



**Information Disclosure Based on
TCFD Recommendations
2023**

Information Disclosure Based on TCFD Recommendations

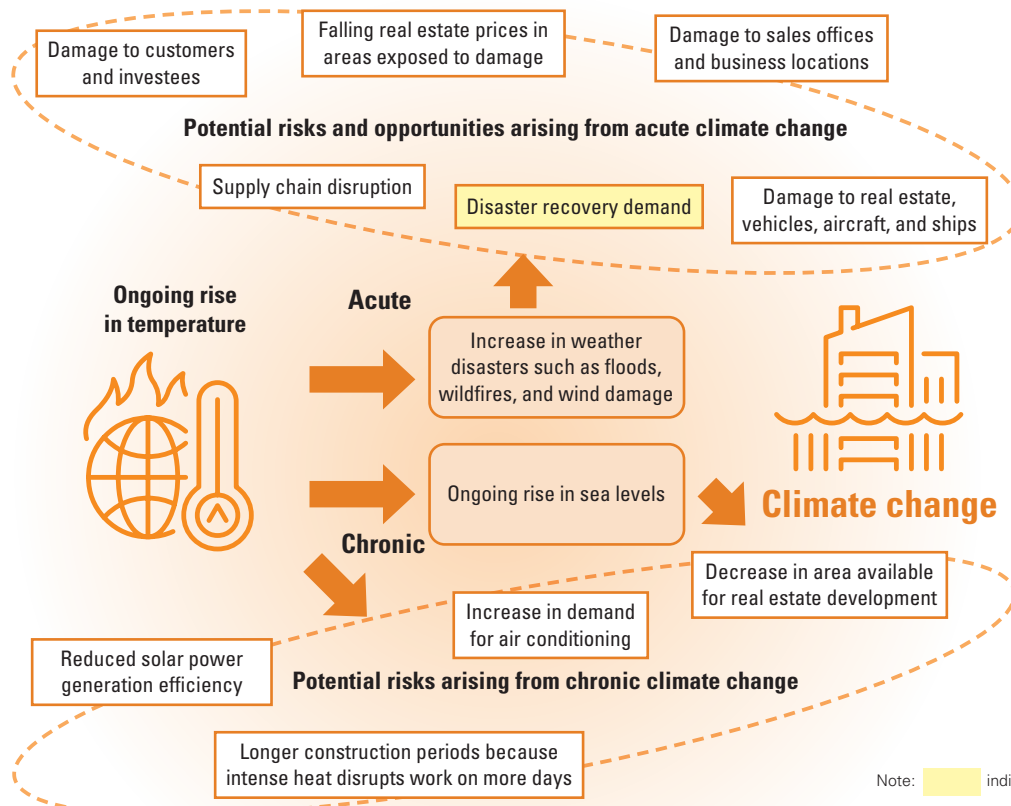
We disclose information in line with the Information Disclosure Framework (Governance, Strategy, Risk Management, and Metrics and Targets) based on the TCFD recommendations and conduct scenario analyses for businesses that are particularly relevant to climate change. This report presents scenario analysis assumptions and analysis results for the fiscal year ended March 2023.

Please refer to page 35 of [Integrated Report 2023](#) for the Information Disclosure Framework for the fiscal year ended March 2023.

