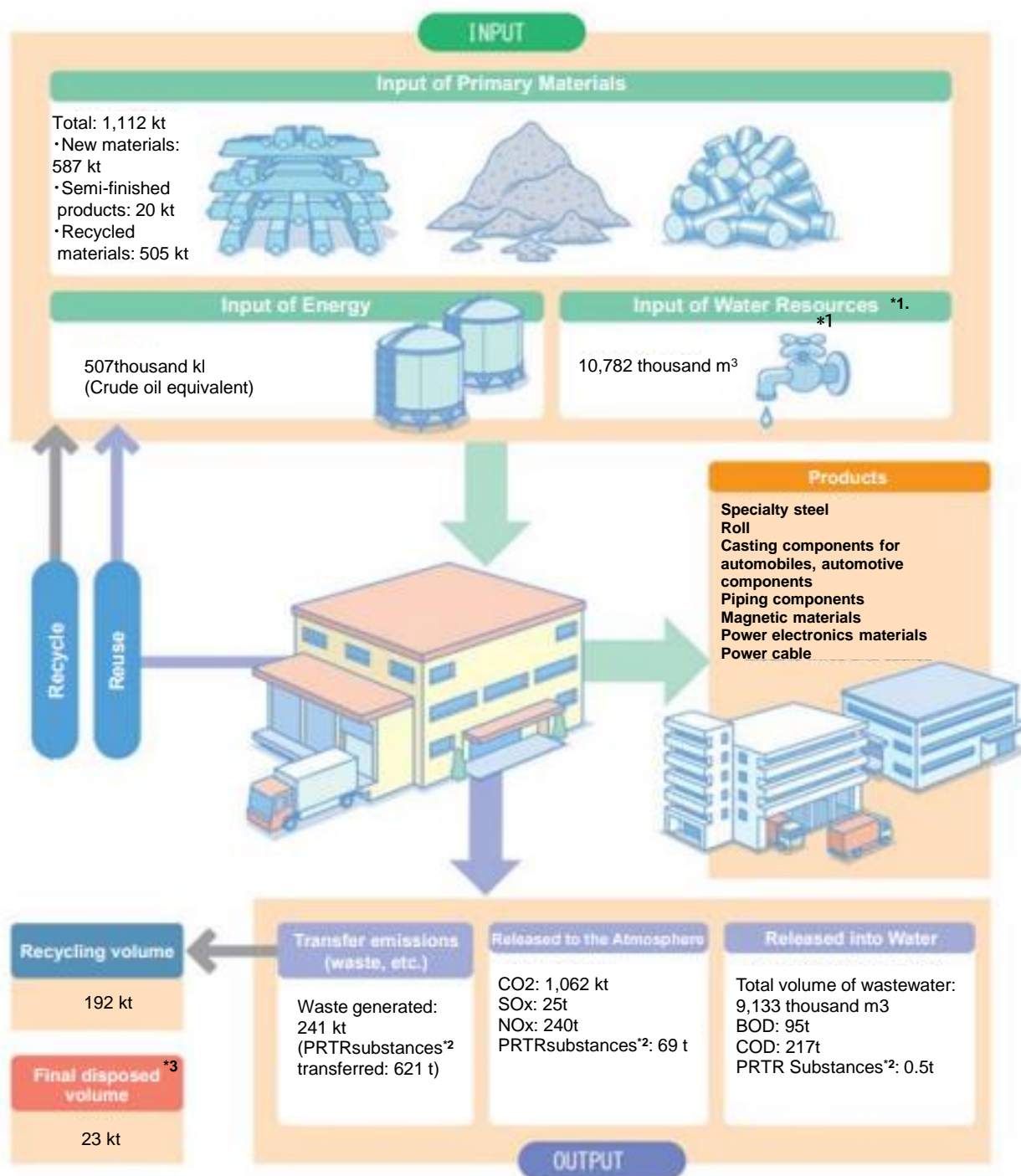


Environmental Consideration in Manufacturing

This is a graphical representation of the balance of materials in manufacturing processes at the Proterial Group for fiscal 2023. The Proterial Group is promoting the reduction of environmental burden in two directions: reducing the volume of input through the efficient use of resources and energy, and reducing the volume of output by controlling atmospheric releases and wastewater discharges, reducing and recycling waste, and so on.

(1) Material Balance

[The Proterial Group's Material Balance for Fiscal 2023 (Global)]



*1. Input of water resources: total amount handled

*2. Volume of PRTR substances released/transferred is the combined total for Group companies in Japan.

*3. Final disposal amount includes that of household waste, hazardous waste, and in-house landfill.

(2) Toward a decarbonized society

The Proterial Group aims to realize our Vision of “leading sustainability by high performance” as stated in our corporate philosophy. We have also expressed our commitment to reducing CO₂ emissions throughout the value chain aiming for a decarbonized society, and set long-term goals to achieve carbon neutrality by fiscal 2050 primarily to promote efforts to reduce CO₂ emissions from production operations.

[1] Addressing Climate Change

(a) Disclosure in accordance with 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 Proterial Group considers the impact of climate change on its business as one of its 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. We will continue to enhance our disclosure of information on the impact of climate change on our business activities in accordance with the TCFD Recommendations.

Going forward, we will work to meet disclosure standards published by the International Sustainability Standards Board (ISSB) and Sustainability Standards Board of Japan (SSBJ).



* TCFD (Task Force on Climate-related Financial Disclosures):

Created in 2015 by the Financial Stability Board (FSB) in response to the related request from the G20 summit meeting. In June 2017, the TCFD published the final recommendations, specifying items for business and other organizations to deal with when disclosing information on climate-related risks and opportunities.

(b) Indicators and Targets

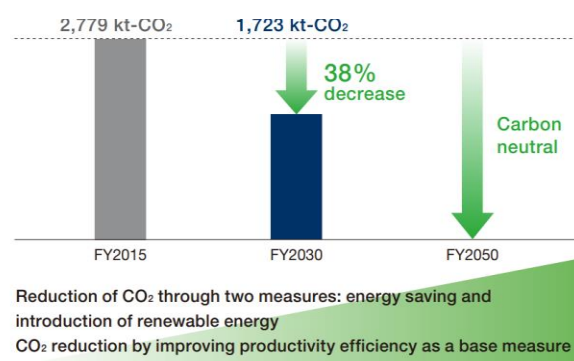
■ About Scopes 1 and 2

The following are Scope 1 and 2*¹ CO₂ emissions reduction targets set by the Proterial Group. In promoting carbon neutrality, we will implement various measures, such as process improvement particularly through facility investment, fuel conversion for melting and heating furnaces and other equipment, technology development for expanding usage of carbon-free fuels, and introducing renewable energy in addition to continuing with previous energy-conserving activities.

*1. Scope 1: Direct emissions of greenhouse gases by business operators themselves (fuel burning and industrial processes)

Scope 2: indirect emissions associated with the use of electricity, heat, and steam supplied by other companies (absolute value)

[CO₂ Emission Reduction Target (Group-wide)]



*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 (kt-CO₂)]

Item	FY2021	FY2022	FY2023 ^{3,4}
Scope1	876	818	234
Scope2	1,340	1,096	828
Scope1 + Scope2	2,216	1,914	1,062

*2 CO₂ emissions (Scopes 1 and 2) in fiscal 2022 were certified by a third party.

