



# Responses to Climate Change (TCFD)

## Status of Greenhouse Gas Reduction Efforts/Emissions

GRI 305-1,2,3,4,5

### Greenhouse gas reduction policy

The progression of global warming is arising from increased greenhouse gas emissions from the consumption of fossil fuels. The adverse effects of this climate change are posing major threats to our lives and ecosystems, including an increase in natural disasters such as heavy rains and floods, decreases in food and water resources, extreme heat, and outbreaks of infectious diseases.

NOF is actively working to mitigate climate change and achieve a decarbonized society. We support the goals set by the Paris Agreement, which include keeping the global average temperature rise well below 2°C (the 2°C target) and striving to limit it to 1.5°C as much as possible. To that end, we are committed to reducing our greenhouse gas emissions and aim to achieve carbon neutrality by 2050. In addition, we have set a target of reducing GHG emissions by 40% or more from the fiscal 2013 level by fiscal 2030 (mid-term target for GHG emission reduction).

We also began supporting the recommendations of the Task Force on Climate-Related Financial Disclosures (TCFD) starting in 2022, and we disclose information transparently. From fiscal 2024, we will also participate in the GX League. We will not only focus on reducing our own greenhouse gas emissions, but also contribute to climate change mitigation by providing eco-friendly products and services. We are determined to take action and grow with society for a sustainable future.

### Activities through industry associations

NOF is a member of and supports the efforts of the Japan Soap and Detergent Association (JSDA) and the GX League, which is organized by the Ministry of Economy, Trade and Industry. We will proactively incorporate the policies and the latest developments toward solving climate change issues discussed by each organization, and apply them to our daily activities. In addition to addressing the goals of each organization, we are also working to ensure consistency in our policies and strategies at NOF. Furthermore, a NOF director serves as chair of the JSDA Environmental Committee, and promotes industry-wide climate change measures.



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GRI 305-1,2,3,4,5/306-1,3

## Scope 1 and 2 CO<sub>2</sub> emissions (FY2023)

(Thousand tons of CO<sub>2</sub>)

	Scope 1	Scope 2	Total (Scope 1+2)
NOF	44.4	78.2	122.7
Domestic Group	51.2	83.4	134.5
NOF Group	58.6	100.6	159.2

## Scope 3 CO<sub>2</sub> emissions (FY2023)

NOF Group

(Thousand tons of CO<sub>2</sub>)

Category	FY2023	Calculating method
1 Purchased products and services	453.3	Calculated by multiplying the quantity and cost of each item of purchased raw materials, consumables, and repair materials by the emission intensity by division according to the guidelines Calculation scope: All of NOF, 8 domestic affiliate companies in Japan, and 2 major overseas affiliate companies
2 Capital goods	53.3	Calculated by multiplying acquisition cost of fixed assets by the emission intensity according to the guidelines
3 Fuels and energy-related activities not included in Scope 1 or 2	29.1	Calculated by multiplying the sum of electricity consumption and steam consumption by the emission intensity according to the guidelines
4 Transportation and distribution (upstream)	26.7	Calculated from ton-kilometers of transportation for purchased raw materials and ton-kilometers of transportation for delivered products for which the company is the consignor
5 Waste generated in business activities	9.7	Calculated by multiplying the weight of each type of waste generated at production sites by the emission intensity according to the guidelines
6 Business travel	0.5	Calculated by multiplying the number of employees by the emissions intensity according to the guidelines
7 Employee commuting	1.4	Calculated by multiplying the amount of commuting expenses by the emission intensity according to the guidelines
8 Leased assets (upstream)	-	Not applicable
9 Transportation and distribution (downstream)	-	Not applicable
10 Processing of sold products	17.8	Calculated by multiplying the sales volume of processed edible oils and industrial explosives by emission intensity according to the guidelines
11 Use of sold products	Not determined	Calculation is not possible because NOF products are mainly intermediate raw materials and the processing methods utilized by users after delivery are wide-ranging and undisclosed
12 End-of-life treatment of sold products	0.6	For packaging materials of shipped products, calculated by multiplying the weight of each type by the emission intensity according to the guidelines
13 Leased assets (downstream)	-	Not applicable
14 Franchises	-	Not applicable
15 Investments	-	Not applicable
Total	592.4	

