Environment

TOPICS

Environment

In order to support the basis of LIFE and continuously create peace of mind for the future in a bid to realize a sustainable society, SEKISUI CHEMICAL Group will work to address environmental issues with a long-term outlook.

Positioning of This Materiality

SEKISUI CHEMICAL Group positions the environment as the most important key to transforming its business activities and business model in a manner that helps conserve the global environment while ensuring sustainable business. As a part of efforts to address environmental issues, arguably society's greatest challenge, we have identified climate change, water risk, and resources recycling as important issues under our Long-term Environmental Management Vision, SEKISUI Environment Sustainability Vision 2050, and are working to realize an earth with maintained biodiversity. Under our current Medium-term Management Plan, we are working to analyze risks and opportunities, reduce greenhouse gas emissions, introduce renewable energy, and reduce the environmental impact of our business activities, particularly in response to climate change.

Our Philosophy

The planet's air, water, land, and other elements interact with each other to form a healthy foundation for the survival of living things and a rich biodiversity. SEKISUI CHEMICAL Group aims to create a planet and society in which humankind and economic activities can develop sustainably by utilizing the planet's valuable natural and social capital created through its activities.

We are engaging in business activities on a daily basis with the aim of preventing further deterioration of natural capital through such means as reducing greenhouse gas emissions, promoting the use of recycled resources, and decreasing any impact on ecosystems. We are also working to provide returns to natural and social capital by expanding sales of products to enhance sustainability while endeavoring to realize an earth with maintained biodiversity.

* Natural capital: A term that refers to physical resources from nature, such as soil, air, water, minerals, flora and fauna, as well as biological capital, human capital, and social capital.
Social capital: A term that refers to the social infrastructure and facilities that form the basis of production activities and living environments, such as roadwork, housing, ports, airports, railroads, water supply and sewerage systems, public parks, educational facilities, social welfare facilities, electricity, gas, and hospitals.

Promotion System

We will deploy initiatives geared toward the solution of environmental issues based on the Group's Long-term Environmental Management Vision, SEKISUI Environment Sustainability Vision 2050, and its Environmental Medium-term Plan, SEKISUI Environment Sustainability Plan: Accelerate II (Fiscal 2020-2022). To accelerate the solution of issues, we are also focusing on enhancing supply chain management and employee education and training.

Structuring the Environmental Medium-term Plan Target and Promotion Systems

In aiming for the aspirations raised in the Group Vision as our direction over the medium- to long-term, in 2019 SEKISUI CHEMICAL Group formulated the Vision Statement looking to 2030 for the purpose of more clearly illustrating our management strategies. From fiscal 2020, we will deploy strategies based on this Statement.
Under the slogan Innovation for the Earth, and in order to realize a sustainable society, we support the basis of LIFE and will continue to create peace of mind for the future (Social value) while aiming to double the Group's business (sales of 2 trillion yen, operating income ratio of 10% or higher) by 2030 by expanding contributions to solving social issues through business growth and reform and creating new businesses, centered on ESG management.
In order to support the basis of LIFE and continuously create peace of mind for the future while engaging in corporate management aimed at realizing a sustainable society, we must maintain a longer-term viewpoint as we deploy and implement the required approaches to various global environmental issues.
To date, SEKISUI CHEMICAL Group has considered its approach and illustrated a direction to environmental issues with an eye toward 2030. In 2019, we undertook a review of the various events and social demands that have re-emerged and formulated the SEKISUI Long-term Environmental Management Vision 2050 in regard to the direction of our environmental initiatives for 2050. Backcasting from this Vision, we have re-defined the milestones that must be reached within the Group-wide management strategies in regard to specific environmental issues. In order to achieve these milestones, we established concrete target values in the three-year Medium-term Plan that launched in fiscal 2020. The promotion system itself, however, remains the same.

Long-term Environmental Management Vision SEKISUI Environment Sustainability Vision 2050

The SEKISUI Environment Sustainability Vision 2050 formulated in 2019 aims for the same goals as the SEKISUI Environment Sustainability Vision 2030 formulated in 2013. We recognize that conducting our corporate activities relies on valuable natural capital from the Earth and beneficial social capital from society, and thus declare we will coordinate with stakeholders to accelerate our contributions to the return on those capitals.

Progress on the Environmental Medium-term Plan SEKISUI Environment Sustainability Plan: Accelerate II (Fiscal 2020-2022)

From fiscal 2020, we have deployed initiatives based on the Environmental Medium-term Plan SEKISUI Environment Sustainability Plan: Accelerate II, which spans the three years from fiscal 2020 to 2022.

Integrated Index Sekisui Environment Sustainability Index and Its Evolution

The Sekisui Environment Sustainability Index is an index that shows the degree of environmental impact (use of natural capital) and contribution back to the environment (return of natural capital) through SEKISUI CHEMICAL Group-wide activities.

We have gradually expanded the target scope and awareness of this index to encompass our impact and return on natural capital as well as social capital. From fiscal 2020, we have been refocusing on natural capital and social capital as the capital of the Earth and society on which our corporate activities have an influence or contribute, and to assess the impacts and added values (outcomes).

For natural capital, we will continue to use the Life-cycle Impact Assessment method, and for social capital, we are considering the use of impact-weighted accounting.

Environmental Management System

SEKISUI CHEMICAL Group has been promoting environmental activities by building an environment management system that complies with the ISO 14001 standard at production sites. Although we will shift the long-term viewpoint of the direction for these activities from 2030 to 2050, the environmental issues on which we focus and the initiatives we deploy for solutions will remain the same.

In order to solve these issues, we feel we must bring our entire supply chain into our sights as we undertake initiatives, and that doing so will accelerate problem-solving. To this end, we reviewed our CSR procurement guidelines and systems to strengthen supply chain management.

We are approaching suppliers with a clear understanding of current conditions and issues and will look to accelerate the solutions of these issues through collaboration.

Education to Enhance the Ability to Contribute to Solving Social Issues

From 2020, we have been focusing on education to enhance the ability to contribute to solving social issues with the aim of realizing Vision 2030.

SEKISUI CHEMICAL Group will provide education and training to encourage employees to better understand social issues and take all appropriate action. This education and training is designed to help employees think about issues as their own and to put efforts into practice, depending on their responsibilities and working environments.

Environmental Accounting

Within the Medium-term Plan that commenced in 2020, we are employing environmental accounting because the investments and costs applied to the environment are defined as capital costs within Group-wide management strategies, and also because we recognize that restraining these costs and improving productivity improves ROIC.

Long-term Environmental Management Vision

Put in place in 2019, SEKISUI Environment Sustainability Vision 2050 aims for the same goals as SEKISUI Environment Sustainability Vision 2030, which was formulated in 2013.
Through its corporate activities, products, and businesses, SEKISUI CHEMICAL Group contributes to solving various natural and social environmental issues in order to realize an earth with maintained biodiversity. We remain conscious that the business activities we carry out incorporate the Earth's natural capital as well as meaningful social capital from society. We are therefore committed to accelerating efforts aimed at returning such capital back to the environment and society while collaborating with stakeholders.
Working toward the realization of an earth with maintained biodiversity entails the same stance required to achieve the SDGs set for 2030. This is because this earth cannot be realized without a society in which many of the issues in natural and social environments have been solved.
The following three activities are emphasized as activities that contribute to solving issues.

(1) Expand and create markets for products to enhance sustainability*1
(2) Reduce environmental impact
(3) Conserve the natural and social environments*2

*1 For more information, see p. 54, Products to Enhance Sustainability.
*2 For more information, see p. 70, Social and SDGs Contribution Activities.

We seek to invigorate these activities and accelerate solutions to problems. This means that while each and every employee should be conscious of the range of environmental issues, we need to do more than just have a talented group of personnel with considerable ability to contribute to solving issues; it will be necessary, we believe, to partner with all groups of stakeholders and collaborate to move forward on activities.

*Stakeholders: "Customers", "Shareholders", "Employees", "Business partners", "Local Communities and the Environment"

Progress under the Environmental Medium-term Plan

From fiscal 2020, we have set targets to be achieved in fiscal 2022, the final year of the Medium-term Plan, and have launched initiatives for the crucial items listed as follows within our Environmental Medium-term Plan, SEKISUI Environment Sustainability Plan: Accelerate II (2020–2022).

Improving the Rate of Return of Natural and Social Capital
Monitoring progress with the integrated index, Sekisui Environment Sustainability Index: Maintaining a rate of return to natural capital of 100% or more

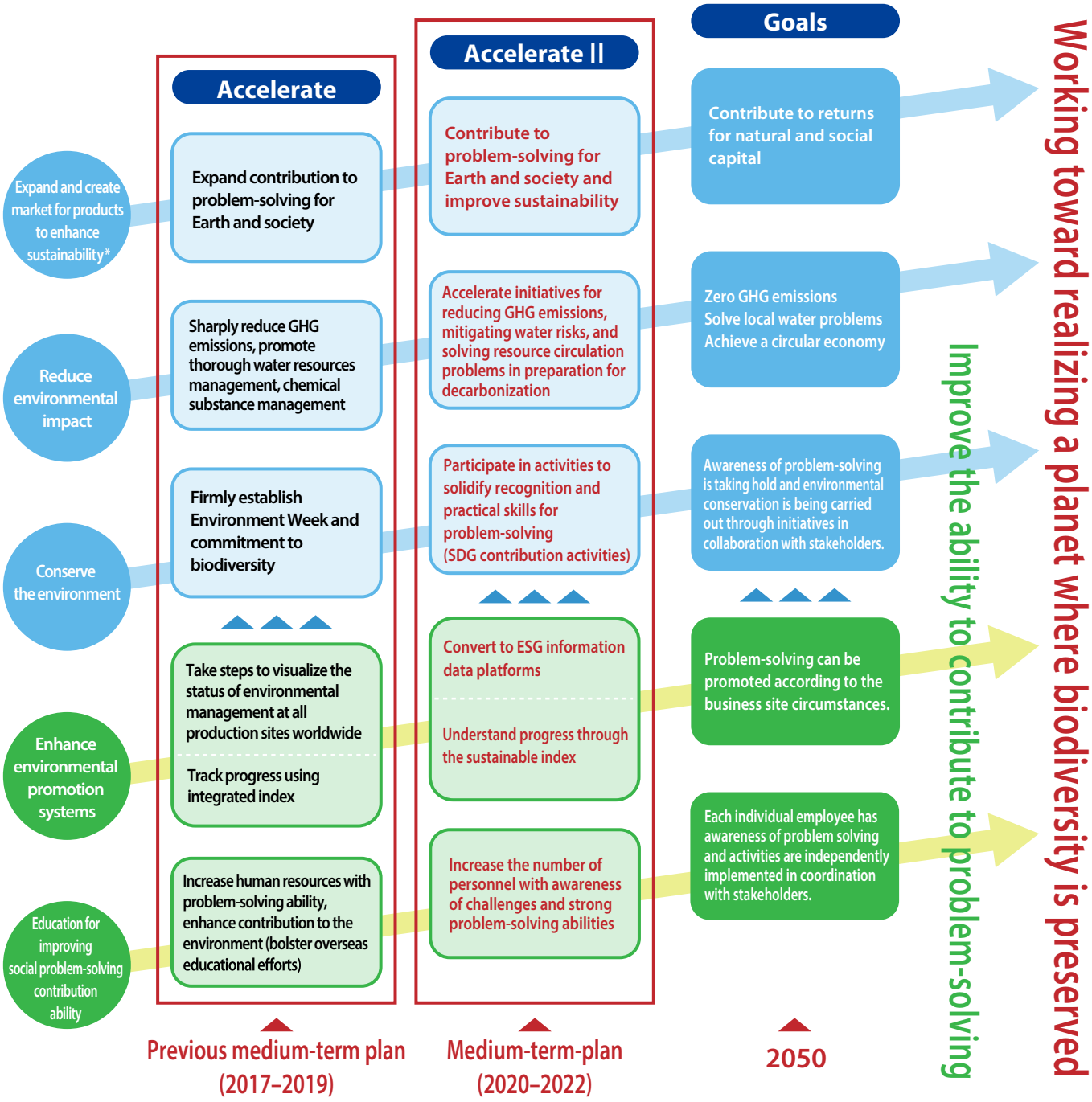
Improve Global and Social Sustainability with Our Products
Sales of Products to Enhance Sustainability: 800 billion yen (sales ratio equivalent to 63%)

Initiatives Aimed at Addressing Climate Change
[Decarbonization]
Renewable energy as a percentage of purchased power: 20%
Reductions in greenhouse gas emissions: 9% or more (vs. fiscal 2013)

Initiatives Aimed at Addressing Resource Depletion
[Promoting resource recycling]
Recycling rates for waste materials: Grasp current conditions and set a baseline (achieve double or more of the baseline by fiscal 2025)

Initiatives Aimed at Addressing Water Risks
[Preservation of water resources]
Water intake volume at production sites using a large amount of water: 10% reduction (vs. fiscal 2016)
Total amount of COD discharged into rivers by production sites where discharge is substantial: 10% reduction (vs. fiscal 2016)
[Minimizing water risk]
Understanding water risks specific to watersheds and implementing related initiatives

Improving the Ability of Employees to Contribute to Problem Solving
Promoting activities that contribute to SDGs


Accelerate
Accelerate II
Goals
Expand and create market for products to enhance sustainability*
Reduce environmental impact
Conserve the environment
Enhance environmental promotion systems
Education for improving social problem-solving contribution ability
Expand contribution to problem-solving for Earth and society
Sharply reduce GHG emissions, promote thorough water resources management, chemical substance management
Firmly establish Environment Week and commitment to biodiversity
Take steps to visualize the status of environmental management at all production sites worldwide
Track progress using integrated index
Increase human resources with problem-solving ability, enhance contribution to the environment (bolster overseas educational efforts)
Contribute to problem-solving for Earth and society and improve sustainability
Accelerate initiatives for reducing GHG emissions, mitigating water risks, and solving resource circulation problems in preparation for decarbonization
Participate in activities to solidify recognition and practical skills for problem-solving (SDG contribution activities)
Convert to ESG information data platforms
Understand progress through the sustainable index
Increase the number of personnel with awareness of challenges and strong problem-solving abilities
Contribute to returns for natural and social capital
Zero GHG emissions
Solve local water problems
Achieve a circular economy
Awareness of problem-solving is taking hold and environmental conservation is being carried out through initiatives in collaboration with stakeholders.
Problem-solving can be promoted according to the business site circumstances.
Each individual employee has awareness of problem solving and activities are independently implemented in coordination with stakeholders.
Working toward realizing a planet where biodiversity is preserved
Improve the ability to contribute to problem-solving
Previous medium-term plan (2017–2019)
Medium-term-plan (2020–2022)
2050

Promoting the Environmental Medium-term Plan Backcasted from Our Long-term Vision

We have been implementing our three-year Environmental Medium-term Plan, SEKISUI Environment Sustainability Plan: Accelerate II from fiscal 2020. Backcasting to achieve the goals we have set for 2050 in our Long-term Environmental Management Vision, SEKISUI Environment Sustainability Vision 2050, we are aiming for milestones established for each Medium-term Plan while implementing various initiatives.

In the Environmental Medium-term Plan, we identify climate change, water risk, and resource recycling as the important environmental issues that the Group should address. To accelerate the solution of these issues, we are focusing in particular on three areas: creating and expanding markets for Products to Enhance Sustainability; reducing environmental impact; and environmental conservation.

Since its launch in 2006, the predecessor of the Products to Enhance Sustainability, the Environment-Contributing Products program, has on the basis of internal standards registered products that have a high degree of contribution to solving environmental issues. We had committed to society to increase the ratio of such products in all of the Company's products and had been promoting the creation of products that solve social issues and the expansion of those product markets.

In fiscal 2017, we expanded the scope of Environment-Contributing Products to encompass not only the natural environment but also human capital and social capital. SEKISUI CHEMICAL Group aims to improve the lives of the people and the Earth's environment. In terms of improving people's lives, we believe it is essential to solve the issues noted in the Sustainable Development Goals (SDGs) adopted by the UN in 2015, including promoting welfare and health, improving the global environment, and securing robust infrastructure by mitigating and adapting to climate change. We reaffirm our commitment toward addressing and resolving issues in these areas.

First, we will promote our efforts by maintaining a focus on solving these issues. To improve the sustainability of both the Company and our products, we will implement verifications and assessments in regard to Governance (Internal Control), supply chain, customer satisfaction, processes, and supply chain assessment, throughout our supply chain.

In terms of issues related to climate change, we established a long-term goal of zero greenhouse gas emissions by 2050, and to achieve that goal, put in place a milestone in which all purchased power in Scope 2 comes from renewable energy by 2030. Under the current Medium-term Plan, we are targeting a 20% conversion by fiscal 2022. To actively promote the conversion of electricity used at production plants to renewable energy, we started conversion support measures from fiscal 2020 for our "energy procurement innovation" phase. With regard to fuel sources under Scope 1, we are continuously promoting efficiency improvements by renewing aging equipment, converting power source to electricity, and continuous energy saving activities at production sites.

Regarding issues related to water risk, we are focused not only on continuing to reduce the amount of water used on a Group-wide basis and promoting the recycling of water, but also on working to improve quality of water, based on COD indicators discharged into watersheds. In addition, SEKISUI CHEMICAL Group aims to better understand water risks specific to a given area and is committed to formulating and implementing measures for high-risk businesses to reduce water risk in each of their respective operating regions.

As far as the recycling of resources is concerned, while focused on reducing the amount of waste generated even as we aim to double our businesses by 2030, we will also promote initiatives emphasizing recycling with the aim of realizing a circular economy and a recycling-based society in 2050.

As products and technologies that contribute to resource recycling, we are currently conducting pilot projects relating to Bio-Refinery (BR) technologies that can use microorganisms to produce ethanol from waste and are proceeding toward their business implementation.

We believe that the solution of environmental issues will be accelerated if the entire supply chain works as one. More than ever, we will develop measures and carry out activities with an emphasis on supply chain management throughout the product life cycle.

Fiscal 2021 Plans and Results and Fiscal 2022 Plans

Creating and Expanding the Market for Products to Enhance Sustainability

Fiscal 2021 target Net sales: 750.0 billion yen (sales ratio equivalent to 65%) **Results** **772.4 billion yen** **(sales ratio equivalent of 66.7%)**	Number of new registrations: **Fiscal 2021 target: 6 registrations** **Fiscal 2021 results: 28 registrations** **Target achieved**

<Factor Analysis>

In 2021, we deepened the evaluation and awareness of resource recycling in conventional products by means of identification through revising the standards for contributions that play a part in resource recycling, and six out of 28 cases were registered as products that contribute to resource recycling. In particular, the recycling of PVA resin, which is carried out in partnership with raw material suppliers, assisting greatly not only in terms of the level of its contribution but also to an increase in sales of Products to Enhance Sustainability.

In response to increasing demand for low carbon and decarbonization, there have been increased sales of products that reduce greenhouse gas emissions in customers' processes as intermediate materials related to electronic devices and in products that support the necessary functional improvements for the 5G evolution. These, too, contribute to the overall increase in sales of Products to Enhance Sustainability.

<Quantification of the Contribution Effect on Solving Issues through Products>

In fiscal 2021, we identified environmental values from products equivalent to 60% of Environment-Contributing Products sales.

Regarding returns and value of social capital, we are also looking into the utilization of an impact accounting method.

The Group will leverage the visualized environmental and social values (degree of contribution on solving issues) of products and lines of business, releasing information and enlightening society, and will also step up its activities that allow it to receive feedback about its business.

Reducing Environmental Impact

GHG emissions:
Fiscal 2021 target: Reduction of 8% or more (vs. fiscal 2013 baseline)
Reduction of 21.1%, target achieved

Energy savings:
Fiscal 2021 target: Reduction of 1% of energy consumption per unit of production (vs. fiscal 2019 baseline)
Reduction of 1.5% (1.0% increase in Japan and 4.6 % reduction overseas), target achieved

<Factor Analysis>

GHG emissions: Despite a recovery in production volume, GHG emissions were reduced due to the introduction of electricity for in-house use generated by solar power equipment and the effects of converting purchased power to renewable energy sources.

Energy savings: Reduction in energy consumption per unit of production owed to the recovery in production volume.

Amount of waste generated:
Fiscal 2020 - 2022 target: Reduction of 1% or more per unit of production over a three-year period (vs. fiscal 2019 baseline)
Reduction of 6.7% (1.9% reduction in Japan, 14.1% reduction overseas), target achieved

<Factor Analysis>

Japan: Continued reduction in the amount of waste by allowing the re-use of scrap generated as part of the production process for high-performance resin products as well as a reduction in per unit of production owing to the recovery in production volume.

Overseas: Continued reduction in the amount of waste at UIEP Company business sites and a drastic reduction in per unit of production owing to the recovery in production volume.

Going forward, we will not only reduce the amount of waste generated in the production process, but also work to advance the recycling of waste and products, while simultaneously promoting the use of recycled resources in order to achieve a truly circular economy.

Environmental Conservation

SDGs Contribution Activities*

With regard to social contribution activities, such as environmental conservation and nurturing of the next generation, which have been carried out mainly by business sites or employees, recommendations advocate a change in consciousness toward awareness of SDGs during the undertaking of activities while continuing conventional endeavors.

The objectives of conventional activities becomes clear by considering which social issues to focus on and why to work on solving those social issues, centered on the SDGs, and expect that activities will be reviewed and effects will further improve.

In fiscal 2020, the number of actual activities reduced due to the COVID-19 pandemic. From 2021, we have been working from where we can, based on the above ideas.

* For more information about SDGs contribution activities, see p. 70, Social and SDGs Contribution Activities.

Environmental Medium- to Long-term Plan and Fiscal 2021 Actual Results

✓: FY2021 target achieved　　×: FY2021 target not achieved

Initiatives		Aim	Indicator	Base year	Medium- to long-term target			Target and results for FY2021				Target					
					Medium-term target (FY2020-FY2022)	FY2030 Target	FY2050 Target	FY2021 Target	FY2021 Results ☑	Self-evaluation	Reference page	Domestic production sites	Research facilities	Domestic offices	Overseas production sites	Overseas offices	Other
Rate of return on natural resource and social capital		Achieving "Earth with Maintained Biodiversity" through corporate activities	Sekisui Environment Sustainability Index Rate of return to natural capital	—	Maintain 100% or more			Maintain 100% or more	117.7%	✓	P.162	✓	✓	✓	✓	✓	✓
Products to enhance sustainability	Improve economic value	Maximize value (social and economic)	Sales of products to enhance sustainability (growth rate (compared with 2019))	—	800.0 billion yen, 22% growth rate (compared to 2019), 63% sales ratio	Expand sales of problem-solving products	Drive sustainable corporate growth thorough products and service which improve environmental and social sustainability.	750.0 billion yen (sales ratio equivalent of 65%)	772.4 billion yen (sales ratio equivalent of 66.7%)	✓	P.64	✓	✓	✓	✓	✓	✓
			Number of new registered products	—	6 per year	6 per year		6 per year	28 per year	✓	P.64	✓	✓		✓		
Reduce environmental impact	GHG	Decarbonization: Zero GHG emissions	Renewable energy ratio of purchased electricity (including solar power generation for in-house use)	—	20%	100%	Maintain 100%	5%	19.7%	✓	P.192	✓	✓	✓	✓	✓	✓
			GHG emissions	FY2013	-9%	-26%	-100%	-8%	-21.1%	✓	P.190	✓	✓	✓	✓	✓	✓
	Reduce energy usage volume	Improve energy efficiency and reduce energy expenses during production	Energy consumption per unit of production	FY2019	-3%	-10%	—	-1%	-1.5%	✓	P.190	✓			✓		
	Resource circulation	Promotion of resource reuse	Waste generated per unit of production	FY2019	Decrease of waste generated per unit of production: 1% over a 3-year period	—	Achieve a circular economy	Decrease of waste generated per unit of production: 1% over a 3-year period	-6.7%	✓	P.207	✓			✓		
			Copier paper use per unit of production	FY2019	-3%	—		-1%	-29.9%	✓	P.209		✓	✓		✓	
			Waste generated per building	FY2019	-6%	—		-2%	-6.3%	✓	P.209						✓
	Water risks	Maintain water resources	Water intake volume at production sites which use large quantities of water	FY2016	-10%	—	—	-10% (three-year Medium-term plan)	-2.4%	×	P.217	✓					
			Total COD volume of river discharge water at production sites with large COD emission volumes	FY2016	-10%	—	—	-10% (three-year Medium-term plan)	+4.2%	×	P.220	✓					
	Reduce the impact of chemical substances	Reduce chemical emission and transport volumes	VOC emissions (Japan)	FY2019	-3%	—	—	-1%	-6.7%	✓	P.224	✓			✓		
	Ecosystem	Ecosystem impact: Minimize risks of ecosystem deterioration	JBIB Land Use Score Card® points	FY2019	+3 points over a 3-year period	Promote ecosystem consideration*at all business sites *Ecosystem consideration: Increased quantitative evaluation of biodiversity	Maintain ecosystem consideration at all business sites	+2 point	+3.3 points	✓	P.242	✓	✓				
Education and development	Enhancing the ability to contribute to the resolution of social issues through education	Improve employees' ability to contribute to solving social problems (employee education)	Problem-solving capability indicators for personnel	FY2020	Implement education and human resource index checking to develop the skills needed by human resources with excellent problem-solving abilities (ESG human resources). Achieve FY2020 benchmarks and set goal values.	Level up as human resources with excellent problem-solving ability	Take a leading role in society as human resources with excellent problem-solving ability	Understand baseline and set target	Set target values Target: +10 points of the baseline	✓	P.65	✓	✓	✓	✓	✓	

Integrated Index

Rates of return to natural and social capital

Integrated Index Sekisui Environment Sustainability Index

The Sekisui Environment Sustainability Index reflects the impact on the environment of the activities of SEKISUI CHEMICAL Group companies (the use of natural and social capital) and their degree of contribution to the environment (returns to natural and social capital) as a single indicator. The major items for implementation in the Environmental Medium-term Plan - reducing various impacts on the environment, expanding products and services that contribute to the natural and social environments, conserving the environment, and so forth - were integrated into this indicator; the Group has been running preliminary calculations since fiscal 2014. From fiscal 2017, this index is being used to monitor the overall progress of Group companies' environmental management.

