

Climate Change Information Disclosure Based on the TCFD Recommendations

The Toyo Ink Group understands that the response to climate change is a material management issue with a huge impact on business activities. We expressed support for the Task Force on Climate-related Financial Disclosures (TCFD) in November 2020. We are currently engaged in a number of activities to address climate change, such as working to reduce CO₂ emissions with the aim of achieving carbon neutrality by FY2050.

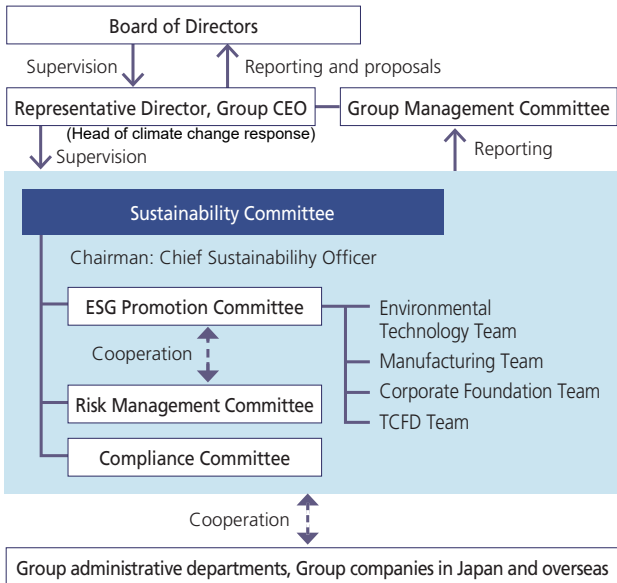
Governance / Risk Management

The Sustainability Committee—which oversees the sustainability activities of the entire Toyo Ink Group—is chaired by the Chief Sustainability Officer and is supervised by the Board of Directors via the President and Representative Director, Group CEO. The status of sustainability activities is reported to senior management via the Group Management Committee and other means. The missions of the ESG Promotion Committee—a subordinate organization under the Sustainability Committee—include driving sustainability activities throughout the Group based on the Sustainability Vision “TSV2050/2030,” along with practical operations, promotion and disclosure of information on addressing the issue of climate change. The committee is comprised of three teams (Environmental Technologies, Manufacturing and Corporate Foundation), which engage in specific activities in coordination with the various Group companies and divisions.

They also coordinate with the Risk Management Committee to identify, assess and study climate change risks in the same way as other risks, and identify and address material risks. The state of CO₂ emissions is evaluated by the Environment & SCM Promotion Department under the Production-Logistics Division.

[WEB](#) Details of TSV2050/2030 are shown in the CSR Activities section of our website.

System for addressing climate change (FY2022)



Agenda items of meeting bodies and status of meetings held, etc. (FY2022)

Committees	Agenda, status of meetings held and reporting, etc.
Sustainability Committee	<ul style="list-style-type: none">Sustainability meeting (Group-wide, held in September)Reports to management: two times (proposal for disclosure of climate change-related information and report on results)
ESG Promotion Committee	<ul style="list-style-type: none">Review of the product portfolioConsideration of low-carbon raw materialsConsideration of energy-saving measures and introduction of renewable energy, etc.Consideration of the content for disclosures of climate change informationMeeting status: regular meetings held once a month, and as necessary for each theme

Strategy

Basic policies and strategies

The Toyo Ink Group recognizes that the policies and measures taken by national and local governments in response to global climate change have a significant impact on market conditions, the procurement of raw materials and consumer preferences and may have a strong impact on business continuity and business performance in the future. We analyze these risks and opportunities, reflect them in our management policies and business plans, and engage in appropriate activities to address climate change.

Basic policy on activities to address climate change

The Toyo Ink Group recognizes that climate change is a serious business risk, and actively engages responses to global demands. At the same time, we will endeavor to contribute to the improvement of social sustainability through comprehensive sustainability activities, including addressing climate change.

