

Together with the Environment

Sustainability Material Issues 1 Promoting Environmental Initiatives for a Sustainable Planet



Basic Approach

We at the Lion Group believe it is our solemn responsibility to provide excellent customer experiences in the areas of health, comfort and cleanliness while protecting the global environment—the foundation of health and daily living—in accordance with our aim of “Becoming an advanced daily healthcare company.”

We have strived to realize a sustainable planet while working to achieve the targets of Eco Vision 2020.

From 2021, we will strive to achieve LION Eco Challenge 2050, a set of long-term environmental objectives formulated in 2019. Going forward, the Group will ambitiously work toward the realization of a decarbonized, resource-circulating society.

Lion’s Commitment to the Environment

In line with the corporate slogan, “life.love.” we have written “Lion and the Environment” to encapsulate our commitment to the environment, expressing our aim of reducing environmental burden not only through our business activities, but through our products as well, while making every day brighter for each individual.

Lion and the Environment

Making daily life more pleasant should also mean caring for the environment.
Each everyday activity can do good things for our planet.
That’s Lion’s eco-philosophy. It’s why we make environment-friendly products that fit right into your lifestyle.
For example, we use renewable plant-derived carbon-neutral ingredients.
And we help you conserve water resources with our water-saving products while protecting the water environment.
So, day by day, without even thinking about it, you help keep our planet healthy.
It’s an eco-lifestyle for everyday life.
That’s Lion’s promise to you and the Earth.

> [“Every Day. For the Earth” pamphlet \[Japanese\]](#)  (5.01MB)

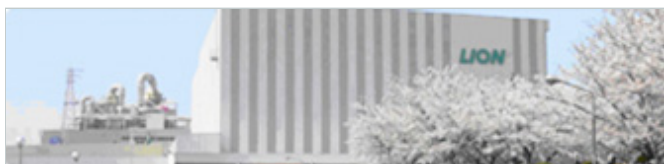
Approach / Management / Targets and Achievements



Environmental Approach and Policy /
Management



Environmental Objectives and Achievements



ESG Data and Third-Party Verification



Disclosure based on TCFD recommendations



Initiatives



Realizing a Decarbonized Society

- Reducing CO₂ Emissions throughout Business Activities
- Reducing CO₂ Emissions throughout Product Life Cycles



Realizing a Resource-Circulating Society

- Recycling Resources
- Reducing Water Use



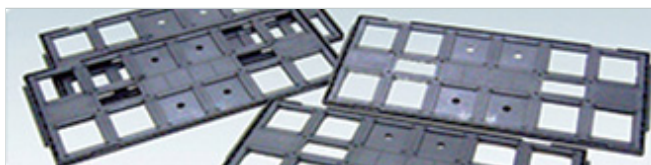
Harmonizing with Nature (Biodiversity)



Environmental Communication



Chemical Substance Management



Environmentally Friendly Technologies in the
Chemicals Business



Lion's Environmentally Friendly Products

- Products with the "eco Lion" Mark [Japanese]



Environmental Approach and Policy / Management

- ✓ Approach
- ✓ Environmental Policy
- ✓ Environmental Management System
- ✓ Environmental Management Structure
- ✓ Legal Compliance

Approach

In 2019, the Lion Group established the [LION Eco Challenge 2050](#), a set of long-term environmental objectives, with the goal of promoting business activities that help to address global problems, such as those identified in the Paris Agreement and the Sustainable Development Goals (SDGs). In 2022, many countries, including Japan, began raising their environment- and sustainability-related targets. We have also revised our objectives as we work to achieve carbon neutrality by 2050. Aiming to realize a decarbonized, resource-circulating society, we will promote environmentally friendly habits with consumers to continuously provide planet-friendly lifestyles that make more sustainable living easy.

Environmental Policy

The Lion Group's [Environmental Policy](#) adheres to the spirit of the [Lion Group Charter for Corporate Behavior](#), which states: "We shall play a positive and active role in creating a sustainable society that harmonizes economic development and environmental protection."

Environmental Management System

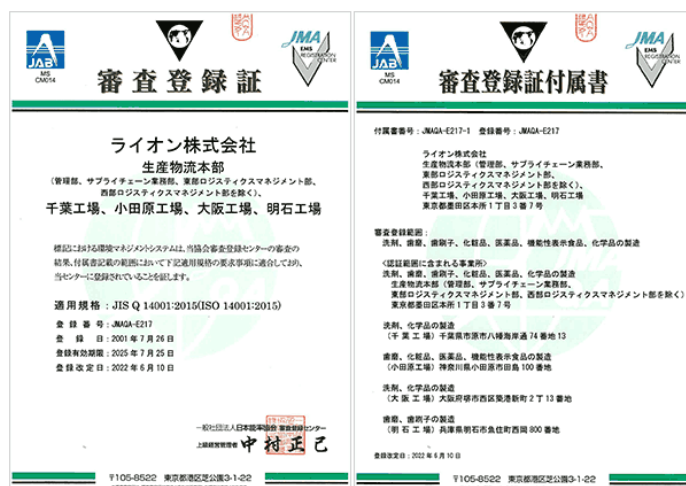
The purpose of the Lion Group's Environmental Management System is to identify, evaluate and remedy the adverse environmental impacts of our business activities, products and services, and to improve our environmental conservation activities on an ongoing basis.

We strive to enhance systems for environmental management and reporting with the aim of addressing environmental issues globally. Environmental data on the Lion Group is available on our website.

[> Environmental Data](#)

Status of ISO 14001 Certification

Lion acquired ISO 14001^{*1} certification covering its production sites in July 2001 and has maintained this certification since. Including the plants of Group companies in and outside Japan, the Lion Group continues to push ahead with its management systems and environmental conservation activities by obtaining ISO 14001 certifications and ensuring operations are in compliance with ISO 14001.



ISO 14001 Certificate of Registration

Lion Corporation (Korea) (“LCK”) has received certification as a “Green Company”^{*2} from the government of South Korea. The certification period is 3 years, and as a result of the examination in November 2021, LCK received recertification (period: November 2021 to November 2024) following the previous term (period: November 2018 to November 2021).



Certification

^{*1} ISO 14001: An international standard for environmental management

^{*2} Green Company: A company that contributes to the improvement of the environment by significantly reducing pollutants, saving resources and energy, improving the environmental effect of products and establishing a green management system, as stipulated in Article 16 of the Environmental Technology and Industry Support Act

> Lion Group ISO 14001 certifications 

Environmental Management Structure

To grow our businesses while reducing our impacts on the global environment, the [Sustainability Promotion Council](#), which consists of the executive corporate officers, including the President, and representatives of related divisions. The council deliberates on policy for dealing with environmental problems and monitors the progress of related efforts.

Top Environmental Audits

Lion's top management has been carrying out environmental audits of domestic Group production sites since 1999. Since 2009, we have formulated audit plans based on the characteristics of each plant and carried out regular audits every three years. Top environmental audits scheduled for 2020 were postponed to the second half of 2021 due to the COVID-19 pandemic. In 2021, we carried out top environmental audits of the Lion Specialty Chemicals Co., Ltd. Ono Production Site and the Lion Chemical Co., Ltd. Fine Chemical Production Site in a hybrid format combining in-person and online auditing. Lion Chemical Co., Ltd.'s Oleochemical Division, Lion Specialty Chemicals Co., Ltd.'s plant in Yokkaichi and the Odawara Plant underwent environmental audits in 2022 as the Company returned to its standard format of auditing under Director Kobayashi, the director in charge of the Sustainability Promotion Department.



Top environmental audits (2022) Left: Lion Chemical Co., Ltd.'s Oleochemical Division . Right: Odawara Plant

Internal Environmental Audits

Trained internal environmental auditors regularly conduct internal environmental audits to check compliance with the requirements of ISO 14001. The relevant departments then take responsibility for implementing improvements regarding any issues thus identified. In addition, the general managers of offices and plants conduct management reviews to confirm that organizational management systems are constantly being improved to be more apt, fair and effective.

Legal Compliance

Lion ensures compliance with environmental laws and regulations. In addition, we carry out management based on proprietary management standards.

Proper Waste Disposal

For waste disposal, a waste disposal officer at each operating site commissions waste disposal contractors based on contractor selection standards laid out in Lion's waste management regulations. We also perform regular on-site inspections of waste disposal contractors' facilities to determine whether we should continue to commission them.

Proper PCB Waste Storage and Disposal

Polychlorinated biphenyl (PCB) was once widely used as an insulating oil in electrical equipment for its excellent fire resistance and electrical insulation properties, but its manufacture and import are now prohibited by law. Lion had been strictly storing and disposing of PCB-containing equipment in its possession in compliance with the Act on Special Measures concerning Promotion of Appropriate Handling of PCB Wastes until disposal could be outsourced. The disposal was completed in 2022.

Wastewater Management

We manage ordinary wastewater to ensure that we do not emit wastewater that violates legal or regulatory water quality standards through such means as enhancing the stability of wastewater treatment facilities, maintaining and reinforcing treatment control, and carrying out emergency drills. Furthermore, operating sites form agreements with individual municipalities and establish and enforce voluntary standards to ensure thorough wastewater management.

Proper Management of Fluorocarbons

Identifying the facilities covered by the Fluorocarbon Emissions Control Act, doing simple and periodic inspections, keeping records, and calculating the amount of leakage are all part of Lion's response to the legislation. No operating sites in fiscal 2022 had fluorocarbon leaks that required notification. We will keep working to prevent leaks and encourage the introduction of non-fluorocarbon and low Global Warming Potential (GWP) equipment when updating facilities.

Responding to Legal and Regulatory Changes Related to the Environment

With regard to revisions of environmental laws and regulations, namely, the Act on the Rational Use of Energy, the Act on Promotion of Global Warming Countermeasures, the Act on Confirmation, etc. of Released Amounts of Specific Chemical Substances in the Environment and Promotion of Improvements to the Management Thereof, the Act on the Evaluation of Chemical Substances and Regulation of Their Manufacture, etc., the Waste Disposal and Public Cleansing Act and the Soil Contamination Countermeasures Act and the Fluorocarbon Emissions Control Act, information is collected from administrative agencies and industrial associations to ensure that related departments are up to date on and fully compliant with the latest developments.

There were no violations resulting in fines or other penalties in 2022.

Environmental Objectives and Achievements

- ✓ LION Eco Challenge 2050 Long-Term Environmental Objectives
- ✓ The Lion Group's Initiatives to Address Climate Change ✓ Eco-First Commitment
- ✓ Participation in External Organizations

LION Eco Challenge 2050 Long-Term Environmental Objectives

In 2019, the Lion Group established the LION Eco Challenge 2050, a set of long-term environmental objectives, with the goal of promoting business activities that helping to address global problems, such as those identified in the Paris Agreement and the Sustainable Development Goals (SDGs). In 2022, many countries, including Japan, began raising their environment- and sustainability-related targets. We have also revised our objectives as we work to achieve carbon neutrality by 2050. Aiming to realize a decarbonized, resource-circulating society, we will promote environmentally friendly habits with consumers to continuously provide planet-friendly lifestyles that make more sustainable living easy.



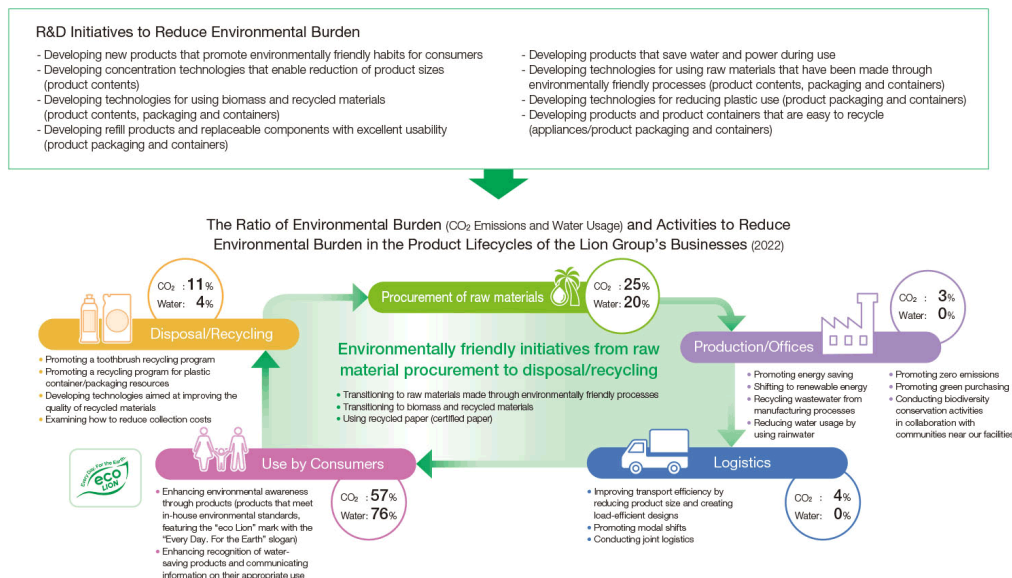
Lion Group Initiatives for 2030

1. Zero-carbon throughout business activities (Scope 1 and 2) / Shift to smart energy Reduce absolute quantity of Scope 1 and 2 CO₂ emissions by 55% in comparison with 2017 by 2030
⇒ KPI: Conversion of all electricity used in-house to renewable energy by 2030 (by 2024 in Japan)
2. Carbon neutral product lifecycles (Scope 3) / Decarbonize the value chain Reduce absolute quantity of Scope 1, 2, and 3 CO₂ emissions by 30% in comparison with 2017 by 2030
Lower petrochemical-derived plastic use rate to 70% or less by 2030
⇒ Develop and supply environmentally friendly products and services through environmentally friendly design
⇒ Increase the sophistication of recycling initiatives and transform to a circular business model
⇒ Promote water- and power-saving habits, and refill and waste-free habits
3. Help achieve a carbon negative society by reducing its environmental burden (Scope 4) / Create green innovations
Contribute to reducing CO₂ emissions in society by using our products (Japan)
⇒ Propose environmentally friendly, fulfilling lifestyles and create new markets (sustainable fashion, smart homes and decarbonized transportation fields) through collaboration with lifestyle-related companies



Activities for Reducing Environmental Burden

As part of its responsibility as a producer, the Lion Group is working to achieve decarbonization and to solve plastic and water resource issues in every stage of the product lifecycle, from the procurement of raw materials to use by consumers, disposal and recycling. As laundry and other housework requires electricity and water, CO₂ emissions and water usage are at their highest at the stage when consumers use our products. Going forward, we will work to reduce the environmental burden of our products at this stage through the provision of environmentally friendly products and services and the creation of environmentally friendly habits for consumers.



The Lion Group's Initiatives to Address Climate Change

Climate change has become a pressing social issue in recent years and presents serious future risks to corporate management as well as the possibility of new opportunities for corporate activities. Under the Vision2030 long-term strategic framework, the Lion Group has made reinforcing initiatives to address the sustainability material issues one of its management strategies and designated creating healthy living habits and promoting environmental initiatives for a sustainable planet as its top priority material issues. Accordingly, we are working to mitigate risk by reducing CO₂ emissions and other means while advancing a variety of initiatives to address the risks and opportunities presented by climate change, such as promoting the formation of environmentally friendly habits together with consumers.