The Group has been aiming to achieve 90% over the three-year period of the Environmental Medium-term Plan (2017-2019) and achieved a return rate of 104.5% in fiscal 2019, the final year of the Plan.

As far as the Environmental Medium-term Plan is concerned, the Group is evaluating its impact on and contribution to not only the natural environment but also the social environment while declaring its intention to contribute to the return of natural and social capital for its Sekisui Environment Sustainability Index. In 2050, even as we expand our business, we will promote ESG management while maintaining a return of 100% or higher for both natural capital as well as social capital.

Calculation Results

The results of calculating the Sekisui Environment Sustainability Index, utilizing results from fiscal 2021, are as follows. Setting the use of natural and social capital (the impact on natural and social environment) at 100, the return of natural and social capital (contributions to natural and social environment) was 117.7% (a 13.2 percentage point increase over the 104.5% achieved in fiscal 2019 and a 4.2 percentage point decrease from the 121.9% achieved in fiscal 2020).

Trends in the return rate are analyzed as follows.

(1) Regarding the use (impact) of natural and social capital, the influence of COVID-19 gradually dissipated, and the return to production to pre- pandemic levels was one of the causes of the increase in environmental impact. However, the impact on natural and social capital has decreased compared to FY2019 prior to the pandemic in terms of energy and the supply chain. This is considered to be the result of the conversion of renewable energy for electric power, cooperation by our suppliers, and sales of products that lower energy consumption at the time of use (Zero Energy Housing [ZEH]-specification housing).

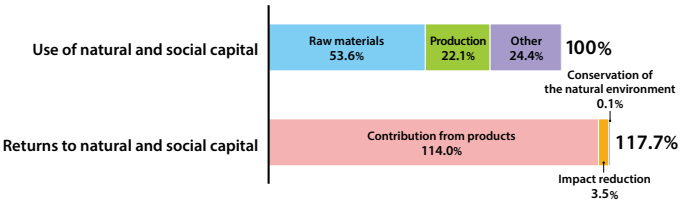
(2) Regarding the return (contributions) of natural and social capital, the returns (contributions) due to Products to Enhance Sustainability are steadily increasing. From an environmental conservation activity perspective, however, contributions are decreasing. This reflects restrictions on the implementation and content of activities due to various policies including efforts to address any further spread of COVID-19 at business sites.

Going forward, we will maintain the rate of return to natural and social capital at 100% or higher while growing the company and expanding our businesses. By 2050, we aim to realize the sustainable use of the earth's natural capital and the social capital generated by human society.

In this index, promoting solving issues by means of products will contribute to improving the sustainability of the earth and society. We also believe that bringing about improvements in the returns on natural and social capital will link to improvements in the sustainability of SEKISUI CHEMICAL Group and its products.

Results of Fiscal 2021 Calculation ✓

Sekisui Environment Sustainability Index (2021)



Calculation Method

(1) Quantitatively calculate the amount of environmental impact and the benefits of environmental activities for each category

Environmental impact and environmental activities (i)

- Raw material usage
- Water used
- Environmental contribution of each product
- GHG emissions
- Emissions of chemical substances
- Employee participation rate in activities to conserve the natural environment
- Volume of waste generated
- Area of land used

(2) Calculate the impact (-factor) and contribution (+ factor) for each category using a database of experts who have accumulated coefficients for calculating the impact on the environment.

Raw data by category Ai × Coefficient ki = Environmental impact (TI)

(3) Add up the amount of impact and contribution for each category (= integration)

Σ (Raw data for each category) Ai × Coefficient ki = Σ (Environmental impact TI)

Note: Units are the amount of damage calculated (= amount necessary to restore the environment to the original conditions [living organisms, plants, and global warming] if our activities damaged the environment)

After compiling the raw data in (1), above, the damage calculation-based impact assessment method LIME2, developed for use in Japan by Professor Norihiro Itsubo of Tokyo City University, was employed for the calculations in stages (2) and (3).

Indicator	Calculation Method
Sekisui Environment Sustainability Index	Sekisui Environment Sustainability Index: Overall of returns of natural capital by the Group / Overall of use of natural capital by the Group Calculating the use and return of natural capital Employing LIME2 (a damage calculation-based impact assessment method developed for use in Japan by Professor Norihiro Itsubo of Tokyo City University) and covering all the criteria for conservation defined by LIME2, the impacts on each of human health (including the effects of global warming), societal assets (including the effects of global warming), the effects on plants (reducing interference on growth), and the effects on life (restricting the extinction of living species) were evaluated and then made into a single indicator. The amount of return to natural capital is calculated assuming that the risk of damage to natural capital has been reduced by various environmental contribution efforts of the entire group compared to the case without such efforts. ・Items included in the calculation of the amount of natural capital used Direct use: Use of land, greenhouse gases, amounts of emissions into the air of PRTR substances and air pollutants, the COD discharged into bodies of water Indirect use: Purchased raw materials*1, energy use, water intake volume, amount of waste material emitted, amount of GHGs emitted indirectly in supply chains (Scope 3) ・Items included in the calculation of returns to natural capital Amount of contributions to reducing use of natural capital through Environment-Contributing Products, the amount of contribution from environmental conservation activities, environment-related donations, mega-solar power generation output (solar farms that produce over 1,000 kilowatts (1 megawatt) of energy each year) *1 Until fiscal 2017, the Group gained an understanding of environmental impact, including the volume of greenhouse gasses emitted, by making calculations using MiLCA, the database provided by the Japan Environmental Management Association For Industry. However, from fiscal 2018, the Group is reflecting the actual GHG emissions of its raw material suppliers with regard to four principal resins (PP, PE, PVC and PVA).

Indicator	Calculation Method
Sekisui Environmental Sustainability Index	Scope of Calculation / Listing by category of calculation: Estimated calculations were conducted using the following assumed conditions: ・Raw materials: Purchased raw materials covered; estimates incorporated into calculations Concerning housing, the calculation includes the constituent raw materials for one structure multiplied by the number of structures manufactured ・Manufacturing / Emissions of harmful chemical substances: 〈Japan〉 emissions of 1 t per year or more of substances covered under PRTR are included in the calculation. 〈Overseas〉 Not included ・Manufacturing / Land maintenance: Domestic plants and research facilities were incorporated into the calculation using the area of the premises, generally considered in terms of the land used for buildings*2. The areas of the premises of overseas plants were estimated. The effects of land use are included in the calculation based on the 30-year period after the purchase of the land *2 Concerning land use, starting with fiscal 2017, improvements to land quality in the JBIB Land Use Score Card® system promoted in Japan were deemed as reductions of the impact of land use, weighted accordingly, and included in the calculation. ・Others: Capital goods in supply chains, other fuel- and energy-related activities, transport and shipping, waste, business trips, commuting by employees, leased assets (downstream), processing/use/disposal of sold products Business trips and commuting by employees: Covers consolidated numbers of employees and includes some estimation Use of sold products: Covers housing sold during the fiscal year, and included in the calculation with assumed energy use for 60 years into the future. Until fiscal 2017, the Group calculated the amount of greenhouse gas reduction achieved through solar power generation as the amount of reduced environmental impact. From fiscal 2018, however, we are also calculating the effect of reduction in energy used in residences built to zero energy house (ZEH) specifications. Processing of sold products: Energy use by customers while processing our products anticipated to consume large amounts of energy was estimated and included in the calculation Disposal of sold products: Major raw materials for each fiscal year were covered and included in the calculation based on the assumption that they would be made into products and disposed of during that fiscal year

Indicator	Calculation Method
Sekisui Environmental Sustainability Index	・Product contributions: (1) The differences in contribution to the environment between the relevant products and previous technologies were evaluated qualitatively for each criterion, based on the contribution to the natural and social environments for each life-cycle (the five stages of procurement of raw materials, manufacturing, distribution, use/maintenance, disposal, and recycling) in terms of CO_2 reductions and energy savings, reductions in waste materials, resource savings, water-savings and the water cycle, preventing pollution, direct preservation of biodiversity, QOL improvements, and other factors. For factors for which a significant difference was estimated, data per product unit was investigated. (2) Based on the results*3 of these investigations, a coefficient for calculating the impact on the environment for each series of data was multiplied by the data, yielding a calculation of the degree of contribution to the environment of each product unit. (3) The sales amount for products in each fiscal year were multiplied by the results found in (2) to calculate the degree of contribution to the environment for each product, and the results were included in the calculation. Trial calculation was performed on the effects of products equivalent to around 67% of Environment-contributing Products. *3 Based on individual standards of the divisional companies ・Direct contribution / Contribution from activities reducing environmental impacts: The effects on the environment relating to production for each fiscal year were compared to [the effects on the environment relating to manufacturing in fiscal 2016 × (revenue in that fiscal year / revenue in fiscal 2016)], and the difference was included in the calculation. There was a proportional relationship between revenue and the effects on the environment relating to manufacturing, based on the idea that the difference was the result of efforts undertaken in the Group's activities. ・Direct contribution / Conservation of the natural environment: The Group keeps track of the number of participants and the amount of time spent on each activity. In the case of planting cedar trees, a fixed coefficient of CO_2 (1.1 t-CO_2 /person-hour) was multiplied by the number of people and the amount of time spent and incorporated into the calculation. Regarding activities in cooperation with local communities which were promoted in Japan, because improving the sustainability of activities through local cooperation and making them conduct the activities on their own (autonomous) were made targets from fiscal 2017, the Group's ability to work toward this target was weighted against the growth axis and included in the calculation ・Direct contributions / donations: The amount intended to be paid for conservation was deemed equal to the amount of money calculated for damage caused and included in the calculation. ・Direct contribution / Mega-solar: Amount of electricity generated included in the calculation as generated energy converted to a CO_2 basis

Environmental Management System

Promoting an Environmental Management System Based on ISO 14001

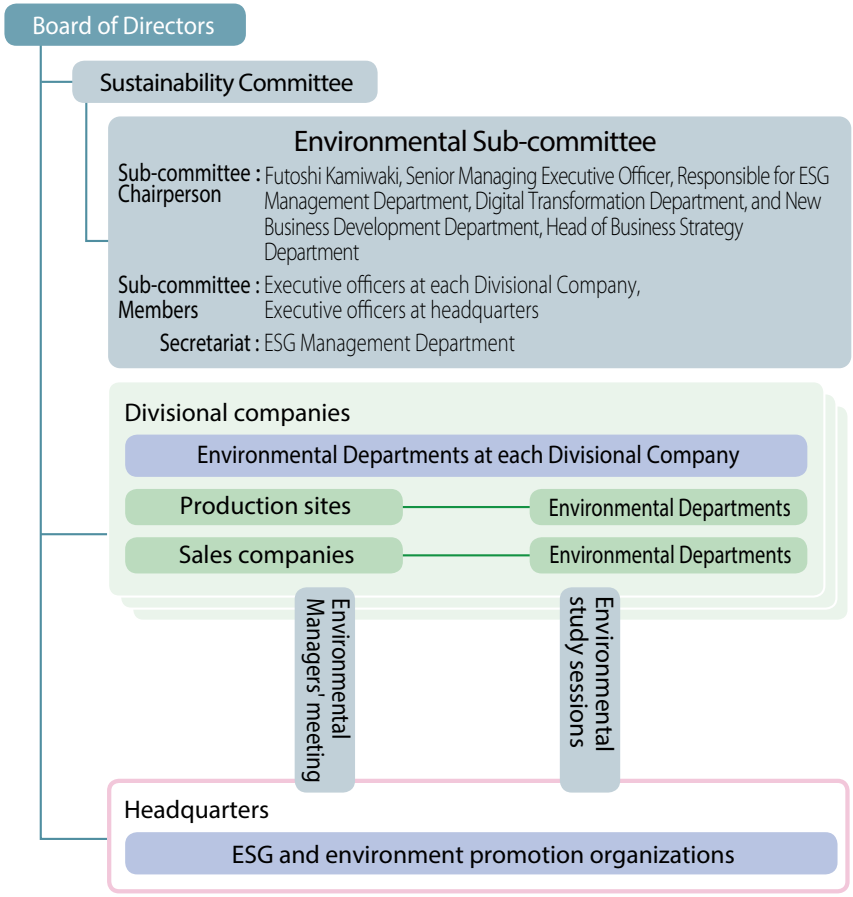
Environmental Management System

The environmental aspects of SEKISUI CHEMICAL Group have been managed and promoted under the Sustainability Committee since fiscal 2020. The CSR Committee, which had been in place until fiscal 2019, had discussed major CSR initiatives and activity policies. By changing the structure of this committee and renaming it the Sustainability Committee, we have turned it into a forum to deliberate on policies and strategies for improving the sustainability of society and SEKISUI CHEMICAL Group. In addition, we have positioned the environment as one materiality for improving sustainability and established the Environmental Sub-committee, which is subordinate to the Sustainability Committee.

At the first Sustainability Committee meeting (held in December 2020), the committee deliberated on the main sustainability-related initiatives, including the environment, as well as activity policies and related issues. A framework was created for the deliberations of this committee to be reported to and approved by the Board of Directors, then applied to management. In addition, the determination and implementation of a detailed activity plan related to the environment will be carried out through meetings of environmental managers from Corporate Headquarters and each divisional company.

In fiscal 2021, the Environmental Sub-committee met twice, in November and March, confirming progress and deliberating on the effectiveness of measures related to such issues as greenhouse gas emission reduction, handling water risk problems, and initiatives for reducing the volume of waste products generated. In addition, in such cases as when urgent expansion of measures is required, management meetings (which meet monthly and are chaired by the head of the Business Strategy Department who is also the person in charge of the ESG Management Department) deliberate on these matters as needed and report to the Board of Directors.

Environmental Management Promotion System (from fiscal 2020)



Environmental Management Across the Supply Chain

When starting or continuing business transactions, we ask our suppliers to establish an environmental management system in conformity with ISO 14001 and to reduce their environmental impact.
With regard to important environmental issues such as climate change, we are confirming whether reduction targets have been set and efforts are under way.
The raw materials used in manufacturing are employed to identify the volume consumed as a part of efforts to ensure material balance and also in monitoring environmental impact. Recognizing that climate change is the most important environmental issue in the case of the raw materials we use, we are stepping up efforts particularly with regard to the reduction of greenhouse gas emissions.
From a raw material perspective, we are requesting the presentation of greenhouse gas emissions data during raw material manufacture from more than 10 manufacturing companies, while promoting efforts to reduce greenhouse gases under Scope 3 for the future for the four major resins that are purchased in large volumes and have high levels of greenhouse gas emissions.

Group EMS-Aligned Environmental Activities in Offices

SEKISUI CHEMICAL Group encourages environmental activities in its offices that are in line with its Environmental Management System (EMS). At our offices located throughout Japan, we refer to the EMS for guidance on environmental activities, such as turning off lights during lunch breaks and other steps to conserve energy and reducing the use of paper.

Setting Self-management Targets That Are Stricter than Environmental Laws and Regulations

SEKISUI CHEMICAL Group has set its own environmental management targets. This includes reducing emissions into the atmosphere and water environments, which are stricter than legal regulations. Each business site closely follows these internal targets. We aim to prevent environmental accidents before they occur by conducting internal environmental audits to uncover latent environmental risks.
In addition, we are developing comprehensive activities by sharing information on new legal and regulatory trends as well as incidents of other companies within the Group.
In fiscal 2021, there were no reports of violations of environmental laws or regulations including transgressions relating to the disposal of waste, wastewater discharge, and contamination. There were also no reports on incidences of administrative guidance. There was one minor incidence of fire and one of heavy oil leakage. There were no complaints (see p. 174). Moving forward, SEKISUI CHEMICAL Group will continue to work to ensure compliance with all statutory and regulatory requirements while promoting thoroughgoing safety.

Major Initiatives

Expansion of EMS Overseas

At our overseas business sites, we are also expanding EMS implementation with similar policies to Japan. We are putting in place systems for obtaining environmental impact data and taking initiatives to reduce environmental impact based on this data.
As of the end of March 2022, 49 business sites in Japan and 41 business sites overseas had acquired ISO 14001 or other similar certifications. The proportion of SEKISUI CHEMICAL Group production sites and research facilities which have acquired these certifications is now 94%.
Additionally, the Group aims to achieve ISO 14001 certification at all production sites.

Conducting Emergency-preparedness Drills

To prevent and mitigate environmental pollution during an emergency, our employees at each business site are trained at least once a year in emergency procedures and communications for a variety of scenarios unique to each business site. The implementation results from the main training held in fiscal 2021 are set out below.

Training for Measures and Notices to be Carried Out in Emergencies

Simulated emergency scenarios	Number of times drills performed
Leakage and outflow of oil and other materials	40
Atmospheric release of solvents and other materials	5
Fire incidents	32
Earthquake incidents	8
Emergency reporting drills	15
Comprehensive disaster drills	32
Handling of other equipment-related accidents	2

Performance Data

Scope of Tabulation for Environmental Performance Data

Note: Regarding the scope of aggregation for environmental performance data, all SEKISUI CHEMICAL (consolidated) business sites (100% of production sales amounts) are subject to environmental reporting.

Japan

Housing Company

R&D institute — **One company and one business site**

Sekisui Chemical Co., Ltd. Tsukuba R&D Site

Production plants — **Seven companies and 10 business sites**

Hokkaido Sekisui Heim Industry Co., Ltd. / Tohoku Sekisui Heim Industry Co., Ltd. / Sekisui Heim Industry Co., Ltd. / Chushikoku Sekisui Heim Industry Co., Ltd. / Kyusyu Sekisui Heim Industry Co., Ltd. / Sekisui Board Co., Ltd., etc.

Sales and construction companies — **26 companies and 141 business sites**

Sekisui Heim sales companies
Construction and service companies

34 companies and 152 business sites in total

Urban Infrastructure & Environmental Products Company

R&D institutes — **One company and one business site**

Sekisui Chemical Co., Ltd. Kyoto Research & Development Laboratories

Production plants — **20 companies and 17 business sites**

SEKISUI CHEMICAL Co., Ltd. Shiga-Ritto Plant and Gunma Plant / Higashinihon Sekisui Industry Co., Ltd. /Nishinihon Sekisui Industry Co., Ltd. / Chiba Sekisui Industry Co., Ltd. / Sekisui Chemical Hokkaido Co., Ltd. / Toto Sekisui Co., Ltd. / Shikoku Sekisui Co., Ltd. / Nara Sekisui Co., Ltd. / Yamanashi Sekisui Co., Ltd. / Sekisui Seikei, Ltd.

Sales — **One company and nine business sites**

Sekisui Chemical Co., Ltd. Tohoku Sales Headquarters, Higashinihon Sales Headquarters, Chubu Sales Headquarters, Nishinihon Sales Headquarters, Kyushu Sales Headquarters, etc.

20 companies and 27 business sites in total

High Performance Plastics Company

R&D institutes — **Two companies and two business sites**

Sekisui Chemical Co., Ltd. Minase Site
Sekisui SoflanWiz Co., Ltd. R&D Division

Production plants — **12 companies and 14 business sites**

Sekisui Chemical Co., Ltd. Musashi Plant, Shiga-Minakuchi Plant and Taga Plant / Sekisui Techno Molding Co., Ltd. / Sekisui Nano Coat Technology Co., Ltd. / Sekisui Fuller Company, Ltd. / Tokuyama Sekisui Industry Co., Ltd. / Sekisui Polymatech Co., Ltd. / Sekisui SoflanWiz Co., Ltd., etc.

12 companies and 16 business sites in total

Headquarters

R&D institutes — **Two companies and two business sites**

Sekisui Chemical Co., Ltd. Advanced Technology R&D Center
Sekisui Medical Co., Ltd. Drug Development Solutions Center

Production plants and headquarters — **Three companies and seven business sites**

Sekisui Chemical Co., Ltd. Osaka headquarters and Tokyo headquarters
Sekisui LB Tec Co., Ltd. Chubu Plant
Sekisui Medical Co., Ltd. Iwate Plant, Tsukuba Plant and Ami Site
Research Laboratory of Plastics Technology Co., Ltd.

Five companies and nine business sites in total

Total: 67 companies and 204 business sites

Note: The total number of companies and business sites do not match, since some companies have two or more business sites, and some business sites are shared by two or more companies.

Overseas

Housing Company

Sekisui-SCG Industry Co., Ltd.

One business site in total

Urban Infrastructure & Environmental Products Company

Sekisui KYDEX, LLC. Bloomsburg-North Campus
Sekisui KYDEX, LLC. Bloomsburg-South Campus
Sekisui KYDEX, LLC. Holland Plant
Sekisui Eslon B.V.
Sekisui Industrial Piping Co., Ltd.
Sekisui Rib Loc Australia Pty. Ltd.
Sekisui (Wuxi) Plastics Technology Co., Ltd.
Sekisui (Shanghai) Environmental Technology Co., Ltd.

Eight business sites in total

High Performance Plastics Company

Sekisui S-Lec America, LLC.
Sekisui S-Lec Mexico S.A. de C.V.
Sekisui S-Lec B.V. Film Plant
Sekisui S-Lec B.V. Resin Plant
Sekisui S-Lec (Thailand) Co., Ltd.
Sekisui S-LEC (Suzhou) Co., Ltd.
Sekisui Specialty Chemicals America, LLC. Pasadena Plant
Sekisui Specialty Chemicals America, LLC. Calvert City Plant
Sekisui Specialty Chemicals Europe S.L.
Sekisui Specialty Chemicals (Thailand) Co., Ltd.
S and L Specialty Polymers Co., Ltd.
Sekisui Voltek, LLC, Coldwater Plant
Sekisui-Alveo B.V.
Sekisui Alveo BS G.m.b.H.
Thai Sekisui Foam Co., Ltd.
Sekisui Pilon Pty. Ltd.
Youngbo Chemical Co., Ltd.
Youngbo HPP (Langfang) Co., Ltd.
Sekisui Youngbo HPP (Wuxi) Co., Ltd
Sekisui DLJM Molding Private Ltd. Greater Noida Plant
Sekisui DLJM Molding Private Ltd. Chennai Plant
Sekisui DLJM Molding Private Ltd. Tapukara Plant
Sekisui Polymatech (Thailand) Co., Ltd.
PT. Polymatech Indonesia
Sekisui Polymatech (Shanghai) Co., Ltd.
Sekisui Polymatech Europe B.V.
SEKISUI AEROSPACE CORPORATION, Renton
SEKISUI AEROSPACE CORPORATION, Sumner
SEKISUI AEROSPACE CORPORATION, ORANGE CITY

29 business sites in total

Headquarters

Sekisui Xenotech, LLC.
Sekisui Diagnostics, LLC. San Diego
Sekisui Diagnostics (UK) Ltd.
Sekisui Diagnostics P.E.I. Inc.
Sekisui Medical Technology (China) Ltd.
Sekisui Medical Technology (Suzhou) Ltd.
Veredus Laboratories Pte. Ltd.

Seven business sites in total

Business Sites That Have Received Third-party Certification for Their Environment Management Systems

Housing Company

Sekisui Chemical Co., Ltd. Tsukuba R&D Site*
Hokkaido Sekisui Heim Industry Co., Ltd.
Tohoku Sekisui Heim Industry Co., Ltd.
Sekisui Heim Industry Co., Ltd.
  Kanto Site
  Tokyo Site
  Chubu Site
  Kinki Site
Chushikoku Sekisui Heim Industry Co., Ltd.
Kyushu Sekisui Heim Industry Co., Ltd.
Sekisui Board Co., Ltd. Minakuchi Plant
Sekisui Board Co., Ltd. Gunma Plant
Sekisui-SCG Industry Co., Ltd.
SCG-Sekisui Sales Co., Ltd.

Urban Infrastructure & Housing Company Environmental Products Company

SEKISUI CHEMICAL Co., Ltd. Shiga-Ritto Plant
Sekisui Chemical Co., Ltd. Gunma Plant
Sekisui Chemical Co., Ltd. Kyoto R & D Laboratories
Chiba Sekisui Industry Co., Ltd.
Sekisui Chemical Hokkaido Co., Ltd.
Toto Sekisui Co., Ltd. Ota Plant
Nishinihon Sekisui Industry Co., Ltd. Okayama Plant
Shikoku Sekisui Co., Ltd.
Kyushu Sekisui Industry Co., Ltd.
Nara Sekisui Co., Ltd.
Yamanashi Sekisui Co., Ltd.
Sekisui Seikei, Ltd. Chiba Plant
Sekisui Seikei, Ltd. Kanto Plant
Sekisui Seikei, Ltd. Hyogo Plant
Sekisui Seikei, Ltd. Hyogo-Takino Plant
Sekisui Seikei, Ltd. Izumo Plant
Sekisui Home Techno Co., Ltd.
Sekisui KYDEX, LLC. Bloomsburg
Sekisui KYDEX, LLC. Holland Plant
Sekisui Eslon B.V.
Sekisui Rib Loc Australia Pty. Ltd.
Sekisui (Wuxi) Plastics Technology Co., Ltd.
Sekisui (Qingdao) Plastic Co., Ltd.
Sekisui (Shanghai) Environmental Technology Co., Ltd.

