SKG-5R Report 2023



Message from the President

The starting point is *monozukuri* in harmony with the natural environment.

> Since its inception as a pioneer in the field of foam plastics in 1959, SEKISUI KASEI Group has been bringing products and services that support the daily lives of people and contribute to industrial development. At the same time, we have also actively engaged in environmental activities. Early in our Group's history, in 1971, we began recycling expanded polystyrene (EPS) ahead of others in the industry. These efforts later spread throughout the industry, and now Japan has the domestic recycling rate of 90% or higher.

> In recent years, expectations have risen for chemicals manufacturers, including us, address global environmental issues, such as responding to climate change and transitioning to a circular economy.

> As we take these challenges head-on, we continue to aim to preserve and pass on "Our Planet. Our Tomorrow." that is our corporate message, to the next generation.





Target 2030 Basic Realize co-existence of "Contribution to a Sustainable Society" Policy and "Sustainable Enhancement of Corporate Value."

SKG-5R

Targets

Create Sustainable Star Product and expand their business Increase recycled and biomass material usage ratio Reduce CO₂ emissions and achieve carbon neutrality

Become a leading environmental company

Contribution to a sustainable society and sustainable enhancement of corporate value

> We launched SKG-5R in 2019, and in July 2020, we announced our SKG-5R STATEMENT, which sets out our initiatives and targets. In addition to the targets of "creating Sustainable Star Products and expand their business" and "reducing CO₂ emissions," it added the targets of "taking on the challenge of carbon neutrality" and "increasing the ratio of recycled and biomass raw materials in our total production volume," We have been implementing SKG-5R through efforts such as launching the "ReNew+" and "BIO Cellular" brands. This report was created to present stakeholders with information regarding SKG-5R-related initiatives and the current progress against our targets. We are confident that by working together as SEKISUI KASEI Group to deliver innovations that meet society's expectations, we can continue to increase our Group's environmental, social, and economic value.



that cares for people and the planet as it creates new value



October 2023

President and Chief Executive Officer

Masato Cashiwabara

What is SKG-5R?

Star Product

SEKISUI KASEI Group (SKG) has set targets to be achieved by FY2030 with the aim of realizing a sustainable society. To achieve these targets, we are contributing to the solution of the global issues listed in the SDGs by promoting SKG-5R: Reduce, Reuse, Recycle, Replace, and Re-create.

SKG-5R



We support and contribute to the Sustainable Development Goals (SDGs)

and biomass



2Rs based on SEKISUI KASEI Group's unique technologies

Core measures

 Shift from oil-derived materials to biomass and derived biodegradable materials

• Shift to renewable energy

Core measures

• Create next-generation products and business models that provide new value and functions for environmental improvement

%

Achieve carbon neutrality





Targets for SKG-5R

Create Sustainable Star Product and expand their business

> For a sustainable society, it is essential to minimize the environmental impact, not only in the manufacturing products stage but also in the materials that are sourced, and to minimize the environmental impact of products even after they have been used by customers.

> With regard to Sustainable Star Product (environmentally-friendly product), we have set targets for the number of registrations and share of total sales for FY2030 and are working to further advance our existing products and commercialize new materials.

Targets for FY2030

Total number of registrations Share of total sales

(Reset in April 2022)

Sustainable Star Product

SEKISUI KASEI Group defines products that consider the limited resources they use and their environmental impact throughout the life cycle, from the raw material procurement stage to the use stage and the disposal and recycling stage, as "Sustainable Product."

We certify those products among our sustainable products that make even greater contributions to the environment as "Sustainable Star Product," aiming to promote the creation those products and expansion their business.

Sustainable Star Product



Products and systems that are useful in daily life and friendly to the environment, such as foam plastics

Examination · Certification/Registration

The Environment Committee examines products before they are registered as "Sustainable Star Product," products that meet the criteria are then approved in management meetings before being certified and registered. In addition, the validity of this certification and operation is evaluated by a third party.

