

Information Disclosure Aligned with TCFD Recommendations

Support for TCFD

Following the adoption of the Paris Agreement, activities targeting progress toward a de-carbonized society extended around the world. The frequency and severity of natural disasters has increased in recent years, and this trend is thought to be related to climate change. Business activities have been significantly affected.

In February 2021, the Company announced its support for the recommendations of TCFD, which was established by the Financial Stability Board.

JR Kyushu performed the scenario analysis of climate risks and opportunities in alignment with the TCFD. The Company's operations involve large volumes of CO₂ emissions, and the Company conducted scenario analysis regarding the influence of climate change on the railway business, which is affected by increasingly frequent/severe natural disasters.

We will continue to disclose information according to TCFD recommendations and implement environmental initiatives to contribute to the building of a sustainable society.

Governance

The JR Kyushu Group has established an ESG Strategy Committee as a deliberative body to strengthen and further implement corporate ESG initiatives. Realizing a de-carbonized society has been announced as one of the JR Kyushu Group's material issues.

The ESG Strategy Committee will confirm that business activities are being advanced in line with the basic philosophy and basic policies about environmental issues such as climate change, confirm the status of progress in regard to voluntary targets for supporting the resolution of the climate change issue, formulate risk management.

In addition, when necessary, the Board of Directors receives reports about important matters that have been discussed at the ESG Strategy Committee and provides instructions.



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Strategy

1 Climate change-related Risks and Opportunities

The risks associated with climate change are classified as risks related to the transition to a lower-carbon society (transition risks) and physical impacts (physical risks).

The following is a review of the impacts of climate-related risks and opportunities on the organization's business, strategy, and financial planning for the railway business.

		Type	Evaluation	Risks	Opportunities
Transition	Policy/regulation	Increase in carbon tax (Increase in carbon price)	Large	(Medium to long term) <ul style="list-style-type: none"> Energy procurement cost increase Materials procurement cost increase due to rise in price of iron and steel Decrease in sales due to passing of procurement costs on to wages 	(Medium to long term) <ul style="list-style-type: none"> Insignificant influence on energy procurement costs from measures to address trend toward energy saving and de-carbonization
		Regulations related to carbon emissions and the use of fossil fuels	Moderate	(Medium to long term) <ul style="list-style-type: none"> Increase in development/manufacturing costs for rolling stock to address regulations (Long term) Difficulty in operating diesel rolling stock if unable to address regulations 	(Medium to long term) <ul style="list-style-type: none"> Increase in sales accompanying maintenance of environmental superiority of railways resulting from early adoption of de-carbonization
	Market	Change in energy mix Change in energy prices	Large	(Medium to long term) <ul style="list-style-type: none"> Energy procurement cost increase Decrease in sales due to passing of energy procurement costs on to wages 	(Medium to long term) <ul style="list-style-type: none"> Lower costs and higher sales due to introduction/expansion of renewable energy businesses accompanying advances in photo-voltaic power generation and electricity storage technologies
	Technologies	Adoption of next-generation technologies	Large	(Medium to long term) <ul style="list-style-type: none"> Decline in sales due to decrease in environmental superiority of railways resulting from adoption of electric vehicles, etc. Failure of investment in new technologies for environmentally friendly rolling stock, etc. (Long term) Decrease in sales following loss of railway superiority due to adoption of self-driving technologies for automobiles, etc. 	(Short to medium term) <ul style="list-style-type: none"> Lower costs due to adoption of self-driving technologies for railways (Medium to long term) <ul style="list-style-type: none"> Decrease in costs due to efficient inspection operations accompanying advances in weather forecasting Increase in sales accompanying active use of public transportation due to adoption of MaaS (Long term) Decrease in maintenance costs and increase in environmental superiority due to introduction of next-generation rolling stock, increase in sales due to increased environmental superiority
	Reputation	Changes in customer preferences Change in reputation among investors	Large Small	(Short to medium term) <ul style="list-style-type: none"> Decline in sales if the environmental superiority of railways decreases, resulting from a shift to alternative means of transportation due to higher environmental consciousness among customers (Short to medium term) <ul style="list-style-type: none"> Decline in reputation among investors if environmental measures are not considered to be aggressive 	(Short to medium term) <ul style="list-style-type: none"> Increase in sales if the environmental superiority of railways is maintained, resulting from a shift to the use of railways due to higher environmental consciousness among customers (Short to medium term) <ul style="list-style-type: none"> Attraction of ESG investment due to shift to low-carbon, environmentally friendly businesses
Physical	Acute	Increased frequency/severity of natural disasters	Large	(Short term) <ul style="list-style-type: none"> Decrease in sales due to disaster recovery cost increases and service suspensions accompanying increased or longer incidents of rain/strong winds (Short to medium term) <ul style="list-style-type: none"> Influence on business continuity due to supply chain interruption Decline in asset value in regions with high disaster risk 	(Medium to long term) <ul style="list-style-type: none"> Decrease in disaster restoration costs and increase in sales due to operation of a railway business that is disaster resilient.
	Chronic	Rise in average atmospheric temperature	Large	(Short term) <ul style="list-style-type: none"> Increase in air-conditioning costs Increase in costs to address heatstroke Increase in costs due to breakdown of electrical equipment and other railway assets and to rail buckling (Short to medium term) Decline in sales due to trend toward refraining from going out 	-

