# E Environment

## Environment

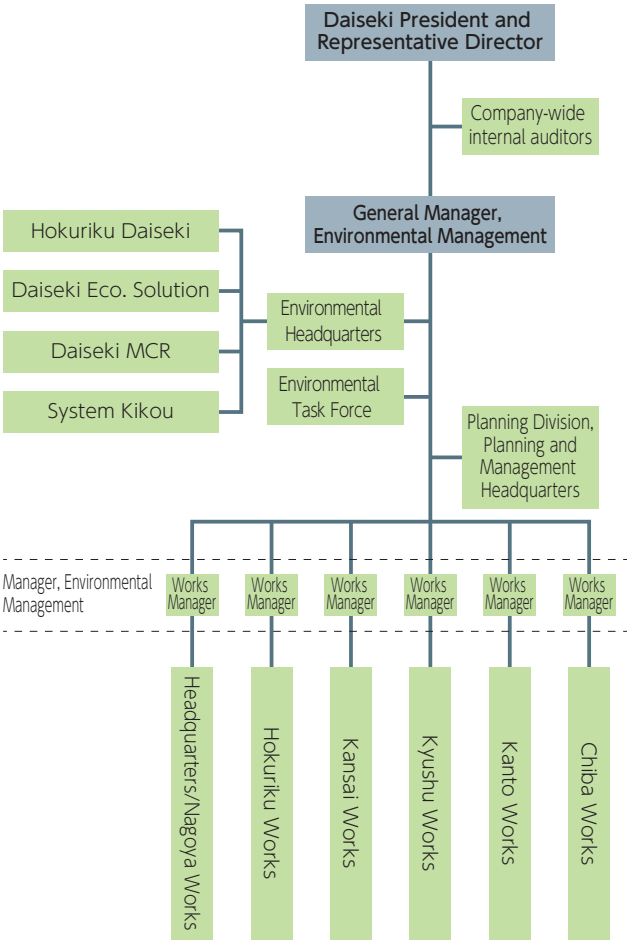
As a venous enterprise running through society feeding into manufacturing and other arterial industries, Daiseki recycles industrial waste to the fullest extent possible, utilizes resources effectively and strives to reduce environmental burdens in the waste treatment process.

# Promoting Environmental Management

## Developing environmentally friendly operations through an environmental management system

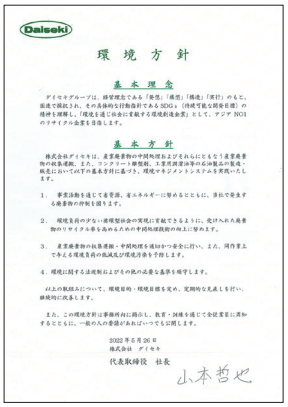
The Daiseki Group has established an environmental management system delivering environmental management led by our President. Our Environmental Headquarters, comprising Daiseki and our Group company management teams, deliberates on and makes decisions regarding priority matters concerning environmental protection and climate change.

**Structure of the Daiseki Group Environmental Management System**




## Formulation of an Environmental Policy and its dissemination to employees

The Daiseki Group has established an Environmental Policy based on the Group's shared core principles and bringing together the core policies guiding environmental initiatives at each of our group companies. Daiseki is raising employee awareness of our Environmental Policy among all staff and working to achieve our targets as a company aiming to create a better environment.


Daiseki

環 境 方 針

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1.

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2022年5月20日
株式会社 ダイセキ
代表取締役 社長
小本哲也

The Daiseki Group's Environmental policies

## Our system for monitoring compliance with environmental laws and regulations

Daiseki, Daiseki Eco. Solution, and Daiseki MCR have acquired ISO 14001 certification. In FY2023, the Daiseki Group received no administrative sanctions (orders for improvement, orders for action, or business suspension orders) under the Air Pollution Control Act, the Noise Regulation Act, or the Offensive Odor Control Act. Additionally, we incurred no fines or penalties with regard to environmental matters.


ISO 14001
マネジメントシステム登録証

登録証番号：JQA-EM0304

株式会社 ダイセキ

ISO 14001：2015 ／ JIS Q 14001：2015

JQA

ISO 14001 Management System Registration Certificate

## Key environmental achievements in FY2023 (Daiseki Group)

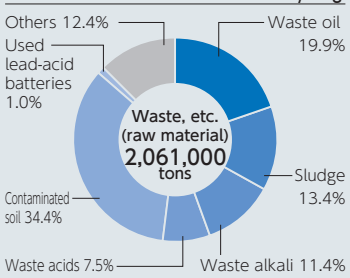
| Amount of materials received for recycling | Recycling rate | $CO_2$ total emission (Scope 1 and 2 only) |
|---|---|---|
| **2,061,000** tons (1,070,000 tons) | **87.7**% (87.1%) | **38,000** tons of $CO_2$ (27,000 tons of $CO_2$) |