*3 CO₂ emissions (Scopes 1 and 2) in fiscal 2023 were certified by a third party in August 2024.

*4. CO₂ emissions in fiscal 2023 significantly decreased compared to the previous fiscal year due to the impact of business portfolio revision, among other factors.

■ 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 2023 totaled 2,111 kt-CO₂, of which “Category 1: Purchased Goods and Services” accounted for the largest share (76.2%).

Category	Category description	FY2021		FY2022		FY2023	
		CO ₂ emissions (kt-CO ₂)	Percentage (%)	CO ₂ emissions (kt-CO ₂)	Percentage (%)	CO ₂ emissions (kt-CO ₂)	Percentage (%)
Category 1	Purchased goods and services	1,746	74.1	1,787 ^{*5}	76.5	1,769 ^{*6}	83.8
Category 2	Capital goods	115	4.9	106	4.5	115	5.4
Category 3	Fuel and energy related activities not included in Scopes 1 and 2	412	17.5	391	16.7	182	8.6
Category 4	Upstream transportation and distribution	38	1.6	24	1.0	21	1.0
Category 5	Waste generated in operations	27	1.1	11	0.5	7	0.4
Category 6	Business trips	4	0.2	3	0.1	3	0.2
Category 7	Employee commuting	12	0.5	12	0.5	11	0.5
Category 13	Downstream leased assets	2	0.1	2	0.1	2	0.1
Total		2,356	100.0	2,336	100.0	2,111	100.0

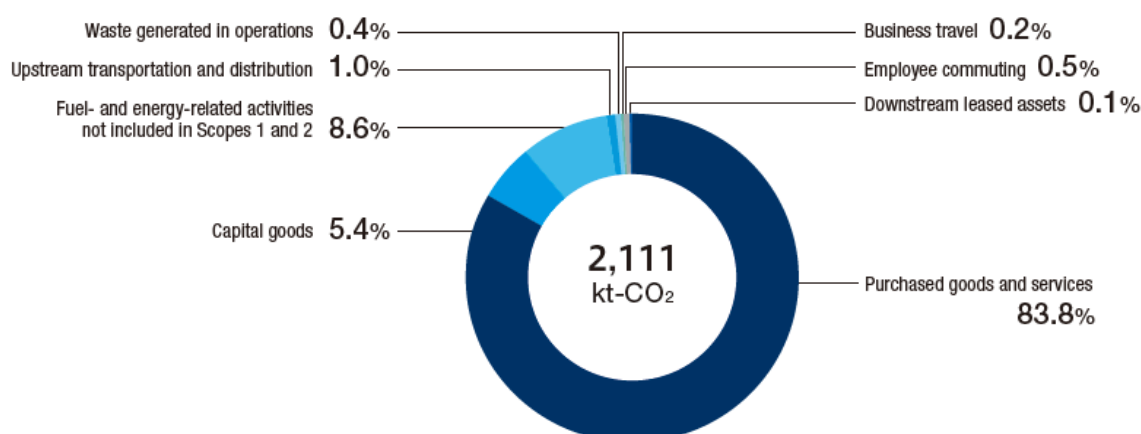
*5. CO₂ emissions (Scope 3 Category 1) in fiscal 2022 were certified by a third party.

*6. CO₂ emissions (Scope 3 Category 1) in fiscal 2023 were certified by a third party in August 2024.

Scope of data: Figures in Categories 1 to 7 (excluding Category 4) and Category 13 are 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 determined based on the achievement of annual targets. Starting in fiscal 2022, the achievement of the Group's CO₂-emissions reduction target has been added as an evaluation item for climate-change response.

Internal carbon pricing

To promote CO₂ emissions 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.

(c) 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. We recognize that scenario analysis should cover the entire Group, including the supply chain, and thus are ramping up the scope of analysis, starting with our domestic business in fiscal 2022. In fiscal 2023, we re-evaluated our domestic business in line with the transition to the new system. In fiscal 2024, the scope was broadened to include major overseas operations.

Scenario-analysis process

Scenario analysis is conducted following the relevant steps to assess (i) financial and business impacts under different scenarios and (ii) resilience of the Proterial Group strategy in regard to climate-related risks and opportunities.

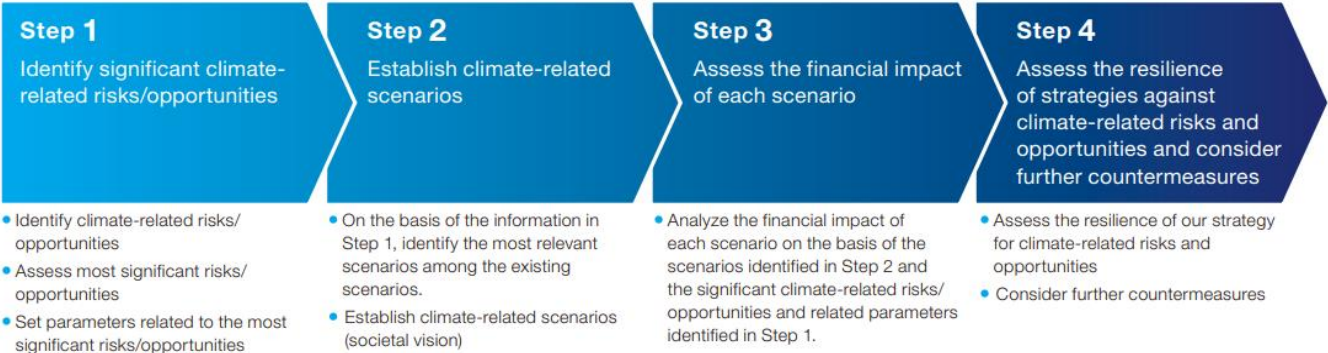
Assumptions for scenario analysis

Scenario:	Refer to “Below-2°C scenario” for risks and opportunities excluding physical risks, and refer to “4°C scenario” for physical risks.
Target businesses:	FY2022: Advanced Components and Materials Division (domestic sites); Advanced Metals Division (domestic sites) FY2023: each business unit (domestic sites) FY2024: Each business unit (domestic sites and major overseas sites)
Target year:	Impact as of 2030

Reference scenario

Classification	Main reference scenario
Less-than 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

■ Steps of scenario analysis



The following table summarizes the results of examinations on risks and opportunities posed by climate change.

