

Proterial Group's Response to Climate Change

Disclosure Based on TCFD Recommendations (June 30, 2023)

1 Response to TCFD Recommendations

As countries around the world intensify their efforts to address climate change in accordance with the Paris Agreement, the Japanese government announced in October 2020 its policy goal of reducing emissions of greenhouse gases, as typified by carbon dioxide (CO₂), to virtually zero by 2050. Accordingly, companies are expected to be more proactive than ever in their efforts to transition to a decarbonized society.

The Group considers the impact of climate change on its business as one of our most-important management issues, and we believe that enhanced disclosure of climate-change-related information is a key factor in building a relationship of trust with our stakeholders. Accordingly, in June 2021, we registered our support

for the TCFD* Recommendations, and in accordance with the TCFD Recommendations, the Group will continue to enhance our disclosure of information on the impact of climate change on our business activities.



* The Task Force on Climate-related Financial Disclosures (TCFD) was established by the Financial Stability Board (FSB) in 2015 in response to requests from the G20 for climate-related disclosures. The TCFD published its final report in June 2017, in which it recommends companies to disclose items related to climate change-related risks and opportunities.

2 Governance

In April 2010, the Proterial Group established the Group Basic Policy on Environmental Preservation to clarify the Group's unified approach to environmental management. In June 2021, we registered our support for the TCFD Recommendations, and in August of that year, following a report to the Board of Directors, we established a new environmental policy named "Aiming for Green Growth while taking Risk as Opportunity." The Proterial Group Environmental Committee (Group Environmental Committee, hereafter) has been established as a framework for promoting environmental activities such as climate-change countermeasures. The Group Environmental Committee is chaired by the Environment Executive Officer, and its executive office is the Environmental Strategy Department, Manufacturing & Engineering Division. Its activities are promoted in cooperation with the environmental managers of each business unit, business sites, and group companies. The Group Environmental Committee is responsible for developing environment-related regulations, setting targets for reducing environmental impact, and confirming that activities are appropriate and effective.

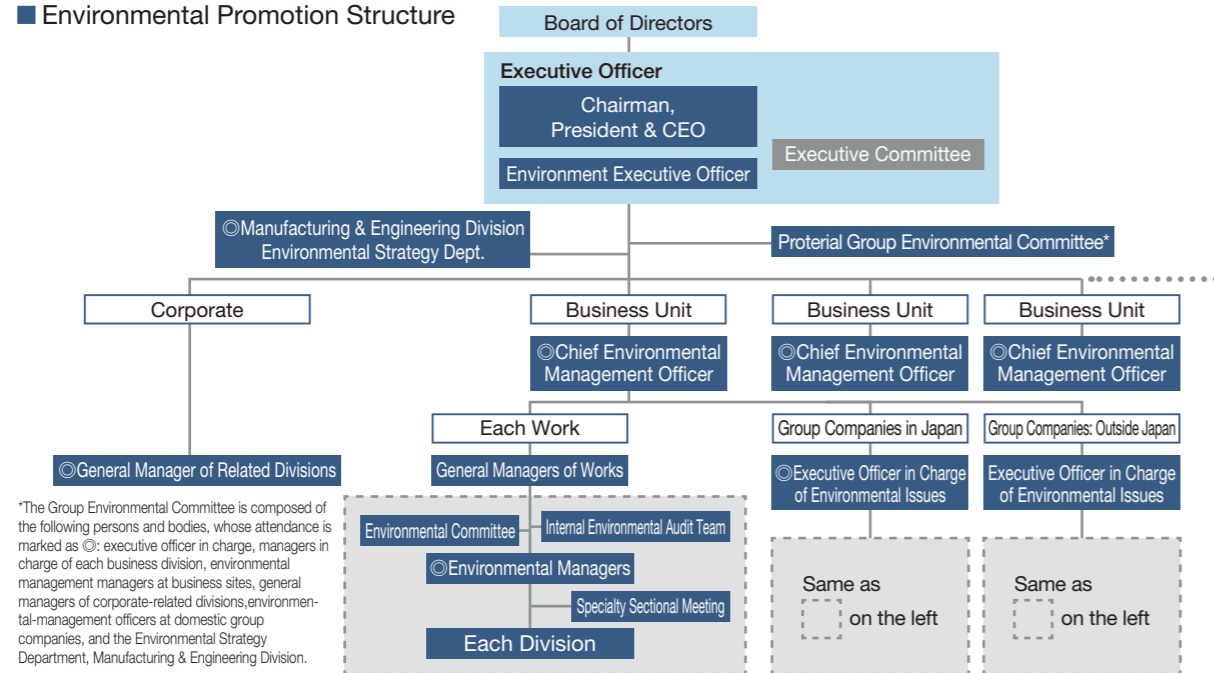
Policies and targets concerning environmental activities are discussed and set by the Group Environmental Committee as annual environmental-action plans. With regard to climate-change countermeasures, the Environmental Action Plan sets targets for reducing CO₂ emissions within the Group. On the basis of those targets, energy-saving activities and the use of renewable energy are being promoted at each manufacturing site. The status of reductions in CO₂ emissions is monitored regularly, and the Group Environmental Committee meets once a year to share the results of the previous fiscal year, the status of numerical targets for the current fiscal year, and major initiatives to promote continuous improvement of activities. Since fiscal year 2021, the Executive Officer in charge of the environmental issues (Environment Executive Officer after January 2023), who chairs the Group Environmental Committee, reports to the Executive Committee and the Board of Directors twice a year on the status of efforts, including climate-change measures, to address environmental issues.