Flow for examination, certification, and registration



Targets for Sustainable Star Product

By FY2030:

- Increase the total number of registrations to 100
- Increase the share of total sales to 50%

SKG-5R sets the targets of increasing the total number of registrations of Sustainable Star Product to 100 and raising the share of total sales to 50% by FY2030.

The targets for FY2024, the final year of the mid-term management plan, "Spiral-up 2024," are the total number of registrations of 60 and the share of total sales of 20%.

In FY2022, there were a total of 48 registrations, and the share of total sales rose by 1.0 points to 17%, so both the number of registrations and the share of total sales are advancing roughly in line with the plan. We will continue to contribute to the solving of environmental and social issues by developing Sustainable Star Product.

Certification criteria for Sustainable Star Product

We have set detailed criteria for each environmental contribution item for the certification of products and systems that exceed a certain predefined level as "Sustainable Star Product."

ReduceWeight and space reduction Energy saving and of CO2 of Suppression of waste geneReuseReusability Higher durability (longerRecycleUse of recycled material Higher recyclability (e.g. Establishment of an indexReplaceEffective use of biomasts Substitution of oil-derivedRe-createContribution to environmental ContributionsOther environmental contributionsProducts offsetting environmental		EIIVIIOII
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Other environmental contributions Products offsetting environmental	Re-create	Contribution to environme
	Other environmental contributions	Products offsetting envi



Environmental contribution item

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emissions reduction in production, transportation and use stages eration in the production and after-use stages

product life)

easier to sort) ependent recycling system

resources ed materials

ental improvement by the re-creation of value and functions

ronmental impact, environmental labeling

Sustainable Star Product

We are committed to sustainable business activities through manufacturing that is kind to people and the planet using SEKISUI KASEI Group's materials, technologies, and expertise.

3RS for the creation of a recycling-based society

Reduce

ESLEN Beads HCMH

Foam with 100 times Expansion Rate

ESLEN Beads HCMH is polystyrene bead foam that has achieved an expansion ratio of 100 times. Conforming to Positive List System of Japan for food utensils and containers/packaging, this product reduces the weight by a further 10% compared to conventional foam molded products of high expansion ratio (foam with 90 times expansion rate).



Reuse



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PIOCELANTM Packaging material for transporting automobile parts Polystyrene / Polyolefin Hybrid Resin Foam

The packaging material molded with PIOCELAN can be reused repeatedly as a container for transporting automobile parts with excellent impact resistance and shock absorption properties. With safe and efficient packaging design for transportation, this product improves the loading efficiency and contributes to energy saving during transportation.

Recycle

ESLEN Sheet RNW

Polystyrene Foam Sheet

ESLEN Sheet is an extrusion method expanded polystyrene sheet that uses 25% or more of recycled polystyrene as a raw material. This product has the same thermal insulation properties and processability as conventional sheets made from virgin raw materials, and can be used as a panel base material.



2RS_{base} on SEKISUI KASEI Group's unique technologies

Replace

ELASTILTM BIO Thermoplastic Elastomeric Bead Foam

ELASTIL BIO is a foam molded product of beaded thermoplastic elastomer with a Biomass content of 45% or more, using a plant-derived material made from castor beans. This product maintains the features of ELASTIL, which is as elastic as rubber, and as soft as polyurethane, used in products such as running shoe midsoles. With ELASTIL BIO, we have succeeded in creating a product that is 30% lighter and 10% more resilient than conventional products made from petroleum-derived raw materials.

low-dielectric properties. anticipated.







TECHPOLYMER[™] HSC series

Polymer Particles

This series of hollow microparticles with an internal air layer offers high levels of thermal resistance and

They can be used as an additives in semiconductor isolation devices to achieve low dielectric constants and low dielectric dissipation factors. Their potential for reducing transmission loss (thermal energy loss) in high-frequency sign al processing used in the next generation of high-speed communications is highly

Targets for SKG-5R

ITT

Recycled and biomass material usage ratio

To create Sustainable Star Product and expand their business, we have set targets for recycled and biomass material usage ratios for the products we manufacture. To achieve these targets, we have created our category brands, "ReNew⁺" and "BIO Cellular," and we are expanding our lineups for each brand.