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Strategy

2 Scenario Selection

We analyzed the effect of climate change on our railway business, based on 2°C to 4°C scenarios outlined by specialist institutions, such as the IPCC (Intergovernmental Panel on Climate Change) and IEA (International Energy Agency).

Additionally, in August 2022, we conducted an analysis reflecting the 1.5° C scenario and calculated the financial impacts of some elements.

<Major scenarios used in scenario analysis>

Used primarily to analyze transition risks	IEA: NZE, SDS, STEPS, DRS
Used primarily to analyze physical risks	IPCC: RCP1.9, RCP2.6, RCP8.5

<Future prediction parameters related on transition and physical risks based on each scenario*1>

Risk	Parameter	Unit	Future prediction parameters (2050)				
			At present	4°C	2°C	1.5°C	
Transition	Increase in carbon tax	Emission coefficient*2	g-CO ₂ /kWh	463	282	67	-5
		Carbon price*2	\$/t-CO ₂	—	—	160	250
Physical	Increased frequency/severity of natural disasters*3	Probability of slope failure*4	%	10	12	12	
		Flood frequency*5	times	1	4	2	

*1 Parameter values are based on partial estimations.

*2 Refer to World Energy Outlook 2020 and World Energy Outlook 2021 (IEA).

*3 The 1.5° C scenario was analyzed using parameters for the 2° C scenario, as sufficient future prediction parameters are not available for the 1.5° C scenario.

*4 Refer to the Climate Change Adaptation Information Platform (A-PLAT).

*5 Refer to Recommendations on water control plans based on climate change (Technical review committee on flood control plans based on climate change)

<Calculation of increase in financial impact associated with risks, etc.>

We calculated the increase in financial impact that is likely to be caused in 2050 by the qualitative risks that are expected to have the biggest impact and for which we have parameters for future predictions.

Transition risks were calculated by estimating emissions in 2050 from emission coefficient predictions for each scenario and multiplying these emission volumes by carbon costs.

For physical risks, we referred to hazard maps provided by the Ministry of Land, Infrastructure, Transport and Tourism, established the risk level for each site (stations, areas between stations, etc.) and estimated the costs likely to be incurred as a result of disasters at each risk level based on past costs. We also calculated increases in facility damage costs that are likely to occur in future based on the likelihood of disasters in each scenario.

<Calculations of increase in financial impact in 2050 based on each scenario>

Risk	Expectations	Increase in financial impact (billions of yen/year)			
		4°C	2°C	1.5°C	
Transition	Increase in carbon tax	Costs due to introduction of carbon tax based on decrease in emission coefficient	—	+ approx. 1.5	+ approx. 1.0
Physical	Increased frequency/severity of natural disasters	Costs incurred by damage to facilities due to increase in natural disasters	+ approx. 15.0	+ approx. 7.5	

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3. Results of Scenario Analysis and Future Policies and Initiatives

Under the 2°C scenario, which anticipates an increase in carbon taxes and cost increases due to the adoption of renewable energy, if the environmental superiority of railways can be maintained, then there will be a shift of customers from other means of transportation, and we will be able to secure opportunities to increase sales.