Strategy and Scenario Analysis—Assumptions

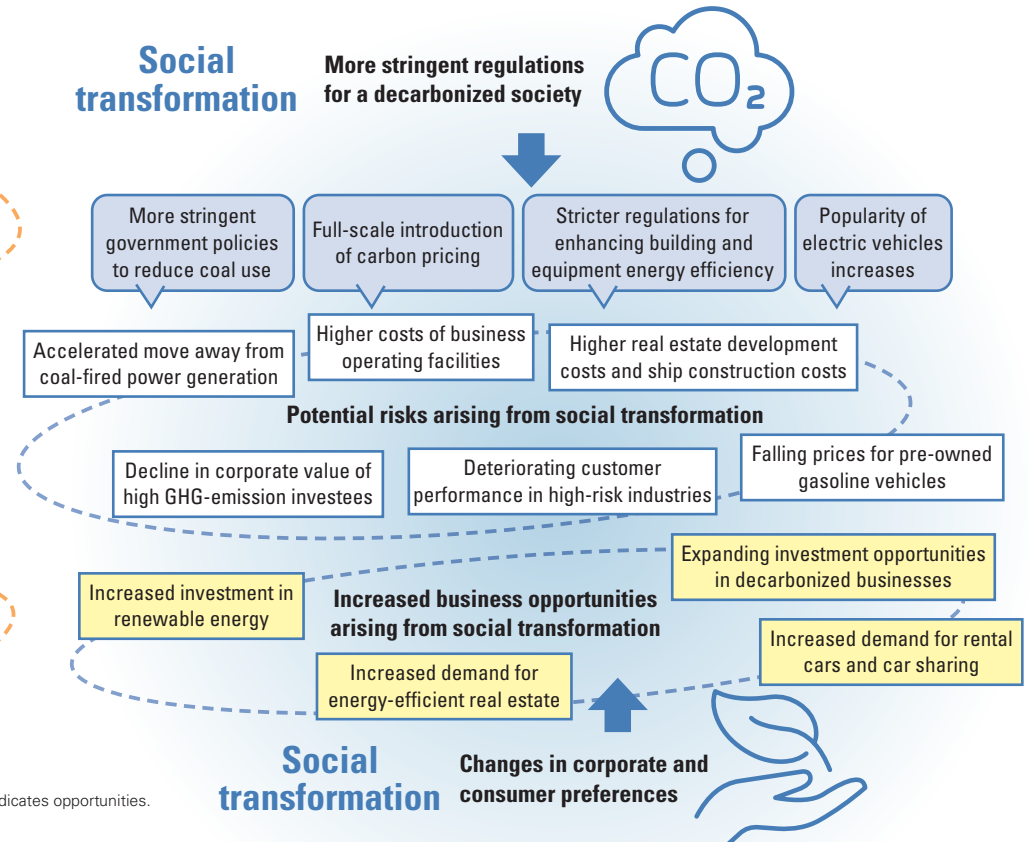
4°C Scenario

The average global temperature at the end of the 21st century is about 4°C higher than preindustrial levels. Government policies of each country in addition to corporate and consumer preferences remain the same. For example, coal use continues, renewable power generation gains limited traction, no full-scale introduction of carbon pricing, demand for energy-saving real estate remains limited, electric vehicles do not become widespread, and the shift away from ownership-based vehicle usage stalls. The physical effects of climate change become apparent and can be felt directly.



1.5°C Scenario

The average global temperature increase at the end of this century can be kept at 1.5°C compared to preindustrial levels. Aggressive government decarbonization policies move forward, corporate and consumer tastes change, and society shifts. There will be no significant change from the current physical impact of climate change.



Note: indicates opportunities.

Reference scenarios: Transitional: Stated Policies Scenario (STEPS)*¹ (IEA WEO 2022), Physical: SSP*² 5-8.5 (IPCC AR6)

Reference scenarios: Transitional: Net Zero Emissions by 2050 (NZE)*¹ (IEA WEO 2022), Physical: SSP*² 1-1.9 (IPCC AR6)

*¹ A scenario presented in *World Energy Outlook 2022* published by the International Energy Agency (IEA) in 2022.

*² Shared Socioeconomic Pathways. Models for estimating temperature rise presented in the *Intergovernmental Panel on Climate Change Sixth Assessment Report* (IPCC AR6). The models suggest that a larger SSP value will result in a greater rise in temperature.

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Strategy and Scenario Analysis

Environment and Energy Business: We expect the 4°C scenario to reduce sales and incur recovery costs due to flood damage at power plants. Meanwhile, we expect the 1.5°C scenario to increase business opportunities from the expansion of the renewable energy market, although there is substantial risk of an accelerated move away from our coal-fired power plant assets and higher costs from the introduction of carbon pricing.

