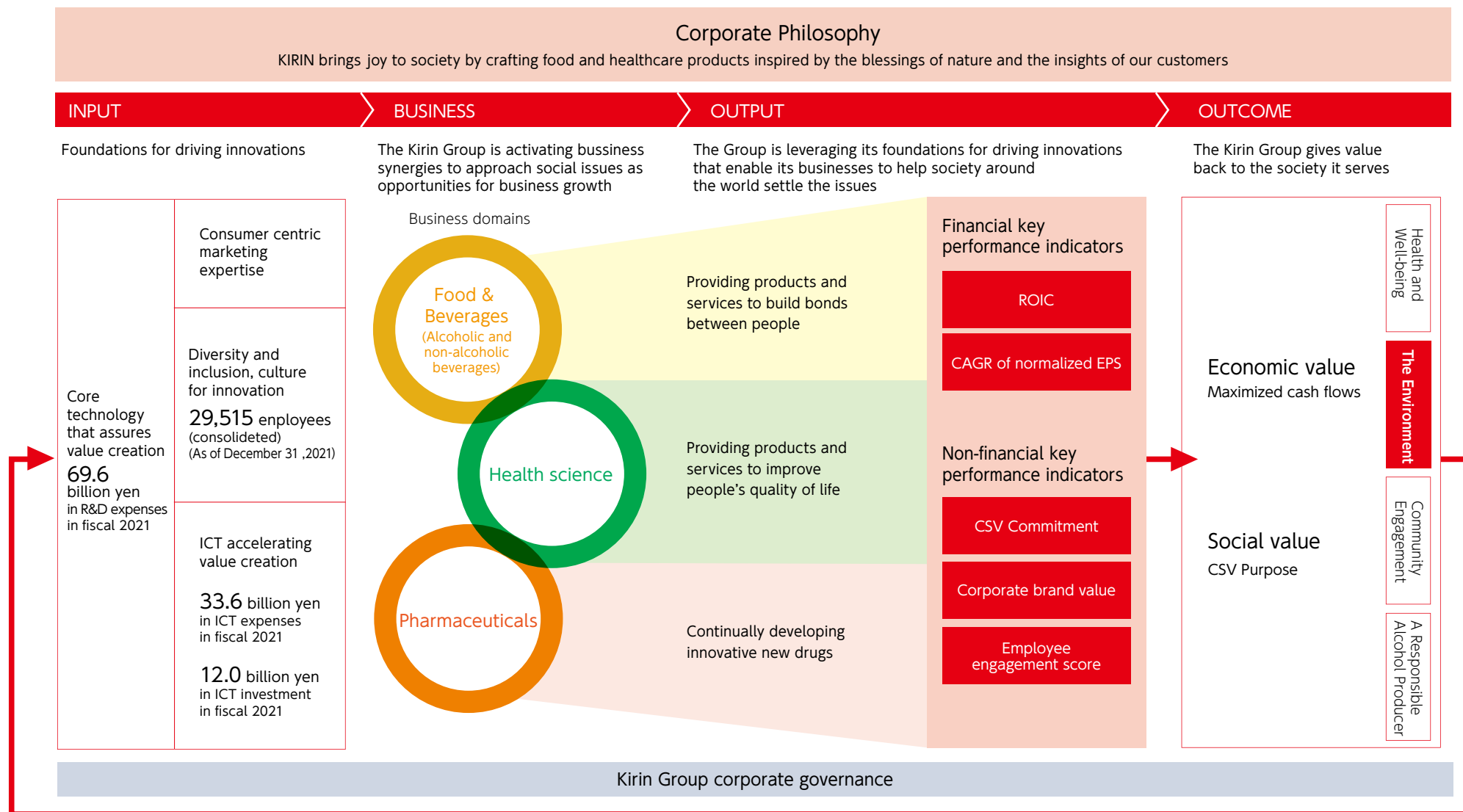


Value Creation Model

The Kirin Group creates value by processing agricultural products and water, putting them in containers, and offering them to consumers as products. If the GHGs produced during these processes cause climate change to become more serious, the biggest impact will be on biological and

water resources, which are our ingredients. In this way, the four material environmental issues that we set forth in our 2013 Kirin Group Long-Term Environmental Vision — biological resources, water resources, containers and packaging, and climate change — are not independent issues

but are interrelated. In the Kirin Group, we will utilize our technical capabilities, one of our strengths, to solve these four environmental issues in a holistic way, and support the sustainability of our value creation model.

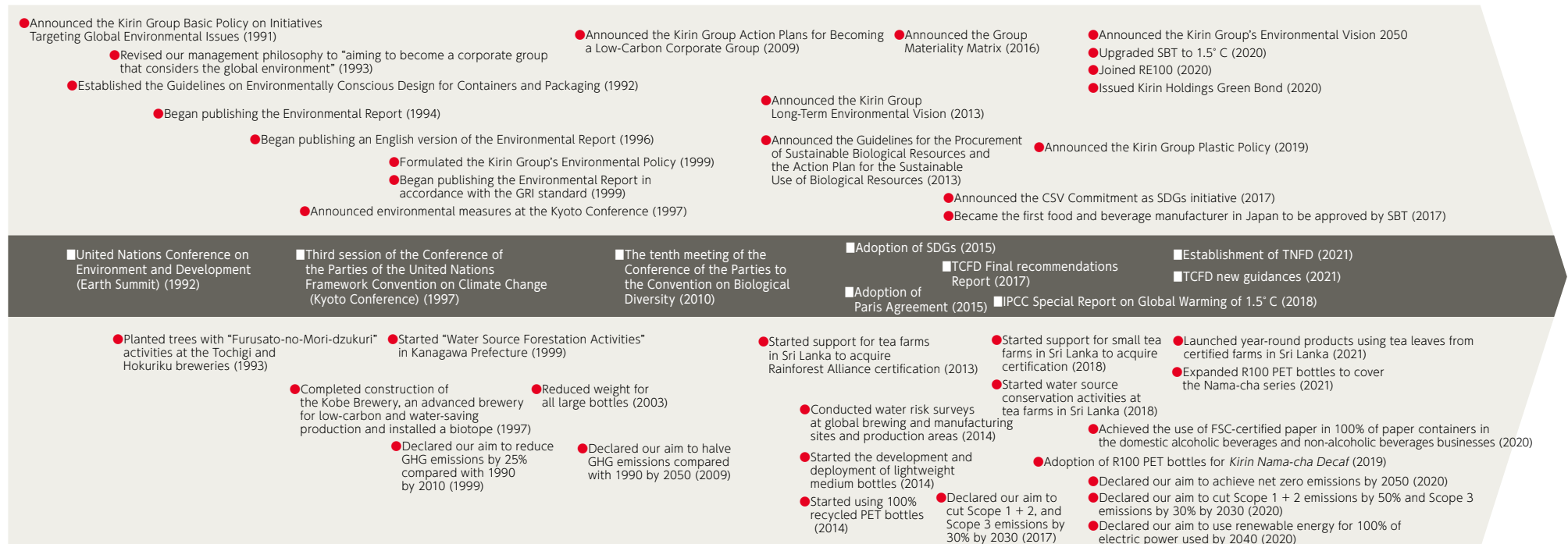


Global Trends and Kirin's Actions

The Earth Summit in Rio de Janeiro in 1992 provided an opportunity for a major shift in the Kirin Group focus, from existing activities centered on anti-pollution measures to activities with a global perspective. In 1991, the year before the summit, we formulated the Kirin Group Basic Policy on Initiatives Targeting Global Environmental Issues, and in 1993, the year after the summit, we revised our management philosophy to "aiming to become a corporate group that considers the global environment." At the third session of the Conference of the Parties of the United Nations Framework Convention on Climate Change in Kyoto in 1997, the company participated as one of two companies representing Japan and we presented our environmental measures to the world. In 2013, we announced the Kirin Group Long-Term Environmental Vision, a long-term strategy targeting the year 2050, which was not common at the time. We revised this strategy into the Kirin Group's Environmental Vision 2050, our new long-term strategy, in 2020. In 1997, when the Kyoto Protocol was adopted, we completed the construction of Kirin Brewery's Kobe Plant as a state-of-the-art advanced model brewery for low-carbon and water-saving production, and we also installed a biotope on the premises.

In 2010, the year of the tenth meeting of the Conference of the Parties to the Convention on Biological Diversity in Nagoya, we published the Kirin Group Declaration of Support for Biodiversity Conservation. In 2013, we formulated the Kirin Group Action Plan for the Sustainable Use of Biological Resources, and began supporting the acquisition of more sustainable farming certification in Sri Lanka, a major producing area of tea leaves as an ingredient in *Kirin Gogo-no-Kocha*. In 2018, the Kirin Group also began water source conservation within tea farms. In order to protect precious forests which absorb GHGs and inhabited by diverse organisms, we have converted all paper containers in the domestic alcoholic beverages and non-alcoholic beverages businesses to FSC-certified paper. In 1999, Kirin Brewery's Yokohama Plant became the first brewery in the industry to start Water Source Forestation Activities, which we have since expanded to all breweries. Kirin Brewery is taking steps to conserve water at an early stage, reducing its unit water consumption by nearly half compared with 1990. In 1992, we established the Guidelines on Environmentally Conscious Design for Containers and Packaging. Taking advantage of our strength in having a research laboratory (currently the

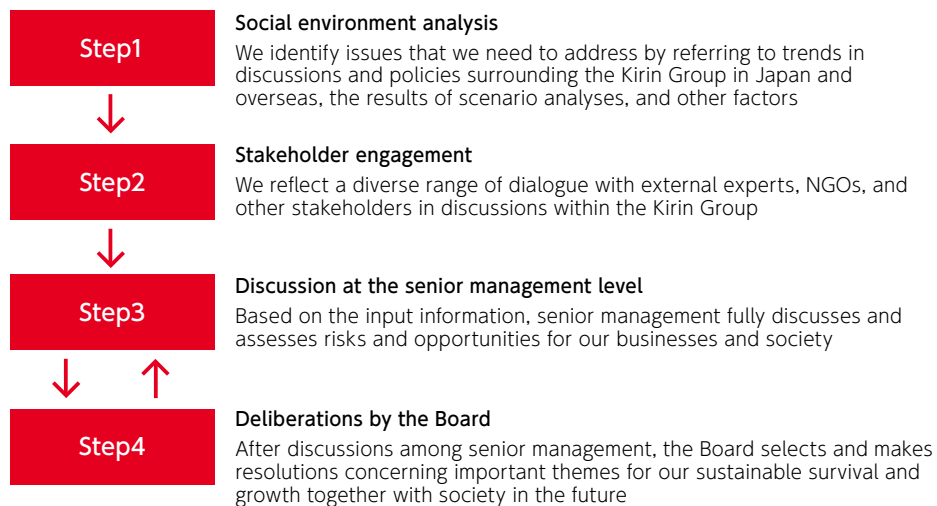
Institute for Packaging Innovation) that develops and designs containers and packaging in-house, which is unmatched in the alcoholic beverages and non-alcoholic beverages industry anywhere in the world, we began developing and rolling out lightest returnable large beer bottles in 1993, the lightest returnable medium bottles made in Japan in 2014, and now we use the lightest bottles made in Japan for all returnable beer bottles. We have also made advanced efforts to reduce the weight of cans, paper containers, and PET bottles, and we are now focusing on chemical recycling and the collection of used bottles as part of our aim to create a "society that continuously recycles plastics," in order to contribute to the circular economy and reduce the impact on ecosystems and water systems. In 2009, we announced the Kirin Group Action Plans for Becoming a Low-Carbon Corporate Group. As one of the first corporate groups to set a long-term target for the reduction of emissions by 2050, we have set an ambitious target of halving GHG emissions across the value chain compared with 1990. In 2020, we obtained approval for our science-based targets for 1.5° C, joined RE100, and declared our aim to achieve net zero emissions by 2050.



