Efforts to Address Climate Change

TAIYO YUDEN aims to contribute to the achievement of the international environmental goals set forth in the SDGs and the Paris Agreement. We also recognize the importance of climate-related financial disclosure, endorse the TCFD recommendations, and are working to disclose related information.

Efforts to Address TCFD

As the impact on society of climate-related physical risks, such as frequent storms and floods is increasing, the role of companies in achieving a carbon-free society is becoming more important. We consider that strengthening the implementation of climate adaptation measures is one of the most important business challenges.

To tackle the global issue of climate change, TAIYO YUDEN thoroughly promotes planning and working on energy efficiency & conservation, energy creation, and the utilization of renewable energy through manufacturing based on the decarbonization concept to achieve carbon neutrality by 2050. We have set a reduction target of absolute GHG emissions based on the Science Based Targets (SBT*) initiative. We aim to contribute to the achievement of the international goals and are taking steps to reduce our emissions and enhance information disclosure in line with TCFD in collaboration with a wide range of stakeholders.

*SBT refers to setting targets based on scientific evidence. It indicates greenhouse gas emission reduction targets set by a company for a period of five to ten years into the future to align with the levels sought by the Paris Agreement stipulated in 2015.

Governance

The TAIYO YUDEN Group considers climate change to be one of the most important business challenges. In April 2021, we established the Sustainability Committee with the aim of promoting company-wide efforts on sustainability issues through business activities.

The Sustainability Committee, chaired by our President and Chief Executive Officer, meets four times a year. The committee sets key issues as materiality, shares issues, and deliberates measures to resolve them, reporting to the Board of Directors. In addition, the Environmental Promotion Committee, a sub-committee of this Sustainability Committee, monitors steps taken against quantitative targets for climate change and the status of their achievement. If the targets prove difficult, the Environmental Promotion Committee will request that additional measures be put in place and issue a directive for corrective action.

Strategy

(1) Identification of risks and opportunities

TAIYO YUDEN used climate scenarios such as the IEA and the IPCC to identify climate-related risks and opportunities that affect our business, qualitatively evaluated their characteristics, and conducted scenario analysis. Moving forward, we will analyze these risks and opportunities we have identified.

Division	Assumed event	Climate-related risks and opportunities	Degree of financial impact (Profit basis)
Transition risks	Introducing and raising carbon prices	Increasing of operation costs due to introducing of carbon prices	Major
	Strengthening environment-related regulations	Increasing of costs for measures due to strengthening of GHG emission reduction targets and energy efficiency improvement targets	Medium
		Increasing of costs due to compliance with domestic and overseas environmental regulations	Medium
Physical risks	Intensifying extreme wind and flood damages	Intensified wind and flood damages to sites	Minor - Medium

Division	Assumed event	Climate-related risks and opportunities	Degree of financial impact (Profit basis)
Opportunities	Acceleration of EV shift	Increasing in sales of electronic components for the electric vehicle market due to the global shift to EVs	Major
	Increased demand for high-efficiency products	Increased sales of electronic components for the industrial equipment market due to increased demand for power supplies with energy management functions to reduce GHG emissions	Major
	Increased production efficiency	Secure profits by promoting lowcarbon production activities including the development of energy-saving measures and the introduction of renewable energy	Major
	Promotion of climate change-related measures	Enhance customer trust by advancing climate change-related measures	–

Degree of financial impact: Minor=JPY 1.5 billion or less; Medium=JPY 1.5 to 6 billion; Major=JPY 6 billion or more

(2) Setting the scenario analysis theme

TAIYO YUDEN carried out a scenario analysis on the following themes evaluated as "highly important risks and opportunities" based on the degree of impact on our business, the relevance to our business strategies, and the degree of stakeholder interest.

Transition risks / Opportunities

Target business / Analysis theme

Common to all businesses	Financial impact of introducing carbon prices on operating costs

External information referred to in the analysis

	1.5°C scenario	4°C scenario
Key reference scenarios*1	NZE (Net Zero Emissions by 2050 Scenario)	STEPS (Stated Policies Scenario)
View of the world	■ A world of rapid increases in clean energy policies and investment, where developed countries achieve their net-zero pledges ahead of other countries, and the world average temperature rise around 2100 is below 1.5°C compared to before the industrial revolution. ■ As each country shifts to renewable energy, prices of fossil resources tend to decrease.	■ A world where policies and implementation measures that affect the energy market adopted by countries as of the end of September 2022, as well as related policy proposals, are partially implemented, and the average global temperature rise around 2100 is about 2.6°C to 4° C compared to before the industrial revolution. ■ As each country depends on fossil resources, prices of fossil resources tends to rise.

