Global Environment

JR-West Group's approach to protection of the global environment

The JR-West Group pursues initiatives aimed at realizing a future vision of "a safe and comfortable society filled with meetings among people and smiles." And as we work to make western Japan an area in which everyone, including future generations, can continue to enjoy energetic, active lifestyles, we are contributing to the achievement of the SDGs and, thereby, the sustainable development of society.

One particular area of focus is global warming prevention and climate change action, where there has been a rapidly accelerating push towards a decarbonized society. By honing the environmentally friendly strengths of railways, we will fully capitalize upon the opportunities presented by this change to a decarbonized society, while, through our group business activities, we will contribute to the protection of the global environment and the creation of a sustainable society.

Head of operations;
Director and Senior Executive Officer; Senior General Manager of Corporate Strategy Headquarters
Eiji Tsubone

Systems to pursue initiatives to protect the environment

We consider protection of the global environment to be one of our key business challenges and have therefore established a Global Environment Committee. The committee is chaired by the president and comprises executive directors in charge of Head Office departments and general managers of the principal divisions. It deliberates and facilitates action on important matters, such as the Group's basic policy for global environmental protection and the setting of medium and long-term targets and plans. Important items deliberated by the Global Environment Committee are also reported to and discussed with the Sustainability Committee, Group Management Committee, and Board of Directors in order to share this information among senior management.

Global Environment Committee

Chair: President, Vice chair: Vice President

Comprises directors who also serve as executive officers at Head Office departments, and division managers responsible for management planning, capital investment, finance, governance, risk management, CSR, and global environmental protection.
Generally, meetings are held at least twice a year.

Tasked with formulating group policies and action plans regarding global environmental protection, and holding discussions on important matters

Railway Subcommittee

Chair: Senior General Manager of Railway Operations Headquarters

Comprises the railway departments and divisions in charge of group companies associated with the railway business

Tasked with formulating policies and plans for the railway departments, and promoting measures in that regard

Company/Group Company Subcommittee

Chair: General Manager of the Corporate Strategy Division

Comprises the companies and divisions in charge of group companies associated with businesses other than the railway business

Tasked with formulating policies and plans for business domains other than railway, and promoting measures in that regard

Think-and-act Environmental Subcommittee

Chair: General Manager of the General Affairs and Secretarial Division

Works with the Railway Subcommittee and the Company/Group Company Subcommittee to develop measures to encourage each employee of the JR-West Group to think and act on their own initiative to protect the global environment

Branch offices, group companies

Progress on medium-term environmental goals

In tandem with the JR-West Group Medium-Term Management Plan 2022, the JR-West Group has set medium-term environmental goals for fiscal 2023 and is working to achieve them.

As of fiscal 2022 we are on track to meet all of our goals in each field.

Energy consumption intensity (vs. FY2014)
FY2023 target: -3.0%
FY2022 results: -4.7%

Percentage of energy-efficient railcars
FY2023 target: 88.0%
FY2022 results: 90.1%

Station and onboard garbage recycling rate
FY2023 target: 96.0%
FY2022 results: 99.4%

Railway material recycling rate (facility construction)
FY2023 target: 97.0%
FY2022 results: 97.4%

Railway material recycling rate (rolling stock)
FY2023 target: 92.0%
FY2022 results: 95.8%

Promote environmentally friendly stations and office facilities

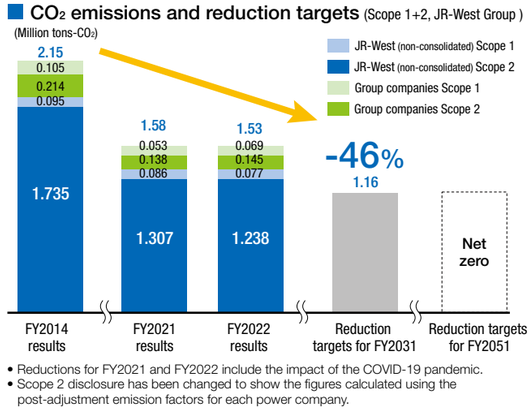
Related SDGs

JR-West Group Zero Carbon 2050 long-term environmental goals

Setting targets to achieve carbon neutrality

Understanding that our businesses emit a large amount of CO_2 and responding to climate change—such as storms and floods and other intensifying natural disasters, caused by global warming—are important management issues that must be addressed for the JR-West Group to continue doing business. In recognition of the need for the JR-West Group to be more active in addressing climate change, we have formulated the JR-West Group Zero Carbon 2050 long-term environmental goals. Target values include reducing CO_2 emissions for the entire Group by 46% (in comparison to fiscal 2014) by fiscal 2031 and to net zero by fiscal 2051.