Identification of Materiality

In February 2022, the Kirin Group announced the Kirin Group 2022-2024 Medium-Term Business Plan, the second stage of our Long-Term Management Vision, the Kirin Group Vision 2027. When formulating the new medium-term plan, we updated our social and environmental analysis, and after dialogue with internal and external stakeholders, as well as discussions among management including the Group CSV Committee on multiple occasions, and deliberation at meetings of the Board, we revised the Management Issues for Sustainable Growth (Group Materiality Matrix) in anticipation of the situation in ten years' time. As a result, we reconfirmed that the following four important issues related to the environment that we set in the Kirin Group's Environmental Vision 2050 are highly material issues for Kirin Group management: "sustainable use of biological resources," "sustainable use of water resources," "sustainable recycling of containers and packaging," and "overcoming climate change." Beta v0.1 of the Taskforce on Nature-related Financial Disclosures (TNFD) framework, published in March 2022, recommends an integrated approach to climate change and nature-related risks. The holistic approach is a fundamental concept of the 2013 Kirin Group Long-Term Environmental Vision, in which we clearly state that the four environmental issues of "biological resources," "water resources," "containers and packaging," and "climate change" are not independent but "interrelated environmental issues." The Kirin Group has continuously pursued this concept since we turned our focus to environmental activities with a global perspective in early 1990. As a pioneer of the holistic approach, we intend to contribute to increased global awareness of this concept and the resolution of environmental issues.

Flow for the identification of materiality



Group Materiality Matrix (GMM) Revision of Management Issues for Sustainable Growth

● A responsible Alcohol producer ● Health and well-being ● Community Engagement
● The environment ● Other Material Agenda and Governance

Impact on Stakeholders	large	<ul style="list-style-type: none"> ● Creating bond and trust for people's well-being 	<ul style="list-style-type: none"> ● Fulfillment of Unmet Medical Needs ● Sustainable development of communities in raw material production areas and business development regions ● Sustainable use of biological resources ● Sustainable use of water resources ● Sustainable recycling of containers and packaging ● Overcoming climate change 	<ul style="list-style-type: none"> ● Dealing with alcohol-related problems ● Ensuring food safety and security ● Stable supply, safety and reliability as a pharmaceutical producer ● Respect for human rights
	Medium	<ul style="list-style-type: none"> ● Helping to improve the performance of brain functions and prevent their decline 	<ul style="list-style-type: none"> ● Support for the prevention of non-communicable diseases ● Promoting compliance 	<ul style="list-style-type: none"> ● Support for maintaining immunity ● Ensuring occupational health and safety ● Human resource development to realize innovation ● Promoting diversity and inclusion ● Improving the effectiveness of corporate governance ● Reinforcing risk management ● Protection of personal information
	small	<ul style="list-style-type: none"> ● Improvement of access to nutrition ● Ensuring tax transparency 	<ul style="list-style-type: none"> ● Enhancing the Sustainability of food economy ● Building sustainable logistics ● Countermeasures against cyber attacks 	<ul style="list-style-type: none"> ● Implementation of health management ● Realization of a vibrant workplace/ culture ● Strengthen group governance
		small	Medium	large

Kirin Group's Environmental Vision 2050

Since the adoption of the Paris Agreement in 2015, many international initiatives such as SBTi and TCFD have started, and global trends related to the environment have changed significantly, including the discussion of marine pollution caused by plastics as a global issue. In scenario analysis based on the TCFD Recommendations, which we have been conducting since 2017, we have seen the enormous scale of the impact of climate change on agricultural products and water resources. We expect that the corporate environmental initiatives will evolve from being self-contained to having a positive impact on wider society. In order to meet these demands from society, the Kirin Group has

determined that we must establish a new environmental vision. Food companies are "canaries in the coal mine" who are quick to realize that the effects of climate change on agricultural raw materials have already become apparent. To reduce negative impacts on natural capital and pass on a sustainable planet to the next generation, it will not be enough just to minimize negative impacts and make our impact neutral. The "positive impact" approach that we have newly introduced in the Kirin Group's Environmental Vision 2050 represents a further development of our existing holistic approach to the environment. With regard to renewable energy sources, we are committed to "additionality," i.e., contributing to

the decarbonization of society by adding and increasing renewable energy in the world, and we aim to build a "society that continuously recycles plastics" by developing our own commercialization techniques for chemical recycling. With regard to natural capital, we aim to be "nature positive," whereby the expansion of our businesses will contribute to the restoration of ecosystems and increase of their services. Under this new vision, we will broaden our horizons and expand the scope of our efforts from the value chain to wider society. Together with society, especially with the young generation who will lead the future, we will create a prosperous world for the next generation.

Kirin Group's Environmental Vision 2050

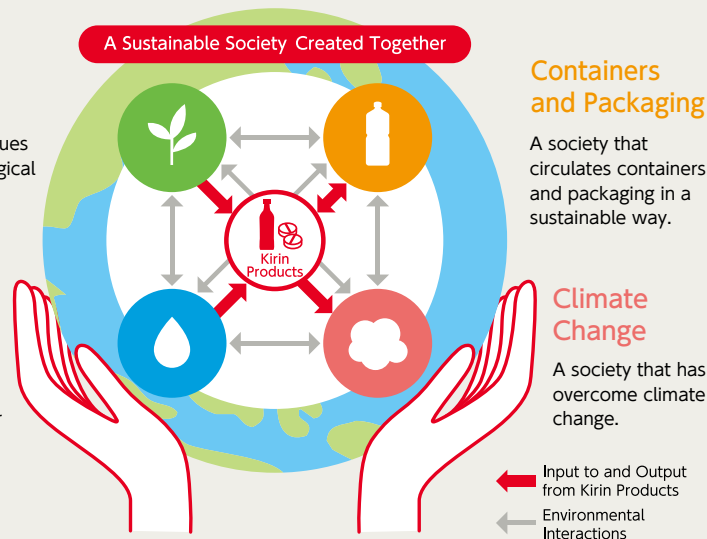
Enrich the Earth with Positive Impact

Biological Resources

A society that values sustainable biological resources.

Water Resources

A society that values sustainable water resources.



Kirin and its broad stakeholders enrich society and the Earth for future generations through positive impact on people and the environment.

Efforts for Realization

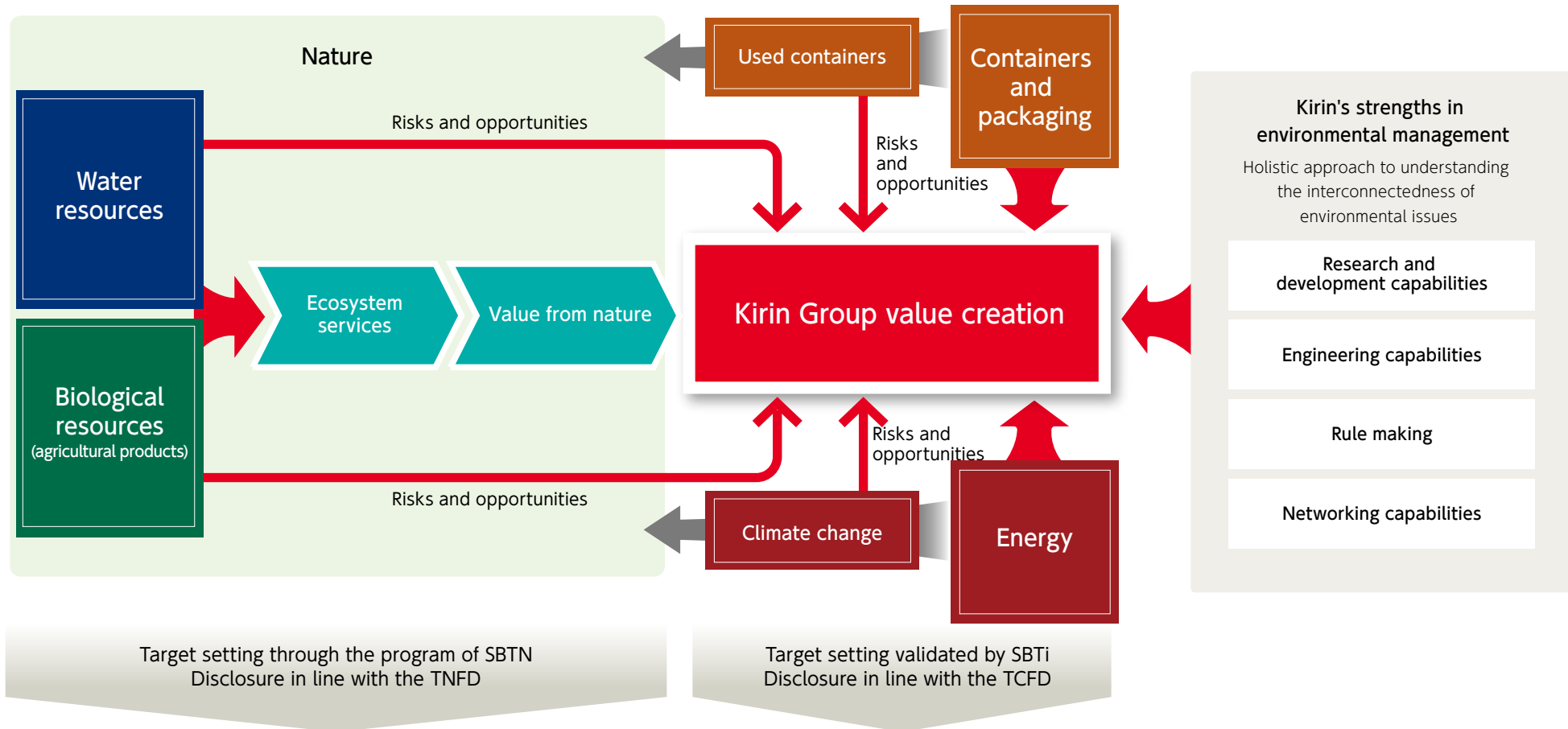
Biological Resources A society that values sustainable biological resources.	Cultivate, expand and procure sustainable agricultural raw materials <ul style="list-style-type: none"> ● Procure agricultural raw materials that comply with certification schemes, such as FSC, RSPO and the Rainforest Alliance. ● Cultivate agricultural raw materials that are suited to global warming and expand them to raw material production areas. ● Promote recycling and reduction of product waste, thereby bringing food waste generated by production activities to zero. Stand by the side of farmers to make raw material production areas sustainable <ul style="list-style-type: none"> ● Expand support in acquiring sustainable certifications, such as the Rainforest Alliance, and solve environmental issues, etc., in production areas. ● Examine and research contributions to affluent biodiversity by sustainable agriculture and expand the outcomes to raw material production areas.
Water Resources A society that values sustainable water resources.	Bring water, used as a raw material, to a sustainable state <ul style="list-style-type: none"> ● Continue to reduce the volume of water use in group operational bases. ● Further promote water source forestation activities in Japan. Solve problems with water in a way that suits the characteristics of basin regions where our business bases are located <ul style="list-style-type: none"> ● Minimize risk during water-related disasters by reinforcing resilience and efficiency for supply chains. ● Implement water source preservation activities and education programs to preserve water in raw material production areas, thereby solving water issues in the value chain.
Containers and Packaging A society that circulates containers and packaging in a sustainable way.	Develop and disseminate sustainable containers and packaging <ul style="list-style-type: none"> ● Use sustainable containers and packaging that employ recycled materials and biomass. ● Aim to develop new containers and services. Build a resource-recycling system to make containers and packaging sustainable <ul style="list-style-type: none"> ● Take the lead in improving the recycling system in Japan. ● Contribute to collection of resources and establishment of recycling infrastructure in areas where operations are maintained.
Climate Change A society that has overcome climate change.	Realize Net-Zero GHG emission from the entire value chain <ul style="list-style-type: none"> ● Achieve RE100 at an early stage and source the company's energy from 100% renewable energy. ● Realize Net-Zero GHG emissions from in the entire value chain. Lead to build a decarbonized society <ul style="list-style-type: none"> ● Build a business model that contributes to a decarbonized society with customers and other stakeholders. ● Support research to mitigate climate change and expand responsible renewable energy to society.