Lion's Greenhouse Gas Reduction Targets Validated by the SBT Initiative

In March 2023, Lion has had its greenhouse gas (GHG) reduction targets for 2030 validated by the Science Based Targets (SBT) initiative^{*1} as being based on sound scientific grounds and aligned with the target of limiting global warming to 1.5°C. This validation follows a previous validation from SBT in 2020 as being aligned with the target of limiting global warming to well below 2°C.



[🔗 Science Based Targets](#)

^{*1} The SBT initiative (SBTi) is a collaborative international initiative established in 2015 by the CDP, the United Nations Global Compact (UNGC), World Resources Institute (WRI) and the World Wide Fund for Nature (WWF). The initiative assesses and validates whether GHG reduction targets set by companies based are properly science-based to help achieve the Paris Agreement goal of keeping the increase in the global average temperature to 1.5°C above pre-industrial levels.

■ Validated GHG Reduction Targets (Targets for 2030)

- Reduce total Scope 1^{*2} and 2^{*3} GHG emissions^{*4} (absolute quantity) by 55% (compared with 2018 levels)
- Reduce Scope 3^{*5} GHG emissions (absolute quantity) by 30% (compared with 2018 levels)
- Increase annual electricity procurement from renewable sources to 100% (from 0% in 2018)

^{*2} Scope 1: Direct emissions from the use of fuel by the Company.


^{*3} Scope 2: Indirect emissions from electricity and heat purchased and used by the Company.

^{*4} CO₂ emissions account for 99.8% of Lion's GHG emissions (2022 figure).

^{*5} Scope 3: Indirect emissions from the Company's value chain (excluding those covered by Scope 1 and Scope 2) attributable to purchased goods and services (category 1) or end-of-life treatment of sold products (category 12).


[➤ News release: Lion's Greenhouse Gas Reduction Targets Validated by the SBT Initiative](#)

Eco-First Commitment

Under the Eco-First Program, companies make a commitment to the Minister of the Environment regarding their global warming countermeasures, efforts to reduce waste and promote recycling, and other voluntary initiatives to conserve the environment ([Lion's Eco-First Commitment \[Japanese\]](#) ). The Minister of the Environment then certifies that such companies are leaders in their industries in terms of implementing forward-looking, voluntary business activities in environmental areas.

In 2008, Lion became the first company in a manufacturing industry to be certified as a member of the Eco-First Program. Since then, we have updated our Eco-First Commitment in step with the establishment of long-term environmental objectives. The last such update was made in 2019 to reflect the LION Eco Challenge 2050 long-term environmental objectives.

Eco-First Promotion Council

The Eco-First Promotion Council [\[Japanese\]](#)  is an organization established in December 2009 to reinforce coordination among environment-related governmental bodies and EcoFirst Program member companies, increase awareness of the program and further enhance initiatives to address environmental issues.

Since the council's establishment, Lion has actively participated as a core member, serving as the chair company from fiscal 2012 to 2013 (Chairman: Lion President Itsuo Hama, current Lion Chairman). Lion is currently involved with council operations as the managing company.

Participation in External Environmental Initiatives



[TCFD](#) 



[Eco First Companies Association \[Japanese\]](#) 



[CLOMA Japan Clean Ocean Material Alliance](#) 



[Japan Climate Initiative](#) 



[Plastics Smart \[Japanese\]](#) 



[Keidanren Initiative for Biodiversity](#) 



[GX League \[Japanese\]](#) 

Disclosure based on TCFD recommendations

The Lion Group's Response to the TCFD

In May 2019, Lion endorsed the recommendations of the Task Force on Climate-related Financial Disclosures (TCFD), an organization established by the Financial Stability Board (FSB). From October 2019 to January 2020, Lion took part in the Ministry of the Environment's Project to Analyze Scenarios of Climate Risks and Opportunities in Accordance with TCFD, evaluating the financial impact on its operations of climate-related risks and opportunities. In 2022, Lion expanded the scope of its analyses to encompass businesses, communities, product categories and supply chains, developing them into full-scenario analyses. The climate-related information resulting from these analyses is disclosed based on the TCFD framework.



Initiatives and Policy to Address the TCFD Recommendations

Core Elements of the TCFD's Recommended Climate Related Disclosures		The Lion's Group's Initiatives
Governance	The organization's governance around climate-related risks and opportunities.	<ul style="list-style-type: none"> Climate-related risks and opportunities are reported to the Sustainability Promotion Council (which meets twice a year) by its E Subcommittee and also reported, as needed, to the Senior Executive Committee, Executive Committee and Board of Directors. In addition, a working group had been established under the Council to responsively look for business opportunities in the changes in external conditions brought about by climate change.
Strategy	The actual and potential impacts of climate-related risks and opportunities on the organization's businesses, strategy, and financial planning	<ul style="list-style-type: none"> Based on the TCFD recommendations, we conducted scenario analyses using a 1.5°C scenario and a 4°C scenario for the Consumer Products Business and some countries of the Overseas business, the operations of which are likely to be impacted by climate change by 2030 and 2050. We worked to identify and evaluate short-, medium- and long-term climate-related risks for the period from the present to 2050 and factor them into our businesses, strategy and financial planning.
Risk Management	The processes used by the organization to identify, assess, and manage climate-related risks	<ul style="list-style-type: none"> The Lion Group has designated certain climate-related risks that have the potential to significantly impact the Group's businesses as "shared risks" to be managed Group-wide. The Corporate Planning Department and E Subcommittee coordinate such management, working together to identify, assess and manage these risks.
Metrics and Targets	The metrics and targets used to assess and manage relevant climate-related risks and opportunities	<ul style="list-style-type: none"> The CO₂ emissions of Lion Corporation and its domestic and overseas consolidated subsidiaries (Scopes 1, 2 and 3) are currently disclosed on Lion's website. The LION Eco Challenge 2050 long-term environmental objectives include realizing a decarbonized, resource-circulating society as well as targets for 2030 based on the metrics of CO₂ emissions, petrochemical-derived plastic usage and water usage.

Overview of Scenario Analyses

- We conducted scenario analyses using scenarios in which the average global temperature increases 1.5°C or 4.5°C from the pre-industrial average by 2100. These analyses, focused on effects in 2030 and 2050, were carried out for the Consumer Products Business (for the oral care, beauty care, fabric care, living care and pharmaceutical product fields) and the Overseas Business (for businesses in China and Thailand).
The principal scenarios used for this analysis were the following.
 - * Principal scenarios used for analysis of transition risks and opportunities:
The IEA's NZA and STEPS scenarios
 - * Principal scenarios used for analysis of physical risks and opportunities
The IPCC's RCP1.9 and 8.5 scenarios
- The analyses consisted of identifying climate-related risks and opportunities in each scenario, considering their qualitative impacts on businesses and then quantitatively estimating these impacts in financial terms in order to rate them as large, medium or small. As a result, the introduction of a carbon tax and increased raw material and packaging costs were identified as risks that have a large impact on our businesses. The expansion of markets for sustainable products was identified as an opportunity that has a large impact on our businesses. In addition, we are studying the latest literature, including the IPCC's AR6, to envision how conditions related to daily living will shift due to climate change as a perspective for exploring new business opportunities.

The Lion Group's Main Climate-Related Risks and Opportunities

Risks and Opportunities			Impact		
			Description	4°C	1.5°C
Transition	Introduction of a carbon tax (Scopes 1, 2 and 3)		<ul style="list-style-type: none"> Increased factory operating costs due to the full-scale introduction of emissions trading and the application of carbon taxes by governments Increased raw material procurement costs due to carbon taxes on emissions, including Scope 3 emissions 	Small	Large*
	Increased cost of raw materials	Fossil fuel-derived	<ul style="list-style-type: none"> Increased costs due to the full-scale introduction of emissions trading and the application of carbon taxes 	Large	Medium
		Palm oil-derived	<ul style="list-style-type: none"> Increased costs due to tightening of palm oil regulations and increased use of certified oil 	Small	Medium
		Plant-derived (from corn, mint, etc.)	<ul style="list-style-type: none"> Increased prices due to decreases in crop yields 	Small	Small
	Increased cost of packaging and containers	Plastic-derived	<ul style="list-style-type: none"> Increased costs due to regulations on plastic use 	Small	Medium
		Aluminum-derived	<ul style="list-style-type: none"> Increased costs due to a shift from iron to aluminum as a result of regulations on vehicle weight, etc. 	Small	Medium
		Timber resource-derived	<ul style="list-style-type: none"> Increased costs due to forest fires, forest protections or logging regulations 	Small	Small
	Expansion of markets for sustainable products		<ul style="list-style-type: none"> Expansion of demand for sustainable products, including those that save water and power, due to rising customer awareness of ethical consumption 	Small	Large
Physical	Increased average temperature		<ul style="list-style-type: none"> Increased operational and personnel costs due to growing energy costs and burden on workers 	Small	Small
			<ul style="list-style-type: none"> Increased sales of laundry-related products due to higher temperatures and of hygiene-related products and services due to increases in infectious disease 	Medium	Small
	Changes in precipitation and weather patterns		<ul style="list-style-type: none"> Increased costs of dealing with impacts on the operations of Lion or its suppliers due to increased flooding and water stress. Potential for decreased credibility in the event that stable supply cannot be maintained. 	Medium	Small
	Increased severity of extreme weather events		<ul style="list-style-type: none"> Decreased revenue due to internal logistics delays and supply chain interruptions resulting from increased severity of extreme weather events. Potential for decreased credibility in the event that stable supply cannot be maintained. 	Small	Small

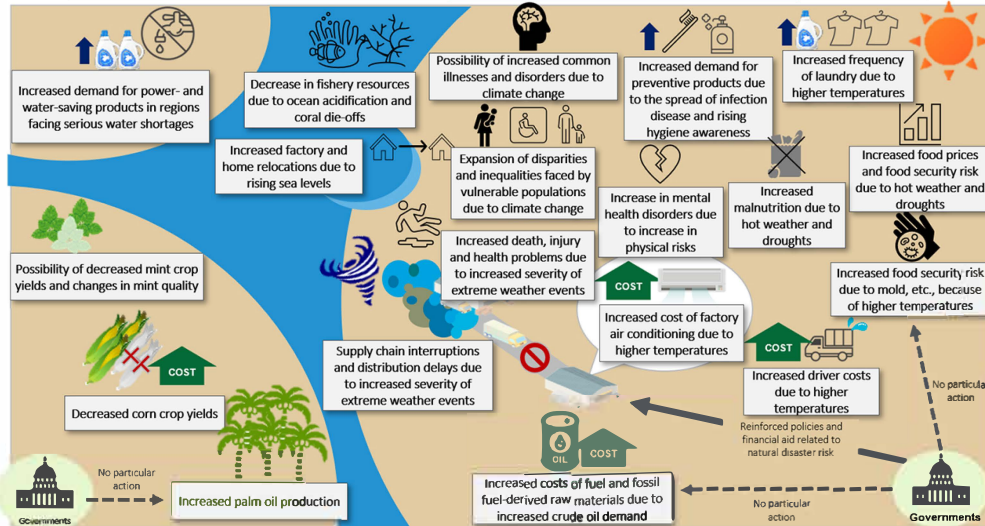
Note: Risks are shown in red, opportunities are shown in blue

* Impact if the LION Eco Challenge 2050 environmental objectives are not met and CO₂ emissions are not significantly reduced

Summary of Scenario Analysis Results

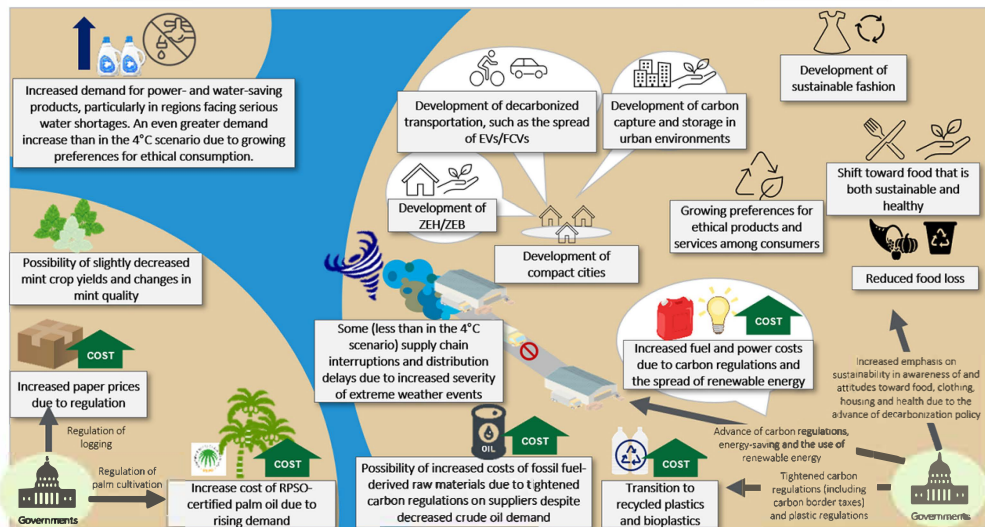
- Lion has been advancing efforts to address the scenarios used in the most recent analyses for some time but will continue to direct management effort at further reinforcing resilience to change going forward.
- Under the 4°C scenario, the increased cost of fossil fuel-derived raw materials is a major risk. Lion is already advancing efforts to replace such raw materials with plant-based materials and reinforcing other efforts aimed at decarbonization. Furthermore, to address rising physical risks, such as those of floods and water stress, we are advancing such efforts as reinforcing business continuity planning and supply chain data coordination. In terms of opportunities, the markets in such areas as products related to infection prevention and laundry are expected to grow, so we are working to develop related products and reinforce related services. Furthermore, we will continue to explore growth opportunities in the fields of inclusive oral care and infection control—areas of strength for Lion—to address the increase in the risk of the spread of infectious disease.
- Under the 1.5°C scenario, the increased cost of plastic-, aluminum- and palm oil-derived raw materials and packaging is a major risk. Lion is already advancing initiatives to reduce such risk, including reducing the use of petroleum-derived plastic and procuring RSPO-certified palm oil and palm kernel oil derivatives. In terms of opportunities, we expect substantial expansion in demand for environmentally friendly products, presenting the potential for business expansion by increasing offerings of products that meet the Lion eco-standard. Furthermore, these initiatives will help to reduce CO₂ emissions during the product use and disposal stages, which account for the majority of Lion's Scope 3 emissions. In addition to these efforts, as under the 4°C scenario, we are exploring other ways of securing opportunities for further growth. These include the development of technologies suited to the growth of sustainable fashion and other lifestyle changes as well as expanding the supply of electro-conductive carbon, which will be necessary for the development of decarbonized transportation, including the spread of electric vehicles.
- In addition, we will monitor social trends as we consider measures to address issues that currently have only a small quantifiable financial impact but could present a large future risk to Lion (such as procuring high-quality mint).

The World in 2050 in the 4°C (Business as Usual) Scenario



The World in 2050 in the

1.5°C (Decarbonization Measures Adopted) Scenario



Realizing a Decarbonized Society

Approach

Since the Industrial Revolution, rising emissions of CO₂ and other greenhouse gases (GHGs) have contributed to global warming. The impact of global warming-driven climate change on people and ecosystems is expected to become increasingly severe, coming in such forms as more frequent heavy rains, flooding and other natural disasters, dwindling food and water resources, extreme heat, and outbreaks of infectious disease.