CO_2 emissions and reduction targets (Scope 1+2, JR-West Group)



- Reductions for FY2021 and FY2022 include the impact of the COVID-19 pandemic.
- Scope 2 disclosure has been changed to show the figures calculated using the post-adjustment emission factors for each power company.

Scope 3 CO_2 emissions

	FY2021	FY2022
Non-consolidated	1.71 million tons-CO_2	1.58 million tons-CO_2
Group companies*	2.17 million tons-CO_2	2.27 million tons-CO_2
Total	3.88 million tons-CO_2	3.85 million tons-CO_2

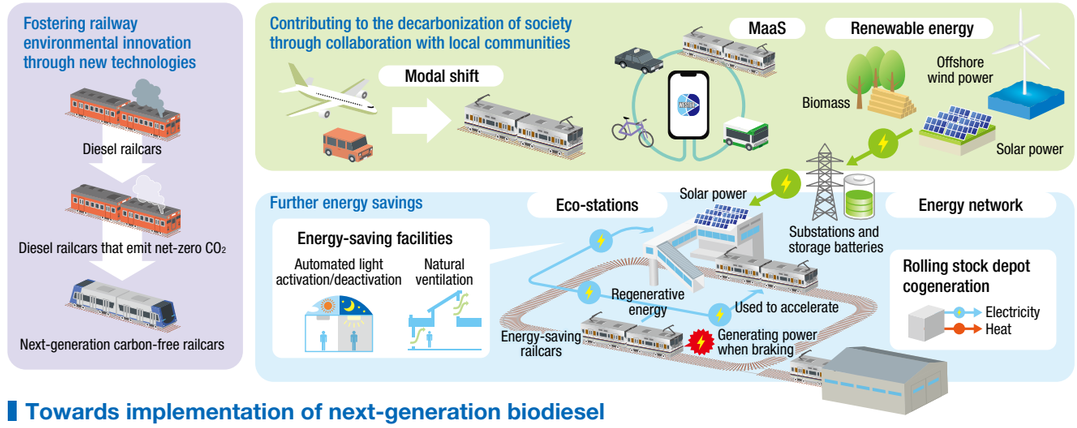
Scope 1: Total CO_2 directly emitted by the JR-West Group from combustion of fuels, such as diesel oil for diesel train operation, and kerosene and heavy oil for operational purposes (includes the CO_2 equivalent mass for leaked fluorocarbons)

Scope 2: Total CO_2 emitted indirectly by the JR-West Group from the use of power and heat purchased from power companies and others

Scope 3: Total CO_2 emitted from other companies in relation to the JR-West Group's business activities (indirect emissions other than Scope 1 and Scope 2)

*The scope of calculation for group companies encompasses all consolidated subsidiaries and the five main group companies (Amagasaki Hotel Development Limited, Kosei Corporation, Osaka Energy Service Co., Ltd., Possible Medical Science, Ltd., JR West Iwill Co., Ltd.)

JR-West Group Zero Carbon 2050



Towards implementation of next-generation biodiesel

At JR-West, we're looking into replacing diesel fuel used to run diesel trains and other vehicles with next-generation biodiesel, which has the same properties as, and is 100% interchangeable with, existing diesel fuel, thereby achieving net-zero CO_2 emissions. In order to facilitate the practical introduction of biodiesel, we will undertake validation testing, which is centered on the JR-West service area and is part of the Fiscal 2022 New Technology Development Challenges Program of the Ministry of Land, Infrastructure, Transport and Tourism's Railway Technology Development and Adoption Promotion System.

This validation testing commences in fiscal 2023 with single engine tests and trial train operation using 100% next-generation biodiesel (approximately one-month operation during regular, summer, and winter periods to confirm the impact of temperature). It will extend through fiscal 2025 with multiple, long-distance trials involving passenger trains (approximately 200 km per day per car) to confirm whether biodiesel can be safely and reliably used with such trains.

Based on the results of validation testing, we aim to start full-scale use of next-generation biodiesel in fiscal 2026.