Targets for FY2030

Recycled and biomass material usage ratio target

• Increase to 50% or more materials used to be recycled or biodegradable/biomass-derived raw materials by FY2030

In order to create and expand Sustainable Star Product, we have set a target to be achieved by all products manufactured by SEKISUI KASEI Group by FY2030: 50% of the materials used in our products to be recycled or biodegradable/biomass-derived raw materials.

Targets and actual results of

raw material usage ratio to the total production volume



Creation of category brands

To reach our targets, we have launched two new category brands, "ReNew⁺" and "BIO Cellular". By accelerating our development of new materials in harmony with the natural environment and expanding the lineups of these brands, we will promote the shift to businesses that solve environmental and social issues, and we will contribute to the realization of a recycling-oriented society.

Category brand logos-



Product category brand using recycled raw materials



Product category brand BIOCellular using biodegradable or biomass-derived plastics

ReNew⁺

SEKISUI KASEI Group collect used products and scrap materials from manufacturing processes and reprocess them so they can be easily reused as raw materials for new products.

Developing materials that are made from recycled raw materials that perform as well as conventional products requires overcoming a number of technical challenges. However, we believe it is important to reduce waste.

ESLEN Beads RNW

Expandable Polystyrene Beads



We collect polystyrene components used in discarded household appliances* and expanded polystyrene molded products and convert them into raw materials.

Discarded household appliances: Electrical appliances for the home such as TVs and refrigerators that have been discarded

BIOCellular

"Bioplastic" is the collective term for biomass plastic and biodegradable plastic. Biomass plastic is made from recyclable organic materials such as plants, while biodegradable plastic can be broken down by actions of microorganisms and the like into, ultimately to CO_2 and water. By commercializing materials such as these, which have the potential to reduce environmental impact, we are committed to helping solve the problems that are threatening our global environment, including climate change and ocean pollution.

ST-Eleveat_™ BIO

High Heat-resistant Lightweight Foam



ST-Eleveat BIO is high heat-resistant lightweight foam with a biomass content of 25% or more, by replacing conventional raw materials with plant-derived materials. We also offer a range of high flame-retardant grades with a biomass content of 15% or more.





LIGHTLON_™ RNW

Non-cross-linked Low Density Polyethylene Foam Sheet



LIGHTLON is a foamed polyethylene sheet that uses 30% or more recycled materials. This product promotes plastic recycling reduces environmental impact.



RETONA FOAM_{TM} BIO

Biodegradable Foam



RETONA FOAM BIO is foam made from biodegradable plastics such as PLA and PBS. This product can be broken down into CO₂ and water by the action of microorganisms found in nature, such as compost.

Targets for SKG-5R



CO₂ emissions

Following the enforcement of the Paris Agreement in 2016, an international framework for addressing climate change, in October 2020, Japan declared that it aims to achieve carbon neutrality by 2050. SEKISUI KASEI Group has identified addressing climate change as one of its materiality (key management issues) and has set a target to reduce CO2 emissions by FY2030 to achieve carbon neutrality by 2050.



Targets for FY2030

by 2050

CO₂ emissions reduction targets Scope1+2*:

• Reduce CO₂ emissions by 27% by FY2030 (from FY2018 levels)

• Reduce CO₂ emissions to virtually zero by 2050

To achieve carbon neutrality by 2050, we believe that it is important to set ambitious targets and reduce CO₂ emissions by backcasting from those targets. In SKG-5R, we have set a target to reduce Scope 1+2* CO₂ emissions by 27% by FY2030 from FY2018 levels, that was based on the standards of the Science Based Target (SBT) initiative.

In line with our reduction plans, the entire Group is actively working to promote energy savings in production activities and to review and revise our energy procurement methods and we view our reduction target for FY2030 as a milestone on the path to achieving virtually zero CO₂ emissions by 2050.

