



CENTRAL JAPAN RAILWAY COMPANY  
**Integrated Report 2022**

JR CENTRAL Integrated Report 2022







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Editorial policy

JR Central strives to enhance dialogue with its stakeholders, including shareholders and investors, in order to contribute to sustainable growth and increase corporate value over the medium to long term. The objective of this report is to deepen readers' understanding of our company's financial information and non-financial information such as business strategies and ESG information. This report is edited with reference to the "International <IR> Framework" issued by the International Integrated Reporting Council (IRC) and the "Guidance for Collaborative Value Creation" issued by the Ministry of Economy, Trade and Industry. For ESG information, we refer to the "GRI Standards" issued by the Global Reporting Initiative.

[Remarks regarding forecasts, etc.]

Future plans, forecast figures, etc., in this report are an outlook based on the information that is currently available to JR Central and may contain risks and uncertainties. Examples of potential risks and uncertainties include economic trends, business environment developments, consumption trends, the competitive situation for JR Central and its subsidiaries, and changes in relevant laws and legal provisions. This report is compiled based on information available as of the end of June 2022, in principle.

- In this report, figures of financial information are truncated, while statistical data and all percentages are rounded.
- FY2021 signifies the fiscal year ended March 31, 2022.

Management Philosophy

*Contribute to the development of Japan's main transportation artery and social infrastructure*

Japan's Main Transportation Artery

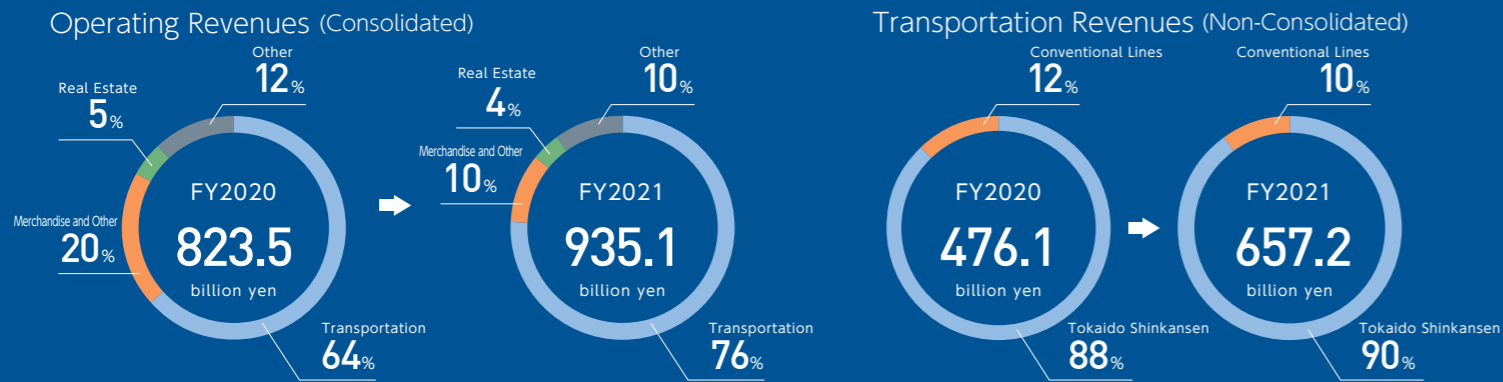
JR Central's mission is to undertake high-speed, large capacity passenger transport between Tokyo, Nagoya, and Osaka. "Japan's main transportation artery" refers to this passenger transport. Since the artery runs through this area of Japan, which plays an important role as the center of the country's economy and culture, it is possible that stagnancy in the main transportation artery will cause Japan's economic and societal movement in general to also stagnate. JR Central will continue to carry out its mission of managing Japan's main transportation artery today and in the future through operation of the Tokaido Shinkansen and the Chuo Shinkansen.

Social Infrastructure

On a broader perspective, JR Central also undertakes the mission of supporting the social infrastructure. That is, along with the management of Japan's main artery, we take a locally oriented approach in operating a network of conventional lines in the Tokai Region, centered on the Nagoya and Shizuoka areas, and manage affiliated businesses focused on the local communities, thereby supporting the people in these areas. We will remain committed to operating conventional lines while managing and further enhancing our affiliated businesses.



# JR Central's Operating Revenues Composition



\*1 Consolidated operating revenues composition is based on revenue from external customers  
 \*2 Operating revenues and transportation revenues for FY2021 and FY2022 have decreased because of the impacts of the COVID-19 pandemic.

# Market Area Characteristics and Transportation Capacity



Manages JR Central's railway operations, such as the Tokaido Shinkansen and conventional railway operations in the Tokai area, bus operations, and others.

### Major Affiliated Companies

Central Japan Railway Company  
 JR Tokai Bus Company



Includes a department store in JR Central Towers, retail sales in trains, and others.

### Major Affiliated Companies

JR Tokai Takashimaya Co., Ltd.  
 JR-CENTRAL PASSENGERS Co., Ltd.  
 Tokai Kiosk Company  
 JR Tokai Corporation



Includes real estate leasing business, such as station building leasing, and real estate in lots.

### Major Affiliated Companies

Central Japan Railway Company	Tokyo Station Development Co., Ltd.
JR CENTRAL BUILDING CO., LTD.	Nagoya Station Area Development Corporation
JR Tokai Real Estate Co., Ltd.	JR Development and Management Corporation of Kansai
Shin-Yokohama Station Development Co., Ltd.	



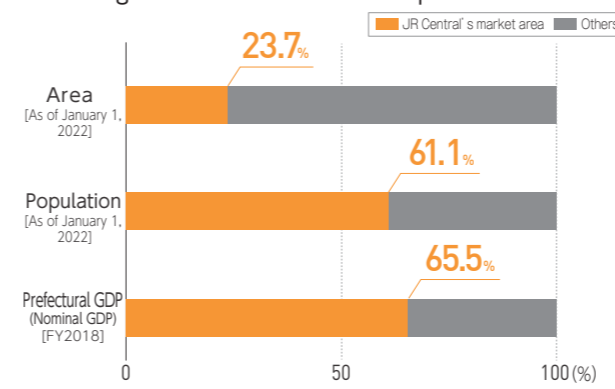
Includes hotels in our main stations, travel, advertising, rolling stock production, and construction which are not included in other reportable segments.

### Major Affiliated Companies

JR Tokai Hotels Co., Ltd.	JR TOKAI CONSTRUCTION Co., Ltd.
JR Tokai Tours, INC.	CHUO LINEN SUPPLY Co., Ltd.
JR TOKAI AGENCY CO., LTD.	Nippon Kikai Hosen Co., LTD.
NIPPON SHARYO, LTD.	Tokai Rolling Stock & Machinery Co., Ltd.

Japan's population and economic activity are concentrated in our market area covering the Tokyo Metropolitan area, the Nagoya region, and the Osaka region

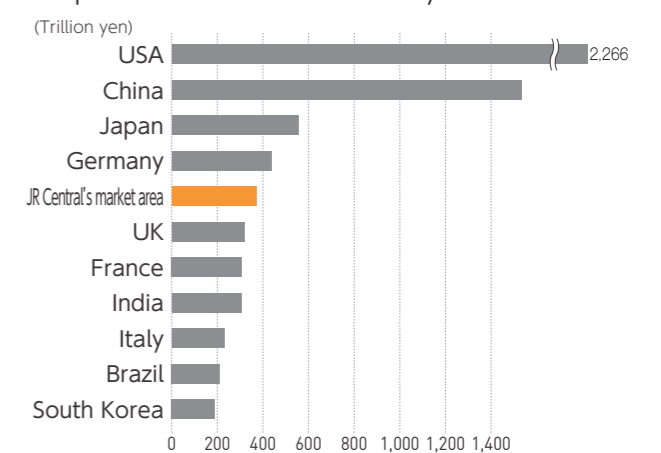
Percentages of our market area in Japan as a whole



\*JR Central's market area is calculated taking the following prefectures into account: Tokyo, Kanagawa, Chiba, Saitama, Ibaraki, Shizuoka, Yamanashi, Nagano, Aichi, Mie, Gifu, Shiga, Osaka, Kyoto, Hyogo, Nara  
 [Source]Area: Geospatial Information Authority of Japan "Municipalities Area Statistics of Japan"  
 Population: Ministry of Internal Affairs and Communications "Population, Demographics and Number of Households Derived from Basic Resident Registration"  
 Total production by prefecture: Cabinet Office "Report on Prefectural Accounts"

JR Central's market area equals the economic size of major countries

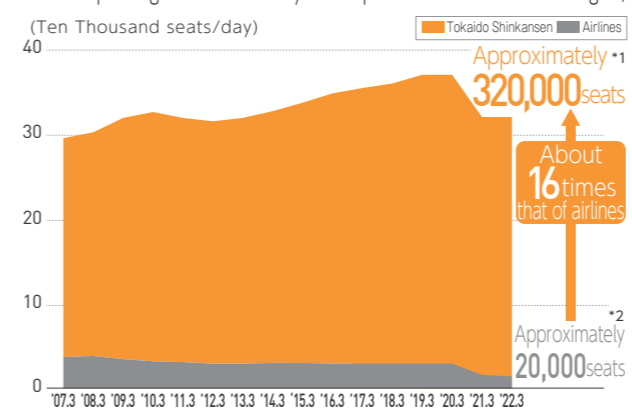
Comparison with GDP of each country



\*Calculated at a rate of 110.43 yen per dollar.  
 Source: United Nations database, Cabinet Office "Report on Prefectural Accounts"

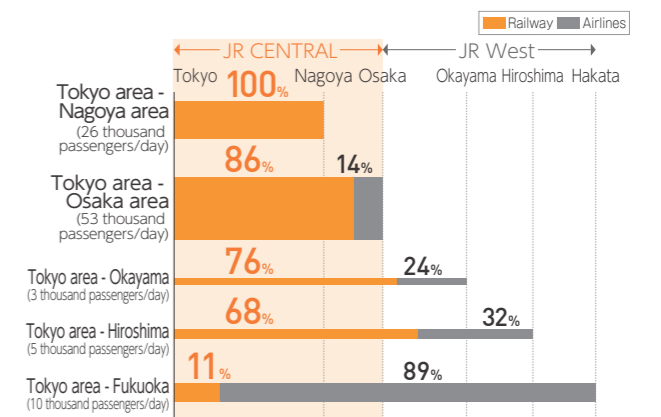
Within this market, we provide unrivalled transportation capacity that is incomparable to other modes

Changes in daily transportation capacity (Comparison between the Tokaido Shinkansen and airline transportation services operating between the Tokyo Metropolitan area and the Osaka region)



JR Central has established an overwhelming market share within its market area

Market Share (against Airlines)



\*1 Tokaido Shinkansen: The number of passenger seats provided (including extra train services) on through-service "Nozomi" and "Hikari" lines operating between Tokyo Station and Shin-Osaka Station in each respective fiscal year.  
 \*2 Airlines: Calculated by JR Central based on information pertaining to specified Japanese air carriers (Ministry of Land, Infrastructure, Transport and Tourism) for FY2006 to FY2021.  
 \*3 Numbers for FY2021 have decreased because of the COVID-19 pandemic.

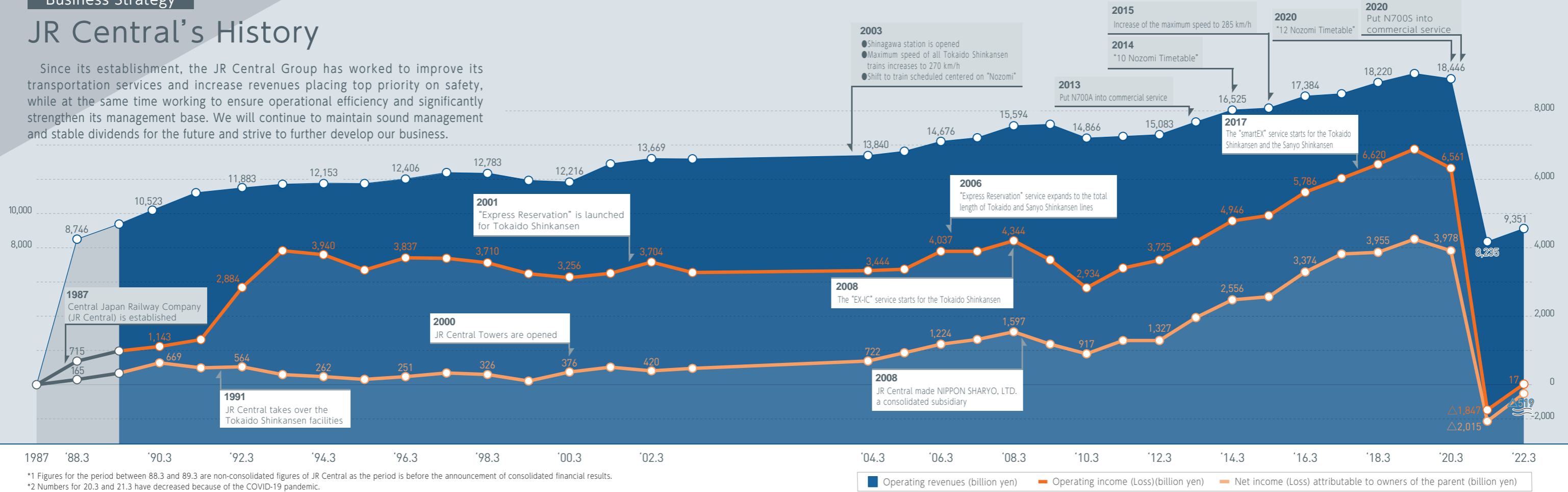
\*1 Market share is calculated by JR Central based on the Inter-prefectural data of the inter-Regional Passenger Mobility Survey, published by the Ministry of Land, Infrastructure, Transport and Tourism for FY2020.  
 \*2 Numbers of passengers per day have decreased because of the COVID-19 pandemic.  
 \*3 Tokyo area: Tokyo, Kanagawa, Chiba, Saitama, Ibaraki  
 Nagoya area: Aichi, Gifu, Mie  
 Osaka area: Osaka, Kyoto, Hyogo, Nara



# Business Strategy

## JR Central's History

Since its establishment, the JR Central Group has worked to improve its transportation services and increase revenues placing top priority on safety, while at the same time working to ensure operational efficiency and significantly strengthen its management base. We will continue to maintain sound management and stable dividends for the future and strive to further develop our business.



\*1 Figures for the period between 88.3 and 89.3 are non-consolidated figures of JR Central as the period is before the announcement of consolidated financial results.  
 \*2 Numbers for 20.3 and 21.3 have decreased because of the COVID-19 pandemic.

### Established by the Privatization and breakup of JNR

JR Central was born on April 1, 1987, following the privatization and breakup of Japan National Railways (JNR). JNR, the predecessor of JR Central, took over Japan's railway business, which was then a national enterprise, as a public enterprise in 1949. JNR supported the development of Japan through the provision of efficient transportation for the Japanese people, but due to poor management of the public corporation, it incurred debts of over 30 trillion yen, largely as a result of the creation of new lines with unclear management responsibilities and a disregard for profitability. At the same time, it was unable to respond quickly to global trends.

Under these circumstances, the "JNR reform" was an effort to review the role of the railway business operated by JNR for the future. In 1987, as part of administrative reforms, the operations of JNR were passed on to 11 succeeding corporations with the aim of carrying out sound corporate management by privatizing and breaking up the transportation operations of JNR, rebuilding the railway business as a means of transportation for the people, and further developing it for the future.

Since the privatization and breakup of JNR, JR Central has steadily progressed as a private company, inheriting the public and social missions of JNR.



Photographs from the time of privatization  
 "Hida #1" departure ceremony (April 1, 1987, at Nagoya Station)

### Consistently Improve Transport Services on the Tokaido Shinkansen

With the inauguration of the Tokaido Shinkansen in 1964, the journey time between Tokyo and Osaka was shortened to 3 hours and 10 minutes (4 hours at the time of inauguration) from 6 hours and 30 minutes. Furthermore, with the introduction of the "Nozomi" in 1992, that time was shortened to 2 hours and 30 minutes.

In October 2003, the investment in rolling stock and ground facilities that we had continuously engaged in for approximately 15 years culminated with the upgrading of the maximum speed of all trains to 270 km/h and the drastic timetable revision that resulted in a maximum of seven Nozomi services operating each hour.

With the introduction of the "10 Nozomi Timetable" (operating up to 10 Nozomi

services in both directions)" in 2014, and the increase in maximum speed to 285 km/h in 2015, the shortest travel time between Tokyo and Osaka has now been reduced to 2 hours and 21 minutes. With the timetable revision of March 2020, we realized the "12 Nozomi Timetable" that runs up to 12 services (1 every 5 minutes on average) per hour during busy hours. In July, we began commercial operation of the new N700S series Shinkansen, which incorporates the results of our accumulated technological development, and we are making use of the Tokaido Shinkansen even more convenient.

### Establishment of a Solid Management Base

	FY1987	FY2019	FY2021
Railway operation accidents (incidents per year)	60	<b>17</b> Substantially reduced	26
Passenger volume (10,000 people per day)	27.9	<b>45.8</b> 1.6 x	22.9
Number of services (trains per day)	231	<b>378</b> 1.6 x	336
Maximum speed (km/h)	220	<b>285</b> (+65km/h)	285
Operating revenues (billion yen)	8,746 *1	<b>18,446</b> 2.1 x	9,351
Operating income (billion yen)	715 *1	<b>6,561</b> 9.2 x	17
Net income attributable to owners of the parent (billion yen)	165 *1	<b>3,978</b> 24.1 x	△ 519
Long-term debt (trillion yen)	5.5 *2	<b>1.8</b> *3 -3.6 trillion yen	1.9 *3

\*1 Non-consolidated figures \*2 Figures for FY1991 \*3 Excluding long-term debt for the Chuo Shinkansen



Transition of Shinkansen rolling stock



## Business Strategy

TOP  
MESSAGE

President and Representative Director

*Shin Kaneko*

“Contribute to the development of Japan’s main transportation artery and social infrastructure.” COVID-19 has brought about a challenging business environment, but our mission remains unchanged. We are committed to strengthening our management base by efficiently providing safe and convenient services to as many customers as possible, and therefore we must practice “ESG Management” while contributing to society as never before by sustainably developing JR Central.

## Creating a positive cycle of “ESG Management” guided by a clear management philosophy

It has been a long time since the idea of "ESG" was put forward to the world, and here let me tell you about our "ESG Management." This is a management style where a company grows by simultaneously generating "economic value" such as profits and cash flows, and by creating "social value" such as the realization of a sustainable and prosperous society. It is something in which I strongly believe. In light of the aforementioned understanding, we have been practicing "ESG Management" based on our management philosophy of "Contribute to the development of Japan's main transportation artery and social infrastructure" while simultaneously generating "economic value" and creating "social value" with solid governance where JR Central establishes a corporate culture that places the highest priority on safety, ensures the soundness of management, and pursues long-term development to increase the trust of all stakeholders.

Specifically, on the Tokaido Shinkansen, the main transportation artery of Japan as well as conventional lines in the Tokai region, punctual and comfortable railway transportation services have been thoroughly refined with safety as the top priority. At the same time, we have been tirelessly developing highly synergistic affiliated businesses with railway business, working to reduce costs and improve efficiency, and steadily increasing revenues and profits to secure cash flows, generating "economic value."

The Tokaido Shinkansen service grew 38% in terms of transportation revenues from FY2002, before the opening of Shinagawa Station, to FY2018, before the COVID-19 pandemic. This was especially due to the opening of Shinagawa Station and the shift to a Nozomi-centered schedule, a further improvement in the transportation service of the Tokaido Shinkansen, and the subsequent extra Nozomi trains and raising the maximum speed to 285 km/h. This is much higher than the 14% real GDP growth rate for the same period, and as a result, our consolidated operating cash flows have grown by 57% during the period.

At the same time, we consider it important to pursue safe, punctual and comfortable services in our business activities centered on the mainstay Tokaido Shinkansen. In so doing, we are contributing to the realization of a more comfortable society

and the development of local communities. Also, we have been tirelessly promoting the use of railway transportation, which has inherently excellent environmental performance, while also incorporating the latest technology to improve our environmental superiority. The results of these business activities are linked to the achievement of the "sustainable development" that the SDGs aim to achieve through the construction of safe and resilient infrastructure, the promotion of innovation, and the mitigation of climate change effects. Furthermore, we have been working tirelessly to create "social value" by focusing on human resources development to support the operation of the railway business, and by making daily efforts to achieve the SDGs from the perspective of promoting gender equality and rewarding employment, etc.

The abovementioned cash flows, i.e., "economic value," are the source of our funds for creating "social value" such as developing safe, resilient, and environmentally superior infrastructure, improving our services, and promoting human resource development and innovation to support these efforts while providing better services. As a result, we have been attracting more people to use our services, which leads to a positive cycle. This positive cycle has made it possible to realize the Chuo Shinkansen Project that is currently under way.

Reinforcement of earning power by utilizing latest technologies  
~Aiming for safer, more convenient, and most comfortable railway~

In the midst of the COVID-19 disaster that has lasted for a long time, the JR Central Group has experienced substantial financial damage. Against this background, we are fulfilling our mission as a transportation service operator for those who need JR Central's transportation while preventing the spread of infection. We are also striving for efficient operations. However, profits are declining due to a decrease in the number of passengers, and our ability to generate economic value is temporarily impaired. As such, we must make great efforts to overcome this hardship.

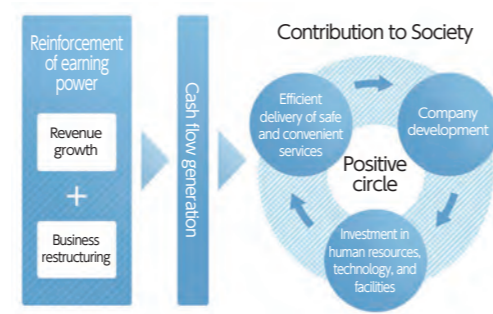
The situation, in which contact between people has been significantly restricted due to the spread of COVID-19, is expected to run its course as everyone is vaccinated and treatment drugs are developed. However, the changes that have emerged during the COVID-19 pandemic, including greater use of telework,

web conferencing, etc. and a major shift of travel reservations to online channels, will remain even after the outbreak runs its course, provided they are reasonable. Undoubtedly, COVID-19 has accelerated these kinds of changes. JR Central will face these changes head on in order to recover from the damage incurred amid the pandemic through its own efforts, will continue to powerfully fulfill its social mission into the future, and we must work to reinforce our earning power by increasing passenger use through creativity and ingenuity to reconstruct the positive cycle of "ESG Management"

JR Central is promoting "business restructuring" to reduce routine costs by 80 billion yen on a non-consolidated basis over 10 to 15 years by establishing an efficient business execution system, and is taking on the challenge of realizing a new concept, "revenue growth," to reinforce our earning power.



Positive cycle of investment and service improvement through reinforcement of earning power



In recent years, technologies such as sensing, image recognition, big data transmission and analysis, AI, and robotics have evolved significantly. JR Central is committed to providing safer, more convenient, and most comfortable railway services with greater efficiency by proactively incorporating these technologies to fundamentally transform current transportation services, addressing future declines in the labor force. This way, we will vigorously fulfill our social mission by integrally developing the three generations of railway of the Conventional Lines, Tokaido Shinkansen, and Chuo Shinkansen over the future under our management philosophy of "contributing to the development of Japan's main transportation artery and social infrastructure."

**Chuo Shinkansen Project as a growth strategy that contributes to the further development of Japan's economy and society**

We must continue to give top priority to safe and reliable transportation, and fulfill our mission of maintaining and developing Japan's main transportation artery. In order to achieve this, the Chuo Shinkansen Project that we are currently working on needs to be strongly promoted. The Chuo Shinkansen Project (assuming that we, as a private company, will pay for it ourselves) will be implemented through the use of the Superconducting Maglev System that we have been developing as a drastic measure to address the need for largescale renovation of the Tokaido Shinkansen, which has been operating for more than half a century, and major disasters. Therefore, we will manage the Tokaido Shinkansen and the Chuo Shinkansen in an integrated manner. For example, by shifting users of the Tokaido Shinkansen "Nozomi" to the Chuo Shinkansen, the number of "Hikari" and "Kodama" services can be increased on the Tokaido Shinkansen. We hope to construct the most desirable transportation system as a whole by combining the two high-speed railways. With this strategy, we will be able to ensure stable management, reduce risk, and continue to forcefully fulfill our mission.

people and creating new demand for travel. In addition, new ways of working, such as telework, have become popular recently, and many people are moving to areas with abundant nature, for example. The premise for this is the existence of railways and other transportation services that provide immediate access to the city center when needed. ICT and transportation services are complementary, and we believe that the overwhelming time-saving effect of the Chuo Shinkansen will bring a variety of choices to people's lifestyles and contribute to the realization of a more prosperous and sustainable society.

We will continue to make every effort to carry out the Chuo Shinkansen Project, sufficiently examining costs, maintaining sound management and stable dividends, while focusing on construction safety, environmental protection, and cooperation with local communities, with the aim of opening the line as soon as possible.



I therefore believe that the opening of the Chuo Shinkansen will have a big impact on the Japanese economy as well as on people's lifestyles. The government has also proposed the "Super Mega Region" concept, and hopes are high that the opening of the Chuo Shinkansen will have an extremely significant effect, just as the Tokaido Shinkansen did in the past, realizing the integration of the three urban centers of Tokyo, Nagoya and Osaka. Due to the overwhelming time-saving effect of the Chuo Shinkansen, it will bring significant benefits and potential for development to the Japanese economy and society, for example, by encouraging people to meet each other, which leads to creation of innovation and expansion of business opportunities.

Furthermore, as society is rapidly changing through the development of ICT and other factors, the opening of the Chuo Shinkansen will broaden various possibilities in people's lives. The development of ICT in recent years has been remarkable. ICT has the aspect of accelerating and strengthening the connections between

**Environmental superiority goes beyond the current situation**

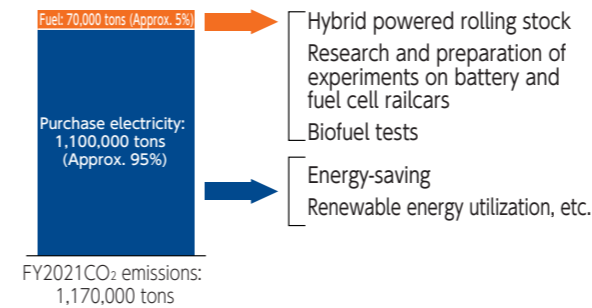
As I mentioned earlier, we have been working tirelessly to preserve the global environment based on the recognition that it is an important issue for our sustainable growth. Railways have always had the advantage of being more energy efficient and less harmful to the global environment than other modes of transportation. Directly, JR Central has been striving to reduce the load on the environment by further improving the energy efficiency of its railway operations through such measures as lowering power consumption in rolling stock. Furthermore, we endorsed

the recommendations of the TCFD (Task Force on Climate-related Financial Disclosures) in May 2021. Rather than maintaining the existing circumstances, we aim to realize a sustainable society. And we are committed to further reducing CO<sub>2</sub> emissions, in line with the "Carbon-neutrality by 2050" policy formulated by the Japanese government. For example, in July 2022, the Taketoyo Line was operated with virtually zero CO<sub>2</sub> emissions, through the purchase of a "FIT non-fossil fuel energy certificate."

Of the CO<sub>2</sub> emitted by JR Central, about 95% is indirectly emitted during the generation of the electricity we purchase, and the remaining 5% is directly emitted by our diesel railcars, etc. As for the future, we will first consider the electrification of diesel trains for approximately 5% of direct emissions from business activities. As for the remaining indirect emissions, in addition to carbon-neutrality efforts across the entire power generation sector, we will actively strive to reduce CO<sub>2</sub> emissions by

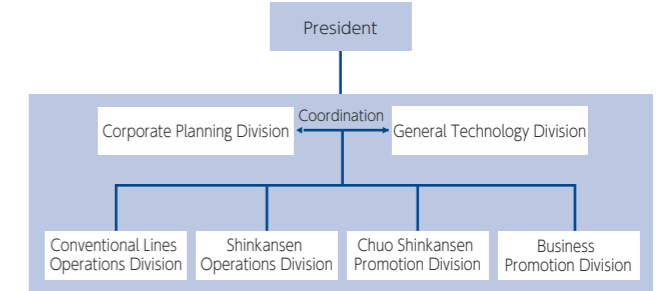
adopting new technologies, such as improving the energy efficiency of rolling stock and facilities, and considering the use of renewable energy. Furthermore, in order to realize a recycling-oriented society, we are making effective use of limited resources, including the promotion of material recycling of recycled aluminum for Shinkansen rolling stock. We will continue to contribute to the realization of an environmentally sustainable society by establishing a system and promoting these initiatives.

Initiatives to mitigate CO<sub>2</sub> emissions



- Hybrid powered rolling stock
- Research and preparation of experiments on battery and fuel cell railcars
- Biofuel tests
- Energy-saving
- Renewable energy utilization, etc.

Organization for environmental measures



**Keep fulfilling our mission to "Contribute to the development of Japan's main transportation artery and social infrastructure"**

Severe financial conditions continue due to the impact of COVID-19. However, the JR Central Group's mission remains unchanged into the future: to refine the safe, punctual, fast, frequent and comfortable characteristics of the Tokaido Shinkansen, which forms the main transportation artery of Japan, and to strengthen the conventional lines in the Tokai region that form the network with the Tokaido Shinkansen, as well as affiliated businesses. At the same time, the construction of the Chuo Shinkansen will be promoted to further strengthen the realization of this mission henceforth. JR Central must overcome the current difficulties through its own

efforts. Therefore, we will always return to our management philosophy of "Contribute to the development of Japan's main transportation artery and social infrastructure." And in order to achieve this at a higher level, we are determined to tirelessly strengthen the three abilities of each division: the "ability to work safely," the "ability to provide better service," and the "ability to work efficiently." We are committed to achieving sustainable growth by firmly maintaining sound management and stable dividends, and by increasing the trust of all our stakeholders, including our shareholders, customers, employees, and business partners.

Respond to the trust and mandate of all stakeholders and pursue the mission of "Contribute to the development of Japan's main transportation artery and social infrastructure" to recreate the positive cycle of "ESG Management" once again.







## Creating Social Value

## Generating Economic Value

**Priority Themes (social background)**

- 9 INDUSTRY, INNOVATION AND INFRASTRUCTURE** + **11 SUSTAINABLE CITIES AND COMMUNITIES**: **Building a safe and resilient infrastructure** (heavy earthquakes, intensification of natural disasters, new infectious diseases, cyber security)
- 11 SUSTAINABLE CITIES AND COMMUNITIES**: **Providing accessible transportation infrastructure** (barrier-free, inbound demand)
- 11 SUSTAINABLE CITIES AND COMMUNITIES**: **Local community revitalization** (communities along the line & economic expansion)
- 12 RESPONSIBLE CONSUMPTION AND PRODUCTION** + **13 CLIMATE ACTION**: **Global environment preservation** (climate change, resource shortage)
- 5 GENDER EQUALITY** + **8 DECENT WORK AND ECONOMIC GROWTH**: **Comfortable workplace establishment** (employee motivation, diversity of human resources)
- 9 INDUSTRY, INNOVATION AND INFRASTRUCTURE**: **Innovation advancement** (economic growth, technology base establishment)

**Key Business Activities**

- 1 Safety measures** (ability to work safely)
- 2 Measures to improve services** (ability to provide better service)
- 3 Greater efficiency** (ability to work efficiently)
- 4 Pursuit of environmental superiority**

Tokaido Shinkansen + Chuo Shinkansen  
 Japan's Main Transportation Artery

Conventional Lines + Affiliated Businesses  
 Synergy

Social Infrastructure

Management capital (human resources, technology, equipment, etc.)  
 Appropriate governance



Sustainable growth

Cash flow generation

**Future investment**

- Human Resource Development
- Technological Development
- Capital Investment

**Shareholder return**  
 (long-term stable dividends)

Foundation building





# JR Central's "ESG Management"

## JR Central's Key Business Activities

JR Central sets the highest priority on ensuring safe and reliable transportation from a medium- to long-term perspective under its management philosophy of "Contribute to the development of Japan's main transportation artery and social infrastructure." JR Central integrally maintains and develops the Tokaido Shinkansen, which serves as Japan's main transportation artery, and the conventional line network in the Tokai region through continuous efforts, as well as operating the "three generations of railways" by constructing the Chuo Shinkansen to make Japan's main transportation artery a dual system. In addition, our basic policy is to work together with Group companies to develop affiliated businesses that have synergies with railways. Through business strategy based on the basic policy, we have been practicing "ESG Management"

to generate "economic value" such as profits and cash flows, while at the same time creating "social value" to realize a sustainable and prosperous society. We have also achieved sound management, stable dividends, and sustainable growth as a company under solid governance in order to increase the trust of all our stakeholders.

The JR Central Group, whose core is the railway business, has a long-term vision. Competitiveness enhancement is thus essential, with top priority placed on ensuring safe and reliable transportation through human resource development, capital investment, and technological development. To this end, our business activities are focused on (1) Safety measures, (2) Measures to improve services, (3) Greater efficiency, and (4) Pursuit of environmental superiority.

### ① Safety measures

The primary mission of the railway business is to ensure safety at all times and in all circumstances. Regardless of past achievements, once a major accident occurs, trust in JR Central will be lost at once, and even its very existence will be threatened. With this frame of mind, we have been concentrating our greatest energy into safety assurance from both the hardware and software perspectives ever since our establishment. In terms of non-physical measures, we have been tirelessly building systems to ensure safety, mainly by establishing rules and regulations. Furthermore, human resource development is indispensable to put these systems into practice. Therefore, we promote initiatives to deepen employees' understanding of the nature of duties and rules by proactively thinking about them, in addition to raising their awareness of discipline so that they can comply with the rules themselves. Additionally, we are repeatedly performing practical training so as to be able to respond to various conditions expected in the event of extraordinary situations such as natural disasters or contingencies.

In terms of equipment, capital investment is also important to ensure safety. The majority of JR Central's capital investment to date has been safety-related, totaling more than 4.2 trillion yen since its establishment. For example, in the Tokaido Shinkansen, we have been upgrading the ATC (Automatic Train Control) and CTC (Centralized Train Control) systems, implementing earthquake countermeasures such as derailment prevention guards and the earthquake

prevention system, and carrying out large-scale renovation to maintain and improve the integrity of Shinkansen infrastructure.

On conventional lines, we have been upgrading CTC, replacing ATS (Automatic Traffic Stop) with ATS-PT, making various structures anti-earthquake, taking measures against heavy rainfall and falling rocks, and improving safety devices on grade crossings. In addition, we are working tirelessly on security measures at railway stations, trains and important facilities, and technology development is also focusing on safety-related themes to enable such equipment. Also, the Chuo Shinkansen Project, which we are currently working on, is a project to fundamentally prepare for the need for large-scale renovation of the Tokaido Shinkansen and potential major disasters. Looking ahead, we will continue to work on both physical or non-physical measures to hone our "ability to work safely," which is the key to the railways business.



Crew pointing and calling



Large-scale renovation

### ② Measures to improve services

Since its establishment, JR Central has been working tirelessly to improve its railway services. In the mainstay Tokaido Shinkansen, safety is of course the top priority, and we are working to improve transportation services, focusing on speed and frequency, while introducing new types of rolling stock and improving ground facilities. In 2003, with the opening of Shinagawa Station, all trains reached a maximum speed of 270 km/h, allowing us to shift to a Nozomi-centered timetable, and in 2020, all trains achieved a maximum speed of 285 km/h with the "12 Nozomi Timetable." In addition to increasing the speed and frequency of the services, we are also working to improve the convenience of our "EX Service" ("Express Reservations" and "smartEX"), an online reservation and ticketless boarding service. On conventional lines as well, we have been working to improve our services by, for example, launching new types of rolling stock and increasing the frequency of services. We are also working to provide barrier-free access and support for overseas visitors to make it easier for them to use our services.

On the other hand, in the non-railway business, we are striving to strengthen our competitiveness and sales capabilities by enhancing our store assortments, improving services, renovating commercial facilities at stations, and continuing to make effective use of company-owned land, focusing on areas where synergies

with railways can be expected, such as the uniform management of the JR Central Towers and the JR Gate Tower. Leveraging fresh perspectives and flexible ideas, we will continue to hone the "ability to provide better service" in the railway and non-railway businesses, including the Chuo Shinkansen now under construction.



N700S

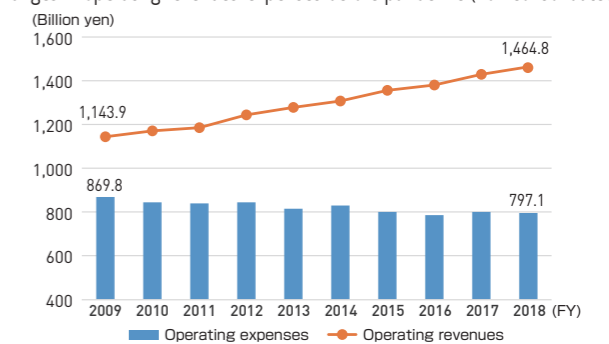
### ③ Greater efficiency

We will increase revenue by promoting the use of our services through safety measures and service improvement measures. Furthermore, we have been working on improving efficiency and lowering costs in all aspects of business execution, including capital investment, by utilizing the knowledge and technical capability cultivated and thoroughly pursuing the rationality of business practices, without being bound by traditional ways of working. As a result, we have been able to steadily improve our operating profit margin by reducing fixed costs even when operating revenues were increasing, as in the decade or so before the pandemic.

Today, the pandemic impact has caused considerable business damage. However, in addition to temporary cost control for the time being, we are promoting "Reform of Business Operations" to build the most desirable operational system by actively utilizing ICT in order for the JR Central Group to strongly fulfill its social mission well into the future. Over the next 10 to 15 years, we aim to reduce non-consolidated expenses for the Shinkansen and conventional lines by about 80 billion yen, or about 10% of our regular costs. Furthermore, with regard to the

Chuo Shinkansen Project, we will continue to hone our "ability to work efficiently," for example, by continuously reducing costs while ensuring safety in all aspects of construction, operation and maintenance.

Changes in operating revenues/expenses before pandemic (non-consolidated)



### ④ Pursuit of environmental superiority

Global environmental preservation is a monumental challenge for JR Central to achieve sustainable growth while earning the trust of society. Inherently, railways have the outstanding characteristic of being highly energy efficient compared to other transportation modes and having a minimal adverse impact on the global environment. However, in order to further reduce the load on the environment, JR Central is working to further improve the energy efficiency of its railway operations, such as by making its rolling stock more energy efficient.

In addition to the above, we will continue to make efforts to further reduce CO<sub>2</sub> emissions in line with the "Carbon-neutrality by 2050" policy formulated by the Japanese government. Specifically, we will consider electrification of trains to reduce direct CO<sub>2</sub> emissions from business activities, which account for approximately 5% of our total emissions. As for the remaining indirect emissions, which account for about 95% of the total, we will actively strive to reduce CO<sub>2</sub> emissions by adopting new technologies, while considering decarbonization efforts across the entire power generation sector and technological trends. In addition to further energy efficiency of rolling stock and facilities, we will also work to utilize

renewable energy, through the purchase of a "FIT non-fossil fuel energy certificate" to operate the Taketoyo Line with virtually zero CO<sub>2</sub> emissions. In addition, we have endorsed the Task Force on Climate-related Financial Disclosures (TCFD) recommendations established by the Financial Stability Board (FSB). We will identify the financial impact of climate change risks and other factors, and promote information disclosure based on the TCFD recommendations.