Our Holistic Approach to Solving Interrelated Environmental Issues

The Kirin brewing philosophy of "Reverence for Life" is behind the Kirin Group's holistic approach. Malt, hops, and water are all blessings from nature, and yeast, which breaks down the sugar in wort into alcohol and carbonic acid and determines the flavor of beer, is also a microorganism. The idea is that in order to produce great-tasting beer, we need to continue to work directly with "life" and study the life sciences. The idea of "Reverence for Life" is based on the teachings of respect for the diversity of humanity and the natural environment of Dr. Albert

Schweitzer, who won the Nobel Peace Prize in 1952, namely his idea that, "I am life that wills to live, in the midst of life that wills to live." This idea also serves as the backbone of our CSV management, in which we contribute to those around us (social value), as well as our own company (economic value). Our corporate culture, which is fostered through developing the life sciences, has led to R&D capabilities and engineering technologies that go beyond areas outside of the life sciences, such as packaging. Both the pursuit of getting our

GHG emissions reduction targets validated against science-based criteria by the SBTi and our intention to contribute to the setting of scientific targets related to natural capital through participation in the corporate engagement program of the Science Based Targets Network stem from an organizational culture that values science. Consortia with NGOs and other companies, collaboration with local communities, and participation in global initiatives are all aspects of our holistic approach.



Kirin's strengths in environmental management

The foundation of our inputs for the Kirin Group's value creation model are our unique "technological capability that assures

value creation" that is unprecedented for a company with origins in the alcoholic beverages business. It is a source of

strength that enables us to solve environmental issues through holistic solutions.

INPUT

OUTCOME

Foundation for innovation

Research and development capabilities

Kirin Central Research Institute

The Kirin Central Research Institute conducts research centered on health science. By combining our diverse strengths and technologies with those in other fields, we promote open innovation and create opportunities for new businesses and services.

Our strengths include: "raw material cultivation and production" technology, of which "mass plant propagation technology" is a representative research achievement; technology for "identifying and evaluating substances with health functions," which has discovered a constituent of matured hops that reduces body fat and a constituent of camembert cheese that improves memory function; technology for the "production of functional substances," which uses microorganisms such as E. coli and mold to ferment and produce raw materials for pharmaceuticals and bioactive substances; and "advanced constituent analysis" technology, which uses a combination of structural analysis called the crystalline sponge method, instrumental analysis, and information analysis to identify target constituents in samples and identify their structures in detail.

The Kirin Central Research Institute also successfully discovered the function of Lactococcus lactis (LC) Plasma. In September 2021, we announced that in a joint study with the Tropical Infectious Diseases Research & Education Centre at the University of Malaya (Vice Chancellor: Dr. Mohd Hamdi Abd Shukor) in Malaysia, the Kirin Central Research Institute confirmed that taking Lactococcus lactis (LC) Plasma for two months significantly reduced the cumulative number of days of fever, muscle pain, joint pain, pain behind the eyes, and other symptoms known to be the main symptoms of dengue fever. Kirin Holdings and the University of Malaya are accelerating joint research aimed at verifying the antiviral effect of this lactic bacteria on tropical diseases other than the dengue virus.

Institute for Packaging Innovation

The Institute for Packaging Innovation develops and evaluates technologies related to packaging lines and packaging and containers used in the Kirin Group's alcoholic and non-alcoholic beverages businesses. The Institute for Packaging Innovation engages in activities such as the in-house development of containers and packaging, as one of the few research laboratories of its scale owned by a global alcoholic beverage company. Based on the technologies it has accumulated over many years in areas such as glass bottles, cans, PET bottles, cardboard cartons, and other paper packaging, the Institute for Packaging Innovation provides the necessary technical assistance to bring products to market by utilizing AI technology, kansei (affective) engineering, and other technologies, and creates technical "seeds" that enrich the lives of our customers and society through new containers and packaging. The Institute is as well-equipped as a small plant, with machinery to fill glass bottles and aluminum cans with beer, as well as equipment to attach labels to bottles.

At Kirin, we are working to develop technologies for high-purity recycling and "chemical recycling" based on the chemical decomposition, purification, and repolymerization of PET bottles, as part of our aim to create a "society that continuously recycles plastics."

Engineering capabilities

Kirin Group engineering

As a manufacturer, production equipment is an essential part of our business, and it is vital that we possess the engineering capabilities to quickly develop facilities that are capable of efficiently producing quality products while being eco-friendly and comfortable for workers. The Kirin Group has set up engineering organizations within each operating company to ensure that our production facilities are supported by engineers with a thorough understanding of manufacturing processes, production technology, and maintenance techniques. The Kirin Group owns Kirin Engineering, a general engineering company specializing in the construction of plants producing beer, non-alcoholic beverages, pharmaceuticals, and other products. This company is engaged in the large-scale construction, expansion, and remodeling of production facilities for both for Kirin Group companies in Japan and overseas and companies outside the Group. The capabilities of these engineering organizations are strengths of the Kirin Group, and support environmental measures in our business domains, ranging from food and beverages to pharmaceuticals.

Rule making

The Science Based Targets Network

An organization that sets science-based targets related to natural capital and aims to create sustainable systems for the Earth. The Kirin Group's medium-term GHG emissions reduction target is approved by the Science Based Targets Initiative (SBTI) as 1.5° C-aligned, and we are the first company in the Japanese pharmaceutical and food and beverage industries to participate in the SBT for Nature Corporate Engagement Program (CEP), an initiative for setting targets related to natural capital.

The TNFD Forum

We are the first Japanese food and beverage and pharmaceutical company to participate in and support the TNFD Forum, which shares the mission and vision of the Taskforce on Nature-related Financial Disclosures (TNFD) for companies to report and act on risks related to natural capital.

Taskforce on Climate-related Financial Disclosures

The TCFD (Task Force on Climate-related Financial Disclosure) was established to consider how to disclose climate-related information and how financial institutions should respond, and published its final report in June 2017. The Kirin Group began disclosing information in accordance with the TCFD Recommendations in 2018.

Alliance To End Plastic Waste

In March 2021, the Kirin Group became the first Japanese food company to join the Alliance To End Plastic Waste (AEPW), an international non-profit organization dedicated to solving problems related to waste plastic in the environment. By solving the world's plastic waste problem from a global perspective, we aim to create a "society that continuously recycles plastics," together with other participating companies.

Networking capabilities

NGO

The Kirin Group works with international NGOs such as the Rainforest Alliance, WWF Japan, FSC Japan, and Earthwatch Japan to address various environmental issues.

Consortiums

We collaborate with other companies and NGOs, including the Consortium for Sustainable Paper Use and the Rainforest Alliance Consortium.

Local communities

We engage with people in producing areas to identify issues and consider and implement solutions, including local communities in Sri Lanka, which is a major tea producing area, and areas around the fields that Mercian manages.

Next generationa

We promote engagement with the next generation through collaboration with the Kirin School Challenge, Japan Environmental Youth Network, etc.

Holistic solutions to environmental issues

Technological capability that assures value creation

Message from Top Management

Environmental Strategy

Indicators and Goals

Activity



Disclosure based on TCFD recommendations

Environmental Management

Environmental Data

Implementation of Our Vision and Approach ~Message from Group Employees~


The distinctive feature of the Kirin Group's holistic approach is that we are not merely working to achieve individual goals, but instead our activities are based on Group employees' awareness of the interconnectedness of environmental issues in their efforts and a better understanding of the world that we are aiming for in the environmental vision. By recognizing that solutions for these issues can also lead to solutions for other environmental issues and have a positive impact on people involved in the value chain and local communities, we are able to add breadth and depth to our activities and enable Group employees to work with a sense of mission.

Strengthening measures to reduce GHG emissions in order to mitigate the impact on agricultural raw materials and water

In order to mitigate the impact of climate change on biological resources and water, the Kirin Group has established a strategy and roadmap through 2030 to achieve our GHG emissions reduction targets, which we have significantly raised compared with previous targets. In order to achieve net zero emissions throughout the value chain as a whole by 2050, we have upgraded our medium-term target for reducing GHG emissions to the new SBTi standard of a "1.5 ° C target." We have also joined RE100, and will take steps to use renewable energy for all electric power that we use by 2040.

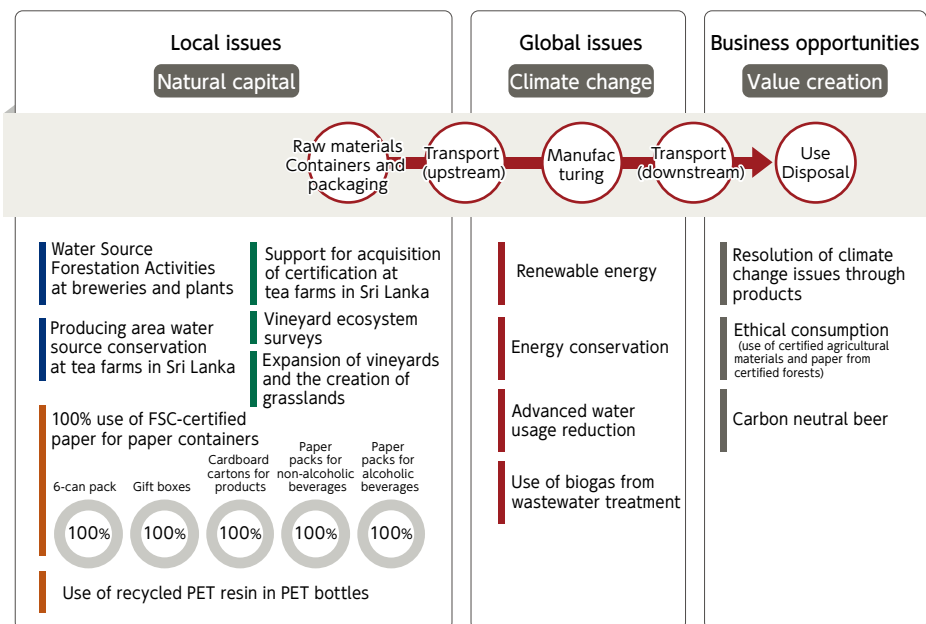
The Kirin Group focuses on the "additionality" of renewable energy in our efforts. Our approach is to contribute to the decarbonization of society by adding and increasing the amount of renewable energy. The first step was the installation of large-scale solar power generation facilities at Kirin Brewery's plants in Japan. We also take "ethicity" into consideration. Renewable energy that people create by destroying nature, such as palm plantations that people create by cutting down tropical rainforests and biomass-power generation from precious forests, is unacceptable. We believe that we must avoid installing facilities that adversely affect the surrounding environment and generating power from renewable energy that is vulnerable to disasters.