*1 The analysis is based on the scenarios published in the World Energy Outlook 2022, the annual report by the IEA (International Energy Agency).

Physical risks

Target business / Analysis theme

Common to all businesses	Impact of intensified extreme weather disasters on sites (floods and storm surges)

This data covers the 18 sites in Japan and 8 sites outside Japan.
We assessed physical impacts at the baseline (current), and at the middle and end of this century.

External information referred to in the analysis

Information provider	Reference
Ministry of Land, Infrastructure, Transport and Tourism	Flood simulation search by location (Flood navigation), overlapping hazard map
WRI (World Resources Institute)	Aqueduct Floods Hazard Maps, Inundation depth in meters for coastal and riverine floods
IPCC (Intergovernmental Panel on Climate Change)*2,3	AR6 Climate Change 2021: The Physical Science Basis, Working Group 1 Interactive Atlas
Others	Yukiko Hirabayashi et al. (2013). Global flood risk under climate change. Nature Climate Change, 3(9), 816-821.

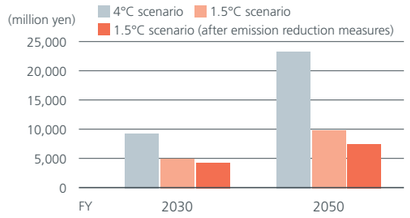
*2 We assessed physical impacts based on the climate scenarios SSP1-2.6 and SSP5-8.5 used in the IPCC AR6.
*3 The SSP1-2.6 and SSP5-8.5 scenarios correspond to the RCP2.6 and RCP8.5 climate scenarios used in AR5.

(3) Scenario analysis results

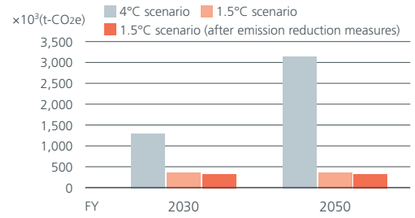
Transition risks: Financial impact of introducing carbon prices on operating costs

Risk	Impact of carbon prices on operating costs in 2030 and 2050
Our climate scenario analysis prerequisites	Assuming that a carbon price of 18,340 yen will be imposed on each ton of GHG emissions in 2030 and 32,750 yen in 2050, we forecast the effects on carbon prices. Carbon prices are set based on (IEA World Energy Outlook 2022 (Net Zero Emissions by 2050 Scenario, Stated Policies Scenario).
Analysis result	We forecast future GHG emissions trends and the financial impact on operating costs if carbon prices were introduced. Under the 1.5°C scenario, if GHG emissions reduction measures were implemented, costs would have been reduced by about 900 million yen as of 2030 and by 2.4 billion yen as of 2050 compared with the scenario where no measures are taken (see G1). In addition, although we are promoting the introduction of renewable energy, even if the power is 100% renewable energy, the remaining SCOPE1 emissions in the 1.5°C scenario will be 260,000 t-CO_2 (see G2), and the impact of the carbon price will be about 7.4 billion yen.
Strategy	In order to reduce energy consumption, we believe that it is necessary to improve production efficiency by reviewing our production processes, focusing on our core products, along with promoting the introduction of renewable energy. In addition, we plan to consider measures to reduce the remaining SCOPE 1 emissions toward the achievement of carbon neutrality in 2050.

G1: Carbon Price Effect



G2: GHG Emissions Trends



Physical risks: Impact of intensified extreme weather disasters on sites (Floods and Storm Surges)

Risk	Impact of increased weather disasters associated with climate change on our manufacturing sites at the middle and end of this century
Our climate scenario analysis prerequisites	We assessed 26 sites inside and outside Japan based on public hazard information and various information obtained for climate change impact assessment.
Analysis result	We assessed the potential for manufacturing site damage due to intensifying extreme floods and storm surges, and screened sites that require priority investigation of the impact of physical risks. We independently graded baseline (current) flood and storm surge risks and assessed the changes in the current to mid-century or end of-century grades based on the RCP2.6 and RCP8.5 climate scenarios. Regarding floodings, there is one site in Japan that seemed to be at high risk at present, but there was no change in the grade in the future. On the other hand, there were no sites overseas that were currently considered to be at high risk, but for one site, the risk was assessed to increase compared to the baseline by 2050 and 2085. Regarding storm surges, there are currently no sites that are considered to be high risk, and there was no change in the grade in the future.
Strategy	In the future, we will investigate in detail the sites that have been assessed as being at high risk based on the results of this analysis and take preventive measures such as installing equipment to minimize flooding on site and ensuring the installation height of the power supply system if deemed necessary. In addition, we will establish a stable product supply system based on our Business Continuity Plan (BCP), which will enable us to resume business activities as soon as possible in the event of a business continuity problem such as a shutdown.

