



Financial impacts (selected)

Steam, electricity, and other forms of energy are consumed mainly in the manufacturing processes of the NOF Group. As transition risks brought about by climate change, the financial burden is expected to increase due to rising carbon tax costs and higher unit prices of renewable energy charges,* and the total impact is estimated to be around 3.3 billion yen. In addition, the NOF Group has established a business continuity plan for physical risks with the 4°C scenario assuming 7.7 billion yen in facilities damage in the event that a major typhoon, which occurs once every 500 to several thousand years, breaks through embankments and floods our waterfront plants.

*Charges for promotion of renewable energy generation

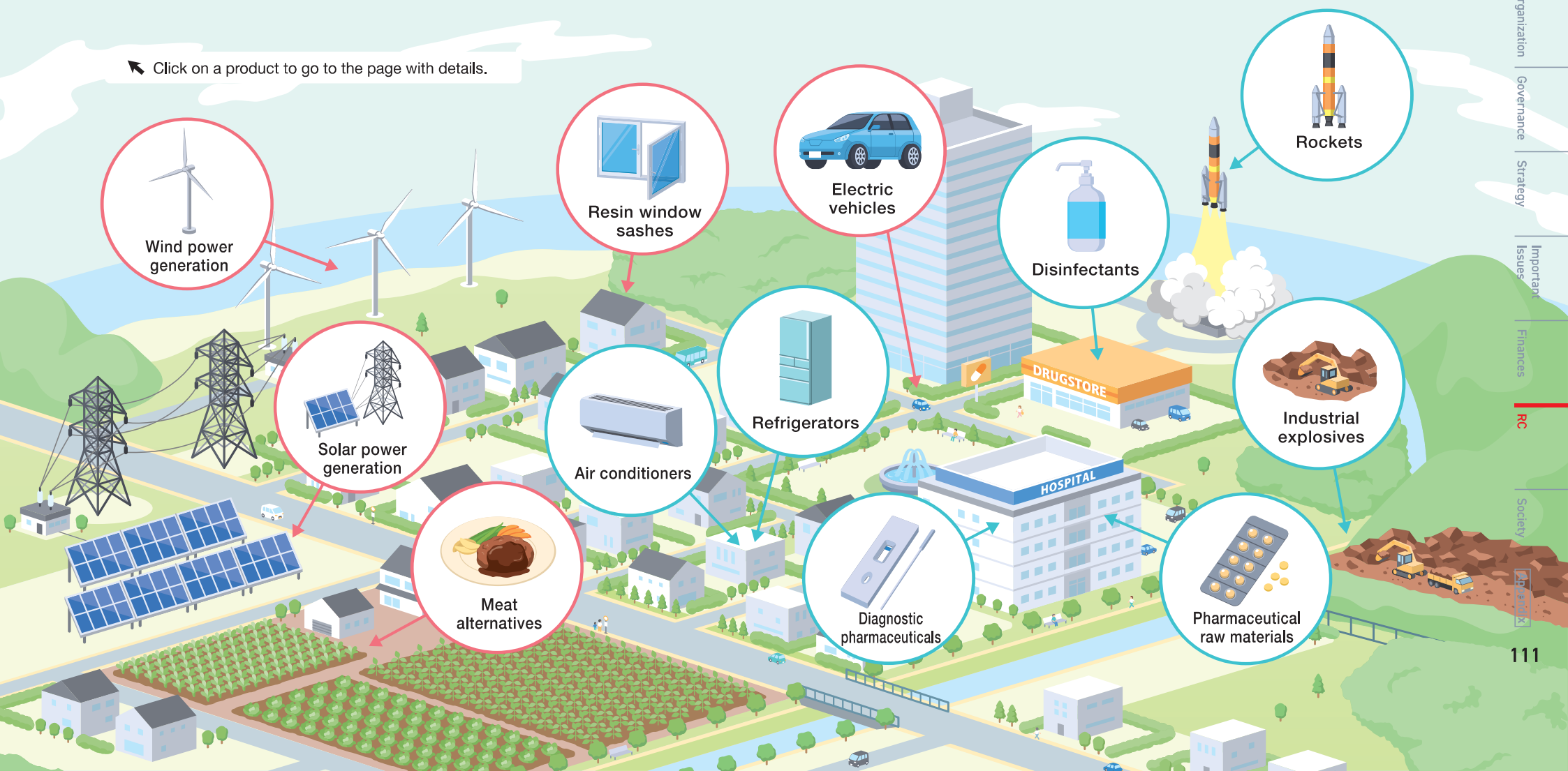
Category	Scenario	Risks	Details of risks	Financial amount of impact	Notes						
Transition risks	1.5°C	Carbon tax	Financial burden from tax increases	(Hundreds of millions of yen/year) <table><tr><th>Year</th><th>Impact (Hundreds of millions of yen/year)</th></tr><tr><td>2020</td><td>0.5</td></tr><tr><td>2030</td><td>31.6</td></tr></table>	Year	Impact (Hundreds of millions of yen/year)	2020	0.5	2030	31.6	Domestic Group CO₂ equivalent emissions in fiscal 2020, with a carbon price of 20,000 yen per ton of CO₂ in fiscal 2030.
		Year	Impact (Hundreds of millions of yen/year)								
2020	0.5										
2030	31.6										
	Renewable energy charges	Increased energy costs	(Hundreds of millions of yen/year) <table><tr><th>Year</th><th>Impact (Hundreds of millions of yen/year)</th></tr><tr><td>2020</td><td>3.8</td></tr><tr><td>2030</td><td>5.2</td></tr></table>	Year	Impact (Hundreds of millions of yen/year)	2020	3.8	2030	5.2	Domestic Group The unit price of the renewable energy charge for fiscal 2030 is set at 4.1 yen/kWh based on fiscal 2020 electricity consumption.	
Year	Impact (Hundreds of millions of yen/year)										
2020	3.8										
2030	5.2										
Physical risks	4°C	Storm surges	Flooding of facilities due to storm surges	(Hundreds of millions of yen/year) <table><tr><th>Year</th><th>Impact (Hundreds of millions of yen/year)</th></tr><tr><td>2020</td><td>0</td></tr><tr><td>2050</td><td>77</td></tr></table>	Year	Impact (Hundreds of millions of yen/year)	2020	0	2050	77	NOF Typhoons and embankment failures every 500 to several thousand years.
Year	Impact (Hundreds of millions of yen/year)										
2020	0										
2050	77										