Global Environment

Climate change-related risks and opportunities, and scenario analysis
(information disclosure based on TCFD recommendations)

Basic approach

We will leverage the fact that railways—the core business of the JR-West Group—are more environmentally friendly than other types of transport, to help reduce the CO_2 emissions of society as a whole by having more people utilize our services. Moreover, the impact of climate change associated with global warming, such as intensifying natural disasters, is increasing with every year, and the need for society as a whole to address it is growing rapidly.

The JR-West Group must understand the fact that our business as a whole emits a large amount of CO_2 and recognize that addressing climate change is an important issue for management if we are to continue doing business into the future. We are working to understand the risks and opportunities that climate change brings.

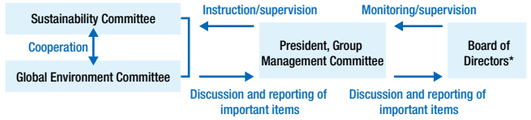
Additionally, the JR-West Group supports the recommendations of the Task Force on Climate-related Financial Disclosures (TCFD). We will proceed with appropriate disclosure and analysis of information on risks and opportunities related to climate change.

These risks and opportunities, and the analysis thereof, focus on the railway business, which is the core business of the JR-West Group, and which is expected to be strongly affected by climate change.

Governance

The JR-West Group will contribute to the creation of a sustainable society, and we will pursue initiatives to protect the environment and allow us to grow sustainably in the long term. And to serve as the driving force behind these initiatives, we have established the Global Environment Committee, which is chaired by the president and comprises executive directors in charge of Head Office departments and general managers of the principal divisions. This committee generally meets twice annually to deliberate on the Group's basic policy for global environmental protection and on the setting of medium- and long-term environmental targets and plans. It also monitors the progress of concrete initiatives aimed at achieving the plans and targets.

Items on the Global Environment Committee agenda are reported to and discussed by the Sustainability Committee, Group Management Committee, and Board of Directors as necessary.



*Examples of matters referred to the Board of Directors for discussion: Setting of long-term environmental goals, climate change-related risk and opportunity analysis, content of information disclosures based on TCFD recommendations

Strategy

Based on the impacts of climate change and socioeconomic scenarios in light of the situations presented by the Intergovernmental Panel on Climate Change (IPCC), the JR-West Group has analyzed the risks and opportunities that climate change represents to the railway business.

We are aware of the risks of increased damage brought on by more frequent typhoons and floods, the heightened tax burden accompanying the introduction of a carbon tax, and the increasing amount of the renewable energy surcharge brought about by Japan's review of the makeup of its electricity sources. Conversely, the superior environmental characteristics of railway have been recognized, and it was found that the increased convenience offered by the spread of MaaS and other similar services also provides opportunities to increase railway use.

The details of the analysis is shown at right. The analysis considers a 2°C increase scenario (RCP* 2.6) and a 4°C increase scenario (RCP 8.5). The qualitative analysis is based on a 2°C increase scenario (RCP 2.6), where society has actively addressed climate change.

The direction of the technological solutions addressing changes in the business environment, including climate change, is illustrated in the JR-West Group Technology Vision. (Ref. URL: https://www.westjr.co.jp/global/en/procurement/procurement_plan/pdf/technological_vision.pdf)

Going forward, the JR-West Group will contribute to the creation of a sustainable society, taking appropriate measures to address the risks and opportunities it has identified and working to increase corporate value in the long term as a business group that is responsible for social infrastructure.

*RCP: Representative concentration pathways

Risk management

The JR-West Group will update the content of its analysis based on information such as changes in the business environment and the publication and update of a range of forecasts issued by public institutions in relation to the risks and opportunities associated with climate change, along with measures to address them. We will also periodically deliberate on and monitor the content of the analysis and the state of initiatives aimed at achieving long-term environmental targets in meetings of the Global Environment Committee.

Content discussed by the Global Environment Committee is reported to and discussed by the Sustainability Committee, Group Management Committee, and Board of Directors as necessary, sharing and managing matters such as climate change-related risks as important issues for management.

We have performed this risk and opportunity analysis based on the 2°C increase scenario (RCP 2.6) and 4°C increase scenario (RCP 8.5), taking into consideration factors like the robustness of future prediction data. However, as socioeconomic analyses and other measures continue to progress and future prediction data becomes more robust, we will revisit this analysis to include responses for a 1.5°C increase scenario (RCP 1.9).