Note: ( ) shows the number with Daiseki only

## Perspective of the environmental load by Daiseki Group's recycling business

### INPUT

**Amount of materials received for recycling**



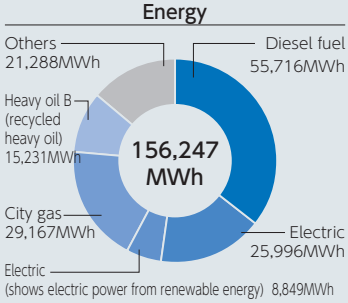

**Supplemental materials** 118,000 tons

**Water** 933,000 tons

**Raw material for petroleum products** 2,000 kl

**Recycled water (rainwater)** 31,000 tons

**Energy**




### Daiseki Group

**Daiseki Group Recycling Rate**

**87.7**%

(Amount of materials received for recycling−intermediate treatment residue (non-recyclable)) / Amount of materials received for recycling ×100

| Waste oil treatment | Treatment of waste acids and waste alkalis | Sludge treatment | Contaminated soil treatment | Lead recycling |
|---|---|---|---|---|
| Waste oil | Waste acid and waste alkali | Sludge | Contaminated soil | Used lead-acid batteries |
| Recycled fuels (recycled heavy oil/ supplemental fuel) | Raw materials for cement (from waste) | Raw materials for cement (from waste) | Raw materials for cement (from contaminated soil) | Recycled lead |
| | Usable metals, etc. | Purification & discharge (purification & discharge after dehydration) | | |
| | Purification/discharge | | | |

Waste collection

Petroleum product manufacturing

### OUTPUT

**Recycled products shipment**

| | |
|---|---|
| Recycled fuels: | 239,000 tons |
| Raw materials for cement (from waste): | 239,000 tons |
| Useable metals and similar: | 9,000 tons |
| Raw materials for cement (from contaminated soil): | 399,000 tons |
| Recycled lead: | 12,000 tons |
| Other recycled materials: | 322,000 tons |

**Drainage to sewer or rivers/other bodies of water**

| | |
|---|---|
| Purification & discharge (sewer discharge) | 937,000 tons |
| Purification & discharge (river discharge) | 320,000 tons |
| Purification & discharge (ocean discharge) | 68,000 tons |

Note: Discharged after purifying to the value under standard

**Intermediate treatment residues (non-recyclable)**

| | |
|---|---|
| Incinerated | 11,000 tons |
| Final disposal (landfill) | 243,000 tons |

Note: Intermediate treatment residue is outsourced

**Petroleum products** 2,000 kl

**Emission into the air**

$CO_2$ total emission 38,000 tons of $CO_2$

# The Three Pillars of Environmental Protection

## Environmental Protection Pillar 1 Maintaining a high recycling rate

The Daiseki Group receives wastes such as waste oils, waste acid/alkali, sludge, contaminated soil, and used lead-acid batteries from our customers and recycles them into recycled fuel, raw materials for cement, usable metals, recycled lead, etc.

**Recycling rate**
(FY2023)
**87.7%**

Note: See page 28 for a definition of recycling rate

## Environmental Protection Pillar 2 Contributing to the realization of a circular economy by promoting effective resource cycles

The Daiseki Group promotes activities aimed at realizing a circular economy society in order to protect the environment, secure natural resources, and build a sustainable society. Demand for circular economies is rising to recycle waste into resources in order to ensure the stable supply of natural resources and to prevent environmental pollution and adverse impacts on biodiversity from mining. Our Group is promoting initiatives to realize a circular economy society by recycling industrial waste into various resources.

### Output amounts of major recycled resources by Daiseki Group in FY2023

| Recycled resources | FY2023 output amount | Alternative natural resources |
|---|---|---|
| Raw materials for cement | 638,000 tons | Limestone |
| Recycled fuels (recycled heavy oil/supplemental fuel) | 239,000 tons | Heavy oil, coal |
| Usable metals, etc. | 9,000 tons | Metal resources, agents, etc. |
| Recycled lead | 12,000 tons | Lead |
| Raw materials for plasterboard | 96,000 tons | Plaster |


Raw materials for cement

Recycled fuels


Usable metals, etc.


