

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

Proterial Group’s Response to Climate Change

Disclosure Based on TCFD Recommendations (July 29, 2024)

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. Going forward, we will also continue to respond to the disclosure standards of the International Sustainability Standards Board (ISSB) and the Sustainability Standards Board of Japan (SSBJ).



* 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, hereinafter) 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.

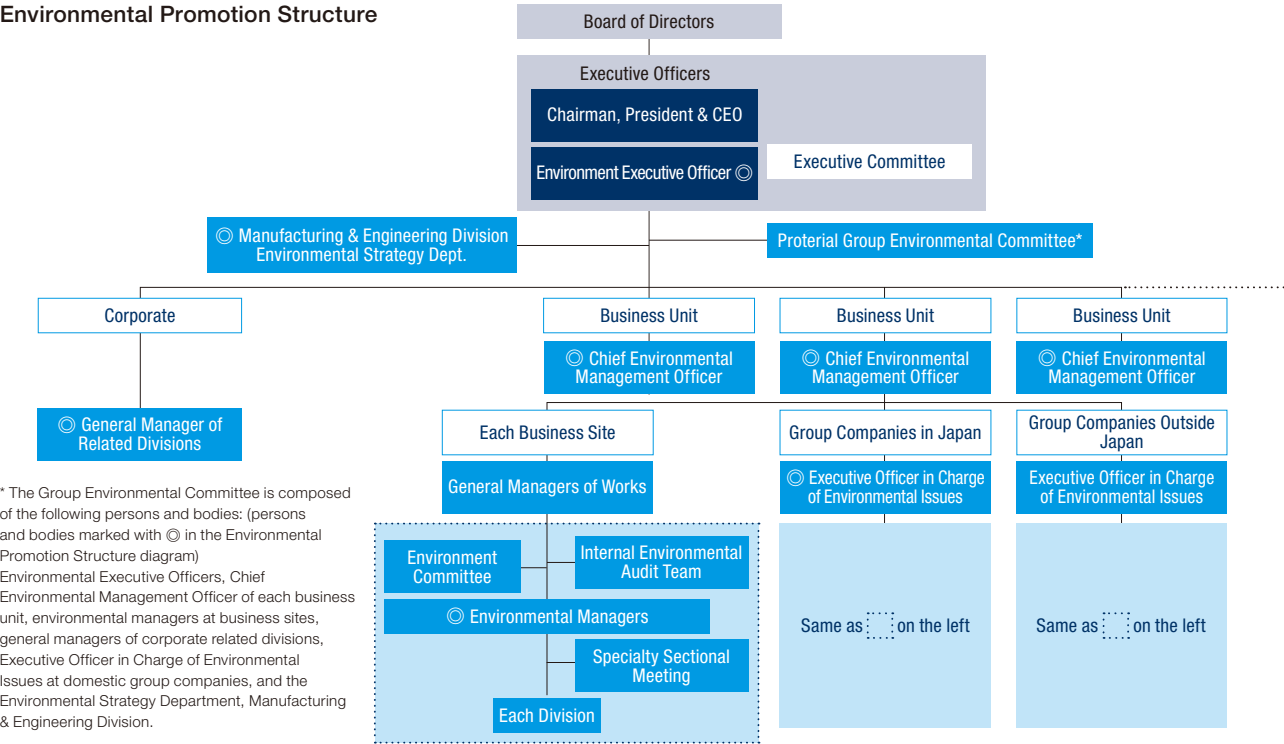
Policies and targets concerning environmental activities are discussed and set by the Group Environmental Committee as annual environmental action plans. With regard to climate change countermeasures, the Environmental Action Plan sets targets for CO₂ emissions within the Group. On the basis of those targets, energy-saving activities and the use of renewable energy are being promoted at each manufacturing site. The status of 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.

In addition, the status of efforts toward environmental issues, including climate-change measures, are reported twice a year to the Executive Committee and the Board of Directors, where important issues related to climate change are also deliberated and decided.