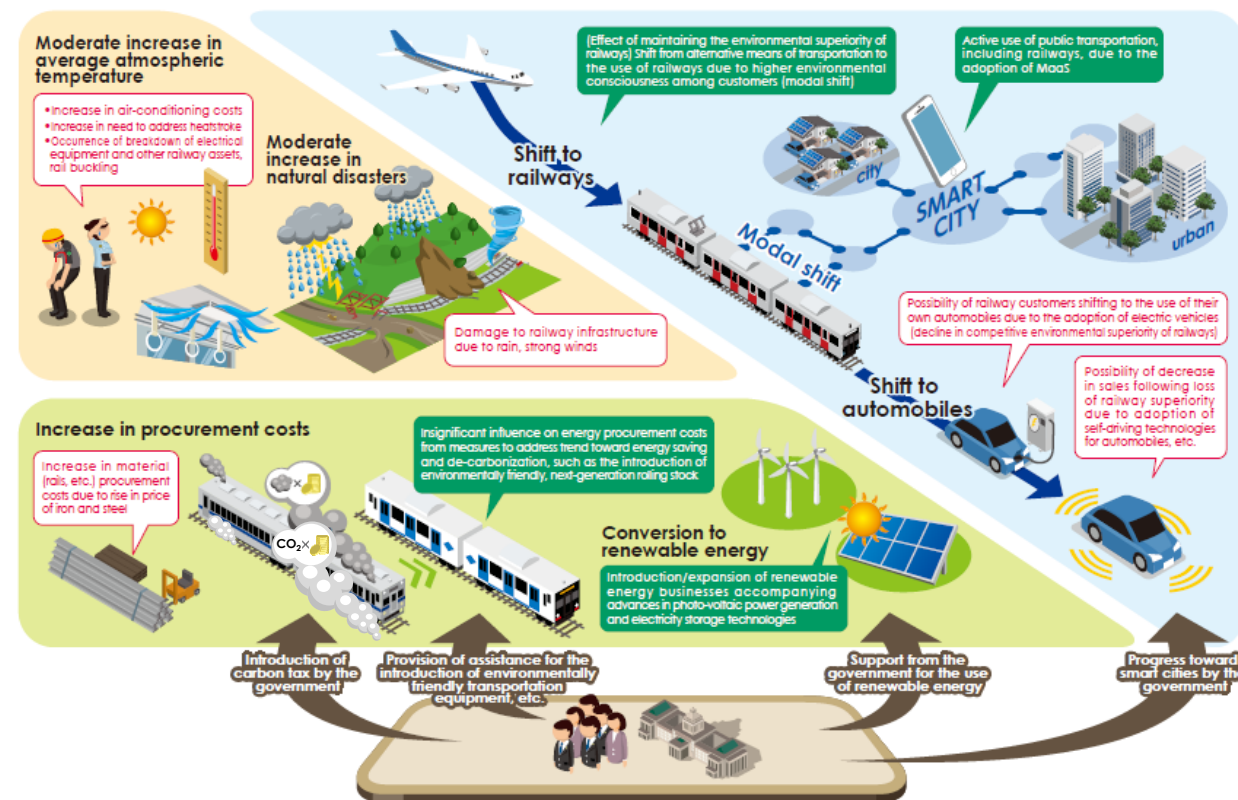
Additionally, we predicted that while aiming for the 1.5°C scenario will mean a higher carbon tax, decreasing the overall emission coefficient will reduce costs associated with carbon tax.

In addition, under the 4°C scenario, due to the increasing frequency/severity of natural disasters caused by climate change, there will be damage to railway assets and an increase in maintenance costs, as well as a decline in sales due to the suspension of operations.

We will work to further expand our scenario analyses and the details we disclose, taking measures such as reflecting future prediction parameters that are available, taking into account the external data that is being disclosed.

For society and for the Company, The Group will work to advance initiatives for the achievement of the 2°C furthermore 1.5°C world to facilitate the realization of a sustainable society.

(1) Results of Scenario Analysis (Global outlook under 2°C, 1.5°C scenario (2050))

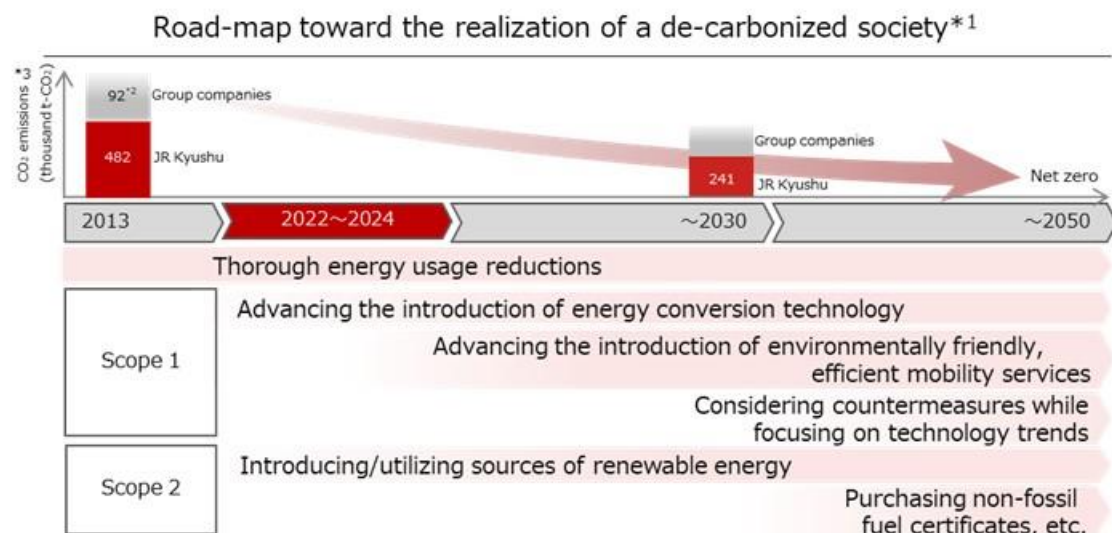


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(2) Future policies and initiatives