Recycled lead


Raw materials for plasterboard

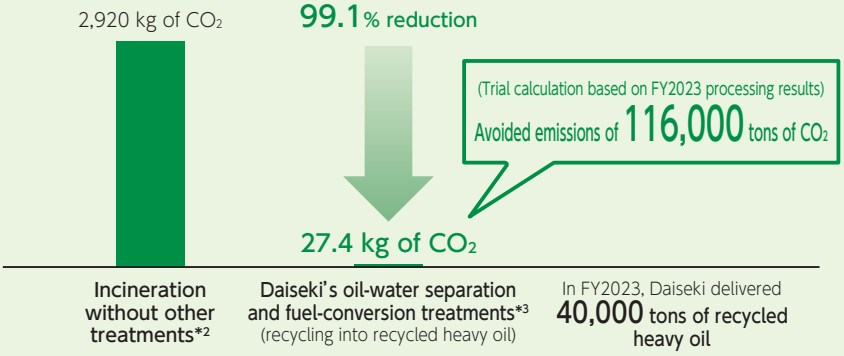
Environmental Protection Pillar 3

# Waste treatment with low greenhouse gas emissions

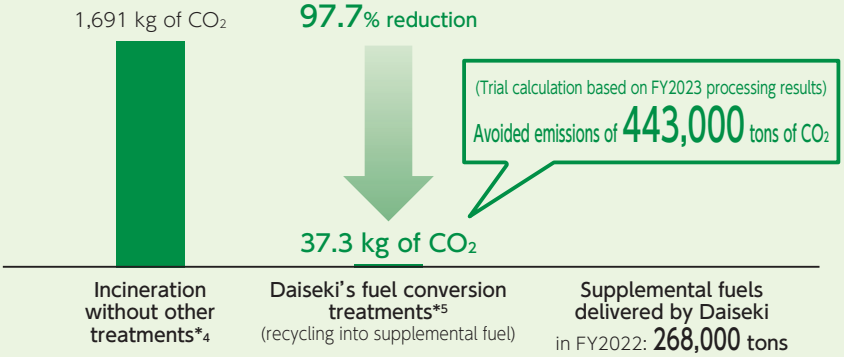
In March 2023, the GX League drew up its Basic Guidelines for Disclosure and Evaluation of Climate-related Opportunities, which include a definition of the concept of "avoided emissions." Daiseki has been involved in the formulation of these Guidelines. They indicate the extent to which company's products and services have contributed to lowering emissions across society as a whole. Daiseki is able to offer treatment methods with lower $CO_2$ emissions than incineration. In the categories of waste oil and sludge, for example, outsourcing recycling and treatment to Daiseki reduces our customers' Scope 3 Category 5 (Waste Generated in Operations) emissions to zero,*1 allowing them to report lower Scope 3 greenhouse gas emissions to CDP and other environmental ratings agencies.

Daiseki has set a target of achieving avoided emissions of at least 680,000 tons of $CO_2$ by FY2025.

## Comparison when treating one ton of waste oil




## Comparison when treating one ton of waste solvent




**Avoided emissions of 559,000 tons of $CO_2$**
(Equivalent to the annual $CO_2$ emissions of 200,000 households*7)

**Target by FY2025:**
**Avoided emissions of 680,000 tons of $CO_2$*6**
(Equivalent to the annual $CO_2$ emissions of 240,000 households*7)

Note: The following trial calculations are based on FY2023 results for our oil-water separation and fuel conversion treatments, two of our main processing methods. These theoretical figures estimate the reduction in $CO_2$ emissions effected by our treatments, as compared to a scenario in which our customers simply incinerate their waste.

*1 The Database on Emissions Intensity for Accounting of Greenhouse Gas Emissions, etc., by Organizations Throughout the Supply Chain (Ver. 3.1), published by the Ministry of the Environment, sets the emissions intensity (quantity of greenhouse gas emissions per a given unit of activity) for recycling of waste oil and sludge to zero.
*2 Calculated on the basis of $CO_2$ issuing from the carbon contained in waste (based on emissions factors from the Ministry of the Environment's Greenhouse Gas Emissions Accounting and Reporting Manual).
*3 Calculated by totaling 1–3 below (from Daiseki FY2023 processing results)
1. $CO_2$ generated through fuel consumption by boilers used for oil-water separation
2. $CO_2$ calculated according to the amount of electricity used for neutralization, biological treatment, and other processes
3. $CO_2$ equivalents of the $CH_4$ and $N_2O$ generated by wastewater treatment

*4 $CO_2$ emissions from incineration without other treatments are calculated by multiplying the waste oil emission factor by the waste solvent ratio, assuming that the 268,000 tons of materials received for recycling for supplemental and other fuels in FY2023 was a mixture of 148,000 tons of waste solvent, with water accounting for the remaining 120,000 tons. These figures fluctuate every year depending on the ratio of waste solvent to water in the material received.
*5 $CO_2$ calculated according to the amount of electricity used for fuel-conversion treatments, based on Daiseki's FY2023 processing results
*6 In the mid-term management plan, it is expected that Daiseki's non-consolidated net sales for FY2025 will be 120.55% compared to FY2022. The target was set based on an assumption that the effect of reduction of $CO_2$ emission is proportionate to the net sales.
*7 In FY2022, annual $CO_2$ emissions per household were 2.74 tons of $CO_2$ (according to the FY2022 Survey on Actual $CO_2$ Emissions in the Household Sector)

# Climate Change Scenario Analysis

Daiseki has established a Risk Management Committee and conducts risk management every quarter, including assessment of climate change risk. Consideration of risk impacts and frequencies is not sufficient to give a full picture of climate change risk, so we are conducting analyses of set scenarios.