Flood risk	Number of Sites Rated as Major Hazard (Grade A)				
	2005	2050		2085	
	–	RCP2.6	RCP8.5	RCP2.6	RCP8.5
Japan (18 sites)	1 site	1 site	1 site	1 site	1 site
Outside Japan (8 sites)	0 site	1 site	1 site	1 site	1 site

Storm Surges risk	Number of Sites Rated as Major Hazard (Grade A)				
	2010	2050		2090	
	–	RCP2.6	RCP8.5	RCP2.6	RCP8.5
Japan (18 sites)	0 site	0 site	0 site	0 site	0 site
Outside Japan (8 sites)	0 site	0 site	0 site	0 site	0 site

Risk Management

TAIYO YUDEN has assigned the Director and Executive Vice President in charge of safety and environmental affairs to be responsible for climate-related risks, who reports and deliberates these issues at the Internal Control Committee through the Compliance Subcommittee and the Risk Management Subcommittee in accordance with the group management system. We refer to social analysis, interviews with customers and suppliers, and ESG engagement with investors as tools for identifying climate-related risks. The impact of these risks has been assessed in relation to their financial impact and management strategy.

Indicators and Targets

GHG emissions

TAIYO YUDEN has set targets for GHG emissions; a 42% reduction by FY2030 compared to FY2020 to achieve carbon neutrality by 2050. In order to achieve these targets, we will steadily promote efforts to reduce GHG emissions through measures such as the use of renewable energy and the improvement of production efficiency. As part of our measures, we will convert 100% of the electricity used at our R&D center to renewable energy in FY2024.

Target and Result regarding GHG emissions

	FY2020 Achievement	FY2022 Achievement	FY2030 Targets
GHG emissions* (10^3t-CO_2e)	484 (Reference year)	**396** (Compared to FY2020 ▲18.3%)	**281** (Compared to FY2020 ▲42%)

*SCOPE 1+SCOPE 2

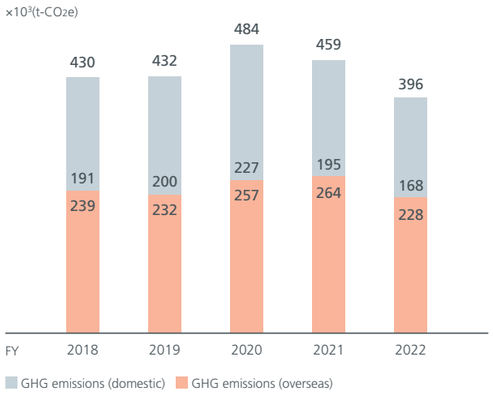
Results of Efforts to Reduce Greenhouse Gases and Energy Consumption

In FY2022, the amount of GHGs emitted by the entire group decreased by 63,000 t-CO_2e compared to FY2021. Specifically, the domestic sites reduced their emissions from 195,000 t-CO_2e in FY2021 to 168,000 t-CO_2e, and overseas sites reduced theirs from 264,000 t-CO_2e in FY2021 to 228,000 t-CO_2e (see G1). The amount of energy used by the entire group was 252,000 kL (crude oil equivalent).

We will continue to review production processes, with a focus on core products, to further improve production efficiency and reduce energy use. Furthermore, we have been promoting the incorporation of renewable energy in our efforts to combat global warming. The renewable energy used in FY2022 was 123,212 MWh.

*The following conversion factors were used for these calculations. [Electric power] Japan: factors released by the Ministry of the Environment; overseas: factors provided by the International Energy Agency (IEA); [Fuel] Japan/overseas: factors released by the GHG Protocol.

G1: GHG Emissions (calculated from total energy consumption)



	GHG Emissions ($\times10^3$t-CO_2e)
SCOPE 1	42
SCOPE 2	354

Efforts on Indirect Emissions Other than from Energy Use (SCOPE 3)

In recent years, there has been an increasing demand from our stakeholders to disclose information on SCOPE 3 emissions, in addition to information on SCOPE 1 and SCOPE 2 emissions. In order to respond to such a demand, we are striving to keep track of our SCOPE 3 emissions.