	Society	Risks and Opportunities	Financial Impact	Countermeasures and Assessment	
4°C Scenario	Climate change accelerates; disasters increase in scale and frequency	Risk Landslide and flood damage to operating facilities such as power plants Acute Landslides, floods, and storm surges increase	Coal-biomass co-fired power plants and solar power plants Repair costs and loss of power sales opportunities	ORIX, in principle, does not develop power generation facilities in areas where there is a risk of landslides. Thus, while ORIX could incur some risk as a result of expansion in the hazard map area following development, we believe the risk is minimal as solar power plants located in hazard map-specified areas account for less than 1% of generating capacity for ground-mount and less than 2% for roof-mount types. Meanwhile, while some power generation plants may be at risk from floods and storm surges, this can be mitigated through (1) estimating flood risk and locating facilities at an adequate elevation, and (2) both quickly restoring service following damage and shoring up construction through reinforcement and other measures.	
		Risk Decrease in power generation efficiency due to higher temperatures Chronic Temperature increases	Solar power plants Lower sales due to reduced power generation	Degradation of generation efficiency per 1.0°C increase in temperature is only about 0.3%-0.5%, so only minor impact foreseen	
1.5°C Scenario	More stringent environmental regulations in Japan and internationally to decarbonize society	Risk Accelerated move away from coal-fired power generation More stringent government policies to reduce coal use	Coal-biomass co-fired power plants Incur costs for closure or facility renovation due to fuel conversion	ORIX is considering fuel conversion; such measures and other issues may incur commensurate costs	
		Risk Higher costs due to carbon pricing Introduction of carbon pricing	Coal-biomass co-fired power plants, waste processing facilities, and final disposal sites Rising costs	Impact depends on ability to pass on higher costs into the selling price	
	Corporations increasingly invest in and adopt renewable energy in response to investor and consumer pressure	Expansion of the renewable energy market and renewable power generation	Opportunity Increased business prospects resulting from the expansion of the renewable energy market	Expansion of renewable energy business (PPA* ¹ , biogas, geothermal, and wind power generation, storage batteries, etc.)	—
			Risk Increased output constraints* ² resulting from system capacity limitations Risk Increased use of inherently unstable renewable power generation could result in temporary tighter supply and demand	Solar power plants Reduced revenue from electric power sales due to output constraints* ² Electric power retailing Unstable wholesale market prices Electric power retailing Price competitiveness of ORIX-owned coal-biomass co-fired power plants lower owing to surge in fuel prices	Online power control* ² can mitigate impact on daily output suppression to a certain extent compared to manual control Flexible operations utilizing ORIX-owned coal-biomass co-fired power plants can mitigate impact to a certain extent Impact depends on ability to pass on higher costs into the selling price

*1 PPA (Power Purchase Agreement): A third-party service delivery model in which ORIX installs solar power generation infrastructure and storage batteries in facilities such as stores owned by customers, and supplies the power generated by the facilities to those customers.

*2 Electric power companies temporarily restrict the connection from the power generation facility to the power grid to avoid oversupply when power demand is low. Power sales are suspended or partially restricted during controlled output suppression.

Elawan Energy's Sustainability Report discloses risks and opportunities associated with climate change. Please see [here](#) for details.

The assessment of each risk and opportunity is premised on implementing the above measures. ORIX has not yet decided to implement any countermeasures.

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Real Estate Business: We expect the 4°C scenario to expose some inns and hotels to flooding risk. Meanwhile, although costs may increase as a result of carbon pricing, we expect the 1.5°C scenario to increase the value of energy-efficient real estate.