HC85 Series, hybrid express trains



## Positive Cycle of "ESG Management"

JR Central balances the generation of "economic value" with the creation of "social value" by practicing the above key business activities. The creation and generation of these two "values" are not independent, but mutually reinforce each other, contributing to the positive cycle of ESG Management.

As mentioned earlier, we have been generating "economic value" in the form of profits and cash flows by striving for efficient business operations, while significantly increasing revenues by refining our services with safety as the top priority.

And then using the value, we have been concentrating on strengthening the foundation for our business operations by investing generously in human resource development, technological development, and capital investment from a long-term perspective, to enhance our management capital for developing our business sustainably. We will use the management capital accumulated to implement various measures while re-investing it mainly in key business activities. For example, by tirelessly strengthening the three abilities - the "ability to work safely," the "ability to provide better service," and the "ability to work efficiently" - we are further honing our business and generating greater "economic value."

At the same time, honing our business by focusing on key business activities is directly related to the creation of "social value." With the highest priority on ensuring safe and reliable transportation, we will build a resilient infrastructure to support Japan's main transportation artery and regional transportation as social infrastructure, and the development of affiliated businesses will itself contribute to the sustainable development of the Japanese economy and local communities [S]. In addition, railways have the advantage of higher energy efficiency compared to other transportation modes, and lower impact on the global environment. In other words, we believe that promoting the use of railways while pursuing environmental superiority will greatly contribute to the preservation of the global environment [E]. In addition, by conducting such corporate activities under appropriate governance [G], we believe that we can achieve sustainable growth as a company while increasing trust from all stakeholders by maintaining sound management, returning profits to shareholders based on our basic policy of maintaining stable dividends, and building long-term stable relationships with employees and business partners.

## Generating "Economic Value"

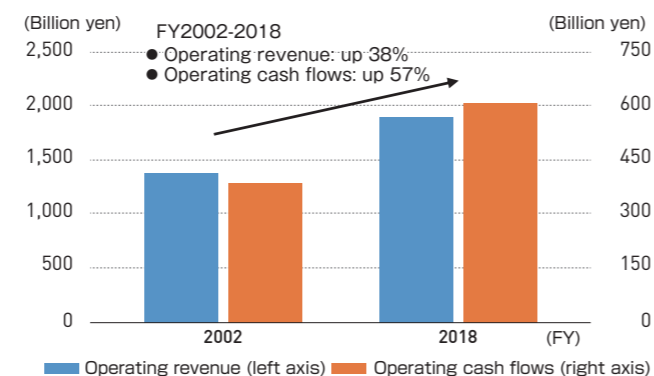
We have used the "economic value" generated through our business to create even more "economic value" by strengthening our profitability and improving our operational efficiency while tirelessly honing our business, especially the Tokaido Shinkansen. Comparing FY2002, before the opening of the Shinagawa Shinkansen Station, to FY2018, before the pandemic, operating cash flows (consolidated) grew 57%.

Such cash flows have been used to reduce the long-term debt that has been incurred since establishment. By further enhancing investment in human resources, technology and equipment while reducing the interest burden, we have also promoted the construction of the Chuo Shinkansen since FY2014. In the meantime, we have paid stable dividends to ensure shareholder return.

We have been able to maintain sound management and stable dividends, increase the trust of all stakeholders, and manage our business based on a long-term outlook, including that of the Chuo Shinkansen. There is no doubt that the basic premise of this is our ability to generate such "economic value." JR Central is currently experiencing

significant management difficulties due to the COVID-19 pandemic, but we are working to boost our management strength so that we can continue to fulfill our social mission into the future.

Strong growth in operating revenue and operating cash flows (consolidated)



## Creating "Social Value"

### S Social

#### S Building safe and resilient infrastructure

Since its inauguration in 1964, the Tokaido Shinkansen has supported the growth of the Japanese economy for more than half a century, with approximately 6.6 billion people using it as the main transportation artery connecting Tokyo, Nagoya and Osaka, the three largest metropolitan areas in Japan. This region comprises about 20% of the land area of Japan, but it is an unparalleled area globally in terms of its concentrated population and production of more than 60% of Japan's GDP. The Tokaido Shinkansen is an indispensable infrastructure that boasts an overwhelming presence over other modes of transportation, as it plays a role in providing transportation services, which are the basic elements of the economy and society. And we are aiming to build a safe and resilient infrastructure that can protect Japan's main transportation artery at all times.

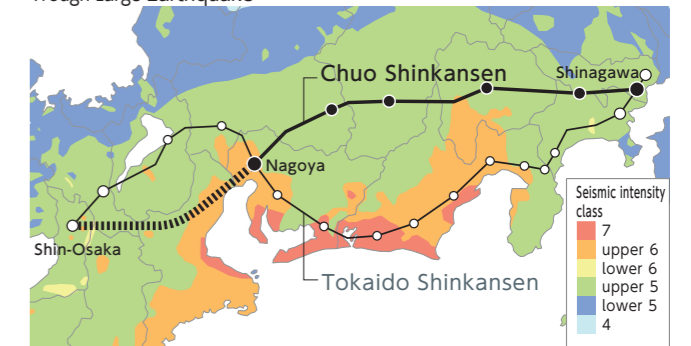
To this end, we have been concentrating our greatest energy in accident prevention from both the hardware and software perspectives ever since its establishment, establishing rules and systems to prevent accidents, nurturing employees and improving their skills through training, and tirelessly upgrading various safety equipment. As a result, the Tokaido Shinkansen has had no accidents resulting in fatalities or injuries of passengers on board since operations commenced, and the number of railway accidents, including on conventional lines, has decreased significantly since our establishment. In response to the current COVID-19 pandemic, we have maintained sufficient transportation capacity to allow our customers can use the railways with peace of mind. We are also taking counter-infection measures, including ventilation of train cars, regular sterilization of parts of stations and trains that customers are likely to touch, and wearing of face masks by staff servicing customers.

Of course, Japan is a major earthquake-prone country, and in the market area of JR Central, there are concerns about the imminence of earthquakes with epicenters directly under the Tokyo metropolitan area and the Nankai Trough. In recent years, it has also become an urgent concern to respond to the intensification of natural disasters. We have been taking sufficient countermeasures against earthquakes and natural disasters from both the hardware and software perspectives ever since our establishment. By working tirelessly to strengthen our facilities as well as to ensure timely and

appropriate operations, we have built a resilient infrastructure to withstand heavy earthquakes and intensification of natural disasters. In terms of systems, we are taking measures, including achieving the redundancy of facilities and securing backups, to ensure that the provision of services to customers and the execution of internal operations will not be disrupted due to earthquakes or other natural disasters, or system failures. Furthermore, we have taken all possible measures to protect against cyber attacks, including setting up an independent system structure that eliminates any contact with the outside world for systems that are vital for train operations.

Additionally, we are promoting the Chuo Shinkansen Project using the Superconducting Maglev System to make Japan's main transportation artery a dual system, as a fundamental measure against the need for large-scale renovation of the Tokaido Shinkansen and potential major disasters. This project will allow us to further reduce management risk and thus stabilize our management base, then in the future, JR Central will continue to carry out its mission since its establishment of managing Japan's main transportation artery.

Distribution map of the estimated greatest seismic intensity of Nankai Trough Large Earthquake



\*Source: Prepared by JR Central based on "Countermeasure against a Nankai Trough Large Earthquake (Final Report)" (May 2013)

#### S Accessible transportation infrastructure

Based on relevant laws, such as the so-called Barrier-Free Act, JR Central has been cooperating with governments and municipalities to jointly establish and improve rolling stock and facilities to enable all passengers to use our services safely and with a sense of security. We will make continuous efforts to address the ever-changing demands of society as appropriate.

We also believe that providing overseas visitors with a chance to visit the rich tourist attractions along our railway lines is an important issue from the perspective of increasing railway revenues and revitalizing local regions along the lines. Therefore, JR Central is implementing a variety of sales measures to encourage tourists to Japan to enjoy the areas along our railway lines casually and conveniently. In addition, we are also working on the expansion of facilities and services to ensure smooth access for overseas visitors to our stations and railways. We will continue to make every effort to ensure that our stations and trains are safe and accessible.



N700S wheelchair spaces (image)





## S Local community revitalization

In addition to the Tokaido Shinkansen, which supports Japan's economy and society, JR Central also undertakes the mission of supporting social infrastructure. It supports people's daily lives by operating conventional lines mainly centered on Nagoya and Shizuoka, and by developing affiliated businesses in these areas in an integrated manner. The conventional lines operated by JR Central, encompassing 12 railway sections, cover approximately 1,400 km in operating kilometers, which is approximately 2.5 times the distance of the Tokaido Shinkansen, and play a role as a means of transportation for daily life, including commuting to work and school. While increasing the frequency of services and launching new types of rolling stock, we have been working to maintain our transport network and provide services that are easy to use, complementing each other in combination with the Tokaido Shinkansen. We are also working to revitalize the region through sales and marketing in coordination with local communities along the line.

Stations, where many people gather, including railway passengers, are important nodes of the local community, and at the same time, they are important management resources for JR Central. By making the most of these management resources, and developing the office, commercial, hotel, and other businesses in good locations at stations will enliven stations and expand the use of railways. On the other hand, if railway use increases due to improvements in transportation services, it will also contribute to the growth of our affiliated businesses developed at stations. By working together with our Group companies to realize synergies between railway and affiliated businesses, we believe that we will be able to revitalize people's travel and economic activities in the region. In the past 15 years or so, skyscrapers have been built around Nagoya Station, and the Nagoya region's traffic flow has changed dramatically, as one example. With the opening of the Chuo Shinkansen, further development is expected.

### History of development around Nagoya Station



At the time of establishment



After completion of JR Gate Tower



## S Human resource development and creation of a rewarding workplace

JR Central views its employees as its greatest management resource. Our management philosophy of "contributing to the development of Japan's main transportation artery and social infrastructure" can be realized at higher levels when the management philosophy and action guidelines are embodied in the work of each employee and then put together as teamwork for thorough implementation. Based on this understanding, the Company strives to improve engagement\* and maximize its corporate value by actively promoting human resource development and the creation of a rewarding workplace.

It is also important for us to maintain and promote the health of employees in order to make these corporate activities sustainable. The Company is actively promoting initiatives to enhance health and productivity management by establishing a "Health Promotion Policy" and an organization to support it, which is headed by the officer in charge of personnel affairs.



\* Meaning the state in which an employee is proud of being a member of the Company and is happy to work for it.



## S Innovation advancement

In order for JR Central to fulfill its mission and develop in the future, it is essential to build the systems and hardware that will serve as the foundation to support daily safe, reliable and comfortable transportation services through technological development. Thus, with the aim of addressing various technological issues in an integrated and comprehensive manner, we have been systematically proceeding with technological development at Komaki Research Center established in 2002, by setting issues that contribute to company measures, such as ensuring safe and reliable

transportation, from a medium- to long-term perspective. These approaches have resulted in many significant achievements, such as safety measures against earthquakes and natural disasters, improved services through enhancement of the functions of rolling stock and other equipment, and enhanced environmental performance. In addition, the Chuo Shinkansen Project, as a fundamental measure to strengthen the main transportation artery, has been promoted through the accumulation of technological development at the Komaki Research Center as well as the Yamanashi Maglev Line.

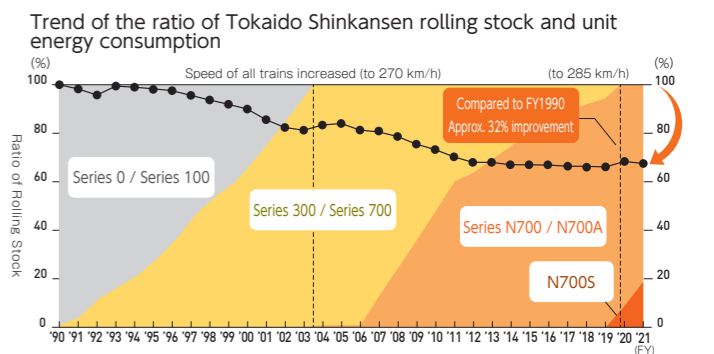
## E Environment

### E Global environment preservation

JR Central also mitigates the load placed on the environment across the entire transportation sector, brought about by having as many passengers as possible opt to use railway services, which have a smaller environmental impact compared to other modes of transport. Railways account for only 6% of CO<sub>2</sub> emissions despite providing 30% of Japan's overall passenger transport volume. We have been working on the introduction of energy-conserving rolling stock to tirelessly refine these characteristics. The new N700S Shinkansen rolling stock consumes 28% less energy when operating from Tokyo to Shin-Osaka at a maximum speed of 285 km/h compared to the Series 300 (in commercial service from March 1992 to March 2012), when running at a maximum speed of 270 km/h. In addition, compared to an aircraft (B777-200), the Tokaido Shinkansen (Series N700 "Nozomi") consumes approximately one-eighth of the amount of energy per seat when traveling between Tokyo and Osaka, and discharges about one-twelfth of the CO<sub>2</sub> emissions. We will tirelessly continue to improve our transportation services while contributing to global environmental preservation as a corporate responsibility. Not only that, but in line with the "Carbon-neutrality by 2050" policy formulated by the Japanese government, we

will make efforts to further reduce CO<sub>2</sub> emissions and also improve our environmental superiority.

JR Central also promotes the effective utilization of resources through the 3Rs initiatives, etc: Reduce, Reuse and Recycle. In addition to minimizing the release of chemical substances and waste, we are working to mitigate our environmental impact by reducing food loss and material recycling.



## G Governance

### G Appropriate governance

As for the railway business, we manage our business based on the principle of steadily implementing the necessary measures to ensure safe and reliable transportation, which is an issue of utmost importance. We are also working on the Chuo Shinkansen, a large-scale, long-term project that will further reduce our management risk, stabilize management, and secure the interests of all stakeholders, including shareholders. These initiatives require massive long-term capital investment and technological development

with considerable lead times, and we believe it is vital to manage our business based on a long-term outlook rather than pursuing short-term profitability.

As such, JR Central will continue to work to establish a corporate culture that places the highest priority on safety, and ensures the soundness and transparency of management while aiming for long-term corporate development. By doing so, we will engage in business activities under solid governance that increases the trust of all stakeholders.

### G Relationships with stakeholders

JR Central's railway business is highly public and has a multifaceted array of stakeholders, including customers, shareholders, employees, business partners, and local communities. Therefore, we believe it is important to maintain an overall balance in our relationships with our stakeholders, rather than focusing on just one facet.

We believe that improving the convenience of many users, contributing to the economic and social development of the region and Japan, securing stable profits, returning profits to shareholders, and building long-term stable relationships with employees and business partners will increase the trust of all

stakeholders and lead to our sustainable growth as a company.

Stakeholders	
<b>Customers</b>	• Safe and comfortable service for everyone • Innovative reduction of travel time by the Chuo Shinkansen
<b>Shareholders</b>	• Sustained increase of cash flows • Long-term stable dividends
<b>Employees</b>	• Long-term stable employment environment • Active and rewarding workplace
<b>Business partners</b>	• Building long-term, stable, fair and equitable business relationships
<b>Local communities</b>	• Expansion of the Japanese economy • Revitalization of local communities • Building a resilient society
<b>Global environment</b>	• Conservation of the global environment by expanding the use of environmentally friendly railways



# Management Revitalization by Utilizing Latest Technology

~Aiming for safer, more convenient, and most comfortable railways~

JR Central is promoting "business restructuring" to reduce routine costs by 80 billion yen on a non-consolidated basis over 10 to 15 years by establishing an efficient business execution system, and is taking on the challenge of realizing a new concept, "revenue growth," to revitalize our management.

In recent years, technologies such as sensing, image recognition, big data transmission and analysis, AI, and robotics have evolved significantly. JR Central is committed to providing safer, more convenient, and more comfortable railway services with greater efficiency by proactively incorporating these technologies to fundamentally transform current transportation services and address future declines in the labor force.

In Highlight 1, we have summarized our future vision of railways and the main initiatives to work toward it. Through these initiatives, we will integrally develop the three generations of railway of the Conventional Lines, Tokaido Shinkansen, and Chuo Shinkansen over the future to vigorously fulfill our mission of "contributing to the development of Japan's main transportation artery and social infrastructure."



Work to improve the business environment in stations and Shinkansen trains



Consider enhancing Shinkansen seat categories



Provide new ways to use Shinkansen

## More Convenience

- Expand our online reservation and ticketless boarding service to provide customers with a smooth travelling experience.
- Leverage ICT and other latest technologies to enhance means of communication with customers and improve the convenience of transportation services.



Propose new travel styles by using "EX-MaaS (tentative name)"

## More Comfort

- Strive to improve services by understanding the needs of customers and introducing new perspectives and flexible ideas.

## Safer Operation

- Improve safety from various angles to continue to provide transportation services that can be used by customers with peace of mind.
- Improve the reliability of transportation services by introducing systems and equipment that use the latest technologies in railway operation and maintenance. Railway personnel will focus on more creative work, such as reflecting local situations and data into planning.



Enable ticketless boarding by expanding the availability of TOICA to all lines and enhancing online reservation service



Install more ticket machines that can provide guidance through video calls



Driver-only operation will be made possible by installing car-side cameras in certain rolling stock



Install platform door at all Shinkansen stations



Monitor the condition of tracks and railway line facilities using image recognition and other technologies



Monitor the condition of railcars by using condition monitoring data



# 1. Safer Operation

## Shinkansen

Technologies used: Sensing, self-driving

Install platform doors at all Shinkansen stations

- To increase safety on the platform
- Also introduce semi-automatic train operation to support the work of train operators
- Assisted by enhanced operations support, the train operator performs a safety check on the platform and opens/closes the door when the train arrives at and leaves each station. In an emergency, the train operator, as the person in charge of the train, supervises conductors and pursers in coping with the situation.
- Conductors focus on supporting customers who are not accustomed to traveling or otherwise need assistance in the train and on patrolling in the train to improve security.



Install platform doors at all Tokaido Shinkansen stations

Semi-automatic train operation (STO: GoA2) #STO:Semi-automated Train Operation GoA:Grade of Automation

- The train operator is stationed driver's cab in the first car.
- The train operator starts the train manually.
- Speed control and stopping during operation are automated.

Automation level (As defined by IEC (JIS)*)	Graphic illustration of operation mode ([ ] indicates the operator's main tasks)
GoA2 Semi-automatic train operation (STO)	Operator [Starting the train, bringing the train to an emergency stop, guiding evacuation, etc.]

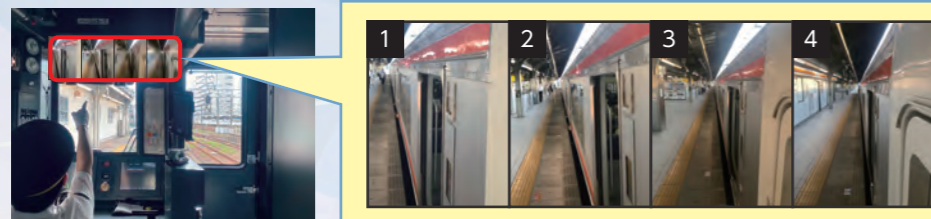
[Reference] Automation levels of railways (excerpt from MLIT materials)

## Conventional lines

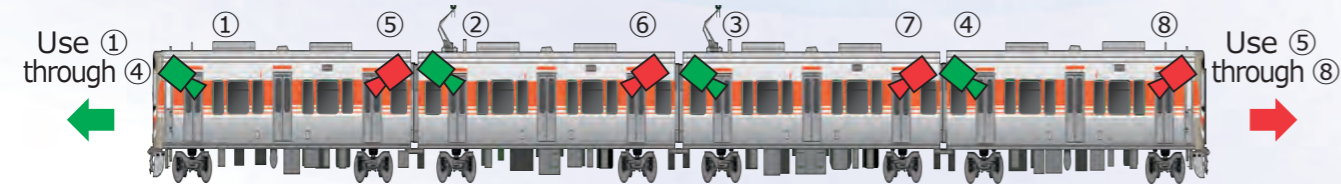
Technologies used: Image recognition

Install cameras to the side of cars for certain trains of three or more cars to help the train operator ensure safety visually.

- The train operator ensures safety by inspecting the images of the cameras installed at each car. In addition, we are considering the use of image recognition technologies to detect passengers who get caught in the train door, fall from the platform, etc.
- While considering such measures to increase safety, we will introduce driver-only operation also to trains of three or more cars.



Images of the car-side cameras ① through ④



The train operator ensures safety by inspecting the images of car-side cameras.

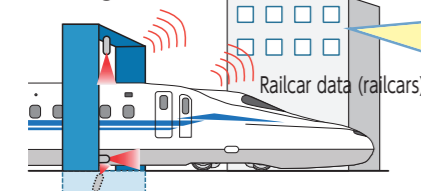
## Increase safety and stability by using the latest technologies

Technologies used: Sensing, image recognition, big data analysis, etc.

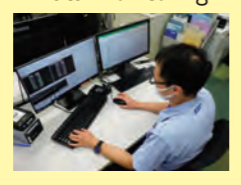
Improve the quality of inspection and repair by actively using condition monitoring, image recognition, etc.

- We will improve reliability and efficiency by shifting from manual or visual inspection to diagnosis based on condition monitoring and image recognition and using a system to assist the input of inspection and repair results.
- We will constantly monitor the conditions of railcars, railway track facilities, electric equipment, etc., by acquiring data on them in order to make repairs before they break down. As a result, rolling stock and facilities will be maintained in a sound condition, and the occurrence of breakdowns and train delays will be less frequent.
- Our employees will strive to further improve the quality of inspection and repairs through verification based on data analysis.

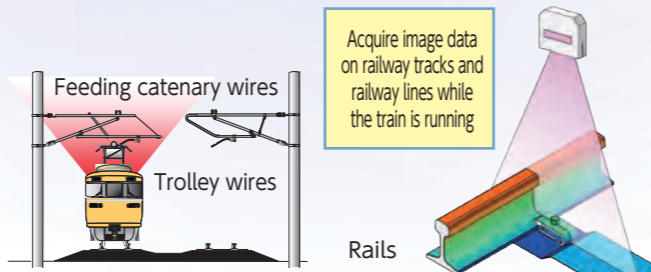
Appearance inspection equipment (above ground)



Data monitoring



Monitor the condition of railcars using railcar data and data from appearance inspection equipment.



Dr. Tokai

Monitor the condition of tracks and railway line facilities using image recognition and other technologies.

# 2. More Convenience

Ticketless services for the smooth use of both Shinkansen and conventional lines

Technologies used: Ticketless

TOICA service will be available on all JR Central lines

- We will expand our services in a phased manner to enable passengers to use IC cards issued by railway companies for transportation on all JR Central lines without buying a ticket at a station in advance.

Internet reservation and ticketless services will be expanded

- We will also introduce a service to enable passengers to reserve seats or buy commuter passes using their smartphones anytime from anywhere.
- Passengers will be able to use limited express trains on conventional lines without stopping at the ticket office in a station to buy tickets.



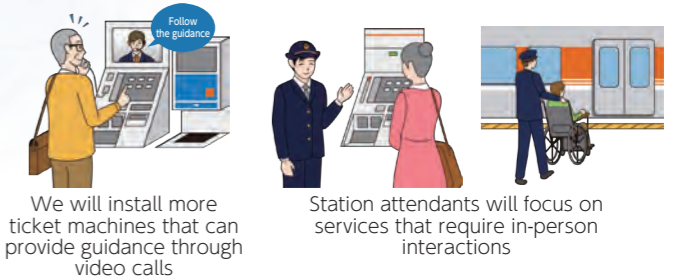
Typical mode of using limited express trains on conventional lines in the future

We will enhance the means of communication with customers at stations

Technologies used: Data transmission

We will expand opportunities for passengers to seek guidance, buy tickets, etc., at stations by using video calls or other means.

- We will enhance remote guidance services, such as "reserved seat ticket machines with support functions" and "centralized passenger service system," as well as support for ticket purchases.
- There will also be more stations at which passengers can buy tickets early in the morning and late at night.
- As a result, we will adjust the deployment of station staff appropriately in accordance with the actual mode of use.



We will install more ticket machines that can provide guidance through video calls

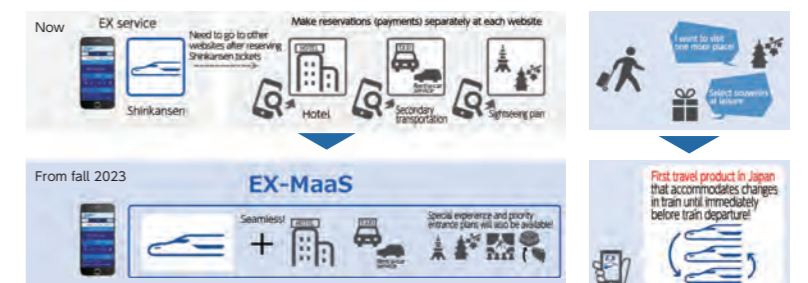
Station attendants will focus on services that require in-person interactions

For more convenient business trips and leisure travel

Technologies used: EX-MaaS

We are preparing for the launch of "EX-MaaS (tentative name)" in fall 2023

- We plan to start "EX-MaaS (tentative name)" service in fall 2023 to enable customers to make reservations and payments seamlessly for their entire trip, including Shinkansen tickets, hotel rooms, local transportation, sightseeing plans, etc., at travel destinations. Reservations and payments throughout the entire trip will be more convenient together with enhanced contents.
- Customers will be able to freely combine Shinkansen, hotels, and sightseeing plans. At the same time, we will also launch a value "EX Dynamic Package (tentative name)," which will accommodate train changes until immediately before train departure for the first time in Japan.



"EX-MaaS (tentative name)" will realize seamless reservations and payments throughout the entire trip (with certain exceptions).

"EX Dynamic Package (tentative name)" will make it possible to change trains until immediately before train departure.

# 3. More Comfort

Provision of high value-added services to meet diverse needs

We will consider enhancing Shinkansen seat categories

- We will consider providing a superior class to Green Cars to make travel more comfortable and provide seats with an enhanced business environment.

We will provide new ways to use Shinkansen

- We will provide a new service for groups of customers to charter a Shinkansen car and hold an event of their own in the car, including customized interior decoration and in-car announcement and renting of equipment, such as monitors.

We will work to improve the business environment in stations and Shinkansen trains

- We will work to further enhance the business environment to enable passengers to work seamlessly before and after getting on the train, such as the introduction of a station workspace "EXPRESS WORK" and the "business booth" in the train.



Business booth (Introduced on a pilot basis to some N700S trains)

Example of a new way to use in-train services (wedding party)



**Highlight 2**

# Targets toward carbon neutrality and addressing the TCFD's Recommendations

With global environmental conservation as a key management theme, we have been constantly enhancing the environmental superiority of railways, which are more energy efficient and have less environmental impact than other modes of transportation, by proactively adopting energy-saving rolling stock and equipment.

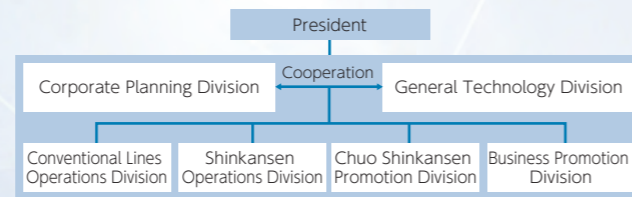
Additionally, we strive to further reduce CO<sub>2</sub> emissions to achieve carbon neutrality in 2050. On the basis of the Japanese government's 2050 carbon-neutrality policy, JR Central and the JR Central Group aim to achieve net zero CO<sub>2</sub> emissions in 2050 as well as reduce CO<sub>2</sub> emissions in FY2030 by 46% from FY2013 levels.

In addition, we endorsed the TCFD recommendations in May 2021 and are proceeding with the analysis of climate change-related risks and opportunities. We will continue to further deepen the risk analysis to support stable business operations over the long term, while contributing to the realization of a sustainable society.

\* TCFD stands for Task Force on Climate-related Financial Disclosures, established by the Financial Stability Board (FSB) in order to consider issues concerning climate-related disclosures, etc. Its final report establishes the recommendation that companies, etc. understand and disclose information about the risks and opportunities that climate change presents to their business.  
 \* See our website for the results of quantitative analysis on potential damage to Tokaido Shinkansen equipment in the event of a river flood. URL: <https://company.jr-central.co.jp/company/esg/environment/>

## 1. Governance

At JR Central, the Corporate Planning Division and the General Technology Division, which oversee the management and the technology sectors, respectively, play a central role in formulating and promoting environmental measures. The President and Representative Director and related directors reflect the results of the study on climate change in management, and oversee the efforts to address climate-related issues. In addition, important matters are discussed and reported at the Board of Directors meetings, etc.



## 2. Strategies

The main climate change-related risks and opportunities that we recognize are as follows:

Risks/Opportunities	Details
Transition risks	<ul style="list-style-type: none"> <li>Increased costs from the introduction of carbon pricing (decarbonization tax, etc.)</li> <li>Increased costs to respond to stricter regulations on CO<sub>2</sub> and other emissions</li> <li>Increased costs to procure energy and materials</li> </ul>
Physical risks	<ul style="list-style-type: none"> <li>Increased damage to railway facilities from more frequent wind and flood damage</li> <li>Increased suspension of service from more frequent wind and flood damage (decreased transportation revenue)</li> <li>Adverse impact on material procurement, etc. due to supply chain disruption</li> <li>Decreased revenue due to customers refraining from traveling under extreme weather conditions</li> </ul>
Opportunities	<ul style="list-style-type: none"> <li>Customers who value environmental superiority shifting from other modes of transportation to rail</li> </ul>

### (1) Transition risks

Of the 21.17 million tons of CO<sub>2</sub> emitted by JR Central (FY2021), approximately 95% is indirectly emitted through our use of electricity, while the remaining 5% is directly emitted through our use of fuels, etc.

To address the 5% direct emissions from the use of fuels, we will introduce the Series HC85 with reduced environmental impact as well as conduct research and promote experiments on battery railcars and fuel cell railcars and promote tests on biofuels.

To address the indirect emissions from the use of electricity, which account for the remaining 95% of the total, we will work to utilize renewable energy while making further energy-saving efforts, such as introducing additional energy-efficient rolling stock including the N700S and Series 315, and accelerating the replacement of platform lights with LED, in addition to making decarbonization efforts across the entire power generation sector in Japan.

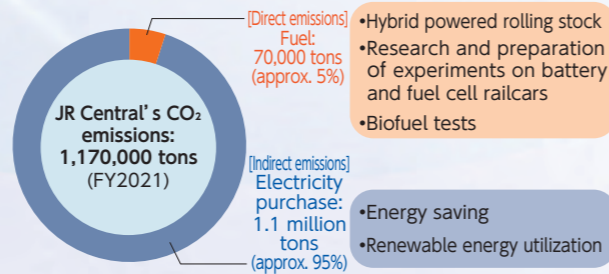
=>Refer to page 67 for information on specific measures.

### 3. Risk management

At JR Central, the Corporate Planning Division and the General Technology Division assess and analyze the impact of climate change risks and opportunities on its business in close cooperation with related departments, and formulate and promote countermeasures.

As part of measures to reduce physical risks, we are working on the construction of the Chuo Shinkansen that utilizes the Superconducting Maglev System as a fundamental measure to prepare for large-scale disasters, in addition to the measures that we have been taking since our establishment to strengthen our facilities to cope with natural disasters in general, not just those caused by climate change.

We will continue to deepen our risk analysis on climate change to ensure the long-term and stable operation of the railway business and also to contribute to the realization of a sustainable society.



### (2) Physical risks

In the railway business, the largest climate change-related physical risk arises from wind and flood damage. For this reason, we have taken various measures in the past and strive to manage such risks more effectively going forward by analyzing the impact of climate change using the framework of the TCFD. As part of this effort, we have conducted a quantitative analysis of potential damage to Tokaido Shinkansen equipment as a result of the increasingly frequent occurrence of river floods, and the analysis results are disclosed on our website.

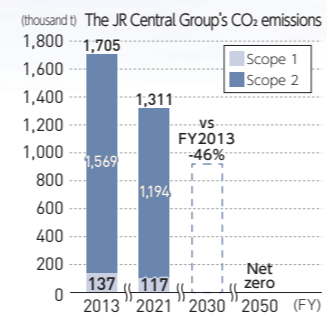
### (3) Opportunities

We see the recent rise in environmental awareness toward decarbonization as an opportunity to further promote the use of train services, a means of transportation that possess high environmental superiority. JR Central intends not only to increase transportation revenues, but also to contribute to the preservation of the global environment by securing safe and stable transportation and improving transportation services.

### 4. Goals and indicators

On the basis of the Japanese government's 2050 carbon-neutrality policy, JR Central and the JR Central Group aim to achieve net zero CO<sub>2</sub> emissions in 2050 as well as reduce CO<sub>2</sub> emissions in FY2030 by 46% from FY2013 levels.

With these efforts, we will further elevate the environmental superiority of railways and contribute to the realization of a sustainable society.



**Highlight 3**

# Initiatives for Human Resources to Support JR Central's Sustainable Growth

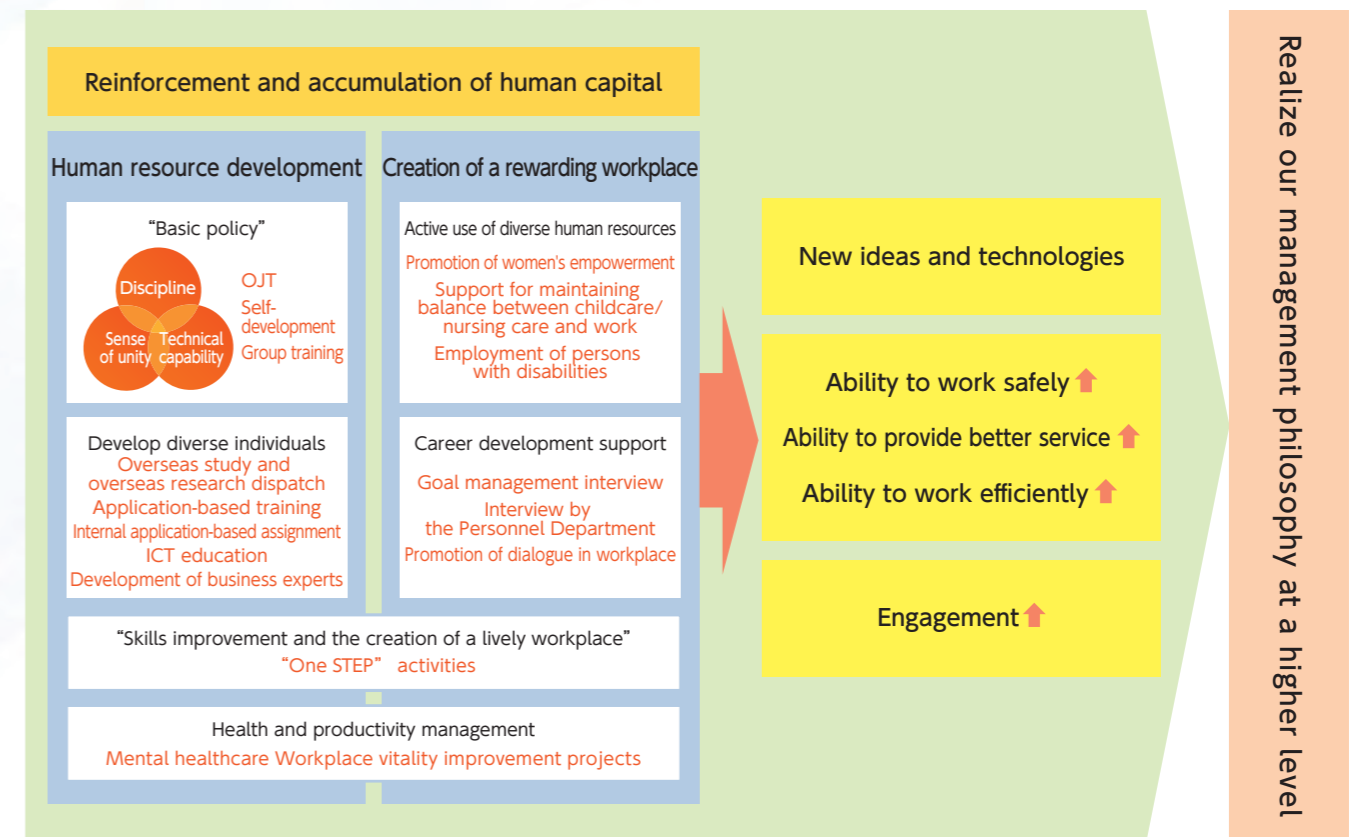
~Human resource development, creation of a rewarding workplace, and health and productivity management~

JR Central views its employees as its greatest management resource. Our management philosophy of "contributing to the development of Japan's main transportation artery and social infrastructure" can be realized at higher levels when the management philosophy and action guidelines are embodied in the work of each employee and then put together as teamwork for thorough implementation. Based on this understanding, the Company strives to improve engagement\* and maximize its corporate value by actively promoting human resource development and the creation of a rewarding workplace.

It is also important for us to maintain and promote the health of employees in order to make these corporate activities sustainable. The Company is actively promoting initiatives to enhance health and productivity management by establishing a "Health Promotion Policy" and an organization to support it, which is headed by the officer in charge of personnel affairs.

\* Meaning the state in which an employee is proud of being a member of the Company and is happy to work for it.

Human capital management (schematic diagram)





# 1. Human Resource Development

## General principles

The railway business can function as a safe and sound system as a whole only when each employee is strongly committed to fulfilling his or her role and works diligently on a daily basis with a high technical capability and accurate knowledge, while various technical skills are highly integrated through the coordination of various departments.

For this reason, JR Central has adopted discipline, technical capability, and sense of unity as its three general principles for human resource development, which are particularly relevant to railway operation, and is working on human resource development based on these principles in order to continue to fulfill its social mission stably and sufficiently over a long term. More specifically, the basic education and training system mainly involves on-the-job training (OJT), in which employees learn the knowledge and skills required for work through daily

operations in each workplace. They also acquire additional knowledge and skills through group training, which is held in the General Education Center, etc., and various self-development opportunities, such as internal and external training programs, etc., that help employees learn knowledge and skills on their own.

It is also necessary, particularly in administrative departments, to help diverse employees fully demonstrate their ability and to create new value by responding to various changes in both internal and external environments with new perspectives and flexible ideas.

Based on the premise of long-term employment, in order to enable employees to attain the necessary abilities and demonstrate their capabilities with enthusiasm, we are working to systematically develop human resources with a broad perspective on personnel management.

## Development of "leaders in railway business" who support the foundation of the Company's business

As many railway operation skills can be developed only through experience, human resources cannot be developed in a short period of time. Therefore, JR Central

strives to offer ongoing employee education that is attentive to details through the combination of on-the-job training (OJT), group training, and self-development.

### (1) On-the-job training (OJT)

We offer various types of on-the-job training (OJT) including, for example, an "N-OJT" program for employees of younger generations to attain specialized knowledge and technical skills. Under this program, employees skilled in practice take a fine-

tuned approach in developing younger employees by using a list that indicates the requirements needed to be regarded as qualified in the workplace and a record of each individual's development plan, details of guidance, and results of the guidance.