In FY2022, we reduced CO2 emissions by 23% from FY2018 levels, surpassing our plans, by improving production efficiency and introducing renewable energy.

 \ast Scope 1: Direct greenhouse gas emissions by the company itself Scope 2: Indirect emissions from the use of electricity, heat, or steam provided by other companies





Initiatives for achieving our target

• The entire Group is promoting energy saving and utilization of renewable energy

To achieve its CO₂ emissions reduction targets, SEKISUI KASEI Group, led by its Energy Strategy Promotion Committee, is rationalizing production processes, and accelerating energy saving while developing new processes and introducing production facilities under environmental investment limits.

Toward a shift to renewable energy, we have introduced solar power generation systems (with a total power generation capacity of 2.1 MW) in five facilities: Sekisui Kasei Tenri, Sekisui Kasei Kanto (Shimodate), Sekisui Kasei Saitama, and Sekisui Kasei Toubu (Head office and Kanuma), and these systems supplement the power used in our production activities.

We will continue to introduce solar power generation systems in our Group sites, not only reducing our own CO₂ emissions, but also improving the stability of power supplied to our sites and communities and contributing to the achievement of carbon neutrality.

Reducing CO_2 emissions in the supply chain (Scope 3¹)

It is important to reduce CO2 emissions associated with our business activities while also working to reduce them throughout the supply chain.

Under SKG-5R, we will contribute through our Sustainable Star Product and collaborate with companies involved in the supply chain, focusing on hotspots'2 that are identified based on calculations of supply chain emissions³, thereby contributing to the reduction of CO₂ emissions in Scope 3

*1 Scope 3: Other indirect CO2 emissions not included in Scope 1+2 *2 Performed based on the GHG protocol international standard and the

Japanese Ministry of the Environment's Basic Guidelines on Accounting for Greenhouse Gas Emissions throughout the Supply Chain

*3 Categories with high CO2 emissions and large potential for reduction

Endorsement of the recommendations of the Task Force on Climate-related Financial Disclosures (TCFD)

• We are committed to further improving our disclosure to contribute to the realization of a decarbonized society.

We have endorsed the recommendations of the Task Force on Climate-related Financial Disclosures and disclose information as necessary.

Energy conservation and CO ₂ emissions reduction initiatives					
Energy consumption reduction	 Introduction of high-efficiency equipment Improvement of production efficiency while considering shifting operations Reduction of energy loss (elimination of air and steam leaks, improved thermal insulation) New process development and introduction of production facilities 				
Energy conversion	 Switching to fuels with lower CO₂ emissions (using STEAM-FIT, etc.) Introduction of renewable energy 				

Solar power generation equipment



Sekisui Kasei Kanto (Shimodate)



Sekisui Kasei Toubu (Head office)