Headquarters

Sekisui Chemical Co., Ltd. R&D Center*
Sekisui Medical Co., Ltd. Drug Development Solutions Center☆
Sekisui LB Tec Co., Ltd. Chubu Plant
Sekisui Medical Co., Ltd. Iwate Plant
Sekisui Medical Co., Ltd. Tsukuba Plant
Sekisui Medical Co., Ltd. Tsukuba Plant and Ami Site
Sekisui Diagnostics (UK) Ltd.
Sekisui Diagnostics, LLC, San Diego
Sekisui Diagnostics P.E.I. Inc.
Sekisui Medical Technology (China) Ltd.

High Performance Plastics Company

SEKISUI CHEMICAL Co., Ltd. Musashi Plant
SEKISUI CHEMICAL Co., Ltd. Shiga-Minakuchi Plant
  [Sekisui Fuller Company, Ltd. Shiga Plant]
SEKISUI CHEMICAL Co., Ltd. Taga Plant
SEKISUI CHEMICAL Co., Ltd. Minase Site
Sekisui Techno Molding Co., Ltd. Tochigi Plant
Sekisui Techno Molding Co., Ltd. Mie Plant
Sekisui Techno Molding Co., Ltd. Aichi Plant
Sekisui Fuller Co., Ltd. Hamamatsu Plant
Sekisui Nano Coat Technology Co., Ltd.
Tokuyama Sekisui Industry Co., Ltd.
Sekisui Polymatech Co., Ltd.
Sekisui SoflanWiz Co., Ltd.
  [Sekisui SoflanWiz Co., Ltd. Iwaki Plant, Atsugi Plant, Akashi Plant and R&D Division]
Sekisui S-Lec B.V. Film Plant
Sekisui S-Lec B.V. Resin Plant
Sekisui-Alveo B.V.
Sekisui Alveo BS G.m.b.H.
Sekisui Specialty Chemicals Europe, S.L.
Sekisui S-Lec America, LLC.
Sekisui Votek, LLC. Coldwater Plant
Sekisui Specialty Chemicals America, LLC.
Pasadena Plant
Sekisui Specialty Chemicals America, LLC.
Calvert City Plant
Sekisui S-Lec Mexico S.A. de C.V.
Sekisui S-Lec Thailand Co., Ltd.
Thai Sekisui Foam Co., Ltd.
Sekisui Specialty Chemicals (Thailand) Co., Ltd.
S and L Specialty Polymers Co., Ltd.
Sekisui Polymatech Europe B.V.
Sekisui Polymatech (Thailand) Co., Ltd.
PT. Polymatech Indonesia
Sekisui Pilon Pty. Ltd.
Sekisui DLJM Molding Private Ltd.
Great Noida Plant, Tapukara Plant,
Chennai Plant
Youngbo Chemical Co., Ltd.
Youngbo HPP (Langfang) Co., Ltd.
Sekisui High Performance Packaging (Langfang) Co., Ltd.
Sekisui S-LEC (Suzhou) Co., Ltd.
Sekisui Polymatech (Shanghai) Co., Ltd.

[ ]: Organizations in brackets are included in the scope of certification. Some sites without parentheses may sinclude related sections that have attained EMS certification.
☆ Eco Action 21; others ISO 14001
* The SEKISUI CHEMICAL Co., Ltd. Tsukuba R&D Site and the R&D Center share a single certification

Indicator	Calculation Method
Number of EMS-certified business sites	Number of business sites that have received external EMS certification External EMS certification: ISO 14001, Eco-Action 21, etc.
The proportion of all production sites and research facilities within SEKISUI CHEMICAL Group that have received external EMS certification	The proportion of all EMS-certified business sites within SEKISUI CHEMICAL Group = The number of all production sites and research facilities that have received external EMS certification / The number of all production sites and research facilities within SEKISUI CHEMICAL Group

Environment-related Accidents, Complaints, etc. ☑

		Content	Response
Accidents	Fires	Fire from laboratory equipment during continuous operation	Reinforce risk assessment and install multiple interlocks
	Leaks	Leakage of heavy oil due to piping corrosion	Renewed piping and replaced soil, added leaks to daily inspection item
Complaints		No complaints occurred.	

In fiscal 2021, there were two environmental accidents which occurred. In both cases, we identified the cause and carried out permanent recurrence prevention measures.

Environmental Accounting

We are working to reduce the environmental impact of our business activities while identifying the effects of costs incurred and investments undertaken.

SEKISUI CHEMICAL Group Refers to Public Guidelines and Adds Its Own Concepts

From an ESG management perspective, and in order to fulfill our reporting responsibilities as a company and promote efficient environmental activities, we are working to reduce our environmental impact while employing environmental accounting in a bid to identify the effects of costs incurred and investments undertaken to contribute to the environment.

Under the Medium-term Plan, which began in fiscal 2020, and from a Group-wide management strategy perspective, environment-related investments and expenses are positioned as a capital cost. We will use environmental accounting to raise awareness that the restraint of capital costs and efforts to improve productivity will help boost ROIC.

Performance Data ☑

Summation period	April 1, 2021 to March 31, 2022
Scope of tabulation	Domestic production sites, research facilities, housing sales company sites, and Corporate Headquarters departments.
Calculation Method	Based on the Ministry of the Environment's Environmental Accounting Guidelines 2005 Edition
Approach toward summation	・Depreciation and amortization are excluded from environmental conservation costs because they overlap with investment costs. ・Investment amounts are based on budget approvals during the summation period. ・Expenditures and investments that contain other than environmental conservation activities are distributed pro-rata in 10% increments. ・Disclosure categories have been revised, environmental conservation costs are subcategorized, and the economic effects of environmental conservation measures are limited to effects on an actual basis, excluding deemed effects from fiscal 2020. ・The environmental conservation effects of physical quantity are shown in each performance data chapter.

Environmental Conservation Costs

(Millions of yen)

Items			FY2020		FY2021	
Category	Description of main activities		Costs	Investments	Costs	Investments
1) Costs within business areas	(1) Pollution prevention costs	a. Air	369	62	319	98
		b. Water	130	77	85	68
		c. Soil	0	7	0	4
		d. Noise	12	1	1	0
		e. Vibration	0	0	0	0
		f. Odor	255	0	242	4
		g. Ground	106	3	105	0
		h. Others	304	8	307	29
		Subtotal	**1,176**	**157**	**1,058**	**202**
	(2) Countermeasures against global warming	a. Global warming (including energy saving)	686	588	114	833
		b. Ozone layer	100	18	6	33
		c. Others	0	4	0	55
		Subtotal	**786**	**611**	**120**	**921**
	(3) Resource recycling costs	a. Effective utilization of resources	63	17	6	31
		b. Water conservation, utilization of rainwater, etc.	4	4	7	28
		c. Waste volume lightening, reduction, recycling, etc.	176	93	177	76
		d. Waste processing, disposal, etc.	6,293	4	6,477	106
		e. Others	18	1	1	6
		Subtotal	**6,553**	**119**	**6,668**	**246**
2) Upstream/downstream costs	Cost increases due to recycling of products such as those manufactured and sold, greener purchasing, etc.		**113**	**0**	**109**	**28**
3) Administrative costs	Environmental education, EMS certification, running costs for green action organization, information disclosure, etc.		**2,385**	**12**	**2,206**	**1**
4) Research & development costs	Research and development on environmental conservation		**3,740**	**313**	**15,009**	**813**
5) Social activities costs	Social contributions, etc.		**112**	**98**	**78**	**0**
6) Environmental damage costs	Nature restoration, etc.		**30**	**2**	**57**	**5**
Total			14,896	1,311	25,306	2,216

Substantive Economic Effects of Environmental Conservation Measures

(Millions of yen)

Description of effects		FY2020	FY2021	Remarks
Revenue	(1) Profit on sales of valuable waste resources	176	139	Profit on sales of valuable waste resources from promotion of waste segregation and recycling
	(2) Revenues from sale of electricity	402	334	Revenues from sale of electricity generated by megasolar facilities
Cost savings	(3) Cost savings through energy-saving activities	1,311	256	Including savings through utilization of co-generation
	(4) Cost savings through waste-reduction activities, etc.	502	463	Reductions through optimization, reuse, and zero emissions activities
Total		2,392	1,191	

Use of Natural Capital

As a Group that conducts business using natural capital, SEKISUI CHEMICAL Group undertakes initiatives aimed at reducing environmental impact, to achieve both environmental preservation and sustainable business. In addition to reducing greenhouse gases, introducing renewable energy, and analyzing risks and opportunities related to climate change, the Group is moving forward with such efforts as resource recycling and protection of water resources.

Initiatives to Reduce its Impact on the Environment

SEKISUI CHEMICAL Group is engaged in businesses that use fossil fuels, lumber, and other resources of the earth (natural capital).
To balance conservation of the irreplaceable global environment and sustainable business, we are working to reduce the impact on the environment.
From fiscal 2020, we have been expanding the scope of our efforts to include the supply chain and strengthen our lifecycle management, including the supply chain, with the aim of resolving environmental issues.

Climate Change

In response to the urgent global need to address the issue of climate change, SEKISUI CHEMICAL Group is working to reduce not only its own greenhouse gas emissions, but also those of its entire supply chain, from the procurement of raw materials to the transportation and use of its products.
Based on the Long-term Vision launched in fiscal 2020, we are focusing on expanding the use of renewable energy and more clearly communicating our policies of contributing to global warming countermeasures through our business activities. At the same time, we are accelerating efforts to achieve carbon neutrality by 2050.

Realizing Resource Recycling

SEKISUI CHEMICAL Group strives to thoroughly implement the 3Rs (reduce, reuse, and recycle) throughout the entire lifecycle of its products and to achieve zero waste emissions from its business sites. In addition to continuing these activities going forward, we will promote recycling, including resource conversion centered on plastic raw materials (use of non-fossil and renewable materials) and the development and social implementation of waste recycling technologies, in a bid to realize a circular economy and a recycling-oriented society in 2050.

Reducing Water-related Risks

Water resources are natural capital that is indispensable to the continuation of business, and at the same time are also natural capital shared by the community.
Up to fiscal 2019, the entire Group has focused on reducing water intake volume and the environmental impact attributable to water drainage. However, the situation and challenges of water resources are highly localized and contradictory to working toward a uniform global goal.
In addition to the activities undertaken to reduce environmental impact by cutting back water intake volume as well as water discharge from fiscal 2020, we are examining our business activities with the use of water in a sustainable manner as a shared regional resource uppermost in our mind after identifying the risk that our ongoing business will have on the water resources located in close proximity to our business sites.

Chemical Substance Management

We believe that properly managing chemical substances while taking into consideration product safety, occupational safety and health, as well as environmental impact is an important responsibility of any company. SEKISUI CHEMICAL Group has set its own targets for reducing the emission and transfer of chemical substances and is working to comply with global laws and regulations on an ongoing basis.

Environmental Impact Assessment

With the aim of understanding and minimizing the impact of products and services on the global and social environment, we will continue to assess the environmental impact of our products at each stage of product planning, development, mass production trials, market launch, and initial distribution.

Material Balance

SEKISUI CHEMICAL Group releases information on the resources and energy used in its business activities (inputs) and on the impact on the environment of those activities (outputs).

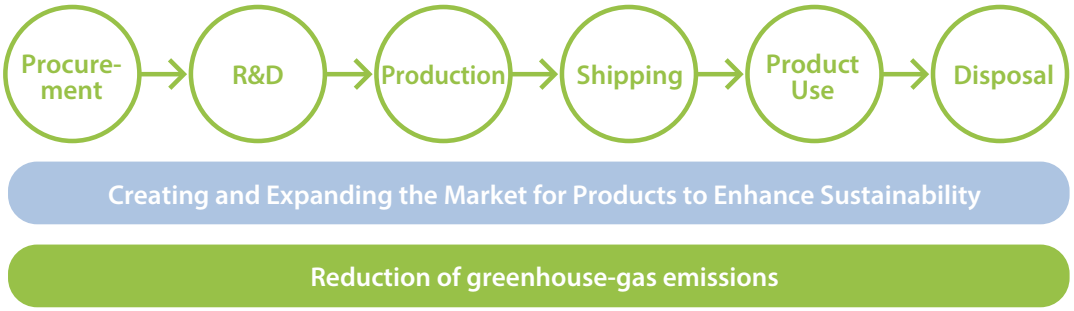
Climate Change

Efforts to Reduce Greenhouse Gas Emissions throughout the Supply Chain

Basic Concept

Reducing Emissions throughout the Supply Chain

SEKISUI CHEMICAL Group has formulated a medium-term greenhouse gas emission reduction plan in line with targets established at COP21 (the 21st Conference of the United Nations Framework Convention on Climate Change).
We are identifying and disclosing the effects in terms of risks and opportunities that climate change will have on business continuity in line with science-based scenarios aimed at the achievement of the ambitious goals of the Paris Agreement, which are based on Science Based Targets (SBT). Moreover, we reflect these factors into our business plans and emission reduction targets. Concerning emissions, SEKISUI CHEMICAL is engaged in reducing greenhouse gas emissions at every stage, from the procurement of raw materials to development, manufacturing, transport, and use. We monitor these emissions throughout the entire supply chain. This does not only includes our own business sites, but also raw material suppliers as well as the use of our products after being sold. Steps are then taken to publicly disclose the findings.



Addressing Climate Change

SEKISUI CHEMICAL Group believes that it is important to earnestly confront all climate change risks and make every effort to keep the temperature rise to less than 1.5°C. Under the SEKISUI Environment Sustainability Vision 2050 that was formulated in 2019, we are trying to contribute to solving environmental issues by reducing the environmental impact of our business activities. We have set a target of zero GHG emissions due to our business activities by 2050. Moreover, we are advancing the introduction of solar power equipment to generate electricity for use at our own business sites in which it was installed, increasing our utilization ratio for renewable energy from externally purchased electricity and have set a new target value of 100% by 2030. We focused on initiatives to achieve a 26% reduction in GHG emissions by 2030, to which we committed ourselves under the SBT initiative. As a result, we expect to reach this target earlier than planned and therefore have begun considering raising the 2030 reduction target.

Risks and Opportunities Posed by Climate Change to Our Businesses

We also strive to understand the risks and opportunities that climate change presents to the operations of SEKISUI CHEMICAL Group, in terms of their magnitude, scope of impact, and other matters through scenario analysis conducted based on the TCFD Guide.
SEKISUI CHEMICAL Group examines measures to mitigate identified risks and considers the creation of new businesses by developing products and services for identified opportunities. Significant risks along with possible countermeasures and strategies are reported to the Board of Directors through the Sustainability Committee, and important strategies are decided at Board of Directors meetings.
Through this kind of management, we believe it is possible to remain a company that meets the demands of society through sustainable business development.

Addressing the Rising Costs Associated with Climate Change Strategies

As an initiative to reduce environmental impact, SEKISUI CHEMICAL Group is working to promote visualization of energy use while reducing the amount by transforming and improving production processes, and continuously upgrading equipment for the purpose of greatly increasing energy efficiency in production processes.
SEKISUI CHEMICAL Group has been switching to purchased power generated from renewable energy sources since fiscal 2020. In Japan, we are promoting the use at our factories of SMARTHEIM DENKI, a power trading service that purchases surplus electricity from solar power generation equipment installed on the roofs of customers' detached houses sold by the Company.

Product Development and Strategies Aimed at Solving Environmental Issues and Meeting the Changing Needs of the Market

SEKISUI CHEMICAL Group manages risks that arise from changing market needs due to climate change and other global social issues by continuing to develop products that make a significant contribution to solving issues in the natural and social environment, and disclosing and distributing detailed data on outcomes. At the same time, we believe that it will surely seize the opportunity of "increasing demand".
In particular, we believe it is possible to magnify the impact we create by quantifying as much as possible the size of the contribution Group products make to solving social issues, which leads to opportunities to create markets in ways that help solve global issues and heighten the awareness of consumers.
From fiscal 2020, we intend to strengthen our partnerships with stakeholders and engage in activities to increase our contribution to solving issues through co-innovation (fusion) and accelerate solutions through early dissemination. With this in mind, we established the MINASE INNOVATION CENTER (MIC) as an organization to promote open innovation with our stakeholders.
MIC has started to accelerate efforts to solve social issues by actively engaging in technological exchanges with start-up companies that possess low-carbon technologies, and materials and technologies that contribute to resource conversion.

Addressing the Deterioration in Operating and Working Conditions

If climate change becomes a grave problem and the highest and lowest temperatures become increasingly extreme, it is possible that people in manufacturing and construction will no longer be able to work. SEKISUI CHEMICAL Group believes that it is possible to minimize the effects of climate change by proposing construction and engineering plans that take into account the seasonality of each region.

Each divisional company and Group subsidiary has formulated its own BCP based on its unique situation as a means of avoiding as much as possible the risk of loss in operations and work availability due to natural disasters.

Major Initiatives

Acquisition of Certification under the SBT* Initiative for Greenhouse Gas Reduction Targets

SEKISUI CHEMICAL Group discloses its targets on its website and elsewhere in order to demonstrate to society its commitment as a company to proactively addressing climate change issues. Additionally, in fiscal 2017, the Group applied for certification under the SBT Initiative to demonstrate that the medium- to long-term targets announced for its overall businesses and for its supply chains reach a scientifically grounded, ambitious level aimed at achieving the COP21 (Paris Agreement) targets. The Group then became the first in the chemical sector worldwide to receive this certification.

<Certified Targets >

SCOPE 1+2: Reduce greenhouse gas emissions by 26%, relative to fiscal 2013, by 2030
SCOPE 3: Reduce greenhouse gas emissions by 27%, relative to fiscal 2016, by 2030

<Progress in Fiscal 2021>

SCOPE 1+2: Reduced greenhouse gas emissions by 20.5%, relative to fiscal 2013
SCOPE 3: Reduced greenhouse gas emissions by 1.3%, relative to fiscal 2016

The Group will continue to affirm its growing responsibility to play its role as an industry leader and will strive to engage in activities leading and imploring society as a whole to work on measures to address climate change.

* SBT: SBT (Science-Based Targets). Called for by joint initiatives, including the UN Global Compact, in response to the adoption of the Paris Agreement. Through the SBT Initiative, greenhouse gas reduction targets established by companies are certified as targets that are scientifically based (SBT) that contribute to long-term measures combating climate change.

Promoting the Use of Renewable Energy in Electricity by Joining RE100

We recognize that the issue of climate change is not only a major social challenge, but also a major risk factor for SEKISUI CHEMICAL Group.In August 2020, we joined the international initiative RE100, which aims to procure the energy consumed in business activities entirely from renewable energy, in order to accelerate efforts that contribute to solving this problem in society as a whole. In the future, we will promote activities in cooperation with member companies and organizations.
To achieve zero GHG emissions from our business activities by 2050, and to attain the greenhouse gas reduction target certified by the SBT Initiative by fiscal 2030, SEKISUI CHEMICAL Group will enact strategies such as entrenching energy conservation measures and promoting a shift to renewable energy.
We intend to shift to renewable energy sources for 100% of the electric power we purchase from external sources by 2030, and aim for all our electric power, including that produced by cogeneration systems, to come from renewable energy sources by 2050.

Reducing Greenhouse Gases at the Supply Chain Stage

In the case of SEKISUI CHEMICAL Group, we were able to determine that greenhouse gas emissions falling under SCOPE 3 are highest at the raw materials procurement and product use stages. The reason that emissions are high in the raw materials procurement stage is because of the characteristics of our business as a chemicals manufacturer.
Meanwhile, emissions from the product-use stage arise from the large volumes of greenhouse gases emitted as the result of the energy consumed by the houses that we sell.
Moving forward, we will review our selection criteria for new materials, with the goal of reducing greenhouse gas emissions by 20% compared to fiscal 2016 for raw materials. We have also begun working with suppliers to reduce the use of four resins known to be raw materials that result in high levels of emissions.
In terms of emissions at the stage of product use, we will contribute to energy use reductions from occupied housing by increasing the proportion of net-zero energy houses (ZEH) among the housing units that we sell, achieving 50% reductions, relative to fiscal 2016, by fiscal 2030.

Promoting the Use of Renewable Energy

SEKISUI CHEMICAL Group has been promoting the use of renewable energy by installing solar power generators at its domestic and overseas production sites.

The following manufacturing sites have installed solar power generation equipment producing electricity for in-house use in fiscal 2021.

- Sekisui Medical Technology (China) Ltd.
- Sekisui Chemical Co., Ltd. Taga Plant
- Sekisui Medical Co., Ltd. Tsukuba Plant (Phase 3)

Sekisui Medical Technology (China) Ltd.

Sekisui Chemical Co., Ltd. Taga Plant

Sekisui Medical Co., Ltd. Tsukuba Plant (Phase 3)

Solar Power Generation Facilities Producing Electricity for On-site Use			
Japan	Tohoku Sekisui Heim Industry Co., Ltd.	USA	SEKISUI S-LEC AMERICA, LLC.
	Chushikoku Sekisui Heim Industry Co., Ltd.	Netherlands	SEKISUI S-LEC B.V. Film Plant
	Kyushu Sekisui Heim Industry Co., Ltd.	Thailand	SEKISUI S-LEC (THAILAND) CO., LTD.
	Sekisui Heim Industry Co., Ltd. Kanto Site	China	Sekisui Medical Technology (China) Ltd.
	Yamanashi Sekisui Co., Ltd.		
	SEKISUI SEIKEI, LTD. Kanto Plant		
	Sekisui Medical Co., Ltd. Tsukuba Plant		
	Sekisui Chemical Co., Ltd. Taga Plant		

SEKISUI CHEMICAL Group has also begun proactively switching over to renewable energy sources for electricity purchased from fiscal 2020, and there are currently a total of 20 facilities in Japan and overseas where 100% of electric power is derived from renewable energy.

Facilities for which 100% of electricity is derived from renewable energy sources			
Japan	Hokkaido Sekisui Heim Industry Co., Ltd.	Netherlands	SEKISUI S-LEC B.V. Film Plant
	Tohoku Sekisui Heim Industry Co., Ltd.		SEKISUI S-LEC B.V. Resin Plant
	Sekisui Heim Industry Co., Ltd. Kanto Site		SEKISUI ALVEO B.V.
	Sekisui Heim Industry Co., Ltd. Chubu Site		SEKISUI POLYMATECH EUROPE B.V.
	Sekisui Heim Industry Co., Ltd. Kinki Site	Spain	SEKISUI SPECIALTY CHEMICALS EUROPE S.L.
	Chushikoku Sekisui Heim Industry Co., Ltd.		
	Kyushu Sekisui Heim Industry Co., Ltd.		
	Sekisui Board Co., Ltd. Minakuchi Plant		
	Sekisui Board Co., Ltd. Gunma Plant		
	Sekisui Medical Co., Ltd. Tsukuba Plant		
	Sekisui Medical Co., Ltd. Ami Site		
	Sekisui Medical Co., Ltd. Drug Development Solutions Center		
	SEKISUI CHEMICAL Co., Ltd. Gunma Plant		
	SEKISUI CHEMICAL Co., Ltd. Tsukuba Site		
	SEKISUI CHEMICAL Co., Ltd. Tokyo headquarters		

Energy consumption from renewable sources in fiscal 2021 was 144.4 GWh, comprising 17.2% of total purchased power (including solar power generation for in-house use) and 19.7% of total power consumption, including self-generated power from co-generation systems.

Energy Savings in Newly Constructed Buildings

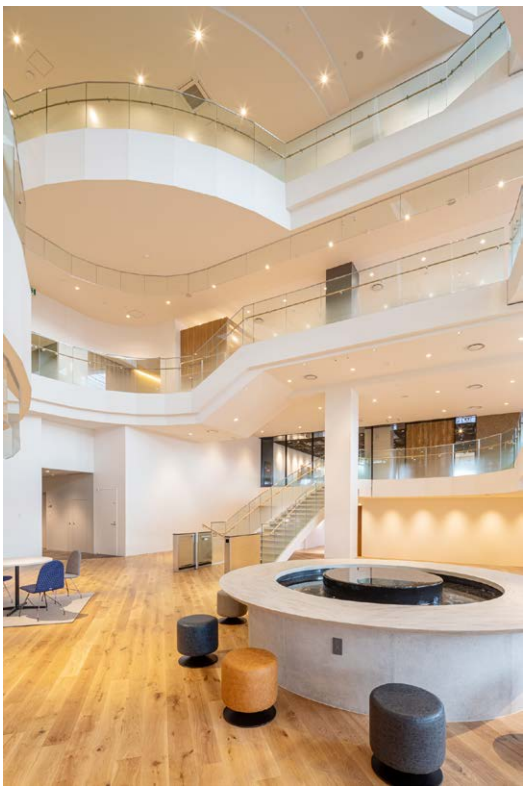
ZEB Ready* Certified New Research Facility, MINASE INNOVATION CENTER

The MINASE INNOVATION CENTER (MIC), a new research facility, was opened in Shimamoto-cho, Osaka Prefecture in August 2020. The facility was designed with a skip-floor configuration and a central atrium so as to make the entire building a space for people to interact. While this gives the building a complex shape, it has also been certified as ZEB Ready thanks to the adoption of fixtures and equipment that contribute to energy conservation, as well as a design that makes the best use of solar energy.

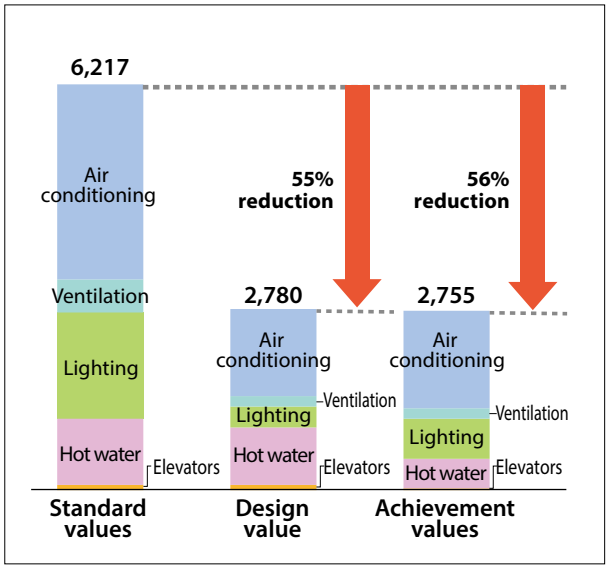
We have been able to engage in continuous operations at a total volume that meets design values for the past two years. Meanwhile, energy use in air conditioners and lighting exceeded design values. We believe that the increase in human resources and subsequent increase in activity is the main reason behind this compared with when the facility first opened. In fiscal 2022, we will promote activities that will help achieve energy saving performance by further upgrading and expanding rules.