The Lion Group conducts businesses that utilize natural resources, such as oil palm and pulp and paper, and therefore recognizes global warming as major risk to its operations.

The Paris Agreement, aimed at mitigating climate change and transitioning to a decarbonized society, came into effect in 2016. The agreement includes the shared global long-term targets of limiting the average global temperature increase to well below 2°C (the “well below 2°C target”) and of pursuing efforts to limit the increase to 1.5°C. In support of the targets of the Paris Agreement, in June 2019, Lion set the long-term CO₂ emissions reduction targets of a 30% reduction by 2030 compared with 2017 and net zero by 2050. In 2020, one of Lion’s targets was validated by the [Science Based Targets \(SBT\)](#) initiative as being aligned with the well below 2°C target.

Furthermore, in May 2019, Lion endorsed the recommendations of the [Task Force on Climate-related Financial Disclosures \(TCFD\)](#).

In May 2021, the LION Group took into consideration such social trends as the Japanese government’s increase in its 2030 greenhouse gas emission reduction target from 26% to 46% (compared to 2013). Based on this, to help realize the common global goal of limiting the temperature increase from pre-industrial times to within 1.5°C, we raised the 2030 CO₂ reduction target under the [LION Eco Challenge 2050](#) for business site activities from 30% to 55% (compared to 2017).

To speed up the achievement of this goal, we also decided to switch the sourcing of all of the Group’s purchased electricity to renewable energy sources by 2030. Furthermore, to facilitate capital expenditure on decarbonization, we introduced the Internal Carbon Pricing (ICP) system, which virtually converts CO₂ emissions into costs based on our own criteria, thus securing a reference for environmental investment decisions.

Based on its [Environmental Policy](#) and the LION Eco Challenge 2050, the Lion Group strives to reduce GHG emissions in its business activities and to contribute to decarbonization by providing environmentally friendly products and services in addition to promoting eco-friendly habit creation together with consumers. Through such efforts, we will contribute to the mitigation of climate change.






➤ [Utilization of Internal Carbon Pricing \(ICP\) \(Lion Integrated Report p.48\)](#) 

➤ [Create Environmentally Friendly Habits with Consumers \(Lion Integrated Report 2022 p.27 Growth Point 3\)](#)

Overview

The Lion group is working to reduce GHG emissions at all stages, from raw material procurement to consumer disposal. We will continue to promote efforts toward the realization of a Decarbonized Society.

Activities Aimed at Realizing a Decarbonized Society

	Procurement of Raw Materials, Packaging and Containers 	Major Initiatives Undertaken by Lion 	Use by Consumers 	Disposal by Consumers 
Activities for Realizing a Decarbonized Society 	<ul style="list-style-type: none"> Substituting plant-based materials and plant-derived container materials for petroleum resources <p>➡ Related Information</p>	<p>Plants</p> <ul style="list-style-type: none"> Improving energy efficiency by reviewing production processes, introducing energy-saving equipment when upgrading facilities, and downsizing products <p>➡ Related Information</p> <p>Office/Facilities</p> <ul style="list-style-type: none"> Energy-saving activities throughout the Company, including administrative, sales, R&D and engineering divisions <p>Distribution after shipment</p> <ul style="list-style-type: none"> Increasing modal shifts during the transportation of products Company-wide energy conservation activities (introduction of electric vehicles, etc.) in administrative, sales, research, technology development and other divisions <p>➡ Related Information</p>	<ul style="list-style-type: none"> Increasing environmental awareness through products (environmental labels on products that meet the Lion eco-standard) Reducing power consumption during product use with power-saving products (requiring fewer rinses when washing) <p>➡ Related Information</p>	<ul style="list-style-type: none"> Substituting plant-derived materials for petroleum resources Promotion of 3Rs (making products more compact, refill packs, development of containers made using recycled or less plastic) <p>➡ Related Information</p>

Initiatives



Reduce CO Emissions throughout Business Activities



Reduce CO₂ Emissions throughout Business Activities

Sustainability Material Issues 1 Promoting Environmental Initiatives for a Sustainable Planet



- ✓ Promotion of Energy Conservation Activities
- ✓ Utilization of Renewable Energy
- ✓ Carbon Offsetting

Promotion of Energy Conservation Activities

In 2021, the Lion Group raised the target of reducing CO₂ emissions from its business activities from a 30% reduction (compared to 2017) to a 55% reduction by 2030 (compared with 2017). As the first part of efforts to achieve our CO₂ emissions reduction target, we are implementing thoroughgoing energy-saving activities at our various plants, offices and other facilities in Japan and overseas to increase energy efficiency.

Our production divisions consume higher amounts of energy, but are aiming to reduce CO₂ emissions by 1% or more per unit of production every year through energy-saving activities such as improving productivity and adopting high-efficiency equipment while working to reduce energy loss from utilities in such forms as steam and pressurized air and by recovering heat to save energy. In addition, our offices have set up power-saving projects as they strive to save energy.

When constructing new buildings, such as plants and employee facility buildings, we strive to implement energy-efficient facility design to reduce energy consumption. The Lion Group moved to its new headquarters (Kurumae, Taito-ku, Tokyo) in January 2023, and the building acquired the “S Rank” certification of the CASBEE-Smart Wellness Office system in 2021, which certifies a building’s wellness performance and overall environmental performance. In the future, by comprehensively understanding the energy consumption status of all plants, we will discover more ways to conserve energy and achieve further energy savings.

Going forward, we will continue to advance measures to further reduce CO₂ emissions.



CASBEE Smart Wellness Office S Rank certification of the new Lion headquarters



New employee facility building at the Lion Chemical Corporation Oleochemical Production Site (LCCOC)



Energy efficiency label at the new LCCOC employee facility building

Received Commendation from the Director-General of the Kanto Bureau of Economy, Trade and Industry for Two Consecutive Years for Excellence in Energy Management

Lion received the Kanto Bureau of Economy, Trade and Industry Director-General's Award for Excellence in Energy Management in fiscal 2019 as an excellent business operator that has made notable contributions to energy conservation. This award was given for Lion's former headquarters building, following the award given for our former Tokyo office building in the previous year. Lion was rated highly for its efforts to reduce energy consumption by utilizing BEMS (Building Energy Management System) data during the relevant period (April 2014 to March 2019) to understand the status and ensure the proper operation of each piece of equipment within the building and by implementing detailed energy management. (Relevant location: former headquarters building)



Award ceremony for fiscal 2019

Received the Osaka Prefectural Governor's Award in the Osaka Stop Global Warming Awards for Contributions to the Prevention of Global Warming

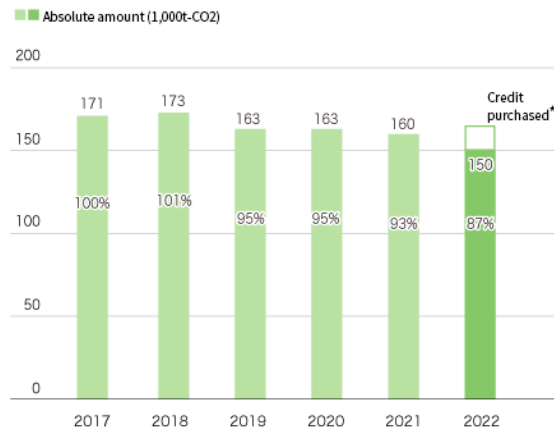
Lion previously received the Osaka Prefectural Governor's Award, sponsored by the Osaka Prefectural Government, in 2018 as the most outstanding business operator in terms of efforts to prevent global warming.

The Osaka Plant (Sakai City) was recognized for its excellent overall efforts to reduce greenhouse gas emissions through energy-saving activities with the participation of all employees, reduction of energy consumption by changing manufacturing processes and types of production, introduction of energy-saving facilities and equipment, and improvement of equipment operations. (Relevant locations: Osaka Plant and Osaka Office)



Osaka Stop Global Warming Award

CO₂ Emissions in Business Activities (Domestic and Overseas)



* Excludes carbon credit purchases. Including these, the amount is 165 thousand tons and 96%.

> ESG Data

Utilizing Renewable Energy

The Lion Group is committed to implementing thorough energy-saving activities but does not expect these to be sufficient to meet its CO₂ emission reduction targets. To make up the difference, it will be necessary to utilize renewable energy by such means as installing facilities to generate solar power for in-house use and switching to purchasing electricity from renewable sources.

Introduction of Solar Power Generation System for In-House Consumption

We have already installed facilities to generate solar power for in-house use at the Hirai Office Site. In 2021, we additionally installed such facilities at LCCOC. Overseas, in the same year, a new solar power generation facility was installed and began operation in the building of the new drying tower added to Lion Corporation (Thailand) Ltd. (LCT). We intend to further increase the amount of solar power generated and increase renewable electricity procurement.



Solar power generation facility at the Hirai Research Center



Solar power generation facility at LCCOC



Exterior view of the new drying tower building at LCT

Switching to Renewables for Purchased Electricity

Lion has changed over its power contracts to power companies that supply 100% renewably sourced energy . As a result, all domestic plants have been using renewable energy since January 2023 as has the new headquarters since April 2023 (partially using J-Credits).

We began by utilizing renewable energy and green power certificates at our domestic offices, and were able to eventually realize our goal of converting all our offices' electricity consumption to that from renewable sources in May 2023. In addition, at Lion's overseas operating sites, we are gradually advancing the switch to renewable energy, and aim to purchase 100% renewable energy across all of Lion's operating sites by 2030.

Carbon Offsetting

Lion Corporation (Thailand) Ltd. has purchased T-VER* (derived from solar powerX), a carbon offsetting credit, to offset the CO₂ from its electricity purchases for 2022.

* T-VER is a credit system operated by a Thai public organization.

Reduce CO₂ Emissions throughout Product Lifecycles

Sustainability Material Issue 1 Promoting Environmental Initiatives for a Sustainable Planet



Lion is taking on the challenge of resolving issues related to decarbonization by focusing not only on reducing CO₂ emissions at its business sites but also on reducing CO₂ emissions throughout the product lifecycles from raw material procurement to disposal by consumers, as part of its producer responsibility.

LION Eco Challenge 2050 and Targets and Indicators for 2030

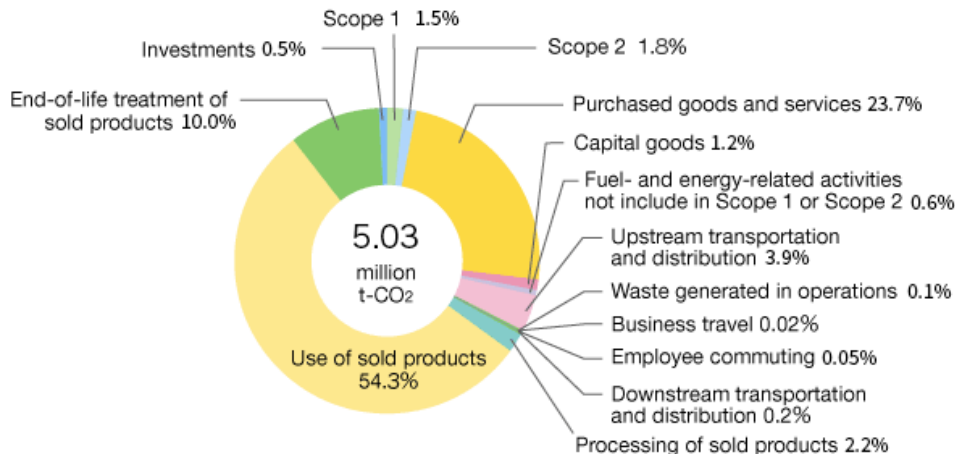
- Aim to reduce CO₂ emissions throughout the lifecycles of its products by 30% from 2017 levels (absolute amount) by 2030
- Aim to halve CO₂ emissions throughout the lifecycles of its product by 2050

Greenhouse Gas Emissions throughout the Supply Chain

Lion Group recognizes that understanding greenhouse gas (GHG) emissions throughout the supply chain is important to realizing a decarbonized society. Accordingly, since 2013, we have calculated GHG emissions throughout the supply chain based on the GHG Protocol Scope 3 standard. In fiscal 2022, our Scope 1, 2 and 3 emissions totaled 5.02 million t-CO₂.

Going forward, we will continue to promote and develop products that help reduce emissions during product use, a stage that accounts for a large portion of product lifecycles GHG emissions. By doing so, we will work to reduce GHG emissions.

GHG Emissions throughout the Supply Chain (2022)



Notes:

Scope: Lion and consolidated domestic and overseas Group companies, January–December 2022

Scope 1: Direct emissions from operating sites

Scope 2: Indirect emissions from the generation of purchased energy (electricity generation, etc.)

Scope 3: Emissions from the supply chain not included in Scope 1 or Scope 2

Scope 1 and 2 Greenhouse Gas Emissions from Domestic Operating Sites

(thousand tons)

	2018	2019	2020	2021	2022
Scope 1	22	21	19	21	21
Scope 2	53	50	48	52	52
Total	74	70	67	74	73
Carbon credits purchased	0	0	0	0	0

Scope 1 and 2 Greenhouse Gas Emissions from Overseas Operating Sites

(thousand tons)

	2018	2019	2020	2021	2022
Scope 1	54	50	54	64	56
Scope 2	45	43	42	22	36
Total	98	93	96	86	92
Carbon credits purchased	0	0	0	0	16

Included as a Supplier Engagement Leader under the CDP Supplier Engagement Rating for a Fourth Consecutive Year

The Lion Group was included for a fourth consecutive year as a Supplier Engagement Leader, a select list of the highest rated companies under the Supplier Engagement Rating (SER) of the CDP, an international non-profit organization that provides systems for environmental information disclosure.

The SER is based on the CDP climate change questionnaire items about governance, targets, value chain (scope 3) emissions and supplier engagement strategies. The rating covers companies that complete and return the CDP climate change questionnaire. The companies that receive the highest ratings for their actions and strategies to reduce greenhouse gas emissions and manage climate risk in their supply chains are selected for inclusion in the list of Supplier Engagement Leaders. In 2022, 653 companies including Lion (131 Japanese companies) were selected as Supplier Engagement Leaders.



[CDP Supplier Engagement Rating](#)

Logistics Division Initiatives

Lion works to reduce CO₂ emissions and energy consumption intensity through the following efforts.

- Using larger transport trucks
- Improving the transport loading rate
- Expanding direct shipping from plants to shorten transport distances
- Promoting modal shifts from trucking to transport by rail or ship

As a result of increased truck transport attributable mainly to urgent transport related to the COVID-19 pandemic, Lion's overall modal shift rate in 2022 declined year on year. The modal shift rate for intra-company transport was 10.5% (compared with 11.2% in 2021).

Although modal shift rates decreased, by using larger transport trucks and improving logistics efficiency regarding such factors as loading ratios, annual CO₂ emissions from logistics came to 21,700 tons, down 0.7% year on year. Energy consumption intensity decreased 5% compared with the previous year, for a five-year average annual increase of 0.2%, falling short of Lion's target average annual reduction of 1% or more. We will continue efforts in these areas going forward.