Kirin Brewery
Manager of Technology Development Department, Production Division
Emiko Sekikawa



Leading the creation of a decarbonized society by introducing renewable energy with a focus on additionality

Following the installation of large-scale solar power generation facilities at the Yokohama Brewery in 2016, we continued introducing these facilities and completed the introduction of such facilities at all nine Kirin Brewery plants by our investment at the Fukuoka Brewery in March 2022. As a result, we expect to reduce GHG emissions by approximately 5,800 tons of CO₂e per year, while also increasing the proportion of renewable energy in electric power used by Kirin Brewery as a whole from approximately 18% as of 2020 to approximately 34%. We achieved a 100% rate of renewable energy for all procured power at the Kirin Brewery Sendai Plant in April 2022, after doing the same at the Nagoya Plant in 2021. The brewery will emit zero GHG emissions from purchased electricity, and we intend for it to reduce GHG emissions by approximately 4,500 tCO₂e per year. We aim to reduce GHG emissions in a profit and loss neutral way over the medium- to long-term, by implementing energy conservation measures with significant cost-cutting effects at an early stage and using funds saved from the reduction of energy costs to introduce renewable energy.



Large-scale solar power generation facilities at breweries and plants

Use of sustainable biological resources through support for the acquisition of certification at tea farms in Sri Lanka

In response to a survey on risk related to biodiversity in 2011, the Kirin Group formulated the Action Plan for the Sustainable Use of Biological Resources. As a key pillar of this initiative, since 2013, we have been supporting the acquisition of Rainforest Alliance certification by tea farms in Sri Lanka, which we are highly dependent on as a major producer of tea leaves, an ingredient in *Kirin Gogo-no-Kocha*.

We initially considered the option of buying tea leaves from certified farms. In our surveys, however, we found that a long civil war had only recently ended in Sri Lanka and few farms was able to afford the training costs required to obtain certification. Rather than leaving behind these farms, we chose to focus on improving the sustainability of Sri Lanka's tea industry as a whole. We believe that if, through our support for the acquisition of certification, tea farms take the natural environment into consideration, and the working and living environments of farm laborers improve, many tea farms will become sustainable, and we will be able to use tea leaves with peace of mind in the future. By the end of 2021, Kirin had supported the acquisition of certification at 94 tea farms, equivalent to approximately 30% of all certified large tea estates in Sri Lanka. In 2018, we also began supporting small farms, and since then 120 tea farms have obtained certification.



Kirin Beverage
Senior Brand Manager, Marketing Department
Mariko Kato

Strengthening the resilience of tea plantations to climate change and water problems

Our activities to support the acquisition of certification, which began with the conservation of biodiversity, are expanding to a response to water risk and stress. Specifically, we guide farms on how to prevent the outflow of fertile soil in heavy rain by planting grasses with deep roots that crawl the ground. In 2018, we started water source conservation activities at tea farms, where we fence off water sources, to prevent local residents from using them for other purposes, and we also provide educational opportunities for them to learn about the importance of water sources, etc. These measures have also contributed to improving the resilience of tea farms against climate change.

In our surveys, we found that support for the acquisition of certification has a positive economic and social impact on tea farms and the people who work there. We will continue to build better partnerships with producing areas and support them in the future. Furthermore, we are also endeavoring to make our customers aware of the tea farms' efforts through our products that use tea leaves from certified farms.



250ml LL slim *Kirin Gogo-no-Kocha* Straight Tea with a mark of certification

Rainforest Alliance certification is a certification for farms that the Rainforest Alliance has recognized for their commitment to more sustainable farming practices while protecting nature and farmers.

Revitalizing Japan's Satoyama landscapes by expanding vineyards at Japan Wine Industry

Mercian's vision is to "make Japan recognized as one of the world's foremost wine regions." As such, in order to produce wine of world-class quality in a stable manner, Mercian decided on a policy of expanding vineyards that it manages itself and thereby secure high-quality grapes on an ongoing basis. Accordingly, in 2003, the company opened Mariko Vineyard in Ueda City, Nagano Prefecture. In 2014, in order to confirm the environmental impact of converting derelict farm land into vineyards, we started an ecological survey at Mariko Vineyard in joint research with the National Agriculture and Food Research Organization (NARO).

In this survey, we were surprised to find many insects and plants, including endangered species, in Mariko Vineyard, where we grow important grapes. According to a lecturer from NARO, the vineyard cultivated in hedgerow style, with grass growing under the vines, along with proper undergrowth cutting, have enriched the ecosystems that this vast good-quality grassland has created. In this way, increasing Japan Wine vineyards will also contribute to the regeneration of Satoyama landscapes. Chateau Mercian Mariko Winery is the only winery in Japan to have been included in the Top 50 of the "World's Best Vineyards," authoritative global awards, for two consecutive years, since 2020. Chateau Mercian has established coexistence with nature, the local community, and the future as an important keyword. In order to put this theme into practice, employees engage in activities such as replanting rare and native species of plant life, and working with NGOs, volunteers, and local elementary schools to increase shrubby sophora (*Sophora flavescens*)*. Since January 2022, 100% of electricity purchased at three wineries (Katsunuma, Mariko, and Kikyogahara) has been generated from renewable energy, and we have also reduced GHG emissions from purchased electricity to zero.



Mercian
Group Manager, Brands Group, Marketing Department
Aya Jindo

* Shrubby sophora (*Sophora flavescens*): The only edible grass for feeding *Shijimiaeoides divinus*, a butterfly that the Red List of the Ministry of the Environment lists as critically endangered IA (designated as endangered IB by Nagano Prefecture).

Working with wineries around the world to make more sustainable wines

In 2022, we teamed up with wineries taking on the challenge of making sustainable wine around the world to launch "Mercian Wines," a new brand of imported wine.

Mercian's long-time partner, Concha y Toro (Chile), the producer of Sunrise, which Mercian has sold for 25 years, is a leader in the global wine industry in areas such as the introduction of green power, the reduction of water consumption, and activities to protect ecosystems. Mercian, which engages in ecological surveys, plant life regeneration, the introduction of green power, and other activities, is also aiming in the same direction. We hope to make Japan Wine even more sustainable by working together with sustainable and advanced wineries.



Ecosystem Survey in Mariko Vineyard, a hedgerow style vineyard



Argyrotaenia japonica (a vulnerable species on the Ministry of the Environment's Red List. Near threatened species on the Nagano Red List)



Hemerocallis citrina var. *vespertina* (near threatened species on the Nagano Red List)

Management summary: climate change

Transition plans related to climate change

The Kirin Group has been continuously performing scenario analysis since 2017, and we have found that climate change will cause significant declines in agricultural products that are important raw materials for the Kirin Group, water stress and water risk, and an increase in energy costs. Wherever we emit GHG, they result in global warming. Accordingly, this is a global environmental issue, and we must all take responsibility. In order to respond to this crisis, the Kirin Group has formulated a roadmap for mitigating climate change, which we began implementing in January 2022, following deliberations and a resolution by the Group Executive Committee. When executing this roadmap, we will aim to balance economic and environmental considerations, as we aim to achieve our Science-based 1.5°C target with profit and loss neutrality by 2030, across the Group as a whole. We have incorporated climate change adaptation measures such as sustainable agricultural production and measures to address water stress into our management plans as non-financial targets. The transition plan we present here is a summary of this roadmap. For more information on disclosure based on the TCFD recommendations, please refer to (→P.72), and for a report on our activities, please refer to (→P.25).

Target

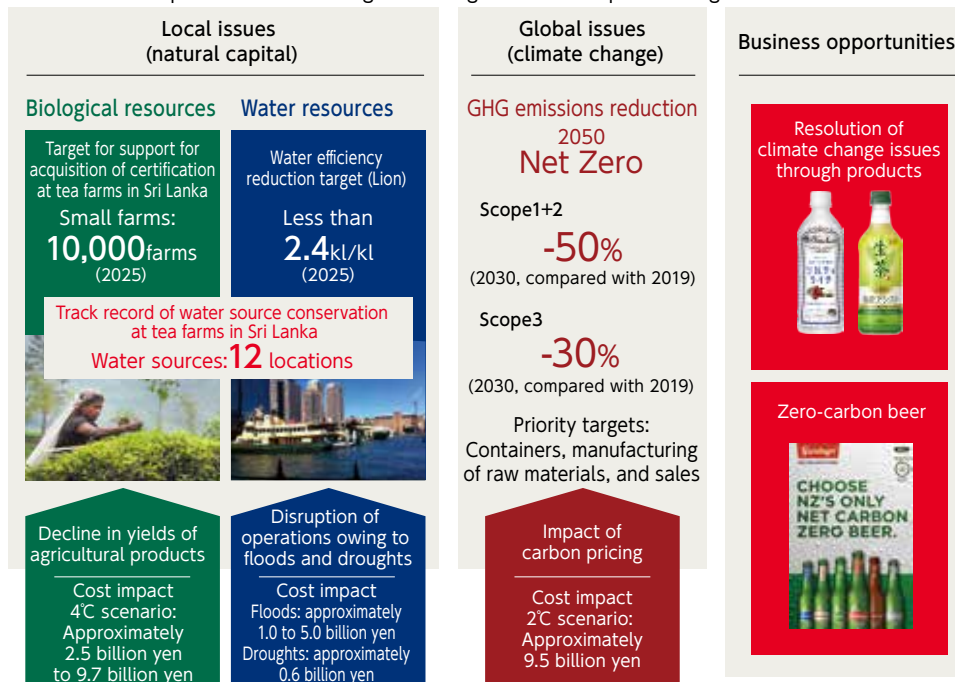
The Kirin Group's long-term climate target is to "achieve net zero GHG emissions across the entire value chain by 2050," which we set in the "Kirin Group's Environmental Vision 2050," as deliberated and resolved by the Board. As medium-term targets to achieve this long-term target, we commit to reduce the total of Scope 1 and 2 GHG emissions 50% and Scope 3 GHG emissions 30% compared with 2019 by 2030. The SBTi, an international initiative, has approved these targets as science-based net-zero and 1.5°C targets respectively. By 2040, we have committed to use renewable energy for 100% of our electric power usage upon joining RE100. We have set detailed targets related to agricultural products and water resources for each group company.

We have also incorporated these indicators for target setting into executive officers' performance evaluations. In addition to financial indicators, we have a system in place where we consider matters related to climate change when determining the level of achievement for performance-linked remuneration.

Management

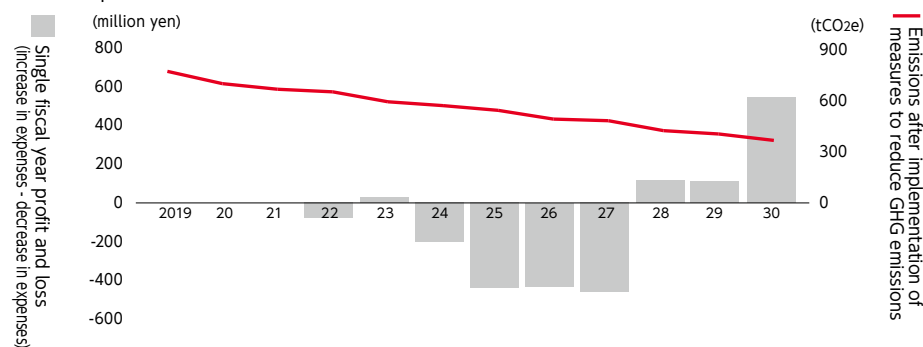
Kirin Holdings has delegated corporate functions related to activities aimed at reducing GHG emissions across the Group as whole to the Technology Development Department of Kirin Brewery, which provides technical support to each company to help them achieve their targets and coordinates efforts within the Group to achieve targets for the Group. We have broken down targets for the Group into targets for each company, and we will aim to achieve group-wide targets through each company working autonomously to achieve their targets. We have set these targets as performance indicators in each company's CSV Commitment, a non-financial KPI, thus reflecting them in the management plans of each company. We added up data for each group company to create our plans through 2024, and we think the possibility of achieving these plans is high. We will achieve our SBT for 1.5°C on a profit and loss neutral basis by using cost savings from energy conservation to offset renewable energy procurement costs and depreciation. We have formulated our roadmap such that it will allow us to achieve on a profit and loss neutral basis without taking into consideration ICP (Internal Carbon Pricing: a method where a company sets its own carbon prices and utilizes them for strategies and decision-making as an organization). As of February 2022, we use

Main financial impact of climate change and mitigation and adaptation targets



* We estimated the "decline in yields of agricultural products" and "carbon pricing" in 2050

Plans for profit and loss neutral reduction of GHG emissions



63 US dollars/tCO_{2e}, or 7,000 yen/tCO_{2e}). If, however, we take ICP into consideration, we expect to accelerate our progress. Under our current roadmap, approximately 70% of the reduction of overall GHG emissions will come from the procurement of renewable energy. Accordingly, in the future, we will increase our energy-conservation measures and thereby enhance economic efficiency as we look to achieve our target. We reflect investment and expenses required to achieve our targets in the management plans of each company, and the Finance Department and Technology Development Department work together to assess economic efficiency whether these plans will be profit and loss neutral over the long term. We will monitor the implementation of measures at group companies and rates of decline in GHG emissions after implementation, etc., and update our roadmap as appropriate.

