



Greenhouse gas emissions

In view of the 2050 Carbon Neutral Declaration announced by the government in October 2020 and its new targets to reduce greenhouse gas emissions announced in April 2021, the NOF Group set a new target of reducing CO₂ emissions by 40% by fiscal 2030 compared to fiscal 2013. The Group had already reduced CO₂ emissions by about 20% (compared to fiscal 2013) in fiscal 2022, and is aiming to reduce greenhouse gas emissions and achieve carbon neutrality by 2050.

Scope 1 and 2 CO₂ emissions (FY2022)

(Thousand tons of CO₂)

	Scope 1	Scope 2	Total (Scope 1+2)
NOF	53.3	78.2	131.5
Domestic Group	60.1	83.5	143.6
NOF Group	71.9	103.3	175.3

Scope 3 CO₂ emissions (FY2022) Domestic Group

(Thousand tons of CO₂)

Category	FY2022	Calculating method
Purchased products and services	278.3	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
Capital goods	22.4	Calculated by multiplying acquisition cost of fixed assets by CO ₂ emission per product according to the guidelines
Fuels and energy-related activities not included in Scope 1 or 2	36.3	Calculated by multiplying the sum of electricity consumption and steam consumption by CO ₂ emission per product according to the guidelines
Transportation and distribution (upstream)	25.0	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
Waste generated in business activities	8.2	Calculated by multiplying the weight of each type of waste generated at production sites by CO ₂ emission per product according to the guidelines
Business travel	0.5	Calculated by multiplying the number of employees by CO ₂ emission per product according to the guidelines
Employee commuting	1.6	Calculated by multiplying the amount of commuting expenses by CO ₂ emission per product according to the guidelines
Leased assets (upstream)	—	Not applicable
Transportation and distribution (downstream)	—	Not applicable
Processing of sold products	20.6	Calculated by multiplying the sales volume of processed edible oils and industrial explosives by emission intensity according to the guidelines
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
End-of-life treatment of sold products	0.7	For packaging materials of shipped products, calculated by multiplying the weight of each type by the emission intensity according to the guidelines
Leased assets (downstream)	—	Not applicable
Franchises	—	Not applicable
Investments	—	Not applicable
Total	393.4	

Guidelines utilized: "Emission Factor Database on Accounting for Greenhouse Gas Emissions of an Organization Throughout the Supply Chain (Ver. 3.3)" (issued by the Ministry of the Environment and the Ministry of Economy, Trade and Industry), "IDEA (Ver. 3.1)" (issued by the National Research and Development Agency and National Institute of Advanced Industrial Science and Technology)



Energy consumption and CO₂ emissions

Energy consumption for fiscal 2022 decreased 7.8% from the previous fiscal year for the NOF Group, and decreased 7.0% from the previous fiscal year for NOF. The total volume of energy-derived CO₂ emissions decreased 13.5% from the previous fiscal year to 149,000 tons for the NOF Group, and decreased 15.9% from the previous fiscal year to 111,000 tons for NOF. Energy intensity per product increased 2.0% from the previous fiscal year to 13.8 GJ/t for the NOF Group, and increased 4.6% from the previous fiscal year to 14.5 GJ/t for NOF. NOF will continue to implement energy-saving measures to produce even greater results.

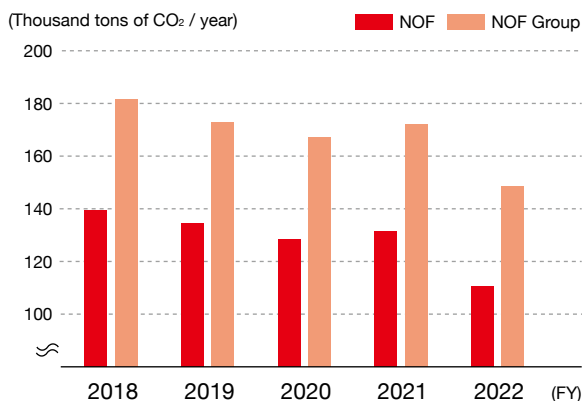
CO₂ emissions other than from energy consumption

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

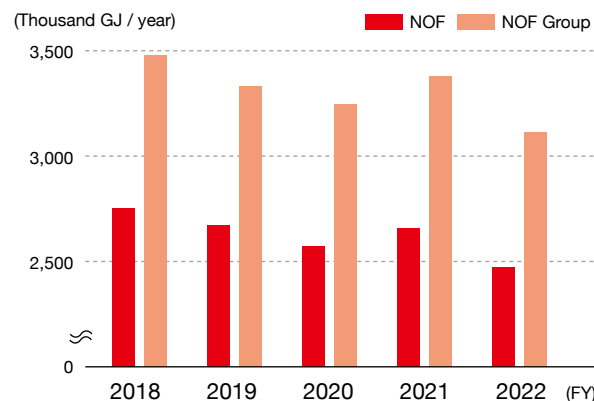
Efforts have been made to reduce PFC emissions by improving the manufacturing equipment on numerous occasions. As a result, PFC emissions have been reduced substantially compared with those in fiscal 1995 (the reference fiscal year for PFCs).