Status of reporting and decision-making on important climate-change-related items in FY2023

Month/Year	Important issues related to climate change	Meeting body
April 2023	Membership of the GX League	(President’s decision)
May, June 2023	Environmental strategy and status of initiatives (initiative results for FY2022, initiative policy for FY2023, update of TCFD disclosure content (review of scenarios and Scope 3 disclosure))	Executive Committee, Board of Directors
October, November 2023	Environmental strategy and status of initiatives (initiative status for FY2023, setting of GX League targets)	Executive Committee, Board of Directors
January 2024	• Revision of company regulations (review of responsibilities of officers in charge of environmental issues, etc.) • Support and participation in Keidanren Declaration for Biodiversity	Executive Committee

Environmental Promotion Structure



Roles in the Promotion Structure

■ Environment Executive Officer
The executive officer in charge of manufacturing and technology is in charge as an Environment Executive Officer who is well acquainted with environment-related issues and exercises overall control through the Group Environmental Committee.

■ Proterial Group Environmental Committee
Deliberates and determines policies, targets, etc. related to environmental management activities within the Group.

■ Chief Environmental Management Officer
Oversees environmental management activities within the business units.

■ Environment Committee
Deliberates and determines policies, targets, etc. related to environmental management activities at each business site.

■ Environmental Managers
Take responsibility for and promote environmental-management activities of each business site.

3. Strategy (Scenario Analysis)

The Group conducted “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, FY2022, we conducted an analysis of our domestic business. In FY2023, we reevaluated our domestic business in line with the transition to the new system. In FY2024, we conducted analysis that included major 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

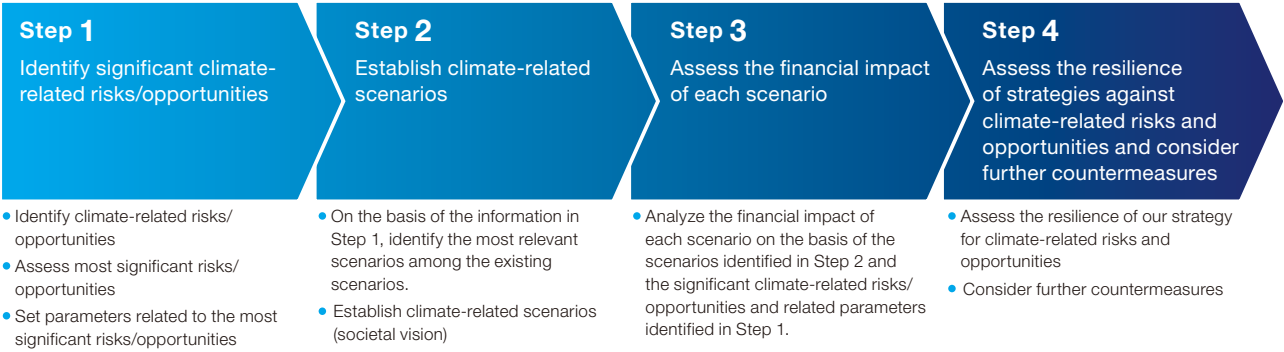
Scenarios: Refer to the “below 2°C scenario” for transition risks and opportunities and the “4°C scenario” for physical risks.
Target businesses: FY2022: Advanced Components & Materials Division (Domestic sites) and Advanced Metals Division (Domestic sites)
FY2023: Each division (Domestic sites)
FY2024: Each division (Domestic sites and major overseas sites)
Target Fiscal Year: Impact by 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

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■ Scenario-analysis steps (figure 1)



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	Automotive castings	
Risk	Transition	Policy/regulations	Medium	Medium	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.
						As for principle raw materials, we will strengthen surcharges 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 nurture new suppliers
		Technology	Small	Small	Large	When introducing new manufacturing processes, we will examine equipment specifications with the aim of reducing its impact on operating costs
	Market	Market	Medium	Small	Large	As for capturing demand for components of automotive internal-combustion engines, we will target the commercial-vehicle and agricultural/construction-equipment fields
						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.
		Acute and chronic	Small	Small	Large	Orders and sales decreased owing to delays in delivery accompanying the suspension of operations caused by natural disasters due to abnormal weather.
	Physical	Acute and chronic	Small	Small	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.