## Projected 4.0℃ Scenario

### ● Amount of greenhouse gas emission is large with insufficient countermeasures, and in 2100 the air temperature will rise in 4℃ compared to the temperature in industrial revolution

In this scenario, there is a lack of clarity around policies aimed at decarbonization, and carbon pricing and other regulations on fossil fuel usage are not strengthened. Although businesses become more aware of decarbonization to some degree, they do not choose low-carbon products at the expense of raising their costs. In this situation, energy costs do not change. With no reduction in fossil fuel usage and demand for recycled fuels expected to be unchanged, Daiseki expands our recycling operations in this category. In response to predictions of increase in number of weather disasters over the medium to long term and the possibility that these could damage our customers' works, Daiseki develops systems to provide reconstruction support.

| | Possible Situation | Impact Assessment | Response |
|---|---|---|---|
| 4.0℃ Scenario (Little to no intervention) | Lack of clarity on greenhouse gas emissions regulations | No change in energy costs | Remains at current level |
| | Businesses' emissions reduction efforts have increased somewhat | Opportunity: Somewhat increased demand for Daiseki's low-emissions industrial waste treatment services | Expanding our industrial waste treatment business operations |
| | | Opportunity: Somewhat increased demand for recycled fuels | Expanding our recycling operations in the recycled fuels category |
| | Increased severity of typhoons, torrential rain, and other natural disasters | Risk: Disasters force Daiseki and/or our customers to cease operations | Disaster prevention measures and securing our supply chain |
| | Rising sea levels and other changes in the marine environment | Risk: Flooding forces Daiseki and/or our customers to cease operations | Implementing measures during times of increased flood risk |

## Projected 1.5℃ Scenario

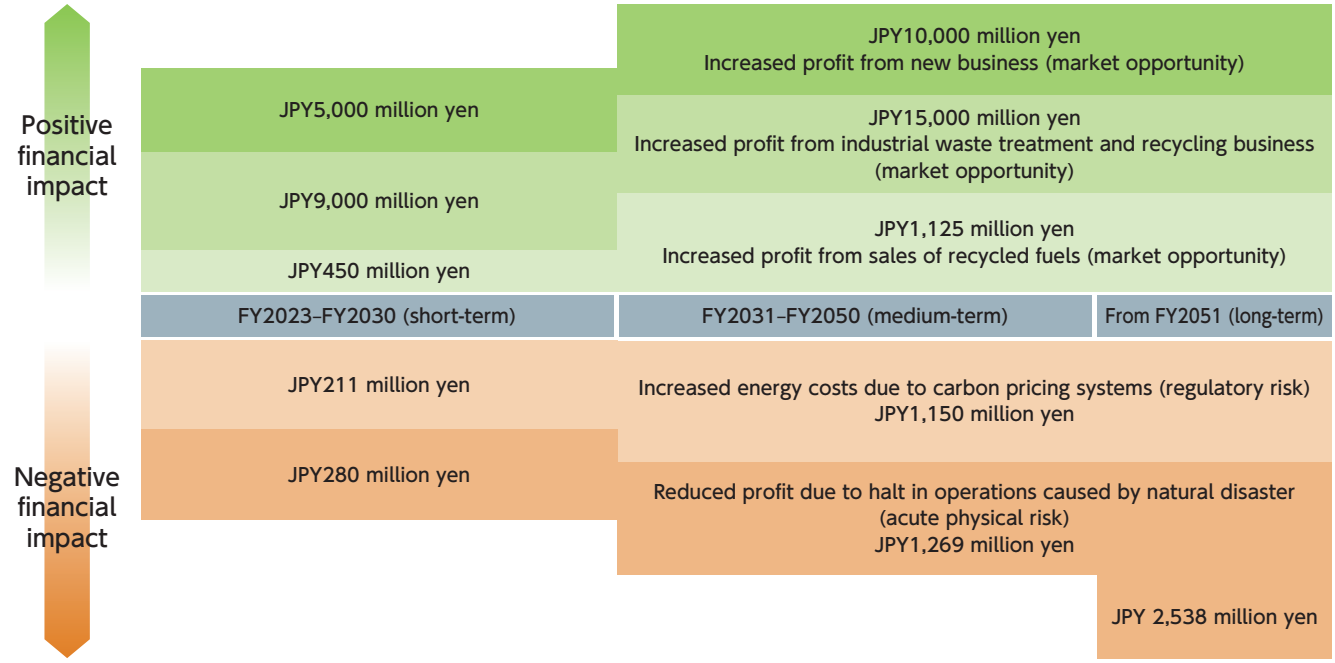
### ● Temperature rise in 2100 will be within 1.5℃ with strict policy for climate change introduced