[Specialty Steel, Rolls, Automotive Castings]

Classification		Type	Content	Business/financial impact ^{*1}			Our response
				Specialty steel	Rolls	Automotive Casting	
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	Medium	Medium	Currently, we are working to reduce CO ₂ emissions by promoting various energy-saving measures (e.g., introduction of or switch to LED lighting and high-efficiency equipment) and activities to improve productivity, aiming to reduce per-unit energy consumption by at least 1% per annum. From now onwards, we will implement additional measures for active promotion of fuel conversion, and introduction of renewable energy equipment (i.e., installation of solar panels) so as to accomplish our CO ₂ reduction target for 2030, a milestone toward achieving carbon neutrality by 2050.
			Increased procurement risk due to strengthened CP regulations for raw materials.	Medium	Small	Small	As for principle raw materials, we will work to increase surcharges and consider and implement plans to find new suppliers. From the perspective of life-cycle assessment (LCA), we will increase the utilization ratio of scrap generating low CO ₂ emissions and find new suppliers.
		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	Large	When introducing new manufacturing processes, we will examine equipment specifications with the aim of reducing its impact on operating costs.
		Market	Decreased demand for peripheral components of internal combustion engines owing to the expansion of xEVs ^{*2} and decrease in sales due to excessive competition with competing xEV suppliers.	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.
			Decrease in sales due to delays in responding to customer requests for decarbonization and lost opportunities to expand new sales.	Small	Small	Medium	We will develop environmentally friendly products and launch them onto the market sequentially while not being restricted to our conventional business areas.
	Physical	Acute and chronic	Sales increased by expanding sales of environmentally friendly products into new global markets in response to increased demand	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.
Opportunity		Resource efficiency	Sales increased by gaining improved customer evaluation as business partner by working on decarbonization	Small	Small	Small	To achieve the 2030 CO ₂ emissions reduction target, we will promote various energy-saving measures (e.g., introduction of or switch to LED lighting and high-efficiency equipment) and productivity-improvement measures while promoting fuel conversion and introduction of renewable energy (i.e., installation of solar panels) in a proactive manner. Also, we will publicize our efforts and achievements.
		Source of energy	Sales increased by gaining improved customer evaluation as business partner by working on decarbonization	Small	Small	Small	We will actively promote CO ₂ reduction by introducing renewable energy and switching to carbon-neutral fuels.

Classification	Type	Content	Business/financial impact ^{*1}			Our response
			Specialty steel	Rolls	Automotive Casting	
	Products/ Services	Sales increased by developing and launching environmentally friendly products onto the market	Large	Small	Small	<p>We will receive new orders and increase the market share of target products by shortening the development lead time and reducing the costs of environmentally friendly products.</p> <p>We will continue to expand sales of environmentally friendly products, which are expected to be in more demand in the future.</p> <p>Examples:</p> <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 the fuel efficiency of airplanes •Battery materials (clad products) and power-semiconductor materials for use in batteries and other products

[Magnetic Materials, Power Electronics Materials, Electric Wires, Automotive Components]

Classification		Type	Content	Business/financial impact ^{*1}				Our response
				Magnetic Materials	Power Electronics	Electric wires and cables	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	<p>We are reducing CO₂ emissions by promoting various energy-saving measures (e.g., LED lighting and renewal/introduction of high-efficiency equipment) and measures to improve productivity.</p> <p>From now onwards, aiming to achieve our CO₂ 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).</p>
			Increased procurement risk due to strengthened CP regulations for raw materials.	Small	Medium	Medium	Small	<p>As for principle raw materials, we will work to strengthen surcharges and cultivate new suppliers.</p> <p>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.</p>
		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	<p>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.</p>
		Market	Decreased demand for peripheral components of	Small	Large	Small	Small	<p>We will reduce costs by introducing high-efficiency</p>

Classification	Type	Content	Business/financial impact ^{*1}				Our response
			Magnetic Materials	Power Electronics	Electric wires and cables	Automotive components	
		internal combustion engines owing to the expansion of xEVs and decrease in sales due to excessive competition with competing xEV suppliers					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 a high RE power-generation ratio.
	Physical	Acute and chronic					
		Orders and sales decreased as a result of delays in delivery owing to operations suspended due to abnormal weather-induced natural disasters	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.
Opportunity	Resource efficiency	Sales increased by raising product value through efficient production and effective use of materials and energy.	Small	Medium	Small	Medium	To achieve the 2030 CO ₂ emissions reduction target, we will promote various energy-saving measures (e.g., introduction of or switch to LED lighting and high-efficiency equipment) and productivity-improvement measures while promoting fuel conversion and introduction of renewable energy (i.e., installation of solar panels) in a proactive manner. Also, we will publicize our efforts and achievements.
	Source of energy	Sales increased through improved customer evaluation as business partner by working on decarbonization.	Small	Small	Small	Small	We will work reduce electricity consumption by improving productivity and increase the utilization rate of renewable energy.
	Products/ Services	Sales increased by developing and launching environment-friendly products onto the market.	Large	Large	Small	Medium	We aim to expand sales by developing products that contribute to a low-carbon society. • 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

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

^{*2} xEV: Generic term for electric vehicles (EVs), hybrid electric vehicles (HEVs), and plug-in hybrid electric vehicles (PHEVs)

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.

[2] Medium and Long-term Goals for Carbon Neutrality

The Proterial Group has set medium and long-term goals to achieve carbon neutrality, as specified below, and is promoting activities toward a decarbonized society according to the goals.

[Medium and long-term goals to achieve carbon neutrality by 2050](Proterial Group)

Medium-term goal: Reduce CO₂ emissions by 38% by FY2030 (compared with FY2015)

Long-term goal: Reduce CO₂ emissions to net zero by FY2050

Target: direct emissions related to fuel consumption (Scope 1) and indirect emissions related to electricity consumption, etc. (Scope 2))

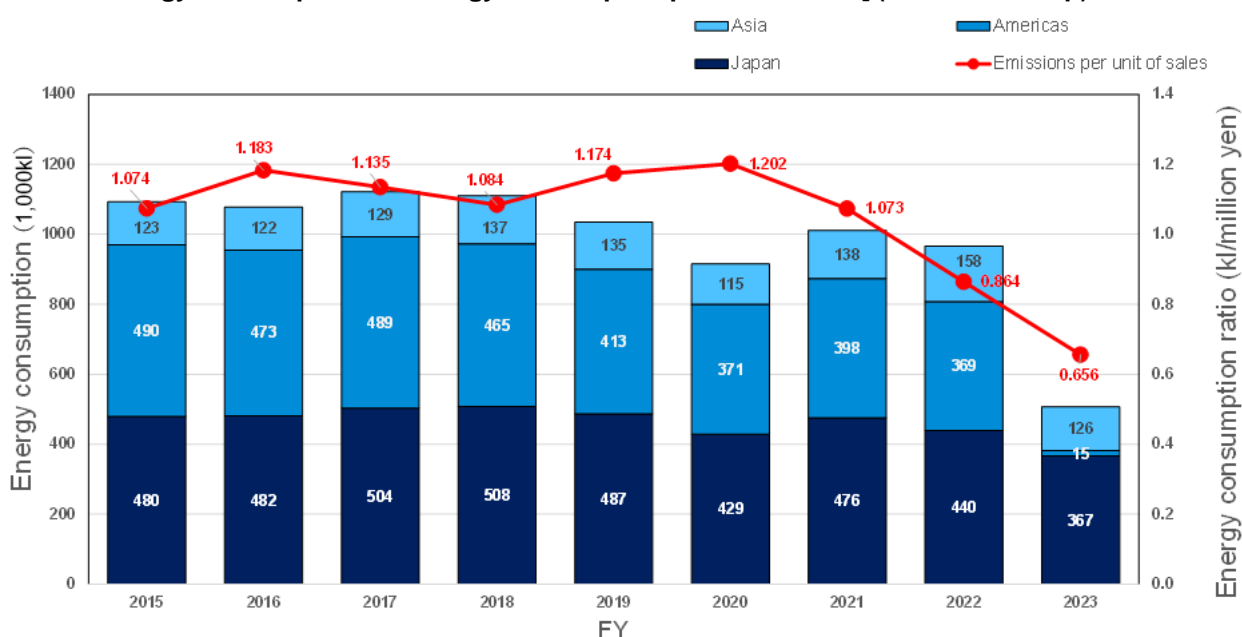
[3] Trends in Energy Consumption and Energy Consumption per Unit of Sales

The Proterial Group's global energy consumption in fiscal 2023 was 507 thousand kl in crude oil equivalent, down 459 thousand kl (47.5%) from fiscal 2022.