Indices and goals

The JR-West Group has formulated the JR-West Group Zero Carbon 2050 long-term environmental goals and has set the objective of achieving net-zero CO_2 emissions for the entire Group by fiscal 2051, with an interim goal of reducing emissions by 46% of fiscal 2014 levels by fiscal 2031.

We believe that this is a level that will result in Japan meeting the goals that it has set for CO_2 reduction and lead to the achievement of the targeted temperature increase of 1.5°C or less, or less than 2°C higher than that of the time of the industrial revolution—the goal of the Paris Agreement.

The JR-West Group will pursue initiatives to reduce CO_2, and, through initiatives intended to realize the goals of JR-West Group Zero Carbon 2050, we will contribute to the creation of a sustainable society.

Qualitative analysis of risks and opportunities

Risks recognized

Type			Risk to the company	Impact	Measures
Risks associated with the transition to a decarbonized society (transition risks)	Policies and laws		Increased tax burden due to reforms in the tax system, such as the introduction of a carbon tax	Large	● Promote energy-efficient rolling stock, energy-saving equipment, and energy-saving driving ● Use alternative fuels, switch electricity to renewable sources ● Facilitate the transition to low-carbon equipment and facilities through the use of internal carbon pricing
			Large increases in the renewable energy surcharge	Large	
			Increased green investment brought on by emissions controls	Large	● Respond to growing green investment through the issuance of green bonds
	Technology		Increased development costs to support next-generation technology		● Control development costs through open innovation and joint development with other companies ● Use subsidy systems from the government and other organizations
			Failed investment due to errors in assessing environmental values		● Investment activities that take environmental values into account using internal carbon pricing
	Market		Increased costs for procuring fossil fuels		● Use alternative fuels ● Study sustainable modes of transportation that are environmentally appropriate for the region
			Increase in material prices due to suppliers passing on environmental costs through their pricing	Large	● Control the cost of purchasing materials by updating equipment and reviewing facilities
			Increase in electricity shortages caused by disturbances in the supply–demand balance associated with the electrification of society and the expanded use of renewable energy		● Promote energy-efficient rolling stock, energy-saving equipment, and energy-saving driving in order to reduce electricity consumption ● Establish in-house systems and methods to respond to power shortage warnings
			Growth of ethical consumption in society		● Achieve smart, green transport by using MaaS in urban areas and intercity transportation, areas where the characteristics of railway offer advantages ● In areas where the characteristics of railway do not offer advantages, consider sustainable transport systems that are environmentally appropriate for the region, in consultation with the region concerned
			Decline in the environmental preeminence of railways due to the electrification of automobiles	Large	
	Reputation		Negative effect on material procurement due to reduced ESG rating	Large	● Disclose information on the status of TCFD analysis and the JR-West Group Zero Carbon 2050 long-term environmental goals ● Conduct research on the development of social infrastructure through the Kyoto University Disaster Risk Management Engineering course (JR-West), and hold regular lectures for citizens, both funded by the company
			More criticism from stakeholders due to delays in initiatives and insufficient information disclosure	Large	
			Loss of consumer confidence due to increased suspensions of train operations		● Publish information on JR-West safety initiatives, including planned suspensions of operations ● Provide information to customers in a timely and appropriate manner when train operations are suspended
Risks associated with the physical impact of climate change (physical risks)	Abnormal weather	Acute risks	Increased damage to railway facilities due to the increasing frequency of typhoons and floods	Large	**We will pursue the following initiatives to mitigate damage to customers and to railway facilities** **[Measures to prevent flooding of railway facilities]** ● Implement both facilities-based and operations-based measures to prevent flooding and relocate rolling stock at important facilities such as general depots, rolling stock holding facilities, signal equipment facilities, and control centers **[Implementation of a weather disaster response system]** ● Introduce a weather disaster response system on major railway lines in the Kansai area to prepare for worsening weather disasters and minimize the risk of human error ● Deploy radar rainfall monitoring systems on all conventional railway lines to improve safety in the event of localized heavy rainfall **[Reinforcement measures of slopes on railway lines]** ● Reinforce sloping areas and establish drainage systems to improve safety and shorten times when operation is restricted, primarily in the Kyoto/Osaka/Kobe area ● Create slope disaster charts and utilize sensing technologies to understand slope deformation and enhance detection precision **[Strengthening of railway track equipment]** ● Improve train operations' safety and durability by replacing old wooden sleeper sections with concrete ones **[Implementation of planned suspensions of operations]** ● Implement planned suspensions of operations, including relocation of rolling stock, as necessary when large typhoons approach or make landfall ● Appropriately provide information regarding planned suspension and resumption of operations **[Implementation of emergency response training]**
			More suspension of train operations due to damage to railway facilities	Large	
			Increased impact on trains due to power blackouts	Large	● Taking BCP into account, install emergency power generators at control centers, which are vital centers for train operation, in order to maintain function during power blackouts ● Establish in-house systems and methods to respond to power shortage warnings ● Deploy the N700S to the Tokaido and Sanyo Shinkansen lines (Its onboard battery-based self-propulsion system will allow us to help customers in the event of extended blackouts)
			Material shortages due to disruptions in supplier logistics		● From the standpoint of BCP, ensure that there are multiple channels in the supply chain for important items that have a significant effect on train operation and that a certain amount of inventory is maintained
		Chronic risks	Increased damage insurance		● Pursue initiatives to mitigate damage to railway facilities (stated above)
			Increased air conditioning costs due to rising temperatures		● Green rooftops and building walls, adopt heat-insulating materials ● Improve air conditioning efficiency by introducing regional heating and cooling systems
			Increased damage from animals due to the expanding range of wildlife caused by decreased snowfall		● Expand measures to prevent damage from animals (installing fences to keep deer from entering, developing sound equipment for repelling animals, improving vehicle obstruction guards, etc.)
	Working environment		Increase in labor accidents such as heat stroke due to rising temperatures		**We will pursue the following initiatives to improve working environments and prevent labor accidents** **[Measures to prevent heat stroke]** ● Prepare equipment to counter heatstroke, such as air-conditioned clothing, use the WBGT index, work in the morning and evening hours ● Equip crew compartments on railcars with air conditioners **[Reconstruction of railway systems]** ● Reduce workload along railway lines through onboard and sensor-networked ground inspections, surveying with MMS technology, and the mechanization and automation of construction work ● Reduce workload along railway lines through the integration of functions into vehicles and the simplification of ground facilities
			Increased cost of measures to prevent heat stroke		