Reduction of Scope 1 and Scope 2 emissions

The Kirin Group takes three approaches to reducing direct GHG emissions: (1) promotion of energy conservation, (2) expansion of renewable energy, and (3) energy transition.

We will focus mainly on the promotion of energy conservation and the expansion of renewable energy until 2030. From 2030 onward, in order to achieve our net zero emissions target in 2050, we must also promote energy transition, i.e., converting combustion fuels used in steam brewing and manufacturing processes from fossil fuels to hydrogen and other fuels that do not emit GHG. We expect that converting to energy that is free from GHG will require some time for technical development, infrastructure development, etc. Accordingly, we are preparing to take various measures at our facilities and solve technical issues. When selecting renewable energy, we will prioritize "additionality," i.e., the contribution to the decarbonization of society through the addition and increase of new renewable energy power sources, and "ethicality," i.e., the responsible expansion of the use of energy, from the perspective of the environmental impact and human rights.

Reduction of Scope 3 emissions

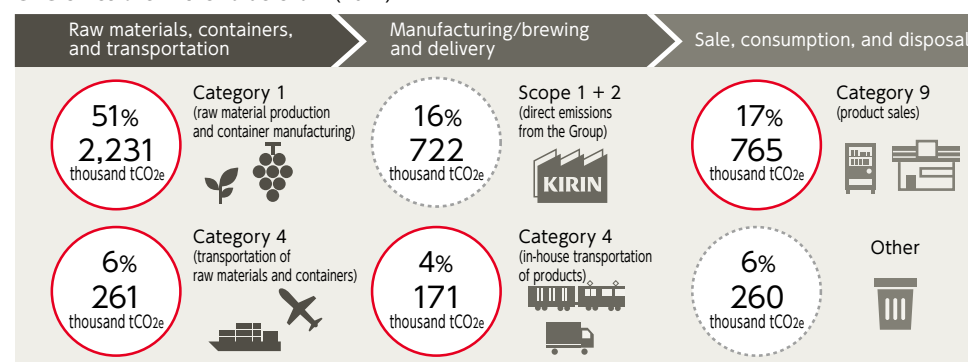
Approximately 80% of GHG emissions from the Kirin Group's value chain are Scope 3 emissions, and we must work with many stakeholders outside the Kirin Group to reduce such emissions. We think this is an opportunity for both the Kirin Group and our stakeholders to create economic and social value, and we thus intend to lead the creation of a decarbonized society. Of the 15 categories defined in the "GHG Protocol," the largest proportion of Kirin Group Scope 3 emissions, at approximately 60%, are category 1, i.e., associated with the production of ingredients and materials. Category 4 (emissions associated with transportation) and category 9 (emissions associated with sales) also each account for a significant proportion of the total. Accordingly, we will define these three categories as priority categories when implementing related initiatives. We will achieve our target for the reduction of Scope 3 emissions by implementing two approaches in parallel: "reduction of our own independent emissions" and "encouragement of reduction at business partners."

Even when "encouraging reduction at business partners," we will emphasize positive impact and additionality, and will prioritize engagement with suppliers over the suspension of transactions. We have already held briefings to share information on the Kirin Group's policies, and we are currently working to confirm emissions reduction plans at each company and the status of progress in both quantitative and qualitative terms through questionnaires for major suppliers. Going forward, we will consider initiatives aimed at the procurement of low-carbon ingredients and materials based on data that we have identified. We will also engage in regular communication on the theme of climate change.

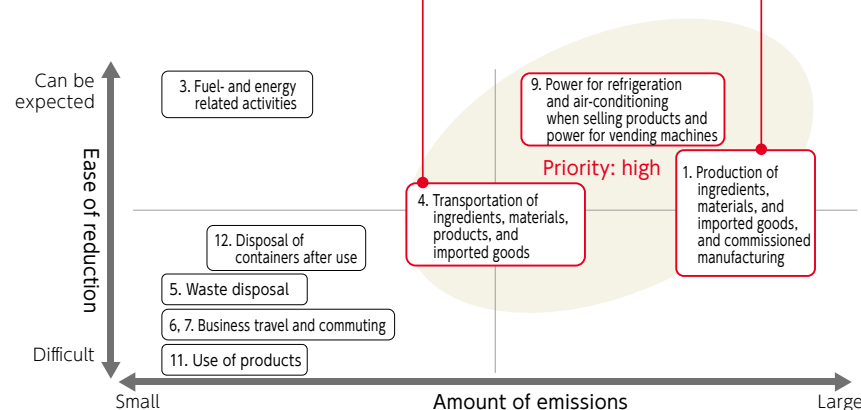
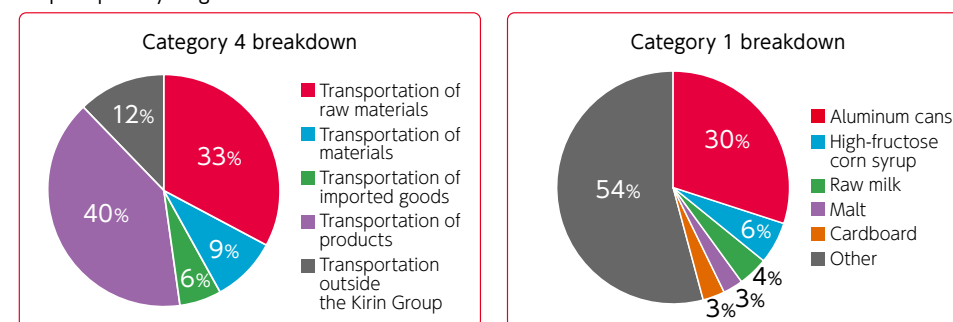
The reduction of Scope 3 emissions is an issue not just for the Kirin Group, but across society as a whole. Accordingly, we intend to share issues with industry peers, various industry organizations, and other bodies, and clarify the domains where we can cooperate. In order to accurately reflect our initiatives to reduce emissions in the calculation of Scope 3 emissions, we will change the database we use for these calculations to IDEA.* We will also consider utilizing external platforms in order to gather accurate data. Containers and packaging will be a key theme in the "reduction of our own independent emissions." We will work to make containers and packaging lighter utilizing our strength – the fact that we have a globally unmatched research institute where we conduct in-house container and packaging development – while also expanding the use of "sustainable containers and packaging," which we will create by recycling used containers. In this way, we reduce GHG emissions associated with the manufacture of ingredients and materials. With regard to transportation, we will operate both production and logistics in an integrated manner that takes into consideration the risk that we will be "unable to transport" products owing to truck driver shortages and other factors. At the same time, we will also continue joint deliveries and our modal shift. In sales, we will take on new challenges, such as zero-carbon products.

* Calculated retrospectively from 2019, the SBT base year, using IDEA (Inventory Database for Environmental Analysis). IDEA is an LCA database offered by the National Institute of Advanced Industrial Science and Technology (AIST). There are plans for regular renewal and the creation of overseas coefficients, and it is in the process of becoming used as standard in Japan.

GHG emissions in the value chain (2021)



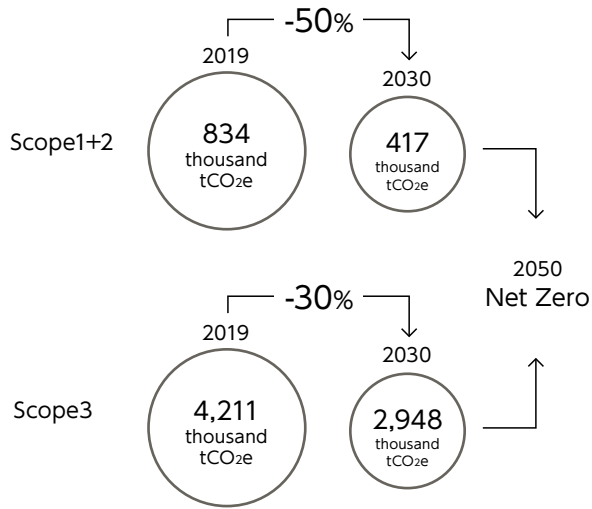
Scope 3 priority targets and emissions ratios



The future

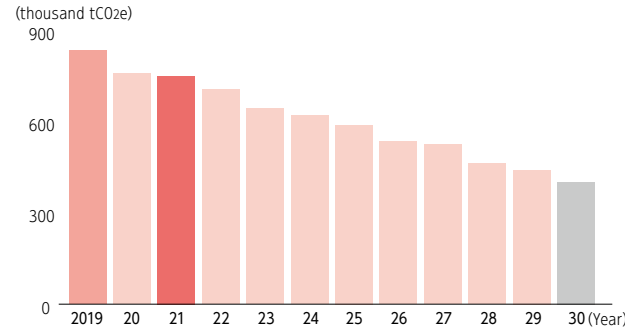
In our roadmap, which forms the core of our transition plan, we intend to update our plans every year to reflect the latest changes in the environment within and outside the Kirin Group, and thereby increase the accuracy of our plans. We intend to continuously implement initiatives to lead the creation of a decarbonized society and create value in both financial and non-financial terms, while also having a positive impact on society.

