

Reducing carbon emissions and climate change

Long-Term Vision of Global Warming Countermeasures ↓
Value chain carbon emissions ↓

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Response to the fluorocarbon emission control act ↓

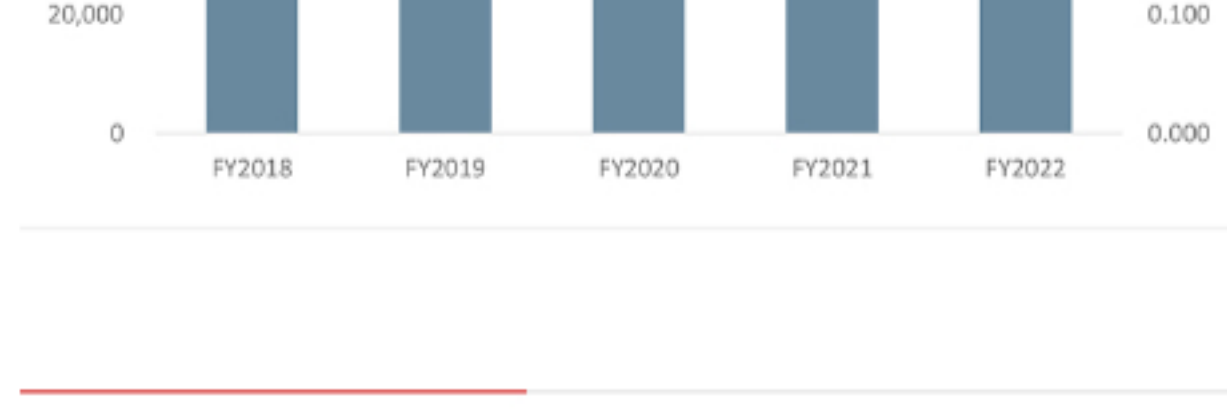
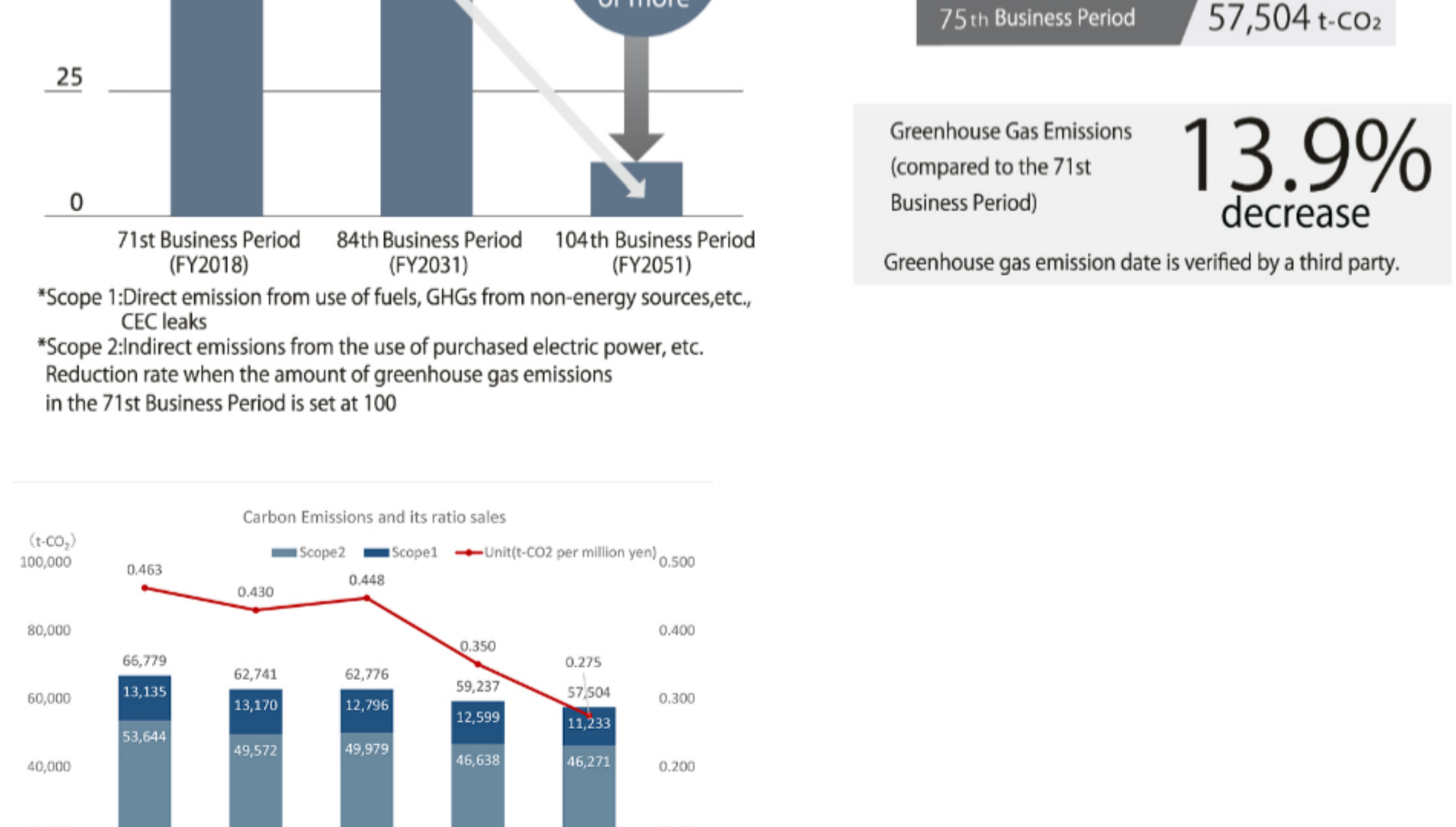
Renewable energy ↓
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Long-Term Vision of Global Warming Countermeasures

