Woods Points" during the period. | Achieved goal with cumulative MMP total of 1,934 points by FY2020 |

* Town Woods Points (Machi-Mori Point: MMP) Initiatives at Asahi Kasei Group sites are divided into four stages. Each initiative earns Town Woods Points and the points are aggregated across the group.




| Stage | Example Initiatives |
|---|---|
| **Stage 1: Installation** | • Installing the Town Woods Pots<br>• Posting information about the Town Woods Pots<br>• Maintaining them properly so they thrive<br>   |
| **Stage 2: Observation** | • Recording trunk thickness and tree height<br>• Photographing and recording information on features like flowering, fruiting, and foliage<br>• Photographing and recording information on the wildlife that visits the Town Woods Pots<br>• Photographing and recording information on naturally occurring vegetation<br>   |

| Stage | Example Initiatives |
|---|---|
| **Stage 3: Dissemination** | • Actively disseminating information including photographs and records of observed plant and animal life both within and outside the site.<br>The dissemination will take place online, through bulletin boards, directly communicating with the local community, etc.<br>  <br><br>  <br> |
| **Stage 4: Development**<br>**Initiatives in other locations** | • Expanding the initiative to other locations<br>• Collaborating with other programs both within and outside the site<br>• (In 2020, we refrained from holding the event due to COVID-19) |

## FY2020 Project: "Town Woods" Red Dragonfly Watching

In fiscal 2020, due to the increase in remote working as a result of the COVID-19 pandemic, in addition to "Town Woods" pot viewings, we expanded the number of viewing locations, such as parks and home surroundings, and held a limited-time project based on a specific theme.
Since dragonflies have been the most frequently observed creatures in submissions up until now, and because it was autumn, we chose red dragonflies as the theme and provided information about how to identify them.
During the two-month period from September 15 to November 16, we received a total of 96 submissions from 11 offices and confirmed 22 types of dragonflies. About 70% of the submissions were of red dragonflies, and the specimen that was most commonly submitted was the *Sympetrum frequens* red dragonfly. Experts said that we observed 11 species, more than half of the 21 species of red dragonflies in Japan, and that these dragonfly records, particularly those of *Sympetrum kunckeli*, *Sympetrum pedemontanum elatum*, and *Sympetrum darwinianum*, which have been said to be declining rapidly in recent years, are very valuable as local biological information.

## Publishing News on the Town Woods Program

In fiscal 2020, in conjunction with the Town Woods Red Dragonfly Watching project, we published information prior to the project explaining its purpose, how to identify red dragonflies, an explanation of results and comments from experts after the event, a column on dragonflies, and offices' initiatives.

# Notable activities in fiscal 2020

## Actions in the Moriyama Area
## Ex-situ conservation of smallhead stickleback, an endangered freshwater fish, and joint effort among companies and communities for dragonfly conservation

In Moriyama, we draw groundwater for industrial use in cooling equipment. Its quality is strictly monitored, and it is discharged to nearby rivers after use. A portion of the discharged water from our Moriyama Works is also used for agriculture, which has become vital for local farmers as well as wildlife inhabiting the waterfront areas.
Against this backdrop, and since water is intrinsically related to our business operations, in fiscal 2010 we started initiatives to protect biodiversity with a focus on water resources.
In fiscal 2015, we began ex-situ conservation of smallhead stickleback, an endangered freshwater fish, and in fiscal 2016, we began dragonfly conservation activities in cooperation with companies that have operations located in Shiga Prefecture and local communities. In fiscal 2020, 15 smallhead sticklebacks were released into the newly established "Moribio" biotope, and a survey by experts confirmed that the number of smallhead sticklebacks increased to more than 600.
In collaboration with companies that have operations located in Shiga Prefecture (Biodiversity Biwako Network), we are involved in "Operation Dragonfly 100: Save Shiga's Dragonflies!" This project involves working with local communities to survey the habitat of the *Sympetrum kunckeli* variety of dragonfly, which resides in wetlands, and to conserve it using a container biotope. As part of our conservation activities, we also hold dragonfly observation sessions in riverside forests, which are inhabited by a variety of organisms, including dragonflies. In recognition of its dragonfly conservation efforts, the Biodiversity Biwako Network, of which we are a member, was awarded the Japan Nature Conservation Grand Prize in the Education and Promotion category. We intend to continue our conservation work in collaboration with various organizations.