1.5°C targets

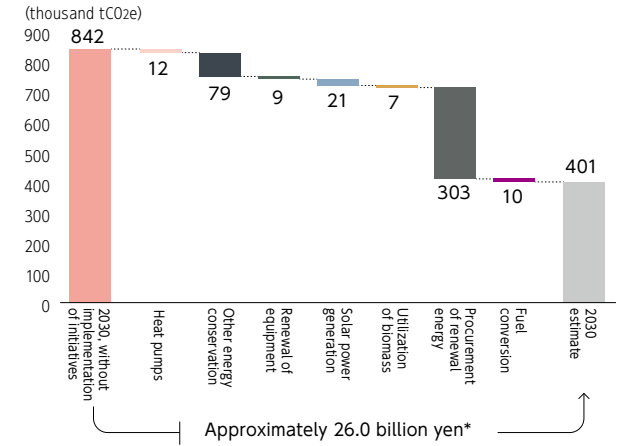


Plans through 2030 (Scope 1 + Scope 2)

Scope 1 + 2 emissions after implementation of measures to reduce GHG emissions

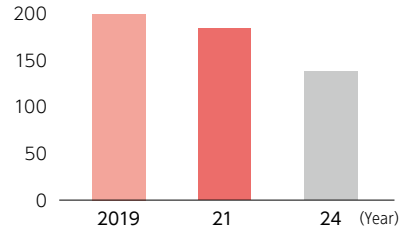


Breakdown of plans to reduce Scope 1 + 2 GHG emissions

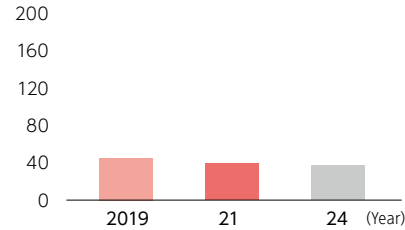


Plans through 2024 (Scope 1 + Scope 2)

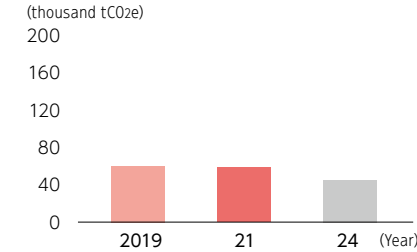
Kirin Brewery



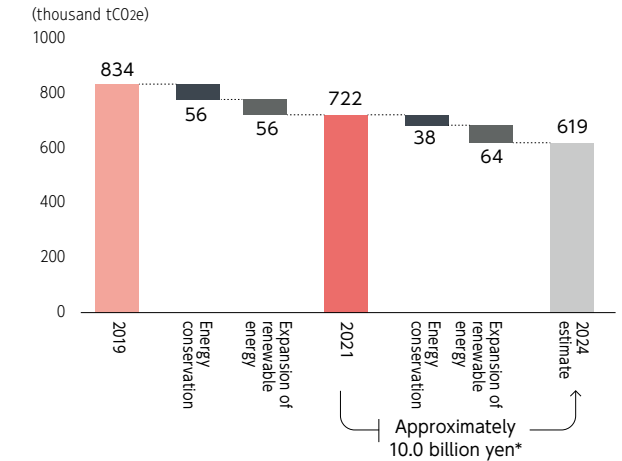
Kirin Beverage



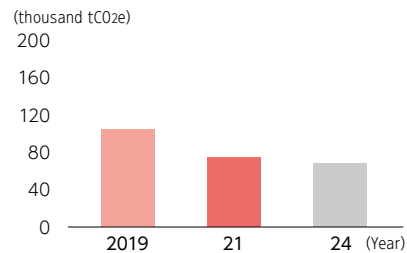
Mercian



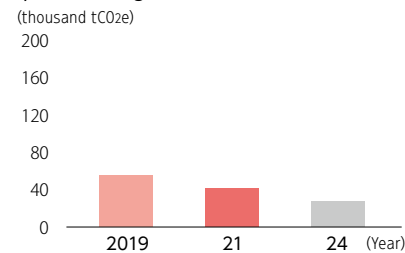
Breakdown of GHG emissions reduction (2019 to 2024)



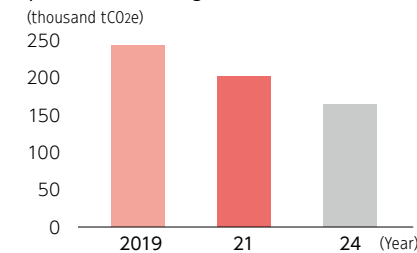
Lion



Kyowa Kirin (global)



Kyowa Hakko Bio (global)



* "Environmental investment" is the total of capital investment and the increase in costs to procure renewable energy. Data from 2025 onward are expected amounts based on our current roadmap, and are subject to revisions as necessary.

More information on environmental investment to achieve our Science-based 1.5°C target → P.76

Management Summary: Natural Capital (Biological and Water Resources)

Awareness of Natural Capital and "Location"

Holistic understanding and disclosure of climate change and natural capital

In May 2021, the Finance for Biodiversity (F4B) initiative released "The Climate-Nature Nexus: Implications for the Financial Sector," which emphasizes the concept of "The Climate-Nature Nexus." This concept considers climate change and natural capital not separately, but in a holistic manner. The Kirin Group's businesses depend on natural capital and it has understood that climate change has a major impact on agricultural raw materials and water, which is also concluded from the scenario analysis based on TCFD recommendations. Our approach is to solve environmental issues holistically based on the premise that they are interrelated rather than independent. As such, the assertion of "The Climate-Nature Nexus" is exactly what we have been trying to achieve. In the future, we intend to use the TCFD and TNFD frameworks to advance integrated disclosure.

LEAP approach focusing on "Location"

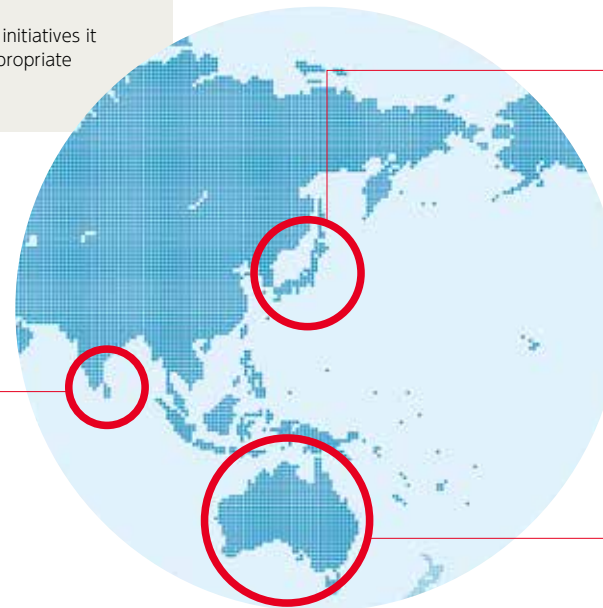
The LEAP approach involves analytical activities in the following order: Discovering the nature interface (Locate), diagnosing dependencies and impacts (Evaluate), assessing risks and opportunities (Assess), and preparing to address nature-related risks and opportunities and reporting back to investors (Prepare). This is a new approach to assessing and prioritizing natural capital dependence and impacts, with a focus on "Location".

The Kirin Group intends to use the LEAP framework to organize and deepen the initiatives it has been pursuing as a company dependent on natural capital, and to make appropriate disclosures.

"Locations" that have a significant impact on our businesses and are important in terms of the natural and social environment.

Sri Lankan tea farms

- Locate** The delicious taste of *Kirin Gogo-no-Kocha* is supported by tea farms in Sri Lanka. Water sources of large coastal cities exist on the farms.
- Evaluate** Approximately 25% of the Sri Lankan tea leaves imported by Japan are used by *Kirin Gogo-no-Kocha*. Tea production areas face increased water risk and stress due to climate change, while heavy rains run off fertile soils.
- Assess** If Sri Lankan tea leave on which Kirin is highly dependent, cannot be used sustainably, the product concept will fail.
- Prepare** Supporting Sri Lankan tea farms in obtaining The Rainforest Alliance certifications since 2013. Widely publish the number of farms obtained the certificate and the number of farms trained in environmental reports, and on the Web.



Global and local perspectives

The Kirin Group took the opportunity of Tenth Meeting of the Conference of the Parties to the Convention on Biological Diversity held in Nagoya in 2010 to conduct a risk assessment of biological resources and understand the dependence of its operations on the natural capital of specific regions. It is to address this issue that we have begun supporting the acquisition of The Rainforest Alliance certifications in Sri Lanka, the main producing area of tea for *Kirin Gogo-no-Kocha*. In the area of water resources, we are acting on our early recognition that water stress and risk vary widely by country and region given our experience conducting business in Japan and Australia which have highly contrasting water resources and water stress.

Our scenario analysis also confirmed that climate change will have extreme physical impacts on natural capital in certain areas. Based on this experience, the Kirin Group understands both that global warming is a global issue and that GHG emissions must be reduced at all companies and that natural capital, such as biological and water resources, needs a local perspective because its characteristics differ by region and location. This is why the Kirin Group is making holistic efforts as proposed the LEAP (Locate-Evaluate-Assess-Prepare) approach in the beta version of the TNFD Disclosure Framework.

The Japanese wine where "Location" determines the characteristics of the product.

Mariko Vineyard

- Locate** An important factor that determines the taste of wine is "terroir" or the character of the land. The vineyard is an area that remains natural and inhabited by rare species of plant and wildlife.
- Evaluate** Expansion of vineyards is necessary for the expansion of the Japanese wine, and the target is derelict land.
- Assess** Joint research with the National Agriculture and Food Research Organization (NARO) revealed that converting derelict land into vineyards creates high-quality grasslands and contributes to a rich ecosystem.
- Prepare** Contributing to Nature Positive and 30 by 30.

"Locations" where water risks are high and water resource management is particularly important.

Production plants in Australia

- Locate** All Kirin Group Australian brewery locations are in water-stressed watersheds.
- Evaluate** Water stress in Australia is very high both empirically and when measured with such tools as Aqueduct. Once every few decades, when flooding occurs due to torrential rains, the damage is significant.
- Assess** Water-saving technology is the best in the Group, but there remains a possibility that production could be disrupted in the event of a severe drought.
- Prepare** Contribute to the development of the SBTs for Nature methodology and set new goals in line with this. Widely publish joint research results in environmental reports, and on the Web, environmental reports, and on the Web.

Scientific approach to natural capital, including biodiversity

Understanding that the Kirin Group is a business dependent on agricultural products (biological resources) and natural capital such as water, we conducted a risk assessment of biological resources in 2011 and a water risk survey of our global production site watersheds and major agricultural raw material production areas in 2014. We have been working to set data-based targets and initiatives. However, there have been issues that have remained empirical because the methodology for setting targets has not been established. We would also like to contribute to rule-making by participating in a corporate engagement program sponsored by the Science Based Targets Network (SBTN) to assess impacts and set targets based on scientific evidence, such as greenhouse gas emission targets. The AR3T Framework, as set forth in the SBTN Action Framework, is being evaluated on a trial basis as it is consistent with the approach taken by the Kirin Group. The Group considers agricultural raw materials and water resources to be the most vulnerable to climate change and has also identified impacts on natural capital through various studies on physical risks and transitional risks.

Value chain assessment and prioritization

STEP 1 ASSESS Due to the nature of the Kirin Group's businesses, we assess that the Group has a significant impact and dependence on freshwater and terrestrial areas in its upstream agricultural raw materials and manufacturing sites.

SBTN's AR3T framework



Avoid

The Kirin Group depends on agricultural products and forests for its raw materials. We aim to avoid problematic use of biological resources and to use them sustainably in accordance with the Kirin Group Action Plan for the Sustainable Use of Biological Resources established in 2013.

Initiatives and Commitments

- 100% use of FSC-certified paper or recycled paper for office paper by 2030 in major global operations to avoid the use of valuable forest resources. (Achieved in Japan Beer and Spirits and Non-alcoholic Beverages businesses.)
- To avoid deforestation of tropical rainforests, the Group will ensure that 100% of transactions for palm oil used as a primary or secondary raw materials in domestic operations have RSPO certification using RSPO Credits*. (Achieved at present)

*Excluding palm kernel oil

Reduce

If we cannot completely eliminate the burden on the natural environment, we will try to reduce it. Once a scientific goal-setting framework is constructed, goals are re-set accordingly.

Initiatives and Commitments

- Support 10,000 small-scale Sri Lankan tea farms supported in obtaining Rainforest Alliance certification by 2025. (About 30% of the large estates certified in the country received Kirin's support.)
- 2.4kl/kl unit water consumption by 2025 at Lion where water stress is high. (Targets have also been set for Japan Beer and Spirits, Non-alcoholic Beverages, Pharmaceutical, and Biotechnology businesses in line with water stress.)
- Reduce food waste in the Japan Beer and Spirits, and Non-alcoholic Beverage businesses by 75% by 2025 compared to 2015.