* ZEB (Net Zero Energy Building): Buildings that reduce annual primary energy consumption balance to zero.
ZEB Ready: Advanced buildings in anticipation of ZEB certification, buildings with high thermal insulation and highly efficient energy-saving equipment.
(From the Ministry of the Environment web page [Japanese language only]: http://www.env.go.jp/earth/zeb/terms/index.html?id=term_01)

MINASE INNOVATION CENTER (exterior view)



MINASE INNOVATION CENTER (interior view)



Primary energy consumption (fiscal 2021)(GJ/m² per year)

Contribute to Carbon Reduction and Decarbonization through Our Businesses

SEKISUI CHEMICAL Group is promoting the creation and expansion of markets through its in-house Products to Enhance Sustainability system. This initiative is designed to help accelerate the Group's contribution through its businesses and the realization of a decarbonized society in 2050.
Products that not only help mitigate the effects of climate change, but also adapt to changes in the environment are considered important from a roadmap perspective. As such, we are looking to expand our lineup of these products. Specific examples are listed as follows.

[Examples of Products That Contribute to Climate Change Mitigation]

<Housing> Products and services that support energy-efficient lifestyles through the use of renewable electricity
Example) ZEH-specification housing (net-zero energy house)
SEKISUI's SMARTHEIM DENKI power trading service selliing surplus generated renewable energy purchased from customers of sold housing to factories and other customers

<Mobility> Lightweight and highly functional products that reduce energy consumption during transportation and shipping
Example) S-LEC® interlayer film for automotive laminated glass that boasts thermal and acoustic insulation functions
Sheet materials used in aircrafts, trains, etc. (SEKISUI KYDEX product)

<Electronics> Materials indispensable for energy-efficient products, products that contribute to improving the durability and performance of related parts, which are becoming increasingly important with the development of 5G connectivity, etc.
Example) Heat release materials that help mitigate issues caused by overheating circuit boards (Sekisui Polymatech Co., Ltd. product)
Materials used in energy-efficient equipment (Micropearl), functional tape

[Examples of Products That Adapt to Changes in the Climate]

<Building & Civil Engineering> Products that help manage natural disasters that are increasing or becoming more severe due to the progression of climate change
Example) Products that enable the temporary storage of rainwater during periods of torrential rain

[Initiatives Undertaken in Collaboration with Other Companies]

Carbon recycling technology project partnership with ArcelorMittal, S.A.
SEKISUI CHEMICAL and ArcelorMittal concluded a partnership to pursue a project to capture and re-use the CO_2 emitted during the steelmaking process in a bid to reduce the dependence on fossil resources and contribute to the decarbonization of steelmaking. Through this project, energies will be directed toward developing technologies that separate, recover, and reuse the CO_2, which would otherwise have been emitted into the atmosphere during the steelmaking process. Key to this work is SEKISUI CHEMICAL's innovative technology that converts CO_2 to carbon monoxide at high yields.

[Progress against Commitments]

Expanding the market penetration rate of ZEH- specification housing

In order to reduce the consumption of energy derived from fossil resources by customers living in Sekisui Heim homes sold by the company, we are committed to and are considering various measures aimed at expanding the penetration rate of ZEH-specification housing. In fiscal 2021, the ratio of new detached net-zero energy houses (ZEH) (actual results compiled in accordance with ZEH builders' reporting methods) was 82%, and 89% after including the Nearly ZEH and ZEH oriented categories. The number of storage cell-equipped homes (energy self-sufficient houses) proposed in conjunction with ZEH houses has also increased on a cumulative basis, and the storage cell installation rate for new detached homes has grown to 72%*.

* Contract-based storage cell installation rate from April 2021 to March 2022 (Company data)

Activities in related initiatives

[Aimed at mitigating climate change]

The Japan Climate Initiative (JCI)

Significance/objectives … The Group is joining the front line of the global push for decarbonization from Japan in order to mitigate climate change.

Activities …… In order to drive social change and help realize decarbonization, the JCI promotes information dissemination from and opinion exchanges with companies, local governments, and NGOs that are actively engaged in addressing climate change. Central to efforts aimed at accelerating activities through corporate collaboration, we are promoting the declaration of goals and activities to achieve objectives.

Our Company's role …… We share the latest information on our initiatives and using them to consider measures.

RE100

Significance/objectives … Aim for companies to cover 100% of the electricity used in their operations from renewable energy sources

Activities …… Motivated companies that have made declarations cooperate with each other to communicate and are promoting communication and activities that have an impact on society.

Our Company's role …… We are contributing to greater use and diffusion of renewable energy in society by declaring our commitment to shifting toward renewable energy.

JAPAN CLIMATE LEADERS' PARTNERSHIP (JCLP)

Significance/objectives … Aim to realize a rapid transition to a decarbonized society and achieve the 1.5°C target to avert a climate crisis.

Activities …… Leading Japan in five pillars to achieve policy changes
Pursuing policy engagement, promoting decarbonization within companies, providing solutions to decarbonize society, communicating with society, and cooperating with global networks

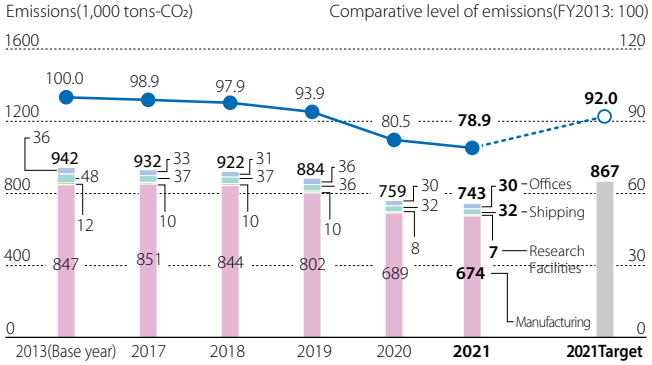
Our Company's role …… Decarbonize the Company and society by making a decarbonization declaration, transitioning to a decarbonized business model, and pursuing corporate collaboration to promote internal decarbonization mainly within supply chains.

Performance Data ☑

Note 1: In addition to SCOPE 1+2, SEKISUI CHEMICAL GROUP manages greenhouse gas (GHG) emissions that arise from its business activities including transportation.

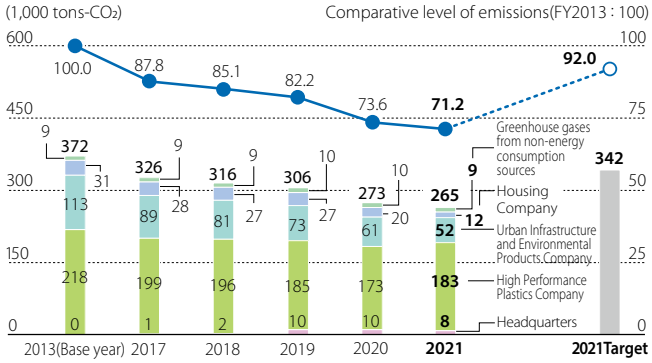
Note 2: As of fiscal 2019, results from the medical business are collated and presented with Corporate Headquarters results following its separation from the High Performance Plastics Company.

Greenhouse Gas (GHG) Emissions from Business Activities

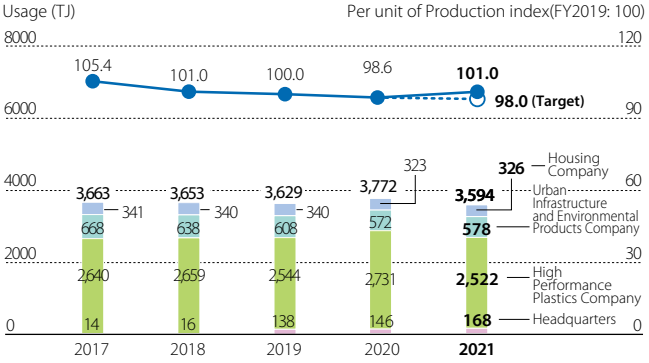


Note: Past figures have been revised due to improvements in calculation precision.

Greenhouse Gas (GHG) Emissions during Manufacturing / Japan



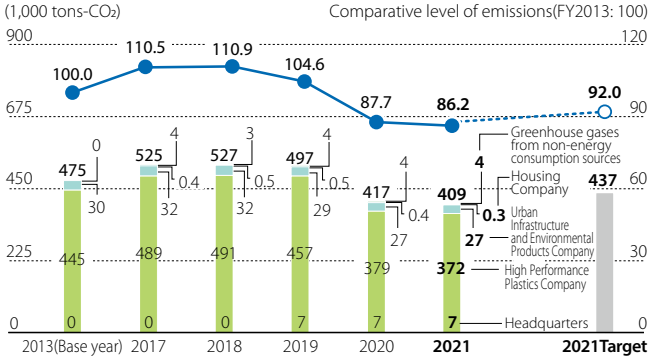
Energy Use and per Unit of Production* (Index) during Manufacturing / Japan



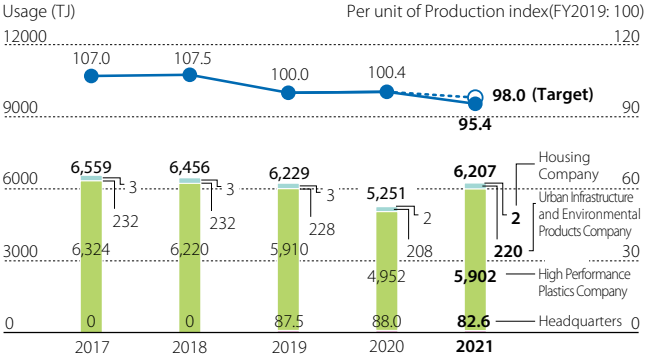
* Energy consumption per unit of production weight

* Past figures have been revised due to improvements in precision.

Greenhouse Gas (GHG) Emissions during Manufacturing / Overseas



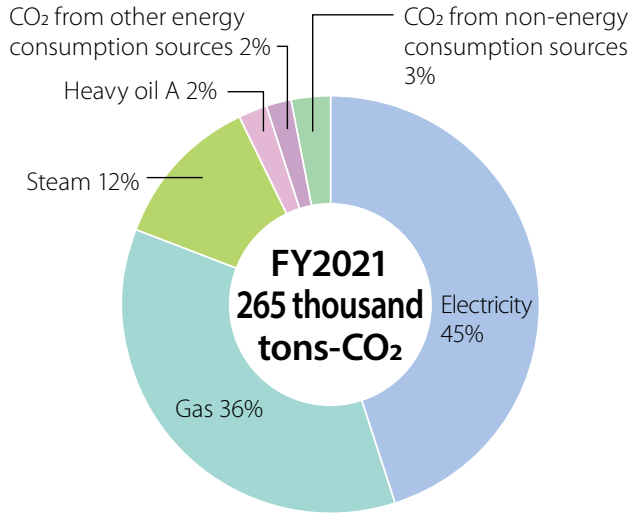
Energy Use and per Unit of Production* (Index) during Manufacturing / Overseas



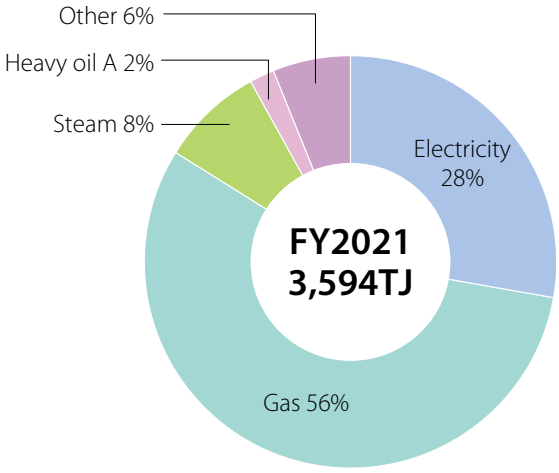
* Energy consumption per unit of production weight

* Past figures have been revised due to improvements in precision.

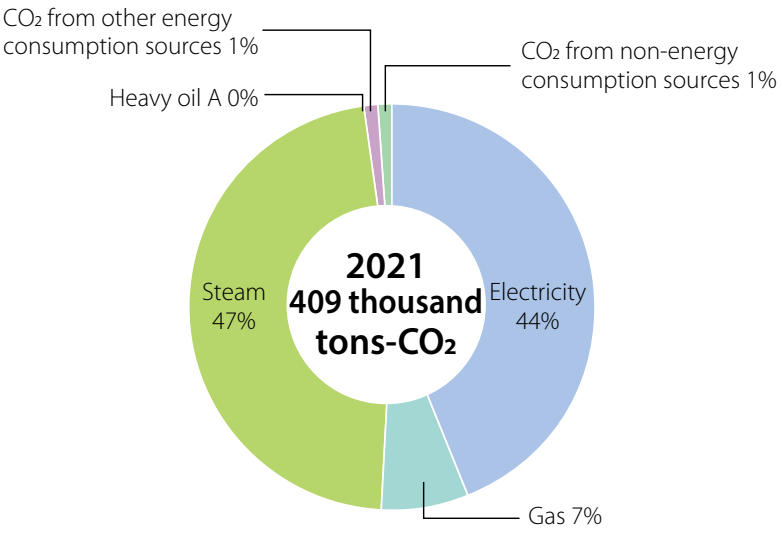
Breakdown of Greenhouse Gas (GHG) Emissions during Manufacturing / Japan



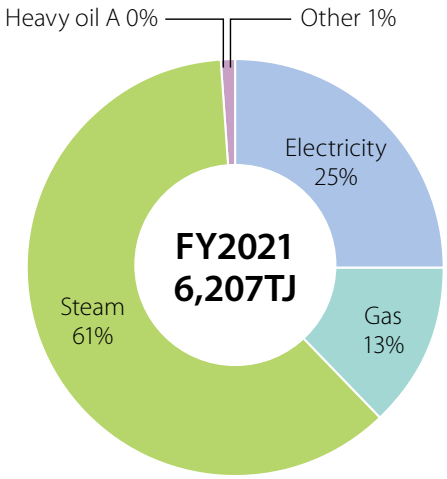
Breakdown of Energy Use during Manufacturing / Japan



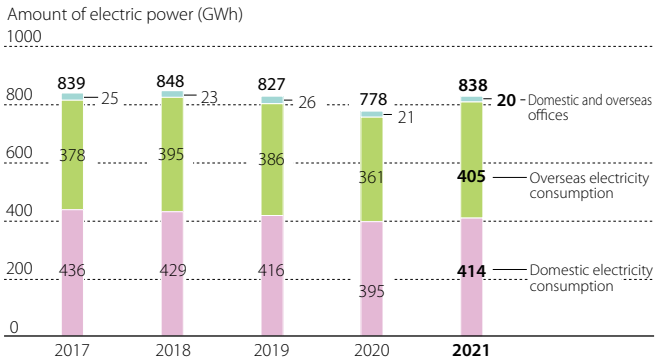
Breakdown of Greenhouse Gas (GHG) Emissions during Manufacturing / Overseas



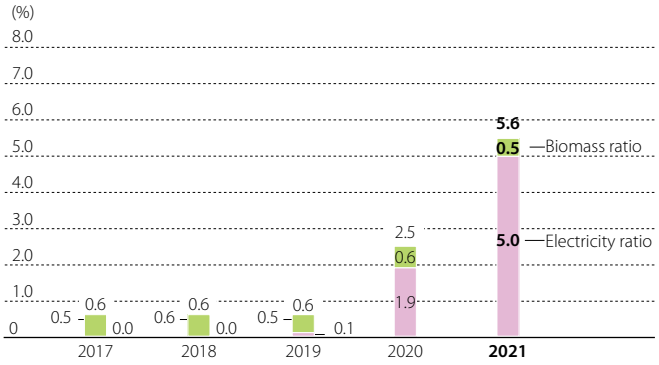
Breakdown of Energy Use during Manufacturing / Overseas



Electricity Consumption in Japan and Overseas/ Domestic Production Sites and Research Laboratories, Overseas Production Sites, Domestic and Overseas Offices

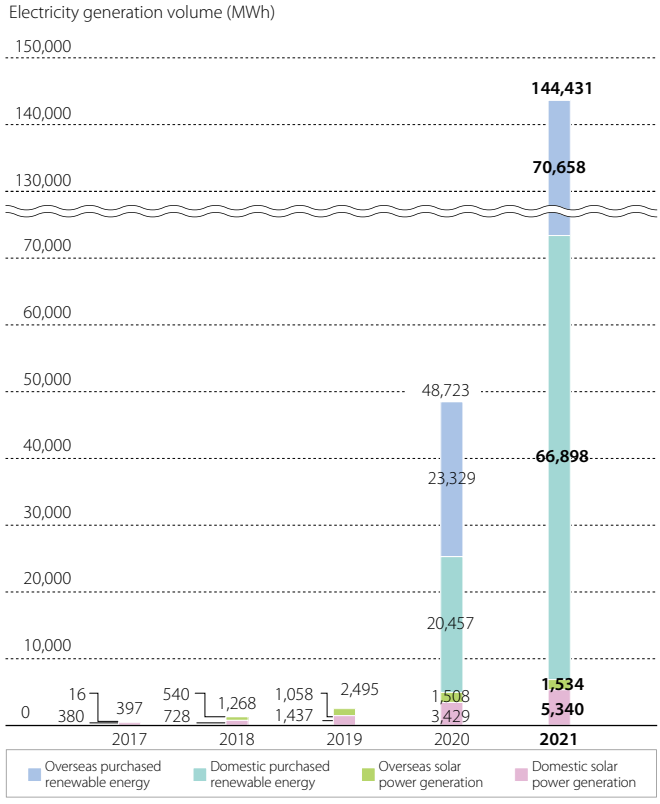


Ratio of Renewable Energy to Total Energy Consumption/ Electricity, Biomass Boilers



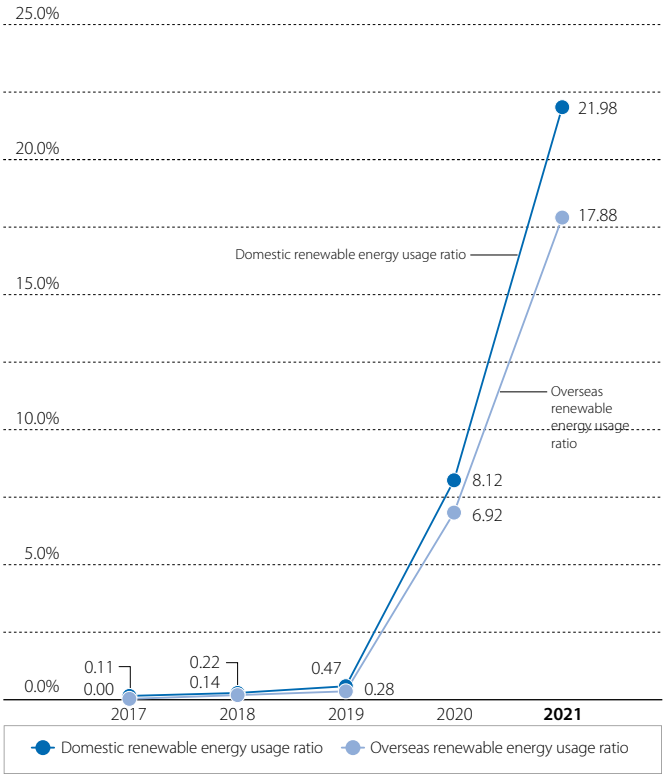
Note: Past figures have been retroactively revised due to changes in aggregate scope.

Energy generated for in-house consumption, amount of purchased electricity, and domestic and overseas *excluding co-generation



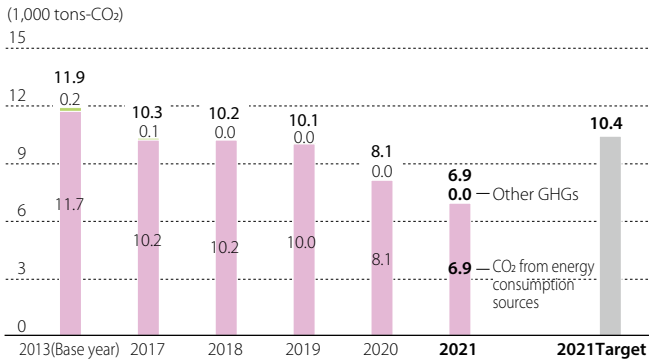
* Past figures have been retroactively revised due to changes in aggregate scope.

Ratio of electricity derived from renewable energy sources/ domestic and overseas *excluding co-generation

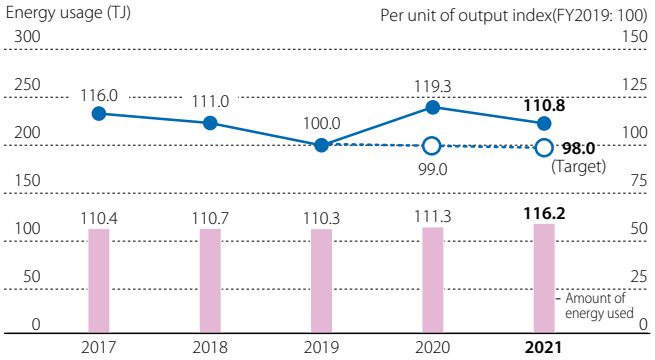


* Past figures have been retroactively revised due to changes in aggregate scope.

GHG Emissions at Research Facilities

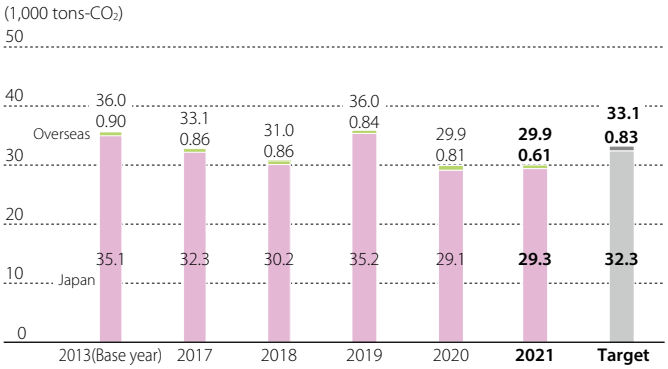


Energy Use and per Unit of Output* (Index) at Research Facilities

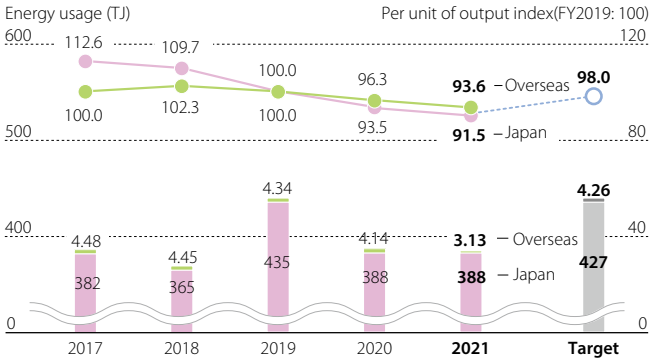


* Energy consumption per employee

GHG Emissions at Offices



Energy Use and per Unit of Output* (Index) at Offices

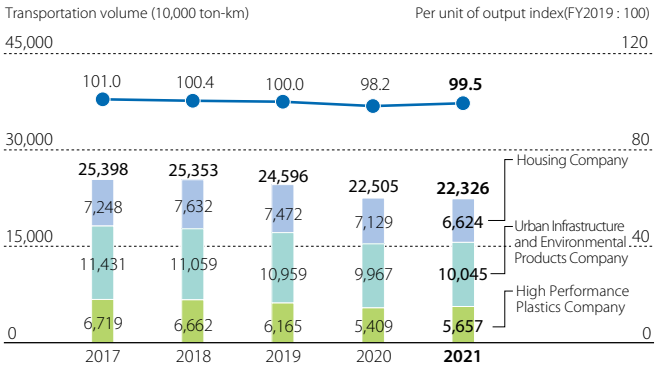


* Amount of energy used per unit of exclusive-use (non-shared) area

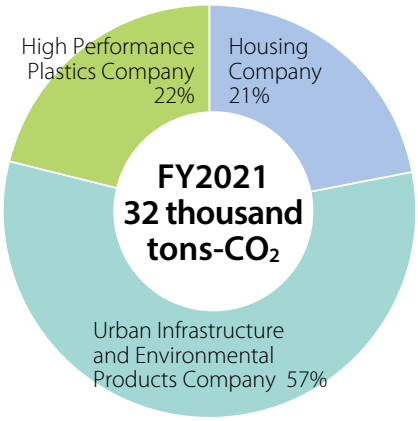
Note: For Japan, electricity and fuel for company cars are tabulated, while only electricity is tabulated for overseas.