(unit: t-CO_2e)

category1	Purchased Goods and Services	482,072	
category2	Capital goods	122,350	
category3	Fuel- and energy-related activities (not included in SCOPE 1 or SCOPE 2)	70,983	
category4	Upstream transportation and distribution	37,239	
category5	Waste generated in operations	12,379	
category6	Business travel	792	domestic sites
category7	Employee commuting	8,833	domestic sites
category8	Upstream leased assets	0	Included in SCOPE 2

(unit: t-CO_2e)

category9	Transportation and delivery (downstream)	Not applicable
category10	Processing of sold products	8
category11	Use of sold products	Not applicable
category12	End-of-life treatment of sold products	121
category13	Leased assets (downstream)	Not applicable
category14	Franchise	Not applicable
category15	Investments	Not applicable
Total		734,777

Use of Renewable Energy

TAIYO YUDEN has been installing solar panels as part of our efforts to combat global warming. After establishing the group's first power-generating sites, Hongo Photovoltaic Power Plant in 2013, others have been built as well, and there are currently eight power-generating sites in Japan and overseas.


Hongo Photovoltaic Power Plant


FUKUSHIMA TAIYO YUDEN


WAKAYAMA TAIYO YUDEN


TAIYO YUDEN Mobile Technology


Elna Shirakawa Photovoltaic Power Plant


KOREA KYONG NAM TAIYO YUDEN


TAIYO YUDEN (PHILIPPINES)


ELNA-SONIC

Initiatives in FY2022

TAIYO YUDEN supports TCFD, is advancing the related information disclosure, and is making efforts to reduce GHG emissions. In recognition of these efforts, the materials building at the Yawatawara Plant received "ZEB Ready" certification and was selected as a CDP Climate Change A-list company in FY2022.

GHG Emissions

The Yawatabara Plant has acquired ZEB Ready certification

TAIYO YUDEN constructed and started operation of a materials building manufacturing barium titanate, a raw material in multilayer ceramic capacitors, in the Yawatabara Plant (Takasaki City, Gunma Prefecture). This materials building has acquired ZEB Ready certification, which is certification that a structure has realized the energy conservation led by the Ministry of Land, Infrastructure, Transport and Tourism.

ZEB is an abbreviation for "net zero energy building," and ZEB Ready covers structures which realize significant energy conservation and achieve a reduction of 50% or more in standard primary energy consumption through reduction of the energy load using advanced architectural design and the introduction of highly efficient facilities, among other measures.

In the current medium-term management plan 2025, TAIYO YUDEN has established investment items concerning environment-related investment, and we have adopted a plan which allocates about 10% of our capital investments to investment and other means for achieving environmental targets. The new materials building has introduced cutting-edge facilities related to manufacturing in order to develop electronic components which support the ongoing development of electronic devices and it supplies the components to our customers in a timely manner. At the same time, it is positioned as a part of our initiatives to improve both the economic value and social value of TAIYO YUDEN, namely by advancing energy conservation in buildings.

Exterior of the materials building at Yawatabara Plant (Takasaki City, Gunma Prefecture)

Selected for inclusion in CDP's "Climate Change A List"

TAIYO YUDEN has for the first time been named among the "Climate Change A List" companies of the CDP*, receiving the highest rating as a company excellent in climate change-related measures, strategies and information disclosure from the international environmental NPO.

The TAIYO YUDEN Group includes the enhancement of its climate change countermeasures in its materiality, aiming to achieve carbon neutrality by 2050. In that process, the Group set its SBT equivalent medium-term target of reducing its greenhouse gas (GHG) emissions by 42% relative to the fiscal 2020 level by fiscal 2030. Also, supporting the recommendations made by the TCFD, the Group identified its climate change-related risks and opportunities and formulated a strategy based on the analysis of 4-degree global warming and 1.5-degree global warming scenarios, including the analysis of the financial impact of such increases in the global average temperature. Based on these targets and the strategy, the TAIYO YUDEN Group is promoting activities to reduce its GHG emissions and energy use through drastic energy conservation, energy creation and use of renewable energy sources.

Now, in recognition of these anti-climate change activities as a whole, TAIYO YUDEN was selected for inclusion in CDP's "Climate Change A List" from among roughly 18,700 companies rated by the NPO. Seventy-five Japanese companies have been selected for inclusion.

*CDP is a non-governmental organization (NGO) managed by a British charitable organization, established in 2000. It operates a global information disclosure system for investors, companies, countries, regions, and cities to manage environmental impacts including reducing their own greenhouse gas emissions, protecting water resources, and protecting forests.