STEP 2 INTERPRET & PRIORITIZE

In the freshwater areas, we studied and prioritized the risks and impacts on water quantity in the watersheds of our production sites according to the proposed methodology presented by the SBTN. In the future, we plan to collect data on high-priority production sites with reference to biodiversity indicators based on the IUCN Red List. In terrestrial areas, the AR3T framework was used to examine raw material production areas and organize the procurement of raw materials that do not damage nature, support the sustainability of production areas, and positive impact initiatives.

Trial Prioritization

Country	Manufacturing site	Water stress	Water Use	Biodiversity risk
US	Biokyowa	★★★★★	★★★★★	★★★
Thailand	Thai Kyowa Biotechnologies	★★★★★	★★★★★	★★★
Japan	KYOWA PHARMA CHEMICAL	★★★★★	★★★★★	★★★
Japan	Kirin Brewery Toride Plant	★★★★★	★★★★★	★★★
Japan	Kirin Brewery Yokohama Plant	★★★★★	★★★★★	★★★
Japan	Kirin Gotemba Distillery	★★★★★	★★★★★	★★★
Japan	Kyowa Kirin Fuji Plant	★★★★★	★★★★★	★★★
Australia	Lion Tooheys Brewery	★★★★★	★★★★★	★★★
Japan	Kirin Brewery Nagoya Plant	★★★★★	★★★★★	★★★
China	Shanghai Kyowa Amino Acid	★★★★★	★★★★★	★★★
Japan	Kirin Beverage Shonan Plant	★★★★★	★★★★★	★★★
Australia	Lion Castlemaine Perkins Brewery	★★★★★	★★★★★	★★★
China	Kirin Brewery (Zhuhai)	★★★★★	★★★★★	★★★
US	New Belgium Brewing Fort Collins Brewery	★★★★★	★★★★★	★★★

*Water stress is evaluated using three indicators (Aqueduct's Baseline Water Stress, Water Risk Filter's Baseline Water Depletion and Blue Water Scarcity) that assess the amount of available water resources.

*Water use as a percentage of total use at 14 sites with high water stress

*Biodiversity is assessed by the scores in Species Threat Abatement and Restoration (STAR), namely STAR_T for threat abatement and STAR_R for restoration. These are calculated based on the IUCN Red List for the watershed of the manufacturing site. We also consider whether biodiversity elements triggering Key Biodiversity Area (KBA) criteria such as fish, amphibians, turtles, crustaceans, dragonflies, etc. are present within a 50km radius of the site's watershed.

Restore & Regenerate

We are working to restore ecosystems and water resources in the raw material production areas. We are also involved in water source conservation activities at our domestic plants and in vegetation restoration activities in our domestic vineyards in cooperation with NGOs and local communities.

Initiatives and Commitments

- Harvest 160 tons of grapes from directly managed vineyards in 2024 (In vineyards where grass growth is encouraged, the expansion of the vineyard leads to the growth of the grasslands and enriches the ecosystem.)
- In Sri Lanka, on a cumulative basis from 2022 through 2024, we aim to have 15 sites for on-farm water source conservation, 20,000 people to be educated on water conservation, and 200 people to be educated on wildlife conservation.

Transform

Natural capital initiatives need to be undertaken not only by companies, but also by society and local communities. We will promote collaboration with many stakeholders and contribute to a new disclosure framework.

Initiatives and Commitments

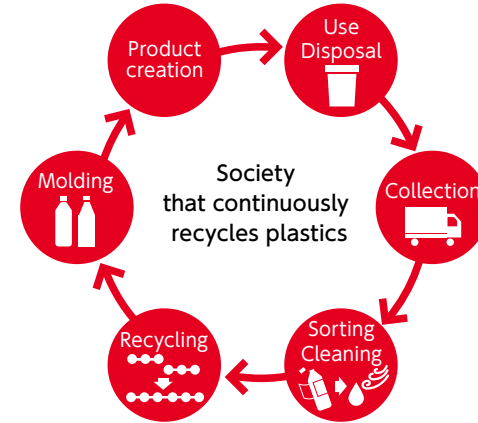
- As a member of the TNFD Forum, we contribute to the development of a framework for financial disclosure of nature-related information through participation in a pilot program.
- The Kirin Group contributes to the development of a scientific goal-setting framework for natural capital as a Corporate Engagement Program participant in SBTs for Nature.
- We apply our experience in establishing a consortium for sustainable paper and tea leaves to collaborate with NGOs and other companies on these and other topics.

Management summary: containers and packaging

Disclosure and dialogue related to the circular economy

As there has been no appropriate disclosure framework that we could use globally for the circular economy including containers and packaging, we have reported on this issue only in the "Activity" sections of our Environmental Reports and other documents. This time, to further promote ESG disclosure and dialogue, we use on a trial basis the framework set forth in "Disclosure and Engagement Guidance to Accelerate Sustainable Finance for a Circular Economy" that the Ministry of Economy, Trade and Industry disclosed in January 2021.

<https://www.meti.go.jp/press/2020/01/20210119001/20210119001.html>



Values	<ul style="list-style-type: none"> ● Kirin and its broad stakeholders enrich society and the Earth for future generations through positive impact on people and the nature (Kirin Group's Environmental Vision 2050)
Business model	<ul style="list-style-type: none"> ● We will develop and disseminate sustainable containers and packaging and build a sustainable resource recycling system for containers and packaging
Risk	<ul style="list-style-type: none"> ● Policy: Stricter laws and regulations related to packaging and its circulation may increase the cost of response and complicate our operations ● Technology: It is possible that innovation will not move forward and there will be no progress in recycling containers and packaging ● Market: If our measures lack consideration for the environment, it may discourage customers from buying ● Reputation: It is possible that we will lose the trust of long-term investors if we are unable to respond appropriately
Opportunities	<ul style="list-style-type: none"> ● Policy: An advanced response can contribute more flexibly and effectively to the circular economy while reducing regulatory complexity and the cost of response ● Technology: Advances in innovation in our container and packaging technology give us a competitive advantage ● Market: Consumers recognize our new environmentally-conscious initiatives, meaning we can pass through costs to prices ● Reputation: Stable investment from long-term investors will continue for us as a sustainable company
Strategy	<ul style="list-style-type: none"> ● Develop new container and packaging technologies at the Institute for Packaging Innovation ● In addition to mechanical recycling, the development of chemical recycling technology for PET bottles will create a society that recycles PET resin from a wide range of other applications, not just used PET bottles ● As for paper, a forest resource, we will expand our efforts to use sustainable paper, which we have already achieved in the domestic alcoholic beverages and non-alcoholic beverages businesses, to all of our businesses, including overseas businesses
Metrics and Targets Governance	<p>Metrics and Targets</p> <ul style="list-style-type: none"> ● Achieve 100% sustainable containers and packaging by 2050 (Kirin Group's Environmental Vision 2050) ● Raise the percentage of recycled resin in PET bottles in Japan to 50% by 2027 (Kirin Group Plastic Policy) <p>Governance</p> <ul style="list-style-type: none"> ● The Board discusses and resolves basic policies and important matters, while the Executive Committee discusses and resolves KPIs

Identification of risks and opportunities

In addition to issues related to climate change, the risks and opportunities related to material environmental issues that are believed to affect the Kirin Group's business and the strategies for addressing them are as follows.

Theme	Scenario	Scenario driver	Time frame			Types of risks and business opportunities	Potential impact			Strategy	Related pages
			S	M	L		L	M	H		
Biological Resources	As a result of global warming, yields of major agricultural raw materials (barley, hops, and coffee beans) decline significantly, affecting procurement costs. Quality degradation is also expected.	Increase in procurement costs due to decline in yields of agricultural products		●	●	Physical risk (acute and chronic) / transitional risk (market and reputation)	■	■		<ul style="list-style-type: none"> •Brewing technology that does not rely on barley •Mass plant propagation technologies •Support for farms to acquire certification for sustainable agriculture 	P80 P33, P80 P28, P29, P32, P80
	Increases in the cost of petroleum-based fertilizers and chemical pesticides due to carbon pricing, as well as competition with biofuel cultivation, affect procurement costs.	Increase in procurement costs of agricultural products due to carbon pricing		●	●	Physical risk (acute and chronic) / transitional risk (market and reputation)		■	■	<ul style="list-style-type: none"> •Brewing technology that does not rely on barley •Mass plant propagation technologies •Support for farms to acquire certification for sustainable agriculture 	P80 P33, P80 P28, P29, P32, P80
	Domestic farm land becomes derelict and distinctive agricultural products and traditional Satochi-Satoyama landscapes are lost as a result of the decline in domestic farmers.	Biodiversity / ecosystem services		●	●	Physical risk (acute and chronic) / transitional risk (reputation)			■	<ul style="list-style-type: none"> •Support for farms to acquire certification for sustainable agriculture •Efforts to enrich ecosystems 	P28, P29, P32, P80 P30, P31
	It is discovered that the environment and the human rights of workers in areas producing agricultural products are not being protected, resulting in a loss of trust from society as a buyer and a decline in brand value.	Biodiversity / ecosystem services Violations of human rights Brand value		●	●	Reputation	■	■		<ul style="list-style-type: none"> •Support for farms to acquire certification for sustainable agriculture •Efforts to enrich ecosystems 	P28, P29, P32, P80 P34, P48, P108, P109
	Supply shortages occur as a result of limits on commercial forestry out of consideration for nature and human rights, as well as a rapid increase in demand for certified agricultural products.	Increase in procurement costs of wood, paper, and agricultural products		●	●	Reputation	■	■		<ul style="list-style-type: none"> •Support for acquisition of sustainable forestry and farm certification systems •Mass plant propagation technologies 	P28, P29, P32, P80 P33, P80
Water Resources	Manufacturing becomes impossible owing to droughts caused by climate change. Society criticizes the company for operating during droughts.	Disruptions to operations due to droughts	●	●	●	Physical risk (acute and chronic) / transitional risk (reputation)	■	■		<ul style="list-style-type: none"> •Advanced water usage reduction technologies •Water stress response for Ingredient Agricultural Production Areas 	P41, P84 P38, P39, P84, P85
	Floods due to extreme rainfall accompanying climate change cause the suspension of production and obstacles to transportation in Japan and overseas.	Disruptions to operations due to floods	●	●	●	Physical risk (acute and chronic)	■			<ul style="list-style-type: none"> •Flood response manual and facility response •Water risk response for Ingredient Agricultural Production Areas 	P81, P82, P83 P39, P84, P85
	Floods due to extreme rainfall and droughts accompanying climate change affect areas producing agricultural products, causing significant declines in yields and affecting our procurement costs.	Decline in yields of agricultural raw materials due to droughts and floods	●	●	●	Physical risk (chronic)	■	■		<ul style="list-style-type: none"> •Measures to address torrential rain and conserve water resources in areas where agricultural raw materials are produced 	P39, P40, P83, P84
	Operation is suspended and brand value declines owing to the pollution of rivers and seas caused by pollutants flowing into wastewater from business sites.	Violations of laws and regulations Scale of damage to surrounding businesses and residents due to pollution	●			Reputation	■			<ul style="list-style-type: none"> •Improvements to environmental management systems 	P106, P107
Containers and Packaging	Climate change results in rapid increases in the price of crude oil, meaning raw material-based resins for PET bottles rapidly increase in price or become difficult to obtain.	Usage rate of recycled resins or plant-based resins	●	●		Physical risk (acute and chronic) / transitional risk (market and reputation)	■	■		<ul style="list-style-type: none"> •Expansion of mechanical recycling •Establishment of chemical recycling manufacturing technology •Creation of social systems for collecting used PET bottles 	P45, P46 P47 P45
	A failure to address marine plastic pollution problems results in a loss of trust from society and a decline in brand value.	Usage rate of recycled resins or plant-based resins	●	●		Reputation	■	■		<ul style="list-style-type: none"> •Expansion of mechanical recycling •Establishment of chemical recycling manufacturing technology •Creation of social systems for collecting used PET bottles 	P46 P47 P47, P53
	With the shift from plastic to paper containers, the use of wood and paper from forests that are not eco-friendly results in a loss of trust from society and a decline in brand value.	FSC and other certification networks and the usage rate of recycled paper	●	●		Physical risk (acute and chronic) / transitional risk (market and reputation) Reputation	■	■		<ul style="list-style-type: none"> •Expansion of the use of FSC and other products with sustainable forest certification 	P48
Climate Change	Carbon taxes are introduced and stringent policy and law are enacted around the world.	Increase in energy costs due to carbon pricing		●	●	Transitional risk (policy and law, technologies, and markets)	■	■	■	<ul style="list-style-type: none"> •Reduction of GHG emissions on a medium- to long-term profit and loss neutral basis 	P15, P16, P60, P87
	The number of persons requiring emergency services as a result of heatstroke doubles owing to rising global temperatures.	Population requiring emergency services for heatstroke	●	●	●	Physical risk (chronic) / transitional risk (market) / products, services, and markets	■	■		<ul style="list-style-type: none"> •Contribution to products that support consumers' immune systems 	P92
	The population exposed to the risk of infectious diseases increases as a result of higher global temperatures.	Population exposed to infectious diseases	●	●	●	Physical risk (chronic) / transitional risk (market) / products, services, and markets	■	■	■	<ul style="list-style-type: none"> •Contribute to products to counter heatstroke 	P94
	Research on responding to climate change cannot be put into practice at the right time. We cannot introduce facilities at an appropriate time.	Research and development capabilities Strengthen engineering functions	●	●		Transitional risk (policy and law, and technologies)		■	■	<ul style="list-style-type: none"> •Research and development capabilities •Strengthen engineering functions 	P89 P89
	Brand value declines as it is pointed out that the renewable energy used by the company affects nature and the scenery, creates noise, is not resilient to disasters, etc.	Violations of policy and law, and human rights, media reporting, and brand value	●	●		Transitional risk (policy and law, and reputation)		■	■	<ul style="list-style-type: none"> •Introduction of renewable energy with additionality •Introduction of renewable energy with consideration for ethics 	P96 P92, P97