### (2) Group training

We put effort into offering various training programs, including job-specific training for leaders in railway business who will support the foundation of the Company's business, selective training programs to develop core personnel in workplace, and stratified training sessions for employees in specific positions. Job-specific training is conducted to improve the knowledge and technical capability of employees by providing them with practical training that is suitable for their job functions and required skill levels. At the General Education Center, we have put in place, for both Shinkansen and conventional lines, life-size railcar simulators and test lines with equipment that is equivalent to that of real lines and provide practical education using various well-equipped training facilities for each transportation, railcar, facility, and electric system. For employees in managerial positions, we provide training on methods to maximize the performance of the workplace and teams by bringing out the strengths and abilities of each staff member. For mid-level employees, we also provide those in professional positions, for example, with selective training programs, such as leadership training, middle-leader training, and forerunner training, to develop future leaders. For new employees, we provide new employee training that runs for about two months after they enter the Company. We recognize this training as an "important opportunity for new employees to shift their awareness from being a student to being a JR Central employee" and implement a curriculum that instills the discipline and norms required of employees of JR Central and the awareness that safety is the top priority.



General Education Center

### (3) Self-development

With regard to promoting self-development, we are also enhancing various support systems and actively supporting the development of the skills of motivated employees. JR Central offers internal training programs (about 30 courses) to help employees systematically learn specialized knowledge and skills that are necessary in their daily work, and many employees (including employees of group companies) engage in self-development through such activities as submitting monthly reports and taking review tests to measure their proficiency.

We also offer a license incentive program that provides employees who have obtained any of about 200 types of licenses designated as useful in work with an incentive equivalent to the course fee and an external distance learning incentive program that provides employees who have completed an external distance learning course, including e-learning, with an incentive equivalent to 50% of the course fee. By taking advantage of these programs, more than 1,000 employees work hard to obtain licenses or take external courses every year.

## Initiatives to find and develop diverse individuals

In order to continue to realize our management philosophy of "contributing to the development of Japan's main transportation artery and social infrastructure" into the future, we need to reinforce both the quality and quantity of our diverse human resources in order to respond

appropriately to changes in the business environment. JR Central is developing human resources with a wide variety of knowledge and experience as our management capital by providing motivated employees with opportunities to gain knowledge and experience.

### (1) Development of global human resources

With the economic and social environment surrounding companies becoming increasingly globalized and complicated, we have established an Overseas Study Program that is fully funded by the Company, with the aim of fostering human resources who can take charge of its future management and play a role on a global stage. So far, 135 employees have studied abroad at various universities, including Harvard University, the Massachusetts Institute of Technology, and the University of Chicago, to learn a broad array of knowledge and build a human network.

We have also established an Overseas Research Dispatch Program to send employees to overseas companies and other organizations to conduct research on advanced technologies, etc., and to utilize the results of the research in our business operations upon their return. So far, 75 employees have been dispatched.

These programs are application-based. We strategically develop human resources who will contribute to the promotion of our business and organizational change in the future by accepting applications from motivated employees of a wide-range of job types.

### (2) Career development through application-based training and programs

JR Central is working to enhance application-based training and programs to help diverse human resources gain knowledge and experience in accordance with their motivation, aiming to raise employee engagement and further diversify our human resource portfolio.

Employees who are expected to play an active role as a senior management member in the future are provided with education opportunities, including career development training to teach them the necessary skills for leading their workplace as a core employee, and opportunities to broaden their perspectives and external human networks, such as participation in cross-industry events and seminars for women and dispatching employees to external programs for working adults.

In addition, we have introduced an internal application-based career development program in 2022 for the purpose of identifying motivated and able employees and promoting them to the right positions and, taking this opportunity, stimulating the motivation for self-development and challenging spirit of employees.

We also permit double employment (side job) depending on its impact on work and the type of work at the other employer.



Career development training

### (3) Development of ICT human resources

We understand that developing human resources who can actively use new technologies, such as ICT, is urgently required for us to create new services out of new ideas and promote the reform of business operations. JR Central is strengthening the development of human resources who can create new value using ICT by providing education to teach practical skills, such as data analysis and system development, in addition to the obvious efforts to raise the ICT literacy of all employees through stratified training sessions, etc.

We also put considerable effort into the use of ICT as an educational tool. For example, we are promoting the use of web conferencing tools and a learning management system (LMS) to enable on-demand viewing of lectures. We also engage actively in other initiatives to deepen technical skills and technologies, including the use of training materials that use VR technology and a stereoscopic projection system in group training.



Group training that uses VR technology

### (4) Development of business experts

JR Central has a job rotation program to systematically develop human resources on the premise of long-term employment. On the other hand, in the job areas in which employees are expected to produce high-quality output by

sharpening their expertise, such as new business development, we are developing experts by identifying employees with high aptitude and assigning them mainly to positions in the Business Promotion Division and group companies.



## 2. Creation of a Rewarding Workplace

JR Central, as a company that provides highly public and open services, has a mission to continue to provide services to please diverse customers. In order to continue to satisfy diverse customer needs, each of our employees who have a diverse

background needs to be able to demonstrate his or her ability to the fullest. We strive to maximize organizational performance by creating a workplace that is rewarding to each employee and thereby extracting the maximum output from each individual.

### Women's Empowerment Project

We are vigorously promoting women's empowerment as part of the initiative to create a workplace that is rewarding and helps employees fully demonstrate their ability.

In accordance with the provisions of the Act on Securing, Etc. of Equal Opportunity and Treatment between Men and Women in Employment (Equal Employment Opportunity Act) and other relevant laws, we handle personnel matters, including recruitment and assignments, without distinction between men and women. Currently, female employees are engaged in a wide range of duties, including administrative work, station front desk work, serving as conductors and drivers of Shinkansen and conventional lines, and hospital nursing work. Due to the characteristics of the work involved, the railway business requires so-called late-night work (work between 10 p.m. and 5 a.m.). However, the Labor Standards Act at the time of the Company's establishment prohibited late-night work by women in principle, except for some limited job types. Due to this situation, the ratio of female employees as of the end of FY1996 was only 1.3%. Subsequently, in response to the revision of the Labor Standards Act in 1997, we have actively employed female employees. As of the end of FY2021, the number of female employees was 2,214 (approximately 12% of all employees), reflecting a significant increase. A female employee was appointed as a Corporate Officer in 2021 and as a Director in 2022 for the first time in the Company. Female employees are active

in many fields, including as Department General Managers and Section Managers.

In addition to our past efforts to enhance various programs to help realize diverse and flexible work styles, we have formulated an action plan based on Act on the Promotion of Female Participation and Career Advancement in the Workplace, which took effect in April 2021, under the leadership of the Women's Empowerment Project launched in July 2020, which is under the direct control of the General Manager of the Personnel Department, in order to become a company in which all employees, regardless of gender, can balance work and childcare and fully demonstrate their ability in rewarding work more than ever.

Under the action plan, we have set numerical targets, such as increasing the percentage of female employees hired as new graduates to 25% or more and increasing the number of female managers by a factor of 1.5 or more (compared to the end of FY2020), and we are promoting company-wide efforts to achieve these targets by March 31, 2026, when the plan period ends.

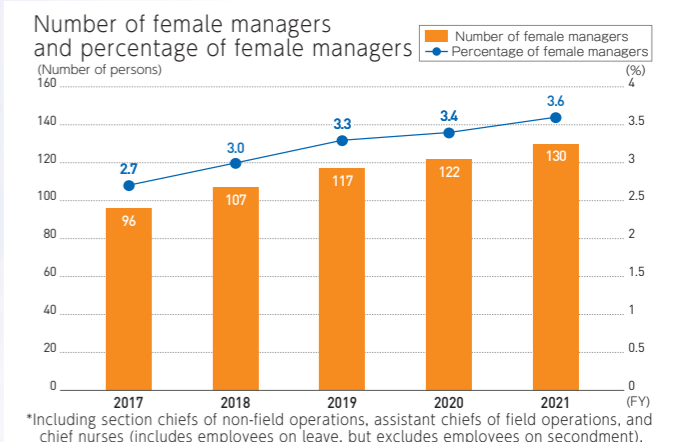
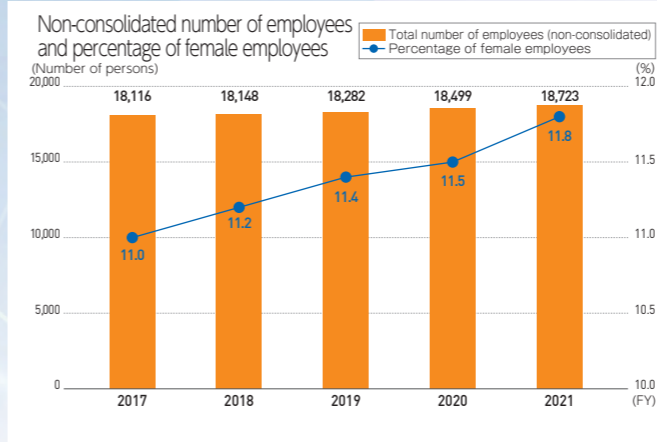


Eruboshi certification based on the Act on the Promotion of Female Participation and Career Advancement in the Workplace (2022)

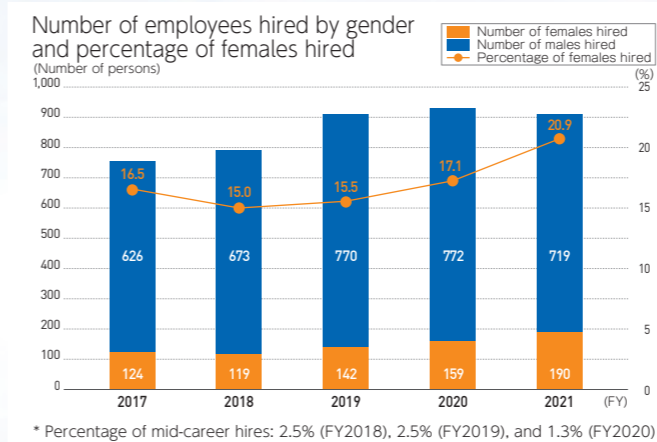
#### Positive action plan for promoting women's empowerment

1	We will increase the hiring rate of women.	Target: Raise the hiring rate of women in the recruitment of new graduates to at least 25%.	<ul style="list-style-type: none"> <li>Strengthen public relations for recruitment so that women can envision themselves working at a railway company.</li> <li>Strengthen the hiring of women in all job types.</li> </ul>
2	We will increase workplaces to which women are assigned, and increase places where employees with restrictions in working styles can play an active role.	Target: Increase workplaces to which women are assigned. Target: Increase places where employees with restriction on working styles can play an active role.	<ul style="list-style-type: none"> <li>Increase workplaces to which women are assigned in view of the provision of facilities for women.</li> <li>Increase places where employees with restriction on working styles due to childcare, etc. can play an active role.</li> </ul>
3	We will increase the number of women in managerial posts.	Target: Assign 1.5 times more women to managerial posts* (vs end of FY2020). * Sum of Line Managers and employees in positions higher than Managers (excluding Officers). Target: Assign 1.5 times more women to Assistant Manager and Supervisor levels or higher (vs end of FY2020).	<ul style="list-style-type: none"> <li>Foster professional mindset among female leaders and support networking outside the Company by sending them on external training courses.</li> <li>Hold seminars with successful women as lecturers in order to introduce role models.</li> <li>Provide training for women aimed at fostering professional mindset.</li> </ul>
4	We will foster a workplace culture and enhance programs to facilitate women to demonstrate their capabilities.	Target: Foster a workplace culture that empowers women to demonstrate their capabilities. Target: Enhance programs that support employees balancing work and childcare. Target: Raise the percentage of annual paid leave taken to at least 80%.	<ul style="list-style-type: none"> <li>Provide training for managers, etc.</li> <li>Enhance work arrangements, etc.</li> <li>Encourage employees to take annual paid leave.</li> </ul>
5	We will encourage men's participation in childcare.	Target: Raise the percentage of male employees taking childcare leave or leave aimed at childcare to at least 30%.	<ul style="list-style-type: none"> <li>Strengthen the dissemination of information to male employees on childcare-related programs.</li> </ul>

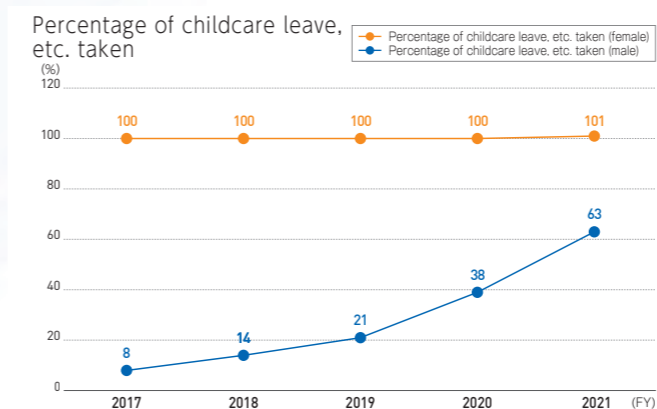
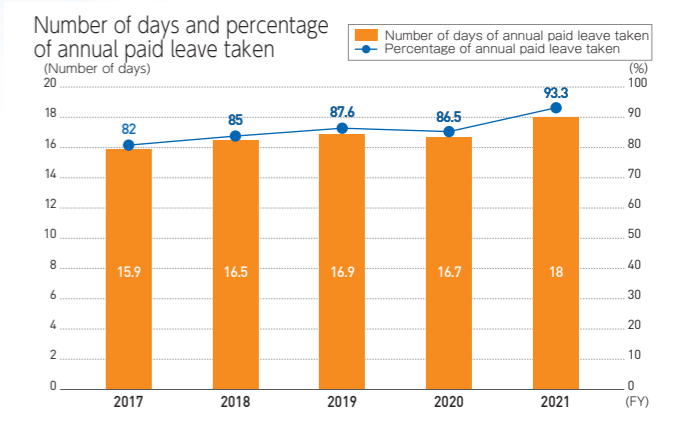
▶ Plan of action for general employers [https://company.jr-central.co.jp/others/action\\_plan/](https://company.jr-central.co.jp/others/action_plan/)



\*Including section chiefs of non-field operations, assistant chiefs of field operations, and chief nurses (includes employees on leave, but excludes employees on secondment).



\* Percentage of mid-career hires: 2.5% (FY2018), 2.5% (FY2019), and 1.3% (FY2020)



\* Calculated including both childcare leave and leave aimed at childcare  
 \* Calculation from FY2021 onwards is based on the calculation method of the Child Care and Family Care Leave Act (enforced in April 2023).



## Support system for maintaining balance between childcare, nursing care, and work

It is essential for us to enhance various programs to ensure that all employees, regardless of gender, can maintain a good balance between work and childcare/nursing care and are motivated to work with enthusiasm in active roles over many years. In 2006, JR Central became the first company in the transport and railway industry to receive the "Minister of Health, Labour and Welfare Effort Award" as a Family Friendly Corporation.\*1 We have continued to make further efforts even after receiving the award, and many of our programs exceed the levels required by law.

For example, at JR Central, employees are entitled to longer maternity, childcare, and nursing care leave than the statutory periods. We are currently taking specific measures to maintain and increase the percentage of employees who take childcare leave by setting targets.\*2 In FY2021, the percentage of employees who took childcare leave was 101% for female employees and 63% for male employees.

We use flexible work arrangements, including flex time for office workers and certain field office employees and reduced work days, which allows field office employees who provide care to a child in the sixth grade of elementary school or younger to take multiple unpaid leave days each month, all with an eye to helping employees achieve a good balance between work and childcare. We also have a wide range of employee benefits, such as mediating the use of company-led childcare centers and offering childcare support subsidies when

employees use babysitters, etc., which are used by many employees.

In addition to these programs, we have a system designed to rehire former employees who resigned for childcare or nursing care reasons or due to other similar circumstances, as long as a certain set of conditions is met. We also have a system that allows an employee whose work location is limited to be transferred, upon request, to an area outside the current area of work. These measures are all part of our efforts to create a better work environment where employees can reach their full potential at different life stages.

\*1 A system introduced by the Ministry of Health, Labour and Welfare whereby companies are rewarded for taking initiatives to establish various programs to support employees in achieving a good balance between work, childcare and nursing care, and for putting in place a mechanism whereby employees have the option of selecting diverse, flexible working styles.

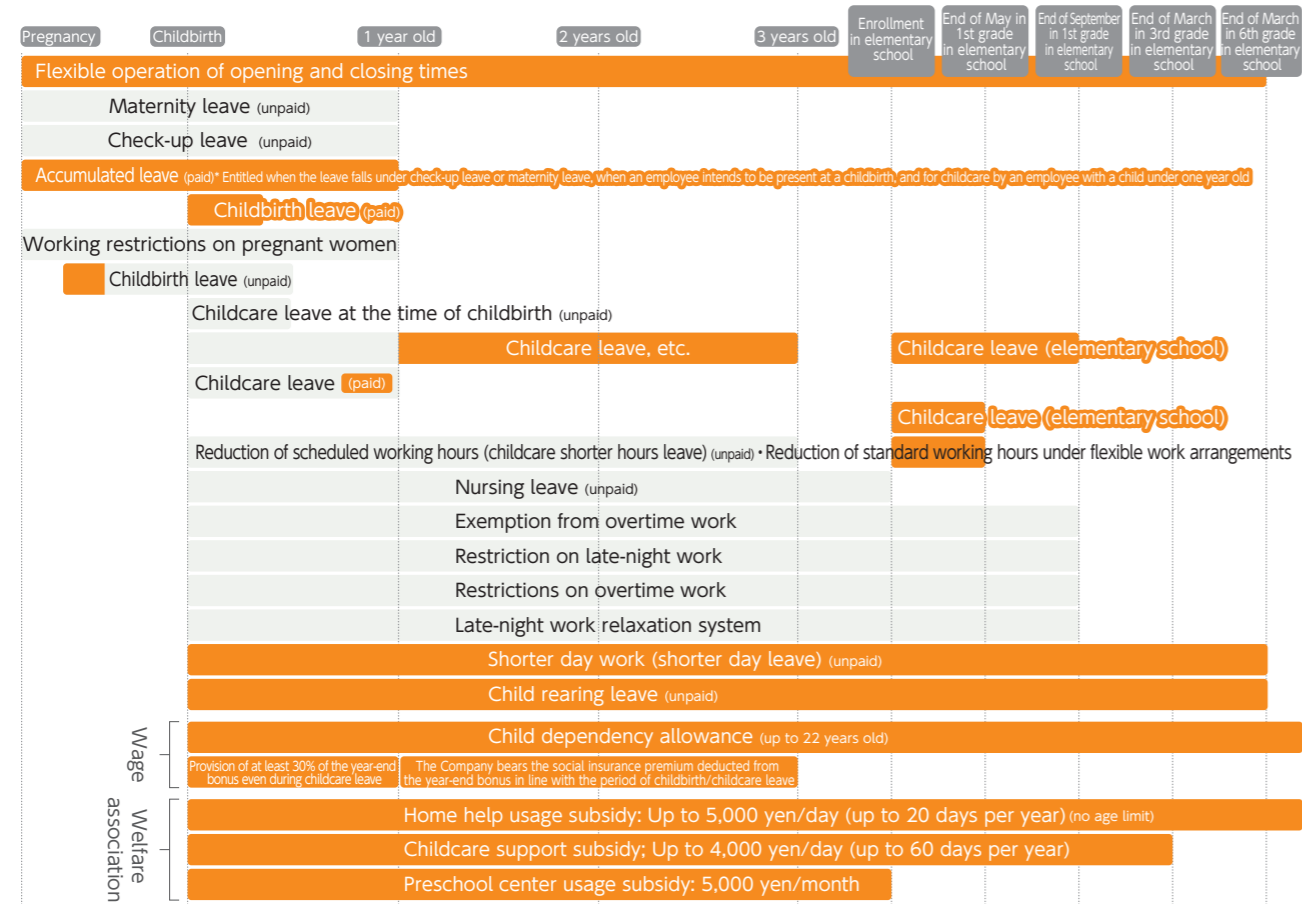
\*2 In the action plan from FY2021 to FY2022, we set targets for the percentage of employees who take childcare leave, etc., of 100% for female employees and 30% or more for male employees. JR Central has been certified four times by the Minister of Health, Labour and Welfare as a child-care supportive institution ("Kurumin" certification), meeting certain requirements set forth in the Act on Advancement of Measures to Support Raising Next-Generation Children.



"Kurumin" certification

### Initiatives for supporting childcare, etc.

Initiatives beyond those called for by law, or voluntary initiatives



## Employment of Persons with Disabilities

JR Central is actively promoting the employment of persons with disabilities from the perspective of utilizing diverse human resources and fulfilling its corporate social responsibility. We place the right people in the right positions in a wide range of departments, including the administrative and operational departments, while giving consideration to the degree of individual disability and other factors.

In October 2006, the Company established a special subsidiary, JR Tokai Well Co., Ltd., based on the Act on Employment Promotion etc. of Persons with Disabilities. This special subsidiary mainly engages in printing and envelope-sealing operations for the JR Central Group. Starting from October 2021, they have offered massage

services as part of the company's initiative to provide benefits and health management to employees.

As a result of these efforts, the employment rate of disabled persons as of June 1, 2021, was 2.74%, which is higher than the statutory employment rate.

In accordance with the revised Act on Employment Promotion, etc. of Persons with Disabilities, we will adhere to our non-discrimination policy in recruitment and hiring as well as continuing to improve the work environment in an appropriate manner, while taking into account restrictions due to disabilities so that individuals with disabilities can make the most of their skills even after they are hired.

## Initiatives to support career development

At JR Central, based on the belief that active communication in the workplace leads to improved productivity, interviews are held every six months where employees are given feedback from their managers and the workplace targets are shared. While maintaining the

principle of employee development through job rotation, we conduct a survey every year on desired jobs and career paths of individual employees to support their career development. The personnel department also holds interviews with employees.

## "One STEP" activities to improve employee skills and create a lively workplace

We promote "One STEP" activities in which multiple employees work together as a team to discuss various issues in the workplace with a sense of ownership, and resolve and improve the issues through their own creativity and originality. The name of this program "One STEP" reflects the idea that "one step made together by ten persons is better than ten steps made by just one person." By implementing activities on a wide range of themes, such as service improvement, safety enhancement, and cost reduction, we aim to improve the skills of employees, create a rewarding and lively workplace, boost the power of the workplace, and develop the Company.



Scene of an activity (discussions visualized and participated in by all members)



### 3. Health and Productivity Management

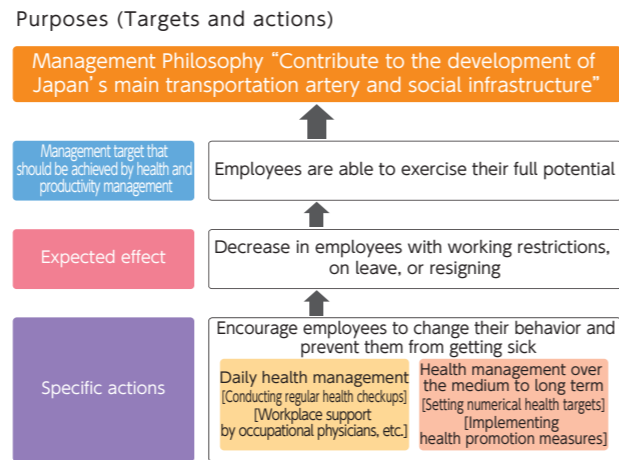
We are actively enhancing health and productivity management in order to maintain and improve the health of our employees, which is the foundation for our continuing to fulfill our social mission.

#### Purposes

In order to achieve our mission to "Contribute to the development of Japan's main transportation artery and social infrastructure" shown in our management philosophy, it is essential that each and every employee demonstrate his/her full potential. In order to maintain and promote employee mental and physical health as its basis, we established the Health Promotion Policy as our overall policy for health promotion measures in April 2018 for the Company to actively support the maintenance and promotion of employees' health.

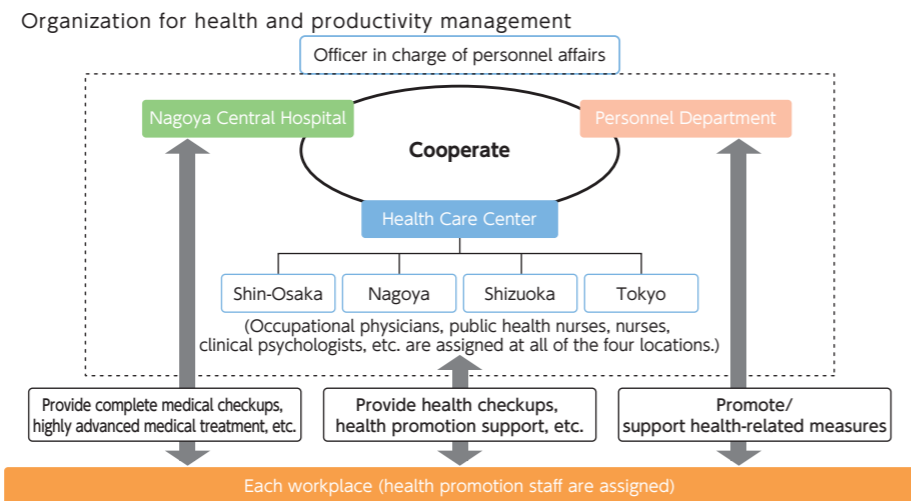
#### "Health Promotion Policy" ~For Working in a Lively and Continuous Way~

- The Company shall establish frameworks for employees to work in a lively way.
- Employees should promote their own health. The Company shall support this.
- We verify the effects of those efforts and further promote health based on objective data that help us understand the status of workplaces and employees.



#### Organization

Headed by the officer in charge of personnel affairs, health and productivity management is being enhanced through cooperation among the Personnel Department, the Company-managed medical institute (Nagoya Central Hospital), and the Occupational Health Department (Health Care Center).



#### Numerical targets

With the aim of reducing the number of employees who are unable to exercise their full potential due to health reasons, we are working to improve health-related indicators that are considered to have a high correlation with physical and mental illness based on the findings of occupational physicians. This is based on the concept of preventing disease by taking action at the stage before people are exposed to health risks, rather than providing support after they become or are likely to become at high risk of illness.

Among several health-related indicators that are considered to have a high correlation with physical and mental illness, we focused first on developing an exercise habit and reducing the smoking rate, and set numerical targets to be achieved by FY2023 to encourage employees to change their behavior.

	Targets (until FY2023)	Current level (FY2021)
Exercise habit	Increase the percentage of employees who walk an average of 8,000 steps or more per day to 50% or more.	35.6%
Smoking rate	Reduce the number of smokers by 25% from the FY2018 level (FY2018: 25.8% ⇒ Target: 19.3%)	21.8%

#### Measures

##### Understanding the health status and sharing health issues and enhancement measures

In addition to stress checks for all employees (with more check items than those required by law), we carry out stress checks with our own additional indicators for employees who have newly joined the Company, have moved to another department, or have been promoted. Furthermore, annual meetings are held for new management staff (equivalent to department heads) and health promotion staff to share health issues faced by our employees and our promotion measures.

##### Smoking cessation support

We provide support including having internal medical professionals give health lectures, offering in-person instruction during health checks or workplace inspections, establishing internal consulting services for quitting smoking, and consolidating smoking rooms. We are also encouraging staff to utilize the Smoking Cessation Support Program by JR-KENPO.



##### Workplace vitality improvement projects

We are taking various voluntary and continuous measures both for mental health and against lifestyle diseases, based on employees' health status and work environments, with assistance from internal medical professionals, with the safety and health organization at each workplace playing a central role. In doing so, we are effectively utilizing the group analysis results of health checks or stress checks.

##### Habituation of exercise support

We hold the following events to improve awareness of health promotion and support the habituation of exercise.

- Promotion of health using an online fitness app**  
We have signed a corporate contract for an app that allows users to view a total of more than 700 classes in 11 fields, such as yoga, walking, meditation and other programs. The contents include individual competitions where participants aim to reach the goal by clearing designated tasks, as well as team competitions where participants compete in terms of the number of programs viewed, making it a fun way to work on promoting health.
- Walking event "Minna de Arukatsu"**  
For the walking event held by the JR Group Health Insurance Association, we are making company-wide efforts by establishing an original incentive system.

#### Selected as a brand under the 2022 Health & Productivity Stock Selection

The Ministry of Economy, Trade and Industry (METI) and the Tokyo Stock Exchange (TSE) jointly select listed enterprises engaging in an outstanding health and productivity management program, in which enterprises focus on and strategically carry out efforts with regard to their employees' and other workers' health from a management perspective, and recognize them as brands under the Health & Productivity Stock Selection. JR Central was selected as a brand

under the Health & Productivity Stock Selection for the first time for its various initiatives focusing on health and productivity management. We will continue to make efforts to promote the maintenance and enhancement of physical and mental health of all of our employees so that they can exercise their abilities to the fullest.



#### Personnel-related data

	Unit	2017	2018	2019	2020	2021 (FY)
Average age	Male	37.8	37.6	37.4	37.1	36.9
	Female	30.7	31.2	31.7	31.8	32.1
	All	37	36.9	36.7	36.5	36.3
Average years of service	Male	17.9	17.7	17.4	17	16.8
	Female	9.2	9.7	10.1	10.2	10.4
	All	17	16.8	16.5	16.3	16
Average number of training hours per year	Hours	32	34	36	35	33
Union membership rate (percentage of all employees covered by collective bargaining agreements)	%	-	-	-	94.6	94.7
Employment rate of disabled persons	%	2.21	2.26	2.51	2.75	2.68
Turnover rate	Male	0.8	1.1	1.1	0.9	1.0
	Female	4.5	3.5	3.7	3.4	3.6
	All	1.2	1.4	1.4	1.2	1.3
overtime work in excess of statutory working hours	Hours/month	-	-	-	10	-

Item	Results		
	R1	R2	R3
Percentage of employees receiving regular health checkups	100%	100%	100%
Employees maintaining normal weight *Aged 40 or older	61.6%	60.0%	61.8%
Percentage of employees with any problem observed	51.4%	52.3%	53.2%
Stress check	Percentage of employees receiving the check	100%	100%
	Average comprehensive health risk (national average: 100)	90	86
Employees at high risk (continuing to receive health guidance)	Employees subject to specific health guidance among those aged 40 or older	20.3%	22.4%
	Employees participating in specific health guidance *Participation rate of the first support program	75.9%	83.1%
Employees at high risk (continuing to receive treatment)	Percentage of those receiving detailed examination	50.2%	45.1%
Percentage of employees on leave due to accident or sickness		0.5%	0.6%
Participation rate of Minnade Arukatsu *A walking event hosted by JR-KENPO		50.1%	67.8%
Employee health literacy			72.0%

- Mental health seminar (held in various training programs, etc.)
- Lectures on health by occupational physicians or public health nurses (held at workplaces)
- Appointing staff in charge of health promotion at each workplace and holding training sessions for them

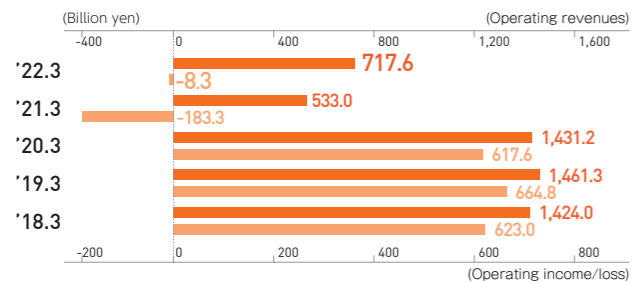


## Generating "Economic Value"

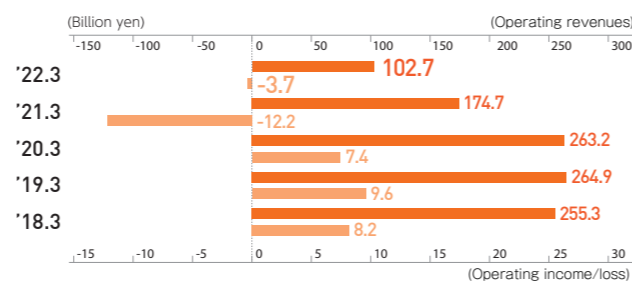
## Financial Data

## Operating Revenues and Operating Income (Loss) of each Segment

## Transportation

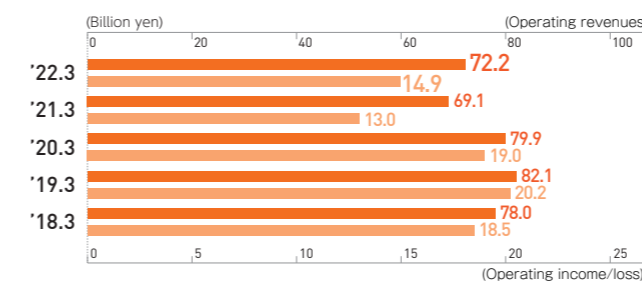


## Merchandise and Other

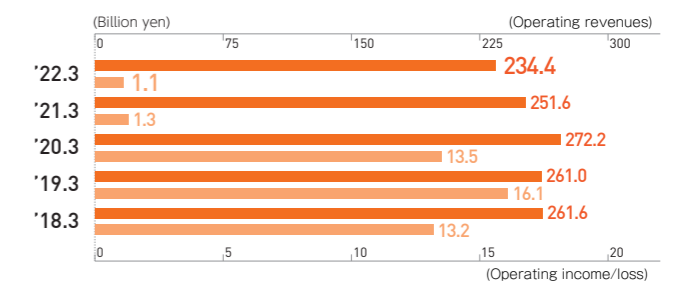


\*1 Operating revenues of each segment include the amount of sales to other reportable segments as well as the amount of sales to external customers.  
\*2 Numbers for FY2019 and FY2020 have decreased because of the COVID-19 pandemic.

## Real Estate



## Other



## Comparative Income Statement (Non-consolidated)

	FY2018. 3	FY2019. 3	FY2020. 3	FY2021. 3	FY2022. 3
	(Billion yen)	(Billion yen)	(Billion yen)	(Billion yen)	(Billion yen)
Operating Revenues	1,427.4	1,464.8	1,436.9	541.7	726.0
Railways Business	1,414.8	1,452.0	1,422.2	527.4	711.3
Affiliated Businesses	12.5	12.8	14.7	14.3	14.6
Operating Expenses	802.1	797.1	813.9	717.7	727.3
Railways Business	793.5	788.7	805.4	709.4	719.0
Affiliated Businesses	8.6	8.3	8.4	8.2	8.2
Operating Income (Loss)	625.2	667.7	623.0	-175.9	-1.2
Ordinary Income (Loss)	547.6	590.1	540.0	-256.6	-74.0
Income (Loss) before Income Taxes	549.5	590.1	539.9	-277.8	-89.4
Net Income (Loss)	384.4	414.0	378.8	-202.3	-68.1

## Comparative Income Statement (Consolidated)

	FY2018. 3	FY2019. 3	FY2020. 3	FY2021. 3	FY2022. 3
	(Billion yen)	(Billion yen)	(Billion yen)	(Billion yen)	(Billion yen)
Operating Revenues	1,822.0	1,878.1	1,844.6	823.5	9,351
Operating Expenses	1,160.0	1,168.3	1,188.4	1,008.2	9,334
Operating Income (Loss)	662.0	709.7	656.1	-184.7	17
Ordinary Income (Loss)	583.5	632.6	574.2	-262.0	-672
Net Income (Loss) before Income Taxes	561.8	630.2	573.4	-268.5	-667
Net Income (Loss) Attributable to Owners of the Parent	395.5	438.7	397.8	-201.5	-519

## Financial Statement Ratios (Consolidated)

	FY2018. 3	FY2019. 3	FY2020. 3	FY2021. 3	FY2022. 3
Return on Equity	13.8%	13.4%	10.9%	-5.4%	-1.4%
Net income/Operating Revenues	21.7%	23.4%	21.6%	-24.5%	-5.6%
Operating Income/Total Assets	8.3%	7.8%	6.9%	-1.9%	0.1%
Equity Ratio	34.3%	37.3%	39.9%	37.9%	37.7%
Earnings per Share	¥2,015	¥2,238	¥2,027	-¥1,025	-¥263
Dividend per Share	¥140	¥145	¥150	¥130	¥130

\* Some numbers for FY2020.3 and FY2021. 3 have been affected by the COVID-19 pandemic.