1. Tracking and reducing greenhouse gas (GHG) emissions in all business activities
2. Provision of products and services that contribute to helping customers and consumers address climate change
3. Building a business foundation that facilitates proactive activities to address climate change
4. Appropriate disclosure of information on the Group’s activities to address climate change

Process for identifying risks / opportunities and disclosing information

In disclosing information based on the TCFD recommendations, we identified risks / opportunities while involving the entire Group to confirm the appropriateness of them. Going forward, we will continue to implement and enhance these initiatives, and seek to further refine the content of our disclosures.



Risks / opportunities organized and summarized in the process of identifying risks / opportunities (partial list)

Transition Risks	Policy and Legal	<ul style="list-style-type: none">Cost increases due to introduction of carbon taxes and soaring emissions trading pricesToughening and/or changing of environmental regulations on GHG emissions, etc., and their impact on production facilities
	Technology	<ul style="list-style-type: none">Decline in the value of existing technologies accompanying the transition to a decarbonized societyIncreasing costs of investment in energy-saving equipment, human resources development and R&D accompanying the transition to low-emission products
	Market	<ul style="list-style-type: none">Decline in demand for packaging materials and printing-related items, etc., accompanying the transition to a circular economy and decarbonizationRise in raw material and energy prices due to the use of non-fossil and recycled raw materials and compliance with regulations
Physical Risks	Reputation	<ul style="list-style-type: none">Decrease in rate of being chosen by customers, due to demands from customers, etc., to reduce GHG emissions
	Acute	<ul style="list-style-type: none">Failure to fulfill supply responsibilities or loss of business opportunities due to supply chain disruptions as a result of climate-related disastersDamage to equipment and facilities caused by climate-related disasters, increased recovery costs and loss of business opportunities due to infrastructure stoppages
Opportunity	Chronic	<ul style="list-style-type: none">Increase in measures and relocation costs for bases located in flood and drought risk areas
		<ul style="list-style-type: none">Increase in sales due to growing customer demand for low-emission products and products that lead to energy conservation, reduction of GHG emissions and recycling of resourcesCapture of business opportunities due to market growth for new climate-related businesses (carbon negative materials and products for combating infectious diseases)

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Strategy

Scenario analysis

TCFD recommends using multiple climate scenarios—including the 2°C or less scenario—to perform analyses when disclosing strategies. In performing its analyses, the Toyo Ink Group refers to a 1.5°C scenario, which envisages a world in which various measures are taken to limit the average temperature rise to 1.5°C in comparison with pre-industrial levels, and a 4°C scenario, which envisages a world in which the impact of physical risks due to climate change increases.

* For our 1.5°C scenario, we refer to the IEA World Energy Outlook: Net Zero Emission by 2050 Scenario and IPCC: SSP1-1.9 scenario.
For our 4°C scenario, we refer to IEA World Energy Outlook: Stated Policy Scenario and IPCC: SSP5-8.5 scenario.

Financial impact: 3=financial impact of several billion JPY or higher; 2=financial impact of around one billion JPY; 1=financial impact of less than one billion JPY
Likelihood of occurrence: 3=already occurring at the present time, or almost certain to occur in the future; 2=relatively high likelihood of occurrence; 1=low likelihood of occurrence