The JR Kyushu Group has established the Road-map toward the realization of a de-carbonized society in the JR Kyushu Group Medium-Term Business Plan 2022-2024 (announced March 2022) based on transition risks and physical risks. In addition to working actively on measures to mitigate these risks, such as reducing our energy consumption and switching to renewable energy, we are also working on adaptive measures such as measures for handling heavy rain.



*1. Appropriately setting milestones, implementing appropriate revisions while considering future technology trends and economic rationality

*2. Aggregate value from periodic reporting stipulated in the Act on Rationalizing Energy Use

*3. Scope1,2

Risk Management

The Group's ESG Strategy Committee, which is chaired by the President and CEO, plans, formulates, and manages the progress of measures to reduce CO₂ emissions. In addition, to identify and evaluate the influences of climate change on the Group's businesses, we analyze climate change risks and opportunities, and in the ESG Strategy Committee, reports are made at least once per year. In addition, reports are made to the Board of Directors as necessary.

Metrics and Targets

The JR Kyushu Group has announced that it is aiming for net-zero CO₂ emissions by 2050. We have also designated the realization of a de-carbonized society as one of our material issues, and have set non-financial KPIs in the JR Kyushu Group Medium-Term Business Plan 2022-2024, including intermediary goals for 2030.

We will continue working on Groupwide initiatives to reduce CO₂ with the aim of realizing a de-carbonized society.

Major objectives/indicators		
• CO ₂ emissions	• JR Kyushu non-consolidated emissions in FY2031/3	50% reduction compared to FY2014/3
• Disclosure of environment-related information	• Groupwide Scope 1 and 2 emissions	Tracking emissions
• Green building	• Groupwide Scope 3 emissions	Starting to calculate
	• Acquisition of green building certification	1 or more cases

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<Reference: Emissions in the supply chain of JR Kyushu alone>

Scope		CO ₂ emissions [Thousand t-CO ₂]			Calculation Method
		FY2020/3	FY2021/3	FY2022/3	
Scope 1		49	41	43	—
Scope 2		209	208	216	—
Scope 3		573	435	558	—
Category 1	Purchased goods and services	203	172	170	Costs of services and goods other than purchased assets were multiplied by a standard unit.
Category 2	Capital goods	316	214	339	Costs of non-consolidated facility investments were multiplied by a standard unit.
Category 3	Fuel-and-energy-related activities (not included in scope 1 or 2)	51	46	46	The total volume of purchased electricity and fuel was multiplied by a standard emission unit.
Category 4	Upstream transportation and distribution	—	—	—	Not calculated as Scope 3 emissions are calculated from operational costs, including transportation costs and similar, in Category 1.
Category 5	Waste generated in operations	1	1	1	Multiplied by a standard emission unit specific to each type of industrial waste. General waste was calculated by multiplying the waste disposal costs by a standard unit.
Category 6	Business travel	0	0	0	Calculated by multiplying the non-consolidated number of employees by a standard unit.
Category 7	Employee commuting	0	0	0	Fare revenue for each type of transport was multiplied by a standard emission unit.
Category 8	Upstream leased assets	—	—	—	Not relevant—already calculated and reported in Scopes 1 and 2.
Category 9	Downstream transportation and distribution	—	—	—	Not calculated as our railway business is our main business.
Category 10	Processing of sold products	—	—	—	Not calculated as our railway business is our main business.
Category 11	Use of sold products	—	—	—	Not calculated as our railway business is our main business.
Category 12	End-of-life treatment of sold products	—	—	—	Not calculated as our railway business is our main business.
Category 13	Downstream leased assets	—	—	—	Not relevant as JR Kyushu does not engage in leasing.
Category 14	Franchises	—	—	—	Not relevant as JR Kyushu is not a franchiser.
Category 15	Investments	—	—	—	Not calculated as JR Kyushu does not invest for profit.

*1 Calculated according to Basic Guidelines for Calculation of Greenhouse Gas Emissions Throughout Supply Chains (Ministry of the Environment, Ministry of Economy, Trade and Industry)

*2 “—” means not relevant or not calculated

*3 “0” means less than 1,000t-CO₂