The major reasons for the sharp decline in energy consumption were the divestiture of overseas subsidiaries (37.9%), a decrease in production (approximately 7.9% on a weight basis) as well as energy-saving activities implemented (1.9%) and expanded introduction of renewable energy (0.4%). Meanwhile, energy consumption per unit of sales improved from fiscal 2022 by 24.1% to 0.656. This was attributable to energy-saving efforts and portfolio revision, which more than offset a 5.3% year-on-year decrease in revenues. Major measures for reducing energy consumption were carried out through improving productivity, ensuring efficient operation of facilities, adopting highly efficient equipment, facilitating fuel conversion, particularly to alternative coke, and promoting heat insulation and waste heat utilization.

To reduce energy consumption even further, we will continue to pursue energy-saving activities linked to monozukuri (manufacturing). The emphasis is on eliminating excess processes, improving efficiency, boosting the yield rate, curtailing fixed energy, installing energy-saving equipment, fuel conversion and introducing renewable energy.

[Trends in Energy Consumption and Energy Consumption per Unit of Sales] (Proterial Group)



[4] Trends in CO₂ Emissions from Energy Usage and CO₂ Emissions per Unit

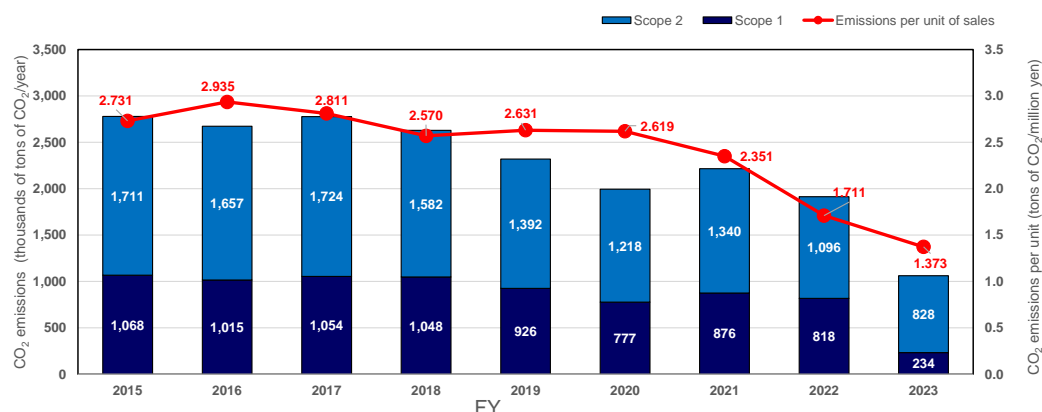
The Proterial Group's global CO₂ emissions from energy usage in fiscal 2023 were 1,062 thousand tons, down 852 thousand tons (44.5%) from fiscal 2022. This was down 1,717 thousand tons (61.8%) from the base year (fiscal 2015).

The major reasons for the decline in CO₂ emissions were the divestiture of overseas subsidiaries (37.9%), a decrease in production (approximately 7.9% on a weight basis) as well as energy-saving activities implemented (2.1%). CO₂ emissions per unit of revenues were 1.373, down 19.8% year on year. This was attributable to energy-saving efforts and portfolio revision, which more than offset a 5.3% year-on-year decrease in revenues. Major CO₂ emissions reduction measures were carried out through improving productivity, promoting efficient operation of equipment, adopting highly efficient equipment, performing heat insulation and shielding processes,

and introducing renewable energy. The amount of renewable energy used by Proterial in fiscal 2023 was 8,354 MWh (0.46% of total electricity usage), which was chiefly generated from solar energy.

Going forward, we will step up our efforts to reduce CO₂ emissions, aiming at medium and long-term targets set to achieve carbon neutrality by 2050, with a focus on introducing renewable energy while continuing with our energy-saving activities.

[Trends in CO₂ Emissions from Energy Usage and CO₂ Emissions per Unit]*¹ (Proterial Group)



*1: Approximately 70% of the Proterial Group's CO₂ emissions are attributable to Scope 2 (electricity). Within Scope 1 (fossil fuels), the largest emitter is city gas, followed by LPG and Bunker A.
We use CO₂ emission factors of electric power on a regional basis: in Japan, emission factor for each electric power company published by the Ministry of the Environment; and outside Japan, the country-specific conversion factor in World Energy Outlook 2023 issued by the International Energy Agency (IEA).

(3) Effective Use of Resources

[1] Vision for Effective Use of Resources

The Proterial Group is using in-house reuse and recycling by way of intermediate processing to create a resource-efficient society and achieve the "thorough circulation of resources throughout the life cycle of goods and services," as stated in the 4th Fundamental Plan for Establishing a Sound Material-Cycle Society.

●Targets for Fiscal 2023 in the Medium-Term Environmental Action Plan (Proterial Group)

Reduction of waste generation per production unit*¹ by at least 34% compared to fiscal 2010
Waste landfill rate: 11.0% or less

●Fiscal 2023 Results(Proterial Group)

Reduction rate of waste generation per production unit: 47.0%
Waste landfill rate: 6.2%

*1. (Waste and valuables generation) / (amount of activity*²)

*2. A figure representing the scale of business activities such as sales or production weight

We are working to reduce the amount of waste and valuables ("waste") generated per production unit, which is calculated to provide us with an indicator for waste reduction activities. We are promoting efforts to reduce waste output, focusing on process innovation such as improvement of production processes. Furthermore, in response to tight conditions at final disposal sites and requirements to respond to social demands regarding the effective use of resources, we are working to improve the waste landfill rate to attain the targets set in fiscal 2019, chiefly by promoting recycling and reducing the final disposal volume.

[2] Results of Waste Management

Total waste generated by the Proterial Group in fiscal 2023 amounted to about 241 thousand tons, down 517 thousand tons from 758 thousand tons in the previous fiscal year. This was due largely to the downscaling of business.

With respect to the generation of waste per production unit, a management indicator in our Environmental Action Plan, we achieved a 47.0% reduction from the base year, exceeding the target for fiscal 2023 (34%). This was particularly owing to the operation of a sand recycling system.