## Comparative Balance Sheet (Consolidated)

	FY2018. 3	FY2019. 3	FY2020. 3	FY2021. 3	FY2022. 3
	(Billion yen)	(Billion yen)	(Billion yen)	(Billion yen)	(Billion yen)
Current assets	3,804.7	3,630.6	3,382.6	3,023.8	2,682.7
Of these assets, the Chuo Shinkansen Construction Fund Management Trust	2,840.9	2,670.5	2,435.0	2,076.1	1,813.0
Fixed assets	5,103.9	5,665.0	6,220.4	6,576.5	6,767.7
Tangible fixed assets	4,544.7	4,706.6	4,925.1	5,176.7	5,407.6
Intangible fixed assets	55.6	77.5	91.1	110.4	142.0
Investments and other assets	503.5	880.8	1,204.1	1,289.3	1,218.0
Total assets	8,908.6	9,295.7	9,603.1	9,600.3	9,450.5
Current liabilities	602.8	650.2	625.6	824.0	737.3
Fixed liabilities	5,221.1	5,137.4	5,105.3	5,089.6	5,103.9
Of these liabilities, long-term debt for the Chuo Shinkansen	3,000.0	3,000.0	3,000.0	3,000.0	3,000.0
Total liabilities	5,823.9	5,787.6	5,731.0	5,913.7	5,841.2
Out of these liabilities, long-term debt and payables	4,856.2	4,851.1	4,846.0	4,932.6	4,941.6
Total net assets	3,084.7	3,508.0	3,872.1	3,686.6	3,609.2
Total liabilities and net assets	8,908.6	9,295.7	9,603.1	9,600.3	9,450.5

## Comparative Cash Flow Statement (Consolidated)

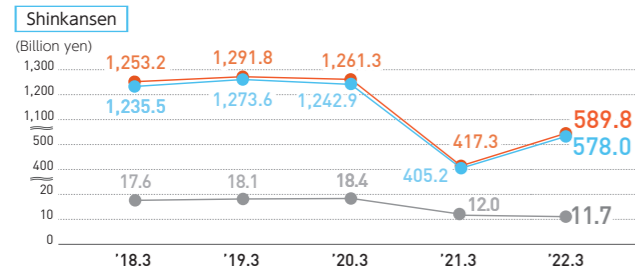
	FY2018. 3	FY2019. 3	FY2020. 3	FY2021. 3	FY2022. 3
	(Billion yen)	(Billion yen)	(Billion yen)	(Billion yen)	(Billion yen)
Cash flows from operating activities	609.5	600.3	595.2	-169.3	71.7
Cash flows from investing activities	-1,676.4	-597.5	-552.4	-134.7	-153.0
Payments for purchases of tangible/intangible fixed assets, etc.	-306.9	-397.8	-459.0	-493.5	-416.1
Proceeds/expenditures concerning the Chuo Shinkansen Construction Fund Management Trust (net amount)	-1,368.1	170.3	235.5	358.8	263.0
Proceeds and expenditures from fund management (net amount)	-1.3	-370.0	-328.9	—	—
Cash flows from financing activities	1,434.7	-33.6	-32.9	262.6	-19.1
Proceeds from long-term debt for the Chuo Shinkansen	1,500.0	—	—	—	—
Net increase in cash and cash equivalents	367.8	-30.8	9.7	-41.4	-100.4
Cash and cash equivalents at beginning of period	414.5	782.4	751.6	761.3	719.9
Cash and cash equivalents at end of period	782.4	751.6	761.3	719.9	619.5



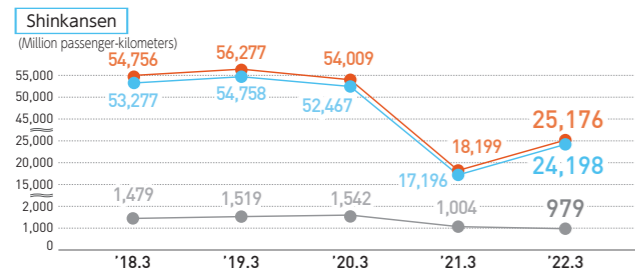
Financial Data

Transportation and Financial Information

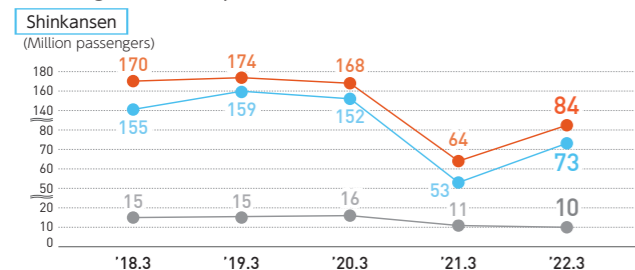
Transportation Revenues



Passenger-kilometers

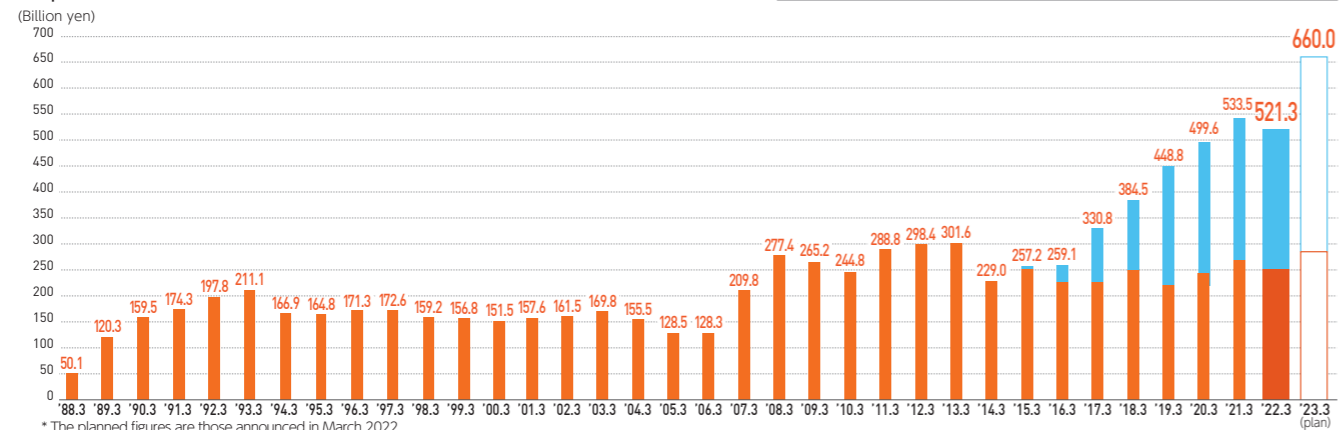


Passenger Ridership

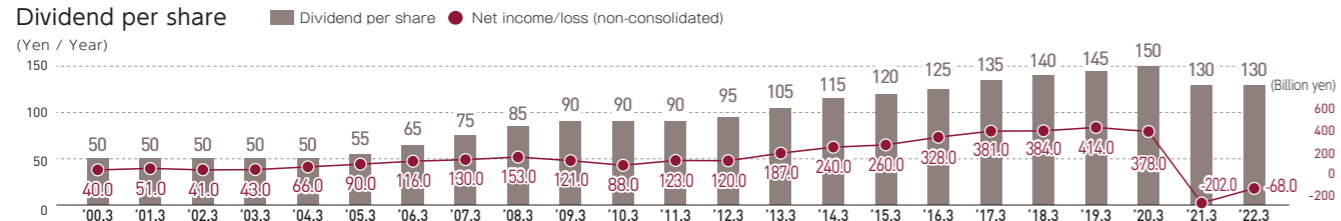


\* Numbers for FY2019 and FY2020 have decreased because of the COVID-19 pandemic.

Capital Investment Amounts (Non-consolidated)

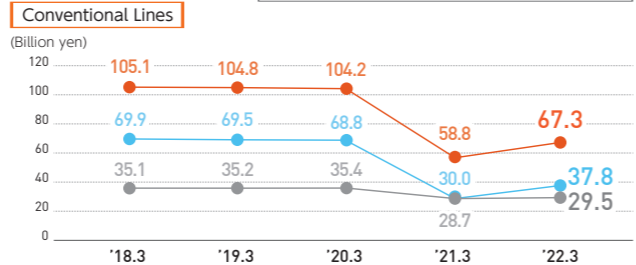


Dividend per share

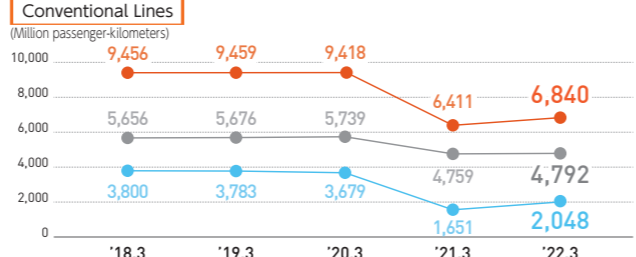


\*1 With respect to the amount of dividend per share for FY2012, given the adoption of the unit share system of splitting 1 share of common stock into 100 shares and setting one (1) unit of shares as 100 shares effective October 1, 2012, the amount was calculated on the assumption that the stock split was conducted at the beginning of the period.  
\*2 The amount of dividend per share for FY2011 and prior is shown by dividing the amount by 100 for the ease of comparison with the amount for FY2012 and thereafter.  
\*3 Net income (loss) for FY2019 and FY2020 have decreased because of the impacts of the COVID-19 pandemic.

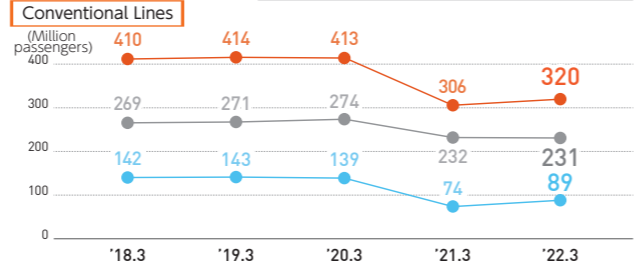
Conventional Lines



Conventional Lines



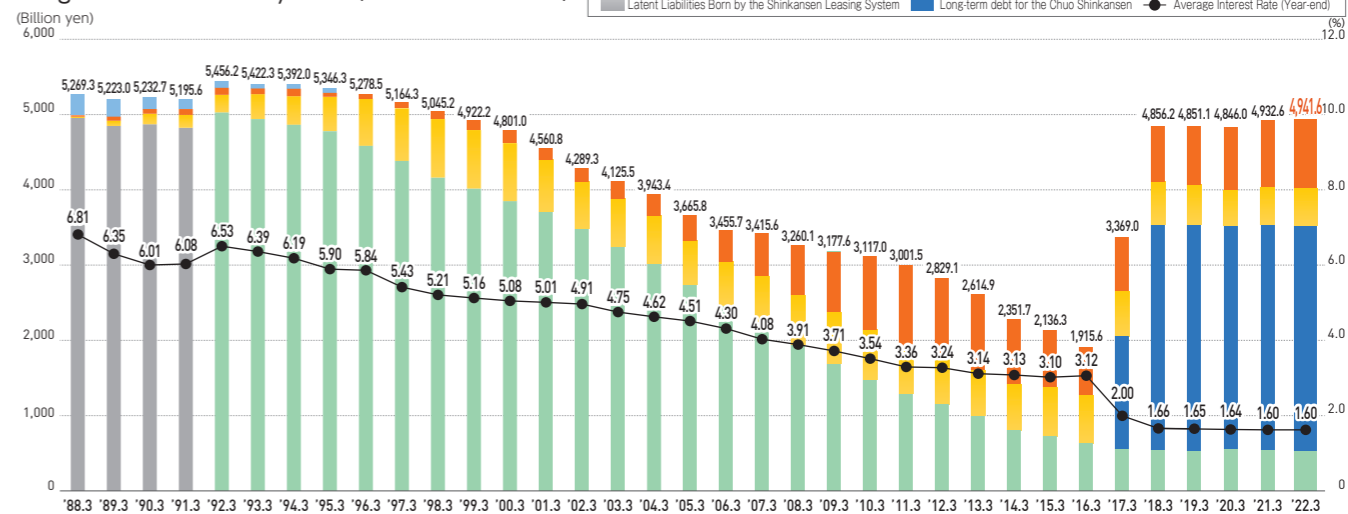
Conventional Lines



Capital Investment Amounts (Excluding the Chuo Shinkansen)

Capital Investment Amounts (Excluding the Chuo Shinkansen) Chuo Shinkansen

Long-term Debt and Payables (Non-consolidated)



Long-Term Loan Using the Fiscal Investment and Loan Program (Long-term debt for the Chuo Shinkansen)

In November 2016, JR Central applied for a long-term loan using the Fiscal Investment and Loan Program (hereinafter, "FILP Loan") for 3 trillion yen (plan) to Japan Railway Construction, Transport and Technology Agency ("JRJT") to promote the construction of the Chuo Shinkansen. We proceeded to borrow funds in five lots sequentially thereafter and secured financing for a planned total of 3 trillion yen in July 2017.

The advantage we gain from the FILP Loan lies in mitigating three management risks, which are interest-rate increase risk, financing risk, and redemption risk.

Specifically, since we can secure long-term, fixed-and low-interest rate funds, we are able to mitigate the risk of interest rates rising in the future and fix interest payments at a low level for a long period of time.

Furthermore, we expect that the construction cost for the route between Shinagawa and Nagoya will be 7.04 trillion yen. However, by securing 3 trillion yen out of the amount expected to require new financing through the FILP Loan, we were able to reduce our financing risk.

Furthermore, since the FILP Loan matures after the construction period of the Chuo Shinkansen, during which time a large amount of funds is needed, we are able to build up cash from operating activities to provide for the redemption of liabilities, thereby also mitigating redemption risk.

In the material submitted to the Transport Policy Council of the Ministry of Land, Infrastructure, Transport and Tourism in 2010, we indicated in our outlook that a period of eight years after start of operation in Nagoya will be set to recover management strength. After reducing long-term debt by a certain amount, construction on the route between Nagoya and Osaka will be initiated while seeing that sound management and stable dividends are strictly maintained, and ensuring that the balance of long-term debt does not exceed 5 trillion

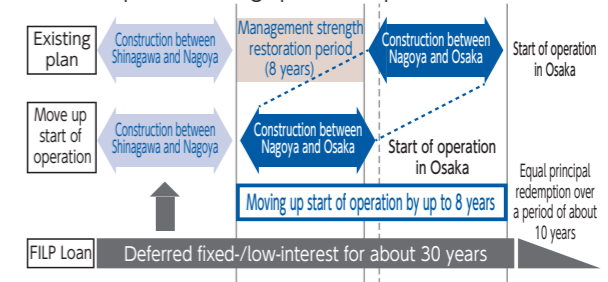
yen throughout the project period until start of operation of the entire line. By utilizing this FILP Loan, we are able to reduce this period for restoring management strength and promote construction efforts in an aim to move up start of operation of the entire line by up to eight years.

The Chuo Shinkansen Project is pursued based on the premise that JR Central, as a private corporation, covers the full cost of construction, while securing management autonomy in investment and ensuring that sound management and stable dividends are strictly maintained until the construction work is fully completed. The FILP Loan does not change this premise.

As for the terms of the FILP Loan, the weighted average rate is 0.86%, which is fixed throughout the entire period, and the annual interest expenses are 25.7 billion yen. The repayment method is equal principal payment over a period of roughly 10 years after deferring the payment of principal for about 30 years.

The funds procured from the FILP Loan will be applied only for the cost of construction of the Chuo Shinkansen, and the transparency is ensured in fund management by the trust.

Illustrated plan of moving up start of operation





Creating "Social Value" —Social—

# Building Safe and Resilient Infrastructure

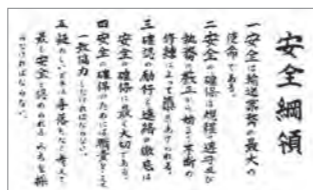
Ensuring safe and reliable transportation is a prerequisite for all business development and marks the foundation of the railway business; therefore, we have consistently given top priority to this issue. Specifically, with regard to the Tokaido Shinkansen as the main transportation artery of Japan and the conventional lines as social infrastructure, we are building a safe and resilient infrastructure by promoting various safety measures in both physical and non-physical aspects to support Japan's economic and social activities in a sustainable manner.



## General Principles of Safety

JR Central has the General Principles of Safety as the basic spirit for employees involved in transportation safety. It was established following a 1951 accident at Sakuragicho Station on the Keihin-Tohoku Line while we were operating as part of Japan National Railways. The principles specifically state that the correct mindset and moral awareness and attitude are needed for all employees to do their utmost to ensure safety and protect human lives before all else, regardless of their job responsibilities, because the railway business is an important service with the responsibility to safeguard precious lives and assets.

Shinkansen line, which has been used by about 6.7 billion passengers, has had no accidents resulting in deaths of passengers since the start of its operation in 1964. We will continuously work to maintain safe and reliable transportation as the top priority, aiming to achieve it at even higher levels.



General Principles of Safety

As a result of various safety efforts, especially the Tokaido

► Safety Report <https://company.jr-central.co.jp/others/report/>

## Basic Approach to Safety

Under the philosophy of the General Principles of Safety, we established the "Basic Approach to Safety" and are abiding by it. We maintain safety through "people," "structure" and "equipment," and what forms the basis is the culture of prioritizing safety. The diagram on right describes a structure whereby a culture in which safety is prioritized above anything else is firmly established and all individuals practice safety-first behavior, upon which each of the three elements of "people," "structure" and "equipment" is made to function at high levels so that these three pillars can support safety.

in the environment, signs and lessons learned from others, and improve the safety of "equipment" by introducing new technologies, including fail-safe, fool-proof and sign-management methods. We are working to maintain safety while continuously reviewing and enhancing these two pillars, along with the pillar of "people," as "structures for safety."



The first pillar of "people" represents ongoing efforts to enhance the ability of employees to detect risks and changes and deal with them without fail on their own initiative, and the ability to deal with difficult situations with a sense of ownership and responsibility, etc., through effective education and training.

The pillars of "structure" and "equipment" respectively represent ongoing efforts to ensure adherence to, and review, "structures," including rules and handling, by accurately grasping situations on the ground from the correct perspective regarding safety and looking into weaknesses based on changes

## Priority Execution Items for FY2022

In order to systematically and intensively promote train and industrial accident prevention measures, priority execution items are determined every fiscal year. For FY2022, we designated "adherence to rules by everyone," "thorough checks," "pursuing higher safety in people, structure, and equipment through (1) enhancement of

training and (2) elimination of risks," "enhancement of meetings before work," and "eradication of four key disasters" as the five priority execution items. All employees are working together to eradicate serious train accidents and industrial accidents from both physical and non-physical perspectives.

## Safety Management System

### Operational system to ensure transportation safety

Based on the Railway Business Act, JR Central established the Safety Management Regulations in September 2006, which summarize the rules to be observed for ensuring transportation safety, with the aim of maintaining and improving safety levels. These regulations specify the operational system for ensuring transportation safety and the responsibilities of safety managers.

As the key safety manager, the President is the first to make important decisions regarding operational safety. In addition, general safety managers, operation managers, and crew guidance managers have been designated, and their respective responsibilities have been determined. The roles of head office managers in ensuring transportation safety have been clarified, and safety measures have been systematically established and promoted under a consistent system.

### Responsibility of key safety managers

Title	Responsibility
President	Decides important matters related to operational safety.
General safety manager	<ul style="list-style-type: none"> <li>Ensures that all employees are fully aware of the importance of safety and comply with laws and regulations to ensure transportation safety.</li> <li>Provides opinions to the President on necessary improvements to ensure transportation safety.</li> <li>Confirms the status of systems related to ensuring transportation safety as needed, and expresses opinions on improvements to head office managers who are in charge of the main operations related to ensuring transportation safety, as necessary.</li> <li>Supervises and manages other matters related to ensuring transportation safety.</li> </ul>
Operation manager	In order to ensure transportation safety, requests reports and gives instructions as necessary concerning the formulation of transportation plans, makes decisions on the operation of train crews and rolling stock, train operation control, training of train crews and maintenance and management of their qualifications.
Crew guidance manager	Trains crew members and maintains and manages their qualifications.

## Safety Promotion Committee

In order to have a focused deliberation of matters regarding the prevention of railway operation accidents, industrial accidents and disasters and design and promote effective measures, we have the Railway Safety Promotion Committee at the Head Office, which meets once every month, and sets up specialized committees

whenever necessary to intensively deliberate on the matters assigned to them. Furthermore, each Operations Division and Branch Office has a Safety Promotion Committee. We make sure all staff at field offices are aware of the matters decided by the Safety Promotion Committee through the Regional Safety Promotion Committee.



## Safety Audit

Safety audits are conducted at JR Central's business organization and affiliate companies to prevent train accidents and eliminate labor accidents. These audits are performed based on three basic policies: confirmation of the level of compliance with laws and regulations, etc., confirmation of measures in place to prevent train and industrial accidents, and prevention of the kind of train and labor accidents whose details have been investigated.

In audits, we verify the actual status of daily operations by checking sites where work is being carried out and the documents related to inspections, construction, etc., and share the results with the relevant departments and affiliated group companies. Through these audits, we are working to prevent violations of laws and regulations, the forgetting of past countermeasures in response to past accidents, and lapses of rules before an incident occurs.

## Initiatives for Human Resources to Ensure Safety

In order to support safety, it is important to continue to improve and refine facilities and to ensure the progress of work. However, as the basic premise, it is essential to develop human resources with high technical capabilities, a strong will, and the correct values to support safety. In developing human resources, we believe it is

important to observe our own rules ("discipline"), to maintain and improve quality and prevent accidents ("technical capability"), and to gain a "sense of unity" by collaborating and cooperating with related employees and by fulfilling personal responsibilities. Focusing on these issues, we are engaged in employee training and education.

### Technical skills training

We implement safety education and training for staff engaging in train operations and facility maintenance. We conduct education and training especially for staff engaging in train operations (such as drivers, conductors and directors) according to the content and time stipulated for each duty.

We introduce simulators, which can perform operations simulation training, etc. for emergencies, to field offices for drivers and conductors. We also conduct various training sessions using ground facilities, such as actual rolling stock and railway lines, so that employees on each system can swiftly and accurately respond to emergencies.



Training for recovery from derailment

### Employee training in preparation for contingencies

We train all employees to go beyond the call of duty in working together with staff, etc., to respond appropriately in ensuring our customers' safety should employees happen to be present when unforeseen circumstances occur while commuting or on a business trip.



Employee training in preparation for contingencies

### Emergency condition response training

We conduct various training every year for the purpose of enhancing the system for quick response to and restoration from accidents and strengthening cooperation among related lines and departments. We conducted practical training in FY2021, such as training for recovery from derailment, information communication training, and line facility restoration training sessions, based on the assumption of natural disasters and contingencies.

### Other training

The General Education Center offers education on specialized knowledge and skills for each function, and provides sessions for various qualifications and train conductors and drivers by using a variety of training facilities that can simulate various events that can occur in actual situations.



Training for Shinkansen conductors



Building Safe and Resilient Infrastructure

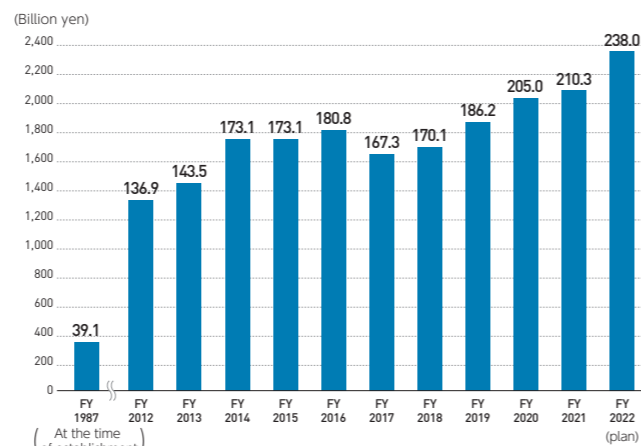
Capital Investment for Safety

JR has actively implemented capital investment related to safety since its establishment. In the 35 years up to FY2021, we have made safety-related investments totaling over 4.2 trillion yen, including safety measures such as updating the Automatic Train Control (ATC) and Centralized Traffic Control (CTC) on the Tokaido Shinkansen, introducing and updating CTC on conventional lines, and replacing the Automatic Train Stop (ATS) with ATS-PT, as well as disaster prevention measures such as seismic reinforcement, improvements in electrical equipment, replacement of rolling stock, and the introduction of efficient and effective inspection machines and systems.

In FY2022, we will continue to place top priority on ensuring safe and reliable transportation, which is the starting point of our railway business. In order to further reinforce structures along with earthquake countermeasures, JR Central will pursue derailment and deviation countermeasures for the Tokaido Shinkansen by implementing derailment prevention guards for the entire line. We will also proceed with the seismic reinforcement of platform sheds, the implementation of measures to prevent suspended ceilings at stations from falling in the event of an earthquake, rebuilding of the Nagoya rolling stock repair and inspection depot, and reinforcing the quake resistance of elevated track columns of conventional lines, etc. Furthermore, to enable customers to use the railways with greater peace of mind, we are advancing the installation of movable platform fences on Platform 20 at Shin-Osaka Station for Shinkansen and Platforms 5 and 6 (outbound Tokaido line) at Nagoya Station for conventional lines. As a result of these efforts, 80% of the total capital investment in

Tokaido Shinkansen, conventional lines, and affiliated businesses, or 238.0 billion yen, is planned as safety-related investment.

Trends in safety-related investment



Large-scale Renovation

Tokaido Shinkansen

Our civil engineering structures are sufficiently maintained through thorough daily inspections and repair. However, in future, it will be inevitable to replace many of the facilities due to aging. We received the approval of the Minister of Land, Infrastructure, Transport and Tourism for our allowance reserve plan for the large-scale renovation of Shinkansen infrastructure for the Tokaido Shinkansen based on the Nationwide Shinkansen Railway Development Act, and began building the reserve from 2002. Along with this, we have advanced our research on a new construction method, led by our Komaki Research Center. As a result of our R&D efforts, we developed a new construction method that allows us to significantly reduce the impact on train operations during construction work, and to considerably cut construction costs. With this method in place, JR Central began the renovation work in FY2013, ahead of the original schedule. In construction work, we begin with the implementation of measures to extend the life of structures by inhibiting the occurrence of cracking and other damage from aging (measures to inhibit aging damage) and, if necessary, overall

renovations such as the replacement of girders (overall renovation) are implemented.

The reserve of 350 billion yen accumulated by FY2012 has been appropriated at a rate of 35 billion yen each year from FY2013. We will continue to actively incorporate the results of our R&D efforts and make improvements, etc. to our construction methods, thereby bringing down related costs while steadily advancing construction work.



Large-scale Renovation

Railway Crossing Accident Countermeasures

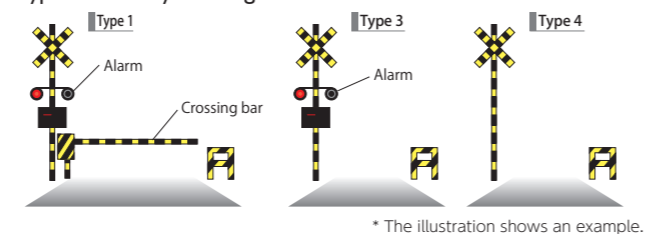
Conventional Lines

A particularly important factor for improving the safety of Conventional Lines is measures to prevent accidents at railway crossings. We are working to install crossing gates, crossing obstacle detection systems, etc., and are taking such drastic measures as eliminating crossings by, for example, elevating the tracks, for which we negotiate with local governments. As part of effort to prevent crossing accidents, we are also actively working on activities to raise awareness, including crossing accident prevention campaigns.

Improvements to crossing equipment

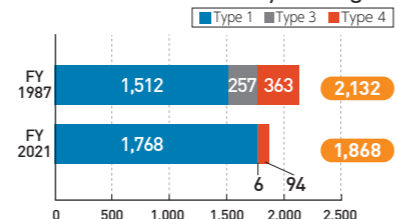
Crossings are classified by the equipment they have into three types: Type 1, which has crossing gates and alarms, Type 3, which has only alarms, and Type 4, which has neither gates nor alarms. Work to upgrade Type 3 and 4 crossings into Type 1 is under way, considering such factors as the amount of road traffic, the amount of railway traffic, and the situation surrounding the crossing.

Types of railway crossings



\* The illustration shows an example.

Historical number of railway crossings and crossing types



Crossing obstacle detection systems

For cases in which a vehicle obstructs a crossing, we install crossing obstacle detection systems that can detect stuck vehicles using infrared or laser beams, and systems that can issue an alert if the crossing gates do not close. If the crossing detects an abnormality, the related signals are made to indicate "stop," and trains are made to stop before they reach the crossing. Starting in FY2022, we have been introducing a high-performance laser sensor crossing obstacle detection system, which has better performance at detecting pedestrians, bicycles, wheelchairs, etc., at crossings where

train traffic is high and that experience high amounts of pedestrian, bicycle, and other traffic. We also have emergency buttons (crossing trouble alert systems), the pressing of which causes related signals to indicate "stop," thereby alerting train drivers of any abnormality occurring at a crossing.



High-performance crossing obstacle detection system (laser sensor type)

Prevention of collision with obstacles; derailment and deviation countermeasures

If any abnormality is detected by crossing obstacle detection systems, related signals indicate "stop." In addition, a "crossing ATS system" that complements the brakes manually operated by the driver has been introduced in phases since FY2021.

By FY2024, we will also install in phases a "crossing deviation prevention stopper," which will control the deviation of a train after it collides with an obstacle on a crossing and derails, thereby preventing it from colliding with another train going in the opposite direction, in the Series 313 trains.

Earthquake-Resistance Measures

Tokaido Shinkansen

Implementation of derailment and deviation countermeasures

For the Tokaido Shinkansen, we are promoting derailment and deviation countermeasures to prevent the expansion of damage from derailment caused by an earthquake. In addition to installing a "derailment prevention guard" to prevent vehicle derailment as much as possible, we are taking measures for civil engineering structures to make them function effectively. We expect to complete the implementation of these measures on the entire line by FY2028. "Deviation prevention

stoppers," which prevent a major derailment of rolling stock in the event of a derailment, have already been installed on all of the Shinkansen rolling stock running in our service area.



Derailment prevention guards

Structural Reinforcement

We have been implementing earthquake-resistance measures for various civil engineering structures and buildings so as to prevent Shinkansen services from being suspended for a long period of time in the event of an earthquake. Furthermore, starting in FY2021, we are implementing seismic reinforcement of platform sheds.

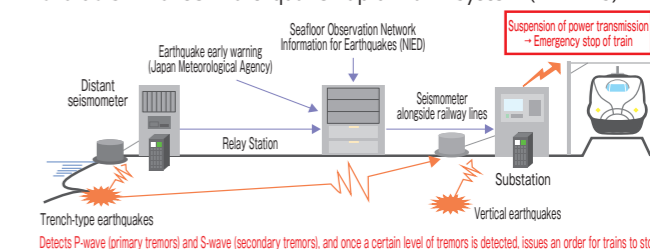
Measures taken and progress

Measures taken	Progress (as of the end of FY2021)
Elevated track columns, bridge piers, and embankments	Completed * Except for some areas under discussion (Elevated track columns: Approximately 19,600; Bridge piers: Approximately 900; Embankments: Approximately 9.4 km)
Bridge railing (fall prevention)	Under way (completed 2,172 beams out of 2,215 target beams)
Station buildings / station ceilings / platform sheds	Station buildings: Completed * except for some areas under discussion Station ceilings: Under way (completed at eight out of a total of 17 stations) Platform sheds: Under way (at 16 stations excluding Shinagawa)
Rolling stock workshops, etc.	Completed (Hamamatsu Workshop, buildings at rolling stock depots)

Initiatives to stop trains quickly

JR Central adopts an earthquake disaster prevention system\* that detects tremors, automatically stops power transmission, and issues orders to moving trains to make an emergency stop. We have also made improvements to the "Earthquake Brake" on rolling stock in an effort to reduce the stopping distance at the time of an earthquake. For the new model Shinkansen rolling stock N700S, which we launched in July 2020, we made improvements to the ATC and the brake system to further reduce the stopping distance by roughly 5% compared to the stopping distance of the N700A (3rd edition).

Tokaido Shinkansen Earthquake Rapid Alarm System (TERRA-S)



\*After introducing the "Urgent Earthquake Detection and Alarm System (UrEDAS)" in 1992 ahead of other companies, we continued to further accelerate the speed of the alarm by introducing the "Tokaido Shinkansen Earthquake Rapid Alarm System (TERRA-S)" in 2005 and started utilizing information from the Seafloor Observation Network for Earthquakes and Tsunamis in April 2019.

Conventional Lines

Reinforcement of structures

Information from the aforementioned earthquake disaster prevention system will be used for conventional lines to detect initial weak tremors in case of an earthquake, and provide a warning to the driver's cabin of trains traveling in segments that are likely to be impacted significantly by the earthquake, instructing the driver who receives the warning to apply the brakes immediately. Furthermore, we have been strengthening the functions of seismometers alongside railway lines since FY2016. We will be able to issue warnings to trains more quickly than before.

Initiatives to stop trains quickly

In order to also minimize the impact of earthquakes on Conventional Lines, we are implementing earthquake-resistance measures on various civil engineering structures and buildings. Furthermore, as with Shinkansen, starting in FY2021, we are implementing the seismic reinforcement of platform sheds.

Measures taken and progress

Measures taken	Progress (as of the end of FY2021)
Elevated track columns, and bridge piers*	Elevated track columns: Under way (completed 5,078 columns previously targeted by the end of FY2017. Since FY2019, 3,338 have been newly added and 852 have been completed for the purpose of further early recovery in the event of a disaster.) Bridge piers: Completed (4 target piers)
Bridge railing* (fall prevention)	Completed (1,985 target beams)
Station buildings / station ceilings / platform sheds	Station buildings: Under way (completed for stations used by at least 5,000 passengers per day, excluding some areas under discussion) Station ceilings: Under way (completed 20 stations of the 30 target stations used by at least 10,000 passengers per day) Platform sheds: Under way (completed one station of the 20 stations used by at least 10,000 passengers per day, excluding stations requiring no reinforcement and sheds constructed with rails)
Rolling stock workshops, etc.	Nagoya Workshop: Completed Nagoya rolling stock section: Rebuilding of the repair and inspection depot under way

\*Earthquake-resistance reinforcements under way in sections including those where there are at least 10 departures per peak hour and where a long, strong earthquake vibration is expected in the case of the Tokai Earthquake



Building Safe and Resilient Infrastructure

Response to Other Natural Disasters

Tokaido Shinkansen Conventional Lines

In addition to earthquakes, the prevention of accidents caused by natural disasters such as tsunamis, heavy rain, typhoons and snowfall is one of the important pillars of our safety measures, and we are implementing various measures.

Tsunami countermeasures

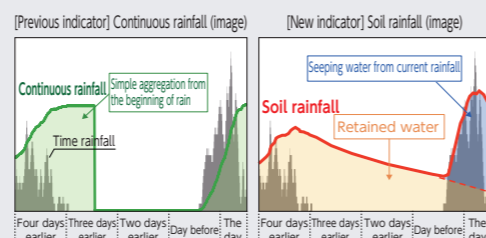
JR Central defines the Conventional Line segments that a tsunami is expected to reach as a "tsunami hazard expected area," based on the tsunami hazard map of each municipality. When a tsunami is expected, first of all, we make arrangements to ensure that no trains enter the "tsunami hazard expected area." For trains already in the area, we move them out of the area or guide passengers to a safe place. In addition, a "tsunami warning sign" has been installed in the area to indicate the direction of evacuation. We also take measures to evacuate quickly by displaying the evacuation route to the nearest evacuation center on tablet devices for conventional line train drivers distributed to train crews. Furthermore, to ensure that these measures can be taken, we make sure that staff are aware of them and conduct evacuation training using actual rolling stock in cooperation with local municipalities.



Evacuation route display on tablet terminal for conventional line train driver

Rain countermeasures

We are taking measures such as protecting the slopes of embankments and cut sections with concrete and other materials, laying drainage pipes to promote drainage, and installing earth and sand stoppers to prevent the inflow of earth and sand. Furthermore, rain gauges are installed along railway lines, and when the amount of rainfall exceeds the regulation value, a warning is automatically issued to the control center, train station, etc., and operation regulations such as suppressing or slowing down trains are carried out. Furthermore, in June 2020, we introduced an operation regulation using rainfall radars, which can finely capture "soil rainfall," a superior indicator for grasping the extent of sediment disaster risk, and localized heavy downpour, in all sections of Conventional Lines, thereby securing a higher level of safety.



Operation regulation using "soil rainfall"

Flooding countermeasures

For the Tokaido Shinkansen, we are working to relocate or elevate signal equipment rooms and power equipment, which are important facilities, install anti-flooding doors, etc., and take measures to maintain the necessary vehicle inspection functions to ensure the stable operation of trains against flooding anticipated for railway facilities. In addition, we have plans to evacuate trains in train-parking areas exposed to risk of being flooded, and evacuate trains according to this plan if the risk of damage arises.



Anti-flooding doors (image)

Wind protection

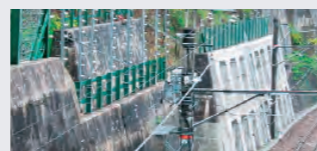
Anemometers are installed in areas where wind is concentrated, such as on mountains and bridges, or where gusts are expected to occur. When the wind velocity exceeds a certain value, an alarm is automatically issued to the control center, train station, etc., and as in the case of rain, operation regulations such as suppressing or slowing down trains are carried out. In addition, due to geographical and other conditions, some anemometers have an additional function of automatically displaying a stop signal when the wind exceeds the standard.



Anemometer

Measures against rockslides and avalanches

For Conventional Line routes where there is a risk of falling rocks or avalanches, we have installed falling rock-retaining walls, rock cover works, and avalanche retaining walls as protective equipment. In addition, if a rock fall or an avalanche is detected by a detector, the train is stopped to prevent accidents.



Falling rock retaining walls and alarm devices

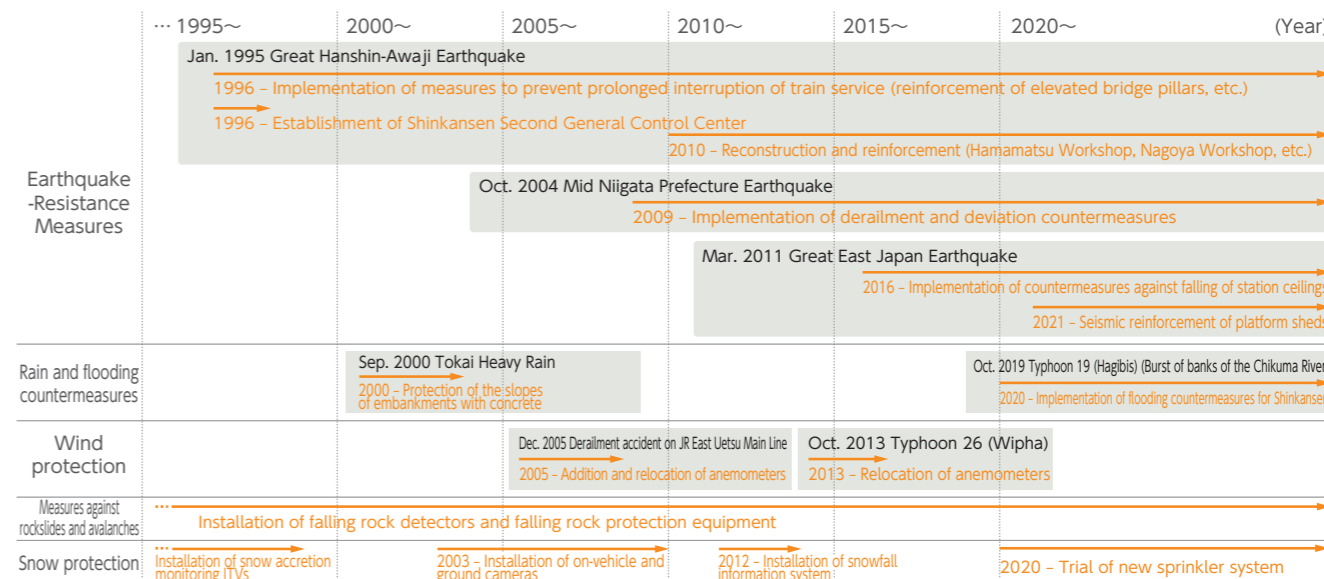
Snow protection

When snow falls or lies, Tokaido Shinkansen trains may operate at a lower speed to prevent the equipment below train floors from being damaged, hit by stones of ballast being lifted up when a mass of snow, formed under the train floor by drifts caused by the train's movement, drops onto the tracks. As a countermeasure, we use rotary brush vehicles to remove snow before the first trains. In the particularly snowy Sekigahara section, we have installed sprinklers to moisten snow to prevent drifts from being lifted up. For N700S, measures on the train side to prevent snow from sticking to train bodies have been enhanced, such as changing the shape of the bogie cover. Furthermore, we use ground-installed cameras to monitor the situation of snow sticking to train bogies and ensure trains operate at an appropriate speed. We have also installed at stations a high-pressure washing machine to quickly remove snow stuck to trains.



Preventing snow drifts with sprinklers

Trends in measures against disasters (extracts)

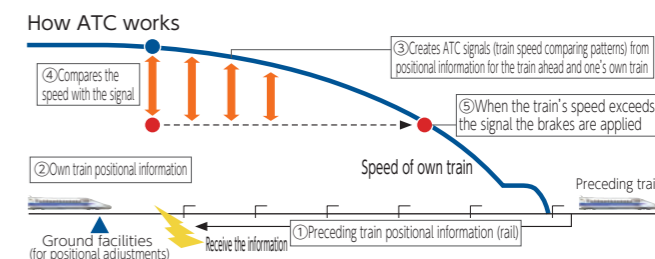


Operation Management and Safety Measures

Tokaido Shinkansen

The principle of Crash Avoidance

The biggest feature of the Tokaido Shinkansen and other Japanese high-speed railway systems is the introduction of an operation control system based on the principle of Crash Avoidance. This principle has been derived to prevent the possibility of a collision by using (1) dedicated tracks for high speed passenger rail service, which have no grade crossings, and (2) an Automatic Train Control (ATC) system, which automatically controls the speed limit of high speed trains and prevents collisions from happening.



Shinkansen General Control Center / Operational control systems

The safe and reliable transportation of the Shinkansen is supported by the Shinkansen General Control Center in Tokyo, where directors work in close collaboration using various systems, such as Computer Aided Traffic Control (COMTRAC\*), to accurately grasp a significant amount of information, including the operational status of trains and the utilization status of facilities, control overall transportation services, and manage their safety.

established in Osaka jointly by JR West, and is equipped with the same functions as the Shinkansen General Control Center in Tokyo so that it can serve as an alternative control center should Tokyo's General Control Center become non-operational due to a disaster. Thus, we have strengthened our crisis management in preparation for emergencies.

\*COMTRAC (COMputer-aided TRAffic Control): A system that controls train routes, manages train operations, and operates and manages the allocation of staff (drivers and conductors) and rolling stock. Based on input data prescribing the operational conditions for each train (such as station departure and arrival times, platforms, and order of movement) in the computer, the system can monitor the status of all trains in operation at all times.

