

Environment

Message from Director in Charge of Environment

GS Yuasa's mission is the pursuance of realizing carbon neutrality

Our main product, storage batteries, is recognized by society as a key device for realizing carbon neutrality. Therefore, as part of our mission to contribute to solving social issues through our business activities, we are committed to environmental conservation, including the realization of carbon neutrality.

In April 2023, we announced GY 2050 Carbon Neutrality Target, presenting three initiatives: promoting energy-saving measures, promoting renewable energy generation, and procuring renewable energy. In addition, we are tackling the following four issues as important environment-related targets:



Masahiro Shibutani
Vice President and Representative Director,
GS Yuasa Corporation
Vice President and Representative Director,
GS Yuasa International Ltd.

>> Reduction of own CO₂ emissions Reducing CO₂ emissions from business activities and allocating resources for this purpose is a top management priority, and discussions are ongoing within executive meetings. Since effective methods for reducing Scope 1 emissions have not yet been established, we are substituting them with reductions in Scope 2 emissions and strategically advancing renewable energy procurement. For Scope 3, we recognize that our most significant source of emissions is Category 1, Purchased Goods and Services. Cooperation from suppliers is essential for achieving reductions, and we are currently preparing to move forward.

>> Reduction of water use We use a lot of water in the manufacturing process for cooling batteries. We are investigating water risks, including water intake risks, at our domestic and overseas sites while reducing water usage through water recycling efforts at each site.

>> Increased usage rate of recycled lead Since recycling lead, the main raw material for lead-acid batteries, is important, we have set a target for the proportion of recycled lead used as raw material for lead-acid batteries. However, with the EU Battery Regulation raising the target for recycled lead use to over 85% after FY2031, further improvements in the recycled lead usage rate are required. Currently, we are working with suppliers to promote increased use of recycled lead.

>> Expanded sale of environmentally considered products We position products that contribute to the electrification of vehicles and the expansion of introducing renewable energy as environmentally considered products and are working to promote their sales. We will strengthen our production system for environmentally considered products and aim to achieve our sales ratio goals.

Fundamental environmental policy

<Basic Philosophy>

We are committed to people, society, and the global environment through the "Innovation and Growth" of our employees and business entities. We will apply the advanced energy technologies we have built up through battery research and development work to deliver comfort and peace of mind to customers around the world, and aim to realize a sustainable society and increase corporate value.

<Action Guidelines>

1. Compliance with laws, regulations, and other requirements

We will strive to prevent environmental incidents, comply with legal requirements, reduce risks connected with the use of chemical substances, and continually improve our environmental management system with the aim of enhancing our environmental performance.

2. Reducing environmental burden

We will aim to be carbon neutral by reducing greenhouse gas emissions throughout our supply chain to limit climate change impacts. We will also recognize water as an important resource and strive to conserve it by reducing consumption levels.

3. Efficient utilization of natural resources

Toward a circular economy*, we will strive to minimize the amount of natural resources we use through a range of means, including reducing raw material usage, using recycled materials, and reducing waste throughout product life cycles and services.

4. Environment-friendly products

To be able to continue "creating the future of energy", we will develop and manufacture products and services that can contribute to the formation of a carbon-neutral circular economy.

5. Biodiversity

Given that our business activities, products, and services depend on the natural environment, we will promote biodiversity conservation activities to protect the ecosystems of endangered and rare species.

6. Disclosure

We will disclose environment-related information to stakeholders in an appropriate manner, and strive to coexist harmoniously with communities by engaging in proactive communication.

7. Human resource development

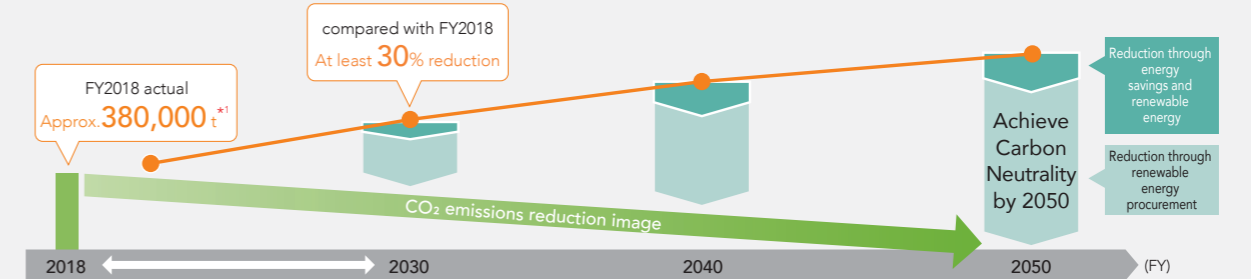
We will foster, across the entire GS Yuasa Group, personnel able to forge the future of our business with the aim of meeting our responsibilities in helping to create a carbon-neutral circular economy.