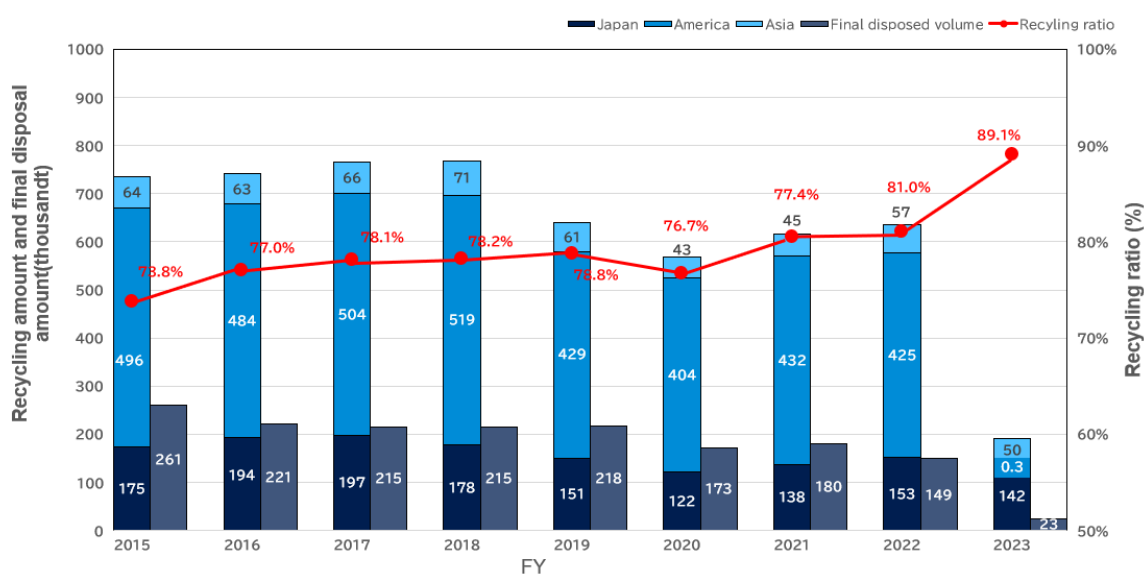
The amount of recycled resources was 142 thousand tons in Japan, 0.3 thousand tons in the Americas, and 50 thousand tons in Asia (total: 192 thousand tons). The final disposal amount was 11 thousand tons in Japan, 1.0 thousand tons in the Americas, and 12 thousand tons in Asia (total: 23 thousand tons). (The final disposal amount includes the amount of household waste, hazardous waste, and in-house landfill.) The amount of recycled plastics waste was 1.3 thousand tons on a non-consolidated basis (2.6 thousand tons on a consolidated basis), due partially to the downscaling of business, and the recycling rate was 86.7% (unchanged) on a non-consolidated basis (86.2%, down 1.4%, on a consolidated basis). (Target of reducing the amount of waste plastics, waste and valuables per production unit: 1% year on year [in and after fiscal 2023])

In fiscal 2023, despite the increasing difficulty with recycling waste in Japan, due partially to the downscaling of business, the waste landfill rate stood at 6.2%, compared to the target value of 11.0%, thanks to recycling activities overseas and other factors. Going forward, we plan to raise the bar overall by continuously promoting initiatives at business sites that are considered to still have many recyclable items.

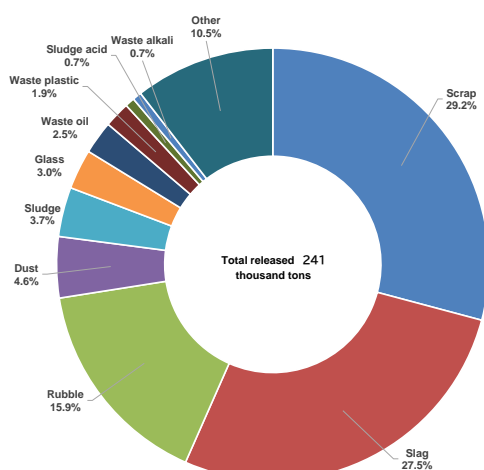
Also of note, we achieved zero emission status^{*1} at 19 business sites.

*1. From fiscal 2011, deemed to be a final disposal volume of less than 0.5% of total emissions.

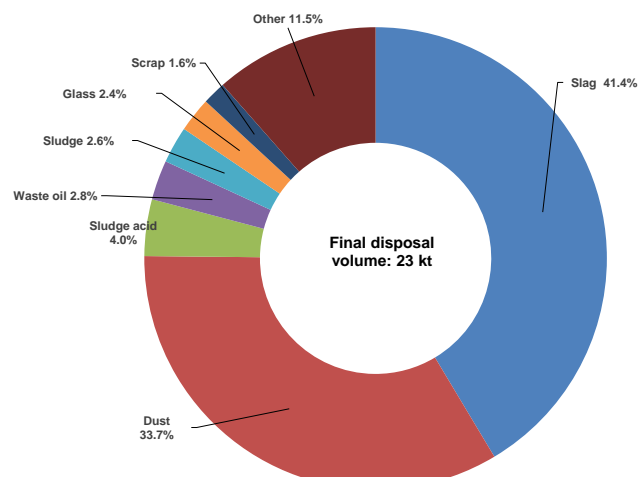
[Trends in Recycling Volume, Final Disposal Volume, and Recycling Ratio] (Proterial Group)



[Breakdown of Waste Volume (Proterial Group)]



Breakdown of Final Disposal Volume (Proterial Group)



Note: The final disposal amount includes household waste, hazardous waste, and in-house landfill.

[3] Reduction of Water Usage

●Targets for Fiscal 2023 in the Medium-Term Environmental Action Plan (Proterial Group)

Reduction of water usage per production unit*1 by at least 34% compared to fiscal 2010

●Fiscal 2023 Results (Proterial Group)