	Society		Risks and Opportunities	Financial Impact	Countermeasures and Assessment
4°C Scenario	Climate change accelerates; disasters increase in scale and frequency	Acute Flooding increases	Risk Flood damage to operating facilities	Inn and hotel operation Repair costs and loss of sales opportunities	Business continuity planning (BCP) can mitigate impact by minimizing damage
		Chronic Temperature increases	Risk Increased demand for air conditioning at operating facilities	Inn and hotel operation, and real estate investment and development Increased air conditioning costs	Minor impact due to renovation with highly efficient air conditioning and rent increases
			Risk Longer construction periods due to work interruptions resulting from intense heat on a larger number of days	Condominiums, and real estate investment and development Higher construction costs due to longer construction periods	Minor impact due to the use of low-heat concrete that can be poured on days of intense heat
1.5°C Scenario	More stringent environmental regulations in Japan and internationally to decarbonize society	Introduction of carbon pricing society	Risk Increased fuel costs due to carbon pricing	Condominiums, and real estate investment and development Higher construction material costs	Minor impact due to higher sales prices and rent
				Inn and hotel operation Higher utility costs	Minor impact due to replacement with highly efficient air conditioning equipment during renovation
	Demand for environmentally responsible real estate will increase, and companies will respond accordingly	Increased demand for energy- and CO ₂ -efficient real estate	Opportunity The value of real estate certified as energy-efficient and decarbonized housing will increase	Condominiums, and real estate investment and development Increased unit rent, higher sales prices, and increased property sales	Develop environmentally certified properties and make other investments to decarbonize

Auto Business: We expect the 4°C scenario to increase earnings by increasing disaster recovery demand. Meanwhile, we expect a limited impact from the 1.5°C scenario, although our conventional businesses are exposed to the risk of contraction due to the growing popularity of electric vehicles. We expect the rental car and car sharing businesses to present opportunities for expansion.

	Society		Risks and Opportunities	Financial Impact	Countermeasures and Assessment
4°C Scenario	Climate change accelerates; disasters increase in scale and frequency	Acute Flooding increases	Risk Damage to ORIX offices	Damage to large auction venues; water damage to vehicles owned by ORIX	Minor impact because auction venues are decentralized
			Opportunity Disaster recovery demand	Higher earnings due to increased demand for vehicles resulting from reconstruction	Meet supply obligations by ensuring sufficient inventory
1.5°C Scenario	More stringent environmental regulations and government policies in Japan and internationally to decarbonize society	Electric vehicle adoption accelerates	Risk Reduced opportunities for maintenance and fueling due to the popularity of electric vehicles	Reduced maintenance revenue and AMS Card* demand	Adding an electric vehicle charging function to the existing AMS Card will largely mitigate impact
			Risk Falling prices for pre-owned gasoline vehicles	Reduced auto sales revenue	Specifying appropriate residual values will largely mitigate impact
			Opportunity New business opportunities, such as charging infrastructure, renewable energy supply, use of batteries for storage	Increase in earnings opportunities	—
	Consumer preferences change due to heightened environmental awareness	Accelerated shift away from ownership-based vehicle usage	Opportunity Increased demand for car rentals and sharing	Expansion of the car rental and sharing businesses due to the rise of the sharing economy	—

* A fuel card that offers the same price at ENEOS, cosmo, apollostation, Idemitsu, and Shell service stations.

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Aircraft Business: We expect the 4°C scenario to have an impact on leased aircraft due to weather disasters, although the impact is expected to be limited. Meanwhile, although customer costs are expected to increase due to factors such as carbon pricing in the 1.5°C scenario, the impact is expected to be minor. Demand for high-efficiency aircraft is likely to increase.

	Society		Risks and Opportunities	Financial Impact	Countermeasures and Assessment
4°C Scenario	Climate change accelerates; disasters increase in scale and frequency		Risks Aircraft damage from weather disasters	Customer repair costs and loss of sales opportunities	Aircraft can be moved, so the risk of damage is limited
1.5°C Scenario	More stringent environmental regulations in Japan and internationally to decarbonize society	Full-scale introduction of carbon pricing and increased use of SAF*1	Risk Increased fuel costs due to carbon pricing/SAF	Increased customer fuel costs	Minimal impact on customers because impact of higher fuel costs can mostly be added on to passenger fares
			Opportunity Increased demand for SAF	Expansion of new business	—

Ships Business: We expect the 4°C scenario to have an impact on ships due to weather disasters, although the impact is expected to be minor. Also, construction costs are anticipated to increase in the 1.5°C scenario due to stricter environmental regulations, but the impact is expected to be limited.