* Resource recycling society with zero waste

GY 2050 Carbon Neutrality Target

GS Yuasa is pursuing carbon neutrality by FY2050

Roadmap for achieving carbon neutrality



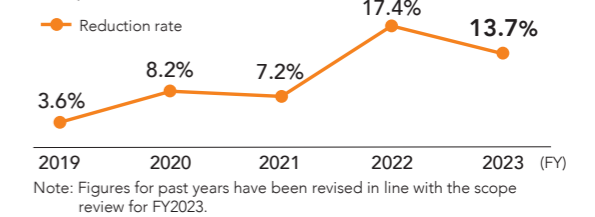
GY 2030 Long-Term Greenhouse Gas Target

*1 Since adoption of the Sixth Mid-Term Management Plan, the GS Yuasa Group's CO₂ emissions aggregation standards were changed, and we are undergoing third-party re-verification for FY2018.
 (1) Recalculated using the 2018 emission coefficient obtained from the Ministry of the Environment and IEA
 (2) Adopted the control standard as the calculation standard, and consolidated subsidiaries that can be directly influenced are included in the scope of calculation.

Overview of GY 2030 Long-Term Greenhouse Gas Target

Target	Reduce FY2030 CO ₂ emissions by at least 30%
Base year	FY2018
Period	12 years (FY2019–2030)

CO₂ emissions reduction rate from FY2019 to 2023 (compared to FY2018)



Efforts through achieving carbon neutrality

Contribution to realization of low-carbon society P.71-72

Promote energy-saving measures

- 1 Install energy-saving equipment
- 2 Develop prescriptions for efficient charging methods and develop new ones



Promote generating renewable energy

- 1 Maximize introduction in all offices and plants in Japan and overseas
- 2 Introduce our own products including Energy Storage Systems (ESS) and conduct a demonstration experiment



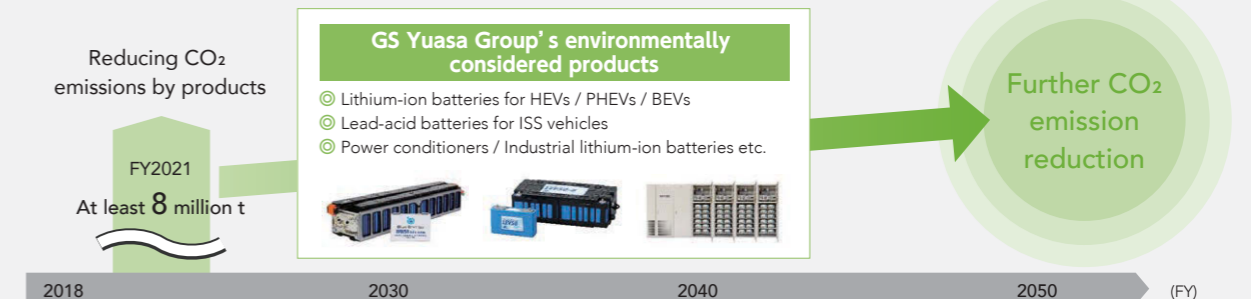
Procure renewable energy

- 1 Purchase electric power derived from renewable energy
- 2 Procure reports of renewable energy



Contribute to reducing CO₂ emission by expanding sales of environmentally considered products

Development and Provision of Environmentally Considered Products P.70-71



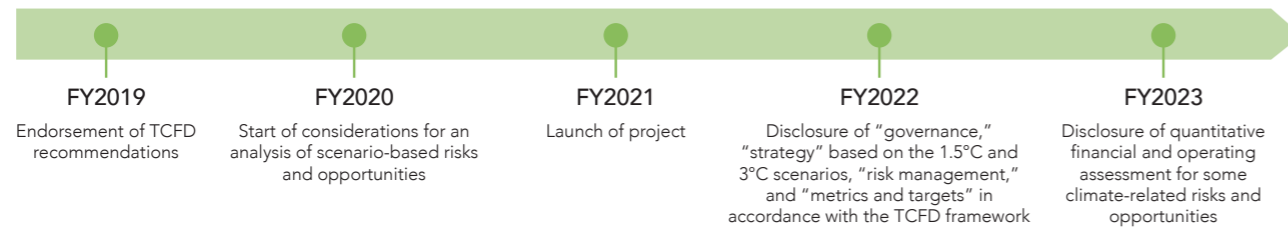
Environment — Response to Climate Change (TCFD)

The GS Yuasa Group recognizes that climate-related issues are one of our important management issues. In December 2019 we announced our support for the recommendations of the Task Force on Climate-related Financial Disclosures (TCFD), and we are working on climate-related information disclosure based on the TCFD framework.



In FY2021, we launched a project to examine climate-related risks and opportunities in accordance with the TCFD framework. The major scenarios adopted for our analysis of risks and opportunities were the 1.5°C scenario and the stated policies scenario (equivalent to the 3°C scenario). We devised strategies based on the short-term (FY2025), medium-term (FY2030), and long-term (FY2040 and FY2050) time axes.

In FY2023 we disclosed quantitative financial impact assessments for each business for some climate-related risks and opportunities.



Governance

GS Yuasa International Ltd., our core operating company, plans and implements responses to climate change in the Group. The company's Board of Directors supervises the entire Group, receiving regular progress reports from GS Yuasa International Ltd. and providing guidance as necessary.