The Shinkansen Multiple Inspection Train (Dr. Yellow)

We have also introduced the "Shinkansen Multiple Inspection Train (Dr. Yellow)" to test electrical facilities such as overhead wires and ground facilities such as tracks. This rolling stock, which is based on the Series 700, aids safe and reliable transportation by efficiently conducting high precision inspections at speeds of 270 km/h.



Dr. Yellow

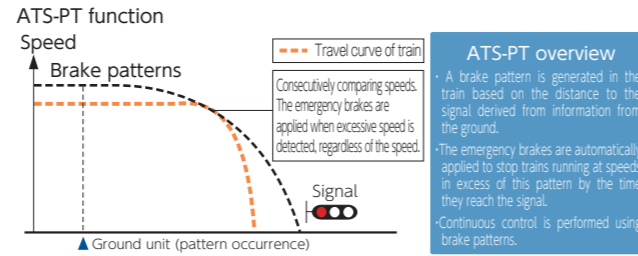


Building Safe and Resilient Infrastructure

Conventional Lines

ATS-PT (Automatic Train Stop)

ATS-PT continuously checks the speed for conventional lines according to the distance between the train and the signal, the curve, and the points. It ensures safety by automatically applying emergency brakes when there is a risk that the train will exceed the safe speed. (We have completed the introduction of ATS-PT in all of our conventional lines.)



Tokai General Control Center (Nagoya) / Shizuoka General Control Center / Operation management systems

The operation of our conventional lines is managed by the Tokai General Control Center (in Nagoya) and the Shizuoka General Control Center. In these Control Centers, directors work in close collaboration using various systems, such as CTC (Centralized Traffic Control),\* to accurately grasp a significant

amount of information, including the operational status of trains and the utilization status of facilities, control overall transportation services, and manage their safety to support safe and reliable transportation on conventional lines.

\*CTC: The CTC system not only remotely and integrally controls station signaling equipment, etc. in order to efficiently manage train operations, but also has the function of conducting real-time monitoring of the operational status of trains. Multiple Inspection Train and Track Inspection Train (Dr. Tokai)

Multiple Inspection Train and Track Inspection Train (Dr. Tokai)

We efficiently and thoroughly manage and maintain railway tracks and electrical facilities on conventional lines using the "Multiple Inspection Train (Dr. Tokai)."



Cyber security measures

In terms of systems, we are also working to build a safe and resilient infrastructure. We are taking necessary measures, including achieving the redundancy of facilities and securing backups, to ensure that the provision of services to customers and the execution of internal operations will not be disrupted due to earthquakes and other natural disasters and system failures. For example, the Shinkansen Operation Management System has an alternative center in Osaka in case the system center in Tokyo is damaged, and the Express Reservation System comprises multiple computers to ensure sufficient processing capacity even if one computer fails. In addition, we regularly conduct drills to prepare for natural disasters and system failures.

Furthermore, we have taken all possible measures to ensure system security against cyber attacks, which have been increasing in recent years. For example, for systems that require absolute safety, such as those related to train operation, we have established an independent system structure that eliminates any contact with the outside world, thereby avoiding external attacks.



Initiatives for Ensuring the Safety of Employees

Ensuring the safety of employees is also an important issue. At JR Central, we have established internal regulations based on the Industrial Safety and Health Act and put in place a safety and health management system. At our business organizations, etc., safety management officers and health management officers are appointed, systems are in place to ensure safety at work and to manage workplace hygiene, and careful safety and health examinations are conducted as part of our active efforts to prevent industrial accidents and improve the work environment. In addition, "safety audits" are performed to confirm the level of compliance with laws and regulations, etc., confirm systems in place to prevent industrial accidents that have occurred in the past, and confirm the state of implementation of accident prevention measures.

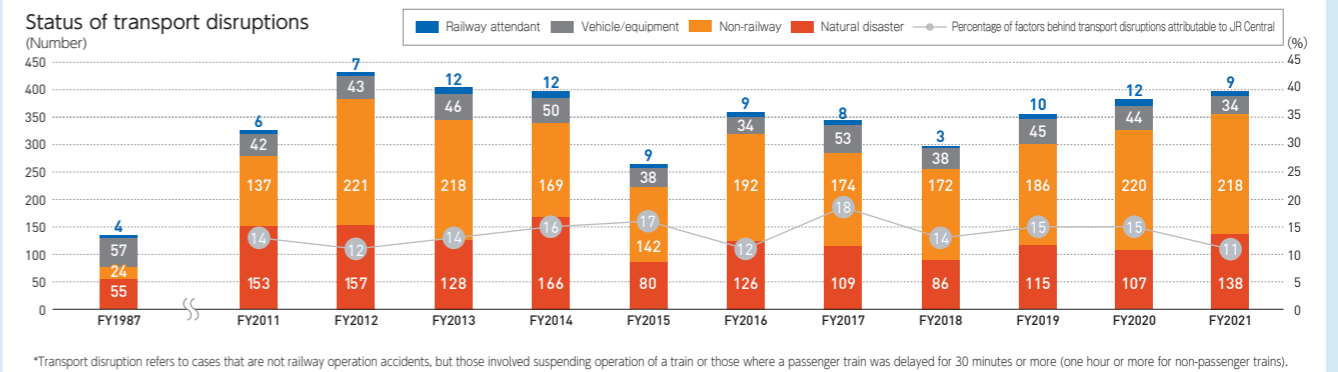
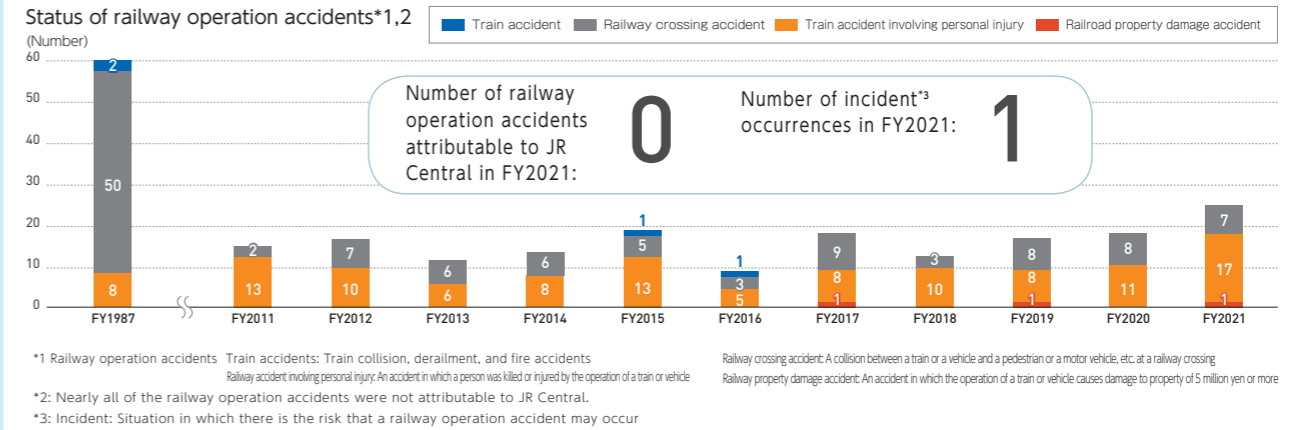
We are also promoting safety and health education throughout the Company. In addition to conducting the induction course on safety and health for all new employees at the General Education Center, we also provide classroom education on laws and regulations at the General Education Center and at each site in accordance with the nature, role and level of work, as well as safety and health education through necessary practical training, including the use of equipment and tools and simulations of industrial accidents.

Regarding people, structure, and equipment, the three pillars that support safety, we have been promoting various activities, such as the "Improve Safety!" campaign to make our work safer by identifying existing weaknesses and risks

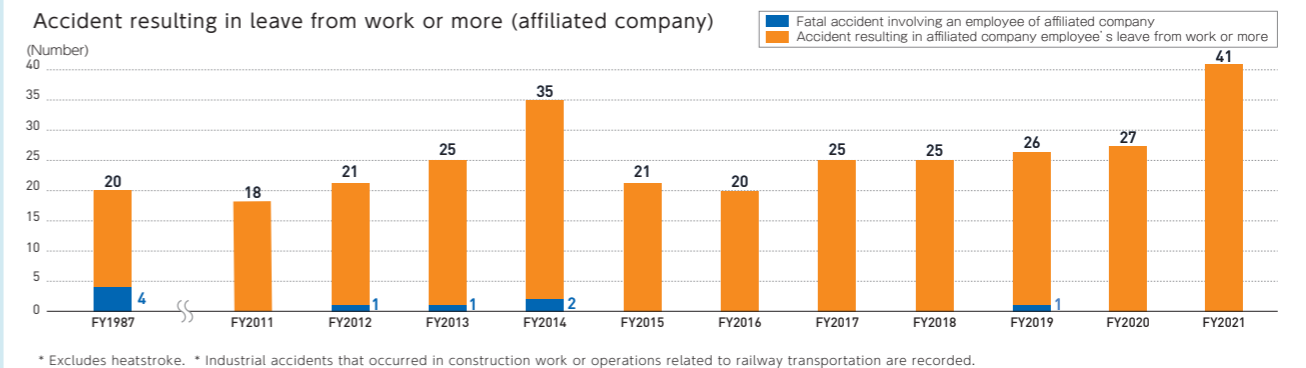
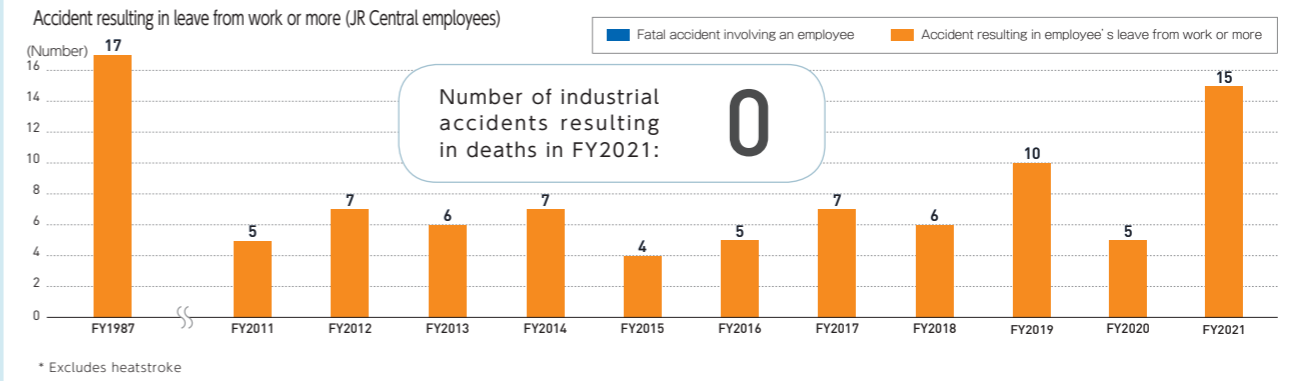
and making improvements to them, and initiatives to raise employees' awareness for the prevention of train accidents and industrial accidents through the use of essays for the prevention of train accidents and industrial accidents and soliciting illustrations, photographs, and slogans related to accident prevention.



Safety-Related Data



Status of industrial accidents (JR Central and its affiliated companies)





Creating "Social Value" —Social—

The Chuo Shinkansen Project Using the Superconducting Maglev System  
~Drastic enhancement of main transportation artery~



Operating speed **500 km/h**  
Tokyo (Shinagawa) - Nagoya Tokyo (Shinagawa) - Osaka  
Travel time (maximum) **40 minutes 67 minutes**

The Chuo Shinkansen Project using the Superconducting Maglev System is a project to duplicate our artery transportation system linking Tokyo, Nagoya and Osaka, which is the lifeline of our business, and drastically prepare for risks, such as aging in the future of and large-scale disasters affecting the Tokaido Shinkansen. This project will allow us to further reduce management risk and thus stabilize our management base and to continue to carry out our founding mission of undertaking high-speed, large-capacity passenger transport between Tokyo, Nagoya and Osaka. This project will also dramatically improve convenience by greatly reducing travel time due to its high-speed operations, bring significant benefits to and potential for development of the Japanese economy and society, and ensure the long-term interests of shareholders and all other stakeholders over a long period of time.

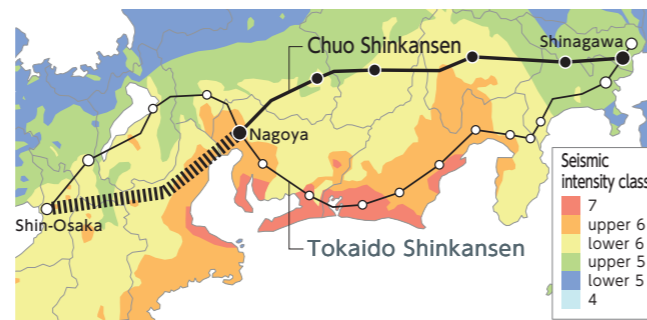
Outline and Significance of the Chuo Shinkansen

We are promoting the Chuo Shinkansen Project using the Superconducting Maglev System based on the Nationwide Shinkansen Railway Development Act (hereinafter, "the Act") to continually carry out our mission of operating a high-speed railway linking the Tokyo Metropolitan area and the Chuo and Kansai regions (from Tokyo through Nagoya to Osaka), which is the lifeline of our business, and to ensure the future foundation of the company.

The Tokaido Shinkansen has been in operation for more than half a century, and while we have been carrying out large-scale renovation, there is the risk of suspension of services due to major facility replacement caused by future aging. Furthermore, Japan is prone to earthquakes, and although we have taken earthquake resistance measures for the Tokaido Shinkansen, there is the risk of potential major disasters, including the undeniable possibility of long-term disruption to Japan's main transportation artery due to a possible major earthquake. Therefore, as a drastic measure to prepare for these future management risks, we decided to complete the Chuo Shinkansen as quickly as possible, under the assumption that we bear the cost of its construction, utilizing the Superconducting Maglev System

that we have developed. The Chuo Shinkansen will turn Japan's main transportation artery into a dual system, and JR Central will operate it in an integrated manner along with the Tokaido Shinkansen.

Distribution map of the estimated greatest seismic intensity of a Nankai Trough Large Earthquake



Source: Prepared by JR Central based on "Countermeasure against a Nankai Trough Large Earthquake (Final Report)" (May 2013)

Chuo Shinkansen Project as a national project

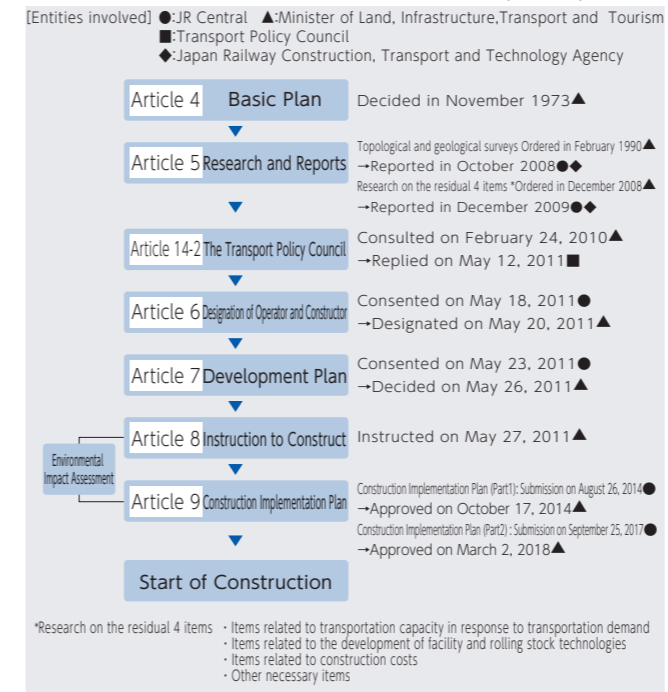
The Chuo Shinkansen is being constructed in accordance with the Act, which is a legal system for developing infrastructure essential to the nation in order to contribute to the development of the national economy, the expansion of the area of Japanese people's lives, and the development of local communities. Based on the Act, we received designation as the operator and an order for construction from the Minister of Land, Infrastructure, Transport and Tourism in May 2011, and then the construction implementation plan was approved by the Minister of Land, Infrastructure, Transport and Tourism in October 2014. In the meantime, we have conducted environmental assessment procedures and published the final environmental impact assessment report between Tokyo and Nagoya, which is promoted as the first stage.

On the other hand, in order to confirm that the principles of a

privately owned company, such as freedom of management and autonomy of capital investment, would not be hindered by application of the Act, we referred fundamental clauses regarding application of the Act to the Ministry of Land, Infrastructure, Transport and Tourism (hereinafter, "MLIT") and received a reply in January 2008 indicating that those principles would not be hindered.

In order to take steady steps towards the successful completion of this project, we will maintain sound management and stable dividends, sufficiently examine costs and demonstrate our flexibility, and make necessary investments to ensure safe and reliable transportation and to enhance the competitiveness of the Tokaido Shinkansen and conventional lines. We will first realize the project between Tokyo and Nagoya, where we have received approval for the construction plan, and strive to further extend the project to Osaka.

Flow of work based on the Nationwide Shinkansen Railway Development Act



Content of Development Plan

Construction line	Chuo Shinkansen	
Section	Tokyo - Osaka City	
Technology used for running	Superconducting magnetic levitation technology	
Maximum design speed	505 km/h	
Approximate amount necessary for the construction (including rolling stock costs)	9,030 billion yen	
Other necessary items	Main areas passed through	Kofu City area, south-central Akaishi Mountains (Southern Alps), Nagoya City area, Nara City area

\*The approximate amount necessary for the construction does not include interest.

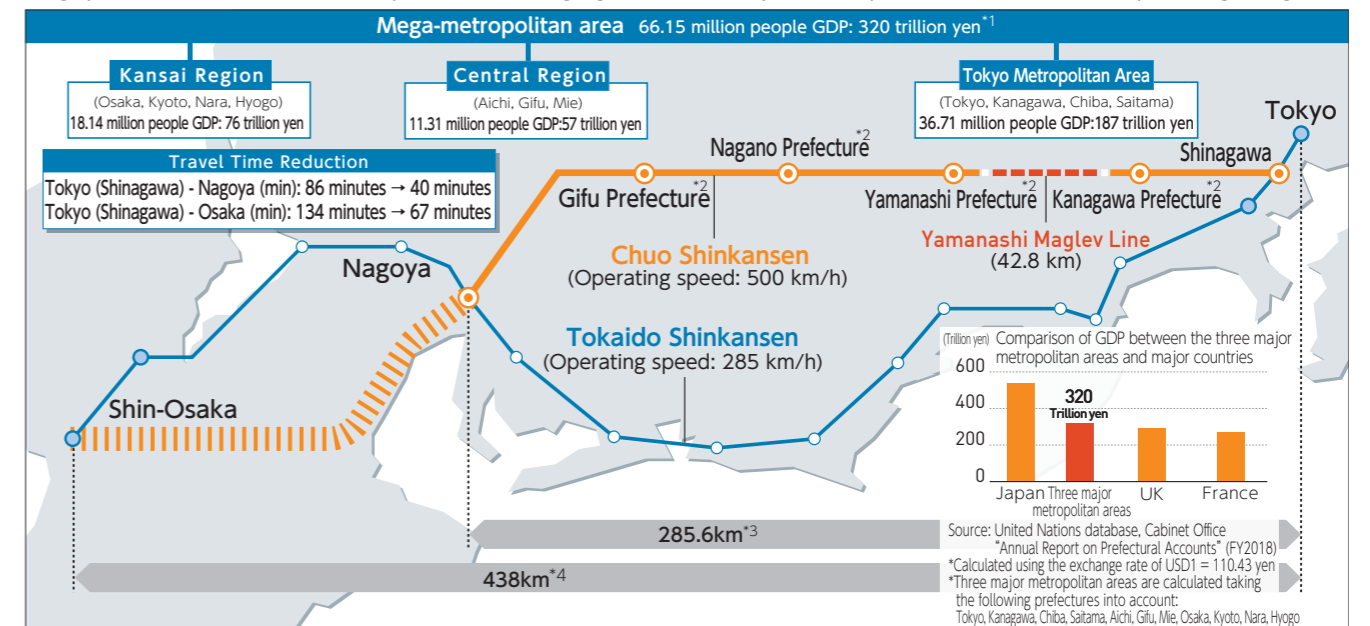
Outline of the Construction Implementation Plan (Part2)of the Chuo Shinkansen section between Shinagawa and Nagoya

Section	Between Shinagawa and Nagoya
Station Location	Shinagawa Station, Kanagawa Prefecture Station (tentative name), Yamanashi Prefecture Station (tentative name), Nagano Prefecture Station (tentative name), Gifu Prefecture Station (tentative name), Nagoya Station
Line extension	285.6km
Construction costs	4,853.6 billion yen [Total construction costs of 5,523.5 billion yen* (Includes rolling stock costs. Excludes the construction costs for the existing Yamanashi Maglev Line.)]
Expected completion year	2027

\*In the "Notice Concerning Total Construction Costs for the Chuo Shinkansen Section between Shinagawa and Nagoya" (April 2021), we announced that the total construction costs are expected to increase to 7.04 trillion yen.

New Value Provided by the Chuo Shinkansen

The realization of the Chuo Shinkansen using the Superconducting Maglev System will contribute to the vitalization of Japan's economic and social activities, turning Japan's main transportation artery between Tokyo, Nagoya and Osaka into a dual system and merging the three major metropolitan areas into a "Super Mega Region."



\*1 Population: Ministry of Internal Affairs and Communications "Population, Demographics and Number of Households Derived from Basic Resident Registration" (January 1, 2022). GDP: Cabinet Office "Annual Report on Prefectural Accounts" (FY2018) \*2 Intermediate station names are tentative. \*3 The Construction Implementation Plan (Part2) of the Chuo Shinkansen section between Shinagawa and Nagoya (March 2018) \*4 The Survey Report of the Chuo Shinkansen section between Tokyo and Osaka (December 2009)

We will continue to fulfill our mission into the future by reducing management risks and stabilizing our management base by completing the Chuo Shinkansen Project. Furthermore, by adopting the Superconducting Maglev System for the Chuo Shinkansen, we can expect a drastic reduction in travel time between cities, and

the three major metropolitan areas will be transformed into one mega-metropolitan area, the so-called "Super Mega Region," where the interaction of people will be highly activated and economic and social activities will be energized, which is expected to have a significant positive effect on our business.



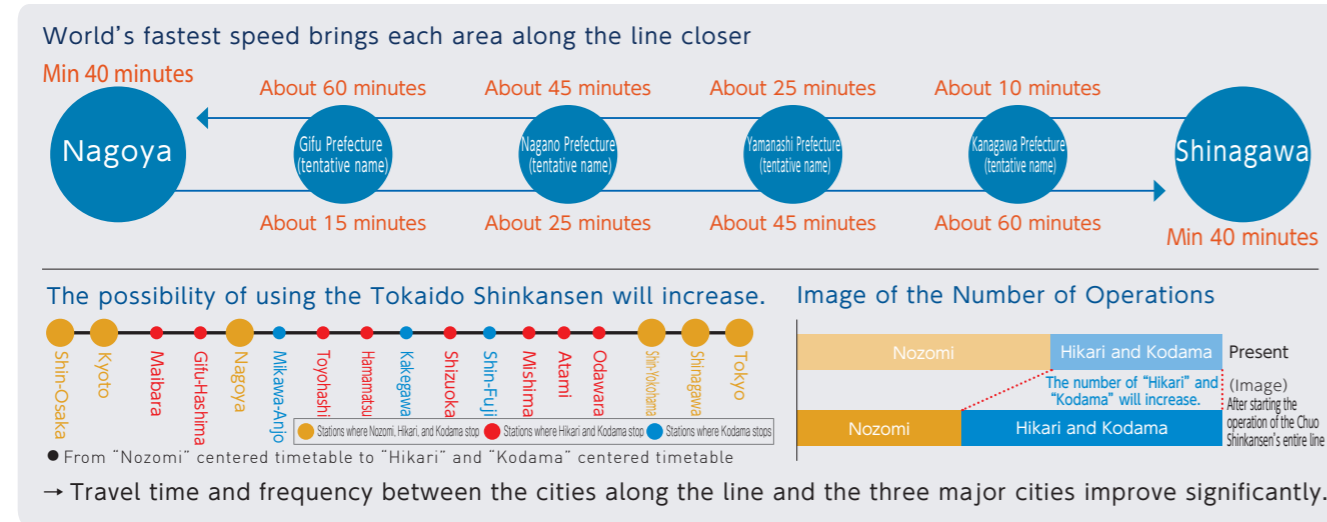
① The Chuo Shinkansen Project Using the Superconducting Maglev System ~Drastic enhancement of main transportation artery~

① Creation of new demand

In the competition between the Shinkansen and air travel, the shorter the travel time of the Shinkansen, the greater its share. Demand is therefore expected to shift from air travel to the Chuo Shinkansen due to the time reduction effect of the Superconducting Maglev System. In addition, the dramatic time reduction will greatly stimulate the flow between metropolitan areas, which is highly expected to generate new demand.

Furthermore, in addition to the anticipated new use of

intermediate stations in Kanagawa, Yamanashi, Nagano and Gifu Prefectures, there is a possibility of significantly improving travel time and frequency between cities along the line and the three major cities and increasing the flow of people if there is room to increase the number of operations and the number of stops for the "Hikari" and "Kodama" by taking advantage of the extra transportation capacity caused by the transfer of "Nozomi" passengers to the Chuo Shinkansen.



② Broad ripple effects on the economy and society

Due to the overwhelming time reduction effect of the Superconducting Maglev System, Tokyo - Nagoya - Osaka will be connected in about one hour, and the three major metropolitan areas will become a "Super Mega Region" with a total population of about 66 million, or over half of Japan's total population.

This "Super Mega Region" is expected to become the core driving new growth for Japan, which is experiencing a declining population, by broadening the scope of activities and thereby

significantly changing lifestyles, such as the way people do business and spend their leisure time, as well as expanding various possibilities. The final report of the "Super Mega Region Concept Study Group" established by MLIT titled "Creating a Super Mega Region to Overcome a Declining Population: Creating New Value through Liberation from Time and Place" (May 2019) presents the following as "impacts of the Chuo Shinkansen."

From the Final Report of the "Super Mega Region Concept Study Group" (May 2019)

- Opportunities for face-to-face interaction between people will increase, and the time for interaction will expand, which will lead to opportunities to create new innovation.
- It is expected to bring about changes in business styles and lifestyles by liberating people from "time" and "place," which have been factors that restrict working and living styles, and providing a variety of options.
- Due to the integration of the three major metropolitan areas, the entire Super Mega Region will create new value and growth industries, which will increase the attractiveness of the region in inviting people and investment from overseas.
- By organically connecting the Chuo Shinkansen, Shinkansen and expressway networks, it is expected that the multiplicity and substitutability of the high-speed transportation network, which forms the framework of the national land policy, will be enhanced, and a sustainable flow of people and goods will be secured.
- It is expected that new regional revitalization will begin in the areas around the intermediate stations located between the three major metropolitan areas and that the effects of the Super Mega Region will spread widely beyond the areas along the Chuo Shinkansen.

\*Extract and summary by JR Central of the final report of the "Super Mega Region Concept Study Group" established by MLIT (May 2019)

Furthermore, according to the "National Land Policy Simulation Model" compiled by MLIT, the productivity improvement effects of the formation of the Super Mega Region as a result of the opening of the Chuo Shinkansen are estimated to be 3.5 trillion yen per year for the opening of the line up to Nagoya and 6.5 trillion yen per year for the opening of the line up to Osaka.

In this way, the dramatic reduction in travel time brought about by the opening of the Chuo Shinkansen will have a major impact on the entire country and will lead to the creation of new value and the sustainable growth of Japan as a whole.

\*National Spatial Planning and Regional Policy Bureau of MLIT "FY2017 Survey Report on the Development of National Land Policy Simulation Model" (July 2018)

▶ Promotion of Construction

We are steadily carrying out the planned construction work in areas along the Shinjwa-Nagoya segment for which we obtained approval of the Construction Implementation Plan, placing priority on safety at work, environmental conservation, and cooperation with local communities and examining costs sufficiently. Capital investments have totaled 1.2969 trillion yen in the period from FY2014, when we obtained approval of the Construction Implementation Plan, to FY2021. The total length of construction areas that have already been contracted out reached about 90% of the Shinjwa-Nagoya segment, including the Yamanashi Maglev Line, totaling about 286 km, at the end of September 2022.

In the Southern Alps Tunnel Shizuoka construction area, we have yet to convince Shizuoka prefecture and other parties, due to which we have not been able to begin tunnel drilling work. In such circumstances, with regard to impacts on water resources of the Oi River, we studied, in

response to the "Interim Report on Oi River Water Resources" compiled in December last year by "Linear Chuo Shinkansen Shizuoka Construction Area Council of Experts" of the Ministry of Land, Infrastructure, Transport and Tourism, a measure to send water back to the Oi River in the amount equivalent to water that leaks inside the tunnels and exceptionally flows outside the prefecture for a specified period while the construction work is underway and have provided explanations to the Shizuoka prefectural government and other parties since April. In addition, we began in July an effort to invite opinions and questions so that we can use such input in future efforts regarding water resources of the Oi River and explanations to the local communities. Furthermore, discussions have been underway since June at the expert council on ways to conserve the environment of the Southern Alps, including ecosystems. We will remain committed to take measures in a sincere manner to win understanding and cooperation of local communities.

Progress of effort to acquire land (at end of September 2022) **Approx. 60%**



Land acquisition rate\*2 = number of landowners from whom land is acquired\*3 / total number of landowners

\*1 The percentage figure is rounded down to be shown in increments of 5 percentage points.  
\*2 The figure may decrease due to a change in the number of landowners as a result of changes in the scope of land being acquired, inheritance, etc.  
\*3 The number of landowners from whom land is acquired represents the number of landowners with whom a contract has been signed.

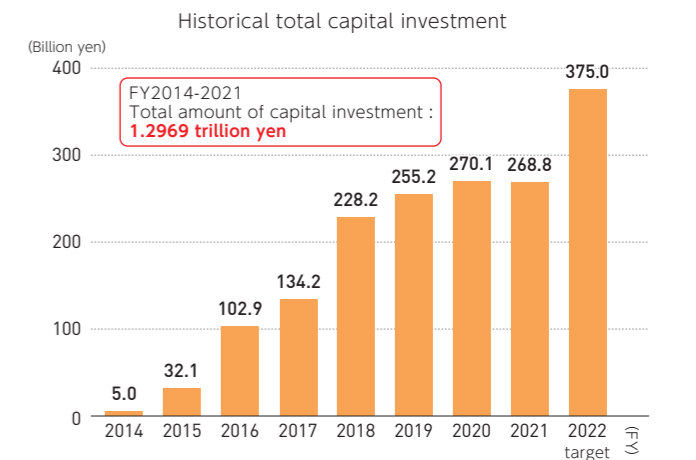
Progress of finding entities that use excavated soil (at end of September 2022) **Approx. 75%**



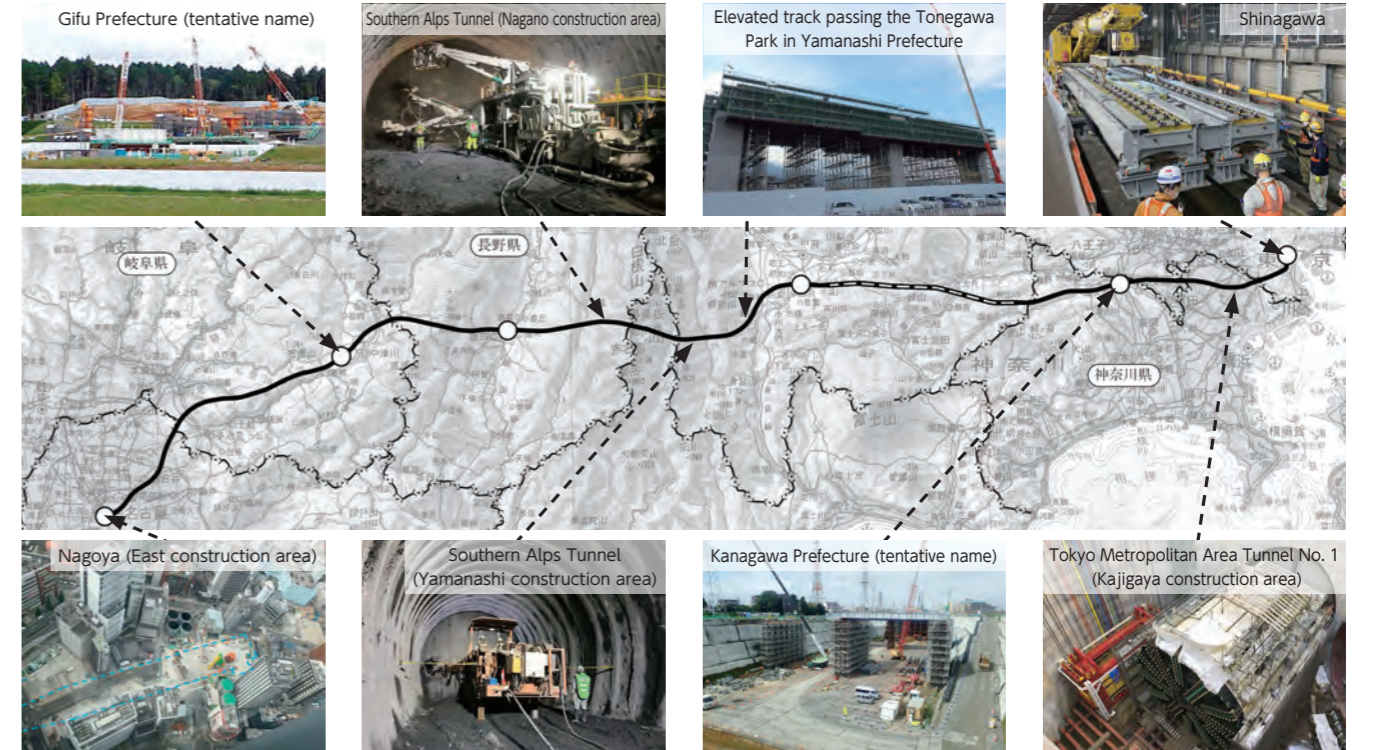
Progress of finding entities that use excavated soil\*5: approx. 75% of the amount of excavated soil\*6. In addition to the entities already enlisted to use about 75% of excavated soil, we are in negotiations with multiple candidates regarding acceptance of excavated soil.

\*4 The percentage figure is rounded down to be shown in increments of 5 percentage points.  
\*5 The entities already enlisted to use excavated soil are entities, etc. with whom we have signed agreements, etc. on the acceptance of excavated soil.  
\*6 The amount of excavated soil is the target figure as of August 2014, the month in which we published a corrected environmental impact assessment report.

Total amount of capital investment



Locations of construction work (at end of September 2022)



\*This map is copied from a Japanese map (with a scale of 1 to 1,000,000) published by the Geographical Survey Institute with their authorization. (Authorization number: H25 Jo Fuku, 310)  
\*See our website for the latest information on the progress of the construction work.

▶ Publicly released materials regarding the Chuo Shinkansen Project (The progress of construction work in each prefecture can be viewed in "Construction safety, environmental preservation, and cooperation with local communities.") <https://company.jr-central.co.jp/chuoshinkansen/>  
▶ Summary of Consolidated Financial Report <https://company.jr-central.co.jp/ir/brief-announcement/> ▶ Investor Meeting Presentation Handout <https://company.jr-central.co.jp/ir/investor-meeting/>



④ The Chuo Shinkansen Project Using the Superconducting Maglev System ~Drastic enhancement of main transportation artery~

➤ Implementation of Environmentally Conscious Construction

Construction of the Chuo Shinkansen is proceeding, taking the surrounding environment into consideration. The main environmental conservation measures being implemented are as follows.

**Atmospheric environment**  
(air quality, noise and vibration)

The use of low-noise and low-vibration construction machinery with low exhaust emissions reduces the generation of nitrogen dioxide and suspended particulate matter, as well as noise and vibration.

**Water environment**  
(water quality, water resources and groundwater)

Wastewater and turbid water generated by construction work are discharged into public waters after measures are taken, such as treatment and neutralization to reduce turbidity as necessary, by means of turbid water treatment facilities, in accordance with wastewater standards, etc., based on laws and regulations, thereby reducing the impact on public waters.

**Animals, plants, and ecosystems**

In the detailed planning of construction, we avoid places where important plant species grow as far as possible, and if construction in such places is unavoidable, we compensate for the influence on the growing environment of important species by transplanting and seeding in places with similar environments.

**Reducing the impact of vehicles used to transport materials and machinery**

We reduce the generation of dust by cleaning and watering the entrances, exits and surrounding roads for vehicles used to transport materials and machinery and by cleaning their tires. In addition, we reduce the number of vehicles used in construction work by using freight trains to transport excavated soil in some locations.

➤ Overview and Development History of Superconducting Maglev System Technology

The Superconducting Maglev System is an advanced technology unique to Japan. Instead of using the friction between wheels and rails like conventional railways, it runs in a non-contact manner due to the magnetic force between the Superconducting Magnet mounted on the vehicle and the coils mounted on the ground. In addition, to obtain the strong power of the magnets, the technology uses a superconducting magnet utilizing "the 'superconductivity' phenomenon, whereby electrical resistance vanishes when a particular substance is brought below a certain temperature," which enables the vehicle to levitate about 10 cm, making it possible to operate safely in earthquake-prone Japan. These features make it possible to travel at an ultra high speed of 500 km/h in a stable manner, unlike conventional railways.

The level of the Superconducting Maglev System Technology has been evaluated in multiple stages since running tests began on the Yamanashi Maglev Line in April 1997. In July 2009, the Superconducting Magnetic Levitation Technological Practicality Evaluation Committee of MLIT (hereinafter, "Evaluation Committee") confirmed that the Superconducting Maglev System Technology had already achieved levels sufficient for commercial service, and the Minister of Land, Infrastructure, Transport and Tourism established technological standards for the Superconducting Maglev in December 2011. Since then, we have continued running tests, and in February 2017, the Evaluation Committee confirmed its evaluation that the technology development required for commercial lines was completed.

We will continue to make efforts to further brush up Superconducting Maglev System Technology, including improving comfort and enhancing the efficiency of maintenance. We will also conduct running tests using the Series L0 improved version and develop commercial vehicle specifications, as well as working to reduce costs for the construction, operation and maintenance of commercial lines.

Progress on the Superconducting Maglev System Technology

Jun-90	JR Central applies to the Minister of Transport for approval of the construction plan of the Yamanashi Maglev Line and gains approval.
Apr-97	Running tests start on the Yamanashi Maglev Line.
Mar-00	The Superconducting Magnetic Levitation Technological Practicality Evaluation Committee of the Ministry of Transport (hereafter, the "Evaluation Committee") acknowledges that "there is potential from a technological standpoint that the technology could have practical applications."
Nov-04	JR Central performs exercises of trains passing each other at 1,026 km/h relative to one another.
Mar-05	The Evaluation Committee of MLIT acknowledges that "the core technologies for practical application have been established."
Jul-09	The Evaluation Committee of MLIT acknowledges that "the technologies required for commercial services have been established from a comprehensive and systematic standpoint, and it is possible to move forward with detailing the specifications for commercial services and the technical standards."
Dec-11	The Minister establishes technical standards for Superconducting Maglev.
Aug-13	Work to extend the Yamanashi Maglev Line to 42.8 km and update facilities are completed.
Apr-15	JR Central records a travel distance of 4,064 km in one day. JR Central records the world speed record for a manned rail vehicle at 603 km/h.
Feb-17	The Evaluation Committee of MLIT evaluates that "the technology development required for commercial lines has been completed."
Aug-20	Running tests start using Series L0 improved version.