■ Status of important decisions on climate change in fiscal year 2022

Month/Year	Decisions on important issues related to climate change	Meeting body
March, April 2022	Environmental strategy and status of initiatives	Executive Committee, Board of Directors
May 2022	TCFD information disclosure	Executive Committee
September 2022	Support GX League	(President's decision)
October, November 2022	Environmental strategy and status of initiatives	Executive Committee, Board of Directors
April 2023	Transition from supporter to member in the GX League	(President's decision)

Contributions to the Realization of a Decarbonized Society/ Ubiquitization of Resource-conserving, Recyclable, and Environmentally-friendly Products

Environmental Promotion Structure



*The Group Environmental Committee is composed of the following persons and bodies, whose attendance is marked as ⊙: executive officer in charge, managers in charge of each business division, environmental management managers at business sites, general managers of corporate-related divisions, environmental-management officers at domestic group companies, and the Environmental Strategy Department, Manufacturing & Engineering Division.

Roles in the Promotion Structure

- Executive Officer in Charge**
The executive officer in charge of manufacturing and technology is in charge as an Environmental Officer and exercises overall control through the Group Environmental Committee.
- Proterial Group Environmental Committee**
Deliberate and determine policies, targets, etc. related to environmental activities within the Group.
- Chief Environmental Management Officer**
Oversee environmental-management activities within the business units.
- Environment Committee**
Deliberate and determine policies, targets, etc. related to environmental activities at each business site.
- Environmental managers**
Take responsibility for and promote environmental-management activities at each business site.

3 Strategy (Scenario analysis)

The Group has begun “scenario analysis” to clarify the risks and opportunities posed by future climate change and to develop business strategies to reduce risks and expand opportunities. While we recognize that scenario analysis should cover the entire group, including the supply chain, in fiscal year 2021, we limited our analysis to a limited number of scenarios and scope of coverage. In fiscal year 2022, we completed the

analysis of our domestic business. In fiscal year 2023, we reevaluated our domestic business for each business unit in line with the transition to the new system. From now onwards, we will promote scenario analysis that includes overseas operations.

Scenario-analysis Process

Scenario analysis—consisting of the four steps shown in Figure 1—aims to assess (i) financial and business impacts under different scenarios and

(ii) resilience of the Group strategy in regard to climate-related risks and opportunities.

Assumptions for scenario analysis

Scenarios	Refer to the “below-2°C scenario” for risks and opportunities excluding physical risks and the “4°C scenario” for physical risks.
Target businesses	FY 2021: Advanced Metals Division (Domestic sites) FY2022: Advanced Components & Materials Division (Domestic sites) FY2023: Each division (Domestic sites)
Target Fiscal Year	Impact as of 2030

Reference scenario

Classification	Main reference scenario
Below 2°C scenario	●IEA World Energy Outlook 2020. Sustainable Development Scenario ●IPCC RCP2.6
4°C scenario	●IEA World Energy Outlook 2020. Stated Policy Scenario ●IPCC RCP8.5

Scenario-analysis Steps (Figure 1)