Policies, targets, and important topics related to the environment are formulated and deliberated upon by the Sustainability Promotion Committee*1 and reported to the Corporate Executive Management Meeting and the Executive Briefing which is headed by the president.

Governance structures relating to climate issues

Board of Directors [Engages in deliberation and discussion at least once every three months] Approves proposed responses to environmental issues (including climate change), receives status reports, and monitors and oversees progress Directors and auditors	Corporate Executive Management Meeting [Engages in deliberation and discussion several times annually] Discusses proposed responses to environmental issues (including climate change) Directors and auditors
Executive Briefing [Meets once every six months] Receives reports on proposed responses to environmental issues (including climate change) and manages the progress of responses President, director in charge of the environment, and relevant directors	Sustainability Promotion Committee*1 [Meets once every two months] Formulates and discusses proposed responses to environmental issues (including climate change) and manages the progress of responses Director in charge of sustainability promotion, sustainability promotion managers of each division and each business office

*1 The CSR Committee was reorganized as the Sustainability Promotion Committee in FY2023.

Examples of past reports and agenda items related to climate change (FY2019–2022)

Meeting entity	Topics reported and discussed
Board of Directors	<ul style="list-style-type: none"> Formulation of the Fundamental Environmental Policy Establishment of the GY 2030 Long-Term Greenhouse Gas Targets Disclosure of business strategies based on the TCFD Renewable energy procurement policy Setting of carbon neutrality targets
Corporate Executive Management Meeting, Executive Briefing, Sustainability Promotion Committee*1	<ul style="list-style-type: none"> Endorsement of TCFD recommendations and membership of the TCFD Consortium Launch of the Energy Saving and Renewable Energy Project to reduce CO₂ emissions Progress report on the Energy Saving and Renewable Energy Project Introduction of internal carbon pricing (ICP) Introduction of in-house solar power generation Formulation of environmental targets in the Sixth Mid-Term Management Plan

Risk management

Risks and opportunities are identified and evaluated through the process described below. Identified risks and opportunities, and the responses to them, are managed under our governance structures including the Sustainability Promotion Committee.

In FY2021, each business division and management division established a project team to conduct companywide analysis of scenarios and examine countermeasures.



Strategy

Assumed Conditions / Main Scenarios

Main scenarios used in scenario analysis*2

Temperature increase	Main scenarios used	Overview
1.5°C	IEA*3 Net Zero Emissions by 2050 Scenario (NZE) (NZE: Net Zero Emissions by 2050 Scenario)	A scenario indicating what the world (policies, technologies, markets, etc.) needs to look like in order to achieve net zero global greenhouse gas (GHG) emissions by 2050 (assumed through a backcasting method)
	IPCC*4 RCP*5 2.6 Scenario and SSP*6 1-2.6 Scenario	RCP2.6: A scenario that assumes future temperature rise to be limited to less than 2°C used in the IPCC Fifth Assessment Report SSP1-2.6: A scenario for the introduction of climate policies to limit future temperature increases to less than 2°C under sustainable development used in the IPCC Sixth Assessment Report
3°C	IEA Stated Policies Scenario (STEPS) (STEPS: Stated Policies Scenario)	A scenario based on energy and climate policies previously implemented and individual policies that are currently being implemented by individual governments
	IPCC RCP 8.5 Scenario and SSP 5-8.5 Scenario	RCP8.5: A scenario with maximum GHG emissions used in the IPCC Fifth Assessment Report SSP5-8.5: A scenario with no climate policies used in the IPCC Sixth Assessment Report

*2 Scenario analysis uses the scenarios of public agencies and may differ from actual future social conditions. *3 International Energy Agency
*4 Intergovernmental Panel on Climate Change *5 Representative Concentration Pathways *6 Shared Socioeconomic Pathways

Time axis	Short term	Medium term	Long term
End year	2025	2030	2050
Reason for adoption	Fifth (FY2019–2022) and sixth (FY2023–2025) mid-term management plan periods	Achievement period of the GY 2030 Long-Term Greenhouse Gas Targets and SDGs	Achievement period of the GY 2050 Carbon Neutrality Target

Assumed social conditions based on scenario analysis

		Through 2025 (short term)	Through 2030 (medium term)	Through 2050 (long term)
1.5°C scenario	Operations	Social demand for emissions reduction: -20%	-40%	-100%
		Carbon price: \$75 / t-CO ₂	\$130 / t-CO ₂	\$250 / t-CO ₂
	Automotive related business	Changes in the automobile market Expansion of automobile electrification Structural changes in the automobile industry in conjunction with electrification	Passenger cars (Global)	
			Number of vehicles (compared to present) Sales: 1.3 times Ownership: 1.6 times Percentage of EVs, PHEVs, and FCVs*7 Sales: 64% Ownership: 20%	Number of vehicles (compared to present) Sales: 2.1 times Ownership: 2.1 times Percentage of EVs, PHEVs, and FCVs*7 Sales: 100% Ownership: 86%
	Industrial battery and power supply related business	Development of alternative technologies to replace lead-acid batteries	Motorcycles and three-wheel vehicles (global)	
		Changes in energy-related markets	Percentage of EVs Sales: 85% Ownership: 54%	
Supply chains R&D	Raw materials	Percentage of EVs Sales: 100% Ownership: 100%		
3°C scenario	Operations	Acceleration of the circular economy*8	Needs for products adapted to a recycling-oriented society will increase year-by-year	
		Emergence and spread of alternative technologies to replace lithium-ion batteries	As battery demand for transportation and electric power related applications expands, the development and spread of battery technologies with higher added value in terms of safety, energy density, cost, charging speed, and life span will progress	
	Industrial battery and power supply related business	Storm and flood damage, storm surges	Expansion of business relating to disaster countermeasures	