In recent years, the problems caused by climate change, such as extreme weather (droughts, heat waves, and heavy rain, etc.), as well as the increasing number of natural disasters, which were traditionally thought to occur once every 50 years, have been imposing serious impacts in many parts of the world. In addition to strengthening business continuity, companies are also required to take measures against climate change in terms of both mitigation and adaptation. In March 2020, we formulated our Long-term Vision of Global Warming Countermeasures, and are working to cut greenhouse gas emissions (scope 1 and 2*) from our business activities.

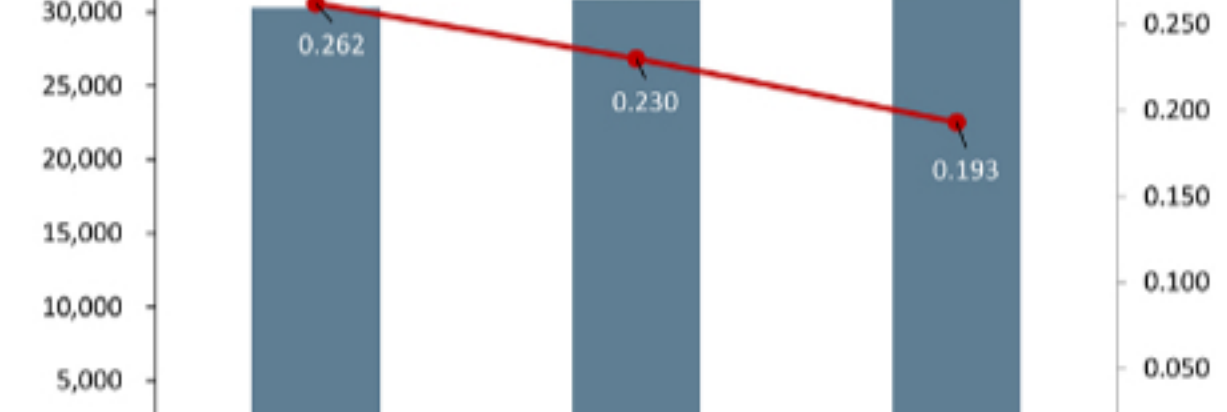
In the fiscal year under review, CO₂ emissions were reduced by 13.9% from the fiscal year ended March 31, 2006, achieving the target of 10% or more, mainly due to the introduction of renewable energy. In addition to energy-derived CO₂ emissions, we have been working on measures to reduce the emission of PFC, SF₆, and other semiconductor manufacturing gases that contribute to global warming by introducing combustion and plasma abatement equipment since FY2006.