Eco Rail Mark Certification

「The Eco Rail Mark system was created by the Ministry of Land, Infrastructure and Transport to certify companies and products that use rail freight transport for a certain portion of product shipment. Because distribution processes are typically opaque to consumers, the Eco Rail Mark is a useful means for companies to indicate that they use or their products are shipped using environmentally friendly rail freight transport.

Lion's Eco Rail Mark certification was renewed in 2021. The certified Lion products are listed in the Eco Rail Mark pamphlet published by the Railway Freight Association and introduced on the website of the Ministry of Land, Infrastructure, Transport and Tourism.

The following six products are certified (as of October 2021).

1. *Ofuro no Look*
2. *KireiKirei Medicated Foaming Hand Soap*
3. *KireiKirei Medicated Liquid Hand Soap*
4. *Between toothbrush*
5. *TOP SUPER NANOX*
6. *Soflan Premium Deodorizer*

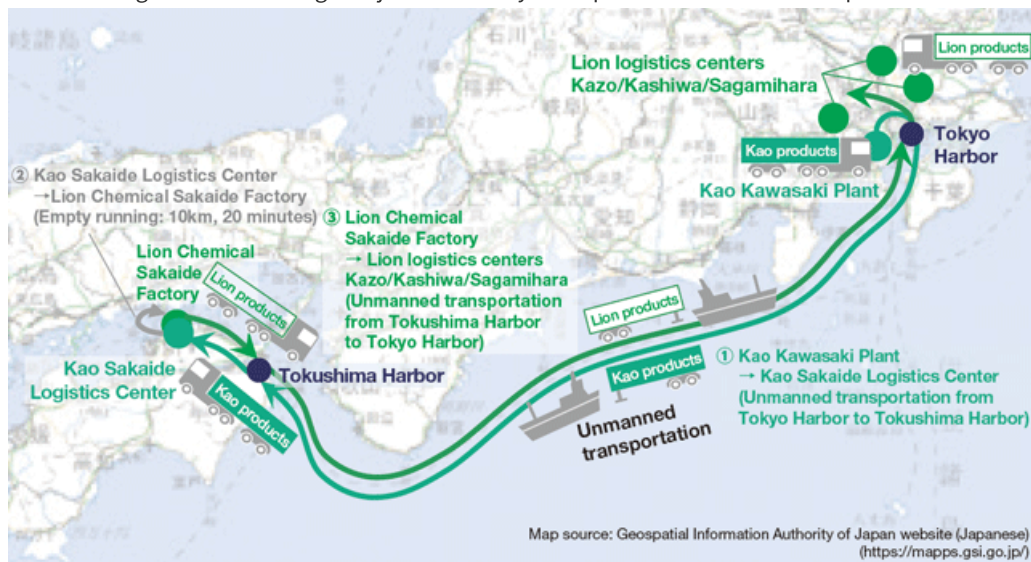


Kao and Lion Conduct Joint Two-Way Transportation

In October 2020, Lion and Kao Corporation commenced regular joint two-way transportation between their respective operating sites. This initiative is expected to significantly reduce CO₂ emissions.* At the same time, by making long-distance transport more efficient, the initiative is helping to reduce the burden on drivers. Going forward, by expanding joint logistics and improving labor conditions using relay transportation, we will work to improve logistics environments based on mutual understanding and cooperation with our trading partners and logistics contractors.

* 45% reduction in CO₂ emissions (total for both companies, compared to previous transportation methods)

Logistics flow of regular joint two-way transportation with Kao Corporation



➤ News Release: Kao and Lion Begin Collaboration on Smart Logistics Initiative Taking Part in the Strategic Innovation Promotion Program Being Led by the Cabinet Office [Japanese]

Related SDGs



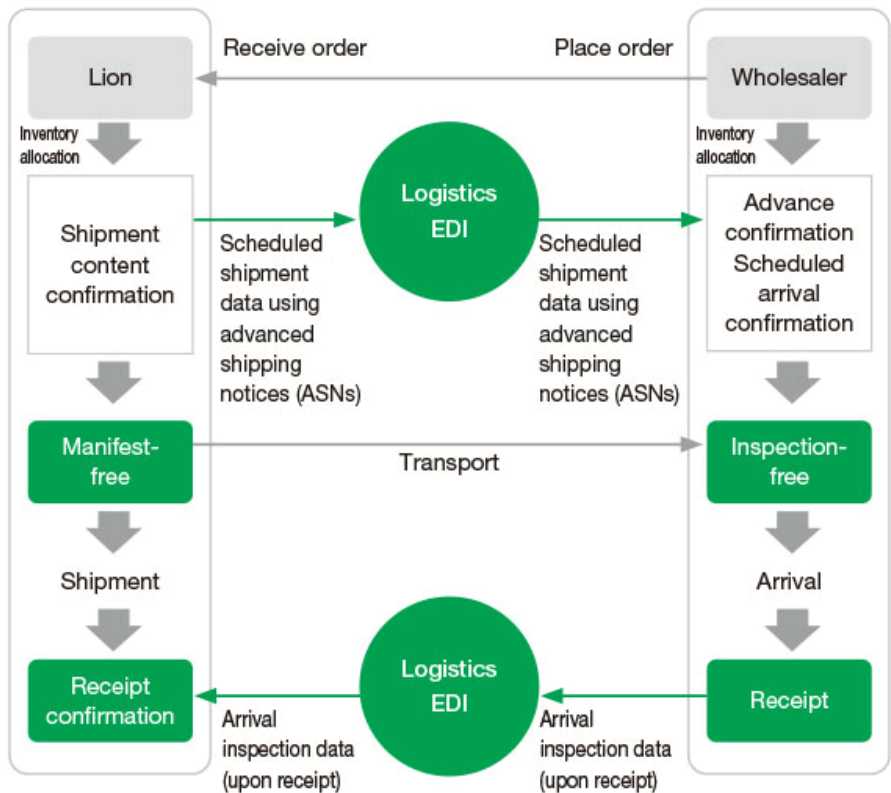
Building a Logistics EDI

In the field of logistics data platforms, Lion is taking a leading role in solving logistics challenges facing the household consumer product industry. Lion collaborated with PLANET, INC., which operates a commercial logistics electronic data interchange (EDI), a logistics information infrastructure for the industry. Furthermore, Lion carried out demonstrations of the use of advanced shipping notices (ASNs) to digitize receipts and simplify inspections, and is rolling out the use of ASNs sent to wholesalers for individual delivery trucks.

We are also involved in activities to improve the efficiency and standardization of business processes at logistics sites, including the Study Group for Logistics Productivity in the Supply Chain sponsored by the Distribution Economics Institute of Japan, the membership of which comprises industry manufacturers and the logistics businesses responsible for their deliveries. We are leading the establishment of an industry-wide supply chain standard model, in cooperation with other manufacturers and logistics businesses. Through these initiatives, we aim to improve work environments, improve labor productivity and reduce environmental burden while building sustainable, resilient supply chains.

Aiming for inspection-free logistics using ASN

How We Achieve Operational Streamlining



Related SDGs



Realizing a Resource-Circulating Society

Approach

The Lion Group will address environmental issues, such as plastic-related problems and water resource shortages, by promoting various activities to realize a resource-circulating society. By doing so, we will contribute to the solution of social issues.

Plastic-related problems are related to other environmental issues as well. For example, excessive plastic use increases lifecycle CO₂ emissions, contributing to global warming, and improper disposal can result in marine plastics, negatively impacting biodiversity. Because Lion manufactures and sells plastic products, it has a significant responsibility regarding plastic-related problems.

The Group has published the [Lion Group Plastics Environmental Declaration](#), which lays out its policy for addressing plastic-related problems. Going forward, based on this policy, we will set targets aimed at realizing a resource-circulating society both in Japan and abroad and continuously work to solve related issues.






Water is a resource of utmost importance and vital for all living creatures. Concerns are rising about elevated dangers of drought and water treatment in Japan are as consequences of global warming. To address the shortage of water resources, we are working to reduce water usage throughout our product lifecycles. As a corporation that provides products that are helpful in daily lives, we believe it is our responsibility to reduce water usage not only in business activities, but by offering water-saving products. Since 2010, we have been selling *TOP NANOX* (now *TOP SUPER NANOX*), a highly concentrated liquid laundry detergent that washes away easily for one-rinse, residue-free washing. In addition, as of 2020, our entire lineup of liquid laundry detergents can be used in single-rinse washing. Moreover, we introduced *Acron Smart Care* in February 2023, a liquid detergent that eliminates the rinse stage. We will continue to strive to reduce water usage.

* White Paper on Water Cycle FY2022 published by the Headquarters for Water Cycle Policy (Japanese)

Overview

The Lion Group promotes the recycling and effective use of plastic, water and other resources at all stages from raw material procurement to disposal by consumers. We will continue to promote initiatives to realize a resource-circulating society.

Activities for Realizing a Resource-Circulating Society

	Procurement of Raw Materials, Packaging and Containers 	Major Initiatives Undertaken by Lion 	Use by Consumers 	Disposal by Consumers 
Activities for Realizing a Resource-Circulating Society 	<ul style="list-style-type: none"> Using plant-derived materials ➡ Related Information Using biomass or recycled materials ➡ Related Information 	<p>Plants</p> <ul style="list-style-type: none"> Promoting zero emissions from plants ➡ Related Information Reducing water consumption by recycling wastewater from production processes and utilizing rainwater ➡ Related Information <p>Offices/Facilities</p> <ul style="list-style-type: none"> Promoting Company-wide green purchasing ➡ Related Information 	<ul style="list-style-type: none"> Increasing environmental awareness through products (environmental labels on products that meet the Lion eco-standard) ➡ Related Information Reducing water usage during product use with water-saving products (requiring fewer rinses when washing) ➡ Related Information 	<ul style="list-style-type: none"> Promotion of 3Rs and Renewable Materials (making products more compact, refill packs, development of containers made using recycled or less plastic) ➡ Related Information Promoting the Toothbrush Recycling Program ➡ Related Information Promoting the recycling of products and plastic packages ➡ Related Information

Initiatives



Recycling Resources

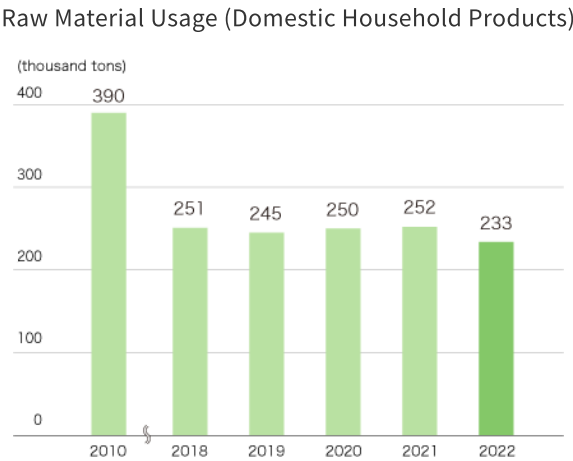
Sustainability Material Issue 1 Promoting Environmental Initiatives for a Sustainable Planet



- ✓ Reducing Raw Material Usage
- ✓ Measures Aimed at Realizing a Resource-Circulating Society
- ✓ Reducing Waste

Reducing Raw Material Usage

The Lion Group understands that the use of raw materials is the use of resources. We therefore work to reduce our use of raw materials by making product contents more compact, expanding our lineup of refill products and making containers lighter.



Measures Aimed at Realizing a Resource-Circulating Society—Reducing Container and Packaging Materials—the Rs and Renewable Materials

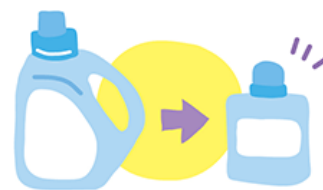
The Lion Group is promoting a wide range of initiatives aimed at realizing a resource-circulating society. We aim to minimize the volume of resources used in business operations, collect resources after their use, and effectively reuse or otherwise employ those resources that retain utility in business operations.

Reduce Smaller containers, less packaging

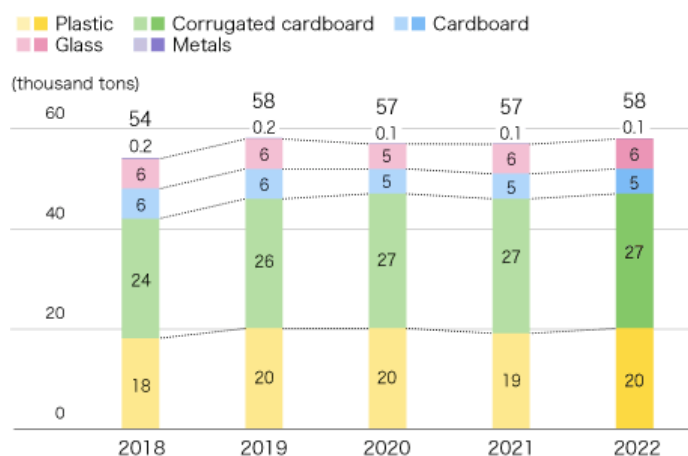
To reduce container and packaging materials, Lion complies with the **Lion eco-standard**, which is designed to evaluate products over their entire life cycles by examining each life cycle stage, from raw material procurement to distribution and disposal. We are increasing the concentration of such products such as laundry detergents, fabric softeners and dishwashing detergents to make their containers more compact while using sophisticated design technology to make containers more lightweight.

In 2021, Lion's total container and packaging material usage was around 57,100 tons, almost the same as the previous year.

Going forward, we will continue working to reduce container and packaging material usage through such means as making products more compact and developing innovative container structures.



Lion's Container and Packaging Material Usage (Domestic Household Products)



* Until fiscal 2021, only containers and packaging materials are taken into account; starting in fiscal 2022, some product plastics are as well.

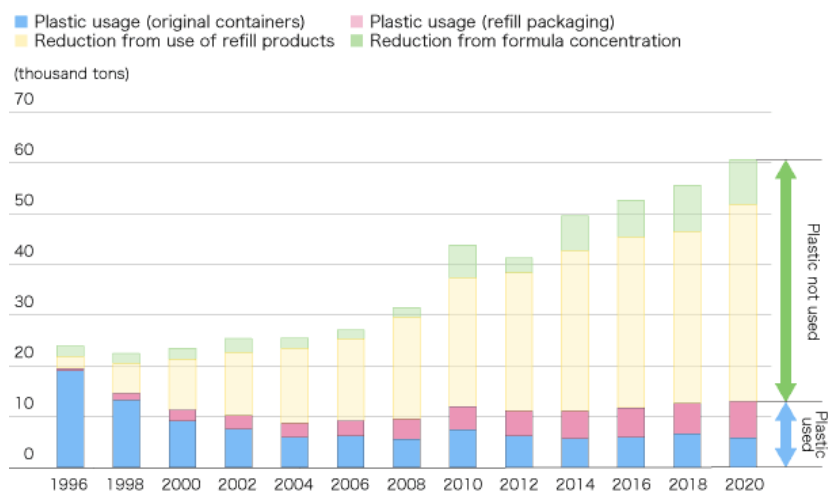
Reuse Increase refill products

Plastic bottles can be refilled and reused. Film packaging for refill packs can be produced using less material than product bottles, and because they weigh less and take up less space after use, they also help reduce household waste.