*7 EV: Electric Vehicle; PHEV: Plug-in Hybrid Electric Vehicle; FCV: Fuel Cell Vehicle

*8 An economic mechanism for the circulation of resources without waste. Positioned as a medium- to long-term economic growth policy, particularly in European countries.

Environment — Response to Climate Change (TCFD)

Risks and Opportunities

1.5°C scenario	Operations	Introduction of carbon tax and renewable energy		
		Risk	Increased costs for energy saving and renewable energy to reduce CO ₂ emissions In the case of the 1.5°C scenario, targets for a major reduction of CO ₂ will be required and carbon taxes will be introduced to achieve carbon neutrality.	
		Risk	Increased carbon costs for the company's emissions in conjunction with the introduction of a carbon tax On the other hand, by implementing CO ₂ reduction measures through the introduction of energy-saving equipment and renewable energy, it will be possible to reduce the carbon tax burden to a certain extent.	
	Automotive related business	Operations	Risk	Increased carbon costs for emissions in upstream segments of supply chains Results of a scenario-based estimate of the financial impact indicated a risk that the introduction of a carbon tax will increase costs by about 3-4 billion yen over the medium to long term. By thorough energy saving and the planned introduction of renewables, however, the cost increase could be reduced to about 2 billion yen.
			Opportunity	Higher demand for batteries in conjunction with increased sales and ownership of passenger vehicles
			Starting batteries and batteries for auxiliary equipment	
		Automotive related business	Opportunity	Higher demand for batteries for auxiliary equipment used in EVs and PHEVs In conjunction with expansion of the market for EVs, PHEVs, and other such vehicles, demand for starting batteries used in internal combustion engine vehicles is expected to decline, but demand for batteries for auxiliary equipment is expected to increase. Also, the shift from a certain number of lead-acid batteries to lithium-ion batteries is expected to advance.
			Opportunity	Replacement of lead-acid batteries with lithium-ion batteries As a result of our estimate of the financial impact, based on the establishment of certain conditions with reference to a scenario-based market, we concluded that while sales of starting batteries will decline sharply, overall sales could increase by 35-55 billion yen over the medium to long term due to a substantial increase in the demand for batteries for auxiliary machinery.
			Risk	Declining demand for starting batteries used in internal combustion engine vehicles
			Batteries for HEVs*, PHEVs, and EVs	
Opportunity			Higher demand for batteries used in EVs and PHEVs It is expected that over the short to medium term, sales of HEVs and PHEVs will increase, but in the long term, as sales of EVs increase substantially and account for approximately 100% of sales in 2050, the battery market will change.	
Opportunity			Fluctuations in HEV and PHEV demand (expansion in the short to mid-term, contraction in the long-term)	
Risk				
Industrial battery and power supply related business	Lead-acid batteries for backup applications and forklifts			
	Opportunity	Higher demand for batteries Demand for batteries used in transportation and electric power related applications is expected to increase, but as technological innovation progresses, it is expected that prices for lithium-ion batteries and other such products will fall and that a certain number of lead-acid batteries will be replaced by lithium-ion batteries.		
	Risk	Replacement of lead-acid batteries with lithium-ion batteries		
	Energy storage systems (ESS) for renewable energy			
	Opportunity	Higher demand for batteries and peripheral systems and devices It is expected that in conjunction with the increased introduction of solar, wind, and other renewable energy generation, demand for batteries and peripheral systems and devices for electricity load leveling and the like will increase. As a result of our estimate of the financial impact, setting certain conditions with reference to a scenario-based market, we concluded that sales could increase by 7-22 billion yen over the medium to long term due to an expansion of the market for energy storage systems for renewable energy in Japan.		
	Raw materials procurement and circular economy			
	Opportunity	Improvement in the superiority of recyclable lead in a recycling-oriented society Risks such as rising resource prices and difficulties in securing resources are expected over the short to medium term. On the other hand, with the development of alternative technologies, it is expected that tight supply and demand situations will be alleviated over the long term. It is also expected that competition relating to sustainable procurement of raw materials will intensify in terms of the environment and society.		
	Risk	Difficulty procuring and rising price for metal resources		
	Risk	Difficulty sustainably procuring and rising price for sustainable raw materials		
	Technological innovation			
Opportunity	Increased business opportunities as a result of leading development of next-generation batteries technologies (all-solid-state batteries, etc.) It is expected that the development and spread of higher added value battery technologies (all-solid-state batteries, metal-air batteries, sulfur batteries, etc.) for transportation and electric power related applications will advance. In cases where the company can lead the development of new technologies, business opportunities will arise.			
3°C scenario	Operations	Natural disasters and temperature rise		
		Risk	Increased damage to facilities due to storm and flooding disasters and increased loss of profit due to business suspension There is a risk of greater impact due to increased storm and flooding damage, including property damage to facilities and machinery at the company's plants, loss of profits from business suspension, and the inability of workers to report to work. The interruption of supply chains is also anticipated.	
		Risk	Business suspension due to damage to supply chains As a result of an examination of flood and storm surge risks based on future climate change impacts using natural disaster simulations, five sites and subsidiaries (two in Japan and three overseas) were evaluated as high-risk. In the event of a 100-year disaster at the Kyoto Plant, where the estimated scale of damage would be large, there could be a potential loss in sales of 9-13 billion yen over the medium to long term.	
	Industrial battery and power supply related business	Risk	Increased costs for air conditioning and cooling processes	
		Emergency power supplies		
		Opportunity	Increased demand for emergency power supplies as countermeasures against severe disaster It is expected that demand for emergency power supplies will increase out of concern regarding intensification of natural disasters due to climate change.	