▼ Target to cut greenhouse gas emissions for scope 1 and 2*



Trends in energy usage and carbon emissions

We are working on energy conservation activities to achieve our mid-term target of "improving unit energy consumption in the 84th fiscal year (ending September 30, 2031) by 10% or more compared to the 74th fiscal year (ending September 30, 2021). In the current fiscal year, we achieved the target of 10% or more by reducing energy consumption rate per unit of production by 16.4% compared to the 74th fiscal year through energy-saving measures in buildings and active introduction of equipment subject to the Top Runner Program. We will continue to promote energy conservation and global warming prevention activities.



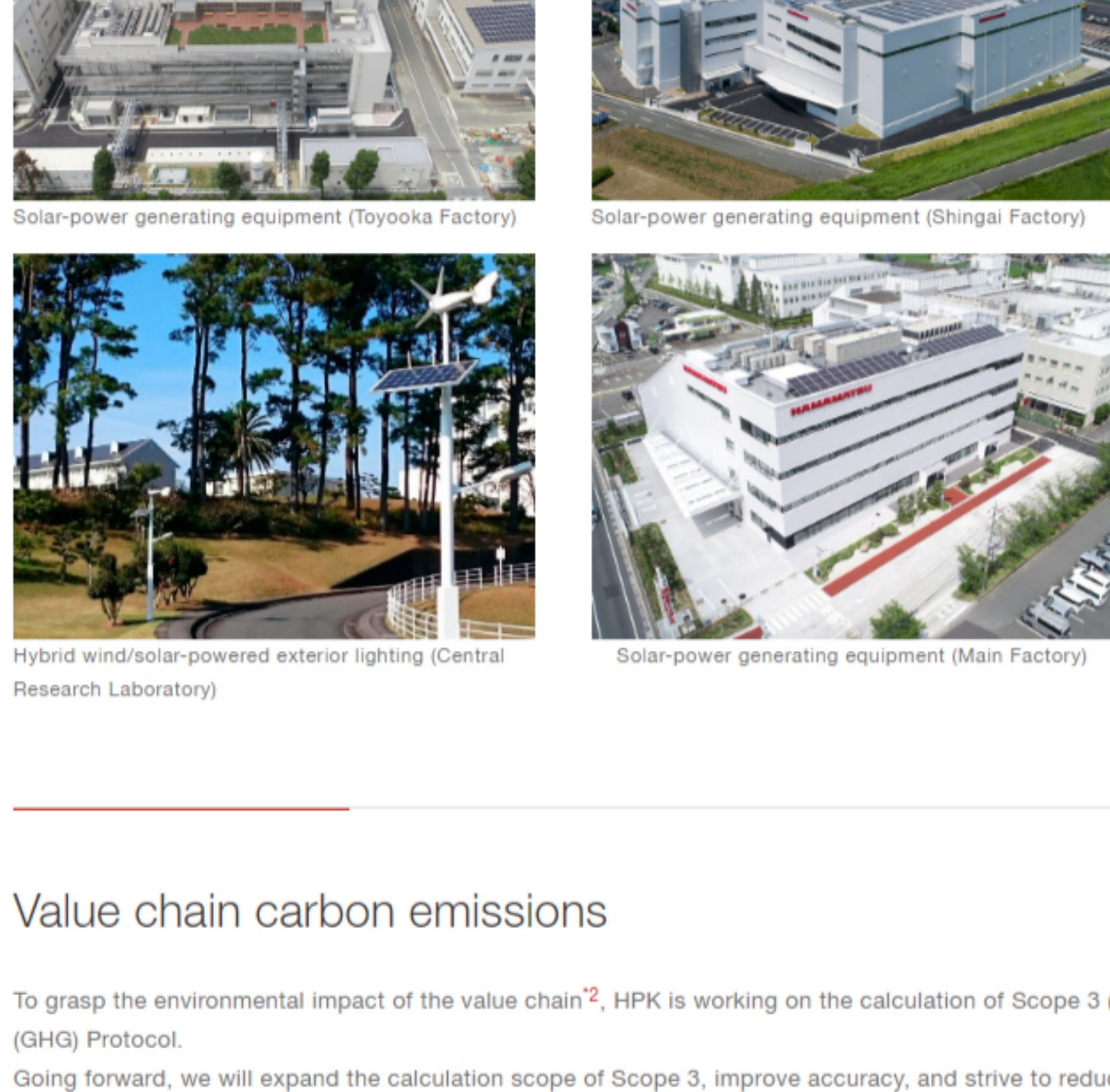
*Calculation scope: Hamamatsu Photonics K.K.