In this scenario, greenhouse gas emissions regulations such as carbon pricing systems and carbon taxation are adopted, resulting in increased energy costs, so we respond by adopting the use of renewable energies and deploying low-emissions vehicles and processing equipment. Fossil fuel usage also decreases, lowering demand for recycled fuels in turn and bringing expectations of decrease in sales. Conversely, demand for our low-emissions industrial waste treatment services and raw materials increases. In anticipation of this kind of paradigm shift, Daiseki will shift our focus to material recycling. Material recycling is the recycling of waste into products retaining close to their original functionality. This removes the need for the incineration or landfill that would be required for disposal and avoids using natural resources, thereby allowing us to contribute to decarbonization and resource recycling.

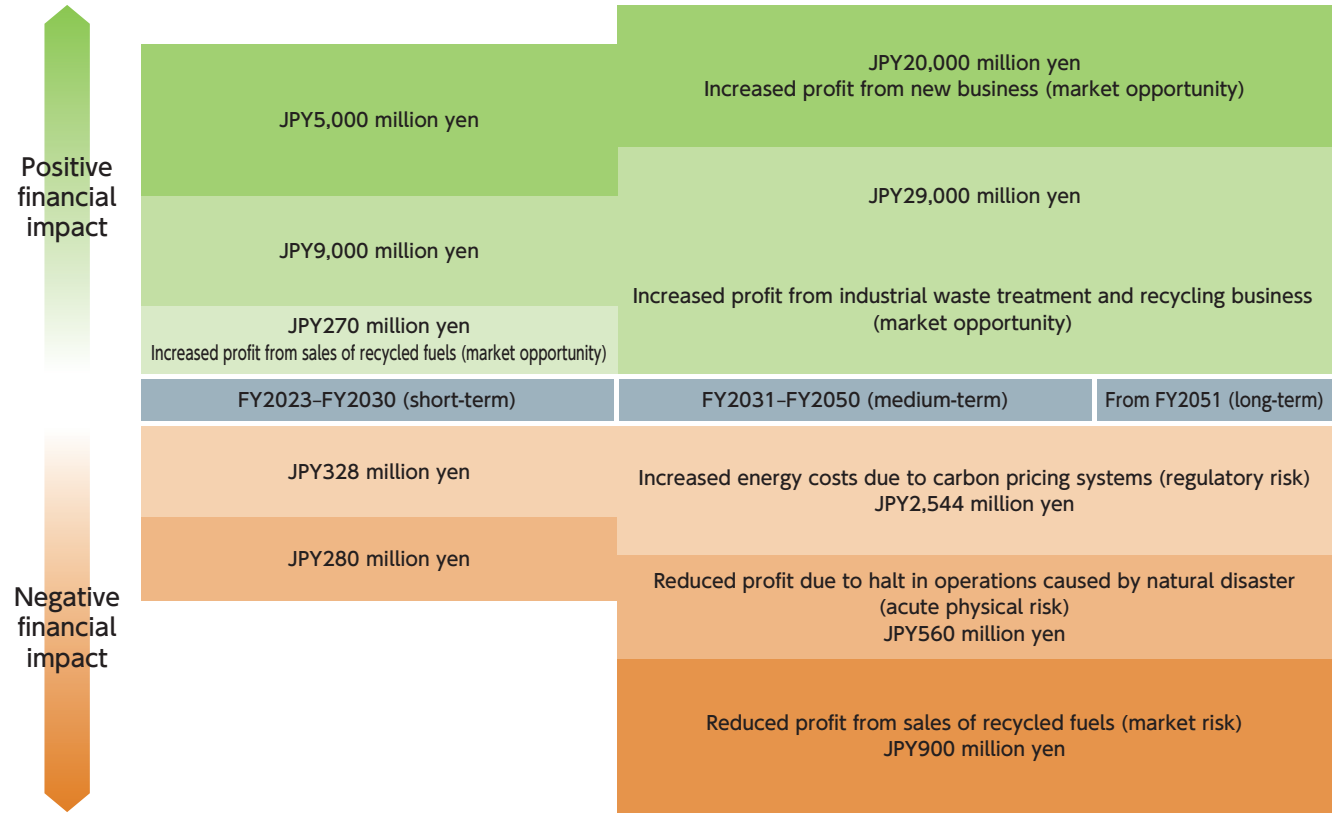
| | Possible Situation | Impact Assessment | Response |
|---|---|---|---|
| 1.5℃ Scenario (controls applied) | Greenhouse gas emissions regulations are strengthened (carbon pricing systems and carbon taxation are adopted) | Risk: Increased energy costs | Adopting use of power by renewable energies and low-emissions equipment |
| | Advances in businesses' emissions reduction efforts | Risk: Reduced fossil fuel usage ⇒ Reduced sales of recycled fuels | Shifting operations from recycled fuels to material recycling |
| | | Opportunity: Increased demand for Daiseki's low-emissions industrial waste treatment services | Proactively expanding our industrial waste treatment service operations |
| | | Opportunity: Increased demand for recycled resources with low emissions | Shifting operations from recycled fuels to material recycling |
| | No change in likelihood of typhoons, torrential rain, and other natural disasters | No change in risk of disasters forcing Daiseki and/or our customers to cease operations | Remains at current level |
| | No change in the marine environment such as rise in sea levels | No change in risk of flooding forcing Daiseki and/or our customers to cease operations | Remains at current level |