Non-financial targets and CSV Commitments (Environmental)

Item	Theme	Non-financial indicators	NEW	←	→	Connection to economic value
Environmental	Climate Change	GHG Reduction rate of GHG emissions (Scope1+2 vs. 2019)				Reduction of cost increase when carbon tax is introduced due to energy saving effect
	Containers and Packaging	PET bottles Percentage of recycled resins used for PET bottles				Profit generation through value creation, stable procurement of PET raw materials
	Water Resources	Water Water use intensity at manufacturing sites with high water stress				Reduction of manufacturing costs, reduction of manufacturing risks due to drought

Message from Top Management
Environmental Strategy
Indicators and Goals
Activity
Disclosure based on TCFD recommendations
Environmental Management
Environmental Data

22

Group Materiality Matrix				
Medium items	Theme	Company/Department	Our Achievements	(Target Year) Target Value
01	Tea leaves	Kirin Beverage	Number of farms supported to obtain Sri Lanka RA certification	(Cumulative total 2022-2024) Farms : 17 Small farms: 5,350
02		Kirin Brewery		(2024)100%
03		Mercian		(2024)100%
04		Koiwai Dairy Products		(2030)100%
05	Sustainable use of biological resources	Kyowa Hakko Bio	Usage ratio of FSC-certified paper or recycled paper for paper containers and packaging *	(2030)100%
06		Kyowa Kirin		(2030)100%
07		Kirin Holdings Health Science Business Dept.		(Cumulative total 2022-2024) Adoption of FSC-certified paper: 8 products Switch to FSC-certified paper: 4 products Switch to non-metallic packaging materials: 2 products
08	Food waste	Kirin Brewery	Amount of product waste reduction rate (compared to 2015)	(2024)50%
09		Kirin Beverage	Amount of product waste reduction	(2024)Continue to expand food bank transactions
10	Sustainable use of water resources	Kirin Brewery	Water intensity	(2024)5.6m ³ /kl or less
12		Mercian (Fujisawa plant)	Water intensity	(2024)3.41m ³ /kl or less
13		Lion(Tooheys, Castlemaine Perkins, James Boag, Pride)	Water intensity	(2025)2.4kl/kl
14		Kirin Beverage (Shonan Plant, Shinshu Beverage)	Water use volumes/Water intensity	(2024)Less than 2023
15		Kyowa Hakko Bio	Reduction rate of water use volumes(compared to 2015)	(2030)32%
		Kyowa Kirin	Reduction rate of water use volumes(compared to 2019)	(2030)40%

Group Materiality Matrix					
Medium items	Theme	Company/Department	Our Achievements	(Target Year) Target Value	
16	Sustainable recycling of containers and packaging	Kirin Brewery	PET bottle recycled resin	(2027)≥50%	
17		Kirin Beverage	PET bottle recycled resin	(2027)≥50%	
18		Mercian		PET bottle recycled resin	(2027)≥50%
19				Reduction of one-way plastic volume Reduction of PET volume(Compared to 2020)	(2024) PET bottles 93t Other plastic bottles 34.5t
20	Other	Lion	Percentage of containers and packaging materials that can be reused, recycled, or composted	(2025)100%	
21			Percentage of container materials that can be recycled	(2025)50%	
22			Kirin Brewery	GHG emission reduction rate (Scope 1+2)(compared to 2019)	(2024)30% (2030)55%
23		Kirin Beverage	GHG emission reduction rate (Scope 1+2)(compared to 2019)	(2024)17% (2030)55%	
24		Mercian	GHG emission reduction rate (Scope 1+2)(compared to 2019)	(2024)25% (2030)55%	
25	Overcoming climate change	Lion	GHG emission reduction rate (Scope 1+2)(compared to 2019)	(2024)35% (2030)55%	
26		Kyowa Hakko Bio	GHG emission reduction rate (Scope 1+2)(compared to 2019)	(2024)32% (2030)55%	
27		Kyowa Kirin	GHG emission reduction rate (Scope 1+2)(compared to 2019)	(2024)51% (2030)55%	
28		Whole Group	Ratio of renewable energy to electricity used by the entire Group	(2040)100%	
29		Whole Group	GHG emission reduction rate (Scope 3) (compared to 2019)	(2030)30%	

●Non-financial targets and CSV commitments are shown only in relation to the environment.

*Paper containers and packaging handled by each operating company, with targets determined by each operating company.Kirin Beverage will continue to use 100% FSC-certified paper for paper containers and packaging.Overseas target companies will check the status of sustainable paper resource procurement and set targets for the future.

Progress (The end of 2021)

Theme	We will create together	Major item	Minor item	Targets	Achievements
Biological Resources	A society that values sustainable biological resources	Supporting Sri Lankan tea farms to obtain Rainforest Alliance certification	Number of largel farms assisted to obtain Rainforest Alliance certification (Number of farms trained) KBC	17 farms (2022~2024)	Total 7 farms (Total number of certified large farms: 94)
			Number of small farms assisted to obtain Rainforest Alliance certification (Number of farms trained) KBC	10000 farms (2025)	Total 2,120 farms
		Others	Use of FSC-certified paper or recycled paper for office paper KB KBC ME	100% (2020)	100%
			Response to sustainable palm oilt KB KBC ME KIW *Except palm kernel oil	100% (2020)	100%
			Reduction of food waste (Compared with 2015 levels) KB KBC ME	-75% (2025)	-80% (2020)
Water Resources	A society that values sustainable water resources	Water reduction	Reduction of water consumption rate LN	2.4kl/kl (2025)	3.8kl/kl
			Rate of reduction of water use volumes (Compared with 2019 levels) KKC	-40% (2030)	-25%
			Rate of reduction of water use volumes (Compared with 2015 levels) KHB	-32% (2030)	-52%
		Water Source Forestation Activities	Number of water source conservation sites KBC	5 sites (2020)	12 sites
Containers and Packaging	A society that circulates containers and packaging in a sustainable way	PET bottles	Ratio of usage of recycled resin for PET bottles KB KBC ME	50% (2027)	4.9%
			Use of FSC-certified paper for 6-can packs KH KB KBC ME	100% (2020)	100%
		Paper container	Use of FSC-certified paper for gift boxes KH KB KBC ME	100% (2020)	100%
			Use of FSC-certified paper for drink boxes KH KB KBC ME	100% (2020)	100%
			Use of FSC-certified paper for cardboard cartons for products KH KB KBC ME	100% (2020)	100%
Climate Change	A society that has overcome climate change	GHG emissions	GHG emissions from the entire value chain KG	Net-Zero (2050)	4,411 thousand tCO_{2e}
			GHG emission reduction rate – Scopes 1 +Scopes 2 (Compared with 2019 levels) KG	-50% (2030)	-13%
			GHG emission reduction rate – Scope 3 (Compared with 2019 levels) KG	-30% (2030)	-12%
		Renewable energy	Ratio of renewable energy in plant purchased electric power KG	100% (2040)	17%

External Evaluation

The Kirin Group conducts transparent information disclosure to its investors and other stakeholders. As such, we have been selected for and rated by the following global indices.

CDP "climate change" category "A-List" (three consecutive years)



CDP "water security" category "A-List" (six consecutive years)

"Gold Award" in the "Environmentally Sustainable Company Category" (two consecutive years)
*Declined in FY2021 due to receiving the award for two consecutive years.



New Thin Film Deposition Technology for PET bottles WorldStar Award and Kinoshita Prize



Kirin Namacha Decaffeinated Tea Drink won WorldStar Packaging Awards



The middle-sized bottle also received WorldStar Packaging Awards



Fuji-Sankei Group Award in the 26th Global Environment Awards



CDP Supplier Engagement Rating "Leader Board" (four consecutive years)



"Environmental Value Award" and highest ranked at the Second Nikkei SDGs Management Grand Prix (three consecutive years)



Kirin School Challenge won the Encouragement Award in the Career Education Awards



Kirin School Challenge won the Judges Committee Encourage Award at the FY2017 Corporate Awards for Youth Experience Activities



Judge's Special Award in the 6th Ikimono Nigiwai Corporate Initiatives Contest



Yokohama Plant won the Green Cities Awards and Green Social Contribution Award



The "Kirin Group Environmental Report 2020" won the "Climate Change Reporting Grand Prize (Minister of the Environment Award)" in the 24th Environmental Communication Award



Development of Lightweight PET Bottle "the 46th Kinoshita Prize for packaging technology"



Minister of Land, Infrastructure, Transport and Tourism Award under the Excellent Green Logistics Commendation Program



Logistics Environmental Grand Prize at the 18th Logistics Environmental Award



Ranked No. 1 in WWF Japan's "Ranking for Corporate Measures Against Global Warming in the Food Sector"



King of Beasts Award in WWF Japan's "Business & Diversity Katte-ni Award"



Selected for the following indices



2021 CONSTITUENT MSCI ジャパン ESGセレクト・リーダーズ指数



FTSE Blossom Japan



FTSE4Good



FTSE Blossom Japan Sector Relative Index