- Step 1**
Identifying significant climate-related risks/opportunities and parameterization
 - Identify climate-related risks/opportunities
 - Assess most-significant risks/opportunities
 - Set parameters related to the most-significant risks/opportunities
- Step 2**
Establish climate-related scenarios
 - On the basis of the information in Step 1, identify the most-relevant scenarios among the existing scenarios.
 - Establish climate-related scenarios (societal vision)
- Step 3**
Assess the financial impact of each scenario
 - Analyze the financial impact of each scenario on the basis of the scenarios identified in Step 2 and the significant climate-related risks/opportunities and related parameters identified in Step 1.
- Step 4**
Assess the resilience of strategies against climate-related risks and opportunities and consider further countermeasures
 - Assess the resilience of our strategy for climate-related risks and opportunities
 - Consider further countermeasures

The following table shows the results of our review of the risks and opportunities posed by climate change.

Classification	Type	Content	Business/financial impact				Our response	
			Specialty Steel	Roll	Pipe*	Automotive castings		
Risk	Transition	Policy/regulations	Increased production and operating costs owing to stricter regulations on carbon pricing (CP), which includes carbon taxes, taxes on fuel and energy consumption, and emissions trading.	Medium	Medium	Small	Medium	Currently, we are working towards improving energy consumption per unit of production by 1% or more per year by promoting various energy-saving measures (LED lighting/replacement and introduction of high-efficiency equipment) and productivity improvement measures. Aiming to become carbon neutral by 2050, we plan to actively promote fuel conversion and introduction of renewable-energy facilities (installation of solar panels) as additional measures to achieve the 2030 CO ₂ -reduction target.
		Technology	Higher procurement costs of raw materials (including rare metals and auxiliary materials such as direct complementary materials) due to stricter regulations concerning CP.	Medium	Small	Small	Medium	As for principle raw materials, we will strengthen surcharges (price sliding-scale system) and cultivate new suppliers. From the perspective of LCA, we will increase the utilization ratio of scrap (which generates low CO ₂ emissions) and nurture new suppliers.
	Market	Increased operating costs associated with the introduction of manufacturing processes (based on electrification and alternative fuels) to meet decarbonization requirements.	Medium	Small	Small	Large	When introducing new manufacturing processes, we will examine equipment specifications with the aim of reducing its impact on operating costs.	
		Decreased sales of peripheral components of internal combustion engines owing to the expansion of xEVs.	Medium	—	—	Large	As for capturing demand for components of automotive internal-combustion engines, we will target the commercial-vehicle and agricultural/construction-equipment fields.	
		Decreased sales due to changes in customer procurement standards (RE100 and other compliance requirements) in accordance with decarbonization.	Medium	Small	Large	Small	As for reducing CO ₂ emissions from manufacturing processes, we will continue to promote both energy conservation and renewable energy, and we will focus on how to respond to customer requests for decarbonization.	
	Reputation	Increased costs of developing new products for a decarbonized society.	Small	Small	Medium	Large	We will develop environmentally friendly products and launch them onto the market sequentially while not being restricted to our conventional business areas.	
		Increased procurement risk due to increased demand for raw materials.	Small	Small	Small	Small	We will develop processes that utilize overseas scrap alloys and low-grade raw materials as well as processes.	
Physical	Acute and chronic	Decrease in sales due to lower customer evaluations resulting from delays in the development and market launch of environmentally friendly products.	Small	Small	Medium	Large	We will strengthen cooperation between the sales departments and the research and development departments with the aim of developing environmentally friendly products, and we will make strengthening that cooperation a company-wide top priority.	
		Orders and sales decreased owing to delays in delivery accompanying the suspension of operations caused by natural disasters due to abnormal weather.	Small	Small	Small	Small	We will systematically improve our production systems in anticipation of extreme weather events. We will expand the BCP system and refine the action manual for emergencies.	
Chance	Resource efficiency	Increased business costs due to rising insurance costs.	Medium	Small	Small	Large	In areas where disasters such as tidal waves and floods are anticipated on the basis of examples of past disaster, we will systematically implement disaster preparedness measures such as relocation of factories and product warehouses, protection of production lines, etc.	
		We will increase sales by increasing product value through efficient production and efficient use of materials and energy.	Medium	Small	Small	Small	To achieve the 2030 CO ₂ reduction target, we plan to promote various energy-saving measures (LED lighting, renewal and introduction of high-efficiency equipment, etc.) and productivity-improvement measures while promoting fuel conversion and introduction of renewable energy (i.e., installation of solar panels). Naturally, we will publicize our efforts and achievements.	
	Source of energy	We will increase sales by improving the customer's evaluation of supplier selection by working on decarbonization.	Medium	Medium	Small	Medium	We will promote CO ₂ reduction by introducing renewable energy and switching to carbon-neutral fuels.	
Market	Products/Services	We will increase sales by developing and launching environment-friendly products onto the market.	Large	Small	Small	Large	We will promote new orders and increase market share of target products by shortening development lead times and reducing costs of environmentally friendly products. We will continue to expand sales of environmentally friendly products, which are expected to be in more demand in the future. Examples: <ul style="list-style-type: none"> Mold materials that provide longer service life Materials for various industrial machinery, undercarriage parts, and exhaust-gas filters that contribute to improved fuel efficiency and reduced emissions by cars Aerospace products that are expected to improve fuel efficiency of airplanes Battery materials (clad products) and power-semiconductor materials for use in batteries and other products Mass-flow controllers that enable semiconductor manufacturing equipment to save energy 	
		We will increase sales by expanding sales into new global markets with increased demand for environmentally friendly products.	Medium	Small	Small	Small	As decarbonization progresses, products are expected to become smaller, more powerful, and lighter; accordingly, we will develop new applications with various alloys that can take advantage of different material properties.	
Market	Market	We will increase sales by expanding sales into xEV market.	Medium	—	—	Small	Many of our products, including cladding materials, are used in lithium-ion rechargeable batteries, for which demand is increasing with the expanding xEV market, so we expect sales to increase.	