# Analysis of the Financial Impact of These Risks and Opportunities on Our Business Activities

## 4.0℃ Scenario

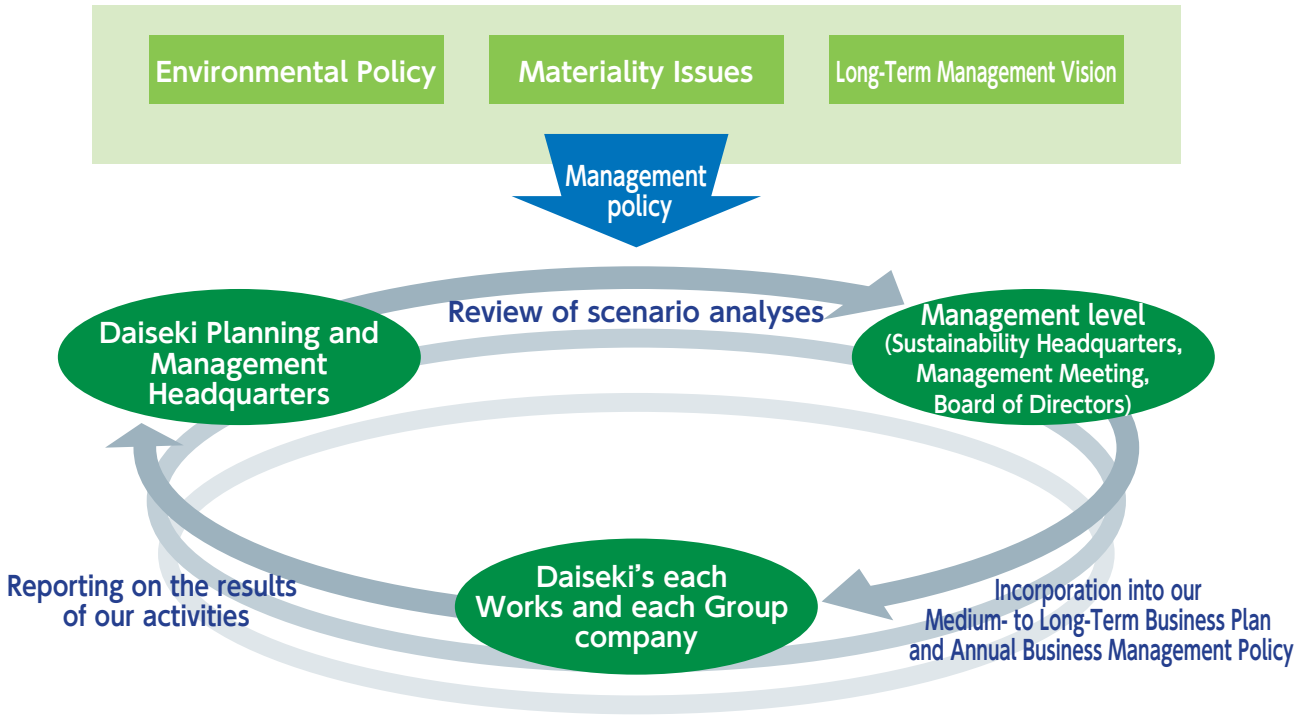



## 1.5℃ Scenario




Note: Positive and negative financial impacts that affect operating profit of the year are calculated. For the basis of calculation, see" Basis of calculation of financial impact to business activities with risks and opportunities."

# Management Strategy Based on Our Scenario Analysis




# Sustainability Headquarters

In order to achieve business growth while mitigating our impact on the global environment, our Sustainability Headquarters, which is composed of executive officers including the Daiseki president and the presidents of Group companies, deliberates on policies to address environmental issues based on TCFD scenario analysis and monitors progress. Please refer to the organizational charts outlining our environmental management system (p.27) and corporate governance system (p.45) to find out more about the positioning of the Sustainability Headquarters within the Company.