Global Environment

Opportunities recognized

Type	Opportunities for the company	Impact	Seizing opportunities
Resource efficiency	Reductions in CO_2 emissions and energy consumption by updating rolling stock and equipment to energy-efficient ones		● Accelerating the installation of high-efficiency equipment such as devices that utilize regenerative power, by using new subsidy programs and energy-saving facilities
	Equipment updates making effective use of government support systems such as tax incentives		
Energy sources	Wider use of fuels with net-zero CO_2 emissions, fuel cells, and storage batteries through technological progress and reductions in pricing	Large	● Studying new energy sources (next-generation biodiesel, carbon-free next-generation rolling stock, fuel-cell co-generation systems, etc.)
Products and services	In areas where the characteristics of railway can be put to good use, railways are acknowledged as being environmentally superior, with use increasing due to policy-based promotion of public transport and greater awareness of railway use (modal shift)	Large	● Promoting the use of railway by strengthening the appeal of its environmental superiority ● Enhancing secondary transport services linked with railway (park and ride, electric bicycle sharing services, etc.) ● Enhancing services using digital technology (ICOCA de Jisapo, a time-staggered commuting point service) ● Enhancing MaaS (Kansai MaaS, WESTER MaaS app, etc.)
	Increased use due to the greater convenience of public transportation associated with the proliferation of MaaS	Large	
	Spread of sustainable modes of transportation that are environmentally appropriate for the region	Large	● Cooperating with regional communities using demand-based transportation to make regional public transport more convenient ● Promoting BRT development projects using self-driving and convoy driving technologies
Market	Reduction of electricity procurement costs through expansion of renewable energy		● Studying participation in renewable energy business
	Securing of revenue in the electricity supply and demand market using JR-West equipment		● Studying participation in VPP (virtual power plant) business
Resilience	Reduction of suspensions of train operations and ensuring of reliability through successful BCP measures in the event of weather disasters		● Pursuing measures to mitigate damage to railway facilities (see previous page) and disclosing related information
	Maintaining railway forests helps reduce CO_2 emissions and prevent disasters		● Ongoing forest conservation activities through Club J-WEST Forest ● Studying the effective use of railway forests

Assumptions for quantitative impact of risks and other concerns

For risks and other concerns extracted through qualitative analysis, we have made quantitative impact assumptions for those items that we expect to have a significant impact and for which objective future forecast data corresponding to the scenarios used in the analysis are available. In addition, we have estimated the trend in transportation revenues based on estimated population and GDP data derived from socioeconomic scenarios.