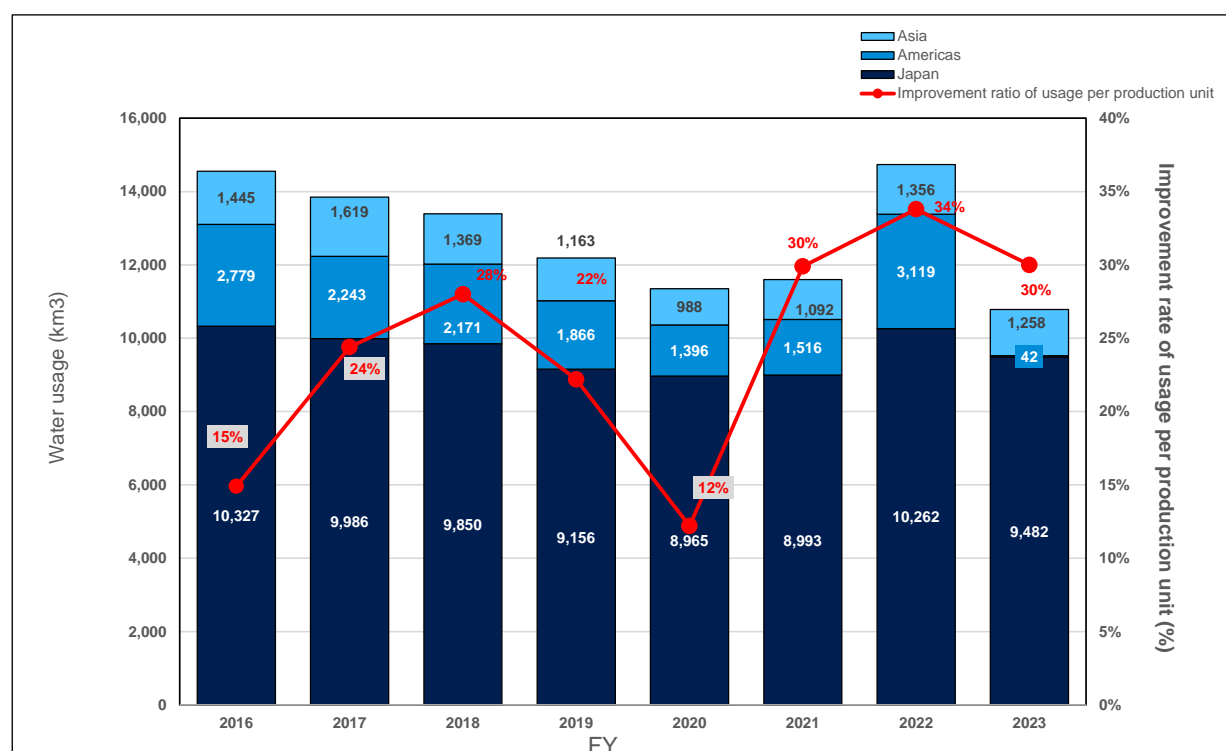
Reduction rate of water usage per production unit:29.6%

*1. (Water usage) / (amount of activity*2)

*2. A figure representing the scale of business activities such as sales or production weight

Since fiscal 2016, we have been working to achieve the targets for effective use of water resources set in the Environmental Action Plan through global Group-wide efforts. Per unit water usage decreased 3,955 thousand m³ from fiscal 2022 to 10,782 thousand m³ (the denominator variable changed to the amount of water intake in 2022). This was a result of measures such as installing water recycling systems in equipment with less impact on quality, adopting functions to reduce water discharge, and repair of water leakage. However, at 29.6%, we failed to achieve the target of reducing water usage per production unit compared to the base year. The major factors for the failure were the downscaling of business and a decrease in volume of product shipment. We plan to continue raising water use efficiency, in order to further reduce water usage.

[Trends in Reduction Rate of Water Usage per Production Unit] (Proterial Group)



(4) Chemical Substance Management

[1] Reduction of Substances of Environmental Concern

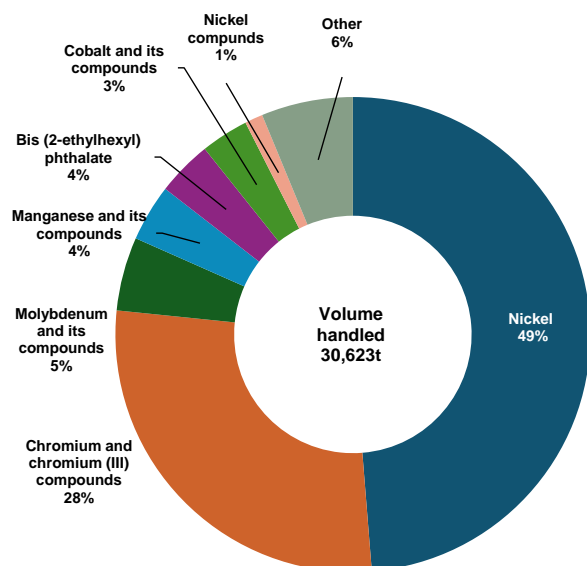
Of the substances handled by domestic companies in the Proterial Group that are subject to the PRTR Law,*1 six substances—nickel (including compounds), chromium, molybdenum, manganese, phthalic acid (2-ethylhexyl), and cobalt—are essential raw materials used in Proterial's products. These six substances constitute 94% of the total amount handled and 74% of that transferred.

Of the total amount released into the atmosphere, 44% is attributable to toluene and xylene, which are volatile organic compounds (VOCs).

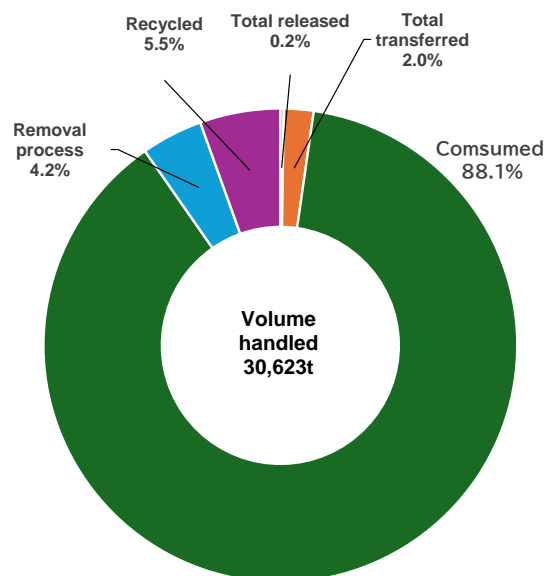
*1. Act on the Assessment of Releases of Specified Chemical Substances in the Environment and the Promotion of Management Improvement

[The State of PRTR Substance Handling in Fiscal 2022 (Domestic Group)]

[Breakdown of Volume Handled]



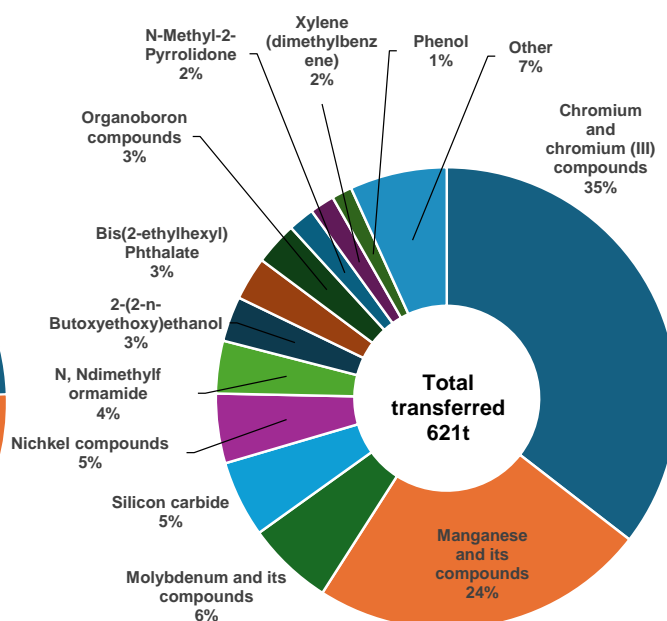
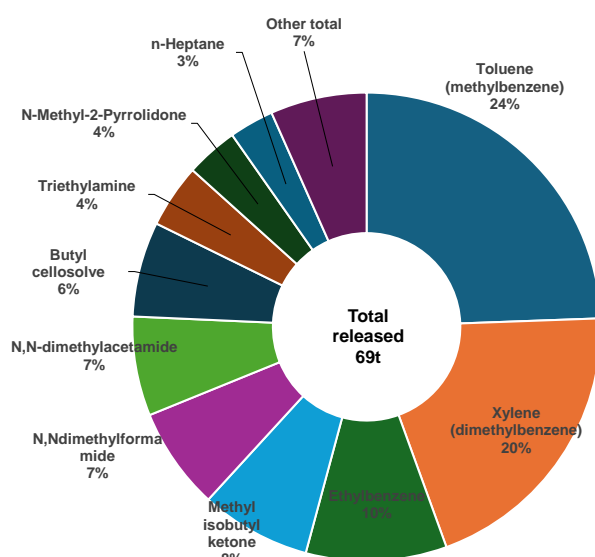
[Volumes Consumed, Released, and Transferred, and Other Breakdowns]