**Smallhead stickleback survey by experts at "Moribio"**

**Observing dragonflies at a nearby riverside forest**

## Actions by Asahi Kasei Juko Co., Ltd.
## Project to rediscover living with the woods and water in Higashiomi

The Shiga Plant of Asahi Kasei Juko (AKJ) is located in the Yuya area of Higashiomi City where there had formerly been a diverse lakeside ecosystem of ponds, rice paddies, and woods. There was a culture of life centered around ponds for irrigation and firefighting. By restoring some of the ponds, AKJ is preserving the habitat for local wildlife, conveying the importance of this to community residents through activities like observation tours. We also hold events at the plant, creating a venue that will lead to the protection of forests and crops as local resources.
In fiscal 2020, we did not hold viewing sessions for the general public due to the COVID-19 pandemic, but under the guidance of experts, we protected and helped propagate the four-spotted skimmer, a rare species of dragonfly whose population is believed to have been declining in recent years. We used the "Yuya Hebel Biotope" that was created on the plant site in 2017 for the purpose of conserving the creatures residing in the waterside ecosystem.
Based on the results of a survey of nearby habitats, we improved the biotope and reservoirs to create an environment where the emergent plants favored by the four-spotted skimmer thrive, leading to natural flight and breeding activities. In early May, we confirmed the natural emergence of four-spotted skimmers within the biotope and reservoir. We also collected eggs from female specimens and transplanted them, and we confirmed the emergence of 55 four-spotted skimmers.

A four-spotted skimmer emerges from a mound of dirt

Four-spotted skimmers emerge in a container biotope where the environment has been improved

## Actions in the Suzuka Area

The Suzuka Works uses the Kiso River system as its source of industrial water, which is used to cool equipment. The used water is discharged into a small river running through the plant. This small river converges with several other rivers and eventually flows into Ise Bay.
The waterside ecosystem of this small river is inhabited by small fish such as minnows, as well as the turtles that prey on them. There are also herons and other birds that visit the area to prey on the small fish, forming a food chain. Several dragonfly species have also been observed. One of these, *Ischnura senegalensis*, has been reported to thrive best in areas where aquatic plants are abundant.
To maintain a waterfront inhabited by such a variety of organisms, river management is conducted with the aim of balancing the biological habitat of the small river with its function as a method of flood control. For example, instead of repairing the banks with concrete, we try to maintain the stone piles that currently exist and preserve the plants on the riverbank out of consideration for the vegetation. We also attempt to manage the flow of the river to maintain variable flow (keeping it slow in certain places) at the water's edge by utilizing the natural environment through the cultivation of aquatic plants such as *Limnophila sessiliflora*. With regard to water quality, we are enhancing our management of the wastewater that flows from the plant into the river. We will continue to strive to maintain an environment where many waterside organisms can coexist.

**River scenery**

*Limnophila sessiliflora*

**Minnows**

## Actions in Nobeoka and the Hyuga Area

Since 2007 we have participated in a reforestation program led by Miyazaki prefecture to create forests in cooperation with companies. We planted more than 44 hectares of broad-leaf trees and other trees native to the area, replacing plantations of cedar and cypress. This included 20 hectares in Hinokagecho, 20 hectares in Takachiho, 1 hectare in Gokase, and 3 hectares in Kitakatacho.

In fiscal 2021, we planted 3,000 trees on 2 hectares from among the approximately 5 hectares of field provided by Hinokagecho. Ordinarily, about 400 people would be invited to participate in the event on each occasion, but due to measures to prevent the spread of COVID-19, we planted about 100 trees, including commemorative trees, with 15 individuals from Hinokagecho, the Nishiusuki Forest Association, alumni associations, the Nobeoka Branch of the Labor Union, and the secretariat. The Forest Association was entrusted with planting the remaining trees.