Classification		Type	Content	Business/financial impact				Our response	
				Magnetic materials	Power electronics	Electric wires	Automotive components		
Risk	Transition	Policy/ regulations	Increased production and operating costs due to tighter regulations on carbon pricing (CP), including carbon taxes, taxes on fuel and energy consumption, and emissions trading.	Medium	Large	Small	Medium	We are reducing CO ₂ emissions by promoting various energy-saving measures (e.g., LED lighting and renewal/introduction of high-efficiency equipment) and measures to improve productivity. From now onwards, aiming to achieve our CO ₂ reduction 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).	
			Increased procurement risk due to strengthened CP regulations for raw materials.	Small	Medium	Medium	Small	As for principle raw materials, we will work to strengthen surcharges and cultivate new suppliers. In the magnet business, we will continue to develop materials that use fewer heavy rare earth elements and introduce them to the market. In the electric wire business, we will reduce the amount of copper used by improving productivity, develop and commercialize aluminum alloy conductor cables, and further expand the ratio of recycled copper.	
		Technology	Increase in operating costs due to capital investment involved in the introduction of manufacturing processes (electrification and alternative fuels) to meet decarbonization requirements.	Small	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	Decreased demand for peripheral components of internal combustion engines owing to the expansion of xEVs and decrease in sales due to excessive competition with competing xEV suppliers.	Small	Large	Small	Small	We will reduce costs by introducing high-efficiency equipment, improving productivity, and procuring parts locally.
				Decrease in sales due to delays in responding to customer requests for decarbonization and lost opportunities to expand new sales.	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.
	Physical	Acute and chronic	Orders and sales decreased owing to delays in delivery accompanying the suspension of operations caused by natural disasters due to abnormal weather.	Small	Medium	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.	

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Classification	Type	Content	Business/financial impact				Our response
			Specialty Steel	Roll	Automotive castings		
Opportunity	Resource efficiency	We will increase sales by increasing product value through efficient production and efficient use of materials and energy.	Small	Small	Small		To achieve the 2030 CO ₂ reduction target, we plan to promote energy-saving measures through fuel conversion for industrial furnaces and boilers, introduction of high-efficiency equipment and waste heat utilization, and actively promote further introduction of solar power generation facilities. We will also proceed with PR activities relating to our efforts and achievements.
	Source of energy	We will increase sales by improving customers' supplier selection evaluation through decarbonization efforts.	Small	Small	Small		We will promote CO ₂ reduction by introducing renewable energy and switching to carbon-neutral fuels.
	Products/ services	We will increase sales by developing and launching environmentally friendly products onto the market.	Large	Small	Small		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 greater demand in the future. <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
Classification	Type	Content	Business/financial impact				Our response
			Magnetic materials	Power electronics	Electric wires	Automotive components	
Opportunity	Resource efficiency	We will increase sales by increasing product value through efficient production and efficient use of materials and energy.	Small	Medium	Small	Medium	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). We will also proceed with PR activities relating to our efforts and achievements.
	Source of energy	We will increase sales by improving customers' supplier selection evaluation through decarbonization efforts.	Small	Small	Small	Small	We will reduce electricity consumption by improving productivity and increase the utilization rate of renewable energy.
	Products/ services	We will increase sales by developing and launching environmentally friendly products onto the market.	Large	Large	Small	Medium	We aim to expand sales by developing products that contribute to a low-carbon society. <ul style="list-style-type: none">• Various products for xEVs (high-performance magnets, SiN, SiC, magnet wires, automotive electrical components, etc.)• Amorphous alloy (MaDC-A) that contributes to higher efficiency of transformers

xEV: A collective term for electric vehicles (EV), hybrid electric vehicles (HEV), and plug-in hybrid electric vehicles (PHEV).

Definition of assessment of business/financial impact
Large: cost or effect is equal to or greater than 5% of sales*1
Medium: cost or effect is equal to at least 1% but less than 5% of sales*1
Small: cost or effect is less than 1% of sales*1

*1 Net sales of target businesses

As described above, in response to the assessment of domestic sites disclosed in October 2023, we have reverified the response to risks and opportunities for each business, including major overseas sites, and we have confirmed that our environmental strategy is resilient.