# Linking sustainability management results with compensation

Compensation for internal directors and executive officers follows a basic policy that links their compensation with shareholder profits as an incentive to sustainably increase corporate value and enhance the practice and promotion of sustainable management, and sets appropriate compensation levels for each director and executive officer based on their responsibilities. As an initiative to achieve SBTi targets, we establish internal emissions reduction targets for each Works based on ISO 14001. Directors and executive officers who achieve these Works targets receive stock-based compensation.

# Greenhouse Gas Emissions Reduction Targets and Results

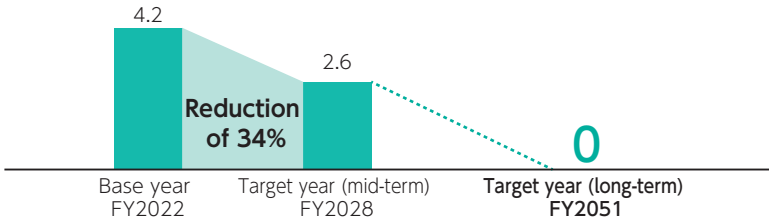
Daiseki Group's established greenhouse gas reduction targets were certified by the Science Based Targets initiative(SBTi)*1 in November 2022 as meeting the "Well-below 1.5℃" target based on scientific evidence. The established targets are as follows.

| | |
|---|---|
| ❶ Scope 1*2 + Scope 2*3 | **34%** reduction by FY2028 (compared to FY2022) |
| ❷ Scope 3*4 | **20%** reduction by FY2028 (compared to FY2022) |
| ❸ Switching to power from renewable energy sources | Switching to**100%** power from renewable energy sources by FY2031 |

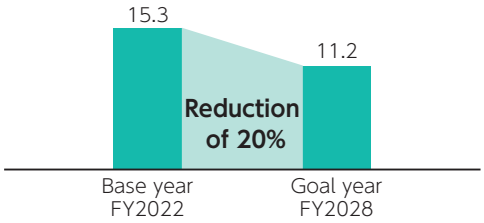
*1 SBTi: SBTi is a joint international initiative established in 2015 by the CDP, the UN Global Compact, World Resources Institute (WRI), and World Wide Fund for Nature (WWF) to verify and certify that greenhouse gas emissions reduction targets set by companies are science based and in line with the Paris Agreement goal of "limiting global temperature rise to well below 2° C above pre-industrial levels."
*2 Scope 1: Direct emissions associated with fuel use
*3 Scope 2: Indirect emissions associated with the use of electricity and heat purchased from other parties
*4 Scope 3: Indirect emissions other than Scope 1 and 2

## The Daiseki Group's medium- to long-term targets for greenhouse gas emissions reduction

**Reduction targets for total emissions under Scopes 1 and 2** (10,000 tons of $CO_2$)




**Reduction targets for total emissions under Scope 3** (10,000 tons of $CO_2$)




* In the process of obtaining SBTi certification, the total for Scope 3 emissions and the reduction targets for Scope 1/2 and Scope 3 were revised upwardly.

### FY2023 greenhouse gas emissions figures at the Daiseki Group

| | Scope 1<br>Direct greenhouse gas emissions by the Daiseki Group (from energy sources only) | Scope 2<br>Indirect emissions associated with the use of electricity, heat, and steam supplied by other companies (electricity only in the case of the Daiseki Group) | Scope 3<br>Indirect emissions not covered by Scopes 1 and 2 (other companies' emissions related to business activities of the Daiseki Group) |
|---|---|---|---|
| Emissions (10,000 tons of $CO_2$) | 2.8 | 1.0 | 15.7 |

# Engagement with customers and our supply chain

We are promoting engagement in the following ways with the aim of reducing emissions.

- Customers that commission waste treatment to Daiseki
  Reduce Scope 3 category (5) emissions (waste) by utilizing our non-combustible waste treatment methods.
- Customers that purchase our recycled products
  Reduce Scope 1 and Scope 3 category (1) emissions (purchased products and services) by using Daiseki's recycled products, which are alternatives to fossil fuels and natural resources.
- Transportation companies that Daiseki commissions to transport raw materials and products and treatment companies that Daiseki commissions to process residues from waste treatment
  We gather fuel efficiency data from transportation companies to calculate emissions. Meanwhile, we are considering an initiative with such companies aimed at reducing emissions

# Carbon neutrality initiatives

## Switching to power from renewable energy sources (Daiseki Group)

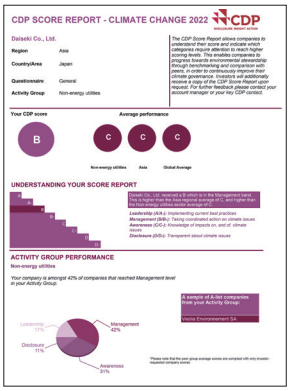
In order to reduce greenhouse gas emissions associated with our business activities, the Daiseki Group began, ahead of the schedule set out in our SBTi target switching to the use of energy from renewable sources (renewable energy) in FY2022. We plan to introduce the use of renewable energy at all Daiseki Group facilities and in all of our Group companies by FY2028, reducing our Scope 2 emissions to zero. In FY2023, Daiseki, Daiseki Eco. Solution, and Daiseki MCR began using renewable energy, and 25.3% of the electricity used by the Daiseki Group was switched to renewable energy.