	Society		Risks and Opportunities	Financial Impact	Countermeasures and Assessment
4°C Scenario	Climate change accelerates; disasters increase in scale and frequency		Risk Increase in ships damaged by weather disasters	Repair costs and loss of opportunities for charter fees	Minor impact because it is expected to remain within the range of market price fluctuations
1.5°C Scenario	More stringent environmental regulations in Japan and internationally to decarbonize society		Risk Owned ships become obsolete	Risk of lower asset values	Replacing owned vessels with more environmentally friendly ships
			Risk Rise in ship purchase price to comply with regulations	Increased construction costs	Limited impact as it can be passed onto charter fees
	Heightened environmental awareness among shippers and charterers		Opportunity Increased demand for ships compatible with new fuels*2	Expansion of investment opportunities	—

*1 SAF: Sustainable Aviation Fuel. Aviation fuel that does not use fossil-derived raw materials and has a lower environmental impact than conventional aviation fuel.

*2 New fuels: Ships are being converted to environmentally-friendly LNG-fueled ships and zero-emission ships that use hydrogen, methanol, ammonia, and other fuels. Zero-emission ships have not yet been put into commercial use.

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Finance Business (Japan/United States/Asia and Australia): We expect the 4°C scenario to expose properties used as collateral, customer offices, and others to risk of damage due to weather disasters, but the impact is expected to be minor. Although customer costs are anticipated to increase in the 1.5°C scenario due to factors such as carbon pricing, the impact is expected to be minor.

Society		Risks and Opportunities	Financial Impact	Countermeasures and Assessment	
4°C Scenario	Climate change accelerates; disasters increase in scale and frequency		Risk Damage to real estate used as collateral and assets owned by the Group (offices, leased assets, etc.)	Increased credit costs due to damage to real estate used as collateral and owned assets	As a result of trial calculations, the anticipated amount of losses to real estate with disaster risk used as collateral and the anticipated amount of damage to customers are minor, and the increase in credit costs is negligible
			Risk Damage to customers' offices	Increased credit costs due to business suspension of customers and increased repair costs	
			Risk Damage to ORIX offices	Repair costs, opportunity loss for sale	
1.5°C Scenario	More stringent environmental regulations in Japan and internationally to decarbonize society Introduction of carbon pricing and shift to environmentally friendly products and services	Risk Increased customer operating costs due to carbon pricing	Increased credit costs due to deterioration in customer performance	Investing in and lending to carbon related industries are limited, and the impact is minor	
		Opportunity Expanded investing and lending opportunities for renewable energy businesses	Increase in new investing and lending transactions	—	

ORIX Bank discloses measures to address TCFD in its Securities Report for the FY Ended March 2023.

Life Insurance Business: We expect the 4°C scenario to reduce the corporate value of investees and borrowers that are vulnerable to natural disasters, but the impact is expected to be minor. We will survey the impact and assess the risk that excessive heat may have, such as higher insurance payouts and premiums as a result of worsening health impairment, higher death rates, and deteriorating morbidity rates. As the corporate value of investees and borrowers with high GHG emissions is expected to decline in the 1.5°C scenario, we will promote reductions in Scope 3 (emissions from investees and borrowers).

Society		Risks and Opportunities	Financial Impact	Countermeasures and Assessment	
4°C Scenario	Climate change accelerates; disasters increase in scale and frequency		Risk Decline in corporate value of investees and borrowers vulnerable to natural disasters	Loss of investment income	Investees and borrowers are diversified, so the impact is minor
1.5°C Scenario	More stringent environmental regulations in Japan and internationally to decarbonize society Introduction of carbon pricing and shift to environmentally friendly products and services	Risk Decline in corporate value of investees and borrowers with high GHG emissions	Loss of investment income	Promote reduction of Scope 3 (emissions from investees and borrowers) • Promote investing in and lending to businesses and companies that contribute to the transition to a decarbonized society • Engagement with existing investees and borrowers, and replacement of investees and borrowers	
		Opportunity Expanded investing and lending opportunities for renewable energy businesses	Expansion of investment income		

The assessment of each risk and opportunity is premised on implementing the above measures. ORIX has not yet decided to implement any countermeasures.