4. Risk Management

The Group has established a Risk Management Committee (RMC) under the supervision of the Chief Risk Control Officer (CRCO) executive officer. The function of the RMC is to identify various risks surrounding the Group, and comprehensively manage risks by summarizing the status of controls against those risks and assessing and weighting the degree to which they manifest and their level of impact. 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 meets twice a year to share the status of risk controls and related monitoring results, and to report to the Executive Committee.

Risk management structure

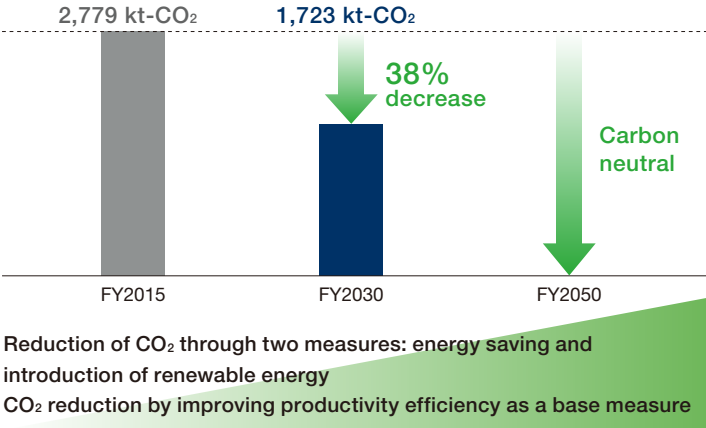


5. Indicators and Targets

About Scopes 1 and 2

The Group has set the Scopes 1 and 2² targets for 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 other manufacturing processes, develop technologies based on carbon-free fuel, and introduce renewable energy.

Target for CO₂ emissions (whole Group)



*2 Scope 1: Direct emissions of greenhouse gases by business operators themselves (fuel burning and industrial processes)
Scope 2: Indirect emissions associated with use of electricity, heat, and steam supplied by other companies

Group-wide Scope 1 and 2 results

Target	FY2021	FY2022 ^{*3}	FY2023 ^{*4,*5}
Scope 1	876	818	234
Scope 2	1,340	1,096	828
Scope 1 + Scope 2	2,216	1,914	1,062

*3 CO₂ emissions (Scopes 1 and 2) in FY2022 have been certified by a third party.
*4 CO₂ emissions (Scopes 1 and 2) in FY2023 are being verified by a third party as of July 2024.
*5 CO₂ emissions in FY2023 significantly decreased compared to the previous fiscal year due to the impact of business portfolio revision, among other things.

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About Scope 3

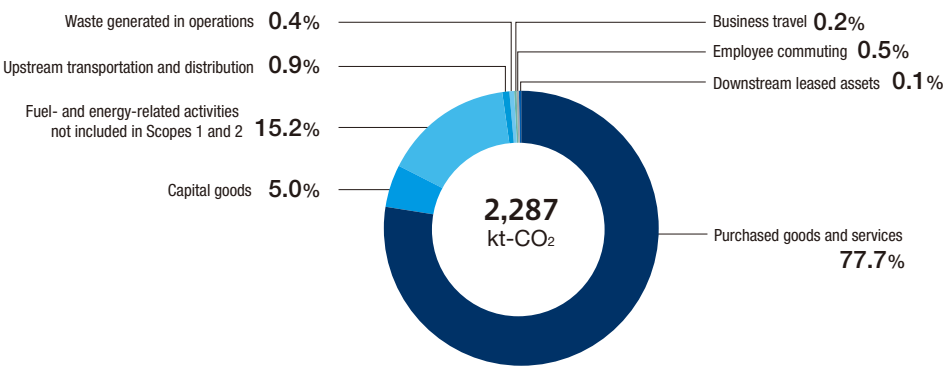
The Company calculated CO₂ amount for Scope 3 Categories 1 to 7 and 13 according to “Basic Guidelines on Accounting for Greenhouse Gas Emissions Throughout the Supply Chain.”CO₂ emissions in FY2023 totaled 2,287 kt-CO₂, of which “Category 1: Purchased Goods and Services” accounted for the largest share (77.7%).