**Tree planting**


**Tree planting**

# The Asahi Kasei Group's Environmental Contribution Products

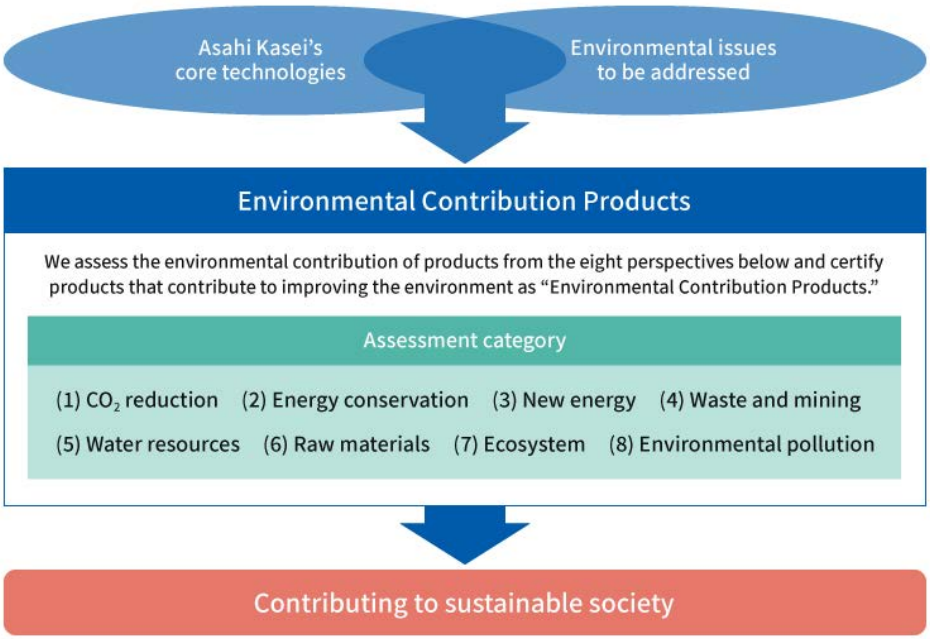


## What are Environmental Contribution Products?

Under "Cs+ for Tomorrow 2021," our medium-term management initiative, the Asahi Kasei Group is striving for sustainable society based on the concept "Care for People, Care for Earth."
For sustainable society, we believe it is important to develop products and businesses that contribute to reducing the impact of society on the environment in addition to reducing emissions, such as greenhouse gases, at the Group's production sites. The Asahi Kasei Group defines products that contribute to the improvement of the environment over the entire life cycle when compared with products considered to be the standard in the current market and products that contribute to the improvement of the environment when compared with our existing products as Environmental Contribution Products.

The Group has conducted Life Cycle Assessments (LCA) for its products to assess their environmental impact over their entire life cycle, and has defined and certified as products that can contribute to $CO_2$ reduction at the stage of product use as "Global Warming Conscious Products." In January 2019, we formulated "Guidelines for Environmental Contribution Products"* and reviewed how our products reduce our environmental impact, including in terms of $CO_2$.

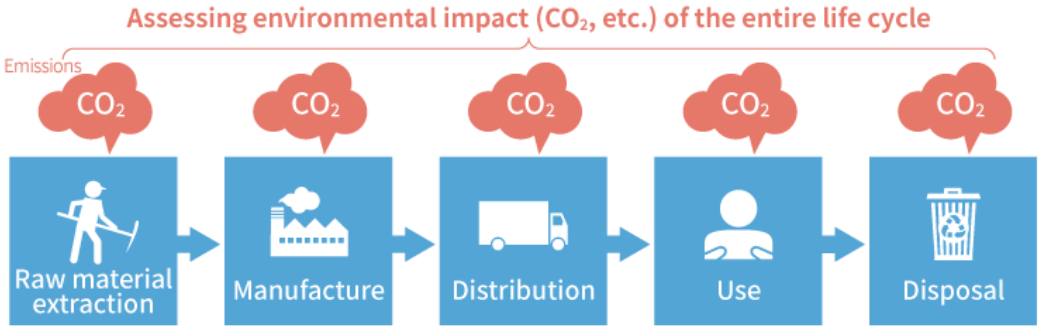
* In preparing the guidelines, we referred to Guidelines for Assessing the Contribution of Products to Avoided Greenhouse Gas Emissions, The Institute of Life Cycle Assessment, Japan, Guideline for Calculating the Reduction in $CO_2$ Emissions, Japan Chemical Industry Association, Guideline for Quantifying GHG Emission Reduction Contribution, Ministry of Economy, Trade and Industry, and other reference materials.