Renewable energy

Hamamatsu Photonics is working hard to reduce carbon emissions by advancing the implementation of renewables such as solar and wind power. At Toyooka Factory, we have installed solar-power generating equipment (250 kW) on the walls and roof of No. 10 Building in collaboration with our solar power business. On the premises of the Central Research Laboratory, we combine solar-power generation with small-scale wind-power generation, in a hybrid system for outdoor lighting. As of October 2022, we have implemented a cumulative total 1,123 kW of renewable energy. In October 2018, we commenced purchasing of Chubu Electric's "CO₂-free Electricity," expanding our introduction of renewables.

Renewable-energy target	Renewable-energy usage rate: 60% (FY2030) 100% (FY2040)
FY2022	14.6% (as of September 2022)

*Calculation scope: Hamamatsu Photonics K.K. and consolidated subsidiaries



Value chain carbon emissions

To grasp the environmental impact of the value chain², HPK is working on the calculation of Scope 3 (shown below) which is based on the Greenhouse Gas (GHG) Protocol. Going forward, we will expand the calculation scope of Scope 3, improve accuracy, and strive to reduce emissions throughout the value chain.

Category	FY2020 emission volume		FY2021 emission volume		FY2022 emission volume	
	Emission volume (t-CO ₂)	Share of total (%)	Emission volume (t-CO ₂)	Share of total (%)	Emission volume (t-CO ₂)	Share of total (%)
Scope 1 (direct emissions: use of fuel, etc.)	12,796	2.0	12,599	2.1	11,233	1.5
Scope 2 (indirect emissions: use of purchased electricity, etc.)	49,979	7.7	46,638	7.7	46,271	6.2
Scope 3 (other indirect emissions)	588,298	90.4	542,845	90.2	685,923	92.3
1. Purchased goods and services	(361,786)	(61.5)	(356,721)	(65.7)	(408,044)	(59.5)
2. Capital goods	(116,511)	(19.8)	(53,214)	(9.8)	(98,641)	(14.4)
3. Fuel and energy use not included in scopes 1 and 2	(11,185)	(1.9)	(11,361)	(2.1)	(10,811)	(1.6)
4. Transport and delivery (upstream)	(8,640)	(1.5)	(11,167)	(2.1)	(17,747)	(2.6)
5. Waste generated by business activities	(448)	(0.1)	(489)	(0.1)	(486)	(0.1)
6. Business travel	(882)	(0.2)	(183)	(0.0)	(754)	(0.1)
7. Commuting by employees	(5,680)	(1.0)	(5,812)	(1.1)	(5,995)	(0.9)
8. Lease assets (upstream)	—	—	—	—	—	—
9. Transport and delivery (downstream)	—	—	—	—	—	—
10. Processing of sold products	(4,339)	(0.7)	(5,464)	(1.0)	(7,176)	(1.1)
11. Use of sold products	(78,541)	(13.4)	(98,088)	(18.1)	(135,912)	(19.8)
12. Disposal of sold products	(287)	(0.1)	(344)	(0.1)	(358)	(0.1)
13. Lease assets (downstream)	—	—	—	—	—	—
14. Franchises	—	—	—	—	—	—
15. Investments	—	—	—	—	—	—

² The entire series of processes involving products, including material procurement, production, logistics, use and disposal. Includes both upstream and downstream parts of the Company's supply chain.