Illustration of products that contribute to climate change

Based on the risks and opportunities posed by climate change, the NOF Group will co-create new value with the power of chemistry by working to develop and provide products that contribute to the reduction of greenhouse gases to **mitigate** the progression of climate change, and products that contribute to **adaptation** by reducing the impact of climate change.

Click on a product to go to the page with details.





Responses to climate change (TCFD)

Disclosure in line with TCFD recommendations:
Strategy

GRI 201-2

Mitigation: 1.5°C and 2°C scenario

*Mitigating the progression of climate change
by reducing greenhouse gas emissions

Electric vehicles

Functional Materials business

Metal Coatings business

Market
scale **Large**

Compared to gasoline-powered vehicles, EVs are expected to cause increased demand for additives for in-vehicle electronic components, lubricants for electronic units, anti-corrosive coatings, and overcoat materials for LCD color filters due to the increase in electronic components (passive components) and electronic units, as well as more and larger LCD panels. In addition, because LED lights are effective in reducing power consumption of EVs, demand for anti-fog agents for LED headlamps is expected to increase. Furthermore, EVs will make vehicles quieter, which is expected to increase demand for resin additives, such as agents that prevent abnormal noises caused by resins rubbing against each other in interior parts.

End uses of the NOF Group's products

For capacitors and LCD panels

(Additives for electronic components /
Lubricants for electronic units / Overcoat materials)

**For agents to prevent
abnormal noises in door
hinges and interior parts**
(Resin additives)

**For antifogging
of LED
headlamps**
(Anti-fog agents)



**For bolts, nuts,
and other parts
that hold batteries
in place**
(Anti-corrosive
coatings)

Wind / solar power generation

Functional Materials business

Metal Coatings business

Market
scale **Medium**

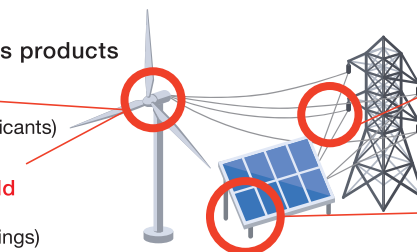
Demand is expected to increase for anti-corrosive coatings for bolts used in wind power generation blades and solar panel mounting parts, as well as biodegradable lubricant required for gear lubrication. Demand is also expected to increase for organic peroxides for cross-linked polyethylene, which is used as a coating material for ultra-high-voltage and high-voltage electric wires used to transmit electricity from wind and solar power generation sites.