Indicator	Calculation Method
Greenhouse Gas Emissions	GHG emissions = Σ[fuel use, purchased electricity, purchased steam × CO_2 emissions coefficient] + greenhouse gas emissions not arising from energy consumption Greenhouse gas emissions not arising from energy consumption = CO_2 emissions not arising from energy consumption* + Σ[emissions of non-CO_2 greenhouse gases × global warming potential] *Includes CO_2 emissions from burning of non-fuel gases based on local laws related to countermeasures on global warming, both inside Japan and overseas [CO_2 Emissions Coefficient] Purchased Electricity: In Japan, the coefficient provided in notices pursuant to the Act on Promotion of Global Warming Countermeasures is applied to the latest data at the start of each fiscal year. In cases where the Company purchases power with the emission coefficient set by menu, the adjusted emission coefficient applies. For overseas data, the latest coefficient data obtained from local power suppliers as of the beginning of each fiscal year is applied. When unavailable, data from the GHG Protocol and EPA eGRID 2019 were used. City Gas/Natural Gas and Purchased Steam: Coefficients obtained from suppliers are applied to the latest data at the start of each fiscal year If a coefficient cannot be obtained in this manner, it is based on local laws related to countermeasures on global warming. Fuel Other than the Above: Based on local laws related to countermeasures on global warming. Global warming potential: Emissions coefficients determined based on greenhouse gas emission calculations, reports, and official disclosures. Fuel that corresponds to energy sources is calculated based on local laws related to countermeasures on global warming both in Japan and overseas.
Energy Use	Energy use = Σ[amount of fuel used, amount of electricity purchased, amount of solar power generation for in-house use, and amount of steam purchased x unit calorific value] [Unit Calorific Value] Purchased Electricity: 3.60 MJ/kWh (Amount of solar power generation for in-house use and amount of purchased electric power from renewable energy sources are included in the energy use) Fuel, Purchased Steam: Based on the Act on the Rational Use of Energy

Transportation Volumes and Energy per Unit of Transportation (Index) / Japan

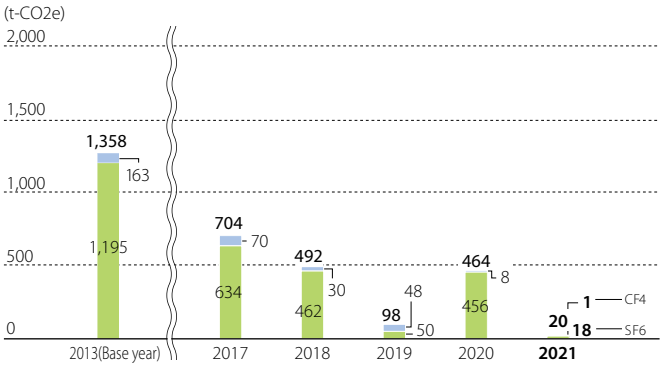


CO_2 Emissions during the Transportation Stage / Japan



Indicator	Calculation Method
CO_2 Emissions during the Transportation Stage	The calculation is made by combining the fuel consumption method (transport of housing units, etc.) and the improved ton-kilometer method (other than transport of housing units, etc.) CO_2 emissions = Σ[fuel use × CO_2 emissions coefficient] + Σ[amount transported (metric tons) × distance transported (km) × fuel use per unit of transportation × CO_2 emissions coefficient] Fuel use per unit of transportation is the value used in the reporting system for specified freight carriers under the Act on the Rational Use of Energy Domestic distribution (shipment of products) is covered

Emissions of Non-CO_2 Greenhouse Gases (Global Production, Laboratories)

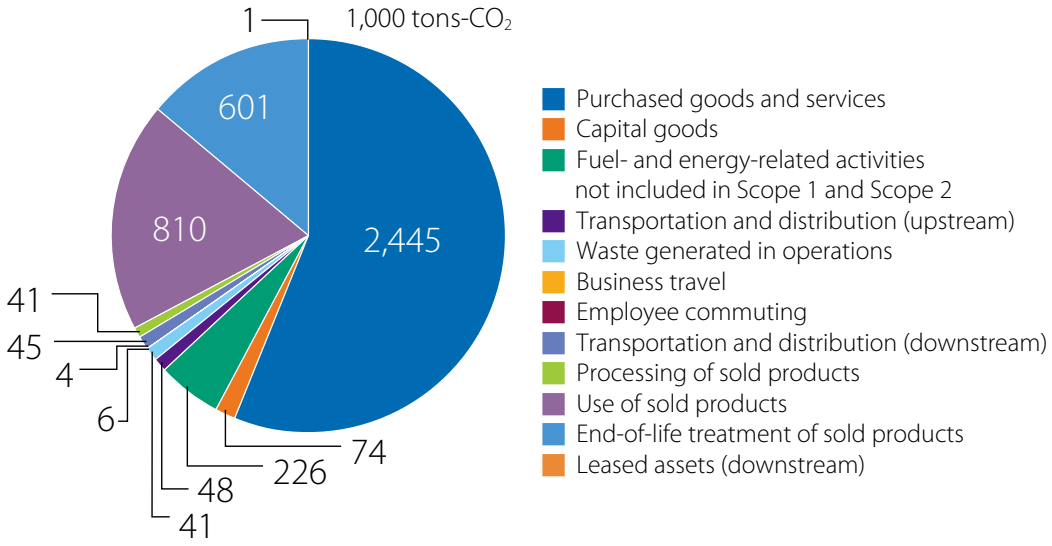


Greenhouse Gas Emissions throughout Our Supply Chain (SCOPE 3)

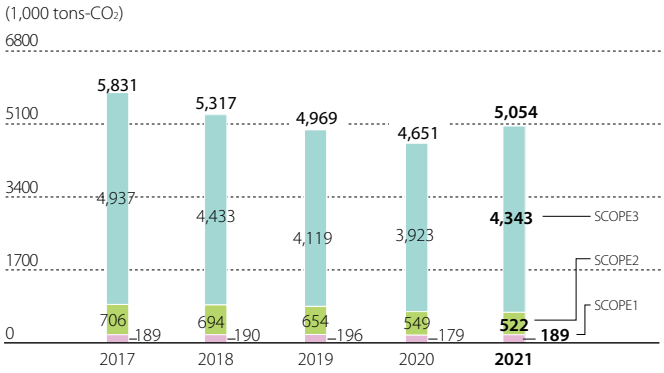
Estimated emissions (1,000 tons-CO_2)

Category		FY2016	FY2017	FY2018	FY2019	FY2020	FY2021
Upstream	Purchased goods and services	2,180	2,336	2,457	2,352	2,282	2,445
	Capital goods	37	171	123	96	80	74
	Fuel-and energy related activities not included in Scope 1 and Scope 2	127	131	129	127	198	226
	Transportation and distribution (upstream)	37	46	48	48	43	48
	Waste generated in operations	46	42	44	44	37	41
	Business travel	26	30	27	24	7	6
	Employee commuting	5	6	6	6	5	4
Downstream	Transportation and distribution (downstream)	45	45	50	48	43	45
	Processing of sold products	43	46	48	45	39	41
	Use of sold products	1,542	1,554	940	772	708	810
	End-of-life treatment of sold products	310	529	560	558	481	601
	Leased assets(downstream)	1	1	1	2	1	1
Total(upstream/downstream)		4,400	4,937	4,433	4,119	3,923	4,343

Note: From fiscal 2018, emissions related to "use of sold products" have decreased by including the effect of reducing energy consumption in ZEH-specification houses.



Greenhouse Gas Emissions throughout Our Supply Chain as a Whole (Classified by SCOPE)



Note: From fiscal 2018, emissions related to "use of sold products" have decreased by including the effect of reducing energy consumption in ZEH-specification houses.

Indicator	Calculation Method	
Greenhouse Gas Emissions throughout Our Supply Chain	Purchased Goods and Services	CO_2 emissions = Σ[(amount of major raw materials used (excluding substances subject to regulation by the PRTR Law) as listed in Material Balance section of this report + estimated values for other raw materials) × emission coefficient (Inventory Database for Environmental Analysis (IDEA) Ver.3.1 (the world's largest GHG emissions database developed by the National Institute of Advanced Industrial Science and Technology (IDEA v.3.1))] Up to and including fiscal 2017, the Group gained an understanding of environmental impact, including the volume of greenhouse gases emitted, by making calculations using MiLCA, the database furnished by the Japan Environmental Management Association for Industry. However, from fiscal 2018, the Group is reflecting the actual emissions of its raw material suppliers with regard to four principal resins (PP, PE, PVC and PVA).
	Capital Goods	CO_2 emissions = Σ[(amount of spending on capital expenditures authorized for the given fiscal year for buildings, structures, mechanical equipment, and transport vehicles) × emissions coefficient (per unit emissions database for calculating organizational greenhouse gas emissions, etc., arising from supply chains (Ver. 3.0) (Ministry of the Environment and Ministry of the Economy, Trade and Industry))]
	Fuel- and Energy-related Activities not Included in SCOPE 1 and SCOPE 2	CO_2 emissions = Σ[(fuel use, amount of purchased electricity, and amount of purchased steam) × emissions coefficient] The emissions coefficients used are as follows. For fuel IDEA v.3.1 For purchased electricity and steam, per unit emission database for calculating greenhouse gas emissions by organizations, etc., arising from supply chains (Ver. 3.0) (Ministry of the Environment and Ministry of the Economy, Trade and Industry). Applicable to production sites, laboratories, and offices both inside Japan and overseas.
	Transportation and Distribution (Upstream)	CO_2 emissions = Σ[amount of major raw materials used (excluding substances subject to regulation by the PRTR Law) as listed in the Material Balance section of this report × transport distance × emission coefficient (IDEA v.3.1)] (Calculated assuming that the transport distance was uniformly 200 km)
	Waste Generated in Operations	CO_2 emissions = Σ[amount of waste materials generated (by type) × emission coefficient (IDEA v.3.1)] Scope: Major production sites and research facilities in Japan and overseas.
	Business Travel	CO_2 emissions = Σ[transportation costs by method of transport × emissions coefficient (per unit emissions database for calculating organizational greenhouse gas emissions, etc., arising from supply chains (Ver. 3.0) (Ministry of the Environment and Ministry of the Economy, Trade and Industry))] (Includes estimates of transportation costs for group companies) Group companies in Japan and overseas all covered.

Indicator	Calculation Method	
Greenhouse Gas Emissions throughout Our Supply Chain	Employee Commuting	CO_2 emissions = ∑[amount spent on commuting allowance × emissions coefficient (per unit emissions database for calculating organizational greenhouse gas emissions, etc., arising from supply chains (Ver. 3.0) (Ministry of the Environment and Ministry of the Economy, Trade and Industry)] (Calculated based on the assumption that all commuting is done by passenger train) (Group company commuting costs include estimates) Group companies in Japan and overseas all covered.
	Transportation and Distribution (Downstream)	The calculation is made by combining the fuel consumption method (transport of housing units, etc.) and the improved ton-kilometer method (other than transport of housing unit, etc.) CO_2 emissions = ∑[fuel use × CO_2 emissions coefficient] + ∑[amount transported (metric tons) × distance transported (km) × fuel use per unit of output × CO_2 emissions coefficient (value used in the reporting system for specified freight carriers under the Act on the Rational Use of Energy)] (Estimates used for overseas) Covers shipments of products by Group companies in Japan and overseas.
	Processing of Sold Products	CO_2 emissions = ∑[production volume of relevant products × emission coefficient at the time of processing the relevant products (IDEA v.3.1)] Covers products for the automotive industry by Group companies in Japan and overseas.
	Use of Sold Products	CO_2 emissions = ∑[number of structures sold as housing during the relevant fiscal year × amount of electricity purchased from power companies throughout a year × 60 years × electricity-based emissions coefficient] The amount of electricity purchased from power companies throughout a year is based on the Electricity Income and Expenditure Home Survey of Houses with Built-In Solar Power Generation Systems (2018). The electricity-based emissions coefficient employed is the emissions coefficient from the fiscal 2021 report produced by the Act on Promotion of Global Warming Countermeasures reporting system (alternate value), equal to 0.470 metric tons-CO_2 /MWh. The calculation is performed under the assumption that housing will be used for 60 years. Housing sold within Japan for the fiscal year relevant to the calculation is covered. Up to and including fiscal 2017, the Group calculated the amount of greenhouse gas reduction achieved through solar power generation as the amount of reduced environmental impact. From fiscal 2018, however, we are also calculating the effect of reduction in energy used in residences built to zero energy house (ZEH) specifications.

Indicator	Calculation Method	
Greenhouse Gas Emissions throughout Our Supply Chain	End-of-life Treatment of Sold Products	CO_2 emissions = Σ[amount of major raw materials used in the products sold during the relevant fiscal year × emission coefficient (IDEA v.3.1)] The calculation assumes that products sold during a given fiscal year are disposed of during the same fiscal year.
	Leased Assets (Downstream)	Calculated to cover construction related to the installation of machinery leased by SEKISUI CHEMICAL CO_2 emissions = Σ[relevant installation units × fuel usage per unit x CO_2 emissions coefficient (an emissions coefficient determined based on a system of greenhouse gas emission calculations, reports, and official disclosures)]

Realizing Resource Recycling

Working to Reduce Waste and Increase Recycling Throughout Product Life Cycles

Basic Concept

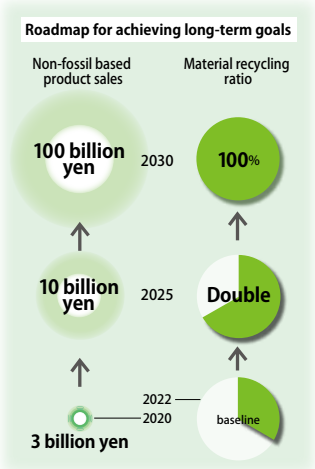
Promoting resource recycling in aims of achieving a circular economy

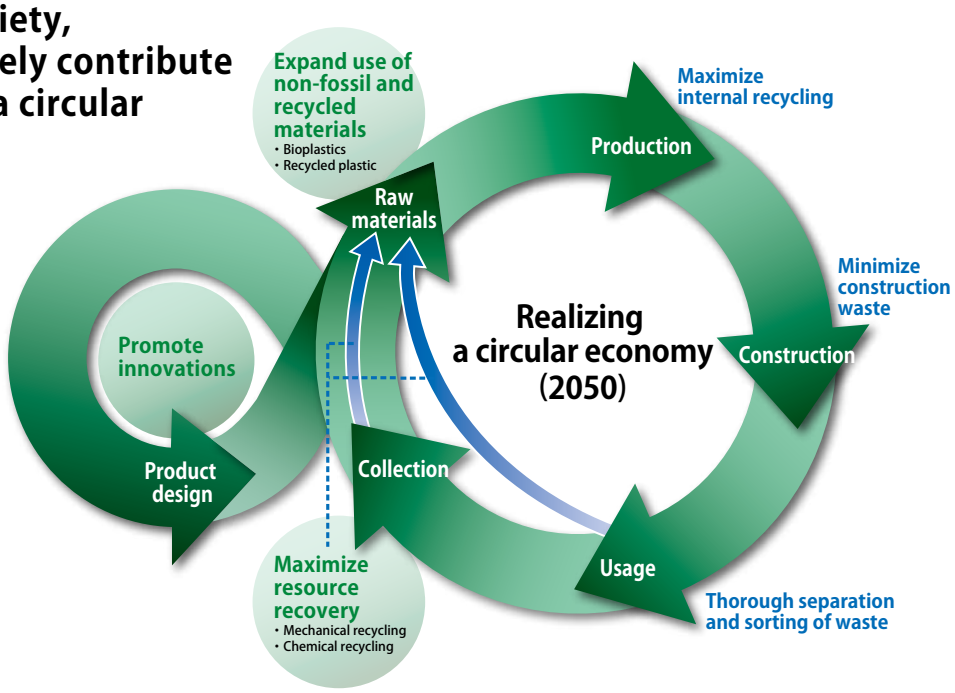
SEKISUI CHEMICAL Group aims to realize a circular economy and a sustainable society in 2050. To achieve this long-term goal, we established a resource recycling policy and strategy in fiscal 2020.
In partnership with our supply chain, we minimize the consumption of virgin raw materials derived from fossil fuels. In addition, we are promoting recycling of resources through material circulation, aiming for a circular economy throughout our businesses. In order to achieve, we are intensifying our initiatives related to the following three points as our Group policy.

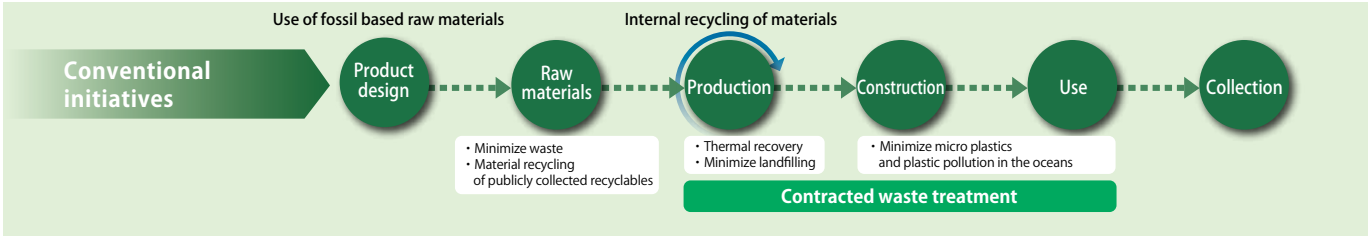
[Group Policy]

[1] Promote innovations that contribute to resource recycling
[2] Expand the use of non-fossil fuel-based materials and recycled materials in our business operations
[3] Maximize resource recovery during the entire product life cycle

For a sustainable society, SEKISUI will extensively contribute to the realization of a circular economy.







Promoting Efforts Based on the Resource Recycling Policy

For Vision 2030, SEKISUI CHEMICAL Group will strategically expand its businesses in four domains and double sales volume through social problem-solving, aiming to achieve a sustainable society and corporate growth. In these business areas, we believe plastics will continue to be an important material. Up until now, in the production process, we have continually made efforts year after year to reduce the amount of waste generated, using waste per unit of production as an indicator for these efforts. In addition, we have carried out for example internal recycling to reuse wood scraps and other waste materials generated and implemented processing for reuse of resources including energy when disposing of materials as waste.

In our newly-determined resource recycling policy, we will expand the ratio of plastic materials we use comprised of bioplastics and other recycled materials which are not derived from fossil fuels. Regarding our production processes, we will promote internal recycling more than ever before, intensifying initiatives to minimize the waste products emitted from our construction projects. In addition, in both the use and recovery stages, we will work on our product design and supply chain to ensure products can be disposed of with thorough sorting and separation. In this way, we will promote initiatives to maximize reuse of material resources through mechanical recycle, chemical recycle, and other recycling methods.

Within these life cycles, we believe that innovation at the product design stage is important for driving the promotion of resource circulation. By designing new products and revising the various processes for existing products, we are promoting initiatives for innovation that will accelerate resource circulation.

Road Map for Long-term Goal Achievement

		2020 ～ 2022	By 2025	By 2030
Business strategy	Net sales of products to enhance sustainability that contribute to resource circulation	1.1 times	1.3 times	2 times or more
Raw material resource conversion	Net sales of products not derived from fossil fuels and using recycled materials	3 billion yen	10 billion yen	100 billion yen
Recycling waste products	Rates for recycling waste plastic into new materials	Analyze current conditions and set baselines	2 times	100%

Addressing Plastic Waste Issues

In recent years, plastic waste as typified by marine plastic waste has emerged as a significant environmental issue. The Group does not engage in the manufacture and sale of primary microplastics where use presupposes dissolution. However, we do recognize that plastic processed products and plastic materials contained in products that are used or discarded after use of the sold products may deteriorate in the natural environment and become microscopic if not properly treated.

1. Employee education
   In both the products we produce and our manufacturing processes, we must correctly recognize these issues, and develop human resources who are capable of finding a resolution. To this end, we engage in employee education while promoting environmental and social contribution activities.

2. Contributing to the transformation of society
   To ensure the proper use of plastic, SEKISUI CHEMICAL Group recognizes the importance of building social systems while promoting a shift in the awareness of each individual employee and undertaking education and training. The Group is therefore engaged in various collaborations between industry, government, and academia.
   For example, in regard to the issue of marine plastics, SEKISUI CHEMICAL Group participates in the Clean Ocean Materials Alliance (CLOMA), a collaboration initiative between companies organized by the Ministry of Economy, Trade and Industry. For a fundamental solution, we are working on the common issues necessary for the social implementation of resource recycling schemes with the aim of realizing a circular economy.

3. Creating and expanding the use of products, technologies, and services that contribute to the realization of a recycling-based society and a circular economy
   SEKISUI CHEMICAL Group has developed a technology to convert combustible waste into gas and then convert that gas to ethanol, which is the raw material for plastics, by means of a microbial catalyst. Currently, a one-tenth commercial scale (processing capacity of approximately 20 tons/day) demonstration plant has been constructed in Kuji City, Iwate Prefecture, and has been in operation since this spring, for practical application of the technology in the future.

4. Promotion of recycling back into materials
   With regard to the waste generated by its production businesses, SEKISUI CHEMICAL Group has been exchanging manifests with waste contractors, and disposal has been undertaken in a proper manner. Going forward, we will continue to endeavor to improve the rate of recycling back into materials after having undertaken proper treatment.

Major Initiatives

Promoting Packaging Material Reductions

SEKISUI CHEMICAL Group has long been an environmentally conscious company, and we are reducing packaging materials, introducing reusable boxes*, and eliminating packaging materials wherever possible, among other initiatives.
Our proactive efforts to reduce packaging since the early 2000s have enabled us to achieve significant results. We will continue these efforts in the future, taking further steps to reduce packaging waste.
As one initiative aimed at using less product packaging, we sell foldable shipping cartons and a range of plastic containers that help facilitate the implementation of returnable box systems.

* Boxes that can be used multiple times to ship materials, parts, and products between locations.

Promoting Construction Material Recycling

The housing industry is engaged in the efficient use and recycling of construction materials throughout. As a member of this industry, SEKISUI CHEMICAL Group is reducing the amount of construction waste produced when building houses and promoting recycling.

Converting External Wall Panel Scrap into Raw Materials for Products

Sekisui Board Co., Ltd. Gunma and Minakuchi business sites, which produce Sekisui Heim external wall panels, generate scrap during their production processes. Along with making efforts to reduce the scraps produced whenever possible, these sites are moving forward with in-house material recycling for any scraps that are ultimately generated. Specifically, the scraps generated during the production of products from the completed external walls are crushed and sorted, after which the extracted wood chips and cement are used as recycled raw materials.

Contribution to Resource Recycling through Business

Without realizing a circular economy in 2050, there can be no decarbonized society. Based on its resource recycling strategy and roadmap, SEKISUI CHEMICAL Group is shifting to the use of non-fossil fuel sourced, recyclable, and related materials with respect to its plastic materials while reviewing its product design to facilitate recycling parts in a manner that contributes to the resource recycling of existing products. In doing so, we are promoting the creation and market expansion of Products to Enhance Sustainability in a bid to accelerate our contribution through our businesses.

[Examples of Products That Contribute to Resource Recycling]

<Building & Civil Engineering> Products that use recycled plastic as a raw material
Example) Products that enable the temporary storage of rainwater during periods of torrential rain (rainwater storage material Cross-Wave)
Pipes with foamed cores made from recycled materials (3-layer pipe)

<Mobility> Buy-back system to take back edge trim from customers for reuse as raw materials (SEKISUI KYDEX product)

[Initiatives Undertaken in Collaboration with Other Companies]

Initiatives for the social implementation of BR technologies

We recognize the need to collaborate with companies and organizations that are active across each of the life cycle processes in order to realize product resource recycling.

SEKISUI CHEMICAL Group has rolled out a technology that converts combustible waste into ethanol using a microbial catalyst and gas fermentation process jointly developed with U.S.-based venture company LanzaTech NZ, Inc. In order to validate the viability and commercial application of this chemical recycling technology, which is essential to resource recycling, the Company, INCJ, Ltd., and SEKISUI BIO REFINERY CO., Ltd. completed construction of a demonstration plant approximately 1/10th the size of a commercial plant in Kuji City, Iwate Prefecture in April 2022. Plans are in place for the ethanol produced at the plant to be recycled as a raw material for plastics in collaboration with SUMITOMO CHEMICAL CO., LTD. which is already underway.

Collaboration with Initiatives

CLOMA (Japan Clean Ocean Material Alliance)

Organizer ····· Ministry of Economy, Trade and Industry, Ministry of the Environment, and Ministry of Agriculture, Forestry and Fisheries

Significance/objectives ··· To solve the issue of marine plastic waste, which is a global environmental issue

Activities ····· Aiming for the more sustainable use of plastic products, and the development, introduction and popularization of innovative substitutes that will lead to a reduction of plastic waste

Our Company's role ····· The Company holds the chairmanship of Working Group 3 (WG3), one of five key action working groups that promote activities aimed at plastic recycling through corporate collaboration. As such, the working group has as its themes the technological establishment and social implementation of chemical recycling as well as the promotion of activities to select and clear issues in the promotion of related companies

Japan Partnership for Circular Economy (J4CE)

Organizer ····· Ministry of the Environment, Ministry of Economy, Trade and Industry and Keidanren Committee

Significance/objectives ··· Aiming to further foster understanding and promote efforts by a wide range of parties responsible, including domestic companies, as the trend toward a circular economy accelerates on a worldwide basis.

Activities ····· Introduction of case studies through case study brochures, dissemination of information for the general public, and support for inter-company collaboration

Our Company's role ····· To accelerate the creation of new cyclical businesses and social implementation by disseminating case studies and providing feedback on in-house technologies and measures by assessing the latest information

J-CEP (Japan Circular Economy Partnership)

Significance/objectives ··· Regarding everything as a resource, creating a society around things, information and feelings by relationship design.