Contributions to the Realization of a Decarbonized Society/ Ubiquitization of Resource-conserving, Recyclable, and Environmentally-friendly Products

Classification	Type	Content	Business/financial impact				Our response	
			Magnetic materials	Power electronics	Electric wires	Automotive components		
Risk	Transition	Policy/regulations	Large	Medium	Medium	Medium	Currently, we are reducing CO ₂ emissions by promoting various energy-saving measures (e.g., LED lighting and renewal and introduction of high-efficiency equipment) and measures to improve productivity. From now onwards, aiming to achieve our CO ₂ -emissions target for 2030, we will actively promote fuel conversion and purchase of renewable electricity as well as the introduction of renewable energy (i.e., installation of solar panels)	
			Large	Medium	—	Small	As for principle raw materials, we will work to strengthen surcharges (price sliding-scale system) and cultivate new suppliers. From the perspective of life-cycle assessment (LCA), we will increase the utilization ratio of scrap (which generates low CO ₂ emissions), and in regard to the magnet business, we will work to reduce the amount of heavy rare earths used and reduce procurement costs by developing low-heavy-rare-earth materials and introducing them to the market.	
		Technology	Small	Small	Small	—	When introducing new manufacturing processes (e.g., introduction of the latest energy-saving technologies), we will examine equipment specifications with the aim of reducing their impact on operating costs. And the increased costs will be passed on to sales prices.	
		Market	Decrease in sales due to lower sales prices and lower customer evaluations due to intensifying competition in the Asian market with competing xEV suppliers	—	Large	Small	Large	We will reduce costs by introducing high-efficiency equipment, improving productivity, and procuring parts locally.
			Sales declined due to the impact on operations caused by the tight procurement of main raw materials resulting from increased demand for copper	—	—	Large	—	We will reduce the amount of copper used by improving productivity and secure multiple procurement routes by securing new suppliers.
	Chance	Market	Decrease in sales due to delays in responding to decarbonized-product requirements for existing products or lost opportunities to expand new sales (RE100, etc.)	Small	Large	Small	Large	We will improve the ratio of renewable energy use by promoting introduction of renewable energy and selecting electric-power companies with high RE power-generation ratio.
			Orders and sales decreased owing to delays in delivery accompanying the suspension of operations caused by natural disasters due to abnormal weather.	Small	Small	Medium	Large	We will systematically improve our production systems in anticipation of extreme weather events. We will expand the BCP system and refine the action manual for emergencies.
		Resource efficiency	Small	Small	Medium	Small	To achieve our 2030 CO ₂ -reduction target, we plan to promote various energy-saving measures (switching to LED lighting and renewal and introduction of high-efficiency equipment) and measures to improve productivity as well as actively promote fuel conversion and introduction of renewable energy (installation of solar panels) while publicizing our efforts and achievements.	
		Source of energy	Small	Small	Small	Small	Reduce electricity consumption by improving productivity and increase the utilization rate of renewable energy.	
		Products/Services	Large	Large	Medium	Medium	We aim to expand sales by developing products that contribute to a low-carbon society. ・ Various products for xEVs (magnets, SiN, SiC, magnet wires, automotive electrical components, etc.) ・ Amorphous alloy (MaDC-A™) that contributes to higher efficiency of transformers	