Method of calculation of scope 3

Category	Activity volume	Unit
1. Purchased goods and services	Amount of purchases of raw materials and parts	Emissions per unit amount of purchase
2. Capital goods	Monetary amount of capital goods purchased	Emissions per unit amount of purchase
3. Fuel and energy use not included in scopes 1 and 2	Fuel, electricity, and heat energy use	Emissions per unit of electricity and fuel used
4. Transport and delivery (upstream)	• Shipping volume related to purchased products and services • Cost of shipping of sold products	• Emission rate (corrected t/kg method) • Emission rate by shipping method
5. Waste generated by business activities	Output volume by type of waste	Output rate by type of waste
6. Business travel	• Distance traveled • Traveling expenses paid	Emission rate by transportation mode
7. Commuting by employees	• Distance traveled • Commuting expenses paid	Emission rate by commuting mode
8. Lease assets (upstream)	N/A	—
9. Transport and delivery (downstream)	N/A	—
10. Processing of sold products	Sales of products	Manufacturing emissions intensity by sector
11. Use of sold products	Final products: Number of units shipped, power consumption and service life	Proxy value for CO ₂ emission coefficient by electricity provider (the Ministry of the Environment)
12. Disposal of sold products	Final products: Number of units shipped and product weight	Emission rate by product type
13. Lease assets (downstream)	N/A	—
14. Franchises	N/A	—
15. Investments	N/A	—

Third-party Verification of greenhouse gas emissions based on ISO 14064-3

To provide and publish transparent and reliable information on the greenhouse gas emissions data calculated by Hamamatsu Photonics (scope 1, 2, and 3), we obtained third-party verification by SGS Japan Inc., and their written opinion. We will continue to work to improve the reliability of its data and reduce greenhouse gas-emissions.

- <FY2016>
Verification statement [503 KB/PDF]
- <FY2018>
Verification statement [235 KB/PDF]
- <FY2019>
Verification statement [1.76 MB/PDF]
- <FY2020>
Verification statement [773 KB/PDF]
- <FY2021>
Verification statement [1.36 MB/PDF]
- <FY2022>
Verification statement [1.38 MB/PDF]

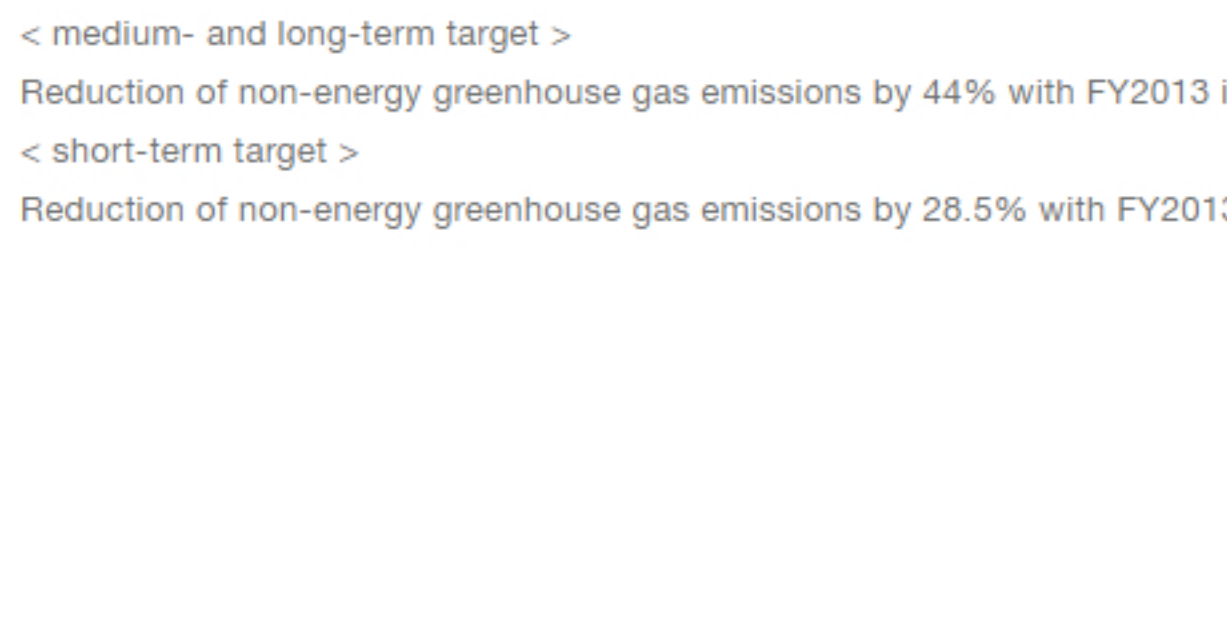
Response to the fluorocarbon emission control act

The Revised Fluorocarbons Recovery and Destruction Law, which was drafted for the purpose of preventing global warming caused by leaks of GHGs substitutes, was enacted in April 2015.