Activities ····· Engage in 1) The optimal circulation of resources in Japan, and 2) The creation of businesses that contribute to the realization of the sustainable society

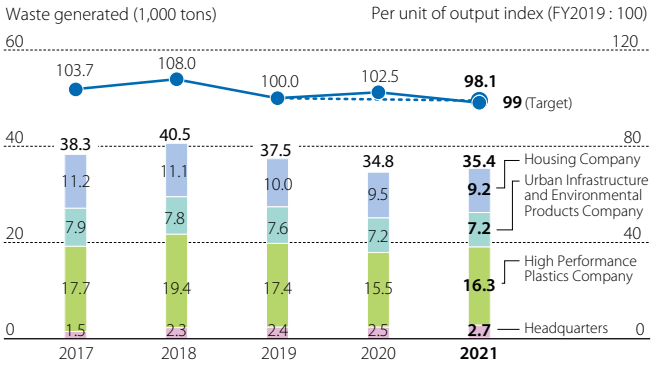
Our Company's role ····· To contribute to the realization of a circular economy by disseminating case studies and providing technical cooperation as a member of a consortium of companies

Performance Data ☑

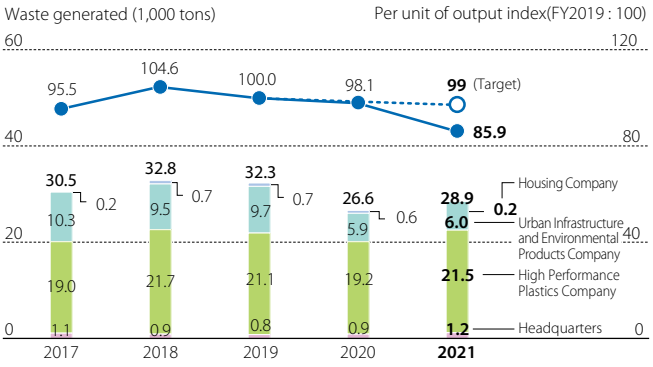
Waste Generated by Production Sites

Note 1: Some past figures have been revised due to improvements in calculation precision.
Note 2: From fiscal 2019, results from the medical business are collated and presented with Corporate Headquarters results following its separation from the HPP Company.

Waste Generated by Production Sites and per Unit of Production (Index) / Japan



Waste Generated by Production Sites and per Unit of Production (Index) / Overseas

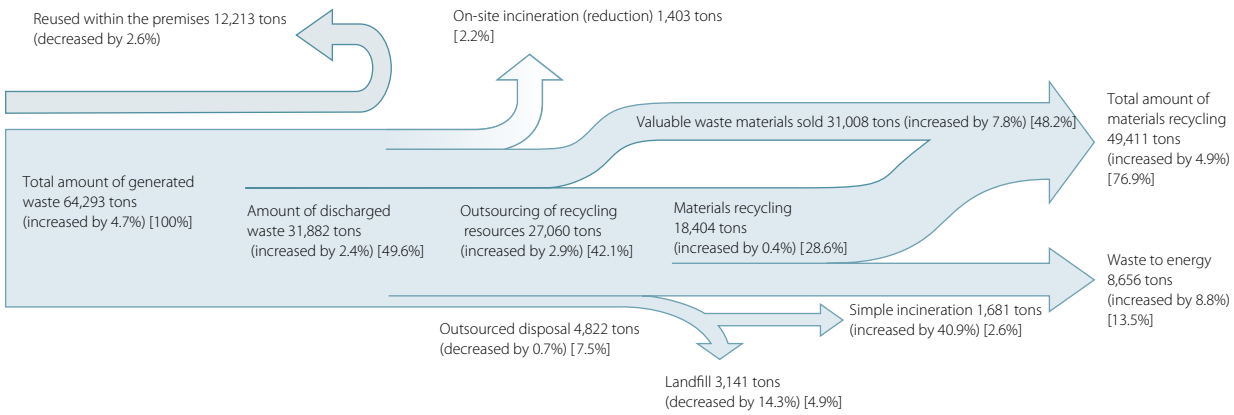


Production Site Waste Generation and Disposal / Japan and Overseas

(unit: tons)

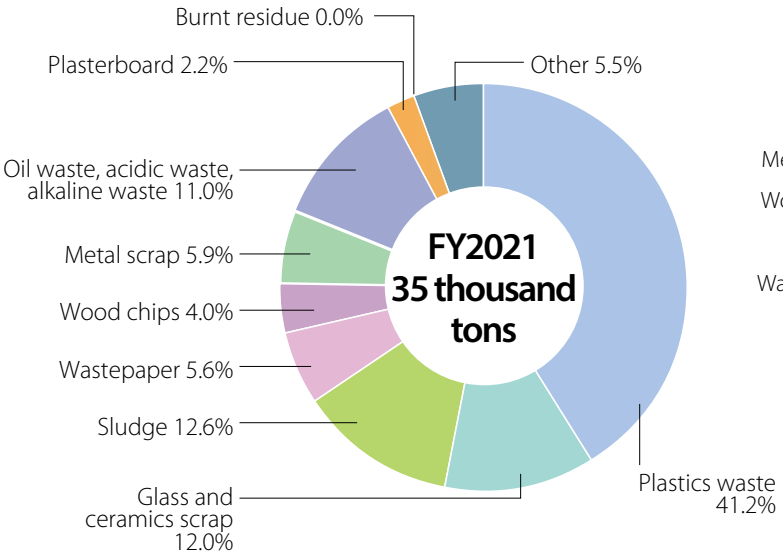
	Total Waste	Recycled Waste	Unrecycled Waste
FY2017	68,777	63,654	5,123
FY2018	72,631	67,332	5,298
FY2019	69,767	63,844	5,922
FY2020	61,392	55,043	6,348
FY2021	64,293	58,067	6,225

Fiscal 2021 Annual Production Site Waste Generation and Disposal / Japan and Overseas

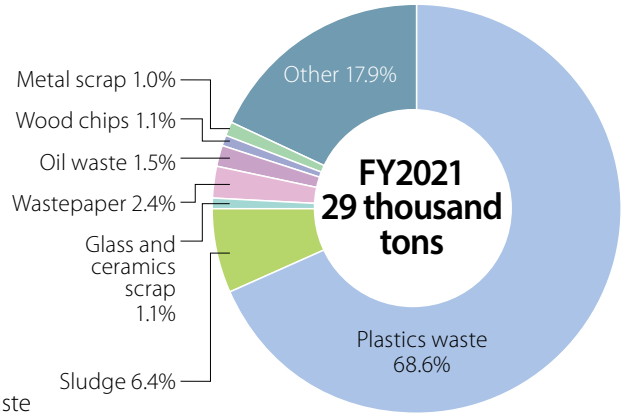


Note: Change over previous year is in ( ) and proportion of total waste generation is in [ ].

Breakdown of Waste Generated at Production Sites / Japan

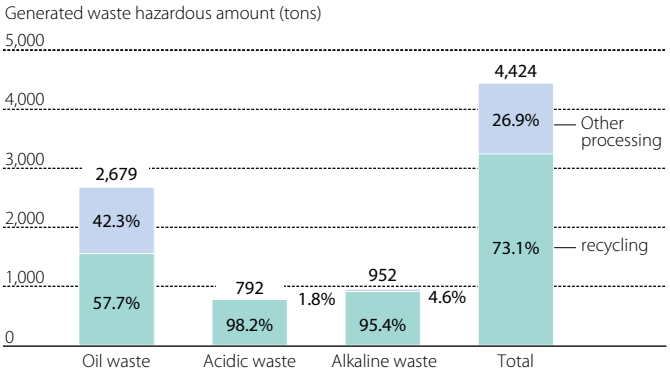


Breakdown of Waste Generated at Production Sites / Overseas



Index	Calculation Method
Generated Waste Amount	Amount of waste generated = Amount of waste collection outsourced + Amount recycled (incinerated waste to energy + recycled back to materials + recyclable waste sold) + Amount incinerated in-house; the items below are excluded: Waste generated by demolition of customers' old houses, left-over construction materials, disposal of machinery, office equipment, etc., medical waste from medical treatment in in-house clinics

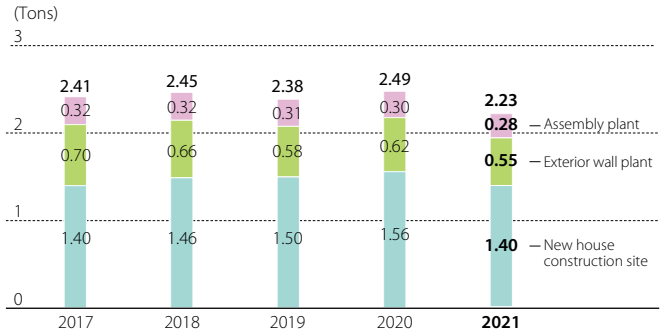
Amount of Hazardous Waste Generated/ Recycling rate (Japan and Overseas) Fiscal 2021



Index	Calculation Method
Amount of Hazardous Waste Generated and Recycling Rate	Recycling rate = Recycled waste / Amount of hazardous waste generated Hazardous substance: Oil waste, acidic waste, alkaline waste Recycling: Material recycling

Waste Generated on Construction Sites of New Housing

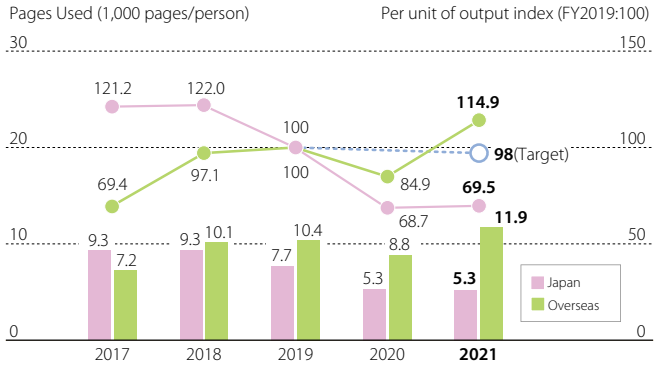
Amount of Waste Generated on Construction Sites of New Housing (per Building) / Japan



Index	Calculation Method
Amount of Waste Generated on Construction Sites of New Housing	Amount of waste generated on construction sites of new housing = Amount of waste generated during construction of outer walls (at factory) + Amount of waste generated during assembly (at factory) + Amount of waste generated at construction site of new housing Amount of waste generated per building during construction of new housing = Total amount of waste generated during construction of new houses / Number of new houses sold Scope: Housing business in Japan

Waste Generated in Offices

Amount of Copy Paper Used at Offices per Person (Index)



Reducing Water-related Risks

Working to Preserve Water Resources as Shared Natural Capital in Watersheds

Basic Concept

The minimization of water-related risks and the solution of local and supply chain water issues

We formulated SEKISUI Environment Sustainability Vision 2050 in 2019 in line with the belief that sustainable operations and development of our businesses requires us to maintain a sound environment in the areas in which we conduct our corporate activities. To realize societies with abundant access to clean water in all the areas in which SEKISUI CHEMICAL Group and its supply chains operate, we have established the following two goals in line with our vision.

<Goals>

1. Minimizing water risks at SEKISUI CHEMICAL Group
   With the goal of maintaining sustainable operations, SEKISUI CHEMICAL Group will seek to minimize water risks. We will also focus on minimizing risks related to water discharged from Group operations in order to better preserve biodiversity.

2. Contributing to the solution of water-related issues in local communities
   We will contribute to solving local water issues through collaboration with products to enhance sustainability and watershed stakeholders, aiming not only to minimize water risks but also to return positively to natural capital.

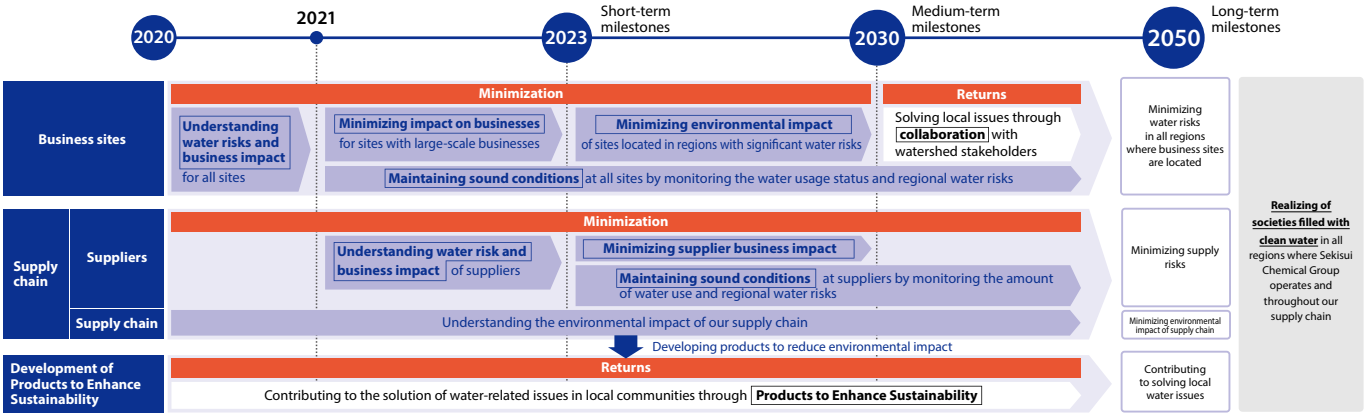
Roadmap to Realize Societies with Abundant Access to Clean Water

SEKISUI CHEMICAL Group has set the goal of realizing societies with abundant access to clean water by 2050, which is the target year of its SEKISUI Environment Sustainability Vision 2050. By backcasting from this goal, we are establishing specific measures and milestones while promoting initiatives.

- We will evaluate local water risks and their business impacts and select business sites and suppliers which the business impact is large, and sites where water risks are substantial.
- For business sites where the business impact is substantial, we will minimize risks by 2023.
- For suppliers which the business impact is substantial, we will minimize risk by 2030, through a review of suppliers.
- For business sites which water risks in the region are substantial, we will minimize their environmental impact by 2030.
- We will create monitoring guidelines and oversee all locations for both business impacts and environmental impacts.

In order to accelerate returns to natural capital, including the conservation of water resources, we will contribute to solving regional water issues and minimizing the environmental impact on the supply chain by continuously promoting the development of products to enhance sustainability.
Moreover, as an initiative being undertaken at business locations around the world, we will contribute to solving regional water issues by building a collaborative system with stakeholders of the watersheds from 2030 to 2050.

Roadmap



Assessment of the Impact on Businesses from Water-related Risks

In fiscal 2020, the first year of the roadmap for 2050, we conducted assessments of the likely impact on business from water-related risks at all SEKISUI CHEMICAL Group production sites and research institutes.
The Group had conducted a water risk survey in 2013, however seven years have passed. Since then, some business sites have been newly established or closed, and therefore we conducted the study again.
The purpose of this study was to identify water-related issues in the areas in which each business site is located (assessment of external factors) and to identify those sites that exhibit major water risks and those that have a significant impact on the environment.
We undertook quantitative assessments of the business impact of water risks as well as the impact on the environment of our business activities in a bid to identify the water-related issues of the local area. In doing so, we used assessment results drawn from Aqueduct Water Risk Atlas 3.0, a tool for assessing water risks in each region of the world created by the World Resources Institute (WRI), an international environmental NGO and information on water use obtained from individual business sites through questionnaires.
In undertaking assessments, we followed the criteria recommended in the Guidelines for Setting Water Targets for Companies* issued by the CEO Water Mandate.
In fiscal 2021, we identified five domestic and overseas sites that were evaluated as having a large business impact, and established guidelines for business impact and water conservation level initiatives that should be minimized.

* Setting Site Water Targets Informed By Catchment Context: A Guide For Companies

Impact of Water-related Risks on Supply Chain

Manufacturers of steel materials used in the housing business and manufacturers of synthetic resins used in the plastics business are suppliers of raw materials of SEKISUI CHEMICAL Group that consume large quantities of freshwater during their manufacturing process. Although we do not directly call on such suppliers to conform to environmental standards, with our Sekisui Environment Sustainability Index we calculate as use of natural capital the environmental impact of the pollutants contained in drainage generated during the manufacturing process of primary materials and monitor it on a continual basis.
We also evaluate the degree of contribution to the environment through the reduction of impact on the water environment in the Group's business activities and the expansion of products and services that contribute to the improvement and maintenance of the water environment as return to natural capital*.
From fiscal 2020, we have continued to gain a better understanding of, for example, the water risks in our supply chains involving products and the impact of reducing water risk by products on returns to natural capital and social capital.

* For more information, see p. 162, Integrated Index: Sekisui Environment Sustainability Index.

Contribution to Reduction of Water-related Risks Through Business Operations

SEKISUI CHEMICAL Group develops a range of businesses related to water infrastructure, such as supply, storage, and drainage of water, contributing to society, not only through technologies and products that help to improve the quality of drainage, such as water treatment systems and drain pipes, but also by creating strong water infrastructure made to withstand natural disasters.
For example, the Cross Wave* rainwater collection system, one of our products being marketed in Japan, India, China, Taiwan, and other ASEAN areas, reduces water-related risks. Cross Wave is used to contribute to measures against chronic water shortages, recycling rainwater for both the greening of urban areas and disaster prevention, and also contribute to minimizing damages caused by floods.
With the goal of not only reducing damage from the ever-increasing number of disasters brought on by climate change, but also promoting disaster mitigation in support of recovery efforts after a disaster, we are expanding the peace of mind we can offer to our housing customers by recommending, for example, the installation of a drinking water storage system that uses water infrastructure piping.

* Cross Wave: Rainwater storage system. This molded product made from recycled plastic creates an underground space which is used to store rainwater. It regulates the rain volume flowing into sewer systems and rivers during torrential rains and makes reuse of rainwater possible.

Reduction of Water-related Risks at Business Sites with High Water Intake and Discharge Volumes

SEKISUI CHEMICAL Group draws the water it needs to use in its business activities from public water systems, industrial water systems, underground reservoirs, and surrounding rivers.
With the understanding that water is a precious natural resource shared in the community, we do our best to reduce the amount of water used, such as by reusing cooling water.
We have to date established targets and enacted measures for reducing water intake and chemical oxygen demand (COD) of discharged water at each of our production and research facilities. However, based on local water risk conditions and the state of water consumption, we will focus on promoting reduction of water use at business locations where the impact on business is particularly large.

Major Initiatives

Reduction of Water Intake, and Chemical Oxygen Demand (COD) of Discharged Water

In fiscal 2021, water intake at production sites increased by 4.3% compared with results of the base fiscal year 2016 and by 8.3 compared with the previous year. This is partly due to the addition of four new production sites overseas, but also due to an increase in production volume at factories that produce synthetic resins, which have high water intake volumes. The COD of water discharged which declined by 1.2% compared with results of the base fiscal year of 2016, increased by 12.0% over the previous year. This was also due to an increase in water discharged due to increased production at factories that produce synthetic resins, which have a high drainage volume.

Examples of capex using the environmental contribution investment framework

	Site	Reduction strategy	Result (Expected)
Reduction in water intake	Shiga-Minakuchi Plant	Introduction of filtration equipment allowing the reuse of recycled wastewater as a coolant. Strengthen management and promoted visualization of water use at the facility.	Reduction of 9%
	Sekisui Medical Co., Ltd. Iwate Plant	10% reduction through automated of industrial water intake adjustment	Reduction of 10%
Reduction in wastewater COD	Sekisui Nano Coat Technology Co., Ltd.	Improve treatment capacity by upgrading wastewater treatment facilities	Reduction of 25%

Reuse of Discharged Water at Shiga-Minakuchi Plant Started

Engaged in the production of synthetic resins, the Shiga-Minakuchi Plant is the business site with the largest water intake in SEKISUI CHEMICAL Group. The water intake accounts for about 30% of all domestic business sites of the Group, and has been increasing every year since fiscal 2015.
To improve this situation, we undertook comprehensive capital investments aimed at reducing the water intake from fiscal 2018. All investment plans were completed in 2020.
Under this plan, we ascertained the locations and the volumes of industrial water used and then undertook adjustments to the water used in those areas where the amounts were high.
We are also working to reduce the water intake volume by reusing purified water in the 20 cooling towers installed within the site.

Water filtration equipment at the Shiga-Minakuchi Plant

Increase of Water Treatment Capacity at Sekisui Nano Coat Technology Co., Ltd.

At Sekisui Nano Coat Technology Co., Ltd., wastewater with high-concentration COD is discharged from the degluing and refining processes of textile products and, after passing through their in-house wastewater treatment equipment, discharged into the sea.
In recent years, the amount of wastewater has been decreasing due to changes in the business domains. Also, the COD of wastewater has become difficult to eliminate due to changes in the composition of the glue used in raw materials. Accordingly, we have made improvements to optimize the capacity of the wastewater treatment equipment.
Treatment capacity has been improved by making the treatment process more compact according to the amount of decrease in wastewater and installing a process in which microorganisms suitable for the treatment of persistently decomposed COD particles are optimized.
In fiscal 2021, COD volume of water discharged decreased by 67% compared with 2016 results.

Sekisui Nano Coat Technology wastewater treatment facility

Water Recycling

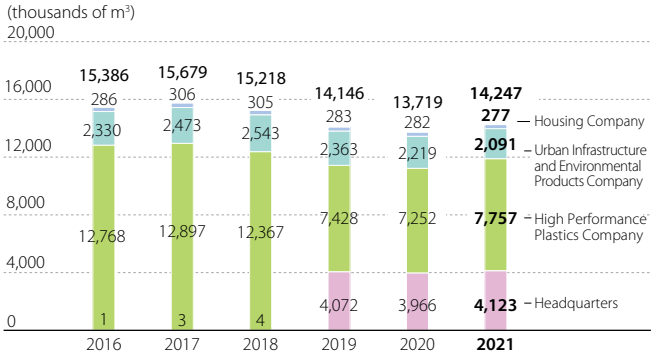
SEKISUI CHEMICAL Group promotes the reuse of water in its production processes in order to reduce the amount of water it draws from water sources. At the production plants of the UIEP and HPP Companies, large volumes of cooling water is recycled and reused in the manufacturing process. In fiscal 2021, at production sites in Japan and overseas, we used 106 million cubic meters of recycled water. This is equivalent to 4.9 times the total water intake.
In Hasuda City, where the Musashi Plant is located, the wastewater purified at the Musashi Plant in accordance with environmental standards is used as the main water source for Lake Kurohama*, which is designated as a nature conservation area in Saitama Prefecture.

* For more information about Lake Kurohama, see the page below.
https://www.sekisuichemical-foam.com/en/aboutus/ecology/

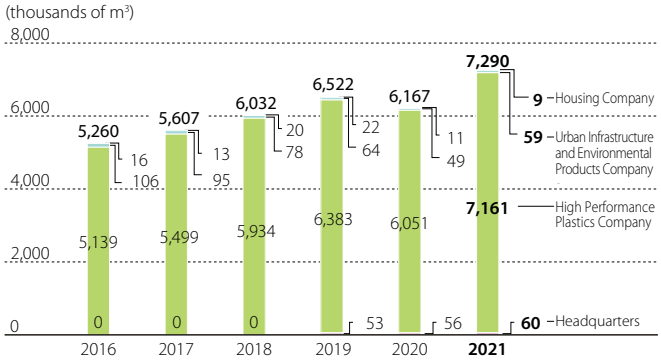
Performance Data ☑

Note: From fiscal 2019, results from the medical business are collated and presented with Corporate Headquarters results following its separation from the HPP Company.