Pipe: Piping Components
 Power electronics: Power Electronics Materials
 Electric wires: Electric Wire & Cable
 xEV: A collective term for electric vehicles (EV), hybrid electric vehicles (HEV), and plug-in hybrid electric vehicles (PHEV).
 RE100: Abbreviation for 100% Renewable Energy. An international initiative that aims to provide 100% of the electricity used in business operations from renewable energy sources.

Definition of assessment of business/financial impact	Large: cost or effect equal to or greater than 5% of sales*1 Medium: cost or effect equal to at least 1% but less than 5% of sales*1 Small: cost or effect is less than 1% of sales*1 —: Not subject to impact assessment
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*1 Net sales of target businesses

As described above, in response to the content of the October 31, 2022 disclosure of the Advanced Metals Division (Domestic sites) and the Advanced Components & Materials Division (Domestic sites), we have reassessed our domestic

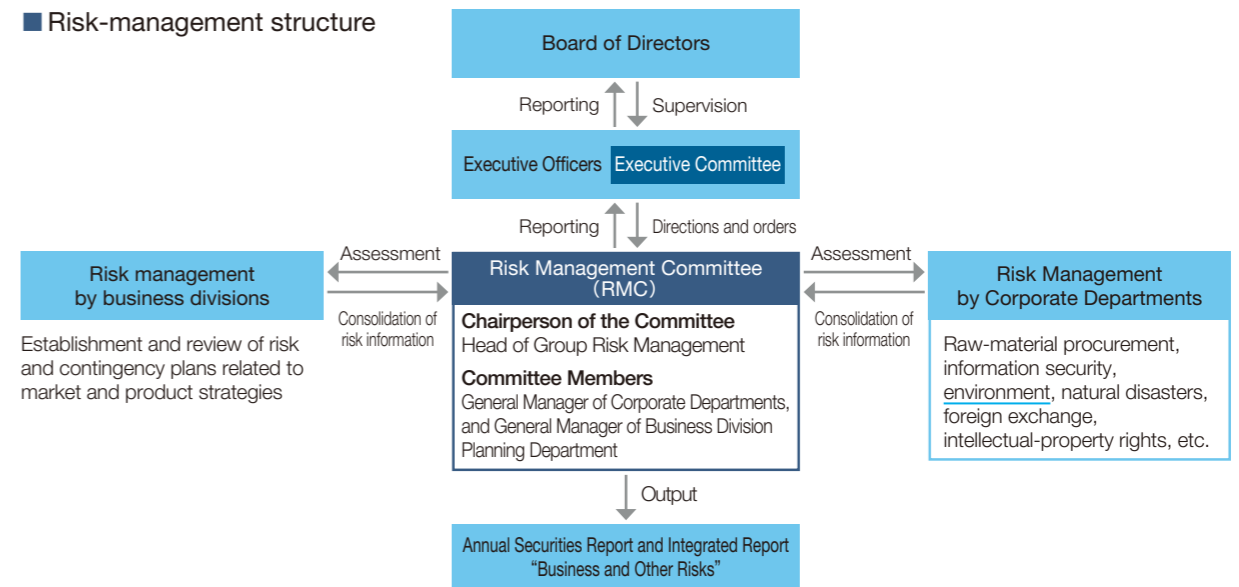
business by business unit in conjunction with the transition to the new system in fiscal year 2023, and we have verified that our strategy is resilient to each risk and opportunity with respect to the strategy for these businesses.

4 Risk Management

In April 2022, the Group established a “Company-wide Risk Management Committee” (RMC) under the supervision of the Executive Officer responsible for group-risk management. The RMC summarizes various business risks surrounding the Group and contingency plans for those risk, and evaluates their coverage and weighting. Risks related to climate change identified by the Group Environmental Committee, corporate

departments, and business divisions are reported to the RMC together with other risks as one of the risks related to environmental regulations. The RMC is scheduled to meet twice a year, and the results of the interim and year-end risk-management assessments of the RMC are reported to and reviewed by the Executive Committee and the Board of Directors.