\*From fiscal 2023, the scope of Scope 3 is calculated as a consolidated Group that includes major overseas affiliate companies (Categories 1, 2, 3, and 6)

\*Guidelines utilized: "Emission Factor Database on Accounting for Greenhouse Gas Emissions of an Organization Throughout the Supply Chain (Ver. 3.4)" (issued by the Ministry of the Environment and the Ministry of Economy, Trade and Industry)



### Energy consumption and CO<sub>2</sub> emissions

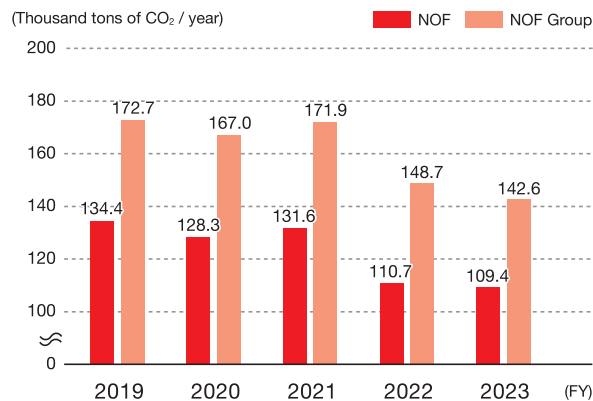
In fiscal 2023, energy consumption by the NOF Group decreased by 6.5% from the previous fiscal year, and by 4.5% on a non-consolidated basis. CO<sub>2</sub> emissions associated with energy use decreased 4.1% from the previous year to 143 thousand tons for the NOF Group, and decreased 1.1% to 109 thousand tons for NOF on a non-consolidated basis. Energy intensity per product increased 0.9% from the previous year to 13.9 GJ/t for the NOF Group, and slightly increased 0.4% from the previous year to 14.6 GJ/t for NOF. Going forward, we will continue to steadily implement energy conservation measures, including conversion to high-efficiency equipment.

### CO<sub>2</sub> emissions other than from energy consumption

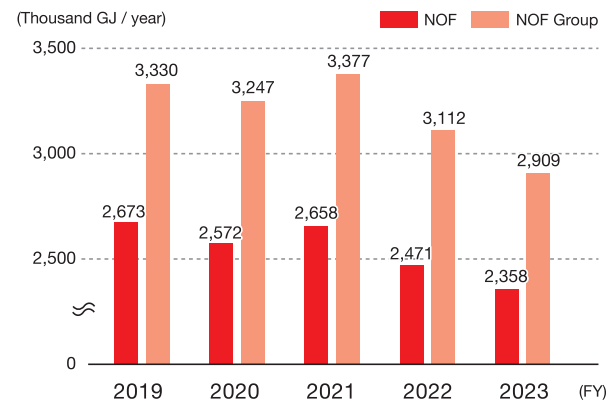
At the Aichi Works, NOF manufactures products for specific purposes using perfluorocarbon (PFC), which has a high global warming potential, as the diluent for organic peroxides.

In fiscal 2023, PFC emissions decreased approximately 37% from fiscal 2022, due in part to the effects of facility improvements. Going forward, we will aim to reduce emissions through efforts such as maintaining steady operation of recovery equipment and further promoting the use of alternative diluents.

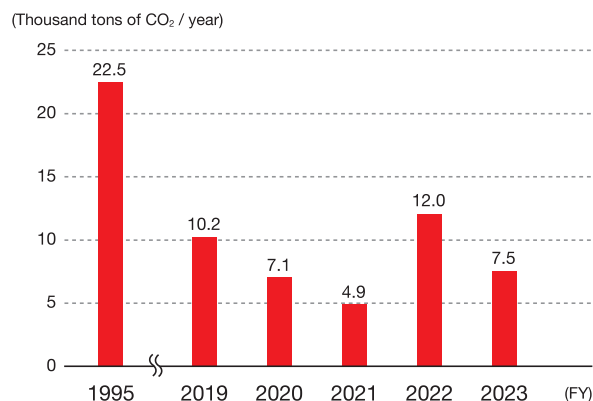
### Changes in CO<sub>2</sub> emissions\*1 by energy consumption