[Breakdown of Release (atmosphere, water)]

[Breakdown of Transfer (waste, sewerage)]

Fiscal 2023: PRTR Data (in Japan)]



[Fiscal 2023: PRTR Data (in Japan) (Unit: Tons/year)]

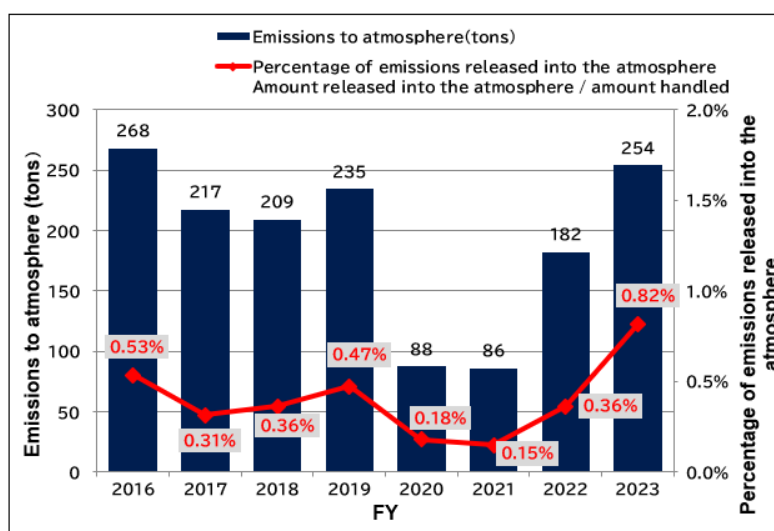
№	Name	CAS№	Volume handled	Volume released					Volume transferred		
				Atmosphere	Public Water system	Soil	Landfill	Total	Sewerage	Waste	Total
31	Antimony and its compounds	-	71	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.9
44	Indium and its compounds	-	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
53	Ethylbenzene	100-41-4	33	6.7	0.0	0.0	0.0	6.7	0.0	5.4	5.5
80	Xylene (also known as dimethylbenzene)	1330-20-7	101	13.8	0.0	0.0	0.0	13.8	0.0	10.7	1.7
82	Silver and its water-soluble compounds	-	4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.1
86	Cresol	1319-77-3	152	1.2	0.0	0.0	0.0	1.2	0.0	3.8	4.3
87	Chromium and chromium (III) compounds	-	8,540	0.0	0.0	0.0	0.0	0.1	0.0	220.4	285.3
132	Cobalt and its compounds	-	997	0.0	0.0	0.0	0.0	0.0	0.0	3.9	5.8
188	N, N-dicyclohexylamine	101-83-7	2	0.0	0.0	0.0	0.0	0.0	0.0	1.6	1.6
213	N, N-dimethylacetamide	127-19-5	227	4.7	0.0	0.0	0.0	4.7	0.0	6.8	4.4
230	N-(1,3-dimethylbutyl)-N'-phenyl-p-phenylenediamine	793-24-8	3	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.5
232	N, N-dimethylformamide	68-12-2	192	4.9	0.0	0.0	0.0	4.9	0.0	22.9	27.8
277	Triethylamine	121-44-8	79	3.0	0.0	0.0	0.0	3.0	0.0	0.0	0.0
300	Toluene (Synonym: methylbenzene)	108-88-3	22	16.9	0.0	0.0	0.0	16.9	0.0	3.9	40.8
308	Nickel	7440-02-0	14,922	0.0	0.0	0.0	0.0	0.0	0.1	4.9	14.0
309	Nickel compounds	-	376	0.0	0.2	0.0	0.0	0.2	0.0	30.3	3.3
330	Bis (1-methyl-1-phenylethyl) peroxide	80-43-3	14	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.0
349	Phenol	108-95-2	169	1.7	0.0	0.0	0.0	1.7	0.0	8.8	0.0
355	Bis (2-ethylhexyl) phthalate	117-81-7	1,155	0.0	0.0	0.0	0.0	0.0	0.0	18.8	0.0
374	Hydrofluoric acid and its water-soluble salts	-	38	0.0	0.0	0.0	0.0	0.0	0.2	2.0	20.6
391	Hexamethylene = diisocyanate	822-06-0	24	0.2	0.0	0.0	0.0	0.2	0.0	0.2	41.6
405	Boron compounds	-	119	0.0	0.0	0.0	0.0	0.0	0.0	18.7	0.0
412	Manganese and its compounds	-	1,186	0.0	0.2	0.0	0.0	0.3	0.0	146.4	14.8
438	Methylnaphthalene	1321-94-4	7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	21.3
453	Molybdenum and its compounds	-	1,536	0.0	0.0	0.0	0.0	0.0	0.1	37.4	0.2
594	Butyl Cell Solve	111-76-2	5	4.5	0.0	0.0	0.0	4.5	0.0	0.0	0.6
626	Diethanolamine	111-42-2	3	0.0	0.0	0.0	0.0	0.0	0.0	2.5	20.1
667	Silicon Carbide	-	57	0.0	0.0	0.0	0.0	0.0	0.0	33.3	180.5
691	Trimethylbenzene	-	19	0.4	0.0	0.0	0.0	0.4	0.0	0.3	0.0
697	Lead and compounds	-	27	0.0	0.0	0.0	0.0	0.0	0.0	0.0	52.9
710	Diocetyl phthalate	117-84-0	16	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.6
721	Furfural	98-01-1	4	0.0	0.0	0.0	0.0	0.0	0.0	0.2	20.1
731	n-Heptane	142-82-5	3	2.1	0.0	0.0	0.0	2.1	0.0	0.8	180.5
737	Methyl isobutyl ketone	108-10-1	5	5.3	0.0	0.0	0.0	5.3	0.0	0.0	0.0
746	N-Methyl-2 pyrrolidone	872-50-4	483	2.5	0.0	0.0	0.0	2.5	0.0	11.4	52.9
(Total of 48 substances with handled volumes of less than 1 ton)			11	0.8	0.0	0.0	0.0	0.8	0.0	3.3	3.3

[2] Reduction of Chemical Substance Emissions

We have revised our chemical substance management system launched in fiscal 2016, which had previously targeted only volatile organic compounds (VOCs), based on risks such as acute toxicity and carcinogenesis, and have identified 47 new substances for management from among substances handled in large amounts (as a result of three types of metal compounds being removed from the former list in fiscal 2022). We are engaged in activities aimed at controlling the release of these substances into the environment. Most are emitted into the atmosphere, and VOCs account for over 90% of the total. We are therefore continuing improvement activities that focus on the treatment of solvent components used for product coating, as in the past, working to reduce emissions by conducting technological investigations and making changes in equipment to find substitutes for coating materials and improve processes.