The Daiseki Group has registered and announced this plan as part of the RE Action—Declaring 100% Renewable initiative.

RE Action—Declaring 100% Renewable initiative logo mark

## Receiving a B score from the CDP (Daiseki Group)

In FY2023, the Daiseki Group received a B score in response to our information disclosure through the CDP Climate Change 2022 Questionnaire, which is the same score as the previous fiscal year. In FY2023, we promoted Task Force on Climate-related Financial Disclosure (TCFD) scenario analysis, financial impact analysis of business activities by risk and opportunity, third-party verification of Scope 3 greenhouse gas emissions, and the introduction of energy conservation and renewable energy. In FY2024, we will further reduce emissions through the introduction of renewable energy and provide proactive information disclosure in order to achieve the emission reduction targets certified by SBTi.




CDP Climate Change 2022 score report

## Reducing electricity use by introducing turbo blowers (Daiseki Nagoya Works and Kanto Works)

In FY2023, a turbo blower was introduced to each of the activated sludge facilities of Daiseki's Nagoya Works and Kanto Works. Since activated sludge facilities supply air to activated sludge, these facilities use a large amount of electricity. By installing turbo blowers with high energy efficiency, we were able to reduce the electricity used in these facilities by approximately 20%.


Turbo blower in the activated sludge facility (Daiseki Kanto Works)

## Endorsement of the GX League (Daiseki)

In March 2022, Daiseki declared our endorsement of the GX League Basic Concept, a framework announced by the Ministry of Economy, Trade and Industry, and in May 2023 we joined the league. The GX League was founded as a place to discuss and create a vision of a sustainable, carbon-neutral future for 2050, a place to discuss market creation and rulemaking in the carbon-neutral era, and a place for companies to conduct voluntary emissions trading to achieve their carbon-neutral targets. As the premier company in Japan's venous industry, Daiseki hopes to use the GX League to share information with other companies and government body and make policy recommendations.

GX League logo

# Initiatives to protect the environment and biodiversity

## Initiatives to protect the atmosphere and water environment

### Mitigation of business-related environmental impact

At Daiseki we are working to reduce environmental impacts resulting from wastewater, exhaust, odors, and noise generated in association with the treatment of industrial waste.

For all soot and smoke generating facilities owned by the company, the level of air polluting materials emitted is measured annually in accordance with the Air Pollution Control Act, and levels are maintained at or below the standard level. In addition, dust collectors and humidification equipment have been installed in plants to prevent the generation of dust during the treatment of industrial waste.

The wastewater we receive is processed first by neutralizing, coagulating, and dehydrating it; then a biological treatment is applied via the activated sludge method before it is finally discharged into sewers or rivers. We have also established our own standards for each plant that go beyond the legal requirements for the discharge of drainage water and formulated emergency response procedures to be followed if a risk of exceeding our own required levels is identified.

As steps to counter unpleasant odors, we analyze samples of industrial waste before it is delivered to us and, in cases where it generates significant unpleasant odor, determine in advance whether to accept its delivery and the treatment methods to be used. We also install odor-eliminating devices in plants to remove odors before release into the atmosphere.

Activated sludge processing facility for biological treatment of wastewater (Daiseki Nagoya Works)


Deodorizing device by scrubber method with high deodorizing effects (Daiseki Kyushu Works)

## Biodiversity initiatives

At Daiseki we believe that in order to protect biodiversity, it is necessary to prevent the destruction and pollution of the natural environment, limit the excessive use of natural resources, prevent global warming, and eliminate invasive species. Based on this approach, Daiseki Hokuriku Works participates in clean-up activities of nearby coastal areas each year, and is working to protect the environment to preserve biodiversity.

For details on Daiseki's initiatives to protect biodiversity, refer to the section of our website on biodiversity.

Coastal clean-up (Daiseki Hokuriku Works)

## Detoxification of toxic substances

At Daiseki Group, we accept special control industrial waste which includes toxic substances such as strong acids, strong alkalis, and heavy metals, and detoxify such toxic substances by appropriately treating them with treatment agents. In FY2023, we accepted 216,000 tons of special control industrial waste, and following treatment we sent 11,000 tons of special control industrial waste in the form of remnants, etc., to an external treatment company. Special control industrial waste is defined as highly hazardous under the Waste Management and Public Cleansing Act, and even small quantities of such waste have an adverse impact on the natural environment. The Daiseki Group contributes to preserving the natural environment by properly treating such toxic substances.

**Change in Amount of Special Control Industrial Waste Received and Emitted**