Note: Those items that were determined in the risk assessment to be of particular importance in the short to long term are listed. *9 HEV: Hybrid Electric Vehicle

Direction of Business Strategies

Now		2050		
1.5°C scenario	Operations	Reduce CO₂ emissions by at least 30% by 2030 Implement measures for energy conservation and use of renewable energy	Further accelerate measures for achieving carbon neutrality Further implement measures for energy conservation and procurement of renewable energy	
	Automotive related business	Securing profits from lead-acid batteries for internal combustion engine vehicles Introduce differentiated products, strengthen our sales capabilities, and increase sales of high-value-added products with a focus on regions where internal combustion engine business remains such as ASEAN		
		Capture demand for batteries for auxiliary equipment used in electric vehicles Capture demand for 12V lead-acid or lithium-ion batteries for auxiliary equipment used in electric vehicles as well (for new automobiles and for replacement)		
		Capture demand for redundant batteries used in electric vehicles Capture demand for lithium-ion batteries used for backup of self-driving vehicles		
		Expand production of lithium-ion batteries for HEVs and PHEVs Production will increase, particularly for Japanese automakers, but will decline in the future		
	Industrial battery and power supply related business	Full-scale entry into EV lithium-ion battery market Invest development resources to enter the market for lithium-ion batteries used in EVs, which are used under demanding environments and must be highly reliably		
		Apply automotive lithium-ion battery know-how to industrial applications Establish a lineup that includes both lead-acid batteries and lithium-ion batteries for industrial applications according to market needs		
		Focus on the renewable energy and energy management fields • Strengthen operation, maintenance, and inspection services • Develop more price-competitive batteries • Introduce products and services aligned with customer needs to capture demand for renewable energy • Capture demand for peak cutting, peak shifting, and other energy management services for business sites		
	Supply chains R&D	Develop the market for lead-acid batteries with high recycling rates Commercialize lead-acid batteries compatible with the needs of a recycling-oriented society	Conduct R&D of and commercialize rare metal-free batteries Promote R&D on and commercialize rare metal-free batteries such as sulfur cathode batteries	
		Conduct R&D of and commercialize post-lithium-ion batteries Promote R&D of all-solid-state batteries and put them into practical application, promote R&D of and commercialize Si anode batteries, Li metal anode batteries, and sulfur cathode batteries		
3°C scenario	Operations	Countermeasures against intensifying disasters • Evaluate future risks including climate risks and implement countermeasures as necessary • Undertake BCP including supply chains		
	Industrial battery and power supply related business	Contribute to countermeasures against intensifying disasters using backup power supplies Focus on market expansion conditions and respond to needs		

Metrics and targets

Sixth Mid-Term Management Plan (FY2023-2025)

 CO₂ emissions (compared with FY2018) At least 15% reduction	 Water consumption (compared with FY2018) At least 15% reduction
 Percentage of environmentally considered products in total sales of all products 45% or more	 Ratio of recycled lead used as lead raw materials in lead-acid batteries 70% or more
Target for reduction of CO₂ emissions (Scope 1 and 2)	
 2030 (compared with FY2018) At least 30% reduction	2050 Carbon neutrality
ICP (Internal Carbon Pricing)	
 The price will be set at ¥15,000 / t-CO ₂ Use as reference information when making investment decisions regarding energy-saving and renewable energy measures	

Environment — Environmental Initiatives

Development and Provision of Environmentally Considered Products

The GS Yuasa Group's products have an impact on the environment during every stage of the product life cycle, from procurement and manufacturing to transportation, use, and disposal. In order to reduce the environmental burden throughout the entire product life cycle caused by the consumption of resources and the generation of greenhouse gases and waste, the Group is committed to improving the product performance through designing that considers selection of raw materials, ease of disassembly and segregation, energy conservation, and appropriate labeling. Also, by actively developing and promoting products that contribute to reducing greenhouse gas emissions, we contribute to mitigating global warming.