Going forward, we will work to minimize the use of plastic materials by both reducing and reusing.



Lion's Use of Plastic for Packaging and Reduction Effects



Recycle Proactively use recycled materials

Using Recycled Plastics

Lion proactively uses recycled plastic in products and containers. Our dishwashing detergent bottles, liquid laundry detergent bottles and toothbrush blister packs are made with plastic recycled from disposable drink bottles and other sources.



Main Uses of Recycled Plastics

Type of plastic	Type of product	Product name	Parts using recycled plastic
Polyethylene terephthalate (PET)	Dishwashing detergent	CHARMY Magica, etc.	Bottle
	Liquid laundry detergent	TOP SUPER NANOX	Bottle (including large sizes)
	Liquid laundry detergent, hand soaps, body soaps	TOP SUPER NANOX, KireiKirei hand soaps, Hadakara liquid body soaps	Pop-up sticker
	Liquid clothing detergent	TOP Clear Liquid Antibacterial	Refill pouch
	Toothbrushes	NONIO, Systema Sonic Assist Brush, Clinica Advantage, etc.	Blister dome packaging
Polyethylene	Fabric softener	OFLAN Aroma Rich	Bottle
			Refill pack
	Liquid laundry detergent	TOP SUPER NANOX For Odors	Refill pack

As of May 31, 2023

Promoting Plastic Product, Container and Packaging Resource Recycling

Aiming to achieve a continuous cycle of plastic use in society, Lion is conducting pilot testing for the recycling of used products and containers and packaging in cooperation with household product manufacturers, recyclers, retailers and municipalities.

Main Activities

Recyclable items	Activity name	Area	Main partners
Toothbrushes	Toothbrush recycling	Over 1,000 locations nationwide	TerraCycle
	Joint municipal toothbrush recycling	Sumida-ku, Itabashi-ku and Taito-ku	
Refill packs	RecyCreation	Ito-Yokado's Hikifune Store Welcia Pharmacy stores (parts of Tokyo and Saitama)	Kao Ito-Yokado Welcia Pharmacy Store Hamakyorex
	Kobe Plastic Next: Joining Forces to Recycle Refill Packs	75 stores and 3 other facilities in Kobe City	Kobe City Household product manufacturers Retailers 18 recycling companies
Bottles and refill packs	"Getting healthy with the planet" JACDS Circular Economy Project (June–December 2022)	31 locations in Yokohama City	Japan Association of Chain Drug Stores distribution companies 4 household product manufacturer
Bottles	Making New Bottles from Used Bottles Collaboration among consumers, local governments, and companies	Higashiyamato City, Komae City, Kunitachi City, Joso City	4 household product manufacturers

As of May 31, 2023

Promoting Circulation of Plastic Containers and Packaging Resources through Partnerships

Kao and Lion are reaching out beyond their corporate groups in an effort to recycle plastic refill containers and packaging (film packaging), aiming to realize a resource-circulating society.

To accelerate the adoption of recycling, building basic systems for resource collection and developing recycling technologies are indispensable. At the same time, it is necessary to change mindsets across society in cooperation with stakeholders, including consumers, with regard to, for example, sorting plastic packaging after product use.

To this end, we are conducting the following four activities.

1. Studying ways to sort and collect plastic film packaging in cooperation with consumers, government agencies and retailers.
2. Creating recycled materials and packaging quality design with consideration for usability in a wide range of products, ease of sorting and collection by consumers, and potential for use across companies or industries.
3. Studying ways to jointly use materials that are collected and recycled.
4. Engaging in promotional and educational activities that will foster greater understanding and cooperation regarding recycling among consumers.

Through the above activities, we are working to improve the economic efficiency of collection and recycling as a whole. First, we are launching collaborative RecyCreation* activities to sort and collect film packaging and raise awareness in cooperation with local residents. By doing so, we are sharing information about the technological hurdles to plastic film packaging recycling.

Going forward, we will advance RecyCreation activities. Furthermore, we are investigating ways to make containers more recyclable and developing technologies for the horizontal recycling of film packaging into new packaging with the aim of achieving a continuous cycle of plastic use.

These RecyCreation activities received the Selection Committee Chairman's Commendation in the fiscal 2021 Good Practices of Consumer-Oriented Management Awards.

> [News Release: Kao and Lion Awarded the New Selection Committee Chairman's Commendation in the Good Practices of Consumer-Oriented Management Awards \[Japanese\]](#) 



* "RecyCreation" denotes upcycling through which more enjoyable and improved products are developed and resulting in new value creation, rather than recycling materials for the purpose of reproducing the same types of materials. The concept of this initiative is "Throwing it away after use. We want to change this common practice."

We have released a concept film presenting these initiatives



 [Youtube](#) (Japanese)

In-store Collection of Used Refill Packs—Recycling Field Testing

RecyCreation activities are under way at Ito-Yokado's Hikifune Store (Sumida-ku, Tokyo) and 31 Welcia Pharmacy stores with the aim of field testing the sorted collection of film packaging from used refill packs. Under this initiative, a special collection box has been installed at the store to collect customers' used refill packaging for such products as laundry detergents and shampoos.



The process of recycling used refill packs in the RecyCreation initiative

Overview of the Field Test

- Purpose
To examine processes for the sorted collection of used refill packs in collaboration with consumers and retailers.
- Content
To enhance consumers' enthusiasm for recycling through RecyCreation. Through the test, we are collecting used refill packs for such products as detergents and shampoos at Ito-Yokado's Hikifune Store and Welcia Pharmacy stores, studying effective collection systems and developing new recycling technology.
- Implementation period
Starting from October 30, 2020
- Location of collection box for used refill packs
Ito-Yokado's Hikifune Store (Sumida-ku, Tokyo) and Welcia Pharmacy stores (eastern Tokyo and parts of Saitama) We will gradually expand this initiative to more locations.
- How to prepare and return a pack for collection
 - ① Cut along the top of the pack to open it
 - ② Rinse out the inside of the pack twice with water
 - ③ Shake off excess water and let dry
 - ④ Put in the collection box



Collection box for used refill packs
in Ito-Yokado's Hikifune Store (Outlined in red)

We have released a concept film of how to wash a used refill pack



[YouTube](#) (Japanese)

Demonstration of the Horizontal Recycling of Refill Packs

In 2020, Lion began partnered with Kao Corporation on a project aimed at realizing a resource-circulating society by plastic product packs, through which a portion of its used refill packs have been collected.

On May 29 2023, the collaboration launched a recycled plastic version of the XXL refill pack for Lion's *TOP SUPER NANOX For Odors*, a highly concentrated liquid laundry detergent. The materials used to create the refill pack consisted in part of recycled materials from used refill packs that had been collected. (Limited quantities available.)

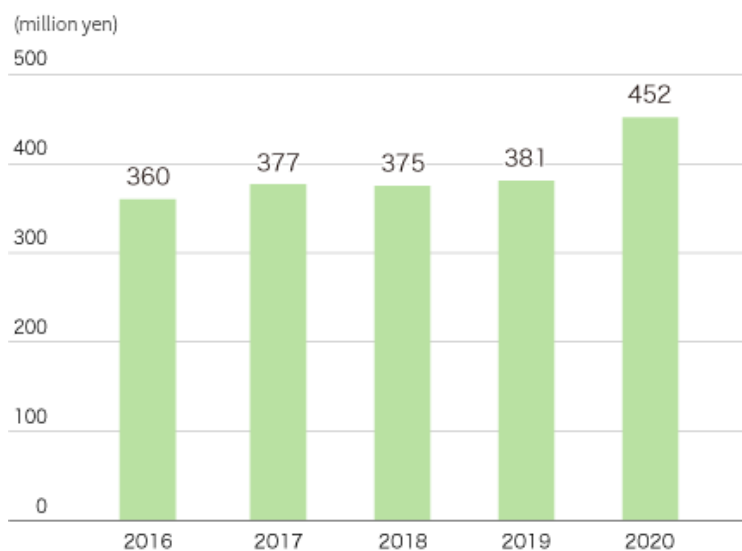
This packaging incorporates 9% recycled materials derived from factory waste and 1% derived from recycled consumer products.



Recycling of Used Containers in Accordance with the Containers and Packaging Recycling System

Being a designated business operating under the Containers and Packaging Recycling Act, we contribute toward the cost of recycling not only our own goods but outside consignments. For the most recent status of operations under this system, please visit the Japan Containers and Packaging Recycling Association website.

[🔗 The Japan Containers and Packaging Recycling Association \[Japanese\]](#)

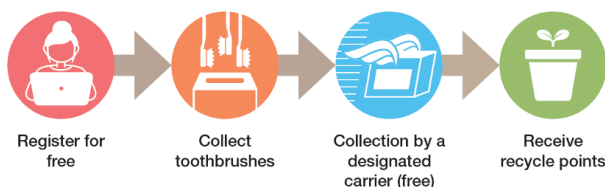


*Total of Lion Corporation, Lion Pet Co., Ltd. and Lion Dental Products Co., Ltd.

About the Toothbrush Recycling Program

Program participation is very easy and free.

- ① Register an account as an individual, school or other organization in advance
- ② Set out collection boxes and collect used toothbrushes
- ③ A designated carrier will pick up the box by the second business day after a collection request is made
- ④ The toothbrushes will be reborn as new plastic products, such as planters, instead of being sent to a landfill or incinerator



Participants receive points according to the weight of the toothbrushes that they send. The points can be exchanged for plastic products produced through TerraCycle's recycling program or donated to a charity of the participant's choice.

> Toothbrush Recycling Program

Using Recycled Materials from Toothbrush Recycling Program to Make Cat Litter Boxes

Domestic Group company Lion Pet Co., Ltd. is currently rolling out the Love Cats Love Earth Sakura Project, through which it donates cat litter boxes and cat litter sets to support people fostering rescue cats. The cat litter boxes are made from 10% recycled plastic from toothbrush recycling.



Renewable Utilizing sustainable resources

Using Recycled Paper

The containers and packaging for our powder laundry detergents and other products are made with recycled paper containing recycled pulp.



Using Plant-Based Plastics in Containers and Packaging

The containers and packaging of some Lion products are made with biomass plastic, made from such plant-based raw materials as corn and blackstrap molasses, a byproduct produced in the process of refining sugar from sugarcane.



Main Uses of Plant-Based Plastics

Type of plastic	Type of product	Product name	Parts using plant-based plastic
Polyethelene terephthalate (PET)	Dental rinse	<i>NONIO</i>	Bottle
	Body soap	<i>Hadakara</i> liquid body soaps	Bottle
	Toothpaste	<i>CLINICA Advantage NONIO</i> , etc	Tube
Polyethylene	Liquid laundry detergent	<i>TOP SUPER NANOX</i>	Refill pack
	Laundry bleach	<i>Bright STRONG Gel</i>	
	Hand soap	<i>KireiKirei Medicated Hand Conditioning Soap</i>	

As of May 31, 2023

Reducing Waste

Zero Emissions from Operating Sites (Domestic)

Lion’s four domestic plants all achieved zero waste emissions* in 2002. All of Lion’s operating sites,** including research institutes and offices, achieved zero waste emissions in 2017.

* Our definition: The waste recycling ratio is 99% or more, excluding recycling residues

** Chiba Plant, Odawara Plant, Osaka Plant, Akashi Plant, Hirai Office Site, Sapporo Office, Sendai Office, Headquarters/Tokyo Office, Nagoya Office, Osaka Office, Fukuoka Office, Lion Chemical Co., Ltd. Fine Chemical Production Site, Lion Chemical Co., Ltd. Oleochemical Production Site, Lion Specialty Chemicals Co., Ltd. Yokkaichi Plant, Lion Specialty Chemicals Co., Ltd. Ono Plant



Waste Generation (Overseas)

Total waste generation overseas in 2021 was down year on year as a result of initiatives to promote recycling. We will continue to advance initiatives to reduce waste going forward.



Scope of Overseas Data

All maintenance and management information for overseas consolidated subsidiaries is published (in Japanese only) in accordance with the Waste Disposal and Public Cleansing Act (Article 15-2-3, Paragraph 2).

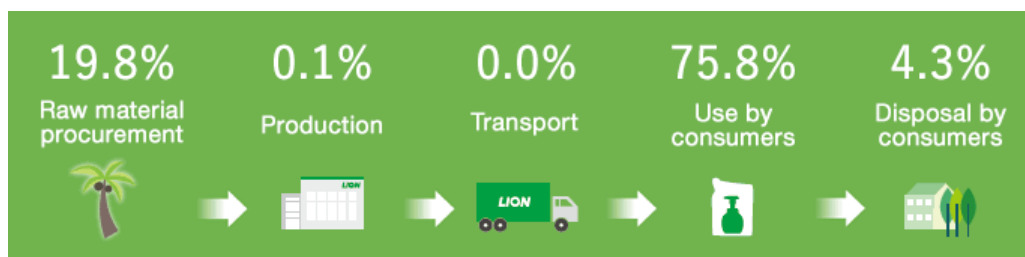
Reducing Water Use

Sustainability Material Issue 1 Promoting Environmental Initiatives for a Sustainable Planet



The Lion Group is working to reduce water use in line with the LION Eco Challenge 2050, a set of long-term environmental objectives formulated in 2019 with the aim of realizing environmental sustainability. In 2019, Lion began calculating water use throughout the supply chain in order to understand water use throughout product lifecycles—from raw material procurement to production, transport, use and disposal. Total water use throughout the lifecycles of Lion’s products in 2022 was approximately 2.3 billion m³.

Breakdown of Water Use over the lifecycles of Lion Products*



* Scope: Lion and domestic and overseas consolidated subsidiaries, January–December 2022.

At 75.8%, the product life cycle stage that accounted for the largest portion of total water use in 2021 was use by consumers. This is because many Lion Group products, such as laundry detergents, are used with water for washing. The Lion Group will continue to work with consumers to reduce water use throughout product lifecycles by providing environmentally friendly products and services that help save water and promoting the formation of environmentally friendly habits.

Water Use and Wastewater Discharge in Business Activities (Domestic and Overseas)

The Lion Group continuously monitors water usage (water withdrawal) and wastewater discharge in its business activities as it strives to alleviate environmental impact and reduce water usage through recycling. We have been implementing ongoing measures to reduce water used in cleaning processes. As part of these efforts, in 2016, we began operating industrial wastewater recycling facilities at the Chiba Plant. In addition, we use limited quantities of rainwater collected from the plant roof for cooling and for watering flowerbeds.

Identification and Evaluation of Water-Stressed Regions

The Group performs water stress evaluations for all its business locations using Aqueduct, a set of tools developed and announced by the World Resources Institute. We consider the regions in which our business locations are located to be water-stressed if their baseline water stress (one of the indicators outlined by Aqueduct) is designated “extremely high.” The results of the evaluation showed that, in 2020, the Group had one location in a water-stressed region, and its water intake was 2% of the Group’s total. In 2021 and 2022, there were no locations in water-stressed regions.