In making the abovementioned calculations, we use MiLCA, an LCA tool provided by the Sustainable Management Promotion Organization (SuMPO).

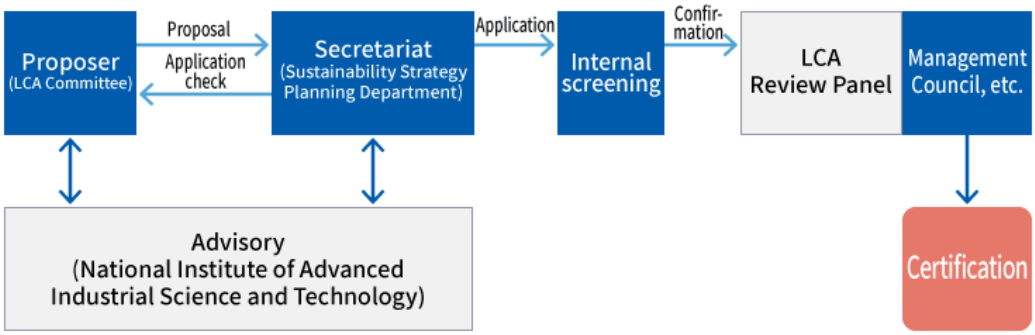
## What is Life Cycle Assessment (LCA)?

Although $CO_2$ is generated during the manufacture of materials and intermediate products in the Asahi Kasei Group, there are also many examples of products which contribute to improving the environment by reducing environmental impact, including $CO_2$, during use considering the entire product life cycle, such as contributions to energy conservation.
The evaluation of the environmental impact of products over their entire life cycle is Life Cycle Assessment (LCA).




## Internal Certification Process

Strategic business units and core operating companies propose products for internal certification. The Asahi Kasei Group receives advice from a third-party organization on the suitability of the environmental contribution calculation methodology and approach from an LCA perspective for the proposed products, and defines products that have been internally certified as Environmental Contribution Products.
We also receive advice on the appropriateness of the calculations of contributions to reductions from outside experts when reviewing certifications.




### LCA Review Panel (held on July 26, 2021)

**Chair:** Atsushi Inaba (Chief Director of Japan Life Cycle Assessment Facilitation Centre (LCAF))

**Members:** Kensuke Kobayashi (Associate Professor, Prefectural University of Hiroshima)
Keigo Matsuda (Associate Professor, Yamagata University)
Hiroyuki Uchida (Senior Consultant, Mizuho Research & Technologies, Inc.)

(Reference) Fiscal 2019 meeting

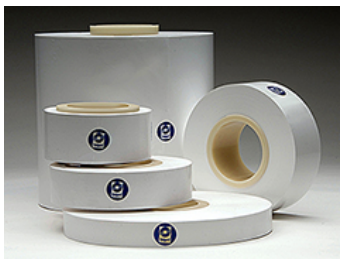
At the LCA Review Panel, Asahi Kasei Group personnel explain the details of calculations and receive comments and advice from the outside experts on the suitability of the establishment of baselines and the approach to contribution to reductions.
We held the event remotely in FY2020 and FY2021 to prevent COVID-19 infections.