Designing environmentally conscious products

For an environmental assessment of product design, design departments employ design standards and then evaluate the suitability of products in design review (DR) meetings based on environmental impact assessments of every stage of the product life cycle. When environmental impact standards are not met, we review the design standards and redesign the product. We use the expertise of several departments in addition to design departments, including engineering, marketing, procurement, quality, and the environment, to make sure that the results of Design for the Environment (DfE) are communicated widely, which also maximizes their effectiveness.

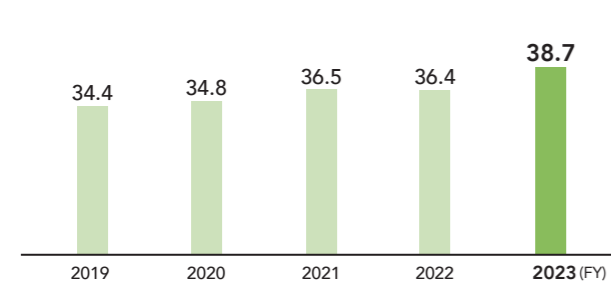
Environmental assessment items

1 Energy conservation	2 Volume reduction	3 Recyclability	4 Ease of disassembly
5 Ease of separation processing	6 Safety and environmental conservation	7 Material selection	
8 Ease of maintenance	9 Energy efficiency	10 Reusability (life extension)	

Popularizing environmentally considered products

The Group defines environmentally considered products as those products that help mitigate global warming, and we are actively working to develop and popularize such products. We incorporate into the Mid-Term Management Plan sales targets for environmentally considered products, making it part of our business strategy to work on climate change through the products we provide to customers.

Sales ratio of environmentally considered products



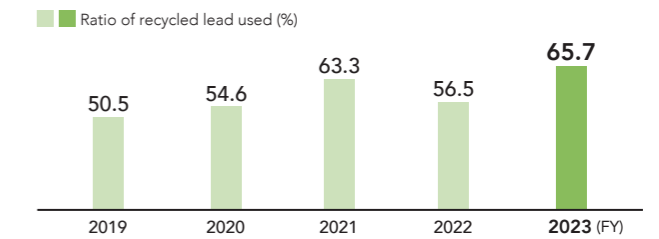
Examples of environmentally considered products

Business sector	Examples of Product
Automotive batteries	<ul style="list-style-type: none"> Lead-acid batteries for vehicles with start-stop systems (ISS: idling stop systems) <p>Batteries for ISS vehicles for improving gas mileage by allowing the engine to stop instead of idling to reduce fuel consumption</p>
Industrial Batteries and Power Supplies	<ul style="list-style-type: none"> Power conditioners Lithium-ion batteries <p>Effectively utilizing renewable energy</p>
Automotive Lithium-ion Batteries	<ul style="list-style-type: none"> Lithium-ion batteries for HEVs Lithium-ion batteries for BEVs and PHEVs <p>Batteries for HEVs, BEVs, and PHEVs installed in electric vehicles and that contribute significantly to reducing greenhouse gases</p>

Increasing usage rate of recycled lead in products

The GS Yuasa Group is working to increase the usage rate of recycled lead—the primary material used in lead-acid batteries, one of our core products. We take action to realize a recycling-oriented society as part of our business strategy by incorporating into the Group's Mid-Term Management Plan targets for the usage rate of recycled lead contained in our lead-acid batteries. The GS Yuasa Group has been taking action to recycle our post-use products by building and operating a recycling system based on extended producer responsibility (EPR). Going forward, we also plan to strengthen our efforts to promote the use of recycled materials in our products.

Ratio of recycled lead used as lead raw materials in lead-acid batteries

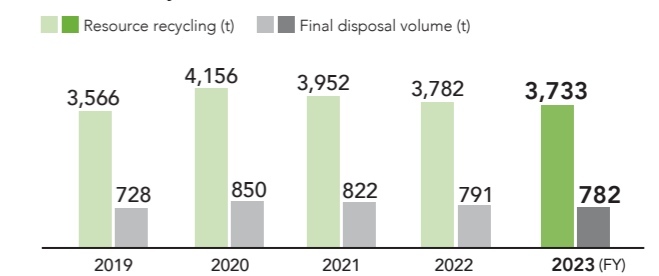


Note: Figures for past years have been revised in line with the scope review for FY2023.

Resource recycling of used products

The GS Yuasa Group believes in the importance of creating and operating a system for recycling resources from used products to help create a recycling-oriented society. To achieve this goal, the Group is working on adequately treating and recycling used products using the wide-area certification system.*1 In January 2008, we acquired wide-area certification from the Ministry of the Environment for industrial batteries and power supplies, and we commenced operation of a recycling system based on this certification starting with orders received in January 2009. Even following the start of operations, we took actions such as expanding the scope of covered products and reviewing operational rules to create mechanisms for the reliable and proper disposal of used industrial batteries.