Our assumptions are based on society in 2030 or 2050. The transition risks are calculated based on a 2°C (RCP 2.6) scenario in which society acts proactively to address climate change. The physical risks and impacts on transportation revenues are calculated based on 2°C (RCP 2.6) and 4°C (RCP 8.5) scenarios. (The results of the estimated impacts are shown in the chart below.)

In particular, the physical risks and impacts on transportation revenues are greater in the 4°C scenario than in the 2°C scenario. Based on these factors, we will take measures to address the risks and promote initiatives to realize a decarbonized society, so as to help curb climate change.

Presuppositions for assumed transition risk and physical risk impact

	Item	Source of forecast data used for trial calculation	Assumed impact in 2030	
			4°C scenario (RCP 8.5)	2°C scenario (RCP 2.6)
Transition risks	Increased tax liability due to carbon tax levy	IEA “World Energy Outlook 2021”	–	$100/t-$CO_2$ (2030, developed countries) Exchange rate: $1 = ¥110
	High electricity prices due to expansion of renewable energy	Renewable Energy Institute “Verification of Electricity Supply-Demand Balance and Costs in 2030”	–	About 24% higher than the current level
	High material prices due to suppliers passing on environmental costs	Kiyoshi Fujikawa (author) “Load of Carbon Tax by Region and Income Group,” others	–	About 2% higher than the current level
	Item	Source of forecast data used for trial calculation	Assumed impact in 2050	
			4°C scenario (RCP 8.5)	2°C scenario (RCP 2.6)
Physical risks	Greater damage to facilities due to increase in natural disasters	Technical Study Group on Flood Control Planning in Light of Climate Change “Recommendations for Flood Control Planning in Light of Climate Change” (revised April 2021), Ministry of Land, Infrastructure, Transport and Tourism	Approximately four times more frequent than current levels	Approximately two times more frequent than current levels
	Reduced revenue owing to increased operational suspensions due to natural disasters			

Quantitative impact assumptions (financial impact) for transition risks and physical risks

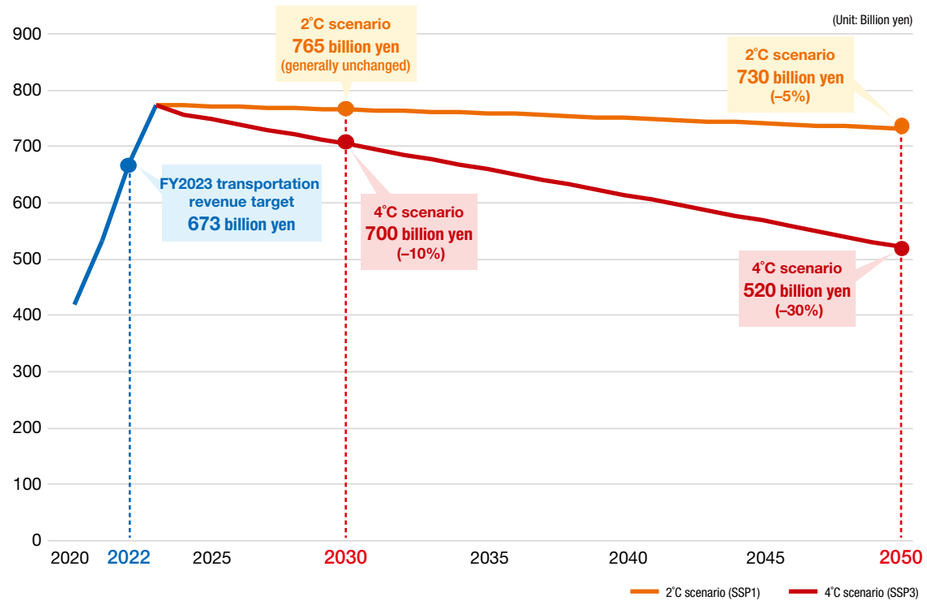
	Item	Assumed impact in 2030	
		4°C scenario (RCP 8.5)	2°C scenario (RCP 2.6)
Transition risks	Increased tax liability due to carbon tax levy	–	12 billion yen/year
	High electricity prices due to expansion of renewable energy	–	10 billion yen/year
	High material prices due to suppliers passing on environmental costs	–	2 billion yen/year
	Item	Assumed impact in 2050	
		4°C scenario (RCP 8.5)	2°C scenario (RCP 2.6)
Physical risks	Greater damage to facilities due to increase in natural disasters	10 billion yen/year	3 billion yen/year
	Reduced revenue owing to increased operational suspensions due to natural disasters	4.5 billion yen/year	1.5 billion yen/year