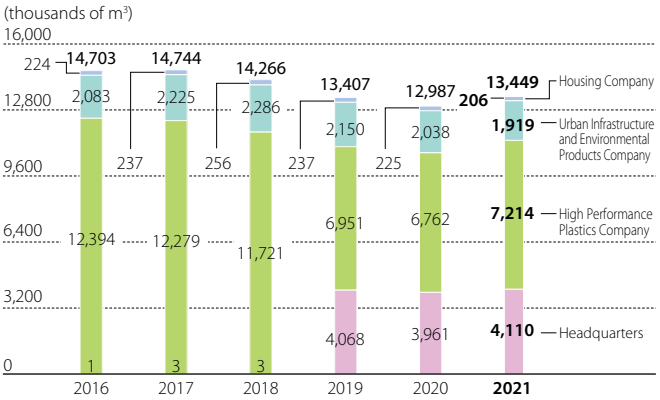
Water Intake at Production Sites / Japan



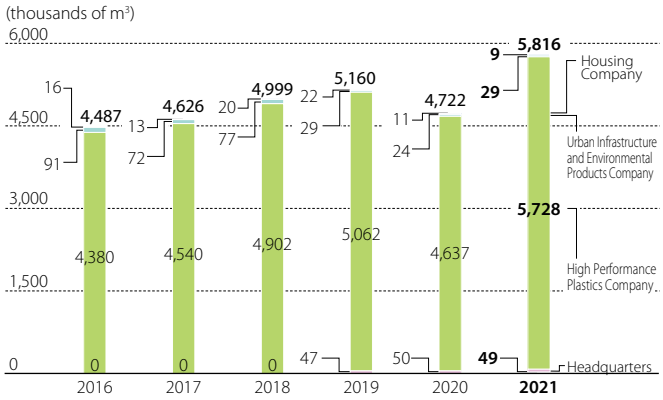
Water Intake at Production Sites / Overseas



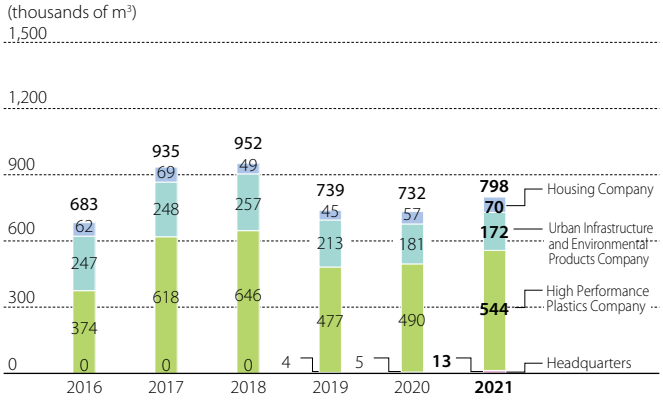
Wastewater Discharge at Production Sites / Japan



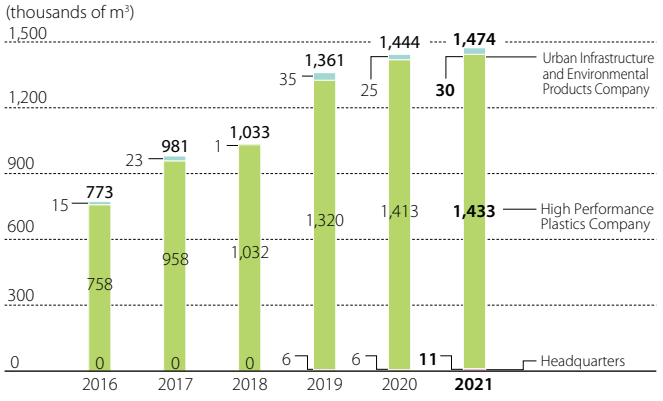
Wastewater Discharge at Production Sites / Overseas



Water Consumption at Production Sites / Japan



Water Consumption at Production Sites / Overseas



Water Intake at Production Sites by Water Source

(thousands of m^3)

Water source	Regions	All regions						Areas in regions with water stress					
		2016	2017	2018	2019	2020	2021	2016	2017	2018	2019	2020	2021
Surface water	Japan	696	1,086	197	726	129	185	0	0	0	0	0	0
	China	0	0	0	0	0	0	0	0	0	0	0	0
	Southeast Asia and Oceania	0	0	0	1	3	0	0	0	0	1	3	0
	Europe	0	0	0	0	0	0	0	0	0	0	0	0
	North and Central America	0	0	0	0	0	0	0	1	0	0	0	0
	Total	696	1,086	197	727	131	185	0	1	0	1	3	0
Ground water	Japan	2,604	2,624	2,632	2,517	2,340	2,328	0	0	0	0	0	0
	China	0	0	0	0	0	0	0	0	0	0	0	0
	Southeast Asia and Oceania	103	120	144	111	121	132	25	26	35	16	22	24
	Europe	0	0	0	0	0	0	0	0	0	0	0	0
	North and Central America	4	0	0	0	0	5	0	0	0	0	0	0
	Total	2,710	2,745	2,776	2,628	2,461	2,465	25	26	35	16	22	24
Seawater	Japan	0	0	0	0	0	0	0	0	0	0	0	0
	China	0	0	0	0	0	0	0	0	0	0	0	0
	Southeast Asia and Oceania	0	0	0	0	0	0	0	0	0	0	0	0
	Europe	0	0	0	0	0	0	0	0	0	0	0	0
	North and Central America	0	0	0	0	0	0	0	0	0	0	0	0
	Total	0	0	0	0	0	0	0	0	0	0	0	0
Third-party water*	Japan	12,086	11,969	12,389	10,903	11,250	11,734	0	0	0	0	0	0
	China	273	298	324	265	247	243	236	288	311	256	241	235
	Southeast Asia and Oceania	896	1,097	966	1,093	957	1,087	18	46	72	80	55	42
	Europe	1,943	1,883	1,866	1,960	1,674	2,527	1,857	1,799	1,805	1,887	1,606	2,444
	North and Central America	2,042	2,209	2,732	3,092	3,165	3,297	10	81	156	141	94	121
	Total	17,241	17,456	18,278	17,313	17,293	18,887	2,121	2,213	2,344	2,365	1,996	2,842
Total volume of water withdrawn	Japan	15,386	15,679	15,218	14,146	13,719	14,247	0	0	0	0	0	0
	China	273	298	324	265	247	243	236	288	311	256	241	235
	Southeast Asia and Oceania	999	1,217	1,110	1,204	1,081	1,219	44	72	107	97	80	65
	Europe	1,943	1,883	1,866	1,960	1,674	2,527	1,857	1,799	1,805	1,887	1,606	2,444
	North and Central America	2,046	2,209	2,732	3,092	3,165	3,301	10	81	156	141	94	121
	Total	20,646	21,286	21,250	20,668	19,885	21,537	2,146	2,239	2,379	2,382	2,021	2,866

* Third-party water: Water withdrawn from local government water suppliers (public water systems, water systems for industrial use)

Wastewater Discharge at Production Sites by Discharge Destination

(thousands of m^3)

Discharge destination	Regions	All regions						Areas in regions with water stress					
		2016	2017	2018	2019	2020	2021	2016	2017	2018	2019	2020	2021
Surface water	Japan	11,219	11,627	11,353	10,680	10,179	10,623	0	0	0	0	0	0
	China	0	0	0	0	0	0	0	0	0	0	0	0
	Southeast Asia and Oceania	22	26	20	43	18	13	2	2	0	22	4	1
	Europe	0	0	0	0	0	0	0	0	0	0	0	0
	North and Central America	0	0	0	0	0	0	0	0	0	0	0	0
	Total	11,241	11,653	11,372	10,722	10,197	10,636	2	2	0	22	4	1
Ground water	Japan	0	0	0	0	0	0	0	0	0	0	0	0
	China	0	0	0	0	0	0	0	0	0	0	0	0
	Southeast Asia and Oceania	0	0	0	0	0	0	0	0	0	0	0	0
	Europe	0	0	0	0	0	0	0	0	0	0	0	0
	North and Central America	0	0	0	0	0	0	0	0	0	0	0	0
	Total	0	0	0	0	0	0	0	0	0	0	0	0
Seawater	Japan	2,892	2,503	2,277	2,160	2,293	2,205	0	0	0	0	0	0
	China	0	0	0	0	0	0	0	0	0	0	0	0
	Southeast Asia and Oceania	0	0	0	0	0	0	0	0	0	0	0	0
	Europe	0	0	0	0	0	0	0	0	0	0	0	0
	North and Central America	0	0	0	0	0	0	0	0	0	0	0	0
	Total	2,892	2,503	2,277	2,160	2,293	2,205	0	0	0	0	0	0
Third-party water*	Japan	591	614	636	567	515	622	0	0	0	0	0	0
	China	272	287	308	255	237	233	235	277	296	246	232	226
	Southeast Asia and Oceania	679	867	830	860	790	881	26	55	103	60	54	37
	Europe	1,930	1,874	1,860	1,944	1,664	2,511	1,857	1,799	1,805	1,875	1,601	2,439
	North and Central America	1,585	1,571	1,981	2,060	2,012	2,177	9	62	79	81	62	62
	Total	5,057	5,213	5,615	5,685	5,219	6,424	2,127	2,193	2,283	2,262	1,949	2,764
Total Volume of Wastewater	Japan	14,703	14,744	14,266	13,407	12,987	13,449	0	0	0	0	0	0
	China	272	287	308	255	237	233	235	277	296	246	232	226
	Southeast Asia and Oceania	701	893	850	902	809	895	29	57	103	83	58	38
	Europe	1,930	1,874	1,860	1,944	1,664	2,511	1,857	1,799	1,805	1,875	1,601	2,439
	North and Central America	1,585	1,571	1,981	2,060	2,012	2,177	9	62	79	81	62	62
	Total	19,190	19,370	19,265	18,567	17,709	19,265	2,129	2,195	2,283	2,285	1,952	2,765

* Third-party wastewater: Wastewater discharged to wastewater treatment facilities of local governments, etc. (sewer systems)

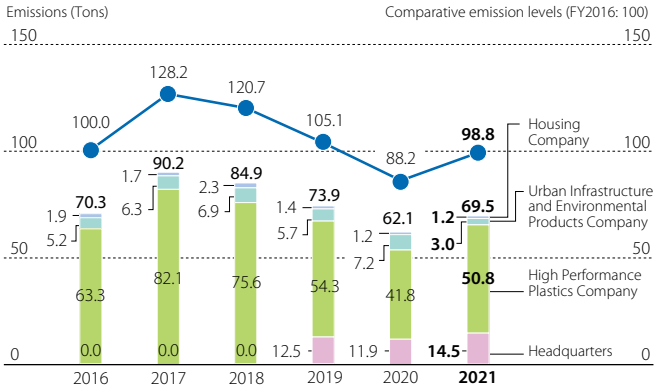
Water Consumption at Production Sites

(thousands of m^3)

Regions	All regions						Areas in regions with water stress					
	2016	2017	2018	2019	2020	2021	2016	2017	2018	2019	2020	2021
Japan	683	935	952	739	732	798	0	0	0	0	0	0
China	1	11	16	10	10	9	1	11	16	10	10	9
Southeast Asia and Oceania	298	324	260	302	272	324	15	15	4	15	22	27
Europe	13	9	6	17	9	16	0	0	0	13	5	6
North and Central America	461	638	751	1,032	1,153	1,125	1	19	77	60	33	59
Total	1,456	1,916	1,985	2,101	2,176	2,272	17	45	97	98	69	101

Indicator	Calculation Method
Water intake	Water intake = Total water intake = (The sum of water intake from surface water, ground water, seawater, and third-party water)
Wastewater discharge	Wastewater discharge = Total wastewater discharge = (The sum of wastewater discharged to surface water, ground water, seawater, and third-party wastewater)
Water consumption	Water consumption = Water intake - wastewater discharge
Areas in regions with water stress	Areas where Baseline Water Stress is ranked as High or Extremely High under the WRI Aqueduct™ Water Risk Atlas (Aqueduct 3.0) Evaluation System

COD Discharge / Japan



Indicator	Calculation Method
COD Discharge	Discharge = Σ[COD concentration (annual average of measured values) x Water discharge volume]

Chemical Substance Management

Minimizing Environmental Impact through Proper Control and Reduction of Chemical Substance Emissions

Basic Concept

Minimizing Environmental Impact through Proper Control and Reduction of Chemical Substance Emissions

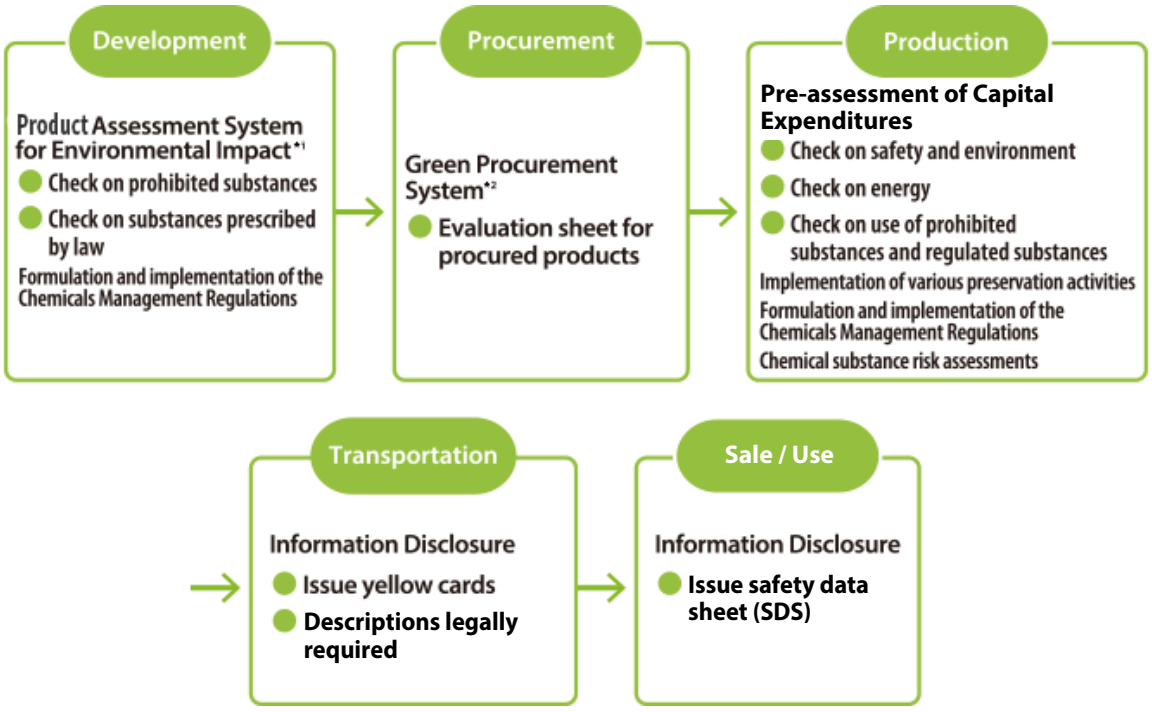
While chemical substances make people's lives more convenient, they also could have harmful effects on the environment or on human beings. Therefore, we believe that taking into consideration product safety, occupational safety and health, and environmental impact through the proper management of chemical substances is an important responsibility.

Since fiscal 1999, SEKISUI CHEMICAL Group has set and worked toward its own targets for reducing emissions and the transfer of chemical substances in addition to implementing efforts such as the Product Assessment System for Environmental Impact*1 and the Green Procurement System*2. Periodically we also review chemical substances, in accordance with the establishment and amendment of relevant laws and regulations.

From fiscal 2021, we will continue to engage in thoroughgoing chemical substance management activities with an awareness of minimizing their impact.

*1 Product Assessment System for Environmental Impact: A system for assessing the environmental impact of products at all stages from raw material procurement through manufacture, use, disposal, and transportation.

*2 Green Procurement System: A system which prioritizes lower levels of environmental impact when procuring raw materials, parts, etc.



Major Initiatives

Controlling VOC Emissions

SEKISUI CHEMICAL maintains the medium-term target of reducing VOC emissions by 3% or more compared with the fiscal 2019 level. In fiscal 2021, VOC emissions in Japan decreased by 6.7% compared with fiscal 2019.

Preventing Air and Water Pollution

SEKISUI CHEMICAL Group complies with laws and ordinances for equipment related to exhaust gases and water drainage.

Soil Contamination Countermeasures

SEKISUI CHEMICAL Group conducted a voluntary assessment of soil contamination at all of its production sites. The Group has implemented cleanup measures and efforts aimed at preventing further contamination at all locations where contamination was found while completing its report to the government. In addition, the Group continuously monitors groundwater, confirming that pollution is not spreading.
Moreover, the Group takes legally mandated decontamination measures when selling land on which production facilities have been closed. In fiscal 2021, conditions did not require any new measures to be taken.

Disposal and Storage of Devices Containing PCBs and Management of Equipment That Uses Fluorocarbons

Transformers and capacitors that contain PCBs are being removed sequentially as PCB treatment facilities are ready to accept taking our equipment. Control of equipment containing PCBs in storage is strictly enforced, including locking of storage facilities and periodic inspections.
Steps are being taken to enhance awareness toward mandatory requirements regarding equipment that use fluorocarbons in accordance with Japan's Act on Rational Use and Proper Management of Fluorocarbons (Freon Emission Control Act) and to ensure thoroughgoing management including periodic inspection.

For more details, see Products to Enhance Sustainability.

Performance Data ✅

Note: From fiscal 2019, results from the medical business are collated and presented with Corporate Headquarters results following its separation from the HPP Company.

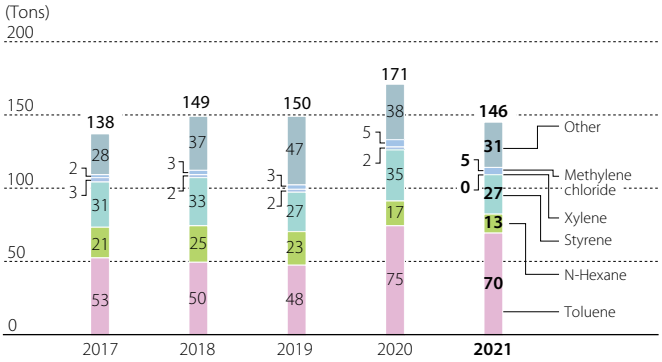
Aggregated results based on the PRTR Law
(substances handled at business sites subject to assessment with a handling volume of 1 ton or more are aggregated).

(Tons)

Substance	Govt. ordinance notification no.	Emission volume	Emission volume				Transfer volume			Detoxification
			Atmospheric	Public water areas	In-house soil	In-house landfill	Sewage system	Transfer in waste disposal	Transfer in waste recycling	
Ethyl acrylate	[3]	36.6	0	0	0	0	0	0	3.66	33.0
Acrylic acid and its water solvent	[4]	1.3	0.061	0	0	0	0	0.13	0	1.065
n-Butyl acrylate	[7]	202.2	1.5	0	0	0	0	1.4	0.0020	199
Acrylonitrile	[9]	482.1	4.1	0	0	0	0	0	0.0090	478
Acetaldehyde	[12]	207.1	0.15	0	0	0	0	0	0	207
Acetonitrile	[13]	53.9	4.3	0	0	0	0	0	50	0
2,2′-Azobisisobutyronitrile	[16]	5.8	0	0	0	0	0	0	0	5.8
Antimony and its compounds	[31]	10.1	0	0	0	0	0	0	1.0	0
Isobutyraldehyde	[35]	70.0	1.64	0	0	0	0	0	0	68
2-Ethylhexanoic acid	[51]	5,720.7	0	0	0	0	0	0	4.9	5,706
Ethylenediamine	[59]	3.0	0.290	0	0	0	0	0	0	2.739
ε-Caprolactam	[76]	33.0	0	0.011	0	0	0	0	0	33
Xylene	[80]	13.8	0	0	0	0	0	0	0	14
Chromium and trivalent chromium compound	[87]	3.7	0	0	0	0	0	0	0.044	0
Vinyl chloride	[Special 94]	125,314.4	4.0	0.11	0	0	0	0	0	125,310
Chloroform	[127]	7.0	0.37	0	0	0	0	0	4.0	0.71
Cobalt and cobalt compounds	[132]	3.1	0	0.13	0	0	0	0	0	2.9
Vinyl acetate	[134]	53.5	5.1	0	0	0	0	3.9	0.001	45
"Inorganic cyanide compounds (not including complex salts and cyanate)"	[144]	21.7	0	0	0	0	0	0	0	22
Cyclohexylamine	[154]	8.2	0.46	0	0	0	0	0	0	7.8
Methylene chloride	[186]	360.3	4.7	0	0	0	0	0	0	356
Divinylbenzene	[202]	2.0	0	0	0	0	0	0	0	2.0
2,6-di-t-butyl-4-cresol	[207]	11.3	0	0	0	0	0	0	0	11.3
N,N-dimethylformamide	[232]	2.9	0	0	0	0	0	0	2.9	0
Organic tin compounds	[239]	148.9	0	0.0003	0	0	0	0.1	0.55	3
Styrene	[240]	1,193.8	27	0	0	0	0	0	0	422
Tolylene Diisocyanate	[298]	9.1	0	0	0	0	0	0	0	0
Toluene	[300]	623.3	45	0	0	0	0	25.2	111	322
Lead compounds	[Special 305]	481.7	0	0.0026	0	0	0	0	4.3	57
Nickel compound	[Special 309]	1.1	0	0	0	0	0	0	0	0
Bis-(2-ethylhexyl) phthalate	[355]	4.0	0	0	0	0	0	0	2.0	0
n-Hexane	[392]	109.8	13	0	0	0	0	0	97	0
Boron and its compounds	[405]	55.3	0	0	0	0	0	0	0	0
"Poly (oxyethylene) = alkyl = ether (C = 12-15 and other blends)"	[407]	3.0	0	0	0	0	0	0	0	0
Manganese and its compounds	[412]	6.2	0	0	0	0	0	0	6.2	0
Methacrylate	[415]	265.4	1.5	0	0	0	0	0	0.012	264
Methyl methacrylate	[420]	184.8	1.5	0	0	0	0	0	0	183
Methylnaphthalene	[438]	1.3	0.0063	0	0	0	0	0	0	1.3
Methylenebis (4,1-phenylene) = diisocyanate	[448]	1,576.2	0	0	0	0	0	0	0.0010	1,572
		137,291.4	115	0.25	0	0	0	30.6	287	135,330

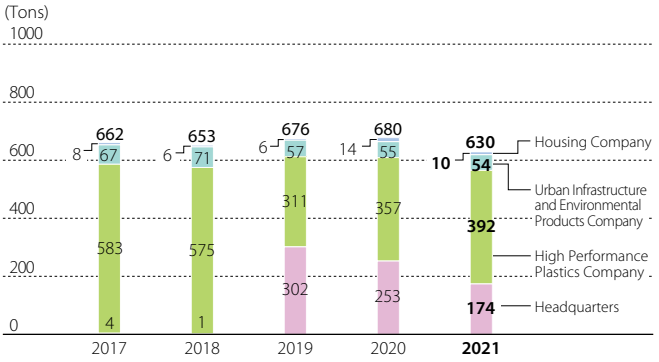
Index	Calculation Method
Amount of Chemical Substances Handled	Amount of substances subject to regulation by the PRTR Law handled [Scope: Production sites and research facilities in Japan]
Amount of Emissions / Transfer of Chemical Substances	Amount of emissions / transfer of chemical substances subject to regulation by the PRTR Law: Amount of emissions = Amount of emissions into the air + Amount of emissions into public waters + Amount of emissions into the soil on-site + Amount disposed of by landfill on-site Transfer amount = Amount transferred to sewers + Amount transferred as waste material [Scope: Production sites and research facilities in Japan]
Amount of Chemical Substances Subject to Detoxication	Amount of chemical substances subject to regulation by the PRTR Law subject to detoxication: Amount detoxified = Amount consumed in reaction + Amount consumed through combustion, etc. [Scope: Production sites and research facilities in Japan]

Amount of Chemical Substance Emission and Transfer (PRTR Law) / Japan



Note: Past figures have been retroactively revised due to changes in aggregate scope.

Discharge of Volatile Organic Compounds (VOCs) into the Atmosphere / Japan

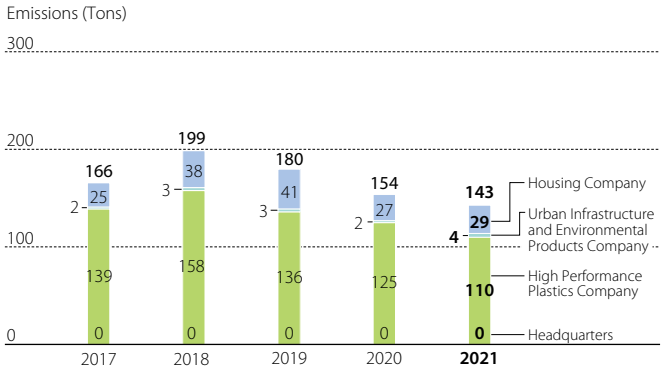


Note: Past figures have been retroactively revised due to changes in aggregate scope.

Index	Calculation Method
Amount of Emissions / Transfer of Chemical Substances	Amount of emissions / transfer of chemical substances subject to regulation by the PRTR Law: Amount of emissions = Amount of emissions into the air + Amount of emissions into public waters + Amount of emissions into the soil on-site + Amount disposed by landfill on-site Transfer volume = Amount transferred to sewers + Amount transferred as waste material Scope: Covers production sites and research facilities in Japan

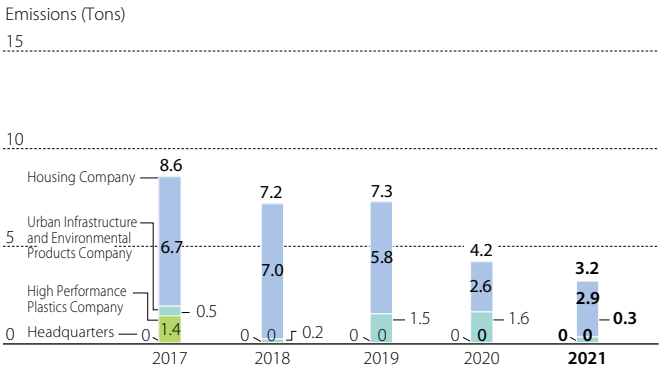
Index	Calculation Method
VOC Emissions	Amount of emissions into the atmosphere of volatile organic compounds (VOC) among the substances subject to regulation by the PRTR Law and Japan Chemical Industry Association

NOx Emissions / Japan



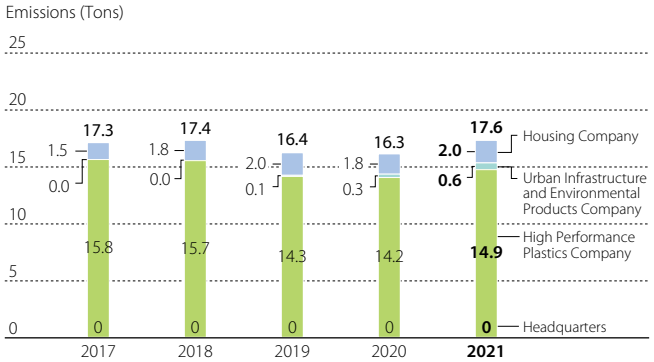
Index	Calculation Method
NOx Emissions	NOx emissions =∑(Amount of exhaust gas airflow per year x NOx concentration x 46/22.4)

SOx Emissions / Japan



Index	Calculation Method
SOx Emissions	SOx emissions =∑(amount of SOx per year x 64/22.4)

Soot and Dust Emissions / Japan



Index	Calculation Method
Soot and Dust Emissions	Soot and Dust emissions =∑ (amount of exhaust gas airflow per year x soot concentration)

Environmental Impact Assessment

Understanding the Impact of Our Products and Services on the Global Environment

Basic Concept

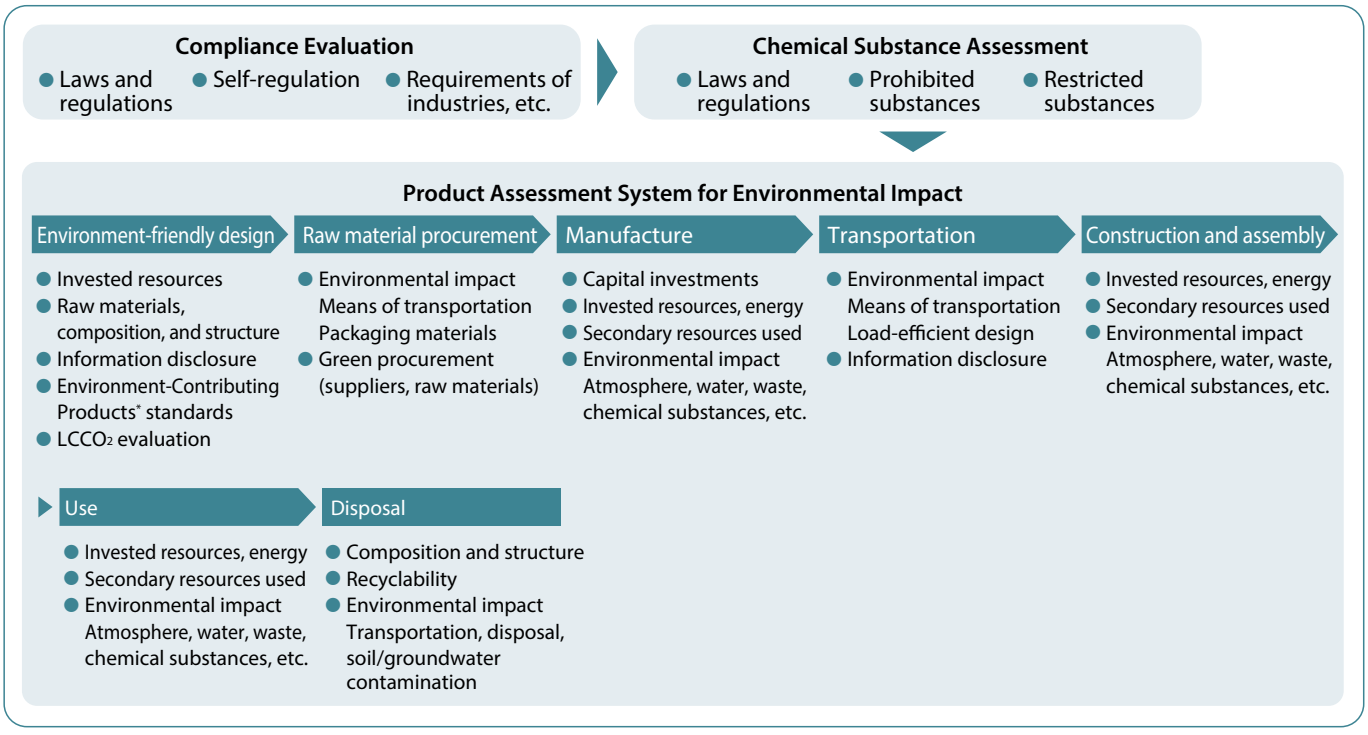
Reflecting the Results of Environmental Impact Assessments Back into Our Measures

SEKISUI CHEMICAL Group assesses environmental impact at every stage of a product's lifecycle when products and processes are developed or changed.