Status of resource recycling pursuant to wide-area certification system



*1 A wide-area certification system aims to involve the manufacturers of a product in the product's recycling and disposal once it reaches the end of its useful life. These systems make possible more efficient recycling and provide feedback on product design leading to easier disposal and reuse, while ensuring that discarded goods are disposed of properly.

Contribution to Realization of Low-carbon Society

Reduction of CO₂ emissions by promoting group-wide energy management

The GS Yuasa Group believes that it is important to continuously improve the energy management system associated with its business activities and promote the reduction of greenhouse gas emissions in order to respond to the social changes accompanying the transition to a decarbonized society (such as requests from stakeholders to reduce greenhouse gas emissions, addition of carbon prices to the use of fossil fuels, and shift from fossil fuels to renewable energy).


In FY2030, we established an organization dedicated to promoting group-wide energy management in order to achieve GY 2050 Carbon Neutrality and long-term environmental goals. This organization promotes activities to formulate specific action plans for business divisions in order to continuously engage in company-wide project activities (promoting measures to save energy, introducing solar power generation systems in our own factories, and procuring renewable energy) carried out in FY2021 and beyond. We have also participated in the GX League*2, which was established mainly by the Ministry of Economy, Trade, and Industry, since February 2024.

*2 The GX League is a platform for companies to collaborate with the government and academia to realize carbon neutrality and social transformation. Its goal is to achieve sustainable growth in present and future societies. Note: GX (Green Transformation) refers to transforming the entire economic and social system through efforts toward a decarbonized society.



Environment — Environmental Initiatives

Main activities of the Energy Saving and Renewable Energy Project (FY2023)

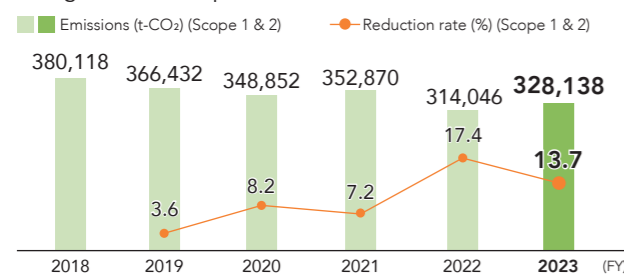
Categories	Item	Main initiatives
Promoting measures to save energy	Review of facility renewal standards	<ul style="list-style-type: none"> Formulate an effective facility renewal plan (utilization of facility management ledger)
	Improvement of production processes	<ul style="list-style-type: none"> Improvement of storage battery charging process Examining for improvement of charging facilities
	Efficient use of production facilities	<ul style="list-style-type: none"> Thorough periodic inspections of capacity utilization status
Introduction of solar power generation facility in our own factories	Examination and implementation of the plan to introduce solar power generation facilities	<ul style="list-style-type: none"> Installed a solar power generation system at the Ritto Plant (rated capacity: 2.2 MW, expected reduction: 700 t-CO₂/year) Examining for the introduction of mega solar power generation facility at business sites and Group companies in Japan 
	Survey on the introduction of solar power generation facilities	<ul style="list-style-type: none"> Survey the feasibility of introducing equipment at all 11 sites and Group companies in Japan
Procuring renewable energy from the market	Procuring electricity derived from renewable energy	<ul style="list-style-type: none"> Switching to 100% renewable energy for electricity used at the Kyoto Plant (Procured 100 GWh equivalent per year from November 2021; FY2023 reduction volume: approx. 40,000 t-CO₂)

Usage status of renewable energy at our factories by region (FY2023)

Country	Production sites	Categories	Electric power (MWh)
Japan	GS Yuasa International Ltd. Kyoto Office	In-house	12
	GS Yuasa International Ltd. Osadano Office	External	91,836
	GS Yuasa International Ltd. Ritto Office	In-house	2,719
	GS Yuasa Battery Manufacturing UK Ltd.	External	2,018
U.S.	Yuasa Battery, Inc.	In-house	286
Thailand	Siam GS Battery Co., Ltd.	In-house	2,555
Thailand	Yuasa Battery (Thailand) Pub. Co., Ltd.	In-house	638
Vietnam	GS Yuasa Siam Industry Ltd.	In-house	1,049
Vietnam	GS Battery Vietnam Co., Ltd.	In-house	152
Indonesia	PT. Trimitra Baterai Prakasa	In-house	69

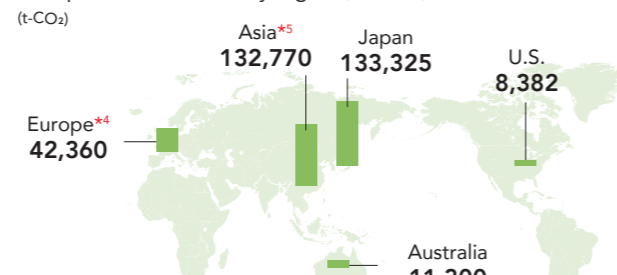
* The utilization rate of renewable energy in power usage at our factories is 15.3%

Changes in the Group's CO₂ emissions and the reduction rate*³



*³ Compared to FY2018. Note: Figures for past years have been revised in line with the scope review for FY2023.