History of Maglev Vehicles



In order to establish commercial vehicle specifications, in August 2020 we started running tests using the Series L0 improved version, which further brushed up the Series L0 based on the results of the running tests so far.

Superconducting Maglev test rides

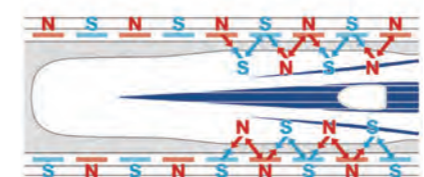


While steadily conducting running tests, we have offered test rides using the Series L0 improved version

Principles of the Superconducting Maglev System

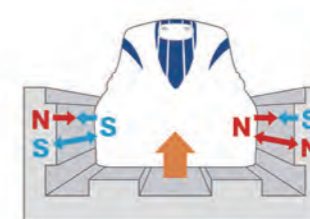
Propulsion System

By passing current through the Propulsion Coils on the ground, a magnetic field (north and south poles) is produced, and thus the vehicle is propelled forward by the attractive force of the opposite poles and the repulsive force of the same poles acting between the ground coils and the Superconducting Magnets built into the vehicles.



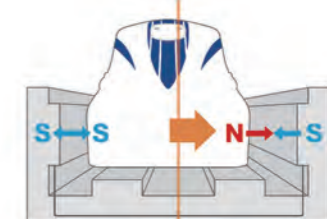
Levitation System

The Levitation and Guidance Coils are installed on both sides of the guideway (track). When the on-board Superconducting Magnets pass through at high speed, an electric current is induced in the Levitation and Guidance Coils, causing them to become electromagnets. This generates a force that both pushes and pulls up the vehicle.



Guidance System

The Levitation and Guidance Coils on both sides of the guideway keep the vehicle in the center of the guideway at all times by exerting an attractive force on the far side of the vehicle and a repulsive force on the near side when the vehicle moves off center to either side.



➤ Total Construction Costs for Shinagawa-Nagoya Section

In the "Notice Concerning Total Construction Costs for the Chuo Shinkansen Section between Shinagawa and Nagoya" (April 2021), we announced that the total construction costs for the Shinagawa-Nagoya section are expected to increase from 5.52 trillion yen estimated at the time of the "Construction Implementation Plan (#2) of the Chuo Shinkansen Section between Shinagawa and Nagoya" (March 2018) to 7.04 trillion yen. The reasons for the increase in construction costs include responding to challenging construction work, enhancing earthquake countermeasures, and securing utilization sites of excavated soil.

The Company will prioritize sound management and stable dividends with regard to future management just as always and will fund the construction costs mainly through operating cash flow and the remaining amount through repayable borrowings. If the Company anticipates that it can no longer ensure sound management and stable dividends, the Company will aim to complete the construction by adjusting the pace of construction and fully restoring its management strength.

As a reference, in order to confirm that the funds necessary for completion of the construction are secured, the Company calculated the operating cash flow based on certain reasonable assumptions in the event that the revenue recovers at a realistically expectable pace from the impact of the COVID-19 pandemic, and it confirmed that, if approximately 1 trillion yen of new financing is added to such operating cash flow, the cumulative amount of the funds available for construction of the section between Shinagawa and Nagoya would exceed the total construction costs of 7.04 trillion yen in FY2028. It should be noted that this does not mean that a new target time for opening is set; however, a trial calculation of the status of securing funds under certain assumptions was made for reference purposes only.

Thus, we have confirmed that we will be able to secure the level of funds necessary to complete the construction even after incorporating the increase in construction costs. The Company will continue to proceed with the Chuo Shinkansen project with the aim of early realization of the Chuo Shinkansen while ensuring sound management and stable dividends.

Estimates to confirm construction costs are secured (as of April 2021)  
(For confirmation, etc.)

Transportation revenues (Shinkansen and conventional lines)	Transportation revenues will recover gradually to 66% in FY2021, 80% in FY2022, and 90% in FY2023, and after FY2024 to 100% by FY2028.
Expenses	Essentially, personnel expenses will be maintained at the current scale of personnel required for railways, and non-personnel expenses will be recorded at the five-year average of the results from FY2015 to FY2019. In addition, cost reductions pursued through "Business Reforms" are considered to a certain extent.
Capital investments (Chuo Shinkansen)	7.04 trillion yen
Capital investments (Shinkansen and conventional lines)	Essentially, necessary capital investments will be accumulated, and considering the cost reductions through "Business Reforms," capital investments will remain unchanged at approximately 220 billion yen per year in and after FY2028.
Other	Interest rate on financing: 3%

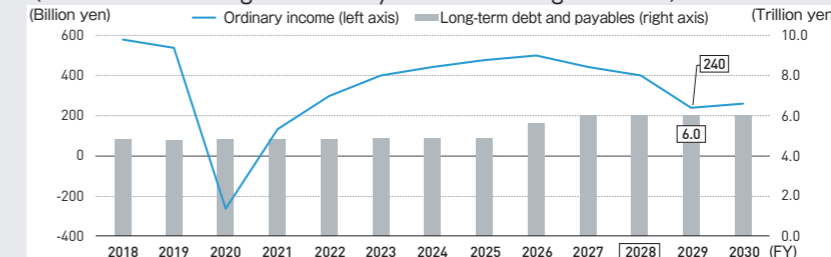
(For reference: Results of confirmation)

Period in which the cumulative amount of the funds available for construction of the Chuo Shinkansen exceeds the total construction cost*	FY2028
Operating revenues for the fiscal year following the above period	1,530 billion yen
Ordinary income for the fiscal year following the above period	240 billion yen
Long-term debt outstanding for the fiscal year following the above period	6.0 trillion yen

Note: In and after the period marked with an asterisk (\*) above, in calculating the operating revenues and ordinary income, it is assumed that transportation revenues will increase by around 5% compared to previous periods and that depreciation expenses and maintenance and operation costs will be recorded for assets related to the Chuo Shinkansen. This does not mean that a new target time for opening is set; however, a trial calculation was made for reference purposes only.

Note: The recovery in transportation revenues from the Shinkansen and conventional lines is compared to FY2018.

(For reference: Changes in ordinary income and long-term debt)







Creating "Social Value" —Social—

Tokaido Shinkansen: Constant Effort to Enhance Service

Since its establishment, JR Central has constantly refined not only the safe and punctual but also fast, frequent, high capacity, environmentally feasible, and comfortable characteristics of the Tokaido Shinkansen, which plays the role of Japan's main artery transportation, in order to maintain and strengthen its competitiveness. Specifically, we have constantly worked to enhance services through the introduction of the "12 Nozomi Timetable," the launch of new N700S Shinkansen rolling stock, and the expansion of online reservation and ticketless boarding services, among others.

9 INDUSTRY, INNOVATION AND INFRASTRUCTURE

11 SUSTAINABLE CITIES AND COMMUNITIES

Characteristics of the Tokaido Shinkansen

**Safety**

**0** accidents

- No accidents resulting in fatalities or injuries of passengers on board since operations commenced
- Improvement of safety awareness and skills through human resources education and training
- Ongoing investment for safety-related facilities

**Punctual**

**0.9** minutes

- Average delay time: 0.9 minutes / 1 train in service

\*Results for FY2021 (including delays caused by natural disasters, etc.)

**Fast**

**285** km/h

- Maximum speed: 285 km/h
- Between Tokyo and Shin-Osaka: 2 hours 21 minutes

\*Note: Accurate as of the March 2022 timetable revision (arrival time based on the fastest trains in service)

**Frequent and High Capacity**

**336** trains **229,000** passengers

- Number of train services per day: 336
- Number of passengers per day: 229,000
- Number of seats available: 1,323 seats/train

\*Results for FY2021 (including extra trains)  
\*Results for FY2021  
\*1,319 seats/train for the N700S type introduced in April 2021  
\*The numbers of train services and passengers per day in FY2021 were reduced by the impact of the COVID-19 pandemic.

**Environmentally feasible**

Approx. **1/8** Approx. **1/12**

- The energy consumption amount per seat when traveling between Tokyo and Osaka is approximately 1/8th that of an aircraft.
- The CO<sub>2</sub> emissions for the same condition are around 1/12th.

**Comfortable**

- Wide open, quiet space

► "12 Nozomi Timetable" expected to significantly improve our services

When the Company was established in 1987, we were operating the Tokaido Shinkansen at a maximum speed of 220 km/h. Since then, we have continued to work on enhancing our transportation services on the Tokaido Shinkansen. We put the Series 300 "Nozomi" into operation in 1992 with a maximum speed of 270 km/h, and, in 2003, opened Shinagawa Station and raised the maximum speed to 270 km/h for all trains, which allowed us to shift to a Nozomi-centered timetable. This timetable also underwent successive improvements to fulfill the needs of customers.

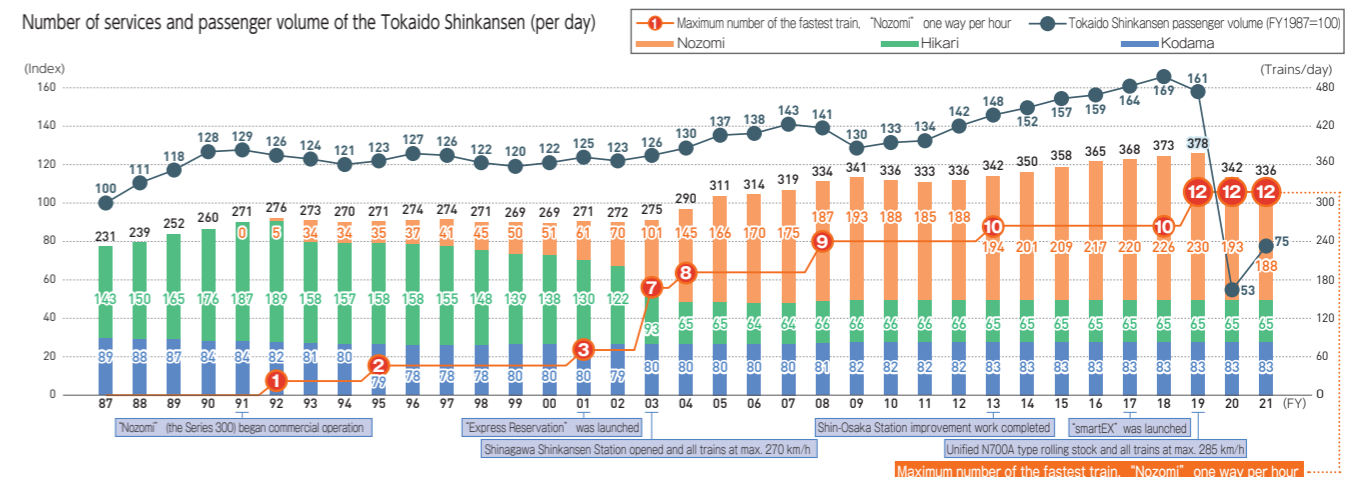
Then, in 2015, the speed of the Tokaido Shinkansen was increased for the first time in 23 years, reaching a top speed of 285 km/h. The Series 700 was retired in the spring of 2020, and we completed

the update to the N700A type\* to allow all trains to run at the same highest speed of 285 km/h. We also finished improvements to equipment and introduced the "12 Nozomi Timetable" in March 2020.

With the "12 Nozomi Timetable," the maximum number of "Nozomi" services per hour increased by two from 10 to 12 in either direction, and "Nozomi" is now operated at an average interval of 5 minutes during busy hours. Also, under the "12 Nozomi Timetable," all "Nozomi" services will travel between Tokyo and Shin-Osaka in less than 2 hours and 30 minutes. (Figure 1)

Passengers can reduce their travel time by reserving train seats online at their convenience and using the new, faster "Nozomi." This has made the Tokaido Shinkansen even more convenient.

\*Generic name of the Series N700 and N700A, and later reflecting the main functions adopted in the N700A



\*1 Departures shown include extra trains.  
\*2 Usage status is shown by means of an index with the sectional transportation volume for FY1987 as 100.  
\*3 Station stops - Nozomi: Shinagawa, Shin-Yokohama, Nagoya, and Kyoto / Hikari: Same as "Nozomi," plus a few additional stations / Kodama: All stations  
\*4 The sum of figures for "Nozomi," "Hikari" and "Kodama" may not agree with the total due to rounding.  
\*5 Departure figures in FY2020 and FY2021 and usage status figures for the period from FY2020 to FY2021 were lower due to the impact of the COVID-19 pandemic.

Figure 1 Travel Time of "Nozomi" between Tokyo and Shin-Osaka

	Previous timetable	New timetable
Within 2 hr 30 min	3 trains	12 trains
2 hr 33 to 37 min	7 trains	None

► Launch of new N700S Shinkansen rolling stock

We began in July 2020 to introduce the new N700S Shinkansen rolling stock, replacing the N700A type. The N700S is designed based on the results of years of technological development and is equipped with features such as enhanced safety and stability, enhanced comfort and convenience, higher emergency response capability, and a standardized design that can easily be constituted to any length of trainsets.



N700S

Number of Rolling Stock

Fiscal Year	2020	2021	2022 (plan)	2023 (plan)	2024 (plan)	2025 (plan)	2026 (plan)	Total
Number of Rolling Stock	12	13	13	4	7	7	3	59

Main features of the N700S

**Enhanced safety and stability**

- Shorter braking distance in the event of an earthquake (Figure 2)
- Enhanced snow-resistant features
- Enhanced status monitoring function

**Enhanced comfort and convenience**

- Equipped with a fully active damping control system
- Additional outlets for mobile devices

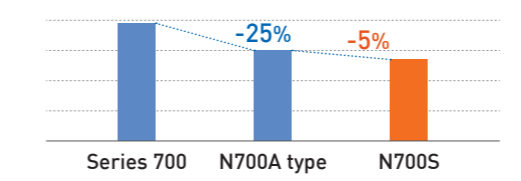
**Lower running cost**

- Reduced power consumption (Figure 3)
- Reduced inspection/repair work

**Higher emergency response capability**

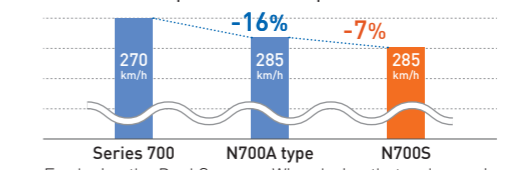
- Battery-based self-propelled system (Figure 4)
- Additional security cameras
- Enhanced intercom functions
- Toilet functions during power outage

Figure 2 Shorter braking distance in the event of an earthquake (at 285 km/h)



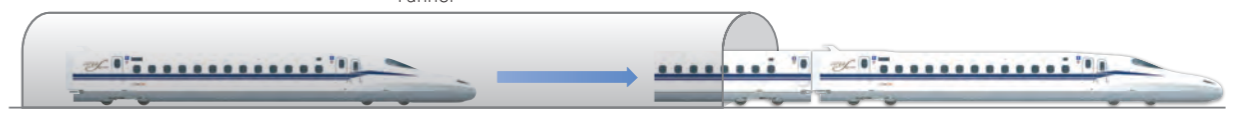
The braking distance during an earthquake is 5% shorter than the N700A type thanks to an improved ATC and brake system.

Figure 3 Reduced power consumption



Employing the Dual Supreme Wing design that reduces air resistance and a drive system that uses next-generation silicon carbide semiconductors, the N700S consumes 7% less electricity than the N700A type.

Figure 4 Battery-based self-propelled system



The N700S is the first high-speed train equipped with a battery-based self-propelled system. It can travel to a location where passengers can safely evacuate in the event of a long power outage following a natural disaster, etc.



▶ Tokaido Shinkansen: Constant Effort to Enhance Service

▶ Promoting Online Reservation and Ticketless Boarding Services

In an effort to have customers more conveniently use the Tokaido Shinkansen, JR Central takes the initiative in promoting greater use of online reservation and ticketless boarding services via "EX Service" ("Express Reservation" and "smartEX").

For customers who frequently ride the Shinkansen for business or other reasons, we provide an "Express Reservation" service that offers a discounted member price throughout the year. Members of the service can smoothly ride the Shinkansen by simply touching their member IC card at the automatic ticketing gates after reserving their preferred seats with a smartphone or other device beforehand. There is no need to stop at the ticket counter of a station, allowing customers to significantly reduce their total transit time and potentially apply for the "Green Program" (not applicable for some members), which allows customers to utilize the points accumulated based on their usage of the Shinkansen to take a seat in a Green Car at the price of the reserved seat in a regular car. In addition, reservations can be changed as many times as necessary before departure without any handling fees, allowing customers to use the service without worry even if there are sudden schedule changes.

We also offer "smartEX" with no membership fee for customers who only occasionally use the Shinkansen, including people traveling to visit their hometown, tourists, and foreigners visiting Japan, so that they can also use the convenient online reservation & ticketless boarding service. This ticketless service enables customers to immediately use the service by simply registering their credit card and the nationwide interoperable transportation IC card from their smartphone, etc. As a result, we offer greater convenience to even more customers.

At the moment, reservations for reserved seats using these services currently account for nearly half of all reservations.

Numbers of EX Service members and registered persons

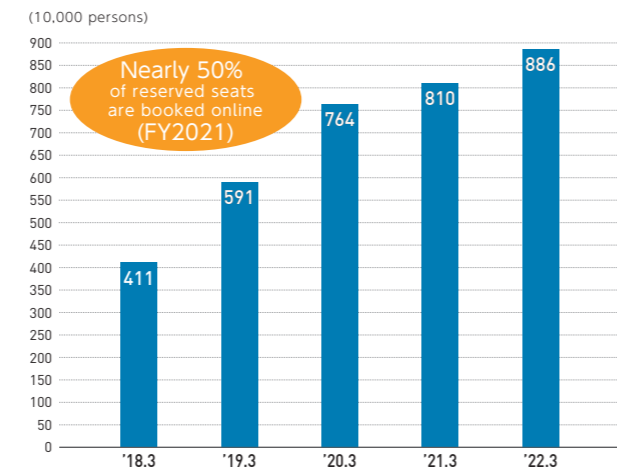
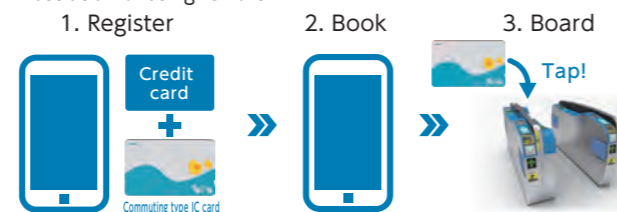


Illustration of using "smartEX"



▶ Further Enhancing Our EX Reservation Service

In March 2021, we launched a ticketless boarding service for group passengers, a ticketless boarding service using a QR code for visitors to Japan, and a reserved seat reservation/change service for delayed trains. Thanks to these services, passengers who board trains in groups and visitors to Japan who do not have commuting-type IC cards are now able to board Shinkansen trains without the bother of obtaining a ticket.

Furthermore, in June 2022, we extended the service areas of the EX Service to the Kyushu Shinkansen (Hakata - Kagoshima-Chuo section), beginning to offer the service along all of the Tokaido, Sanyo and Kyushu Shinkansen lines (Tokyo - Kagoshima-Chuo section).

In addition, in summer 2023, we plan to launch a new "EX-MaaS" (tentative name) service in which reservations and payments for hotels, tour plans, etc., in addition to the Shinkansen, can be seamlessly done for the entire trip. Ahead of this, we launched in November 2021 the "EX Travel Content Portal," a portal site linked to various contents of, for example, hotels along our railway lines via the EX Service screen. Going forward, we will work to prepare for the service launch in summer 2023 so that the entire process, from reservation to payment, can be completed within the site.

In addition, we will provide a new EX travel product which will allow passengers to change trains according to their schedule and board Shinkansen trains through a ticketless process, available for purchase. It will be the first travel product in Japan that allows passengers to change Shinkansen trains online until immediately before the boarding time. It will address the needs of customers who wish to travel on a flexible schedule. We are

currently accepting applications for reservation about a month before the boarding date, but we will make it possible to make reservations about a year before the boarding date. This will not only allow us to take reservations for events whose schedule is known well ahead, including concerts, but also address requests by visitors to Japan to make early reservations.

We aim to enhance our services in terms of both business and tourism by offering products attractive to customers under these structures so that we can increase future usage and revenues.

One-stop, seamless reservation for trips for business or pleasure will become possible.



Other service enhancements

- New EX travel product that allows passengers to board trains through a ticketless process and change trains online until immediately before the boarding time
- Service for Shinkansen reservation well ahead of boarding time (about a year before)

▶ Stimulating Tourist Demand

We are working to stimulate tourist demand by introducing various campaigns for each region or target segment through various information media and sales channels. For Kyoto and Nara, which are the largest tourist resources in our market area, we have continuously implemented travel campaigns in collaboration with local governments and travel agencies, such as the Kyoto Campaign (launched in 1993), the Nara Campaign (from 2005 to 2021), and the renewed Nara Campaign (launched in 2022), and are promoting the use of the Shinkansen mainly from the Tokyo Metropolitan area to the Kansai region. In addition, we are working on coming up with attractive products associated with Tokyo, Yokohama, Shizuoka, Aichi, Hida Takayama, Ise-Shima and other locations.

Since summer 2020, we have been working to stimulate demand by proposing "zurashi tabi" (shifting travel), a new way of traveling whereby the times, locations, means of travel and action at destinations are shifted from the "standard." We are actively introducing new promotional measures that capture customer trends and needs. These include "Oshi Travel Update," a campaign in which the content of "Oshi Travel" of going to see one's own recommendations is updated and suggested in collaboration with business operators, and the "Tadama Tokyo" campaign, which aims to stimulate demand for travel to Tokyo in collaboration with All Nippon Airways, Tokyo Metro, Japan Airlines and East Japan Railway.

Furthermore, targeting inbound tourists, we are working in cooperation with municipalities located along our train lines and other transportation companies to offer sightseeing value tickets covering destinations that are popular among international tourists, such as "Takayama and Hokuriku." We also have travel products to encourage customers to travel in areas along the Tokaido Shinkansen and other train lines of our company, such as FLEX JAPAN, which is a package that comes with a roundtrip Shinkansen ticket, accommodation, etc. We are thus actively working to capture demand from inbound tourism that remains strong. As a tool to promote these offerings, we post about attractive features of Japan on the Central Japan Shinkansen/Train Portal, a website packed with information on our products targeting visitors to Japan.



"Zurashi Travel" poster

▶ Improving the Environment to Support New Ways of Working

The COVID-19 pandemic has led to the growth in new ways of working that does not discriminate between locations, including telework and web conferencing using ICT. In response to such a change in work styles, JR Central aims to expand revenues by fine-tuning services and products that target individual needs, in addition to existing initiatives, in providing them.

We are working to enhance the working environment in stations and trains to allow passengers to spend their time on the train in ways suitable to their work style by, for example, enabling them to continue working seamlessly before and after boarding a Tokaido Shinkansen train.

Specifically, we have made Car No. 7 of the Nozomi train an "S Work Car" on a trial basis, for passengers wishing to do work on mobile devices, etc. without worry. In addition, we plan to launch on Cars No. 7 and No. 8 of Series N700S trains a new, free-of-charge "S Wi-Fi for Biz" service, which has double the transmission capacity of

existing free Wi-Fi services and sets no limit on the length of use, and have introduced, on a trial basis, a "Business Booth" that passengers can use for meetings, etc., by renovating the "smoking room" between Car No. 7 and No. 8 (in the deck part) of N700S trains.

Furthermore, we have set up semi-private work booths and poles fitted with power outlets that are available free-of-charge in some waiting rooms at all Tokaido Shinkansen stations where Nozomi stops. We are also setting up at some stations box-style private work spaces, called "EXPRESS WORK," and office-style work spaces incorporating private booths and meeting rooms that EX Service subscribers can use for a variety of purposes, including working alone in a booth or having meetings with several people, before or after boarding Tokaido Shinkansen trains.

We aim to continue working to enhance our services in a variety of aspects so that businesspeople who use the Tokaido Shinkansen can spend their travel time in more convenient and comfortable ways.





Creating "Social Value" —Social—

# Conventional Lines and Affiliated Businesses: Maintenance and Development of Social Infrastructure

By continuing to strengthen conventional lines in the Tokai region that form a network with the Tokaido Shinkansen, as well as affiliated businesses that are expected to generate synergies with the railway business, such as the JR Central Towers and the JR Gate Tower at Nagoya Station, JR Central is working to expand business revenues and contribute to the maintenance and development of the local social infrastructure.



## » Mission as social infrastructure of the local community

JR Central undertakes the mission of supporting the social infrastructure. That is, in an integrated manner with the management of Japan's main transportation artery, we take a locally oriented approach in operating a network of conventional lines in the Tokai Region, centered on the Nagoya and Shizuoka areas, thereby supporting the people in these areas. The conventional lines operated by JR Central, covering 12 railway sections, reach approximately 1,400 km in operating kilometers, which is approximately 2.5 times the length of the Tokaido Shinkansen, and play a role as a means of transportation for daily life, including commuting to work and school. In other words, they serve as the social infrastructure of the local community. We have steadily improved our services by, for example, launching new vehicles and thereby increasing the speed and frequency of the services.

In order to enhance the convenience of limited express trains, we will continue to develop an integrated network of the Shinkansen and conventional lines by improving connections between the two and increase flexibility in the operation of major limited express trains by increasing the frequency of services or number of cars per train to absorb demand fluctuations caused by seasonal factors and events. In FY2022, we began putting the new hybrid powered limited express "Series HC85" into commercial service as a replacement for the Series 85 diesel railcars currently used for our limited express trains "Hida" and "Nanki." We plan to introduce the new model to serve as "Hida" and "Nanki" express trains in the period through FY2023. The Series HC85 has achieved commercial operation as the first hybrid powered electric car in Japan to reach a top speed of 120 km/h.

Moreover, in order to offer convenient timetables for local train passengers, we will continue to develop a convenient rapid train system, operate trains at regular intervals, and increase the frequency of services or the number of cars per train, especially during the morning and evening commuting hours. Furthermore, we put a new type of commuter electric railcar, the Series 315, which were introduced around the time of our

establishment, into commercial service as a replacement of the Series 211, Series 213 and Series 311. We now have replaced all vehicles with vehicles that have been newly produced since our establishment. We plan to gradually introduce it to conventional lines centered on the Nagoya and Shizuoka City areas, including the Chuo Line, the Tokaido Line and the Kansai Line, in the period through FY2025. By launching these new vehicles, we will improve services for our customers by providing safety, stability, comfort and convenience and by further enhancing environmental performance.



New Series HC85 limited express vehicle

## » Sales and marketing in coordination with local communities along our lines

Areas along our lines are blessed with many tourist resources. While continuing to strengthen our relationships with local residents and travel agencies at tourist spots in our operating areas, we are working to stimulate tourist demand by publicizing attractive tourist resources at stations, on trains, through our website and by other means and by taking various sales and marketing measures.

For example, we sell a special ticket package that includes a round-trip limited express reserved seat ticket, tickets for buses, taxis and other means of mobility in the destination area, and shopping coupons, improving the use of express services along conventional lines. We also offer a train journey with a sense of the extraordinary by operating the express train "Iida Line Secret Stations" on the Iida Line, which runs through remote mountain stations and scenic sections, during periods of high tourist demand. Furthermore, we are holding the "Sawayaka Walking" service, offering free-of-charge walking tours requiring no

reservation that start from our stations and visit wayside sightseeing spots. We are also collaborating with local governments, travel agencies, etc. through the Destination Campaign organized jointly by the six JR companies to develop attractive tourism resources and products and operate sightseeing trains, etc., contributing to regional revitalization as well as promoting the use of the Shinkansen and conventional lines.



Kowada Station and "Iida Line Secret Stations" express train

## » JR Central Group's affiliated businesses

The JR Central Group undertakes businesses in Transportation, Logistics, Real Estate, and Other areas. The Transportation segment involves railway and bus businesses. The Merchandise and Other segment manages department stores and provides sales services for goods and food in stations and trains, utilizing the merit of having good railway station locations

to attract customers. The Real Estate segment develops commercial facilities in stations and areas under elevated tracks and also leases real estate, such as station buildings. In the Other segment, we manage hotels, travel agencies, and advertising agencies, etc. We also manufacture rolling stock and maintain, inspect, and repair our railway facilities in this segment.

## » Uniform management of JR Central Towers and JR Gate Tower

The development of Nagoya Station, the largest station in our network, is a pillar of our affiliated businesses. The JR Central Towers (hereinafter, the "Towers"), opened in 2000, and the JR Gate Tower (hereinafter, the "Gate Tower"), opened in 2017, have been attracting large numbers of visitors. Already recognized as landmarks of Nagoya, these buildings

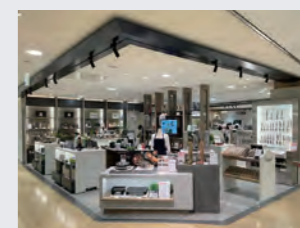
have made a significant contribution to the economic development of the Chubu region. We will continue to operate the Towers and the Gate Tower in a uniform manner and work to increase earnings by demonstrating synergistic effects by segregating the concepts of the businesses of both facilities and promoting collaboration in sales.

### JR Central Towers

Towers, the skyscraper complex with a height of 245 meters and a total floor area of approximately 417,000 m<sup>2</sup>, built right above Nagoya Station, is the core of our affiliated businesses. Our three consolidated subsidiaries run a department store, a hotel, and offices. Ever since the opening of the facility, earnings of our affiliated businesses have increased significantly.

The office business has enjoyed a high occupancy rate since its launch. All office spaces are almost fully occupied. JR Nagoya Takashimaya, ideally located directly above the Nagoya station, attracts large numbers of visitors. In the period between FY2021 and

FY2022, we secured revenue through measures such as a large-scale renovation of the kitchen and tableware section. Nagoya Marriott Associa Hotel is rated highly for its convenient location directly above the station, its spectacular view from the top floors, its upscale facilities, and other features.



Renovated kitchen and tableware section in Takashimaya

### JR Gate Tower

JR Gate Tower is a high-rise complex building with a height of approximately 220 m and a total floor area of approximately 260,000 m<sup>2</sup> that stands adjacent to JR Central Towers and consists of commercial facilities, a hotel, offices, etc.

The office spaces are almost fully occupied due to their prime location directly above Nagoya Station, which the Chuo Shinkansen will serve in the future. Housing about 160 fashion stores, Takashimaya Gate Tower Mall offers products in categories and price ranges not found in the adjacent department store. Nagoya JR Gate Tower Hotel, together with Nagoya Marriott Associa Hotel, is highly regarded by a wide range of guests as a hotel that focuses mainly on

accommodation, offering both comfort and functionality.

By integrating the management and operation of the entire building with Towers, we are pursuing efficient management as the JR Central Group. In addition, Gate Tower has added new content not found in the Towers, further enhancing the attractiveness of the two buildings.



Takashimaya Gate Tower Mall

## » Profitability improvement of JR Central Group's affiliated businesses

To respond to changes in the business environment, we will thoroughly implement low-cost and efficient business operations and promote the management efficiency of each Group company. Furthermore, to ensure further growth of our Group business, we will work on infrastructure development, including a review of operational structures of existing operations and introduction of shared systems, and expand business operations by taking advantage of our experience gained from synergistic effects with the railway business, including new store openings in commercial districts, to improve our profitability further.

For example, in terms of a new store opening in a commercial district, we opened JR Nagoya Takashimaya Watch Maison, one of the largest luxury watch sections in Japan, in the Dai Nagoya Building in July 2021. In addition, we opened JR Nagoya Takashimaya Food Maison Okazaki in the Aeon Mall in Okazaki City, Aichi Prefecture, in March 2022, utilizing the know-how cultivated through operation of the basement food section of JR Nagoya Takashimaya.

In addition, we are working to strengthen our e-commerce business by, for example, opening JR Tokai Market, a new shopping site that stocks products proven popular at our stations and hotels and original railway goods. Going forward, we will work on initiatives to make our stations more convenient and comfortable by expanding collaboration with companies outside the JR Central Group, increasing the number of shops and products, and linking this website and physical shops.



Main visual of JR Tokai Market





Creating "Social Value" —Society—  
Improving the Convenience of Facilities  
(Use of Barrier-Free Designs, Etc.)

▶ Improving the Convenience of Facilities

Enhanced convenience of stations, etc.

The improvement of railway stations is important for local communities since they serve as a connecting point with the local community and secondary transportation, such as buses, private cars and taxis, as well as a gathering spot for the community. In response to requests from local municipalities, JR Central makes improvements to stations, including the installation of passages for pedestrians and bicycles and the building of over-track stations, creates plazas in front of stations, establishes new stations, and promotes railway elevation projects, thereby contributing to the development of local communities. For example, since the number of passengers using Kariya Station on the Tokaido Line is increasing, particularly during morning and evening commuting hours, we are currently carrying out work to widen the platforms, install movable platform fences, and improve the concourse based on discussions with Kariya City regarding improvements to ensure safety and comfort. Kariya City plans to establish and operate a local community exchange center and a tourist information facility to coincide with the station's improvements. JR Central has decided to create a new

space that will be required for the city's plan in order to turn the surrounding area of the station into a hub and thereby contribute to the local community. As a railway company that contributes to local communities and develops together with the communities, we will continue to enhance the convenience of stations and other facilities in cooperation with the local municipalities concerned.

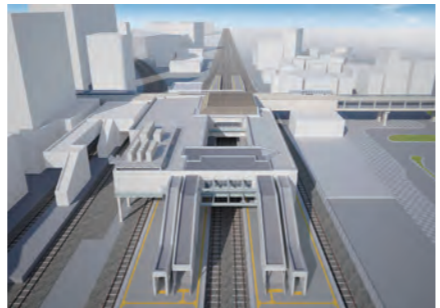


Image of Kariya Station

Initiatives to improve the level of accessibility

Based on relevant laws, such as the so-called Barrier-Free Act, JR Central cooperates with the central government and local municipalities to jointly establish and improve facilities to enable all passengers, including persons with disabilities and elderly passengers, to use our services safely and with a sense of security.

As part of our initiatives taken in stations, we are proceeding with our plan to eliminate level differences by installing elevators, etc. and to install barrier-free toilets sequentially in stations used by 3,000 or more passengers per day, as well as those used by 2,000 or more passengers per day that are positioned as facilities necessary for people's daily lives in the general plans of local municipalities. Basically, in all of the stations, installations have been completed or are under way. Going forward, we will promote the installation of barrier-free facilities in cooperation with the central government and local municipalities and in accordance with the central government's improvement goals. We have completed the installation of guiding blocks for visually impaired persons and braille blocks that prevent such persons from falling from platforms in all stations. In regard to braille blocks, we are sequentially replacing them with the type of braille blocks that indicate where platform edges are located. In addition, we are working to install movable platform fences to further enhance safety on platforms. On the Tokaido Shinkansen line, installation work commenced in FY2011, aimed at fencing off platforms at busy stations where the Nozomi stops. In FY2022, we plan to install fences on Platform 20 at Shin-Osaka Station, after which all of the platforms at stations where the Nozomi stops will be fenced

off. On conventional lines, installation work at Kanayama Station was completed for Platform 3 (inbound Tokaido Line) and Platform 4 (outbound Tokaido Line). In addition to Kariya Station mentioned earlier, we are promoting the installation of fences at Nagoya Station for Platforms 5 and 6 (outbound Tokaido line) and are considering installation on Platforms 1 and 2 (inbound Tokaido line) and Platforms 7 and 8 (Chuo line) to coincide with construction work of the Chuo Shinkansen and the timing of rolling stock renewal. Furthermore, we are studying specific ways of utilizing a new pricing system to support the installation of barrier-free equipment at stations.

In an effort for train cars, we additionally introduced a new N700S train car equipped with wheelchair spaces accommodating six passengers on the Tokaido Shinkansen line. We are testing a web reservation service using the EX Service to enhance convenience of customers making reservations for the wheelchair space. In terms of conventional lines, we are introducing new Series 315 commuter vehicle and new Series HC85 limited express vehicle models with expanded wheelchair spaces. We will continue to enhance barrier-free equipment.



Installation of platform fences on Platform 4 of Kanayama Station



Creating "Social Value" —Society—  
Cooperation with Local Communities

▶ Initiatives to vitalize local communities

Initiatives in coordination with communities located along our lines

As part of sales and marketing, we are deepening our ties with communities located along our lines while rolling out initiatives such as "Sawayaka Walking" and "Destination Campaign (hereinafter, "DC")."

The purpose of Sawayaka Walking is to promote the use of railways on Saturdays, Sundays and public holidays throughout the year. This walking event allows visitors to experience the attractive nature, history and culture of each area along the railway line, and it also contributes to promoting the good health of the participants. The program started in 1991, with the total number of participants now exceeding 5 million. The program commemorated its 30th anniversary in 2021.

One of the largest tourism campaigns in Japan, DC targets a different region every three months in spring, summer, fall and winter and is aimed at attracting customers by rail by promoting new tourist attractions of the region in cooperation with the local municipalities concerned, six JR Group railway companies and travel agencies. For the DC implemented along the lines we operate, we have operated sightseeing trains that enable passengers to enjoy the charms of the region and sold travel products that incorporate tourist attractions and special offers in cooperation with the local communities. For the DC conducted along railway lines operated by another company, we advertise the campaign at our railway stations to raise awareness of the tourist attractions and work with various parties concerned to attract tourists in locations across Japan.



Sawayaka Walking 30th anniversary logo

IIMONO TANBOU

As an initiative aimed at vitalizing local communities through related businesses, we operate the "IIMONO TANBOU" website, which sells delicacies and selected crafts produced along the railway lines we operate to be delivered directly from the place of production. By introducing the attractions of the areas along our railway lines through the sale of products that are not yet known nationwide, JR Central and the producers work together to vitalize local communities. In order to pass on to the future the culture and traditions that have been handed down, we implement measures to support producers working hard in each region to develop original products, etc. We are also expanding the scope of our activities so that people can feel closer to the areas along our railway lines by, for example, holding events bearing the name "IIMONO TANBOU" at department stores and offering hands-on-type tours to the areas. Going forward, we will continue to add various products representative of the areas along our railway lines to the product lineup and work with producers to revitalize the local communities along those lines.



IIMONO TANBOU

SCMAGLEV and Railway Park - A museum of memories and dreams -

We opened the SCMAGLEV and Railway Park in March 2011 in Kinjo Futo, Minato-ku, Nagoya, as part of our participation in the Monozukuri (manufacturing) Culture Exchange Area Project hosted by the city of Nagoya. The SCMAGLEV and Railway Park introduces the progress of high-speed railway technology through displays of rolling stock mainly of the Tokaido Shinkansen, as well as conventional lines and Superconducting Maglev. The total number of visitors through FY2021 was approximately 5.53 million.



SCMAGLEV and Railway Park

Discover the Shinkansen Day

Every year at the Hamamatsu Workshop, we hold "Discover the Shinkansen Day"\* so that people can become more familiar with the Tokaido Shinkansen. We open our Hamamatsu Workshop to the public for free, and visitors can get a closer look at the features of the Shinkansen, which are usually not visible from station platforms or along railway lines. Specifically, we offer programs such as a tour of the Shinkansen driver's platform, a tour inside the Dr. Yellow train, an exhibition and boarding experience of maintenance vehicles, a hands-on experience as the conductor and the purser, and a chance to experience in-train cleaning and maintenance work, all of which are very popular.