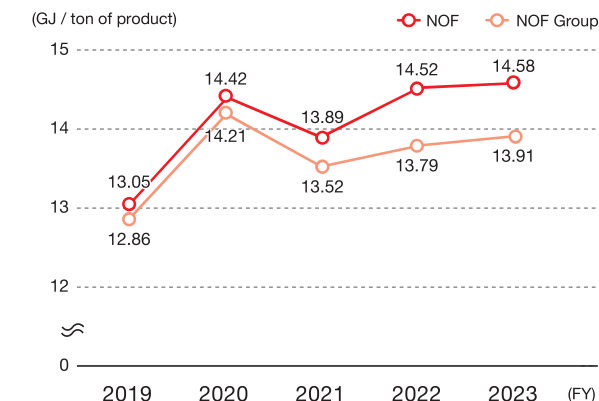
### Changes in energy input\*2



### Changes in PFC emissions



### Changes in energy intensity per product



\*1 The coefficient used in converting the electricity consumption into CO<sub>2</sub> emissions is the emission coefficient used by electric power supply companies in the fiscal year.

\*2 The energy consumption is estimated using 9.76 MJ/kWh as the coefficient when converting electric power consumption into the calorific value.



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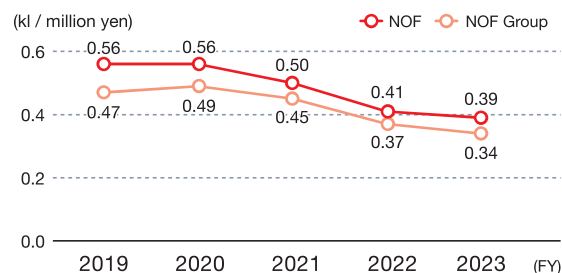
## Status of Greenhouse Gas Reduction Efforts/Emissions

GRI 302-3,4/305-1,2,4,5

### Energy-saving initiatives

The crude oil equivalent of energy consumption by the NOF Group in fiscal 2023 was 75,061 kl, down 6.5% from fiscal 2022. The crude oil equivalent of energy consumption per sales was 0.34 kl/ million yen, down 8.4% from fiscal 2022. We have been working on energy-saving activities such as process improvement and steam usage reduction through replacement of steam traps. In addition, we assess that the growth in net sales has had an impact on the improvement of crude oil equivalent of energy consumption per sales.

### Changes in energy intensity related to sales



### Renewable energy measures (domestic)

As for the NOF Group's initiatives in the area of renewable energy, solar power generation facilities were installed in the Kawasaki Works in 2018 and NiGK Corporation in November 2020 to use renewable energy to provide part of the electricity used in production activities in an effort to realize a low carbon society.

#### Track record of solar power introduction

Kawasaki Works

$10.4\text{kW} \times 4.5\text{H} \times 365 = 17\text{MWh/year}$

NiGK Corporation

$12\text{kW} \times 4.5\text{H} \times 365 = 20\text{MWh/year}$

Company housing in the Kansai area

$10\text{kW} \times 4.5\text{H} \times 365 = 16\text{MWh/year}$

DDS Aichi (Plan)

$83\text{ MW for manufacturing building} + 11\text{ MW for quality assurance building} = 94\text{MWh/year}$

### Initiatives to reduce CO<sub>2</sub> through the use of biomass fuels

PT. NOF MAS CHEMICAL INDUSTRIES, which is located in Indonesia where palm oil is produced, is working to reduce CO<sub>2</sub> emissions by utilizing palm kernel shells (PKS), a biomass fuel which is usually left as waste after oil extraction, as fuel for its boilers.



Biomass fuel (palm kernel shells)



Biomass-fueled boiler



### CO<sub>2</sub> emissions per product by transportation

Starting the operation of an integrated delivery system in fiscal 2006, NOF has since been endeavoring for more efficient transportation. Additionally, NOF has also engaged in modal shifting\* and joint delivery.