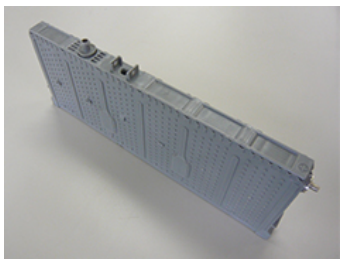
# The Asahi Kasei Group's Environmental Contribution Products

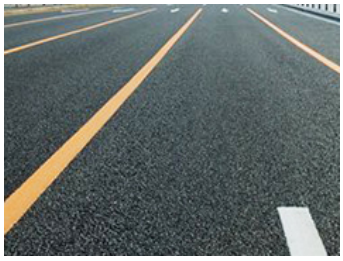
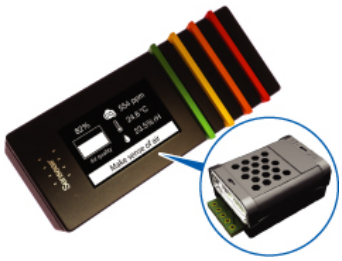
Our Initiatives | Description of Environmental Contribution Products

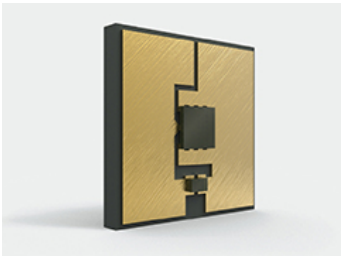
## Description of Environmental Contribution Products

### Contributing to Resource and Energy Conservation for Customers

| Product name | Reason for certification | SDGs contributed to |
|---|---|---|
| **Lithium-ion battery (LIB) separators**<br>  <br>› Hipore™<br>  <br>› Celgard™ | The separator is one of the four main components (cathode, anode, electrolyte, and separator) that make up the batteries (LIBs) for electric vehicles (EV/HEV/PHEV).<br>As a result of their growing popularity, electric vehicles are contributing to a reduction in $CO_2$ during driving, compared with gasoline vehicles. Improving the battery performance (extending range and ensuring safety) is essential to the popularization of electric vehicles, and our development of separator technology is playing a part in this. | |

| Product name | Reason for certification | SDGs contributed to |
|---|---|---|
|  <br>› Ion-exchange membrane process for chlor-alkali electrolysis | Caustic soda and chlorine are manufactured through the electrolysis of brine. The methods of electrolysis are the mercury process, the diaphragm process and the ion-exchange membrane process. The ion-exchange process is an environmentally-friendly method that does not use mercury or asbestos. Asahi Kasei is the only manufacturer in the world that manufactures and sells ion-exchange membranes, electrolytic cells, and electrodes, and boasts the top share of the global market. We have engaged in continual development to enable electrolysis using even less electricity, and our latest ion-exchange membrane grade has the lowest power consumption (compared with Asahi Kasei products: approximately 2% less than the current grade). | |
| Xyron™ lightweight resin<br>  <br>› Electric vehicle battery module materials<br>  <br>› Solar cell connector material | Xyron™, a type of engineering plastic, is an environmentally-friendly material with non-halogen flame retardance and reduction of resin usage due to its low specific gravity. Its properties also include dimensional precision, mechanical strength, and resistance to electrolyte solution. Widely used for electric vehicle battery packs and modules, it has played a major role in the spread of electric vehicles.<br>It is also used in high-voltage photovoltaic systems due to its excellent insulation properties. The number of modules required for high-voltage systems is small, which saves resources. Its low specific gravity also contributes to the reduction of $CO_2$ emissions during transport. | |
|  <br><br>› ASACLEAN™ | ASACLEAN is a cleaning agent (purging agent) for use in plastic molding machines.<br>At plastic molding work sites, when switching between production of different colors and resin types, it is necessary to keep the materials flowing to a certain extent, which inevitably results in loss.<br>By using ASACLEAN during the production switching process, it is possible to make the switch using about 1/3 to 1/10 the amount compared to not using ASACLEAN, which contributes to conserving resources and reducing $CO_2$ by decreasing plastic waste. | |