\*The event was canceled in FY2022.



## Cooperation with Local Communities

### Contribution to local communities through support for recovery from large-scale disasters

For electric power companies to swiftly recover from large-scale disasters, it is necessary to reinforce the support system to enable those engaged in recovery efforts to work safely. In December 2020, Hotel Associa Takayama Resort, which is operated by JR Tokai Hotels Co., Ltd., a JR Central Group company, entered into a disaster support agreement, together with two other hotels in the Takayama district, with the Takayama Office of Chubu Electric Power Grid Co., Inc., recognizing such support activities as an important role of a hotel rooted in the local community. Based on this agreement, we contribute to the local community by supporting recovery from large-scale disasters, such as through preferential provision of accommodation.



Hotel Associa Takayama Resort

### Disaster prevention and recovery activities in coordination with local communities

In preparation for a large-scale disaster or other unforeseen contingencies that might occur on the Tokaido Shinkansen Line, we conduct comprehensive accident response training, etc., with the aim of enhancing the technical capabilities of and strengthening cooperation among employees on each line of operation and affiliated companies in order to provide relief to customers and establish a system for early restoration.

As for our conventional lines, we conduct drills to quickly guide customers on the assumption that a Nankai Trough earthquake has occurred and trains have stopped between stations. We are engaged in disaster prevention efforts in cooperation with local communities. In the past, we invited high school children and staff members of local governments along our railway line to participate in our drills.



Comprehensive accident response training

Tsunami evacuation guidance training

### Earning trust from customers and offering user-friendly services

JR Central is committed to providing services that are trusted and welcomed by local communities and customers, based on our belief that providing safe and reliable transportation and high-quality services to customers and earning customer satisfaction lead to our own joy.

For the Shinkansen, we are implementing the "Brand Quality Service Campaign" to improve the level of our customer service at stations and on our trains so as to provide customers with a sense of security, satisfaction and joy. While in recent years the number of online reservations has been increasing, the JR Central Group is making concerted efforts to enhance its knowledge and skills and foster a service-oriented mindset so that we can accurately respond to the traveling needs of a wide range of customers, including those who are accustomed to traveling on business and travelers visiting Japan.

On our conventional lines, we are aiming to provide customers with truly valuable services, or what we call "Real Value Services." The conventional lines that we operate run in a wide range of areas, each of which has its own unique characteristics. Therefore, each of our employees is required to think independently and take

the initiative to provide services that best suit the purposes and situations of our customers. In order to encourage customers to choose our railway, we encourage employees to enhance their ability to notice the needs of customers and proactively and sincerely provide services that could give customers a sense of security along with a sense of affinity, such as warmth and familiarity.



Customer service role-play

Customer service scene

### Establishment of a medical institution rooted in the local community (Nagoya Central Hospital)

As an acute care hospital, Nagoya Central Hospital, located in Nakamura-ku, Nagoya, performs over 1,700 surgeries year round, providing some of the most advanced medical care services available using the latest medical equipment. The hospital is also a committed emergency health care provider, coordinating with local ambulance services to take in over 3,600 ambulance calls per year. Looking ahead, Nagoya Central Hospital will look to leverage its distinctive features and expertise to further contribute to the local community.



Nagoya Central Hospital

### International exchanges

As a railway operator responsible for managing Japan's main transportation artery, JR Central has also responded to the expectations of society in the form of international exchange, such as receiving observation visits and developing human resources.

In Japan, we have taken officials from foreign governments, overseas railway operators, and other related persons on tours of railway-related facilities, primarily of the Tokaido Shinkansen, to introduce the business of JR Central and exchange opinions on railway management and other matters. Furthermore, in collaboration with several universities in the U.S., we have established and are operating a summer internship program for students, providing them with opportunities to learn about the railways and culture of Japan, thereby increasing their understanding of our company. We have been actively promoting international exchange, despite restrictions on face-to-face exchange due to the impact of COVID-19, by leveraging online methods. The diverse knowledge gained through these visits and programs is also utilized in our initiatives, for example, to attract inbound travelers.

Outside Japan, JR Central maintains three overseas offices in Washington D.C., London and Sydney, where it undertakes a wide range of international operations, such as gathering mainly railway information from countries around the world, exchanging information with specialists and persons in the railway industry in various countries, and engaging in PR activities for overseas markets. We are also actively taking part in international exchanges in these countries. In the U.S. for example, we hold exhibitions

on the superconducting maglev system at STEM (science, technology, engineering and mathematics) education events and provide local children with opportunities to experience cutting-edge science and technology. Meanwhile in the U.K., we operate an exchange training program in which executives are dispatched to and from a local railway operating company, etc., as a way of providing opportunities for employees of both companies to gain further knowledge and develop their skills in railway management and technology through such exchange.

The internship program for university students in the U.S. and the exchange training program with U.K. firms have been held more than 20 times since their inception. When reunions for the participants of these programs are held in both countries, many alumni gather, forming a network of people who share a good understanding of JR Central overseas. The strong relationships of trust that we have nurtured with people who have visited our company over many years support the various activities we conduct overseas.



Online exchange with university students in the U.S.

### Promotion of culture, art and lifelong learning (JR Central Lifelong Learning Foundation)

The JR Central Lifelong Learning Foundation is a public interest incorporated foundation established in October 1990 with the purpose of contributing to society through the promotion of culture, art and lifelong learning. The Foundation's main activities include holding exhibits of the artwork of Hoshun Yamaguchi, a pioneer of new Japanese-style painting who drove the Japanese art scene, at Hoshun Yamaguchi Memorial Hall (Hayamachi, Kanagawa), which opened in October 1991, and opening the ateliers and gardens, which offer seasonal flowers and trees loved by Hoshun and his wife, for public viewing. In 2022, a special exhibition will be held to exhibit the works of young Hoshun, who would later become the foundation of new Japanese-style painting, and his relationship with the Imperial Family. Further, in an effort to support lifelong learning, the Foundation engages in a wide range of cultural business activities, including holding classes on Japanese-style painting and organizing classes to learn about history and culture.



<<Boukyo - small sketch>>  
by Hoshun Yamaguchi, 1953



Hoshun Yamaguchi painting in his atelier

### Initiatives in human rights (JR Central Group Human Rights Policy)

JR Central operates on the basis of respect for human rights, and we believe that enhancing employees' awareness of and sensitivity to human rights is important also from the perspective of fulfilling our corporate social responsibility. Moreover, the human rights issues that companies must address have become increasingly diverse and complex, including issues on race, nationality, gender, sexual minorities and disabilities, in addition to the "dowa" issue. JR Central has been addressing human rights issues appropriately by taking human rights into consideration when hiring,

ensuring appropriate customer response, incorporating new human rights issues, such as harassment, in training and awareness raising activities, sharing information on human rights promotion with group companies, and requesting material suppliers to comply with the law and respect human rights. We have also established the JR Central Group Human Rights Policy, which is disclosed on our website together with information on the system to promote the policy and the specific details of activities such as training, as a guide for conducting business based on respect for human rights.

#### JR Central Group Human Rights Policy

September 1, 2022

##### Respect for human rights

The JR Central Group conducts its business activities with respect for the human rights of all people, including customers, business partners and employees, based on international principles related to human rights.

##### Scope of application

This Policy is applied to all companies of the JR Central Group.

##### Training and awareness raising

The JR Central Group engages in appropriate training and extensive awareness-raising activities so that the Policy is understood and effectively implemented in all business activities of the Group.

##### Human rights due diligence

The JR Central Group strives to prevent and alleviate negative impact on human rights in view of international principles, among others.

##### Dialogue with stakeholders

The JR Central Group engages in dialogue with stakeholders, based on which it works to respect human rights in its business activities.

##### Remedy and correction

In the event a business activity of the JR Central Group causes a negative effect on human rights or it becomes clear that its business activity has been involved in a negative effect on human rights, efforts for remedy and correction will be made through appropriate procedures.

##### Information disclosure

The JR Central Group appropriately discloses information on its initiatives on human rights through its website, etc.





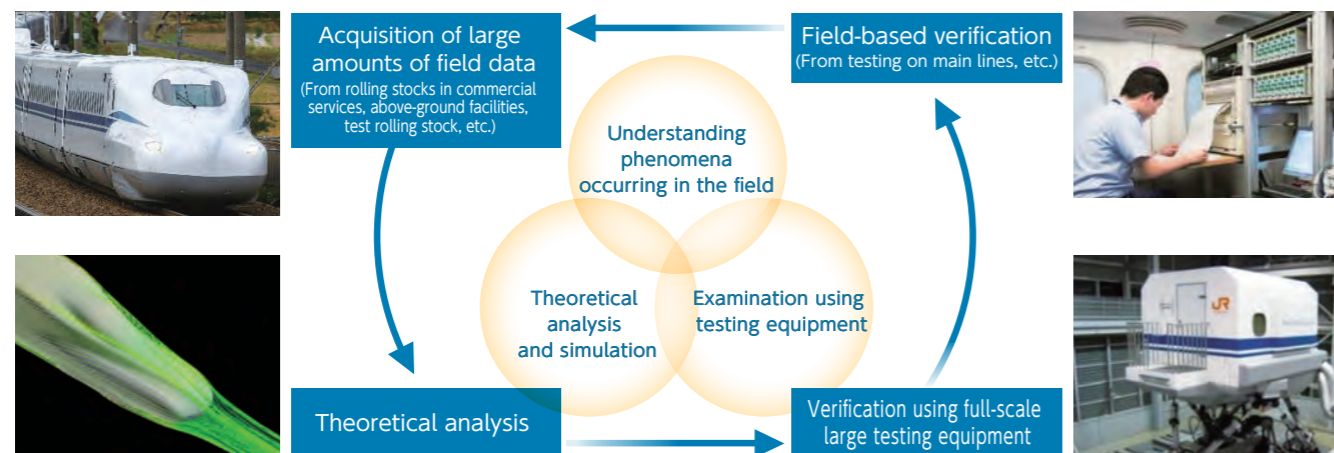
# Creating "Social Value" –Social– Promotion of Technological Development

## ▶ Technological development to support JR Central's growth

In order for JR Central to fulfill its mission and develop into the future, it is essential to constantly work to ensure daily safe and reliable transportation, to pursue comfortable transportation services, and to build the hardware and systems that will support these efforts through technological development. In regard to technological development in railways, it is necessary to bear in mind that only when each physical and non-physical research result is integrated and reflected in actual transportation services and management systems will it

generate value for the business and that the railway business is greatly affected by social and economic conditions. In order to address various technological issues in a more integrated and comprehensive manner, we have set issues that contribute to company measures from a medium- to long-term perspective at the Komaki Research Center, established in 2002, and systematically proceed with technological development to ensure safe and reliable transportation in the railway business.

### Basic railway R&D cycle

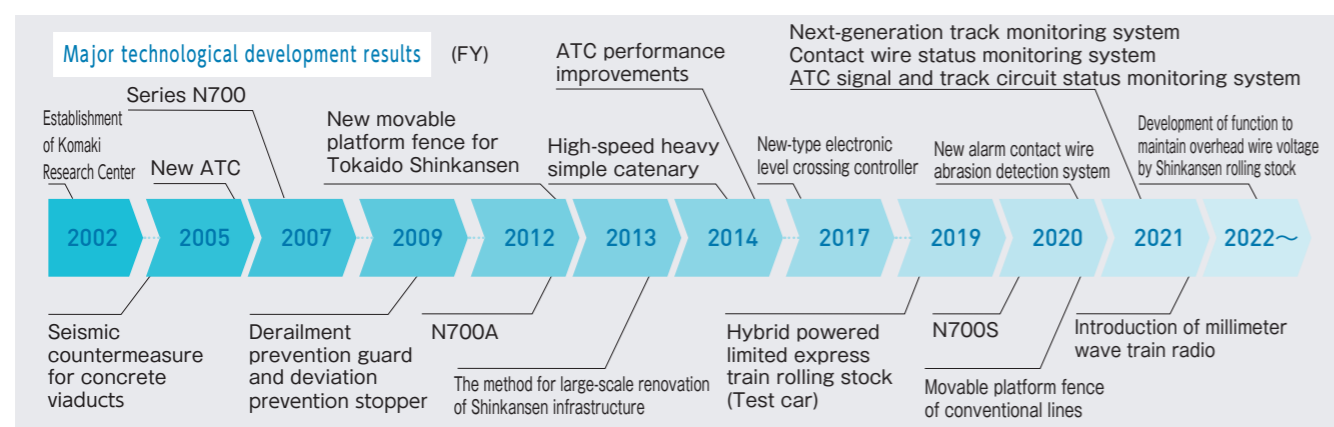


## ▶ Key themes of technology development

We are promoting technological development based on the following pillars, namely "Ensuring safe and reliable transportation," "Specifying the means to achieve operational reforms," "Creating a next-generation railway system" and "Contributing to business operation of the Chuo Shinkansen," while actively utilizing ICT and other advanced technologies.

In order for JR Central to be sustained and develop into the future, it is also working to broaden the scope of its technological fields to a wider range of areas and to promote further innovation of the railway system. We will strive to develop new value and future visions that we want to create and will take on the challenge of research and development to realize them.

## ▶ Major technological development results



## ▶ Development of technologies, enhancement of technological capabilities and human resource development for the future

To proactively deepen railway technologies for the Shinkansen and conventional lines, JR Central pursues the development of technologies that support the future of our company and takes initiatives to enhance technical capabilities and develop human resources. At the Komaki Research Center (Komaki City, Aichi Prefecture), by using actual-size testing equipment, which is the main distinctive feature of the research center, we have made various accomplishments in technology development, including new rolling stock, countermeasures against derailment and deviation for the Shinkansen, large-scale renovation methods for civil engineering structures in relation to our Shinkansen trains, and high-speed heavy simple catenary for our Shinkansen trains. Furthermore, in light of the recent rapid advances in information communications technology (ICT) and the progression of digital transformation, we have established a special unit within the Technology Research and Development Department to further strengthen our efforts to formulate ICT strategies, gather needs, and execute highly challenging development projects.

Divisions, which manage daily train operations, and the Technology Research and Development Department have worked closely together to respond to the technological challenges facing the Railway Operations Divisions and conduct regular technical exchanges. In addition, employees of the Railway Operations Divisions and the Technology Research and Development Department work together to enhance the technological capabilities of the entire company. We are also promoting efforts to develop engineers by, for example, supporting research by free-minded researchers who take on new challenges. Going forward, we will monitor technological trends in other industries and fields, broaden our scope of inspiration and application capabilities, and actively incorporate external knowledge to enhance our organizational capabilities so that we can address the difficult technological challenges we face in the railway business.



External view of Komaki Research Center

## ▶ Major technological developments—Sophistication and labor saving of maintenance operations, cost reduction in maintenance and replacement of equipment—

At JR Central, we are developing technologies to advance, reduce labor, and reduce costs of operations, such as mechanizing and systemizing maintenance operations, on the basic premise that safety is ensured. Specifically, we are working to develop technologies based on the three pillars of introduction of new technologies, data analysis and evaluation, and

active maintenance. In recent years, we have been utilizing new technologies such as sensing, image recognition, information communication, mass data analysis, and robotics, as well as developing technologies that will lead to the consolidation of equipment, extension of service life and optimization of standards, which we will utilize in our business reforms.

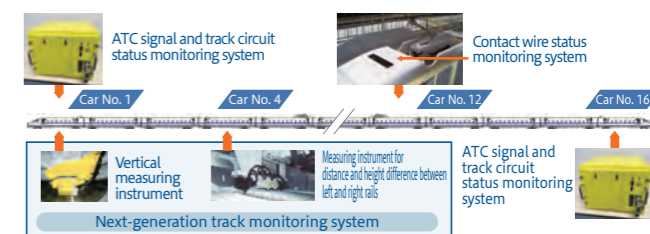
### (Example of technological development (1)) Development of technology for measuring ground equipment using N700S commercial rolling stock

On the Tokaido Shinkansen, tracks and electrical equipment are measured about once every 10 days using Dr. Yellow, a train dedicated to measurement. We have also developed technology to reduce the size and weight of measuring instruments that can be installed in the N700S, the commercial rolling stock of the latest model, in order to grasp the condition of facilities more frequently to perform maintenance work in a timely manner.

workers performed once a month at night to achieve significant labor saving. This will also enable frequent checking of ATC signals and track circuit integrity, achieving early detection of signs of abnormality and prompt implementation of necessary measures and maintenance for signal equipment and track circuits.

As for measurements of the condition of tracks, we developed a next-generation track status monitoring system with improved accuracy by using our own calculation program. This will make it possible to monitor the condition of tracks more frequently and more accurately by measuring the condition of tracks while trains are running and sending data to the General Control Center and others in real time.

After the accuracy of the measurements and durability of these systems were confirmed through a series of running tests using the N700S verification test car, commercial operation of the N700S equipped with measuring instruments was launched in FY2021.



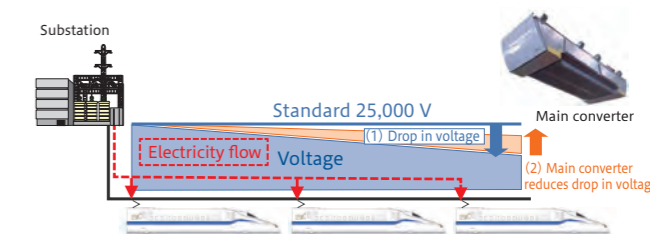
Measurement of ground equipment by N700S commercial rolling stock

### (Example of technological development (2)) Development of function to maintain overhead wire voltage by Shinkansen rolling stock

For the Tokaido Shinkansen, we have maintained overhead wire voltage by enhancing electrical equipment on the ground to prevent failure to maintain the necessary voltage to ensure stable operation of trains due to a drop in overhead wire voltage caused by operating trains on a high-density schedule. As a technology to replace the maintaining of overhead wire voltage by the ground equipment, we have developed a function in rolling stock that reduces declines in overhead wire voltage by improving the software of the main converter installed on N700S cars. This is the world's first technology to maintain overhead wire voltage through rolling stock.

annually. Since FY2022, this function has been installed on certain N700S commercial rolling stock to verify and test the function. After the results of the test have been confirmed, we plan to install the function on other N700S rolling stock.

By realizing a function to maintain overhead wire voltage in rolling stock, we can reduce certain substations and power compensators. When this function has been introduced in all Tokaido Shinkansen trainsets, we expect to be able to reduce the number of substations by approximately 10% and power compensators by about half. The introduction of this system is expected to reduce our power consumption by approximately 20 million kWh

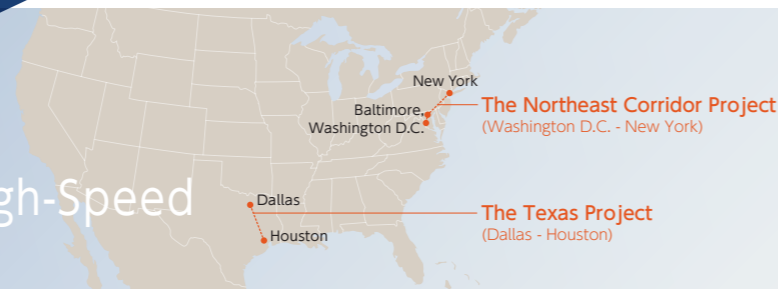


Development of function to maintain overhead wire voltage by Shinkansen rolling stock



Creating "Social Value" —Social—

# Overseas Deployment of High-Speed Railway Systems



## Significance of overseas expansion

The overseas deployment of high-speed railway systems that JR Central pursues is expected to expand the markets of related domestic manufacturers and maintain and strengthen their technological capabilities, in turn fed back to JR Central in the form of a stable supply of materials and equipment and technological innovation and cost reductions in railway-related equipment. We therefore believe that the overseas deployment of high-speed railway systems is an important initiative for JR Central to fulfill its mission of maintaining and developing Japan's main transportation artery into the future. The candidates for

deployment are countries and regions where the introduction of total systems involving new high-speed passenger railway lines can be expected, on which our superior high-speed railway systems can be used to their full potential. Furthermore, we realize the need for the target countries and regions to have a complete legal system where intellectual property rights and the sanctity of agreements are established as socially accepted ideas, a stable political situation, and the economic strength to invest in large-scale infrastructure investments. Therefore, the U.S. is currently the target for promotional activities.

## Consulting & coordination business

Based on the belief that huge infrastructure, such as a high-speed railway, which serves as the foundation of local communities and the economy, should be owned and operated responsibly by the governments and companies of the country or region where such infrastructure is located, JR Central's policy regarding the overseas deployment of high-speed railway systems is that we do not lead the implementing body of development projects. Instead, we contribute to the projects by providing consulting services. Specifically, we propose the deployment of high-speed

railways as a total system, which includes civil engineering structures, tracks, electrical equipment, signaling equipment, rolling stock, operation management systems, and maintenance and repair, to overseas markets. We not only provide support and consultation to ensure safe and reliable operation of the high-speed railways by formulating technical specifications, supplying various manuals regarding operations and maintenance, and conducting education and training for staff, but we also coordinate with relevant Japanese companies when projects become concrete.

### Initiatives in the high-speed railway project in the U.S.

We have been working on the Texas Project, which aims to get the Tokaido Shinkansen system, the high-speed railway system with the highest level of safety and precision in the world, up and running in the state of Texas, and the Northeast Corridor Project, which aims to introduce the SCMagLEV, our superconducting maglev system that is capable of an operating speed of 500 km/h, to the Northeast Corridor.

The Texas Project is a private business venture that aims to link two major cities in the state of Texas, Dallas and Houston, via the Tokaido Shinkansen rail system. The key development players in the project, Texas Central Partners and its subsidiary (hereinafter collectively referred to as "TC"), are currently proceeding with business development activities, including the formulation of technical specifications and processes, the creation of the schematic design of facilities and operation & maintenance plans, and the procurement of construction funds. We provide consulting to assist TC's business development activities from a technological standpoint through a local subsidiary, High-Speed-Railway Technology Consulting Corporation (HTeC), founded in 2016. Furthermore, in 2018, we launched another local subsidiary, High-Speed-Railway Integration Corporation (HInC), to make preparations for signing contracts for core systems in cooperation

with other Japanese manufacturers.

In the Northeast Corridor Project, we are aiming to introduce our SCMagLEV to the Northeast Corridor connecting Washington, D.C. to New York City and have been engaged in promotional activities to realize cooperation between the Japanese and U.S. Governments for the development of the Washington, D.C.-Baltimore section. Currently, the Federal Railroad Association and other relevant organizations are making preparations for environmental impact assessment and other procedures, using a federal grant provided to the State Government of Maryland, while the Government of Japan is conducting research to introduce the SCMagLEV in the U.S. Meanwhile, both the Japanese and U.S. governments are showing more understanding and support for this project, in part because we provided the U.S. Secretary of Transportation and other leading officials with an opportunity to ride on a Maglev train and realize the strong potential of the technology. We are planning to provide comprehensive technical support when the project is put into action.



U.S. Secretary of Transportation Chao visits Tokyo Station

### Technical consulting for Taiwan High Speed Rail

In response to a request for technical assistance from Taiwan High Speed Rail Corporation, which operates Taiwan's high-speed rail system based on the Japanese high-speed rail system, we started providing technical consulting in FY2014. We have completed nine individual projects to date.

### Making efforts to promote Japanese high-speed rail systems as a global standard

We will continue to promote initiatives to establish the Japanese high-speed rail system, which is based on the core principle of "Crash Avoidance," as a global standard through the International High-Speed Rail Association (IHRA).

Going forward, the construction work that we have been consulting on in the planning stage will be in full swing. We will continue to respond to the request from Taiwan High Speed Rail Corporation and contribute to the safe and reliable transportation of Taiwan High Speed Rail.



IHRA International Forum (left: main conference, right: technical visit)

Creating "Social Value" —Social—

# Building Relationships with Material Suppliers



## Policy on material procurement

As it is necessary to procure higher-quality and reliable materials at reasonable prices to support safe and reliable railway transportation, JR Central procures quality materials in Japan and from overseas based on its Basic Philosophy of Material Procurement. In particular, we recognize that quality is the most important factor and inspect our suppliers' technological standards and manufacturing capabilities as well as their efforts to maintain and improve such standards and capabilities. We also constantly strive to reduce costs by promoting the entry of new suppliers, placing orders that take into account economies of scale and strictly assessing manufacturing costs, among other efforts. In the railway business, which requires us to continue to fulfill our social mission in a stable and sufficient manner over a long period of time, it is also necessary to maintain the quality of materials used in the business over the long term. For this reason, we ask our suppliers

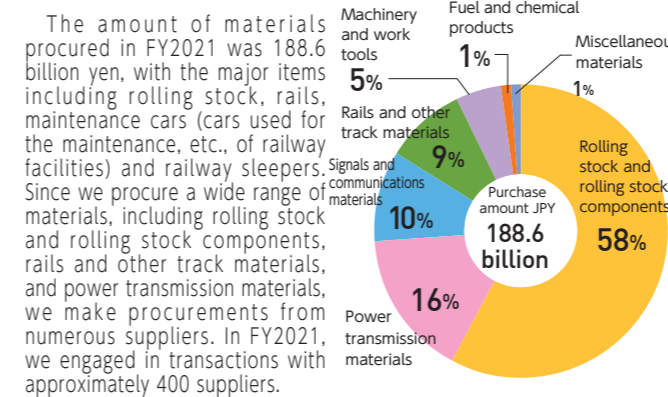
to provide us with a stable supply and after-sale services. In particular, we place orders with multiple suppliers for materials that are indispensable for our daily operation in order to disperse the manufacturing locations geographically so that we can avoid the risk of supply disruption due to an earthquake or other disasters. Furthermore, we ask our suppliers to comply with the relevant laws and regulations and to respect human rights. We investigate their efforts in those matters not only when starting business but also during quality audits at their plants.

Suppliers are business partners in constantly making efforts to reduce costs while maintaining and improving product quality. We believe that building continuous and stable business relationships will enable us to procure high-quality products at low prices and, as a result, will contribute to the enhancement and development of all railway-related businesses in Japan, including our suppliers.

### Basic Philosophy of Material Procurement

1	Procurement prioritizes the maintenance of safe and reliable transportation
2	Procurement of high-quality materials
3	Procurement of materials at reasonable prices
4	Pursuit of suppliers possessing a supply system capable of strictly adhering to contractual delivery deadlines
5	Pursuit of suppliers capable of building a continuing and stable business relationship
6	Pursuit of suppliers capable of supplying satisfactory after-sale care regardless of whether such service is needed during normal or emergency times
7	Pursuit of suppliers capable of adapting to diverse usage environments
8	Establishment of a satisfactory communication framework
9	Appropriate handling of information
10	Fair and equitable transactions
11	Pursuit of suppliers giving consideration to reducing the environmental burden
12	Compliance with relevant laws and regulations
13	Providing and updating website information on procurements

## Actual procurement amount of main materials (FY2021)



## Quality management initiatives

JR Central recognizes that quality management of the procured materials is extremely important from the viewpoint of ensuring safe and reliable railway transportation. Therefore, in addition to reviewing the management status of suppliers, we conduct rigorous inspections of their technological standards and manufacturing capabilities, perform quality audits at our suppliers' plants, and take other steps to ensure that the quality required for our products is maintained.



Conducting a quality audit of rolling stock components

### Declaration of Partnership Building

In support of the "Declaration of Partnership Building" promoted by the government and economic organizations, JR Central declares that it will concentrate its efforts on co-existence and co-prosperity throughout the supply chain, new business tie-ups transcending corporate scales and affiliations, and compliance with desirable trade practices between parent enterprises and subcontractors.





Creating "Social Value" —Environment—

## Contribution to Global Environment Preservation



Goals toward carbon neutrality\*

# Zero

vs FY2013  
CO<sub>2</sub> emissions in FY2030  
**46% reduction**

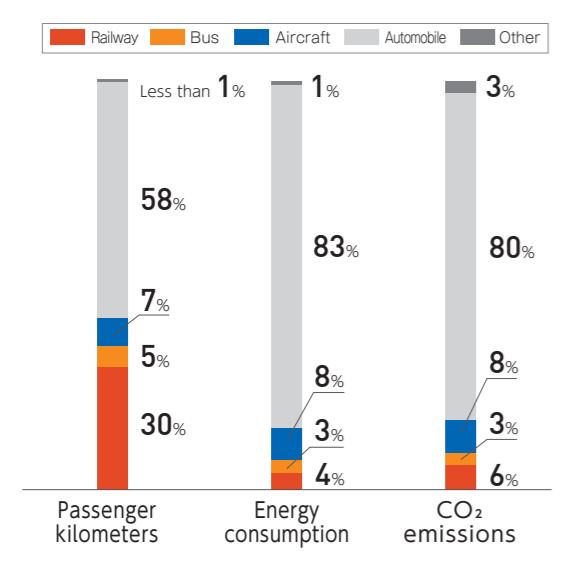
\*Based on the Japanese government's policy to achieve carbon neutrality by 2050

### Environmental superiority of railways

The problem of global warming is an issue that should be addressed on a global scale. While it is regarded that CO<sub>2</sub> has the largest emissions and thus the largest impact on global warming among greenhouse gases, railways have the outstanding characteristic of being highly energy efficient compared to other transportation modes and having minimal adverse impact on the global environment. Railways account for only 6% of CO<sub>2</sub> emissions despite undertaking 30% of Japan's overall passenger transport volume. Compared to an aircraft (B777-200), the Tokaido Shinkansen

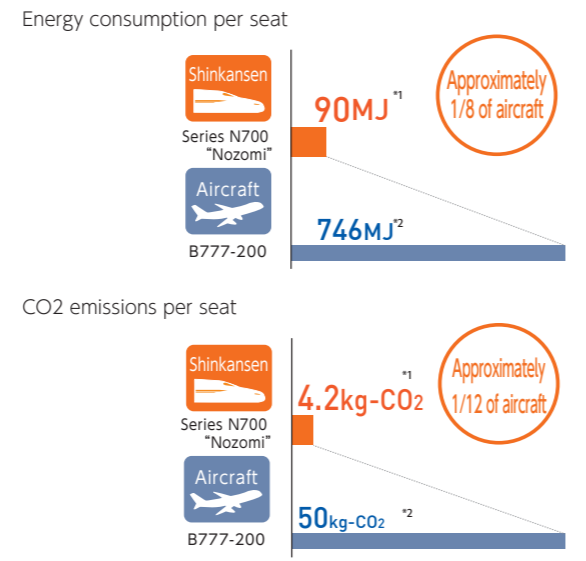
(Series N700 "Nozomi") consumes approximately one-eighth of the amount of energy per seat when traveling between Tokyo and Osaka and discharges about one-twelfth of the CO<sub>2</sub> emissions, proving that the Tokaido Shinkansen has overwhelming environmental superiority. JR Central believes that having as many passengers as possible opt to use railway services, which have a smaller environmental impact compared to other modes of transport, will mitigate the load placed on the environment across the entire Transportation section and contribute to global environment preservation.

Distribution of passenger transportation share, in terms of transportation volume, energy consumption, and CO<sub>2</sub> emissions



\*The items in the breakdown may not add up to 100% due to rounding. Source: Handbook of Energy & Economics Statistics (2019) for transportation volume and energy consumption. 2019 data from the National Institute for Environmental Studies, Greenhouse Gas Inventory Office of Japan for CO<sub>2</sub> emissions.

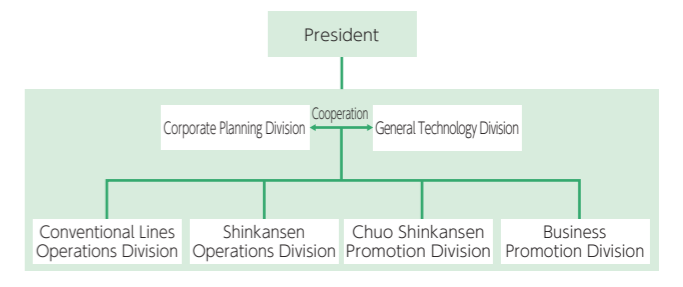
Comparison of the Tokaido Shinkansen and aircraft (between Tokyo and Osaka)



<sup>1</sup> Calculation based on running performance (by JR Central) of Series N700 Nozomi (Tokyo - Shin-Osaka). <sup>2</sup> Calculated by JR Central for B777-200 (Haneda - Itami/Kansai Airport) using ANA's "Annual Report 2011" for reference.

### Promotion structure

JR Central promotes initiatives for global environment preservation through a structure headed by the President, under which the Corporate Planning Division and the General Technology Division, in charge of the management units and technology units respectively, cooperate to formulate policies for efforts to achieve carbon neutrality, resource recycling and biodiversity, as well as policies for technological development, and the Operations Divisions of the two railway businesses, the Chuo Shinkansen Promotion Division and the Business Promotion Division roll out the specific efforts.



### Guidelines

#### Environmental Action Guidelines

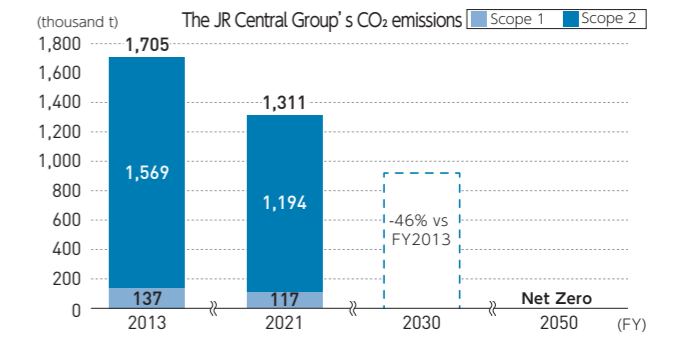
JR Central has established a set of Environmental Action Guidelines consisting of the following seven items as part of its engagement in global environment preservation.

- 1 Provide comfortable transportation services to promote further use of railways, which offer superior global environment preservation
- 2 Promote technological development that contributes to global environment preservation
- 3 Use fuel and energy efficiently
- 4 Promote waste control and recycling
- 5 Appropriately manage chemical substances
- 6 Procure environmentally friendly goods and materials
- 7 Contribute to society and raise awareness for global environment preservation

### Goals toward carbon neutrality

With global environmental conservation as a key management theme, we have been constantly enhancing the environmental superiority of railways, which are more energy efficient and have less environmental impact than other modes of transportation, by proactively adopting energy-saving rolling stock and equipment.

Additionally, we strive to further reduce CO<sub>2</sub> emissions to achieve carbon neutrality in 2050. On the basis of the Japanese government's 2050 carbon-neutrality policy, JR Central and the JR Central Group aim to achieve net zero CO<sub>2</sub> emissions in 2050 as well as reduce CO<sub>2</sub> emissions in FY2030 by 46% from FY2013 levels.



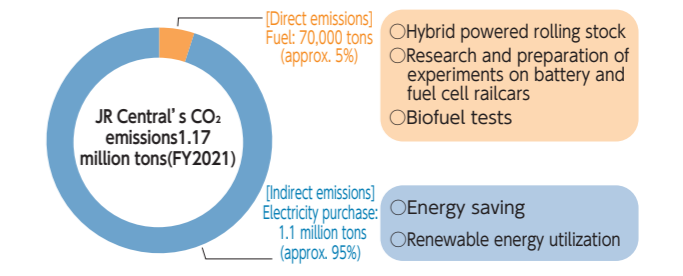
### Contribution to global environment preservation and the achievement of a decarbonized society

Of the 21.17 million tons of CO<sub>2</sub> emitted by JR Central, approximately 95% is indirectly emitted through our use of electricity, while the remaining 5% is directly emitted through our use of fuels, etc. To address the 5% direct emissions from the use of fuels, we will introduce the Series HC85 with reduced environmental impact as well as conduct research and prepare experiments on battery railcars and fuel cell railcars and promote tests on biofuels. To address the indirect emissions from the use of electricity, which account for the remaining 95% of the total, we will work to utilize renewable energy while making further energy-saving efforts, such as introducing additional energy-efficient rolling stock, including the N700S and Series 315, and accelerating the replacement of platform lights with LED, in addition to making decarbonization efforts across the entire Power Generation section in Japan.

We also endorsed the recommendations of the Task Force on Climate-related Financial Disclosures (TCFD)\* in May 2021, based on which we are analyzing the risks and opportunities related to climate change so that we can utilize them for stable business operations over the long term. We have so far disclosed qualitative information on the four elements specified by the TCFD as well as the results of a quantitative analysis on facility damage of the Tokaido Shinkansen due to flooding. Going forward, we will continue to add depth to our risk analyses and consider

strengthening our facilities to prepare against natural disasters. We will also cooperate with external companies and organizations to contribute to the preservation of the global environment and achievement of a decarbonized society by further enhancing the environmental superiority of railways through new technologies and initiatives that contribute to the reduction of environment impact.

#### Initiatives to mitigate CO<sub>2</sub> emissions



- Hybrid powered rolling stock
- Research and preparation of experiments on battery and fuel cell railcars
- Biofuel tests
- Energy saving
- Renewable energy utilization



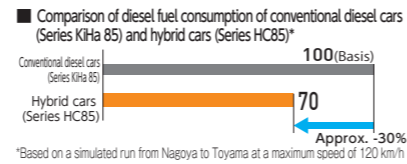
Contribution to Global Environment Preservation

Initiatives to reduce direct CO<sub>2</sub> emissions

Hybrid powered rolling stock

We began introducing the new, hybrid powered limited express Series HC85 in FY2022 as a successor to the Series 85 diesel railcars used for our limited express trains "Hida" and "Nanki." The Series HC85 achieves an approximately 30% reduction in diesel fuel consumption and CO<sub>2</sub> emissions and an approximately 40% reduction in NOx emissions in

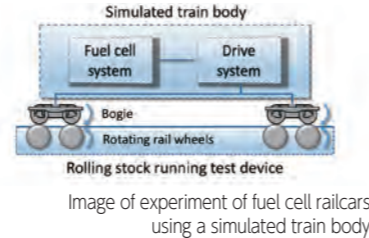
comparison to the Series 85 diesel railcars by making use of the power stored in the batteries when accelerating and stopping.



Research and preparation of experiments on battery and fuel cell railcars

At Komaki Research Center, we are making preparations for simulated running tests of fuel cell railcars, which are expected to mitigate environmental impact, such as by achieving zero CO<sub>2</sub> emissions when running. The tests will be conducted under conditions that simulate actual railway sections. Although the practical application of fuel cell railcars still poses various challenges, including safe handling of hydrogen as fuel, transportation and storage of hydrogen, reduction of size and weight of equipment, durability, and cost effectiveness, we are committed to make steady efforts.

are no overhead wires. Although the current battery performance poses limitations in travel distance, which are a challenge that cannot easily be overcome, we will advance our research, including verification of durability and cost effectiveness.



We are also conducting research toward the practical application of battery railcars, which are equipped with a large running battery and can run on sections where there

Biofuel tests

In January 2022, we cooperated with Euglena to examine the impact of next-generation biodiesel fuel on engine performance and conducted running tests using a Series HC85 test car to verify the practicality of next-generation biodiesel fuel. Furthermore, as described in the "FY2022 New Technological Development Issues of the Railway Technology Development and Promotion

Framework" by the Ministry of Land, Infrastructure, Transport and Tourism, we will conduct demonstration tests with the Railway Technical Research Institute and other JR companies for the introduction of biofuel.