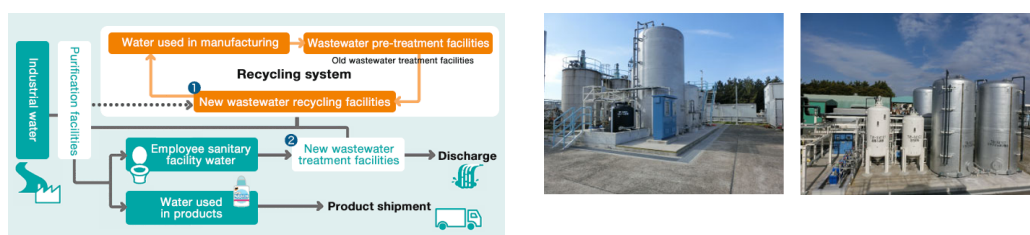
- [Water Usage \(Water Withdrawal\) in Business Activities](#)
- [Water Usage \(Water Withdrawal\) by Source](#)
- [Wastewater Discharge in Business Activities](#)
- [Wastewater Discharge by Destination](#)

The Chiba Plant's Wastewater Recycling Facilities

The Lion Group manufactures and sells products that are closely tied to water usage. Moreover, Lion's plants use a great deal of water in manufacturing processes to clean facilities and in heating and cooling equipment. Recycling wastewater after use can thus produce a significant water-saving effect. To this end, Lion introduced a wastewater recycling system at the Chiba Plant—which uses the most water among Lion's plants—in 2016 that has been in continuous use since installation. The greatest feature of this system was the adoption of new wastewater recycling facilities (①). Thanks to these facilities, we are now able to recycle wastewater from production processes that was previously discharged into the environment. Furthermore, we installed new wastewater treatment facilities (②) that enable greater purification of water from employee sanitary facilities and cleaning facilities than was previously possible, better removing nitrogen, which is a source of marine eutrophication.

In 2022, we conserved about 190,000 tons of water annually compared to 2010. That amount is equivalent to about 21% of the total water usage of all domestic operating sites in 2022.

The Chiba Plant's Wastewater Recycling System



The Chiba Plant was the first household product factory in Japan to recycle wastewater. In 2017, the plant received the New Technology Encouragement Award*¹ from the Japan Society on Water Environment and the Responsible Care Award*² from the Japan Chemical Industry Association.

*¹ In June 2017, the development of the Chiba Plant's wastewater recycling system was recognized with the New Technology Encouragement Award from the Japan Society on Water Environment, Japan's largest academic society related to protecting the aquatic environment. This award is given for research related to aquatic environments or to individuals or organizations that have devised innovative, promising aquatic environment technologies from the perspective of social contribution.

[The Japan Society on Water Environment New Technology Encouragement Award \[Japanese\]](#)

*² In May 2017, the Chiba Plant received the 11th Responsible Care Award from the Japan Chemical Industry Association for its initiatives to protect the aquatic environment and contribute to the local community. Since the start of its operations, the Chiba Plant has continuously implemented activities to protect the aquatic environment.

- [Lion's Responsible Care Activities](#)

Reducing Water Usage During Product Use

The Lion Group is working to reduce water usage throughout the lifecycles of its products. To reduce water usage during product use—the product life cycle stage that accounts for the greatest portion of water use—we provide environmentally friendly products that help save water. For example, since 2020, all Lion liquid laundry detergents can be used with just one rinse cycle. In 2023, we also developed and marketed *Acron Smart Care*, a zero-rinse laundry detergent.

Under LION Eco Challenge 2050, a set of long-term environmental objectives, the Group set the target of reducing water usage 30% per unit of net sales across product lifecycles by 2030 in comparison with 2017 levels. In 2022, life cycle water usage was reduced 7% per unit of net sales in comparison with 2017.

Going forward, we will continue to develop products that help reduce water usage during product use and promote environmentally friendly habits as we strive to reduce the environmental impact of households.

➤ [Development of Zero-rinse Laundry Detergent *Acron Smart Care*](#) (Lion Integrated Report 2023 p.48) 

➤ [Water Use over the lifecycles of Lion Products](#)

Water-Saving Products (Domestic)

TOP SUPER NANOX

TOP SUPER NANOX For Odors

These laundry detergents rinse away easily, enabling one-rinse washing.



CHARMY Crysta Gel

These dishwasher detergents demonstrate high detergency even when used in quick wash cycles, effectively removing grime from dishes and dishwasher interiors.



CHARMY Magica Enzyme + ("Plus")

CHARMY Magica Quick Dry + ("Plus") Antibacterial

CHARMY Magica Antibacterial + ("Plus")

These nano-cleansing dishwashing detergents make stubborn grease slide off dishes like water, helping save time and water when washing up.



Water-Saving Products (Overseas)

Lion sells *TOP SUPER NANOX* through Lion Corporation (Singapore) Pte Ltd, Lion Daily Necessities Chemicals (Qingdao) Co., Ltd. and Lion Corporation (Hong Kong) Ltd. and Lion Home Products (Taiwan) Co., Ltd., helping to save water.



TOP SUPER NANOX
at Lion Corporation (Singapore)
Pte Ltd.



TOP SUPER NANOX
at Lion Daily Necessities
Chemicals (Qingdao) Co., Ltd.



TOP SUPER NANOX
at Lion Corporation (Hong Kong)
Ltd.



TOP SUPER NANOX
at Lion Home Products (Taiwan)
Co., Ltd.

Harmonizing with Nature (Biodiversity)

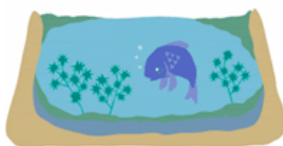
Approach

Lion has long taken the lead in addressing problems in the aquatic environment, such as stream foaming and eutrophication linked to the use of detergents, considering biodiversity at each stage from raw material procurement to disposal by consumers. To continue benefiting from the value provided by biodiversity into the future, we must work with local communities to protect biodiversity and utilize such value in a sustainable, non-depleting way. Furthermore, it is important that we contribute to the realization of a society in harmony with nature by encouraging changes in consumer lifestyles through biodiversity-friendly products.

To this end, Lion will contribute to the development of a sustainable society through its businesses by determining which natural resources are used in business activities and the impacts on biodiversity throughout the value chain. Based on this information, Lion will implement biodiversity conservation activities that help reduce risk and expand opportunities. Also, by having every employee participate in biodiversity conservation activities as part of our environmental education efforts, we are spreading awareness of this important issue throughout our operating sites.



1960s Stream Foaming
The synthetic detergents of the time were slow to break down, leading to foam that covered streams. Lion switched to readily biodegradable detergent ingredients.







1970s Eutrophication
Aquatic eutrophication led to algae blooms and other problems. One cause of this eutrophication was the phosphates then used in detergents. Lion led the way, ahead of its competitors, in creating phosphate-free laundry detergents.



1980s Onward Global Environmental Issues
Global-scale environmental issues received increased attention, leading to growing calls for consideration of resources and environmental burden. Lion is proactively advancing such efforts as enhancing the detergency of its cleaning agents to decrease the amount of product needed, developing water-saving products and utilizing plant-based raw materials.

Overview

Overview of Lion's Biodiversity-Friendly Business Activities

Biodiversity on Which Lion Relies		Watershed* Ecosystems of Raw Material Production Sites	Watershed Ecosystems Where Our Plants are Located	Watershed Ecosystems Where Consumers Reside	
		Procurement of Raw Materials, Packaging and Containers 	Production 	Use by Consumers 	Disposal by Consumers 
Key Natural Resources Used by Lion		<ul style="list-style-type: none"> Plants used as raw materials (oil palms, etc.) Wood that provides the paper raw material for packaging 	<ul style="list-style-type: none"> Cooling water and unprocessed water for equipment cleaning, etc., used at production sites 	<ul style="list-style-type: none"> Tap water consumed during use of our products 	—
Possible Major Impacts of Our Activities on Biodiversity		<ul style="list-style-type: none"> Impact of palm oil growers on the surrounding natural environment and communities (such as impact of illegal logging of tropical forests on wildlife habitats) Damage to the forest environments that are the source of paper raw materials 	<ul style="list-style-type: none"> Impact of groundwater intake by production plants on surrounding natural environments and communities Impact of wastewater and exhaust gases from production plants on the surrounding natural environment and communities Impact of light and odors from production plants on the surrounding natural environment and communities 	<ul style="list-style-type: none"> Impact of water use by consumers on the surrounding natural environment and communities 	<ul style="list-style-type: none"> Impact of wastewater and packaging waste generated by consumers on the surrounding natural environment and communities
Biodiversity Conservation Activities	Activities to Reduce Risks	<ul style="list-style-type: none"> Promotion of procurement of sustainable palm oils (participation in RSPO and purchase of RSPO-certified oils) ➡ Related Information Promotion of forest conservation (use of third-party certified paper) ➡ Related Information 	<ul style="list-style-type: none"> Reduction of production plant waste ➡ Related Information Reduction of water consumption at plants ➡ Related Information Conservation of rivers and other ecosystems by implementing purification technologies on discharged wastewater 	<ul style="list-style-type: none"> Development of water-saving products ➡ Related Information Development of highly biodegradable detergents ➡ Related Information 	<ul style="list-style-type: none"> Surveying the environmental impact of surfactants ➡ Related Information
	Activities to Expand Opportunities	—	<ul style="list-style-type: none"> Conservation and monitoring of habitats in the watersheds where production plants are located (activities include protection of endangered loggerhead sea turtles, maintaining biotopes and removal of non-native species from beaches) ➡ Related Information 	<ul style="list-style-type: none"> Educational activities teaching consideration of water and natural environments (activities include forest maintenance at Lion Forest in Yamanashi and water-related environmental research support through the Japan Society on Water Environment) ➡ Related Information 	<ul style="list-style-type: none"> Promotion of 3Rs (making products more compact, refill packs, development of containers made using recycled or less plastic) ➡ Related Information
				Raising awareness by participating in local biodiversity activities and workshops, etc.	

* Watershed: A range of ecosystems, including forests, rivers, domestic woodlands, tidal flats and beaches, that is connected by water.

Initiatives



Biodiversity Conservation Initiatives



Biodiversity Conservation Activities

- ✓ Activities at Operating Sites
- ✓ Environmental Impact Surveys of Surfactants MEE

Lion conducts biodiversity conservation activities at all of its operating sites. Its plants, in particular, have expansive premises and handle a wide range of raw materials and thus have the potential to impact the nearby natural environment and communities. We therefore work to reduce the impact caused by plant operations and, in cooperation with local NPOs and other organizations, proactively implement biodiversity conservation activities in the watersheds where plants are located so that the benefits of biodiversity can be sustainably enjoyed throughout local communities.



Biodiversity Conservation Initiatives [Japanese] 

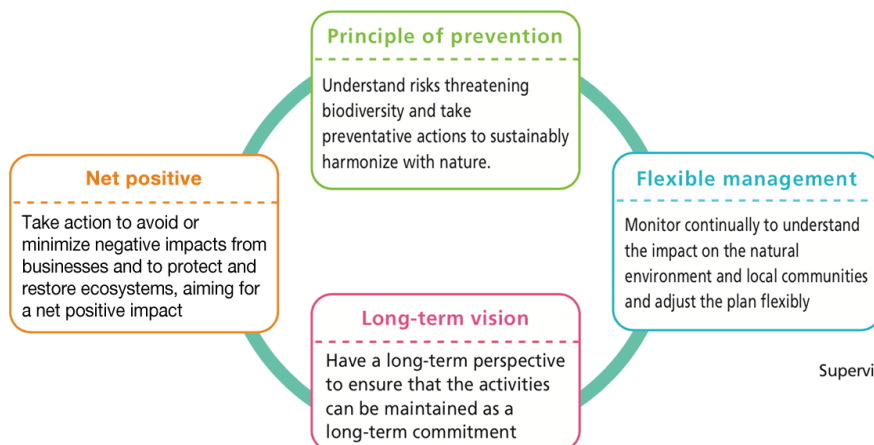
> Biodiversity Conservation Initiatives

> Lion and Biodiversity

Activities at Operating Sites

Basic Principles of Biodiversity Conservation Activities at Operating Sites

Based in part on the Ministry of Environment's Guidelines for Private Sector Engagement in Biodiversity (2nd Edition), we have defined the following four key principles for biodiversity conservation activities at operating sites.

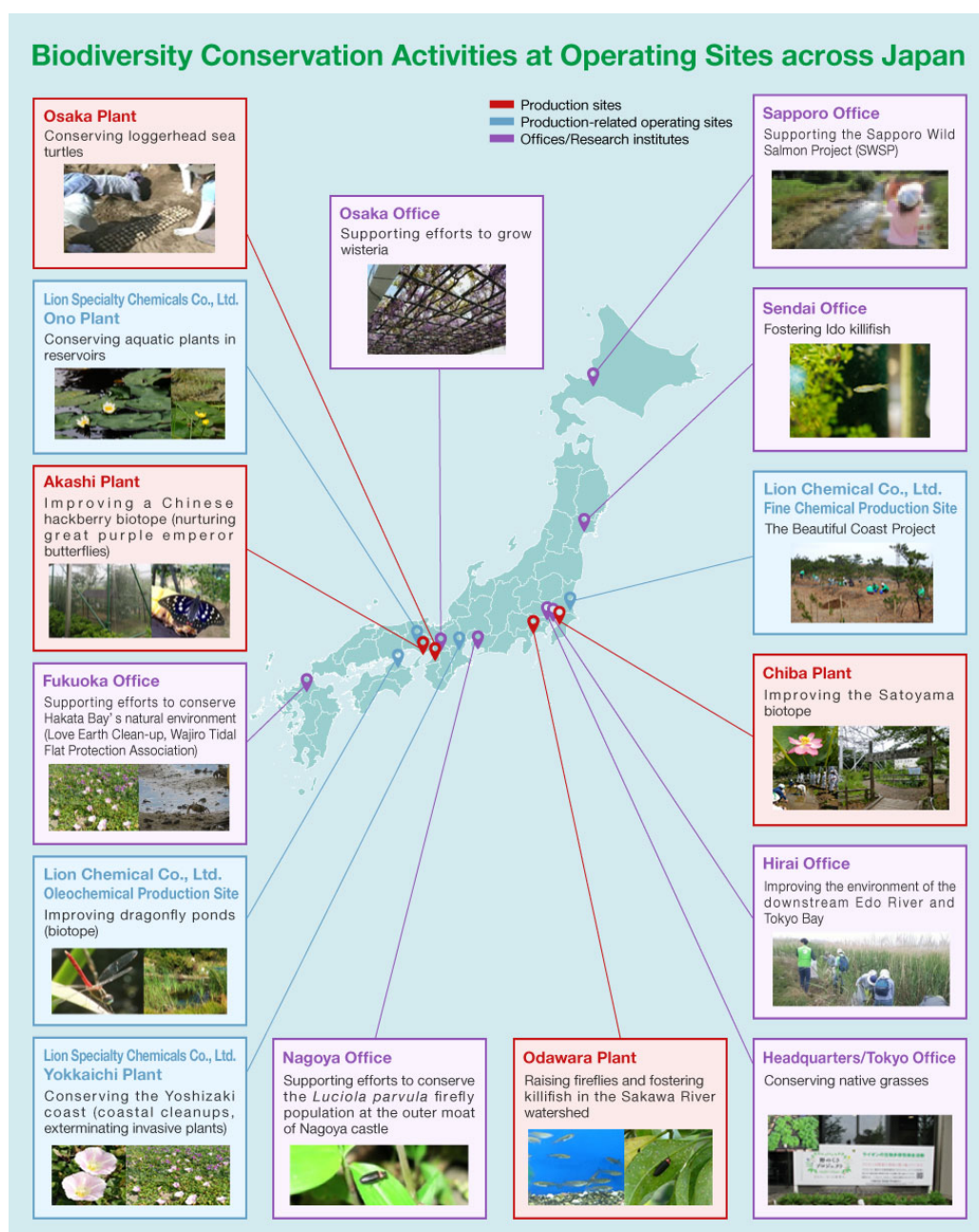


Supervisors: Ecology Path Inc.
Fumiaki Nagaishi
Tetsuya Kitazawa

Below are some of the biodiversity conservation activities being implemented at Lion's operating sites. We select activities to pursue based on the following considerations:

- Improving wildlife-friendly environments in the rivers and lakes of the watersheds that are connected to our plants via business activities or products as well as downstream coastal areas
- Providing habitats for creatures that are disappearing and breeding and raising them with the aim of returning them to their natural habitats
- Replicating natural habitats lost in the nearby area on operating site grounds and maintaining them as biotopes
- Cleaning up and improving business sites, conducting regular assessments of wildlife living there and using business sites as a place for biodiversity education
- Working in partnership with other stakeholders, such as local residents, external organizations and local authorities

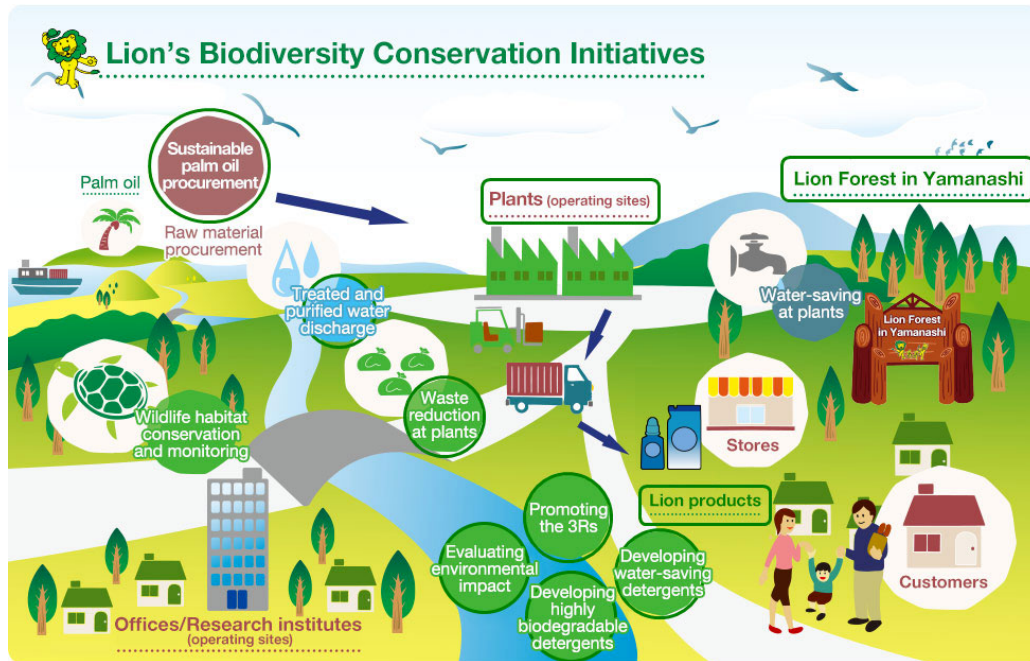
Biodiversity Conservation Initiatives



[Biodiversity Conservation Activities at Operating Sites Across Japan \[Japanese\]](#)

Lion and Biodiversity

Lion provides a wide variety of products that support daily living based in significant part on value derived from nature. In addition to striving to use resources in a sustainable manner, Lion is engaged in biodiversity conservation, aiming to proactively contribute to the realization of a society in harmony with nature.



- Sustainable palm oil procurement
- Plants (operating sites)
- Treated and purified water discharge
- Waste reduction at plants
- Water-saving at plants
- Lion products
- Lion Forest in Yamanashi
- Promoting the 3Rs
- Developing water-saving detergents
- Evaluating environmental impact
- Developing highly biodegradable detergents
- Customers [Japanese]

Environmental Impact Surveys of Surfactants MEE

Lion evaluates and confirms the environmental safety of its products during product development, because almost all Lion products are discharged into rivers and streams after their use. Furthermore, Lion takes part in the [Japan Soap and Detergent Association's](#) measurement of the concentrations of four types of surfactants in four river systems near Tokyo and Osaka and evaluation of related ecosystem risk, which it has conducted four times a year since 1998, to confirm that said surfactants are not negatively impacting the environment. The measurements to date have consistently found surfactant concentrations below the maximum level thought to have no impact on aquatic ecosystems, indicating that there is little environmental impact from detergents.

Furthermore, because Lion developed the plant-based surfactants MEE, it conducts its own measurement of the concentrations of this substance in the same watersheds. By doing so, we confirm that its impact on ecosystems is extremely small.

Evaluating and confirming safety is not a task for Lion alone. In addition to gathering and utilizing the latest technological data from in and outside Japan, Lion is working to provide data to other users in order to enhance safety evaluation technologies.

Supporting Young Researchers

As part of efforts to protect water resources, in 2009, Lion established the Lion Award, which is bestowed through the Japan Society on Water Environment (JSWE). By using the award to recognize outstanding research activities, we are supporting young researchers.

> Support for Japan's largest academic society focused on protecting the aquatic environment



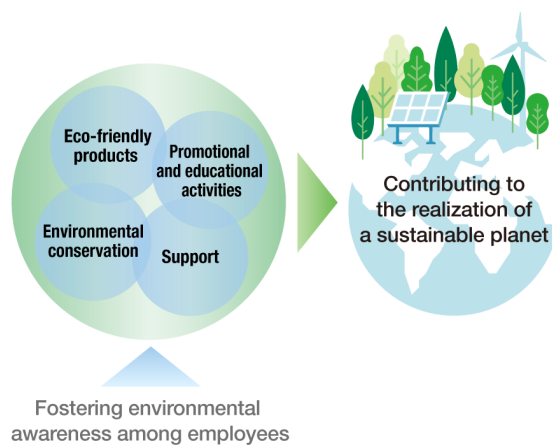
Environmental Communication

Approach

We at Lion believe it is our solemn responsibility to provide excellent customer experiences in the areas of health, comfort and cleanliness while protecting the global environment—the foundation of health and daily living—in accordance with our aim of “Becoming an advanced daily healthcare company.” By using various means of communication to convey our approach to addressing environmental issues, related initiatives and the environmentally friendly features of our products, we promote the formation of eco-friendly living habits.

In addition, we strive to foster environmental awareness among employees through such means as education for new hires and employees in specific job categories.

Overview



Initiatives

Lion believes that environmental communication with consumers plays an important role. In 2022, we explained our initiatives and fostered contact with stakeholders via both in-person events and on our website, as appropriate.



Events, Websites, and Building Relationships with Communities and External Organizations



Environmental Communication through Activities



Environmental Communication through Academic Support



Events, Websites, and Building Relationships with Communities and External Organizations

Events and Websites

Through participation in environmental exhibitions and other channels, Lion seeks to communicate to consumers ways they can be more environmentally friendly both in the course of daily life and through comfortable, clean living using Lion products. In 2022, Lion exhibited at the GOOD LIFE Fair 2022 and SDGs AICHI EXPO 2022, introducing water-saving ideas that can be applied in our daily lives through Lion products and how they can also help prevent global warming. Furthermore, we implement educational programs for the next generation to foster environmentally friendly habits.



Virtual exhibition

Our booth exhibited at EcoPro 2021 is re-enacted with 360° images. Users can learn about our various activities to realize a resource-recycling society through employee explanation and links to the website.



Virtual exhibition [Japanese]




Building Relationships with Communities and External Organizations

Lion participates in the activities of the Japan Chemical Industry Association Responsible Care (RC) Committee, which aims for constant improvement in the environmental performance and safety of chemical substances throughout their life cycles, from development through disposal.



 [Japan Chemical Industry Association](#)

Responsible Care* Activities at the Chiba and Osaka Plants

As a member company of the [Japan Chemical Industry Association](#)  RC Committee, Lion proactively engages in dialogue with local communities. Each plant provides opportunities for dialogue suited to the characteristics of its local community to promote communication with community members.



12th annual Sakai/Senboku responsible care community dialogue meeting held in February 2020

The 13th Responsible Care Sakai/Senboku Regional Dialogue was held in February 2022 via written communication in the form of booklets to curb the spread of COVID-19. Booklets were distributed with information supplied by the Osaka Plant, which summarized the corporate activities undertaken in the Sakai and Senboku districts. The booklet was mailed to neighborhood associations, governments, NPOs, and other organizations included a survey to collect opinions. In the future, as we continuously work toward improvement, we plan to take the survey's findings into consideration.

In addition, the 14th Responsible Care Chiba Regional Dialogue took place in February 2023 and followed the same written communication in the form of booklets.

Booklets were distributed and from the initial stages of the planning process, the Chiba Plant participated and cooperated in the discussions. Neighborhood associations, municipalities, NPOs, and others received a booklet highlighting the SDGs initiatives of businesses in the Chiba area, and feedback was gathered via the included survey. The gathered feedback will be implemented in our future endeavors.

Moreover, in May 2017, the Chiba Plant received the 11th Responsible Care Award from the Japan Chemical Industry Association for its initiatives to protect the aquatic environment and contribute to the local community. Since the start of its operations, the Chiba Plant has continuously implemented activities to protect the aquatic environment from water-related risks. The plant's efforts to purify industrial water for various applications, recycle wastewater used in industrial processes and manage wastewater according to standards stricter than those required by law have led to reductions in water usage and discharge volumes and the conservation of water quality. The award also praised the plant for providing education about the importance of water through initiatives with local children and plant tours.



11th Responsible Care Award Plaque
from the Japan Chemical Industry Association

* Responsible care refers to voluntary management activities performed by companies that handle chemical substances, encompassing the assurance of protections for the environment, safety and health throughout all processes of product manufacturing, distribution, use, final consumption, disposal and recycling as well as the disclosure of the results of such activities and dialogue with society.

Support for Environmental Organizations

Lion supports the following organizations.



🔗 [Sea Turtle Association of Japan \[Japanese\]](#)



🔗 [Japan Society on Water Environment](#)



🔗 [OISCA](#)

Lion is a member of the following organization.



🔗 [Eco First Companies Association \[Japanese\]](#)

The following organizations, of which we are members, have our support.



🔗 [30by30 Alliance for Biodiversity \[Japanese\]](#)



🔗 [Keidanren Initiative for Biodiversity](#)

Environmental Communication through Activities

Lion Forest in Yamanashi

The Lion Forest in Yamanashi is a project launched in October 2006 for the maintenance of an approximately 65-hectare area of forest owned by Yamanashi City in Mizukuchi, Yamanashi City. Yamanashi Prefecture's first Company Forest Promotion Project, it is aimed at fostering environmental awareness among Lion employees by providing experience in the maintenance of forests, a water resource. Lion provides funding for forest maintenance, and employees engage in forest maintenance as volunteers or as part of training for new hires while building relationships with members of the local community.



The Lion Forest in Yamanashi—
Where our commitment to protecting water resources
takes concrete form

We have been implementing Lion Forest in Yamanashi activities since 2006 to foster awareness of the aquatic environment among participating employees through the maintenance of forests, a water resource. Water is not only necessary for life and living, but crucial to maintaining business activities. In particular, Lion's businesses—with such mainstay products as toothpastes, detergents and hand soaps—are deeply related to water through the act of washing. As such, we particularly focus efforts on conserving the aquatic environment through business and social contribution activities.

Through activities spanning more than a decade, the Lion Forest in Yamanashi has achieved progress in forest maintenance, including concrete results, such as promoting tree growth and CO2 absorption. The greatest achievements, however, have been the personal connections and communication built with local residents, including local elementary school students and ladies' groups, and with forestry staff as well as the enhancement of employees' environmental awareness that comes from getting their hands dirty. These activities allow participants to feel first-hand the importance of working with and connecting with people and protecting the global environment.

In line with its aim of being an environmentally advanced company, Lion aims to enhance the environmental awareness of each employee through Lion Forest in Yamanashi activities while further focusing efforts on environmentally friendly business activities.

Toothbrush Recycling Program

The Toothbrush Recycling Program is a program to collect used toothbrushes, which are commonly just thrown away as non-recyclable garbage, and recycle them into planters and other new plastic products. Lion launched the program, the first of its kind in Asia, in 2015, in cooperation with TerraCycle Japan.



Activities

Participants collect used toothbrushes in various ways. Some set up collection boxes at kids' centers, day care centers and kindergartens, while others collect toothbrushes as part of classes at schools, teaching children about the significance of the program.



Collection points
760

Toothbrushes collected
Approx. 780,000


(As of May 31, 2021)

The Recycling Process

Collected used toothbrushes go through several steps in the process of being recycled into planters.



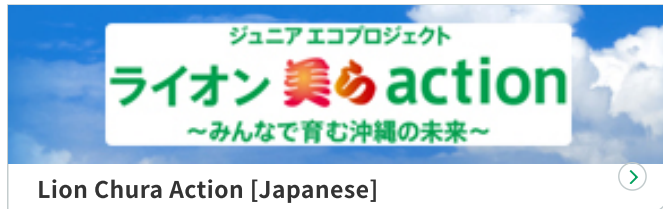
Get Involved

Sign up to participate through [this website \[Japanese\]](#) . The website offers further details about the program and points awarded for toothbrushes collected.



Lion Chura Action

Lion Chura Action is a project to support the eco-activities of children nurturing the future of Okinawa, aimed at protecting and developing the rich ecosystems of the region and achieving lasting harmony with nature.



Environmental Communication through Academic Support

The Lion Award—Supporting Aquatic Environment Student Research

To motivate and support young researchers working in areas related to the aquatic environment, in 2009 Lion created the JSWE-LION Best Student Poster Presentation Award (the “Lion Award”), bestowed through the Japan Society on Water Environment (JSWE) in recognition of outstanding research activities.^{*1}

In 2021, 17 students were chosen to receive the Lion Award, one of whom received the Grand Prize, by the 56th Annual Conference of the JSWE.^{*2}

^{*1} The award is bestowed in recognition of outstanding poster presentations at the JSWE’s annual conference.

Eligible persons: Undergraduate university students, technical school students, junior college students.

Selection method: Based on the votes of regular and corporate JSWE members, winning presentations are selected by the Awards Committee of the Board of Directors.

^{*2} The 56th Annual Conference of the Japan Society on Water Environment was held online.