| Product name | Reason for certification | SDGs contributed to |
|---|---|---|
|  <br>› Elastomer for Asphalt Modification | This product is used as an additive for the modified asphalt used in road surfaces.<br>This original elastomer specially designed by Asahi Kasei can improve road durability and decrease the frequency of maintenance and repairs. | |
|  <br>› $CO_2$ Sensor | This compact, highly accurate, energy-saving gas sensor can detect the concentration of $CO_2$ in the air. Equipping this product to industrial air-conditioning systems and optimizing the amount of ventilation while monitoring the $CO_2$ density will contribute to reductions in power consumption for air conditioning. | |
|  <br>› S-SBR synthetic rubber for fuel-efficient tires | S-SBR is used for the tread (the part in contact with the road) on passenger vehicle tires. Based on the development of original technology, it balances low fuel consumption and braking performance of tires at a high level, contributing to dramatically increasing the fuel efficiency of automobiles. | |
|  <br>Hebel Haus™<br>  <br>Hebel Maison™ | Long Life Homes and Net Zero Energy Houses:<br>Compared with regular housing, our homes contribute to reduction of $CO_2$ during manufacture of all components and construction by meeting the standards for Net Zero Energy Houses, which balance household energy usage at zero or lower through power generation, advanced insulation, and energy conservation, and providing Long Life Home products with a basic structural life of at least 60 years. | |

| Product name | Reason for certification | SDGs contributed to |
|---|---|---|
|  <br>Neoma Foam™ Insulation Material | This product boasts top-class insulating performance, providing high insulation even with little thickness and maintaining its insulating properties for long periods of time. In addition, this insulation material is eco-friendly in a variety of ways, such as by being the first in the industry to succeed in not using any CFC or CFC substitutes as foaming gases. | |
|  <br>› UVC LED for water sterilization | The high-output UVC LED, which emits 265 nm deep ultraviolet (UVC), the most effective wavelength for sterilization, is installed in water servers etc.<br>Since UVC LEDs can be instantly turned on and off, it is possible to design equipment that uses power only when sterilization is required, which helps to save energy.<br>Recently, UVC LEDs have been used for air sterilization in addition to water sterilization.<br>In addition, unlike the conventional mercury lamps (UV lamps) used for UV sterilization, these lamps do not use mercury, which is hazardous to the environment. | |
|  <br>› AWP™ Photosensitive Resin for Printing Plates | No organic solvents are used during the development process, which reduces the emission of VOCs.<br>Moreover, simplifying the drying process contributes to reduced $CO_2$ emissions by lowering energy consumption.<br>Printing losses can be reduced as well due to excellent printing quality and high productivity during printing, which contributes to the reduction in $CO_2$ emissions. | |

## Contributing to Value Chains

| Technology | Reason for certification | SDGs contributed to |
|---|---|---|
| **Manufacturing process for acrylonitrile**<br>  | Acrylonitrile, which is the raw material for ABS resin and acrylic fiber, is manufactured by making propylene (or propane) react with ammonia using a catalyst.<br>Asahi Kasei has continually developed catalysts that enable the efficient manufacture of acrylonitrile from less raw materials.<br>Our catalysts can not only reduce raw material consumption compared with manufacturing acrylonitrile using other, ordinary catalysts (in the model case) but can also reduce emissions of by-products, particularly $CO_2$, and the $CO_2$ emissions associated with waste processing. These catalysts, therefore, make a significant contribution to the manufacture of acrylonitrile with a low environmental impact. | |
| **Cyclohexanol Production Process**<br>  | Asahi Kasei developed the world's first cyclohexane process for producing cyclohexanol, an intermediate material for nylon and other chemical products.<br>The cyclohexene process is notable in that it generates virtually no waste and has a carbon yield of nearly 100%. Compared to conventional methods, this method uses fewer raw materials and generates less $CO_2$ in waste treatments, which reduces the impact on the environment. | |
| **Polycarbonate Production Process Using $CO_2$ as a Raw Material**<br>  | We are licensing a technology for manufacturing polycarbonate using $CO_2$ as a raw material.<br>This is a technology in which resin is manufactured by recovering $CO_2$ emitted as exhaust gas from other plants and using it as a raw material for the process. We believe this will help reduce $CO_2$ emissions. It is also notable for not using any substances that are harmful to the human body. | |

## Other Environmental Contribution Products

■Contributes to resource and energy conservation for customers

- Microza™ water filtration modules

■Use of materials with low environmental impact

- ECORISE™ bio-PLA nonwoven fabric (for coffee cartridges)
- Biogreen Promax™ (for plastic cups)