Group-wide Scope 3 aggregated results

Category	Category description	FY2021		FY2022		FY2023	
		Emissions [kt-CO ₂]	Ratio [%]	Emissions [kt-CO ₂]	Ratio [%]	Emissions [kt-CO ₂]	Ratio [%]
1	Purchased goods and services	1,746	74.1	1,787 ^{*6}	76.5	1,778 ^{*7}	77.7
2	Capital goods	115	4.9	106	4.5	115	5.0
3	Fuel and energy related activities not included in Scopes 1 and 2	412	17.5	391	16.7	348	15.2
4	Upstream transportation and distribution	38	1.6	24	1.0	21	0.9
5	Waste generated in operations	27	1.1	11	0.5	9	0.4
6	Business travel	4	0.2	3	0.1	3	0.2
7	Employee commuting	12	0.5	12	0.5	11	0.5
13	Downstream leased assets	2	0.1	2	0.1	2	0.1
Total		2,356	100.0	2,336	100.0	2,287	100.0

^{*6} CO₂ emissions (Scope 3 Category 1) in FY2022 have been certified by a third party.
^{*7} CO₂ emissions (Scope 3 Category 1) in FY2023 are being verified by a third party as of July 2024.
Scope of data: Categories 1 to 7 (excluding Category 4) and Category 13 are figures for the whole Group. Figures in Category 4 are based on domestic operations only.
Calculation method: FY2021, FY2022: Ministry of the Environment DB3.1 and IDEA database Ver. 3.2 were used.
FY2023: Ministry of the Environment DB3.4 and IDEA database Ver. 3.3 were used.

Scope 3 FY2023 results



Executive compensation

Compensation for our Executive Officers is based upon the achievement of annual targets. From FY2022, we have added the Group's CO₂ emissions target as an evaluation item for climate-change response. We have 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. The concept has been implemented since October 2021, and as a result of the carbon price review, we have decided to maintain the price with reference to the carbon taxes, carbon credits, and procurement prices of renewable energy, both in Japan and overseas. We will continue to review the carbon price periodically.

Topic

Expanding the deployment of renewable energy

The Proterial Group is working to expand its introduction of renewable energy, as well as promoting energy-saving activities, in order to contribute to the realization of a decarbonized society and to promote carbon neutrality.

FY2023, we introduced captive use photovoltaic power generation, mainly using the TPO/PPA model (Third Party Ownership/ Power Purchase Agreement) as shown in the table below.

Installation location	Installation site	Panel capacity (kW)	Annual power generation (thousand kWh/year)	CO ₂ emissions reduction (t-CO ₂ /year)
Moka City, Tochigi Prefecture	Moka Works, Casting Technology Research Laboratory	1,333	2,500	1,100
Kumagaya City, Saitama Prefecture	Kumagaya Works	9,970	11,500	5,100
Hai Duong Province, Vietnam	Proterial Vietnam Co., Ltd.	4,900	5,500	4,000
Hitachi City, Ibaraki Prefecture	Toyoura Plant of Ibaraki Works	1,700	1,947	900

The TPO/PPA model is a scheme in which a solar power system is installed by a company that owns and manages solar power generation equipment (power sales contractor) on a site, roof, or other space provided by the owner of a facility, and the generated electricity is provided to the power consumer of the facility (facility owner) for a fee. This has the advantage of enabling the facility owner (Proterial) to use renewable energy on a large scale while reducing risk by off-balancing its solar power generation.

In addition, we have also installed solar power generation systems at our Yasugi Works (530kW) and Kyushu Techno Metal, Ltd. (100kW) through our own investment, and we have installed solar power generation systems with a total panel capacity of approximately 17,000kW and an annual power generation capacity of approximately 22,500MWh (reducing CO₂ emissions by approximately 11,300t) as of FY2023.

The Proterial Group is aiming to have an annual capacity of power generated by renewable energy of over 35,000MWh by FY2030.

Furthermore, the Proterial Group is not only promoting solar power generation, but also the purchase of renewable energy, and is promoting activities to achieve the carbon neutrality by 2050.



Solar power generation facilities at Proterial Vietnam Co., Ltd.