	Risks / Opportunities	Events / Factors	Impact		Countermeasures / actions
			1.5°C	4°C	
Risks	Rising raw material and energy prices	<ul style="list-style-type: none">● Increasing demand for non-fossil and recycled raw materials● Increase in cost of measures for suppliers due to toughening of GHG emission regulations● Increased raw material costs due to a decrease in naphtha production volume	Financial Impact 3	Financial Impact 2	<ul style="list-style-type: none">● Reduction of high-cost raw materials by reviewing formulations and changing product lineups● Stable procurement of raw materials through review of contracts with suppliers● Reduction of energy consumption by shortening transportation distances, by promoting local production for local consumption
	Decline in demand for packaging materials and printing-related items	<ul style="list-style-type: none">● Circular economy-oriented market growth● Progress in the transition to a decarbonized society● Developments in the packaging industry to eliminate plastics	Financial Impact 3	Financial Impact 2	<ul style="list-style-type: none">● Review of the business portfolio● Enhancing superiority by increasing environmental performance and low-emission characteristics of products● Appealing to customers regarding value-added products through CFP labeling● Rollout of products that support use of low-carbon packaging materials
	Increased impact of carbon prices on costs	<ul style="list-style-type: none">● Introduction of a carbon tax● Carbon taxes on fossil-fuel derived electricity and an increase in carbon tax prices on raw materials● Stimulation of the emissions trading market leading to growing scarcity of emissions credits	Financial Impact 3	Financial Impact 2	<ul style="list-style-type: none">● Transferring increases in raw material prices due to carbon taxes to product prices● Reduction and elimination of high-carbon raw materials through product formulation reforms● Active shift toward electricity derived from renewable energy● Avoiding the purchase of emissions credits by rigorous reduction of direct emissions
	Loss of business opportunities due to the intensification of climate-related disasters	<ul style="list-style-type: none">● Disruption of supply chains due to climate-related disasters (suspension of operations at production bases, obstructions to the transport of raw materials and products)● Delay or suspension of supply of biomass raw materials due to adverse effects on farmland due to climate-related disasters	Financial Impact 2	Financial Impact 3	<ul style="list-style-type: none">● Enhancing disaster readiness through BCM● Construction of a complementary domestic and overseas production network that includes other companies in the same industry● Diversification of sources of raw materials and modes of transport
Opportunities	Increased sales of low-emission products	<ul style="list-style-type: none">● Increase in demand for raw materials (including CO₂-derived raw materials) and products with low emissions during production● Increase in demand for products that lead to energy conservation, low emissions and recycling of resources by customers● Growing consumer expectations for carbon-negative materials	Financial Impact 3	Financial Impact 2	<ul style="list-style-type: none">● Prioritizing selection and securing supplies of low-emission raw materials● Reducing CO₂ emissions from production activities● Expanding lineup of products that consider low emissions from a life cycle assessment (LCA) perspective (e.g., heating/pretreatment at the time of use not necessary, easy to recycle)● Pursuing R&D and commercialization of carbon-negative materials
	Acquisition of business opportunities such as materials for combating extreme heat and infectious diseases	<ul style="list-style-type: none">● Increase in demand for temperature measures in the living environment due to chronic temperature rises● Frequent emergence of newly emerging infectious diseases due to the impact of climate change● Growing demand for products with a low risk of temperature-related accidents during storage and/or use	Financial Impact 2	Financial Impact 3	<ul style="list-style-type: none">● Pursuing R&D and commercialization of materials to combat deterioration of living conditions (hot weather) due to climate change● Pursuing R&D and commercialization of medical-related materials (e.g., drug discovery, medication, medical devices and prevention of infections)

Amount of impact from carbon tax

The impact of carbon taxes on CO₂ emissions (estimated for Scope 1 and 2) in FY2030 was calculated at around 1.74–3.51 billion JPY. On the other hand, if the targets for TSV2030 are met, this impact will be reduced by approximately 38%.

* For a carbon tax per ton of emissions, we referred to the IEA World Energy Outlook 2021. The 1.5°C scenario quotes the carbon tax price for developed countries given by the Net Zero Emission by 2050 Scenario, while the 4°C scenario quotes the EU carbon tax price given by the Stated Policy Scenario.

Scenario	Carbon tax per ton of emissions* (2030)	FY2030BAU		When TSV2030 targets are achieved		Difference
		CO ₂ emissions	Impact from carbon tax	CO ₂ emissions	Impact from carbon tax	
1.5°C	14,950 JPY/t-CO ₂	Japan: 88,400t-CO ₂ Overseas: 146,000t-CO ₂	3.51 billion JPY	Japan: 50,000t-CO ₂ (down 35% from FY2020) Overseas: 95,000t-CO ₂ (down 35% from FY2030BAU)	2.17 billion JPY	-1.34 billion JPY
4°C	7,475 JPY/t-CO ₂		1.74 billion JPY		1.08 billion JPY	-0.66 billion JPY