End uses of the NOF Group's products

For gear oil

(Biodegradable lubricants)

**For bolts that hold
blades in place**
(Anti-corrosive coatings)



**For ultra-high-voltage
and high-voltage wire
coating materials**
(Organic peroxides)

For mounting parts
(Anti-corrosive coatings)

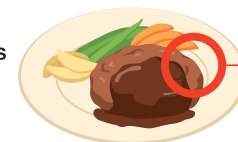
Meat alternatives

Functional Foods business

Market
scale **Small**

Demand is expected to increase for meat alternative oils and fats that help improve the flavor and texture of plant-derived meat alternatives that reduce environmental impact.

End uses of the NOF Group's products



**For meat alternatives such
as soy meat hamburgers**
(Oils and fats for meat
alternatives)

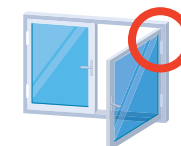
Resin window sashes

Functional Materials business

Market
scale **Small**

Demand for organic peroxides is expected to increase with the spread of energy-efficient housing because vinyl chloride resin is used in resin window sashes with high thermal insulation properties.

End uses of the NOF Group's products



For resin window sashes
(Organic peroxides)



Adaptation

*Reduction of climate change impacts through disaster prevention, etc.

Air conditioners / refrigerators

Functional Materials business

Metal Coatings business

Market
scale **Large**

Demand for refrigerating machine oil, a lubricant for refrigeration equipment, anti-corrosive coatings for fastening parts for external air conditioner units, and polybutene for air conditioner putty is expected to increase due to the increasing need for air conditioners and refrigerators accompanying rising temperatures around the world, including developing countries. The base materials for refrigerating oils sold by NOF are for alternative CFC refrigerants and contribute to climate change adaptation.

End uses of the NOF Group's products

For putty on
air conditioner
pipes
(Polybutene)

For
fastening parts
(Anti-corrosive
coatings)

For lubricants
used in air
conditioners and
refrigerators
(Base materials for
refrigerating oils)

Diagnostic pharmaceuticals / Pharmaceutical raw materials

Functional Materials business

Life Science business

Market
scale **Large**

Due to climate change, there are concerns about the spread of tropical infectious diseases and other diseases and disorders. Therefore, demand for pharmaceutical raw materials is expected to increase due to the rise in disinfectants and additives for diagnostic pharmaceuticals to combat infectious diseases as well as the number of pharmaceutical products against diseases and disorders.

End uses of the NOF Group's products

For disinfecting
hands
(Additives)

For diagnostic
pharmaceuticals
to combat
infectious diseases
(Additives)

For pharmaceutical
ingredients
(Pharmaceutical raw
materials)

Environmental information / Disaster prevention and mitigation products

Explosives & Propulsion business

Market
scale **Small**

As climate change progresses, the need to survey the entire world, including seawater temperatures, may increase, and the amount of marine instruments, rocket launches, etc., for research may increase. In addition, there may be increased applications for temperature indicator materials (labels, stickers, etc.) for temperature control that change color when a specific temperature is reached. Furthermore, with the increased risk of storm surges and other such conditions, there may be an increase in embankment construction using industrial explosives involving procurement of rocks and soil from mountainous areas.

End uses of the NOF Group's products

For marine instruments
and rockets
(Marine instruments,
rocket fuel)

To procure soil
for embankment
construction
(Industrial explosives)



Response to climate change (TCFD)

Disclosure in line with TCFD recommendations:
Risk management

GRI 2-12

Within the NOF Group, the Risk Management Committee comprehensively identifies various management risks surrounding its business, and conducts company-wide risk assessment on the level of impact and potential for occurrence of each risk item in order to identify risks that need to be addressed as a priority. In disclosing information based on TCFD recommendations, a working group consisting of members selected from the Risk Management Committee and the Responsible Care Committee plays the central role in identifying the risks that climate change will affect among the various management risks surrounding our business, and conducts risk assessments to determine the degree to which the impact will change in the future. The analysis results are reported to the Sustainability Committee, and important decisions are made related to climate change risk countermeasures.

Climate change-related risk management organization diagram