Group's CO₂ emissions by region (FY2023)



*⁴ Total of UK, Hungary, and Turkey
*⁵ Total of China, Taiwan, Vietnam, Malaysia, Indonesia, and Thailand

TOPICS

Energy conservation activities in the manufacturing process

GS Yuasa Technology Ltd. is working to save energy in the manufacturing process. In FY2023, airtightness was improved by installing safety covers without any gaps on production equipment, and new covers were installed on the open parts of equipment to turn production equipment into airtight booths. Also, dewpoint sensors were installed in the airtight booths, and dry clean control was changed from entire rooms to the airtight booth level. Dry air and air circulation volume are optimized by switching air conditioning capacity according to operating conditions. As a result of these measures, the company reduced CO₂ emissions by 25 tons per year. To curtail greenhouse gas emissions, the Group is continuously implementing measures to streamline energy usage.



Production equipment with sealed booths

Initiatives for Water Security

The Group uses a large amount of quality fresh water for applications such as dilution of electrolytes, which are storage battery materials, and cooling of storage batteries in the charging process. Since water resources are important natural resources for the continuation of business activities, we believe it is important to work on ensuring quality freshwater and reducing water consumption. In addition, in the production process of lead-acid batteries, water containing harmful substances (such as lead) is discharged. We recognize the importance of properly treating wastewater so that such wastewater does not adversely affect the surroundings of our business sites.

Responding to water risks

By securing water necessary for business activities and through an appropriate response to water risks such as environmental pollution around business sites due to wastewater, the Group aims to promote water security initiatives as well as realize the sustainable use of water resources. Further, we are responding to climate change-related risks based on the TCFD recommendations with respect to risks of damage due to floods (such as the shutdown of our factories due to flooding and disruptions in the supply chain).

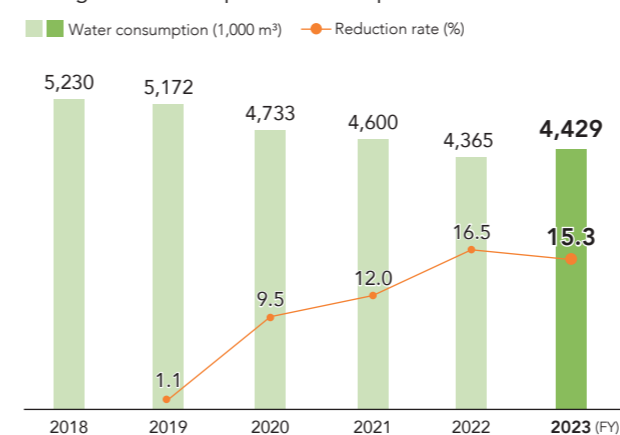
Water risk response examples

Categories	Items	Example of Initiative
Water consumption	Reduction of water consumption	<ul style="list-style-type: none"> Reducing unnecessary water usage through improvements in manufacturing processes Introducing water-saving equipment Recycling water used in the production process Raising awareness of water conservation among employees
		Wastewater management
Treatment of wastewater	Preventing under seepage	Installation of dikes at wastewater treatment facilities and impermeability of floor surfaces
	Responding to emergency situations	Establishing response procedures and training for emergency situations in case of water leakage

Reduction of water consumption associated with production activities

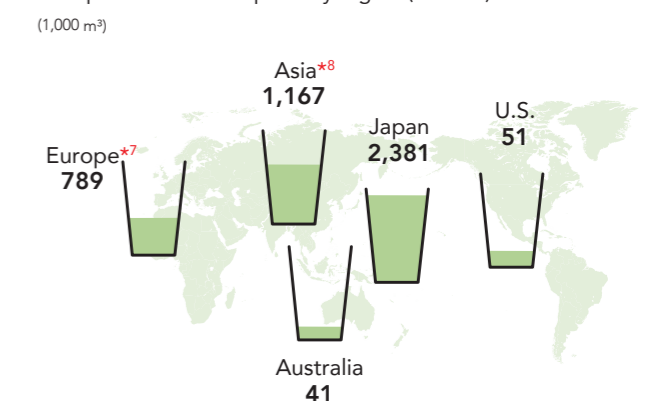
The Group promotes the effective use of water by taking measures at production plants such as recycling water and reducing water use. At lead-acid battery plants, we are undertaking measures to reduce water intake including reusing cooling water, which is used in large volumes during the charging process, and recycling water that has been appropriately treated, such as rainwater and backwash water from industrial water filtration equipment. In addition, by switching the water nozzles of water-cooling devices in the outdoor units of dehumidifiers to spray nozzles at specialized battery factories, we are working to reduce the amount of cooling water used by air conditioning equipment while maintaining the necessary cooling performance.

Changes in the Group water consumption and the reduction rate*⁶



*⁶ Compared with FY2018. Note: Figures for past years have been revised in line with the scope review for FY2023.

Group's water consumption by region (FY2023)



*⁷ Total of UK, Hungary, and Turkey
*⁸ Total of China, Taiwan, Vietnam, Malaysia, Indonesia, and Thailand