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Metrics and Targets

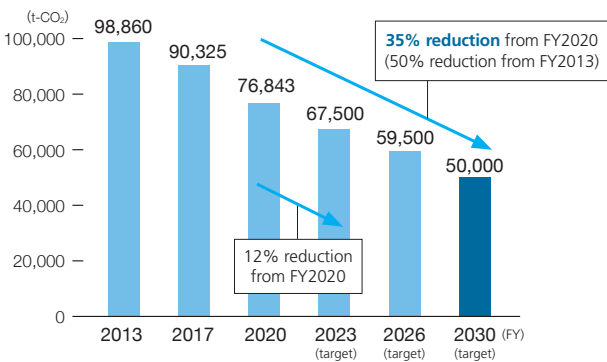
1 CO₂ emissions

Since launching the “CO₂ Reduction Project” in FY2010, the Toyo Ink Group has been striving to reduce CO₂ emissions from its production bases in Japan and overseas. Under the current SIC-II medium-term management plan, we declared that “we would achieve carbon neutrality by FY2050” and set this as the central target of TSV2050/2030.

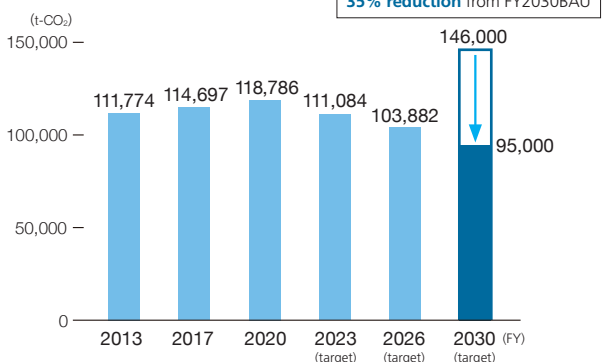
In TSV2030, we set the targets of reducing CO₂ emissions in Japan by 35% from the FY2020 level, to 50,000 t-CO₂; and overseas CO₂ emissions by 35% from the FY2030 BAU level, to 95,000 t-CO₂. Our measures to achieve these targets can be classified into three aspects: reducing energy consumption, shifting to low-carbon energy, and shifting to low-carbon power.

35% reduction
by FY2030

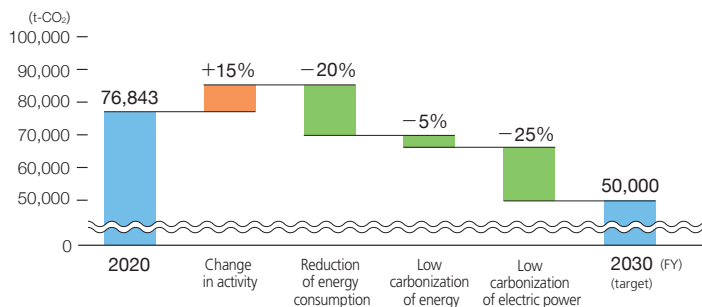
Changes in CO₂ emissions and targets (Japan)



Changes in CO₂ emissions and targets (overseas)



Major reduction measures and assumed reduction amount (Japan)



Direction of measures	Major reduction measures
Reduction of energy consumption	• Energy conservation (eliminating energy loss in processes) • Production process reform from an energy-saving perspective
Shift to low-carbon energy	• Electrification of production equipment (reducing direct emissions) • Preparation and research for the use of LNG alternative fuels
Shift to low-carbon power	• Introducing low-carbon power • Introducing renewable energy equipment

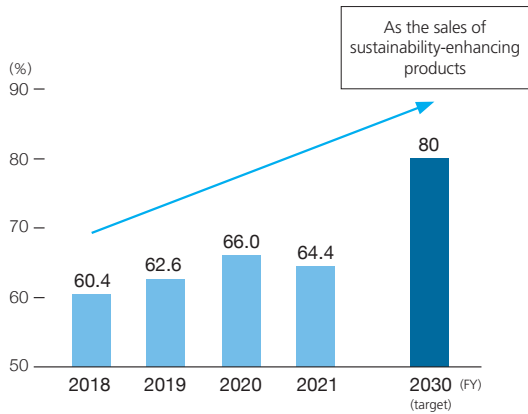
2 The percentage of sales from sustainability-enhancing products