 [The Lion Award \(Japan Society on Water Environment\)](#)

Management of Chemical Substances

- ✓ Approach
- ✓ Chemical Substance Management Policy
- ✓ Overview
- ✓ Chemical Substance Management Initiatives at Each Product Life Cycle Stage

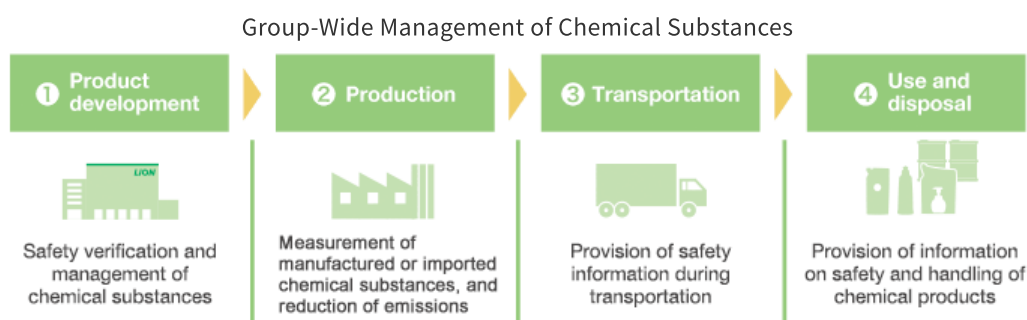
Approach

Chemical substances are indispensable for people to lead comfortable and fulfilling lives. Failure to properly manage chemical substances, however, can result in accidents that put human health and ecosystems at enormous risk. In addition to compliance with related laws and regulations, the Lion Group strives to ensure the strict management of chemical substances at all stages from product development to use and disposal in accordance with its own independent standards.

Chemical Substance Management Policy

Based on the spirit of the [Lion Group Charter for Corporate Behavior](#), the Group has established the [Chemical Substance Management Policy](#). This policy was formulated in light of international trends in chemical substance management and is aligned with the Strategic Approach to International Chemicals Management (SAICM). The policy stipulates that we will strive to implement sound management of chemical substances throughout their life cycles, minimize significant adverse impacts on the environment and human health, and promote communication.

Overview



[> Management System for Information on Chemical Substances](#)

Chemical Substance Management Initiatives at Each Product Life Cycle Stage

1. Product Development

| Selection of Chemical Substances for Use in Products

The types and amounts of chemical substances used in products are determined at the product development stage, with consideration given not only to enhancing product performance, but safety and environmental impact.

> Safety of Raw Materials and Ingredients

2. Chemical Substance Registration and Notifications

| Japan: Complying with the Act on the Regulation of Manufacture and Evaluation of Chemical Substances

Based on the Act on the Regulation of Manufacture and Evaluation of Chemical Substances, Lion notifies the relevant authorities of the use classifications and volumes of all the general chemical substances and priority assessment chemical substances it manufactures or imports (with exceptions based on the provisions of the Act, such as for substances manufactured or imported in quantities of less than one ton per year). As needed, our chemicals departments also notify the relevant authorities of the use classifications and volumes of small-volume and low-volume new chemical substances it manufactures or imports. We will continue to gather information about the volumes and uses of manufactured or imported chemical substances and file proper notifications.

| EU: Complying with REACH

Our chemicals departments register chemical substances as required under the EU's REACH^{*1} chemical substance management system.

^{*1} REACH: Registration, Evaluation, Authorisation and Restriction of Chemicals

| South Korea: Complying with K-REACH

Our chemicals departments and Lion Corporation Korea pre-register and register chemical substances under K-REACH.^{*2}

^{*2} K-REACH: The common name for South Korea's Act on the Registration and Evaluation of Chemicals

3. Production

Going forward, calls for the improvement and reinforcement of chemical substance management will grow. Accordingly, we aim to continue as well as to step up the filing of proper notifications and management of emissions volumes as required under volatile organic compound (VOC) regulations, the Water Pollution Prevention Act and the Act on Confirmation, etc. of Release Amounts of Specific Chemical Substances in the Environment and Promotion of Improvements to the Management Thereof.

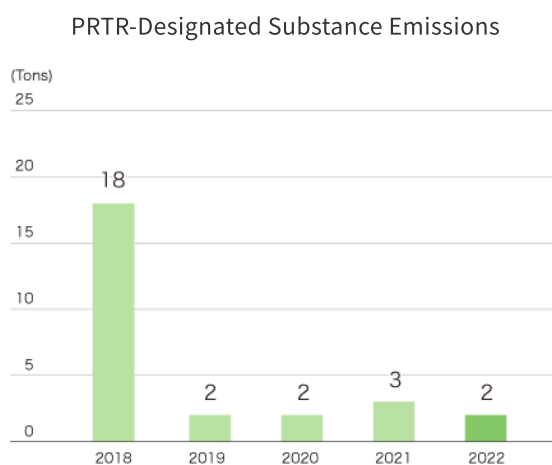
Management of Total PRTR-Designated Substance Emissions

The PRTR (Pollutant Release and Transfer Register) system is a scheme for collecting, compiling, and publishing data on the degree to which a wide variety of potentially harmful chemical substances are released into the environment from what sources, or are transported off of production sites through waste disposal.

The Company's emissions of PRTR-designated substances have remained at approximately 2 tons since 2019.

> [2022 PRTR-Designated Substance Emissions Data for Production Sites in Japan](#) PDF

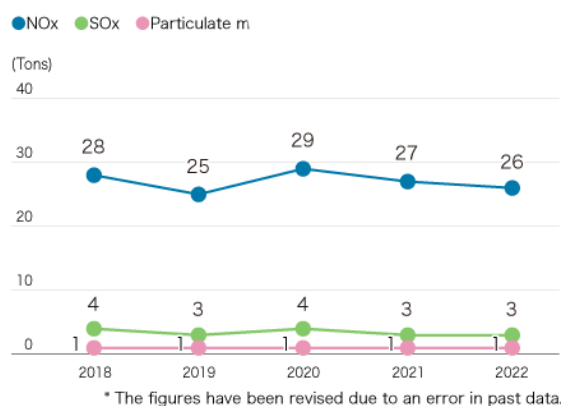
> [PRTR-Designated Substance Emissions \(Domestic\)](#)



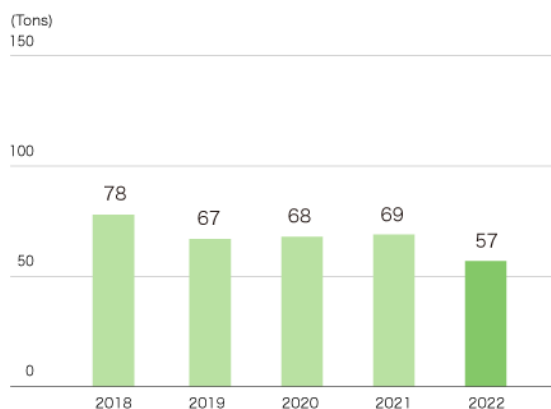
Air Quality-Conscious Production Activities

Lion implements initiatives to reduce emissions of chemical substances that cause air pollution, including nitrogen oxides (NO_x), sulfur oxides (SO_x), particulate matter and VOCs. The Air Pollution Control Law designates emissions standards by type of substance and by type and scale of emitting facility, and many regional governmental bodies have established additional regulations by ordinance. In addition to complying with such laws and ordinances, each plant has formed strict agreements with local municipalities and established strict voluntary standards, in accordance with which we strive to prevent pollution. Furthermore, we are working to reduce emissions by such means as improving the efficiency of production processes and utilizing environmentally friendly equipment, such as nitrogen and sulfur scrubbers.

Emissions of Nitrogen Oxides (NO_x), Sulfur Oxides (SO_x) and Particulate Matter



VOC Emissions



| Water Quality-Conscious Production Activities

A maximum limit on COD^{*1} of 160mg/L (and a daily average of 120 mg/L) has been set by law as a uniform standard within environmental standards related to water pollution per the Water Pollution Prevention Act and Sewerage Act. Lion meticulously complies with these regulations in its business activities. Furthermore, Lion aims for even stricter wastewater quality management, and some of our operating sites have formed agreements with local governments to maintain a COD limit stricter than the uniform standard. By stabilizing the operations of the wastewater treatment facility, performing regular maintenance and improving treatment methods, we are working to further reduce COD in wastewater emissions.

> COD in Business Activities

*1 COD

Chemical oxygen demand. An indicator of water contamination. Indicates the amount of oxygen that will be consumed in the oxidization and decomposition of the organic matter content of the water.

| Utilizing SDSs

Lion prepares safety data sheets (SDSs)^{*2} on its chemical products and provides them to its customers. We also receive SDSs on all the raw materials we use from our suppliers. These SDSs are listed in a database to be used effectively.

*2 SDSs

Safety data sheets. Documents providing information about the environmental impact of, safety precautions regarding and the appropriate handling of chemical products, aimed at preventing accidents caused by chemical substances.

4. Transportation

| Provision of Safety Information during Transportation

In case of an accident during the transportation of raw materials or intermediate products, Lion provides information to carriers about emergency response by distributing and attaching yellow cards and container yellow cards to shipments*

* Yellow cards and container yellow cards

Yellow-colored emergency contact cards providing information about the properties of and emergency response methods regarding chemical substances in case of leaks of other issues during transportation. Yellow cards are for carriers to keep with them during transportation, while container yellow cards are attached to the containers in which chemical substances are stored. Both are prepared based on voluntary industry standards determined by chemical companies.

5. Use and Disposal

| Environmental Impact Surveys

After being used, the surfactants in detergents and other products are discharged into the environment. Lion takes part in the Japan Soap and Detergent Association's environmental monitoring and risk assessment of four types of surfactants in rivers near Tokyo and Osaka, which it conducts four times a year. Furthermore, Lion conducts its own monitoring of the concentrations of the surfactants MEE* in the same watersheds, because this surfactant was developed by Lion. By doing so, we confirm that it has little impact on ecosystems.

> Environmental Impact Surveys of Surfactants MEE

* MEE

Methyl ester ethoxylate

Environmentally Friendly Technologies in the Chemicals Business

Products Made with Sustainable Resources

Lion uses natural plant-derived oils, such as palm oil and coconut oil, as raw materials in its products with an eye to making effective use of renewable resources.

Products That Contribute to Energy Saving

In the automotive field, Lion offers electro-conductive plastic, an alternative to metal materials that helps improve recyclability and reduce weight. Lion also provides electro-conductive carbon, which is used in batteries in the growing field of electric vehicles.

Products That Help Prevent Pollution

Lion does not use chlorofluorocarbons or organic solvents to clean metal components, instead using water-based industrial cleaners to help reduce emissions of volatile organic compounds (VOCs).

 [Environmentally Friendly Products](#)

 [Lion Specialty Chemicals Co., Ltd.](#)

Lion's Environmentally Friendly Products

- ✓ About Lion's Environmentally Friendly Products
- ✓ The Lion Eco-Standard
- ✓ The "eco Lion" Mark
- ✓ Lion's Environmentally Friendly Products—Water Saving

About Lion's Environmentally Friendly Products

Lion considers products that have cleared the proprietary Lion eco-standard to be environmentally friendly. The Lion Group provides products that create effortless ways for consumers to be more environmentally friendly just by living comfortably and promotes the formation of eco-friendly living habits by engaging in interactive communication with consumers.

The Lion Eco-Standard

Lion has created the Lion eco-standard based on life cycle assessment (LCA), in which the environmental burden created by a product is quantitatively assessed at every stage from raw material procurement to disposal. Products that meet at least one evaluation standard in each evaluation category can bear the "eco Lion" mark. In 2021, 82% of Lion's household product* sales were from environmentally friendly products that meet the Lion eco-standard.

[> Products with the "eco Lion" Mark \[Japanese\]](#)

Portion of Sales from Products that Meet the Lion Eco-Standard (Domestic)

2017	2019	2020	2021	2022
76%	77%	80%	82%	81%

* Products in the Oral Care, Beauty Care, Fabric Care and Living Care fields

Lion Eco-Standard Evaluation Categories and Standards

Life cycle stage	Evaluation category	Evaluation standards
①Raw material procurement	Use of plant-based materials Use of sustainable raw materials	<ul style="list-style-type: none"> At least 50% of the raw materials of product contents (organic ingredients) is plant-based Of the plant-based materials used, at least 50% are biodiversity-friendly
②Material procurement	Use of recycled materials Use of plant-based materials	<ul style="list-style-type: none"> At least 10% of the materials used are recycled Cardboard used is at least 94% recycled paper or certified pulp from forest thinning At least 20% of resins used are plant-based
③Manufacturing	Energy saving Water saving Chemical substance use reduction Waste reduction	<ul style="list-style-type: none"> A reduction of at least 20% in greenhouse gas emissions at the manufacturing stage compared with the baseline product* A reduction of at least 20% in water use at the manufacturing stage compared with the baseline product* A reduction of at least 20% in use of chemical substances other than raw materials at the manufacturing stage compared with the baseline product* A reduction of at least 20% in waste generated at the manufacturing stage compared with the baseline product*
④Logistics	Making products more concentrated and compact	<ul style="list-style-type: none"> An increase of at least 20% in product content concentration or packaging compactness compared with baseline product*
⑤Use	Energy saving during use Reduction of greenhouse gas emissions during use Water saving during use	<ul style="list-style-type: none"> A reduction of at least 20% in energy consumed by product use compared with baseline product* A reduction of at least 20% in greenhouse gas emissions after product use compared with baseline product* A reduction of at least 20% in water use during product use compared with baseline product*
⑥Disposal	Packaging reduction Refill packs	<ul style="list-style-type: none"> A reduction of at least 15% in packaging materials used in bottles compared with baseline product* A reduction of at least 50% in packaging materials used in refill packs compared with corresponding product bottles

* Baseline product: Products released in 2017, the baseline year for the LION Eco Challenge 2050.

The “eco Lion” Mark



The “eco Lion” mark symbolizes Lion’s environmental activities and incorporates Lion’s environmental slogan, “Every Day. For the Earth” which concisely expresses Lion’s commitment to the environment in line with the corporate slogan, “life. love.” To help customers choose environmentally friendly products, we use this mark on products that meet the proprietary Lion eco-standard. The factors that make each product environmentally friendly are printed within the mark.



The mark on a product
TOP SUPER NANOX refill pack (350g)

Other Examples of Products with the “eco Lion” Mark



TOP SUPER NANOX

CHARMY Magica



KireiKirei Medicated Foaming Hand Soap refill pack

Environmentally Friendly Products

- TOP SUPER NANOX
- Magica
- Ofuro no LOOK
- LOOK Plus Bath Antimold Fogger
- Soft-in-1 Shampoo

Basis for Water Savings Calculations (Lion data)

TOP SUPER NANOX laundry detergent

Washing 3 kg of clothing in a top-loading washing machine (a major manufacturer's 2019 model with 10 kg capacity), the amount of water saved is 15.7 l per load, or 7,035 l per year (at 8.6 loads per week)

Magica dishwashing detergent

Washing 20 items per wash, the amount of water saved is 3 l per wash, or 2,210 l per year (at two washes per day)

Ofuro no LOOK bath cleaner

Compared with previous detergents, the amount of water saved is approximately 3.2 l per cleaning of the bath, or 1,100 l per year (365 days' worth)

LOOK Plus Bath Antimold Fogger mold-preventing fungicide

Assuming cleaning off mold once takes 24 l of water, the amount of water saved is 144 l per year (assuming one mold removal cleaning every two months)

Soft in1 two-in-one conditioning shampoo

The amount of water saved is 5.7 l per wash compared with using shampoo and conditioner separately, or 2,081 l per year (at one wash per day)