Trial calculation of changes in transportation revenue

Based on population and GDP data derived from socioeconomic scenarios, which are used in cross-disciplinary climate change research, we have estimated the changes in transportation revenue up to 2050.

The population data is derived from “Japanese SSP Population Estimates by City, Town, and Village,” published by the National Institute for Environmental Studies. GDP data is derived from “Global Dataset of Gridded Population and GDP Scenarios,” published by IIASA (International Institute for Applied Systems Analysis). Based on projected demographic and domestic GDP changes in our business areas, we have estimated the changes that will occur from fiscal 2024 onward, which is the period following the revised JR-West Group Medium-Term Management Plan. (For the data referenced here, the 2°C scenario = SSP1 and the 4°C scenario = SSP3.)

The future forecasts in our trial calculation are based on demographic and GDP estimates only and do not take into account individual factors that may affect revenues, such as future sales measures.



Note: Peak values for fiscal 2023 onward assume recovery to approximately 90% pre-pandemic level, and the degree of decrease for those assumed values is given in parentheses.

Global Environment

Decarbonization efforts aimed at the entire supply chain

The JR-West Group is undertaking various decarbonization efforts that contribute to reduced CO_2 emissions across the entire supply chain.

Zero carbon MICE (West Japan Railway Hotel Development, Ltd.)

At the Hotel Granvia Kyoto and six other hotels operated by JR-West Hotels and equipped with banquet rooms, West Japan Railway Hotel Development offers a CO_2 Zero MICE®*1 option that switches the power for the venue spaces over to renewable energy, thereby reducing their CO_2 emissions to virtually zero.

The event organizers who use these venues and who purchase this option are issued a renewable energy certificate (REC) from the Japan Quality Assurance Organization, which certifies their contribution to the spread of renewable energy. For event organizers, obtaining an REC means they are contributing to society and helps improve their reputation as an environmentally friendly company.

West Japan Railway Hotel Development espouses the "SDGs Initiatives at JR-West Hotels"*2 and pursues a variety of initiatives apart from those described in this report. Under the slogan of "Doing what we can to create a hotel that exists in harmony with society," the company aims to drive the growth and development of people-friendly and environmentally friendly hotels.

*1 This option makes use of CO_2 Zero MICE® offered by JTB Communication Design, Inc.
*2 Further information about the SDGs Initiatives at JR-West Hotels
https://www.jrwesthotels.com/en/sdgs/

100% renewable energy building (JR West Properties Co., Ltd.)

The Kyushu Branch of JR West Properties is taking part in the Goto RE100 project, the aim of which is to completely meet all essential power needs through the use of renewable energy from the Goto Islands. The Kyushu Branch has established a plan for using renewable energy to meet all of the contract power demand at the facilities it oversees. Although this will add value to the facilities owned by the Kyushu Branch, as well as increase the corporate value of the facility tenants, it will also bring with it added costs, such as non-fossil fuel certification fees. Thus, in tandem with this, JR West Properties has introduced at its Kaminoshima Center Building (Kaminoshima-machi, Nagasaki City) an on-site PPA model that makes use of recycled solar modules*1 that are not dependent upon the power grid. Both environmental and economic efficiency can be achieved without the burden of anticipated renewable energy surcharge and fuel cost adjustment increases.

This effort has been certified by the Goto RE100 certification committee for converting all energy usage over to Goto-generated and renewable energy. It has been achieved through an on-site PPA agreement with Goto Citizens' Power K.K. and with the cooperation of the Institute for Energy Research on Remote Islands, Japan. This example of using recycled solar modules in an on-site PPA model is the first of its kind in the Kyushu region*2.

Deputy general manager, Kyushu Branch, JR West Properties Co., Ltd.
Tatsuyuki Hirabe

*1 A model that utilizes recycled solar modules in order to reduce the waste generated by solar panel disposal and the CO_2 generated from solar panel manufacturing and other processes.
*2 Based on findings by the Institute for Energy Research on Remote Islands, Japan (as of January 2022).