Assessment of environmental impact of products

Scope: All stages of the product life cycle

Targets: Products and processes



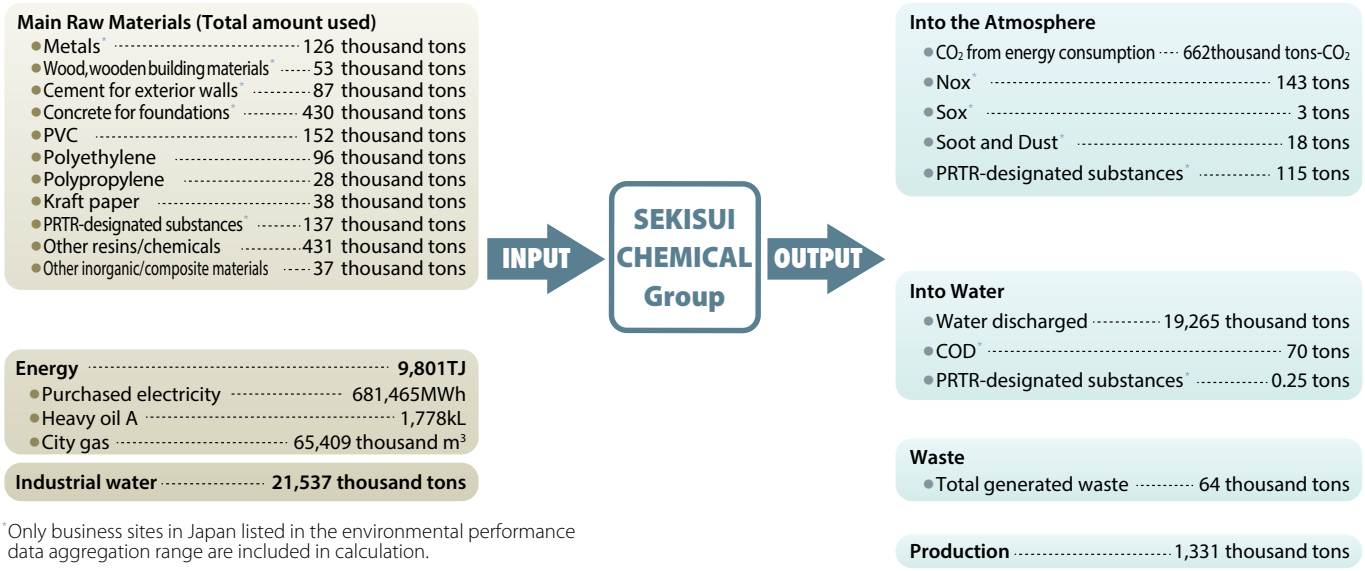
Note: Environment-Contributing Products were evolved into Products to Enhance Sustainability from fiscal 2020. For more details, see p. 54, Products to Enhance Sustainability.

Material Balance

Performance Data ☑

SEKISUI CHEMICAL Group releases information on the resources and energy used in its business activities (input) and on the substances that have an environmental impact generated by those activities (output).

Material balance (Japan and overseas total)
Fiscal 2021 Results



*Only business sites in Japan listed in the environmental performance data aggregation range are included in calculation.

Contributing to Return of Natural Capital

Under its SEKISUI Environment Sustainability Vision 2050, SEKISUI CHEMICAL Group declared that it would contribute to returns greater than the natural and social capital it uses. Natural capital will be returned through, for example, product evaluation systems based on sustainability and global environmental conservation activities.

Co-existing with the Global Environment Through Business Activities and Products

SEKISUI CHEMICAL Group is working to address issues in the natural environment and social environments aimed at improving sustainability of the earth and society with a long-term approach. Aiming to realize an earth with maintained biodiversity in 2050, the Group is committed to and will pursue activities that help return more natural and social capital back to the planet than it uses through the three initiatives: expand and create products to enhance sustainability, reduce environmental impact*, and conserve the natural environment.

* For more information, see p. 177, Use of Natural Capital.

Promoting solutions for issues on the natural environment and social environment while establishing a product evaluation system to increase the sustainability of the earth and society

Between fiscal 2006 and fiscal 2019, the Group internally certified as Environment-Contributing Products those products that demonstrated a high level of environmental contribution when used by customers, and has committed and promoted further expansion of those Products.

From fiscal 2020, the Group has evolved its sustainability-based product evaluation system as Products to Enhance Sustainability.

The premise for products to enhance sustainability remains the same: products that have demonstrated a high level of environmental contribution toward solving natural and social environmental issues when used by customers. We believe contributions that improve the sustainability of the earth and society specifically help solve issues facing the natural environment and social environment.

In addition, corporate sustainability and product sustainability that enables ongoing product manufacturing is important for SEKISUI CHEMICAL Group in order to continuously create and provide products that help solve issues in the external environment.

Based on this, SEKISUI CHEMICAL Group launched measures under the new Products to Enhance Sustainability banner as a product evaluation system to promote the improvement of sustainability of the earth, society, and products.

In addition, our three-year Medium-term Plan from fiscal 2020 will pursue measures to improve sustainability underpinned by our Products to Enhance Sustainability by strategically selecting growth products within our premium framework.

In addition, in order to sustain our contribution to solving issues, we have started to carry out confirmation and evaluation of sustainability for each product. In addition to our Company and raw material suppliers, we also check the current status of customers, such as governance (internal control), environment, and customer satisfaction. Through confirmation and evaluation, we will discover common issues and good practices, implement measures to solve the issues, and carry out horizontal development.

Environmental Conservation

While SEKISUI CHEMICAL Group has to date engaged in activities with the goal of conserving the natural environment mainly in Japan, it has continued to expand the scope of its activities in a bid to realize business sites that coexist in harmony with local environments globally since fiscal 2020. We have, for example, put in place plans to extend efforts to improve the quality of green spaces of our business sites in Europe.

Conserving the Environment

Continuing to Provide Prominent Values Toward the Realization of an Earth with Maintained Biodiversity

Basic Concept

Reducing the Impact of Business Activities on Biodiversity

Business activities of SEKISUI CHEMICAL Group are blessed by the fruits of nature derived from biodiversity, while negatively impacting the ecosystem.
In April 2008, SEKISUI CHEMICAL Group incorporated biodiversity-related items into its Environmental Management Policy. At the same time, we will promote the efficient use of limited resources and energy, and strive to reduce the environmental impact caused by greenhouse gases and harmful chemical substances and prevent pollution.
Having established a set of guidelines* on biodiversity in 2011, the Group strives to conserve biodiversity, including the natural environment, through both environmentally conscious business activities and actions to preserve the environment undertaken around the world.

* Biodiversity Guidelines

1. Analysis/assessment and reduction of impact
   While analyzing/assessing the impact on our business activities, we will work to reduce any negative impact on ecosystems.
2. Contribution from technologies and products
   While working diligently to develop and supply technologies and products that contribute to the conservation or recovery of biodiversity, we will learn from lean natural circulation and promote manufacturing that utilizes that wisdom.
3. Raising employees' awareness and habitat conservation
   Through the promotion of social contribution activities, such as nature conservation activities, we will raise employees' awareness and make efforts to conserve the habitat of living things.
4. Dialogue with stakeholders
   We will work diligently to promote biodiversity conservation by interacting and collaborating with various stakeholders, such as local communities, NGOs, and education/research institutes.
5. Information transmittance and learning/diffusion
   To remain a company that is trusted by and meets the expectations of society, we will disclose our voluntary efforts in biodiversity conservation and their outcomes. At the same time, we will thereby contribute to the enlightenment and the dissemination of a sustainable society.

Long-term Environmental Management Vision

Toward the Realization of an Earth with Maintained Biodiversity

To contribute to the realization of an earth with maintained biodiversity, SEKISUI CHEMICAL Group engages in activities based on the SEKISUI Environment Sustainability Vision 2050*1.
As stated in the SDGs, natural environment and social environment issues are interconnected, and in order to solve a single issue, we must remain conscious of multiple issues while working to find solutions.
Looking ahead, we intend to strengthen our partnerships with stakeholders and evolve activities conscious of the need to solve not only issues relating to the natural environment and social environments, but also contribute to realizing a return to social capital as well as natural capital*2.

*1 See p. 154, Long-term Environmental Management Vision: SEKISUI Environment Sustainability Vision 2050.
*2 See p. 162, Integrated Index: Sekisui Environment Sustainability Index.

Addressing Biodiversity

Initiatives Envisioned to Address Biodiversity

1. Assessment and reduction of the impact of business activities on biodiversity
   ・Developing assessment methods and conducting assessments, reducing impact
   ・Greening of business sites (promoting landscaping and biotope development)
   ・Promoting biodiversity-conscious purchasing

2. Development and promotion of related technologies and products
   ・Incorporating biodiversity assessments at the product development stage

3. Raising employees' awareness
   ・Conducting nature conservation activities at all business sites
   ・Expanding Sekisui Nature Study Course and nature conservation activities

4. Dialogue and cooperation with external stakeholders
   ・Supporting innovations inspired by nature, and holding public forums
   ・Supporting nonprofit and other organizations through Keidanren (Japan Business Federation)

5. Transmittance of information
   ・Participating in exhibitions
   ・Educating the next generation (Children's Nature Study Course, school visits)
   ・Providing information through Sustainability reports, site reports, and the Company's website

Biodiversity Assessments

At the twice-yearly meetings of SEKISUI CHEMICAL Group's Environmental Subcommittee, which has been established under the Sustainability Committee chaired by the president, biodiversity issues related to the Group's business activities and assessments of the impact those activities are deliberated.
Furthermore, when a large-scale land is developed, such as when constructing a new factory, or new land is acquired, for example through M&A, we carry out environmental assessments of the impact that our business may have on the atmosphere, water areas, soil, etc. During these environmental impact assessments, we also verify any impact with regard to biodiversity.

Assessment of Impact on Biodiversity

Under its SEKISUI Environment Sustainability Vision 2050, the Company is working to realize an earth with maintained biodiversity. To that end, we are promoting activities that incorporate a net-positive approach toward ecosystems.

As previously mentioned, the Sekisui Environment Sustainability Index is used as an integrated indicator to confirm the degree of progress toward realizing the Group's environmental vision, and is calculated as the rate of return on natural and social capital.

As a breakdown of this calculation, steps are taken to identify the impact of four aspects on plants (primary growth of plants) and biodiversity (rate of extinction of living species) in addition to climate change issues and social assets, and to monitor as an impact on biodiversity (nature).

Here we show the rate of return for each of these two plant and biodiversity aspects. While neither aspect has yet reached a rate of return of 100% or higher, SEKISUI CHEMICAL Group is steadily promoting corporate activities that will help realize a nature positive future by addressing such environmental issues as climate change and resource recycling.

Trends in Biodiversity and Primary Plant Production Rates of Return

(Unit: %)

	2016	2017	2018	2019	2020	2021 ☑
Biodiversity aspects	41.0	38.3	39.4	43.1	40.8	49.7
Primary aspects	34.2	35.0	35.1	34.9	38.2	41.0

SEKISUI CHEMICAL Group recognizes that the emission of raw materials and chemical substances as well as the disposal of products sold place a serious burden on biodiversity.
Furthermore, we understand that a significant burden on the primary growth of plants falls under the category of raw materials, in particular paper derived from biomass, as well as other materials including those derived from petroleum.
In a bid to reduce this impact, we recognize the importance of strengthening procurement that takes into account sustainability also with respect to non-fossil resources as identified in our resource recycling policy. With the aim of strengthening sustainable procurement, SEKISUI CHEMICAL Group is initiating a variety of steps, including a review of consideration items pertaining to supplier management, the preparation of a guide, and activities aimed at reducing environmental impact and corporate risks in cooperation with suppliers.

Conversely, products that contribute significantly to biodiversity include, for example, products that contribute to the reduced use of mineral, fossil, and forest resources. These products are used in a wide range of areas and include products that contribute to resource recycling by reducing energy consumption during the use of vehicles and transportation, improving durability, and promoting a shift in raw materials. Examples of the former include KYDEX, LLC products for aircrafts and railroads. Examples of the latter include products related to the SPR method for sewage pipe rehabilitation. Products that contribute significantly to the primary growth of plants include, for example, products that reduce global warming and products that can reduce waste. Once again in the case of the former, an example is Sekisui Heim's housing equipped with solar power generation system panels. In the case of the later, examples include Kraft tape, which enables the use of a thinner paper core than previously possible.
To expand these contributions, we are developing products and technologies that contribute to decarbonization while working to reduce waste from products sold. We also acknowledge the importance of putting in place services and technologies that promote recycling. With this in mind, we are looking to achieve each of the aforementioned goals by expanding our lineup of Products to Enhance Sustainability.

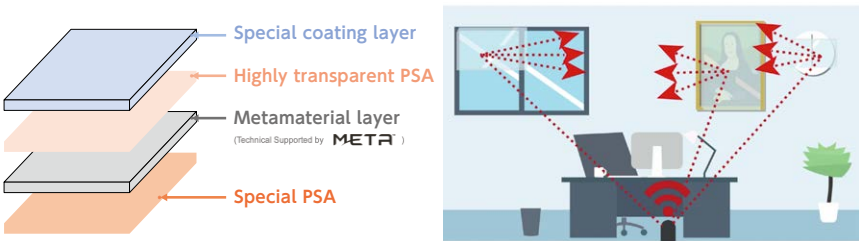
Moving forward, SEKISUI CHEMICAL Group will continue to promote manufacturing while considering its direction from these rates of return in order to engage in these types of nature positive corporate activities.

Innovation Inspired by the Nature Research Support Program and Holding Forums

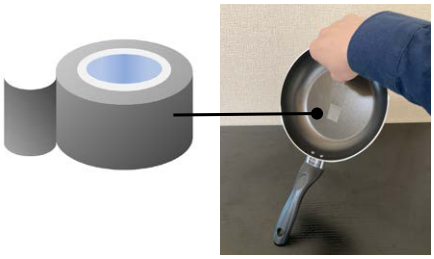
As an effective approach to manufacturing that is geared toward solving social as well as environmental issues, SEKISUI CHEMICAL Group has recognized the importance and necessity of learning from nature's wisdom since 2002. Based on this understanding, we established the nature-inspired manufacturing research support program to promote the development of biomimicry technology and have organized forums where researchers can share their results. The year 2022 marks the 20th year this initiative will be held.

While basic science requires time for research and support, we believe that learning from nature's wisdom has the potential to create fundamental innovations that differ from conventional energy-consuming technologies.
For researchers outside the Company, this program has encouraged the development of 280 (cumulative total) technologies. Amid efforts to the promote development based on this understanding, the following types of technologies and products have emerged.

[Contribution to a next-generation telecommunications society]



Transparent flexible reflector film developed from studies of the brilliance of Morpho butterfly wings



Fluoroplastic-compatible adhesive tape developed from the study of mussel secretions

[Contribution to extending healthy lifespans (and application as a COVID-19 countermeasure)]

Viru-taker™ and Allerbuster developed from the study of plant-based resins

[Contribution to addressing climate change (heat island effect countermeasure)]

Fractal sunshade material Airyshade developed from the study of the cool shade of trees

SEKISUI CHEMICAL Group will continue to place considerable importance on learning from nature's wisdom in its manufacturing with the aim of developing nature positive products and businesses in the future.

Major Initiatives

Use of Sustainable Timber and Ensuring Traceability

To contribute to the eradication of deforestation as well as the sustainable use of timber resources, at SEKISUI CHEMICAL Group every effort is made to ensure that the timber used in products is logged in accordance with statutory and regulatory requirements, such as FSC-certified wood. In addition, the Group conducts investigations into commercial distribution with regard to the logging area, tree species and quantity of timber materials to ensure traceability. For recycled materials, we use timber- and wood-based materials that are already used in markets, as well as unused thinnings and branches.
Previously, traceability surveys were limited to timber and wood-based materials used in manufacturing at domestic production sites, but from fiscal 2020, we are conducting surveys at overseas business sites as well. Giving renewed consideration to our impact on ecosystems, from fiscal 2021 we have begun to formulate Guidelines for Procurement of Timber Materials, into which the opinions of experts have also been incorporated.

Initiatives to Improve Green Space Quality at All Domestic Production Sites and Research Institutes

Having prepared habitats for local flora and fauna at 45 business sites (total site area 3,209,000 m^2, total green space area 838,000 m^2) in Japan, we are moving forward with efforts to improve the quality of green spaces at business sites. Our aim is to build ecosystem networks that connect local communities and business sites while invigorating local partnerships. Under the Environmental Medium-term Plan (2020-2022), we aimed to improve our score on the JBIB Land Use Score Card® by three points compared with fiscal 2019.
Under the guidance of the environmental consulting company Regional Environmental Planning, Inc., we are engaged in a range of activities at each business site. For example, we are formulating and executing green space design and management plans in harmony with the surrounding natural environment, conducting sustainable maintenance and management that utilize natural cycles, eradicating invasive species and conserving rare species, and maintaining communication with stakeholders. As a result, in fiscal 2021 we improved our average score 3.3 points compared with fiscal 2019.

Maintenance Activities in Wetlands Where Japanese Rice Fish Live

At the Shiga-Minakuchi Plant, we conducted a biological survey throughout the factory premises in fiscal 2019 and, based on the results, are developing a variety of biodiversity conservation activities.
As our main activity, we designated a place of particularly high conservation value on the site as a wetland biotope. Here we are carrying out the conservation of a rare Japanese rice fish species, the eradication of an invasive species known as parrot feather, and conducting regular monitoring. Of these, parrot feather is a very fertile plant that can reproduce itself even from broken stem fragments. If allowed to grow, this weed will cover the water's surface and threatens the survival of aquatic organisms, so ongoing eradication is necessary. We continued to carry out eradication work in fiscal 2021 to maintain a biotope environment in which the Japanese rice fish can swim energetically.
In fiscal 2020, we commenced conservation activities for the Japanese lily, which has been selected as the official city flower of Koka City. It is said that it takes about seven or eight years to bloom, and we are working with the goal of growing these naturally on the factory premises.
In recognition of these activities, we have obtained the highest three-star certification in the Shiga biodiversity initiative certification system. In the years to come, we will further enhance environmental education for employees, work to develop human resources who contribute to the environment, and develop activities that also contribute to the surrounding area.

Wetland biotope conservation

Parrot feather, an invasive species

Promoting Biodiversity in the Housing Business

The Sekisui Heim Group is working to create sustainable town schemes by maintaining and improving the property value of the towns in its residential housing business.
In fiscal 2020, the SEKISUI Safe & Sound Project*1 for the complex large-scale Asaka Lead Town was certified as an ABINC ADVANCE certified facility*2, the first time by a single corporate group. Tokyo Sekisui Heim Co., Ltd.'s Smart Heim City Asaka had acquired ABINC certification (fiscal 2018) for town and community development. As an initiative for sustainable town and community development, from the perspective of biodiversity, we have achieved a high ratio of green coverage at Asaka Lead Town by planting an abundance of plants centered on the native species of the region throughout the town. We are also trying to mitigate damage from torrential rain having adopted disaster-resistant infrastructure equipment and utilizing the water retention capacity of the green spaces. In addition, we are planning to hold a variety of events to revitalize the local community through the green spaces. These events include, for example, nature meetings to observe creatures and study plants in which several generations can take part and riverbank clean-up activities. For the purpose of increasing the number of trees and plants that attract wildlife, plans are in place for Group companies to take the lead in implementing a variety of events including tree-planting by local residents and the production and installation of bird nesting boxes that attract native birds that are unique to the region.

*1 Based on the three concepts of Safe, Sound, and Safe & Sound, we are working to create a safe, secure, environment-friendly, and sustainable town while demonstrating the comprehensive strengths of SEKISUI CHEMICAL Group. We are working to build a sustainable town and community that will continue to have value by providing tangible and intangible benefits that will allow its residents, from young people to the elderly, to live safely and comfortably.
<Three Concepts>
Safe: Secure & Safe. Feel a newfound sense of security, anytime and anywhere.
Sound: Environment and Comfort. A vibrant town where residents can participate, enjoy, and build a community.
Safe & Sound: Sustainable. Always watching over and continuously supporting Safe & Sound = free from harm.

*2 ABINC ADVANCE is a certification system by which the Association for Business Innovation in harmony with Nature and Community (ABINC) assesses the contributions made by the private sector that aims for the realization of sustainable communities and towns through biodiversity conservation and for the achievement of the SDGs. Planned and managed in accordance with the concept of the guidelines for the promotion of Ikimono Symbiotic Coexistence Enterprise® certifications developed by the Japan Business Initiative for Biodiversity (JBIB), those enterprises that meet the reference point or higher in the JBIB Land Use Score Card and are certified under this examination process receive this certification.

ADVANCE
ABINC

Quercus glauca
(ring-cupped oak)

Quercus myrsinifolia
(white oak)

Ilex integra
(holly)

Ligustrum japonicum
(wax-leaf privet)

Species of plants scheduled for planting

Artist's impression of Asaka Lead Town after completion

Cooperation with External Organizations

Business Associations Aiming for and Taking Action in Biodiversity Conservation

30by30 Alliance

Organizer ····· Ministry of the Environment
Significance/objectives ··· Achievement in Japan of internationally agreed 30by30 targets
Activities ····· Summarize and promote deployment of efforts necessary, such as OECM certification, to stop and recover biodiversity loss (become Nature Positive) by 2030
Our Company's role ····· Expressing support and aiming to accelerate efforts through in-house and corporate collaboration

JBIB (Japan Business Initiative for Biodiversity)

Significance/objectives ··· Contribute to the conservation of biodiversity in Japan and overseas
Activities ····· Promoting diverse activities, such as conducting research regarding biodiversity together with various companies.
Our Company's role ····· Exchanging opinions with companies that promote biodiversity conservation and sharing case studies while accelerating in-house efforts and raising awareness of social efforts

Activities to Conserve Green Spaces

We work together with an environmental consulting firm on environmental conservation activities and development of local environment, such as research on ecosystems at production sites and laboratories, conservation of biodiversity, and eradication of invasive species..

Social Contribution Activities

To develop personnel who are able to contribute to the environment, we engage in natural environment conservation activities in various regions around the world, through cooperating with local governments, academic institutions, schools, NPOs and NGOs.

Performance Data ✅

Results from the JBIB Land Use Score Card®

	FY2021
JBIB Land Use Score Card®	Increased by 3.3 points

Index	Calculation Method
Points of JBIB Land Use Score Card®	JBIB Land Use Score Card® is a tool promoted by JBIB, which evaluates the level of effort to preserve biodiversity with respect to the land owned by the Company. It is a calculation sheet to evaluate every business site regarding the size and quality of its greenspace, management system, etc. on a scale from 0 to 100. We implement assessments of every business site for the fiscal year using the JBIB Land Use Score Card® and calculate the increase from the number of points it had in fiscal 2019. The index is the average increase of the points across all business sites.