Risk-management structure

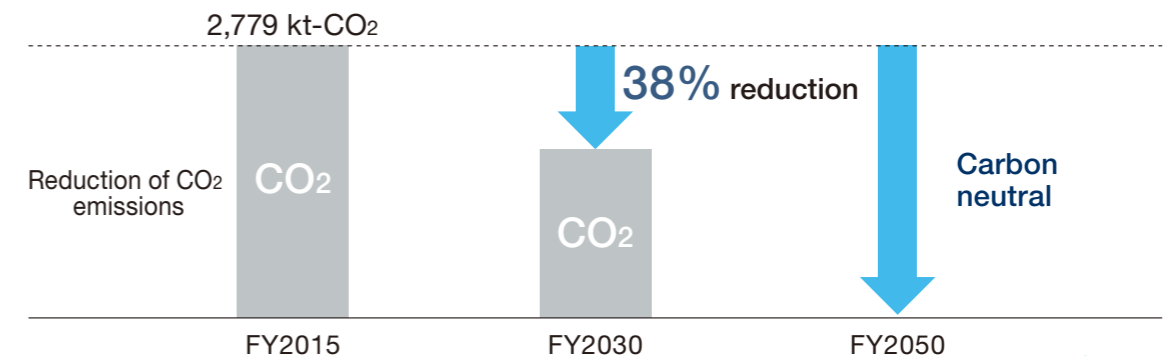


5 Indicators and Targets

The Group has set the Scopes 1 and 2 targets for reducing CO₂ emissions* as shown in the illustration below. In promoting carbon neutrality, we will continue our conventional energy-saving activities while striving to improve processes such as capital

investment, convert to alternative fuels for melting furnaces, heating furnaces, and manufacturing processes, develop technologies based on carbon-free fuel, and introduce renewable energy.

Target for reduction of CO₂ emissions (whole Group)



Reduction of CO₂ through two measures: energy saving and introduction of renewable energy
 CO₂ reduction by improving productivity efficiency as a base measure

*Scope 1 (direct CO₂ emissions by the company)
 Absolute amount of Scope 2 (indirect emissions associated with use of electricity, heat, and steam supplied by other companies)

Contributions to the Realization of a Decarbonized Society/ Ubiquitization of Resource-conserving, Recyclable, and Environmentally-friendly Products

■ Group-wide Scope 1 and 2 results (kt-CO₂)

Target	FY2020	FY2021	FY2022
Scope1	777	876	818
Scope2	1,218	1,340	1,095
Scope1 + Scope2	1,995	2,216	1,913

About Scope 3

The Company calculated CO₂ amount for Scope 3 Categories 1 to 7 and 13 according to "Basic Guidelines on Accounting for Greenhouse Gas Emissions Throughout the Supply Chain."

CO₂ emissions in fiscal year 2021 totaled 2,356 kt-CO₂, of which "Category 1: Purchased Goods and Services" accounted for the largest share (74.1%).

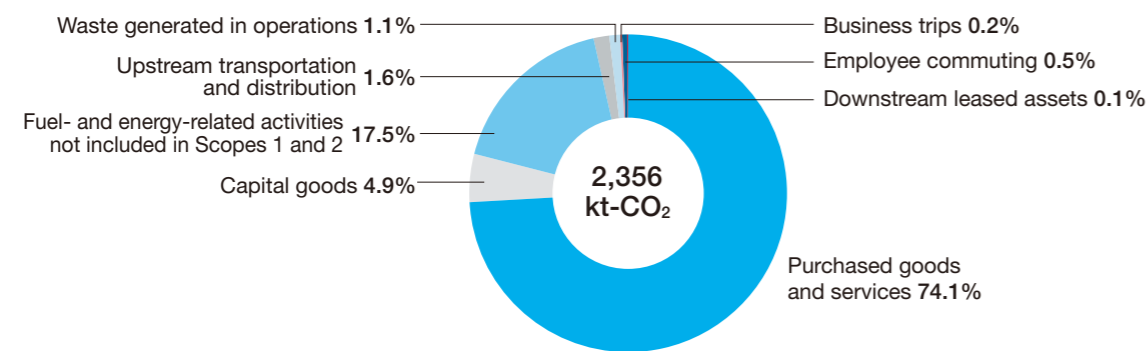
■ Group-wide Scope 3 aggregated results (Fiscal year 2021)

Category	Category description	CO ₂ emissions (kt-CO ₂)	Ratio (%)
1	Purchased goods and services	1,746	74.1
2	Capital goods	115	4.9
3	Fuel and energy related activities not included in Scopes 1 and 2	412	17.5
4	Upstream transportation and distribution	38	1.6
5	Waste generated in operations	27	1.1
6	Business trips	4	0.2
7	Employee commuting	12	0.5
13	Downstream leased assets	2	0.1
Total		2,356	100.0

*Scope of data: Calculated only for the relevant category within the Group.