Sustainable Star Product List

Product name	Reduce	Reuse	Recycle	Replace	Re-create	Environmental contribut (certification ba
AQUAROAD _{TM}						57% reduction in CO $_2$ emissions from raw materials to product use [Compa
INTERFOAM TM BIO						Biomass content of 10% or more
ESLEN Wood Panel RNW PRC grade						100% recycled resin used (Eco Mark certified)
ESLEN Wood Panel RNW RC grade						50% or more recycled resin used (Eco Mark certified)
ESLEN Container						Repeated use
ESLEN Sheet Laminated RNW						10% or more recycled polystyrene + Proprietary recycling system
ESLEN Sheet RNW						25% or more recycled polystyrene used
ESLEN Beads HCMH Foam with 100 times Expansion Rate	•					Product liability compliance and 36% reduction in plasticizer additives [Compa 10% reduction in weight per cubic meter of molded product [Comparison: Mol
ESLEN Beads RNW						30% recycled resin + Proprietary recycling system
ESLEN Beads RNW Returnable Box(NFB)						ESLEN Beads RNW + Eco Mark certified product
ESLEN Beads RNW ERX-ZERO						ESLEN Beads RNW + Carbon offset
ELASTIL™						50% reduction in weight compared to non-foam PU/EVA competitive produ
ELASTIL™ BIO						ELASTIL + Biomass content of 45% or more (Biomass Mark certified)
KATAEMON™						Ideas for eliminating waste without the need to dismantle formwork
SUPER SOILEN SYSTEM						100% crushed grains of used expanded polystyrene
SET BOX™						Repeated use
CELPET™ RNW K grade (Industrial Use)						80% or more used PET bottle flakes as a raw material
CELPET™ RNW S grade (Food Use)						30% to 50% recycled PET bottles + Proprietary recycling
SOILEN Mat RNW						100% recycled resin, 21% reduction in CO_2 emissions [Comparison: The Co
Foldable Thermal Insulation Container						Repeated use
TECHTELAS™						50% reduction in CO_2 emissions during product use [Comparison: Fluoresc
ST-gel™ Electrodes for low-frequency therapy equipment						Repeated use
ST-gel $_{\mathrm{M}}$ Hydrogel pack AI-FIT high moisture type/sustained moisturization type						Biomass content of 18% or more
TECHEATER™						Approx. 30% reduction in CO ₂ emissions during product use [Comparison:
TECHPOLYMER™ Cosmetic grades						Residual monomer reduced to less than 1/100 [Comparison: Industrial grad
TECHPOLYMER™ Microparticles used as component in light cover material						27% reduction in \mbox{CO}_2 emissions compared to inorganic diffusing agents
TECHPOLYMER™ BIO EF-A series/EF-B series						Biodegradable polymer microparticles decomposed in the natural environm
TECHPOLYMER™ BIO EF-C series						Biomass content of 40% or more, 70% or more reduction in wastewater from
TECHPOLYMER™ HSC series						Approx. 36% reduction of energy loss (transmission loss) [Comparison: No
NEOMICROLEN™ SHE						30% or more weight reduction through high foaming [Comparison: Conven
PIOCELAN™ Flat-panel TV glass panel transporting container						Repeated use
PIOCELAN™ Packaging material for transporting automobile parts						Repeated use
PIOCELAN™ Molded Product High expansion and flame-retardant grade						25% lighter with same strength (saving resources) [Comparison: The Comp
PIOCELAN™ RNW Knock-Down packaging						15% or more recycled resin used, repeated use
Non-fluorinated dispersing agent						New alternative dispersing agent for fluorinated dispersing agent of enviro
FRAHASANAM						Cause brand product (A protion of the proceeds is donated to animal welf
LIGHTLON™ BIO						Biomass content of 10% or more (Biomass Mark certified)
LIGHTLON™ RNW						30% or more recycled polyethylene used
CMT bathtub pan						Approx. 75% reduction in weight compared to competitive FRP products
Sponge carrier for DHS Water Purification System						Environmental impact reduction in water bodies
ESLEN Block for EPS civil engineering method						48% reduction in CO2 emissions from raw materials to product use [Compa
EPS Slope Lightweight Leveling Ramp	•				•	Newly designed disaster recovery item without the need for heavy machine Approx. 79% reduction in CO ₂ emissions per set of 30cm level difference e
ES Dan Mat LV Thermal Insulation Board						73% reduction in CO_2 emissions from raw materials to product use [Comparison of the comparison of
Formwork / Thermal Insulation Panel						9% reduction in discarded formwork plywood, 18% reduction in formwork setup and r
ST-Eleveat™						80 to 90% reduction in weight compared to non-foam competitive product
ST-Eleveat™ BIO						ST-Eleveat + Biomass content of 25% (Biomass Mark certified)
ST-Eleveat™ BIO High flame-retardant grade					٠	Biomass content of 15% or more, no halogenated flame tardants used
ST-LAYER™ Wind turbine blade						80% lighter than steel ones and 60% lighter than aluminum ones when cor

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ery elimination [Comparison: Sandbags and laid iron plates]
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removal time [Comparison: Conventional construction methods]
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