In fiscal 2023, emissions released into the atmosphere increased by 72 tons from fiscal 2022 to 254 tons. Also, the percentage of emissions released into the atmosphere rose by 0.82% from fiscal 2022 to 0.46%. This was principally due to starting the mass production of some new products in fiscal 2023, which involved an increase in usage of substances subject to management with a high percentage of emissions released into the atmosphere. Going forward, we will consider improving the manufacturing process so as to reduce atmospheric emissions.

[Trends in Percentage of Chemical Substance Emissions into the Atmosphere]



(5) Eco-Factory Case Study

[1] 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.

In fiscal 2023, we introduced captive photovoltaic power generation, mainly using the TPO/PPA model (Third Party Ownership/Power Purchase Agreement) as shown in the table below.

[Major photovoltaic power generation systems installed in FY2023]

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. The key advantage of this model is to enable the facility owner (Proterial) to use renewable energy on a large scale while reducing risks associated with solar power generation by processing the related transaction on an off-balance sheet basis.

In addition, we have also installed solar power generation systems at our Yasugi Works (530 kW) and Kyushu Techno Metal, Ltd. (100 kW) through our own investment. The combined total panel capacity of solar power generation systems installed to date has reached approximately 17,000 kW, with an annual power generation capacity of approximately 22,500 MWh (reducing CO₂ emissions by approximately 11,300 t), as of fiscal 2023.

The Proterial Group is aiming to have an annual solar power generation capacity of over 35,000 MWh by fiscal 2030. In addition to promoting solar power generation, the Group is also considering the purchase of renewable energy, as part of activities directed at the long-term goal of achieving carbon neutrality by 2050.



Proterial Vietnam Co., Ltd.



Proterial, Ltd. in Kumagaya District

(6) Site Data

Please see page 63 to refer to “Materials Flow at Major Domestic Manufacturing Sites in the Proterial Group in Fiscal 2023.”

(Appendix) Site Data

[Materials Flow at Major Domestic Manufacturing Sites in the Proterial Group in Fiscal 2023]

Classification	INPUT				OUTPUT									
	Raw materials, etc. *1 [t/year]	Energy consumption [crude oil kl/year]	Water [thousand m3/year]	PRTR chemical substances [t/year]	Emissions [t/year]	CO2 *2 [t/year]	Sox *3 [t/year]	Nox *3 [t/year]	BOD *3 [t/year]	COD *3 [t/year]	PRTR emissions *4 [t/year]	Transferred amount of PRTR *4 [t/year]	Drainage [thousand m3/year]	Main Discharge Destinations
Moka Works	44,989	24,577	324	126	27,957	44,426	0.0	2.1	0.6	0.0	4.5	32.2	241	Kinugawa River
Kuwana Works	14,559	13,753	420	9	9,427	32,279	0.9	3.2	0.0	0.1	2.4	3.0	420	Inabegawa River
Yasugi Works	108,862	125,835	4,950	14,857	44,097	269,426	18.3	184.3	0.8	10.6	0.5	374.8	4,840	Nakaumi Lake
Okegawa Works	4,304	16,208	321	1,095	1,262	29,872	0.2	8.2	5.0	4.0	1.9	2.3	292	Arakawa River
Kumagaya Magnetics Works	9,632	21,925	566	141	1,081	39,456	0.6	0.0	12.1	3.2	7.0	3.4	609	Arakawa River
Yamazaki Works	265	2,911	69	6	660	5,660	0.0	0.0	0.2	0.2	0.0	4.9	55	Sewerage
Metglas Yasugi Works	30,097	8,977	0	2	684	17,501	0.0	0.0	0.0	0.0	0.0	0.0	0	Nakaumi Lake
Ibaraki Works	133,452	30,275	1,511	2,107	7,118	55,302	0.2	2.5	17.4	15.3	31.7	73.4	856	Pacific Ocean Kazu sawagawa River, Juo River
Kyushu Techno Metal, Ltd.	8,328	18,504	112	1,090	5,477	39,344	0.0	1.2	0.0	0.7	4.3	20.7	46	Seto Inland Sea
Proterial Yasugi, Ltd.	*5	*5	11	5,749	1,209	*5	0.2	0.4	0.0	0.0	0.0	1.8	2	Nakaumi Lake
Proterial Precision, Ltd.	2,486	7,493	16	2,110	3,446	15,335	0.0	1.6	0.0	0.0	0.0	6.2	3	Nakaumi Lake
Proterial Metals, Ltd.	33,458	30,589	494	1,784	14,918	57,084	0.0	3.0	1.8	1.0	0.8	21.1	398	Sewerage Yoneshirogawa River Kasumigaura
Proterial Wakamatsu, Ltd.	38,634	24,844	126	730	39,306	54,529	0.0	10.3	0.0	0.0	0.0	51.6	70	Sewerage
Proterial Specialty Steel, Ltd.	0	4,089	17	0	304	7,197	0.0	0.0	0.0	0.0	0.0	0.0	12	Sewerage
Proterial Ferrite Electronics, Ltd.	2,208	6,416	78	96	1,798	12,704	0.0	0.0	0.4	0.0	0.0	1.9	77	Sewerage
NEOMAX KINKI Co., Ltd.	255	11,279	145	0	1,390	22,036	0.0	0.4	0.3	0.0	0.0	0.0	133	Maruyamagawa River
NEOMAX KYUSHU Co., Ltd.	5,904	8,052	64	53	1,110	17,420	2.0	0.5	0.0	0.0	0.7	1.8	48	Rokkugawa River
Tonichi Kyosan Cable, Ltd.	5,029	3,847	50	524	1,820	6,565	0.1	0.3	0.0	0.0	0.0	18.1	50	Kasumigaura
Tohoku Rubber Co., Ltd.	1,057	1,293	62	32	426	3,057	0.6	0.4	0.6	0.5	15.6	3.9	58	Pacific Ocean
Santoku Corporation	2,915	3,425	148	111	1,200	7,110	0.0	0.0	0.0	0.0	0.0	0.0	148	Sewerage

*1. From fiscal 2022, data for raw materials include those for products and semi-finished products.

*2. Calculations of CO₂ emissions for electric power use the adjusted emission coefficients for each power company.

*3. Emission concentrations are actual measurements based upon the Air Pollution Control Act and Water Pollution Prevention Act.

*4. PRTR emission quantities are totals of emissions into the atmosphere, public waterways, and soil. PRTR transfers are totals of transfers to waste materials and to sewers.

*5. Data for energy consumption and CO₂ emissions related to Proterial Yasugi, Ltd. are managed together with those for the Yasugi Works.