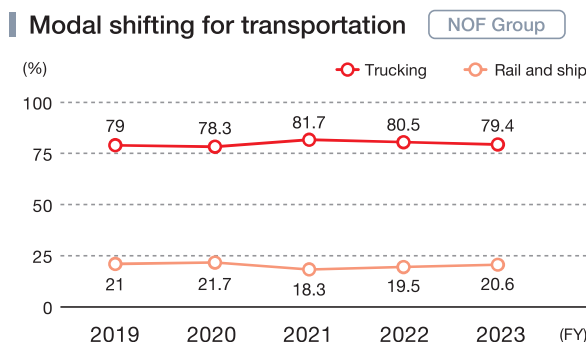
With regard to modal shifting, the percentage of rail or marine transport in the total volume of our product transport had been around 20.6%.

CO<sub>2</sub> emissions per product by transportation were reduced from 100 in fiscal 2006 to 44.0 in fiscal 2023.

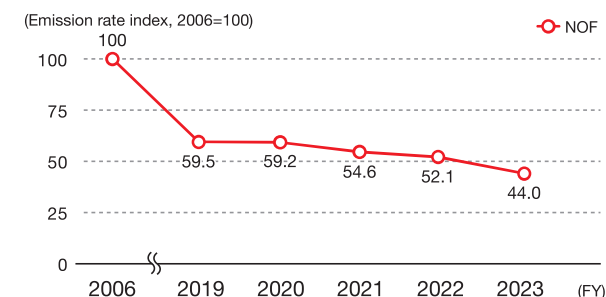


Modal shifting

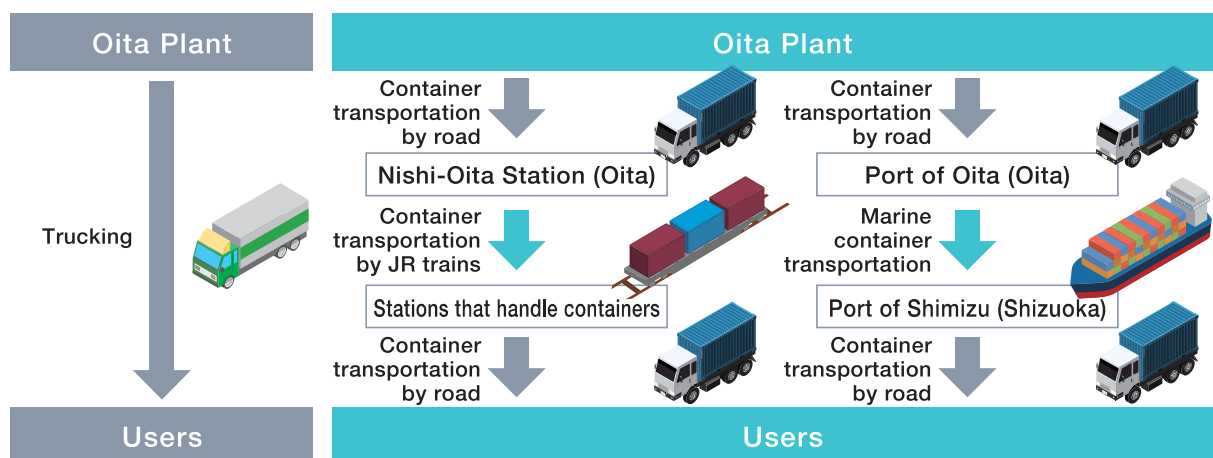
$$\text{CO}_2 \text{ emissions per product by transportation} = \frac{\sum (\text{CO}_2 \text{ emitted by each means of transport})}{\text{Net sales}}$$



### CO<sub>2</sub> emissions per product related to transportation (NOF)



### Oita Plant modal shifting scheme



\*Enhancing the efficiency of transport and at the same time reducing energy consumption and environmental loads by shifting the mode of transport to large per-unit capacity means such as cargo trains and ships.