In fiscal 2022, emissions increased by 144% compared to fiscal 2021. However, we will continue our efforts to reduce emissions through stable operation of recovery equipment and promoting the use of an alternative diluent.

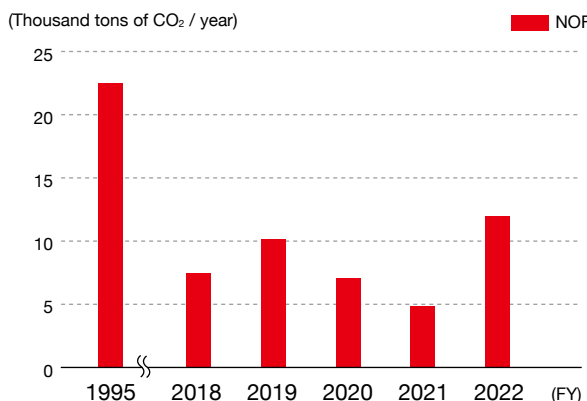
Changes in CO₂ emissions*¹ by energy consumption



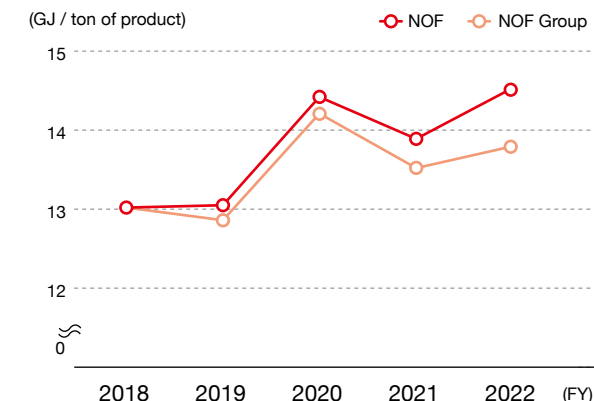
Changes in energy consumption*²



Changes in PFC emissions



Changes in energy intensity per product



*1 The coefficient used in converting the electricity consumption into CO₂ 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.



CO2 emission 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.

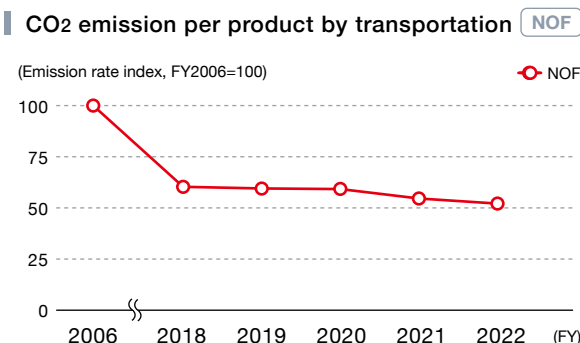
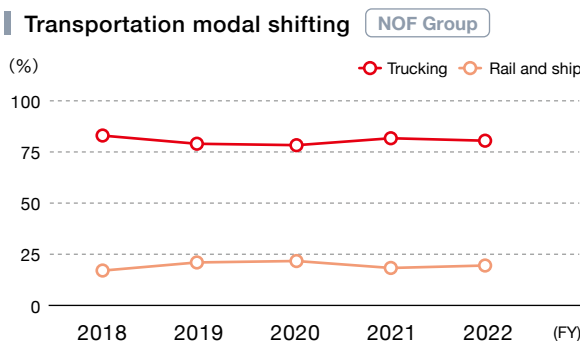
With regard to modal shifting, the percentage of rail or marine transport in the total volume of our product transport had been around 19.5%.

CO₂ emissions per product by transportation were reduced from 100 in fiscal 2006 to 52.1 in fiscal 2022.



Modal shifting

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



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.

In fiscal 2022, the Kawasaki Works generated 15 MWh/year and NiGK CORPORATION generated 19 MWh/year.



Solar power generation panels at Kawasaki Works



Solar power generation panels at NiGK Corporation

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