We are promoting compliance with this law by assigning a control number to each relevant equipment and using a database for managing that equipment information and inspection records. We perform appropriate simple inspections and periodic inspections on the subject equipment. When an abnormality is identified, the equipment is serviced and repaired as soon as possible. We use a database to keep a history of inspections, etc. The amount of leakage per fiscal year is calculated from the database and confirmed to be less than 1,000 t-CO₂.

When disposing of the subject equipment, we comply with the regulations by requesting collection from a Fluorocarbons Recovery Operators and preserving the certificate.

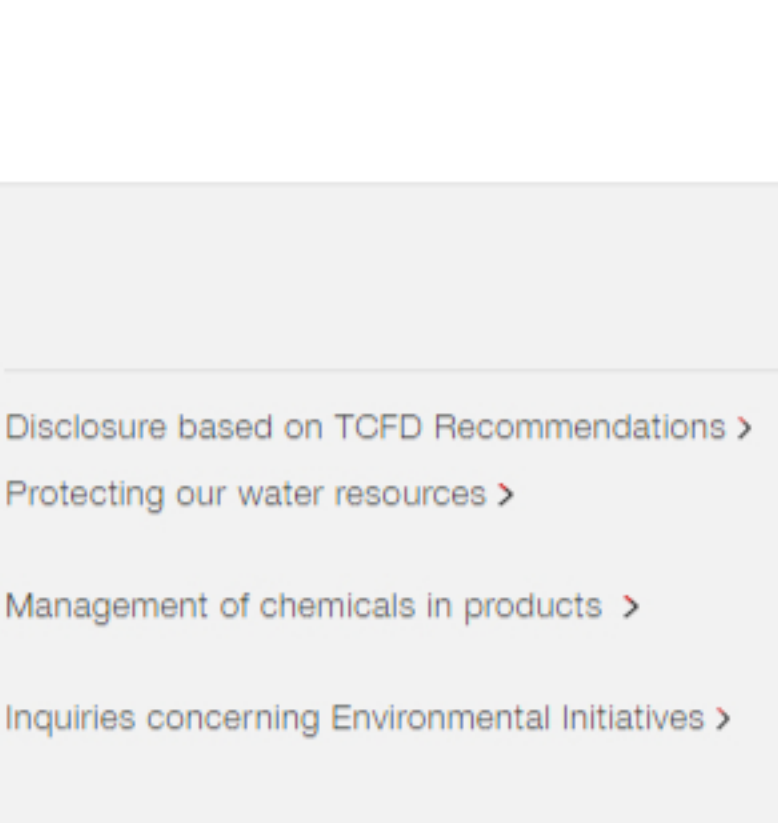
In each division and business site, we conduct education activities covering laws and regulations as well as internal management methods for the administrators.



Reductions in GHG emissions

GHG used in semiconductor manufacturing such as HFC, PFC, SF₆ and NF₃ have large global warming potential (GWP) . We are working to reduce its emissions by installing removal devices and optimizing processes.

- < medium- and long-term target >
Reduction of non-energy greenhouse gas emissions by 44% with FY2013 in FY2030.
- < short-term target >
Reduction of non-energy greenhouse gas emissions by 28.5% with FY2013 in FY2024.



Environment >

Environmental management > Management of pollution including waste >	Reducing carbon emissions and climate change Environmentally Friendly and Contributing Products >	Disclosure based on TCFD Recommendations > Protecting our water resources >
Green procurement activities >	Request for survey on chemical substances in products >	Management of chemicals in products >
Environmental communication activities >	Environmental report back number >	Inquiries concerning Environmental Initiatives >