*Calculation method: Ministry of the Environment DB3.1 and IDEA database Ver. 3.2 were used.

■ Scope 3 Fiscal year 2021 results



Executive compensation

Compensation for our Executive Officers is based upon the achievement of annual targets. From fiscal year 2022, we added the Group's CO₂-emissions reduction target as an evaluation item

for climate-change response. We also applied this indicator to management staff, and we are working on carbon-neutrality measures as it's an important issue facing our business operations.

Internal carbon price

To promote CO₂ reduction, we have added the concept of "internal carbon pricing" to our internal regulations related to capital investment. In detail, we set a carbon price (8,000 yen/t CO₂) based on the total amount of CO₂ emissions after capital investment, and the effect of the CO₂ reduction of the capital

investment is calculated as profit. (October 2021)
The carbon price will be calculated with reference to the procurement price of renewable energy in Japan and reviewed periodically.

TOPIC 1 Introduction of a PV Power Generation System Based on the TPO/PPA Model at the Company's Moka Site

The Proterial has identified contributions to the realization of a decarbonized society as an important management issue. In a bid to address this issue, reduce its environmental impact, and promote the use of renewable energy on a sustained basis, we introduced a photovoltaic (PV) power generation system based on a Third Party Ownership/Power Purchase Agreement (TPO/PPA) model at our Moka site in fiscal 2022. Operations commenced from April 2023. This system has a total solar cell module capacity of 1,333 kWh and an annual power generation of 2,500 MWh, all of which is consumed on-site. This amount of electricity is equivalent to approximately 2.5% to 3% of the Moka Works' electricity consumption, and is expected to reduce CO₂ emissions by about 1,100 tons per year. The clean electricity produced by this PV power generation system on the Company's property is being used in the manufacturing process at its Moka Works and is a central measure for realizing a decarbonized society. In addition to our efforts to reduce CO₂ emissions through the introduction of PV power generation, we will continue to promote initiatives that contribute to the transition to a decarbonized society.



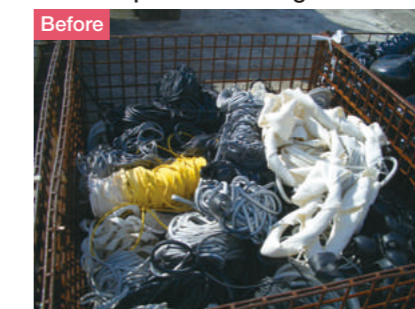
Panoramic view of the PV power generation system at the Moka site

TOPIC 2 Reduction Activities for a Plastic-related Resource-recycling Society

With Japan's Plastic Resource Circulation Act coming into effect, the need to contain the discharge of industrial waste from products that are made from plastic and to promote a variety of measures, including recycling, has increased substantially in recent years. Against this backdrop, Proterial conducts surveys on its amount of industrial waste from plastic-based products and is implementing activities aimed at recycling resources, focusing on business sites with large amounts of such waste. Each business site uses a waste emission classification chart to reduce waste through a process of emission, recycling, disassembly, and recycling. Through this process, industrial waste from plastic products is separated for recycling and waste at each business site to reduce the amount of waste.

The world is currently facing a host of marine plastic debris-related issues. Proterial places the utmost emphasis on preventing marine pollution, including the protection of fish ecosystems. Moreover, we are looking at ways to increase the use of recycled materials at the raw material procurement stage while recycling resources at the development and design stages, which will lead to a circular economy.

Waste separation/sorting case study



Outsourcing the disposal of waste



Sorting into valuable materials and waste, sales of valuable materials, and outsourcing disposal of residual waste

TOPIC 3 Participation in Initiatives and External Evaluations

The Proterial actively endorses and participates in domestic and international environmental initiatives.