Contributing to the creation of a circular economy

The JR-West Group is promoting the 3Rs—reduce, reuse, and recycle—to reduce the environmental impact of wastewater and waste arising from our business activities. We are working as one to contribute to the creation of a circular economy .

Fuubo vending machines
(JR West Japan Kyoto Shopping Center Development Company [formerly Kyoto Station Center Co. Ltd.])

Thanks to a partnership agreement between Kyoto Prefecture, ZERO Corporation, and Weathernews Inc. to reduce food loss as a way to help achieve the SDGs in Kyoto Prefecture and, thereby, help realize an environmentally friendly society, Fuubo* vending machines have been installed in the Porta underground shopping arcade at JR Kyoto Station.

*Fuubo vending machines sell products (e.g., unused food products) that can still be consumed but would otherwise be disposed of for reasons such as being past the delivery or sell-by date or having out-of-season packaging at a discounted price of up to 90% off the normal retail price.

Section chief,
Management Group, Sales Department,
JR West Japan Kyoto Shopping Center Development Company
Tetsuya Sakurada

TABETE food sharing service
(West Japan Railway Hotel Development, Ltd.)

In January 26, 2022, West Japan Railway Hotel Development introduced TABETE*1, one of Japan's largest food sharing platforms, run by CoCooking Corporation, into all five Hotel Granvia hotels, JR-West Hotels' flagship hotel brand.

Also, by operating this program in conjunction with our already existing initiative for reducing food loss, which involves sending leftover food and cooking scraps to a recycling center to be turned into animal feed and other usable material, as well as in conjunction with the 3010 Campaign*2, which reduces leftover food by establishing a fixed time frame for eating during banquets, we will be able to reduce food loss even further.

*1 TABETE is a food sharing service that matches registered users, who support reducing food loss, with products that restaurants and other food-related establishments are unlikely to be able to sell before the end of business hours, or that are in danger of being thrown away despite still being perfectly good to eat.
*2 The 3010 Campaign calls on those hosting events that involve meals to help reduce food loss by allocating the first 30 minutes and the final 10 minutes of the event on eating and drinking.

Assistant manager,
Sales Strategy Department,
Company Headquarters,
West Japan Railway Hotel Development, Ltd.
Chiaki Fukushima

Living in harmony with nature
(water resource protection, biodiversity conservation)

The business activities of the JR-West Group benefit from nature's great abundance, but they also have no small impact on nature. That's why we pursue efforts aimed at conserving biodiversity, such as by limiting the impact that our business activities have on diverse ecosystems.

Reducing the environmental impact of maintenance materials
(Hakusan Depot, Kanazawa Branch)

With the help and ingenuity of group companies, we are finding ways to reduce the number of paint coatings applied to rolling stock without compromising car quality so that we are able to use less paint (organic solvents). We are also working to reduce environmental impact by replacing rolling stock paint, axle rust-prevention agents, and other products containing organic solvents with water-based versions that have less impact on employee health and the ecosystem.

Reducing the impact of river-crossing construction work on aquatic environments
(Yonago Civil Engineering Center, Chugoku Regional Head Office)

When constructing railway crossings over rivers, as part of our planning we take into consideration the impact the project will have on the plants and animals that live in and around the river. We also take measures at the construction site to reduce the impact on the ecosystem, such as by releasing upstream any animals we discover (such as ayu sweetfish and giant salamanders) and installing pollution-control fencing to maintain water quality.

Removing sludge in wastewater treatment using an electrolytic wastewater treatment system
(West Japan Railway Techsia Co., Ltd.)

West Japan Railway Techsia Co., Ltd. developed the J-TREAT electrolytic wastewater treatment system, which electrolytically processes wastewater resulting from washing vehicles and rolling stock parts at locations such as vehicle depots. It eliminates more than 90% of dirt from sludge emissions (clods of dirt removed from wastewater), in addition to reducing the power consumed by the treatment process. Compared to wastewater treatment equipment that utilizes conventional flotation methods, this system contributes significantly to purifying wastewater, conserving energy, and reducing waste. To date it has been installed at 11 vehicle depots belonging to the company. Delivery of this system is being expanded outside the JR-West Group, helping to reduce the environmental impact of society as a whole.