The Toyo Ink Group began our efforts to improve the environmental friendliness of our products in the early days of the Group. In the 1990s we started releasing environmentally friendly products. In recent years, our product development has been focused on “environmental value” and also the comfort in people’s lives, their health and welfare, and safety and reliability. These efforts have enabled us to launch a diverse array of products that are able to contribute to the enhancement of the sustainability of society, thus providing lifestyle value.

Under TSV2050/2030, we added criteria for products with “lifestyle value” to our existing criteria for environmentally friendly products and redefined them as “Toyo Ink Group Sustainability-Enhancing Products.” The Group has set a target of increasing the ratio of the sales of these sustainability-enhancing products to the net sales of the entire Group to at least 80% globally by 2030.

More than 80%
by FY2030

Sales ratio of environmentally friendly products and targets



Environmental value and lifestyle value defined for sustainability-enhancing products, their direction, and examples

Value provided	Direction	Keywords / Examples of initiatives
Environmental Value	Container / package area	Reduce: Reduction and replacement of fossil-derived raw materials
		Replace: Simplification of product mix, replacement with paper
		Recycle: Rollout of materials and systems that support the recycling of plastics
	Mobility / energy area	Shift to EV transportation: Proposal and advance development of materials and technologies that contribute to the acceleration of the shift to EVs Clean energy / new energy: Developing environmentally friendly new power generation systems and proposing materials for these systems
	Carbon recycling	Developing Carbon Capture, Usage and Storage (CCUS) technologies, utilizing CO ₂ -derived raw materials
Lifestyle Value		Medical and healthcare area (prevention and diagnosis, medical treatment, safety and security) Communications, electronics and digital area (high-speed, high-capacity communications, advanced sensing, Big Data)

Case 1 Completion of a Nearly ZEB Technical & Administration Building

In March 2022, Toyochem Co., Ltd.’s Kawagoe Factory completed construction of a “Nearly ZEB” certified Technical & Administration Building. This certification is granted to buildings where effective energy consumption has been reduced by 75% or more. In addition to energy-saving measures such as reducing air-conditioning load by adopting horizontal eaves that limit direct solar radiation, the effective energy consumption of the building was reduced by 76% by creating energy through on-site PPA model solar panels utilizing subsidies from Japan’s Ministry of the Environment (MOE). The building was awarded Nearly ZEB certification and the highest rating (five stars) under the Building-Housing Energy-efficiency Labeling System (BELS).



The new Technical & Administration Building at Kawagoe Factory

Case 2 Toyo Ink India Pvt. Ltd. initiatives

In 2020, Toyo Ink India Pvt. Ltd. (India) switched to natural gas as the source of energy used at its Gujarat Plant. In January 2021, the company also introduced solar power generation systems supplying around 20% of the power consumed at the Gujarat Plant, with the aim of transforming it into a green factory. As a result of these efforts, as of 2021, Toyo Ink India as a whole has achieved a 24% reduction in CO₂ emissions compared to FY2018 levels. From March 2022, the company is also introducing solar power generation systems at its Delhi Plant.



Solar power generation facilities at the Gujarat Plant

Case 1 Biomass inks



Inks made from biomass raw materials—which do not increase the overall amount of CO₂ at the time of disposal—contribute to the reduction of CO₂ emissions from packaging materials.

Case 2 Water-based coating agent for paper



By delivering technologies that give water and oil resistance to paper substrates, we are encouraging the conversion of food packaging materials from plastic to paper.

Case 3 Materials for lithium ion batteries



The addition of just a tiny amount of CNT dispersion enables high conductivity and large capacity for LiBs. It also contributes to longer cruising ranges and improved safety of EVs.