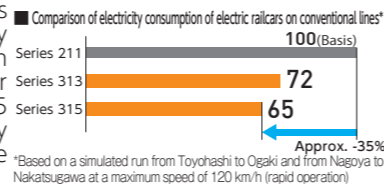


Initiatives to reduce indirect CO<sub>2</sub> emissions

Energy-saving - Introduction of energy-conserving rolling stock -

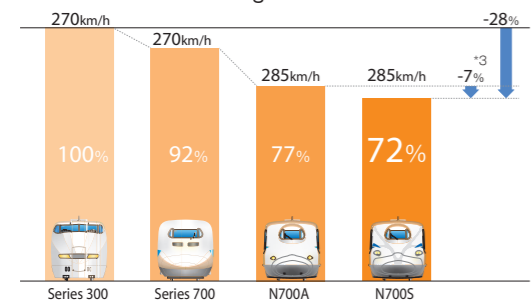
We are actively developing and introducing energy-conserving rolling stock in an effort to further reduce the Tokaido Shinkansen's energy consumption. To replace the Series 300 and the Series 700, we have introduced a total of 80 Series N700 trainsets since FY2007 and 51 N700A trainsets since FY2012. Furthermore, we have been introducing the N700S since FY2020 to replace Series N700, with a plan to introduce 59 trainsets by FY2026.

FY2021 decreased by approximately 32% from what it was in FY1990. JR Central has also been striving to reduce the energy consumption of rolling stock on conventional lines. We have been introducing the new type commuter train Series 315 since FY2021 to replace Series 211, with a plan to introduce 352 cars by FY2025. With further improvements made in energy efficiency through the use of silicon carbide for the power converter, the Series 315 consumes approximately 35% less electricity than the Series 211.



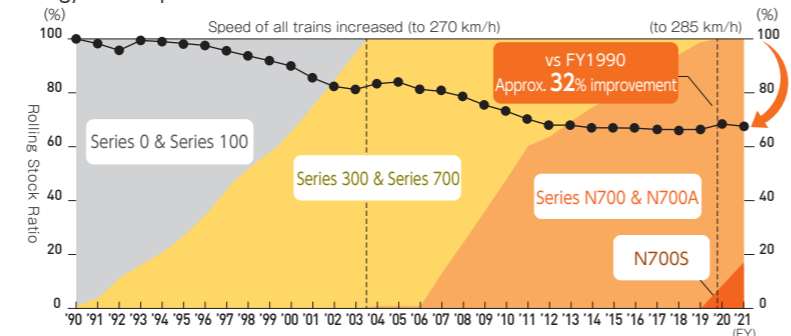
\*1 Generic name of N700A and the Series N700 (enhanced version)  
\*2 JR Central defines unit energy consumption as the amount of energy consumed when running one car for one kilometer, as total rolling stock kilometers is the value that is the most relevant to its business activities.

Comparison of electricity consumption by type of Tokaido Shinkansen rolling stock



Notes: 1. Based on a simulated run from Tokyo to Shin-Osaka at the maximum speed above 270km/h  
2. Figures in brackets represent the year in which the series was introduced.  
3. Includes the effect of optimization of air conditioning control method

Trend of the ratio of Tokaido Shinkansen rolling stock and unit energy consumption



Issuance of Green Bonds\*

To further advance our efforts to preserve the global environment, we issued Green Bonds in March, May and October of 2022. The funds procured through these Green Bonds have been appropriated for investment in the replacement of Shinkansen rolling

stock with the N700S, which contributes to the preservation of the global environment.  
\*See our website for further details.

URL: <https://company.jr-central.co.jp/ir/greenbond/>

Energy-saving - Facility improvement -

We have developed a function that can maintain overhead wire voltage by achieving a function in rolling stock that reduces the decline in overhead wire voltage, which had previously been enabled through power compensators on the ground, by improving the software of the main converter installed on N700S cars. We will install this function on certain N700S commercial rolling stock and verify and test

the function until February 2023. After the results of the test have been confirmed, we plan to install the function on other N700S rolling stock. When this function has been introduced in all Tokaido Shinkansen trainsets, we expect to be able to reduce the number of substations by approximately 10% and power compensators by about half and cut down on electricity consumption by approximately 20 million kWh per year.

Renewable energy utilization

Of our facilities, the SCMAGLEV and Railway Park and the Hamamatsu Workshop have installed solar power generation systems. The system generates power of approximately 450,000 kW per year at the SCMAGLEV and Railway Park and approximately 470,000 kWh per year at the Hamamatsu Workshop. We will continue to consider solar power generation and other systems using new plots of land held by the company.

Electric Power Development Co., Ltd. In this initiative, the electric railcars on the Taketoyo Line will run on power virtually entirely generated by renewable energy by purchasing and using FIT non-fossil fuel energy certificates\* worth approximately 2 million kWh, the annual electricity volume used for the operation of electric railcars on the Taketoyo Line, from Electric Power Development Co., Ltd. This will result in approximately 760 tons of net zero CO<sub>2</sub> emissions per year.



On July 1, 2022, we also embarked on efforts to achieve net zero CO<sub>2</sub> emissions in the operation of electric railcars on the Taketoyo Line in cooperation with

\*The FIT non-fossil fuel energy certificate is a certificate of the non-fossil fuel energy value of the renewable electricity purchased under the FIT (Feed-in Tariff) system.

Contribution to compliance and the achievement of a recycling society

JR Central ensures compliance with various environmental laws and regulations while striving to appropriately manage chemical substances and

reduce waste. We also promote the effective use of resources to reduce environmental impact through the 3Rs initiative (Reduce, Reuse and Recycle), etc.

Reducing food loss

By installing "fuubo," which is a vending machine operated by ZERO company, at the facilities of the JR Central Group (five locations in total, including Takashimaya Gate Tower Mall), we strive to reduce waste of snack foods, etc. that have passed their delivery date and may be discarded.

In 2021, we donated our head office's stockpile food that was approaching its expiration date to a certified NPO engaged in the food bank business, with the aim of contributing to local communities and reducing food loss.



Management of chemical substances and waste

As part of our efforts to preserve the global environment, we conduct an annual compliance survey of all workplaces in order to ensure compliance with various environmental laws and regulations and appropriately manage chemical substances, etc. We also conduct internal audits to check compliance at each workplace and provide feedback on the results to the workplace to ensure thorough compliance.

coating robot for the Shinkansen in our Hamamatsu Workshop in 2017, enabling environmentally friendly water-based painting. We also introduced the country's first water-based paint coating robot for the front of trains on conventional lines in the Nagoya Workshop in 2020, enabling water-based painting of some bodies.



Furthermore, while we had been using oil-based paint containing volatile organic compounds (VOC) for full body painting of trains on the Shinkansen and conventional lines, we introduced the country's first water-based paint

Management of chemical substances

Based on the PRTR system\*1 under the Act on Confirmation, etc. of Release Amounts of Specific Chemical Substances in the Environment and Promotion of Improvements to the Management Thereof (Pollutant Release and Transfer Register Law), we report the amount of emissions and transfer of relevant substances and manage those substances appropriately.

Measures against soil contamination

We submit a report to the relevant organizations should any substances exceeding the standard value set be detected in soil surveys conducted at the time of landform changes or land sales, and we will take appropriate measures as instructed by laws and regulations and the administrative authorities.

Measures against water contamination

Some of our offices use vehicle washing equipment that falls under the category of specified facilities under the Water Pollution Control Act. We are working to prevent water pollution by installing devices to treat wastewater generated by cleaning and regularly measuring the pollution status of such wastewater.



Measures against air pollution

Our measures to prevent air pollution in regard to boilers, which are soot and smoke emitting facilities,\*2 include introducing burners that reduce the generation of NOx and devices adopting an exhaust gas recirculation system that reduces the generation of NOx by recirculating combustion exhaust gas and regularly measuring and recording the amount and concentration of soot and smoke.

Furthermore, in accordance with the Act on Rational Use and Appropriate Management of Fluorocarbons (Fluorocarbons Recovery and Destruction Act), we manage class-1 specified equipment properly by inspecting and keeping records on it.

\*1 A system whereby business operators identify the amount of chemical substances that may be harmful to human health or the ecosystem that are released from their business sites into the environment (air, water and soil) and are transferred outside of business sites as part of waste and report it to the national government. The government then tabulates and discloses the amounts released and transferred based on such reported data and estimates.

\*2 Soot and smoke emitting facilities refer to facilities installed at workplaces that generate and emit soot and smoke and that can cause air pollution through such soot and smoke.



➤ Contribution to Global Environment Preservation

Reducing waste

The aluminum from scrapped Shinkansen rolling stock is recycled into interior materials and interior parts of the N700S. For example, recycled aluminum from scrapped Series 700 Shinkansen rolling stock was used to create the pillars and ceilings of concourses and other parts of Tokyo Gift Palette, a commercial facility at the Yaesu North Exit. (The project was awarded the 2019 Japan Aluminum Association Development Prize and the 2021 Good Design Award.) We also provide recycled aluminum from Shinkansen rolling stock as store interior materials to The Body Shop, a U.K. cosmetics brand. Recycled aluminum from Shinkansen rolling stock

reduces environmental impact compared to when producing new aluminum since it can reduce CO<sub>2</sub> emissions by 97% as it eliminates the use of energy for production.

Other initiatives include reducing the generation of waste during construction, utilizing rainwater, and recycling train tickets and station staff uniforms.



Reuse of aluminum used in a train body

URL <https://www.tokyoeiki-1bangai.co.jp/700aluminum/>

Sustainable public procurement

JR Central implements a green procurement policy, prioritizing the procurement of environmentally friendly materials. To this end, we established the JR Central

Green Procurement Guidelines to enhance coordination with our suppliers and work with them to contribute towards global environment preservation.

URL [https://company.jr-central.co.jp/company/material\\_procurement/\\_pdf/green\\_guide\\_line.pdf](https://company.jr-central.co.jp/company/material_procurement/_pdf/green_guide_line.pdf)

➤ Initiatives by JR Central Group companies that contribute to compliance and global environment preservation

JR Central Group companies are also implementing initiatives that contribute to compliance and global environment preservation.

➤ JR Tokai Bus Company

In 2017, JR Tokai Bus began introducing vehicles that conform with the 2016 Emissions Control. Approximately 30% of the vehicles it currently owns comply with this regulation. These vehicles also adopt AMT (automated manual transmission). AMT buses can improve fuel economy by up to 15% or more compared to MT (manual transmission) buses, thus reducing diesel fuel consumption during operation. We will continue to implement initiatives that contribute to global environment preservation.



An AMT bus

➤ JR Tokai Hotels Co., Ltd.

JR Tokai Hotels is working to rationalize the use of plastic products in accordance with the criteria of the Plastic Resource Circulation Act, which was enacted on April 1, 2022. We strive to reduce the amount of plastic products provided by offering knives, forks and spoons made of an alternative material and straws made of paper and by confirming the will of customers in providing shower caps. Through these initiatives, we aim to reduce the provision of plastic products subject to the Act by 27% in FY2022 compared to FY2018.



Products using an alternative material

➤ JR-CENTRAL PASSENGERS Co., Ltd.

More than 50% of the coffee beans used in the coffee sold on the Tokaido Shinkansen "Nozomi" and "Hikari" trains are grown on farms certified by the Rainforest Alliance. The Rainforest Alliance was established in 1987 as an international non-profit environmental protection organization, and their activities cover more than 60 countries. With the aim of improving the lives of farmers and managing tropical rain forests sustainably, the Alliance gives certification to farms that meet the criteria for forest and river protection, pesticide restrictions, waste management, and the like. Through the procurement of certified coffee beans, we contribute to global environment preservation.



Onboard service

➤ Conservation of biodiversity and coexistence with local communities

In order to mitigate the impact of business activities on the ecosystem and to contribute to local communities, JR Central strives to conserve biodiversity in cooperation with outside companies and organizations.

For example, to further advance the conservation of the natural environment of Japan's Southern Alps, JR Central is engaged in the following initiatives that support the efforts of local communities to conserve alpine flora and maintain forests.

➤ Conservation of alpine flora

In Japan's Southern Alps, there have been issues of loss of flower fields due to deer depredation and sediment discharge, among others. In Nagano Prefecture, the Southern Alps Counter-Depredation Association has been implementing measures to protect alpine flora by installing deer-proof fencing and capturing Japanese deer, among other measures. JR Central entered into a Biodiversity Partnership Agreement with the Southern Alps Counter-Depredation Association and Nagano Prefecture in March 2022 to provide partial support for the expenses necessary for alpine plant conservation activities conducted by the Association. Our employees also take part in the installment of deer-proof fences.

➤ Forest maintenance

In the areas centered around the Southern Alps UNESCO Eco Park, JR Central is supporting efforts of the local communities to maintain forests. In March 2022, we entered into a Forest Maintenance Agreement in Yamanashi Prefecture with the municipality of Fujikawacho and the Kyounan Forest Owner's Cooperative and a Forest Foster Parent Agreement in Nagano Prefecture with the municipality of Ooshikamura. Through support efforts based on these agreements, we will aim to "protect, utilize and nurture" the natural environment of the Southern Alps as a whole, together with the people in the local communities involved.

➤ Cooperation with external entities

Environmental Partnership Organizing Club (EPOC)

EPOC is a group that was established in 2000 mainly by the industry sector in the Chubu region, with the aim of building a sustainable economy and society by leveraging the environmental achievements of companies. (Please see EPOC's website for more details.)

We joined EPOC in FY2002 and are currently involved in the operation of the organization as a core company. We will continue to contribute to global environment preservation through EPOC in cooperation with member companies, among others.

■ Environment-related data

Activity status and environmental accounting for FY2021

The investments, costs, and their principal effect involved in environment preservation activities during FY2021 are estimated as listed below.

Environmental accounting

Category	Main Initiatives	Environment preservation cost (100 million yen) *1		Notes
		Investment	Expenses	
Global environment preservation cost	<ul style="list-style-type: none"> <li>Introduction of energy-conserving rolling stock</li> <li>Improved energy-efficiency at stations and office buildings</li> </ul>	953.9	12.9	<ul style="list-style-type: none"> <li>Percentage of energy-conserving rolling stock: 100% (Shinkansen electric railcars), 100% (conventional line (electric railcars and diesel railcars))</li> <li>New production of N700S rolling stock</li> <li>New production of Series 315 rolling stock</li> </ul>
Research and development cost	<ul style="list-style-type: none"> <li>Development of energy-conserving rolling stock</li> <li>Development related to environment preservation along railway lines</li> </ul>	0.0	107.5	<ul style="list-style-type: none"> <li>Energy consumption by N700S: -28% (vs Series 300)*</li> <li>*Comparison between Series 300 (traveling at 270 km/h) and the N700S (traveling at 285 km/h)</li> </ul>
Resource recycling cost	<ul style="list-style-type: none"> <li>Proper disposal and recycling of station and train refuse</li> <li>Proper disposal and recycling of items generated from workshops and construction work</li> </ul>	0.4	79.3	<ul style="list-style-type: none"> <li>Recycle rate of Shinkansen rolling stock: Approximately 90%</li> <li>Recycle rate of uniforms: Basically 100%</li> </ul>
Environment conservation cost along railway lines	<ul style="list-style-type: none"> <li>Countermeasures against noise and vibration</li> <li>Proper management of environmentally hazardous substances</li> </ul>	80.5	50.5	<ul style="list-style-type: none"> <li>Protection of the environment along railway lines by modifying noise-blocking walls and increasing their height, shaving rail surfaces, etc.</li> </ul>
Total *2		1034.9	250.4	

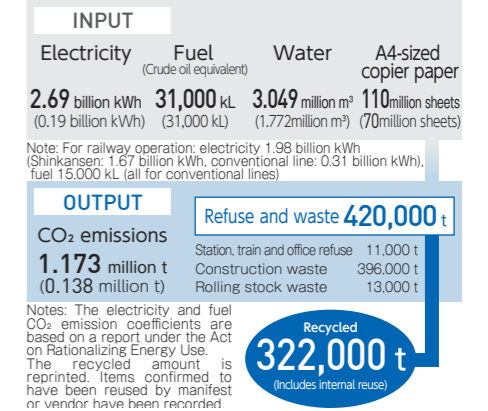
[Approach to environment preservation cost] \*1. Fractions below 10 million yen are omitted. \*2. Totals do not add up due to rounding.  
 ● Compilation is applicable only to JR Central. ● The applicable period is April 1, 2021 to March 31, 2022.  
 ● "Environmental Accounting Guidelines 2005," a publication of the Ministry of the Environment, was consulted with regard to aspects of style.  
 ● Depreciation is not included in the calculations for expenditures.  
 ● In the event of multiple-purpose expenditures, the full amount with greater environment preservation effect is included in the calculation.

Environmental load in business activities

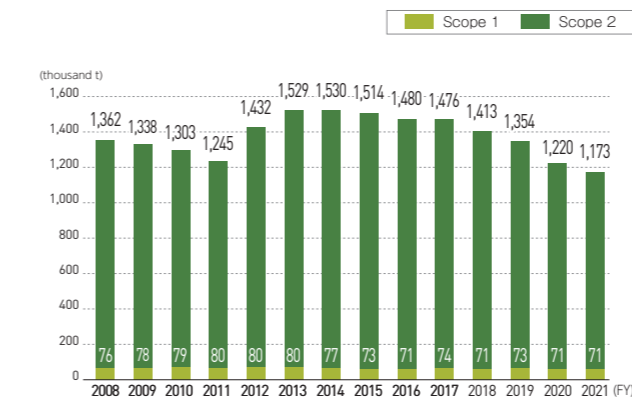
The main resources and energy consumed as well as waste generated in JR Central's business activities during the year FY2021 are as shown below.

INPUT and OUTPUT

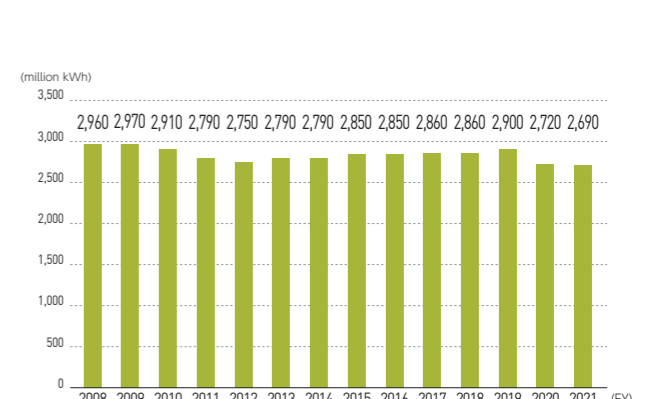
Figures in parentheses are for consolidated subsidiaries.



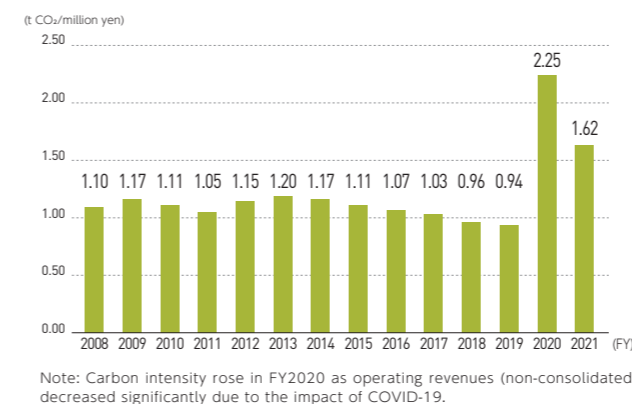
CO<sub>2</sub> emissions



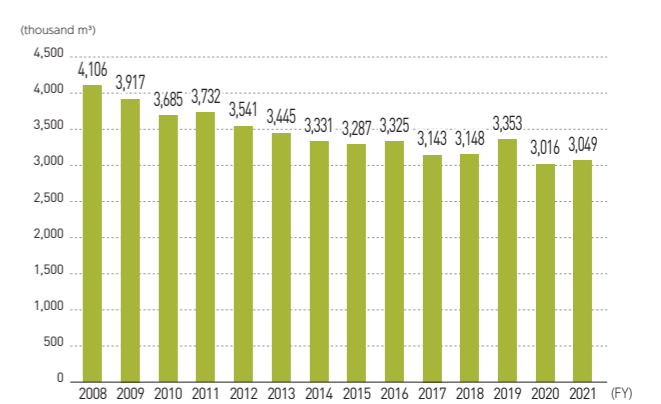
Electricity consumption



Carbon intensity



Amount of water used





## Creating "Social Value" —Corporate Governance—

### Board of Directors, Audit and Supervisory Board Members and Corporate Officers(as of June 23, 2022)

 Representative Director Chairman Koei Tsuge	 Representative Director President Shin Kaneko	 Representative Director Executive Vice President Shunsuke Niwa <b>Overseeing administration</b> (except for the Business Promotion Division)	 Representative Director Executive Vice President Akihiko Nakamura <b>Director General of the Business Promotion Division, overseeing special matters</b>
 Representative Director Executive Vice President Mamoru Uno (Ph.D.) <b>Overseeing the Chuo Shinkansen Promotion Division</b>	 Representative Director Executive Vice President Mamoru Tanaka <b>Overseeing the Shinkansen and Conventional Lines Operations Divisions and management of safety</b>	 Representative Director Executive Vice President Atsuhito Mori <b>Overseeing technology and overseas high speed railway projects</b>	 Director Torkel Patterson
 Director (Outside) Haruo Kasama	 Director (Outside) Taku Oshima	 Director (Outside) Tsuyoshi Nagano	 Director (Outside) Hiroko Kiba

 Full-time Audit and Supervisory Board Member Tatsuhiko Yamada	 Full-time Audit and Supervisory Board Member (Outside) Hajime Ishizu	 Full-time Audit and Supervisory Board Member (Outside) Fumio Yamashita	 Audit and Supervisory Board Members (Outside) Shigeo Kifuji
 Audit and Supervisory Board Members (Outside) Kunihiro Nasu			

#### Senior Corporate Executive Officers

**Kentaro Takeda** Director General of the Corporate Planning Division  
**Takanori Mizuno** Director General of the Chuo Shinkansen Promotion Division and overseeing management of construction  
**Motoaki Terai** Director General of the Maglev Systems Development Division of the Chuo Shinkansen Promotion Division  
**Hiroshi Suzuki** Director General of the Conventional Lines Operations Division, overseeing management of tracks and structures

#### Corporate Executive Officers

**Manabu Ishibashi** Deputy Director General of the Corporate Planning Division and General Manager of the Investment Planning Department  
**Tatsuya Okajima** Director General of the General Technology Division, overseeing management of electrical engineering  
**Hajime Ikuta** Deputy Director General of the Chuo Shinkansen Promotion Division  
**Shigeki Miyamoto** Deputy Director General of the Maglev Systems Development Division of the Chuo Shinkansen Promotion Division  
**Kenichi Niimi** Deputy Director General of the Chuo Shinkansen Promotion Division and General Manager of the Chuo Shinkansen Construction Department  
**Hiroto Takeuchi (Ph.D.)** Deputy Director General of the Chuo Shinkansen Promotion Division, General Manager of the Electrical Construction Subdivision of the Chuo Shinkansen Construction Department, and General Manager overseeing the Nagoya Construction Subdivision of the Chuo Shinkansen Construction Department  
**Ataru Kimura** General Manager of the Public Relations Department  
**Masami Nitta** General Manager of the Administration Department, overseeing the Legal Affairs Department  
**Masaya Sugiura** Director General of the Marketing Division  
**Atsushi Tsujimura** Director General of the Shinkansen Operations Division, overseeing management of transportation  
**Masami Owaki** Director General of the Shizuoka Branch Office

#### Directors' skills matrix

Name	Position and Responsibilities in the Company	Corporate management, Business Strategy	Governance, compliance	Personnel, education, labor affairs	Finance, accounting	Technological development, environment	Railway safety	Community relations, International aspects
Koei Tsuge	Chairman and Representative Director	●	●	●			●	●
Shin Kaneko	President and Representative Director	●	●	●	●		●	
Shunsuke Niwa	Executive Vice President and Representative Director Overseeing administration (except for the Business Promotion Division)	●		●	●		●	
Akihiko Nakamura	Executive Vice President and Representative Director Director General of the Business Promotion Division, overseeing special matters	●	●	●			●	●
Mamoru Uno (Ph.D.)	Executive Vice President and Representative Director Overseeing the Chuo Shinkansen Promotion Division					●	●	
Mamoru Tanaka	Executive Vice President and Representative Director Overseeing the Shinkansen and Conventional Lines Operations Divisions and management of safety		●			●	●	
Atsuhito Mori	Executive Vice President and Representative Director Overseeing technology and overseas high speed railway projects					●	●	●
Torkel Patterson	Director	●	●					●
Haruo Kasama	Director		●	●				
Taku Oshima	Director	●	●			●		●
Tsuyoshi Nagano	Director	●	●				●	●
Hiroko Kiba	Director		●	●			●	

Note: The above matrix does not represent all the expertise and experience of the directors.

#### Corporate Officers

**Naoki Hayakawa** Overseeing the Secretarial Department, the Audit Department and the Property Management Department  
**Kenji Fukami** Deputy Director General of the Corporate Planning Division, General Manager of the Planning & Development Department and General Manager of the Tokyo Planning & Development Department  
**Takahide Saito** Deputy Director General of the Corporate Planning Division and General Manager of the Information Systems Department  
**Kei Sakanoue (Ph.D.)** Deputy Director General of the General Technology Division and General Manager of the Technology Research and Development Department  
**Mitsuhiro Aoki** Deputy Director General of the General Technology Division  
**Masaru Yosano** Deputy Director General of the General Technology Division and Head of the Overseas High Speed Railway Project C&C Business Office of the Technology Planning Department  
**Hisao Sawada** Deputy Director General of the Chuo Shinkansen Promotion Division and General Manager of the Planning and Promotion Department  
**Hiroshi Shigeta** Deputy Director General of the Chuo Shinkansen Promotion Division and Deputy General Manager of the Planning and Promotion Department  
**Yoichiro Dendo** Deputy Director General of the Chuo Shinkansen Promotion Division and General Manager overseeing the Planning and Promotion Department  
**Hiroshi Tahata** Deputy Director General of the Chuo Shinkansen Promotion Division and General Manager overseeing the Planning and Promotion Department  
**Toru Futamura** Deputy Director General of the Chuo Shinkansen Promotion Division, General Manager of the Civil Engineering Subdivision of the Chuo Shinkansen Construction Department, General Manager overseeing the Civil Engineering Subdivision of the Chuo Shinkansen Construction Department, General Manager overseeing the Nagoya Construction Subdivision of the Chuo Shinkansen Construction Department and General Manager overseeing the Environment Preservation Subdivision of the Chuo Shinkansen Construction Department  
**Dai Koyama** Deputy Director General of the Chuo Shinkansen Promotion Division, General Manager of the Machinery Construction Subdivision of the Chuo Shinkansen Construction Department and General Manager overseeing the Nagoya Construction Subdivision of the Chuo Shinkansen Construction Department  
**Yuichi Hanahara** General Manager of the Personnel Department  
**Kazushi Ide** General Manager of the Finance Department  
**Hirofumi Kawada** Deputy Director General of the Business Promotion Division  
**Takeya Tanitsu** Deputy Director General of the Business Promotion Division  
**Kenji Hagihara** Deputy Director General of the Business Promotion Division  
**Hitoshi Kato** General Manager of the Construction Department and General Manager of the Nagoya Construction Subdivision of the Chuo Shinkansen Construction Department  
**Kazuma Tsukamoto** Deputy Director General of the Chuo Shinkansen Construction Department  
**Yoichi Inoue** General Manager of the Transportation Safety Department  
**Chika Takeda** General Manager of the General Education Center  
**Masafumi Kondo** Deputy Director General of the Shinkansen Operations Division and General Manager of the Transportation and Marketing Department  
**Akifumi Horaguchi** Deputy Director General of the Shinkansen Operations Division and General Manager of the Electrical Engineering Department  
**Shunichi Usui** Director General of the Kansai Branch Office overseeing management of rolling stock



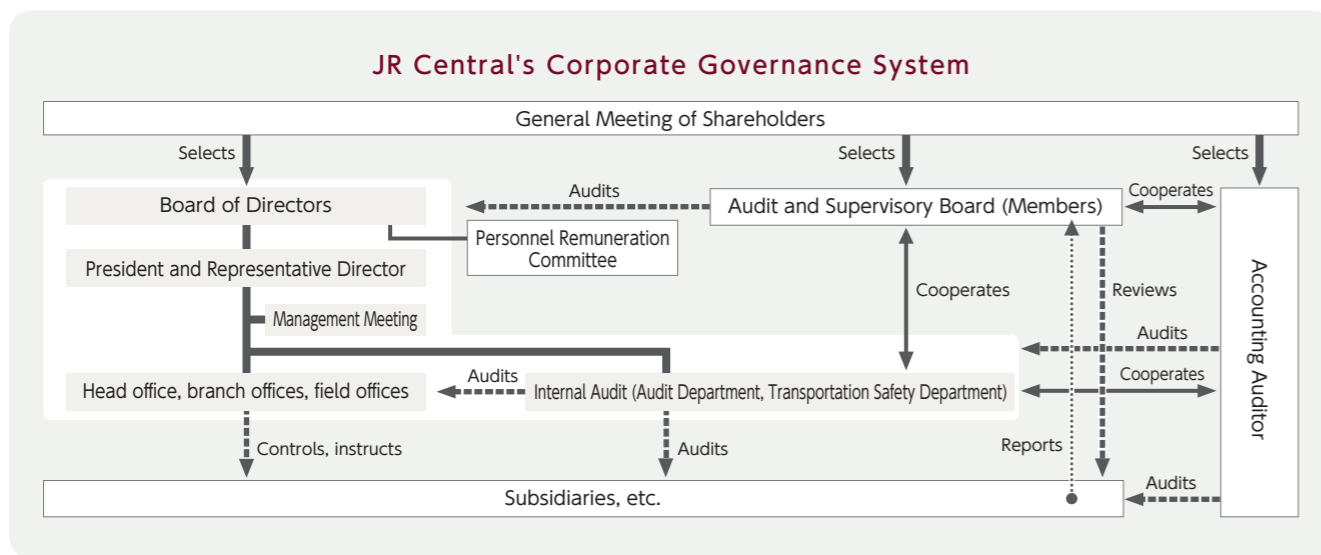
## Creating "Social Value" —Corporate Governance—

### Corporate Governance

JR Central strives to enhance its corporate governance to ensure the soundness, efficiency and transparency of its business management, thereby ensuring long-term development of the company and continuous enhancement of corporate value. We have announced our stance on, and the initiatives put in place in relation to, the Corporate Governance Code in the Corporate Governance Report.\*

\*The Corporate Governance Report can be found on our website.

[https://company.jr-central.co.jp/company/esg/governance/\\_pdf/governance.pdf](https://company.jr-central.co.jp/company/esg/governance/_pdf/governance.pdf)



### Overview of corporate governance system

JR Central's Board of Directors is composed of 12 directors (including four outside directors, one of whom is female) and is chaired by the company's chairman. JR Central also employs an auditor system, and its Audit and Supervisory Board consists of five members (four of whom are outside auditors). (The figures are as of June 23, 2022.)

The Board of Directors meets at least once a month to make legal and appropriate decisions upon fully discussing matters stipulated by law as well as important management matters. It also supervises the work of directors. A Management Meeting is held for in-depth discussion of important management issues. Chaired by the president, the Management Meeting is attended by all full-time directors, Audit and Supervisory Board members, and some corporate officers. By deliberating on a wider range of management matters ahead of Board of Directors' meetings, discussions at the subsequent Board of Directors' meetings are enhanced. We request members of the Audit and Supervisory Board to attend meetings of the Board of Directors, the Management Meeting and other important meetings as we endeavor to ensure the legality of management measures during the deliberation process. In addition to these initiatives, each director and member of the Audit and Supervisory Board performs self-assessment on the effectiveness of the Board of Directors, the results of which are discussed by the Board to further enhance its functions. Further, JR Central strives to ensure the appropriate execution of business by managing and providing guidance to subsidiaries, etc. where necessary.

From the perspective of ensuring the enhancement of objectivity and transparency in the determination of personnel changes and the remuneration of officers, JR Central has established the Personnel Remuneration Committee (chaired by an outside director) consisting of a total of five members: four independent outside directors and the president. The Committee deliberates twice a year with the attendance of all of its members prior to the decision of the Board of Directors on personnel changes and remuneration. Decisions made by the Board of Directors regarding the determination of personnel changes and remuneration are based on the content of deliberation by the Committee.

Although we introduced the corporate officer system in May 2003,

we adopted an executive system in June 2012 that is aimed at further accelerating decision-making and enhancing discussions by the Board of Directors and at further clarifying the roles of directors and corporate officers, who are responsible for business execution, in order to appropriately respond to changes in the business environment surrounding the Company in a timely manner. Audit and Supervisory Board members not only attend important meetings, such as the Board of Directors' meetings and the Management Meeting, but also perform rigorous audits based on plans formulated by the Audit and Supervisory Board through audits of head office departments, railway operation divisions, branch offices, field offices, subsidiaries, etc., as well as examination of the state of business execution by directors, corporate officers and employees through exchanges of opinions with them. To ensure effective audits by Audit and Supervisory Board members, JR Central also provides an assistant system whereby its employees are assigned as full-time staff to support the work of the Audit and Supervisory Board members.

Internal audits are performed by the Audit Department on the overall work of JR Central, its major subsidiaries, and other related companies from the perspective of compliance, efficiency and effectiveness of business operation. The audits are performed by such methods as checking business materials, contracts and other documents, observing operations, and interviewing related persons, and the results are reported to management. In addition, to prevent operational and labor accidents, safety audits are performed by the Transportation Safety Department, the results of which are also reported to management.

JR Central receives appropriate accounting audits that are based on generally accepted audit standards by Deloitte Touche Tohmatsu LLC, which has been selected as its accounting auditor.

Audit and Supervisory Board members, internal audit departments, and the accounting auditor cooperate with each other by exchanging information periodically or as necessary, and they receive necessary information from each department involved in internal control to confirm the status of implementation of each item stipulated in the Fundamental Corporate Governance Policies.

### Outside directors and outside Audit and Supervisory Board members

Based on its policy to ensure the most appropriate system for executing the duties of the company, JR Central appoints four outside directors and four outside Audit and Supervisory Board members. The level of independence of each outside director and outside Audit and Supervisory Board member is judged in accordance with the criteria for independence established by the Tokyo Stock Exchange, Inc. in order to ensure that the opinions provided are formed from an independent standpoint and are based on the high degree of experience and insight accumulated outside the Company.

From their independent standpoints and based on the high degree of experience and insight accumulated outside the Company, JR Central receives opinions from outside directors at meetings of the Board of Directors and the Personnel Remuneration Committee and from outside

Audit and Supervisory Board members at meetings of the Board of Directors and the Audit and Supervisory Board. In addition, through the various opportunities to provide briefing on our operations prior to Board of Directors' meetings, they provide us with valuable advice on economic and social developments and overall business management.

The advice given by outside directors and outside Audit and Supervisory Board members are utilized to perform audits by Audit and Supervisory Board members, internal audits, safety audits, and accounting audits, as well as to implement the items stipulated in the Fundamental Corporate Governance Policies.

Each outside director and outside Audit and Supervisory Board member is registered with the Tokyo Stock Exchange as an independent officer with no risk of conflict of interest with general shareholders.

#### Main concurrent posts held by outside directors and outside Audit and Supervisory Board members [As of March 31, 2022]

Name	Name of other company, etc.	Title
Director	Takashi Saeki	The Ogaki Kyoritsu Bank, Ltd. External Auditor
	Haruo Kasama	Toppan Printing Co., Ltd. External Auditor
	Taku Oshima	NGK Insulators, Ltd. Chairman and Representative Director
Audit and Supervisory Board members	Kunihiro Nasu	Hyojito Co., Ltd. Outside Director

#### Activity status of outside directors and outside Audit and Supervisory Board members [FY2021]

Name	Principal activity	
Director	Takashi Saeki	He attended all 12 meetings of the Board of Directors held in FY2021. In the Board of Directors' meetings, he has stated his opinions based on his experience in corporate management and other expertise. He also attended the meetings of the Personnel Remuneration Committee and expressed his opinions based on his extensive experience and deep insight into corporate management. In addition, through various briefing opportunities prior to Board of Directors' meetings, he has provided valuable advice on economic and social developments and overall business management. Through the abovementioned activities, he has contributed to the maintenance and further development of the sound management of the Company from the standpoint of an independent outside director.
	Haruo Kasama	He attended 11 of the 12 meetings of the Board of Directors held in FY2021. In the Board of Directors' meetings, he has stated his opinions based on his experience as a public prosecutor and lawyer and other expertise. He also attended the meetings of the Personnel Remuneration Committee and expressed his opinions based on his extensive experience and deep insight in law. In addition, through various briefing opportunities prior to Board of Directors' meetings, he has provided valuable advice on economic and social developments and overall business management. Through the abovementioned activities, he has contributed to the maintenance and further development of the sound management of the Company from the standpoint of an independent outside director.
	Taku Oshima	He attended 10 of the 12 meetings of the Board of Directors held in FY2021. In the Board of Directors' meetings, he has stated his opinions based on his experience in corporate management and other expertise. He also attended the meetings of the Personnel Remuneration Committee and expressed his opinions based on his extensive experience and deep insight into corporate management. In addition, through various briefing opportunities prior to Board of Directors' meetings, he has provided valuable advice on economic and social developments and overall business management. Through the abovementioned activities, he has contributed to the maintenance and further development of the sound management of the Company from the standpoint of an independent outside director.
Audit and Supervisory Board members	Haajime Ishizu	He attended all 12 meetings of the Board of Directors and all 14 meetings of the Audit and Supervisory Board held in FY2021. In the Board of Directors' and Audit and Supervisory Board meetings, he has stated his opinions based on his experience in transportation administration and other expertise.
	Fumio Yamashita	He attended all 12 meetings of the Board of Directors and all 14 meetings of the Audit and Supervisory Board held in FY2021. In the Board of Directors' and Audit and Supervisory Board meetings, he has stated his opinions based on his experience in police administration and other expertise.
	Shigeo Kifuji	He attended all 12 meetings of the Board of Directors and all 14 meetings of the Audit and Supervisory Board held in FY2021. In the Board of Directors' and Audit and Supervisory Board meetings, he has stated his opinions based on his experience as a public prosecutor and lawyer and other expertise.
	Kunihiro Nasu	He attended all 12 meetings of the Board of Directors and all 14 meetings of the Audit and Supervisory Board held in FY2021. In the Board of Directors' and Audit and Supervisory Board meetings, he has stated his opinions based on his experience as a lawyer and other expertise.

### Ensuring the effectiveness of the Board of Directors and the Audit and Supervisory Board

The appointment of directors is conferred to General Shareholders Meetings following a resolution of the Board of Directors concerning the appropriate election of candidates deemed to be the most fitting for the role as selected based upon a general consideration of their abilities, knowledge, work history, etc., irrespective of age, sex or nationality. The number of directors elected, the division of director roles, etc., are determined based on a comprehensive consideration of the progress of ongoing projects based on a policy of establishing the most appropriate system for the execution of the Company's operations. From the perspective of ensuring the enhancement of objectivity and transparency in the determination of personnel changes, etc. of officers, JR Central established the Personnel Remuneration Committee (chaired by an outside director) consisting of a total of five members: four independent outside directors and the president. The Committee deliberates twice a year with the attendance of all of its members prior to the Board of Directors' decision on personnel changes, etc. Decisions made by the Board of Directors regarding the determination of personnel changes, etc. are based on the content of deliberation by the Committee.

The important concurrent positions held by directors and Audit and Supervisory Board members are as described in the business reports and General Shareholders Meeting Reference Materials. All concurrently held positions bear no hindrance on the directors' or Audit and Supervisory Board members' ability to fulfill the roles and responsibilities of such positions for the Company.

The Board of Directors meets at least once a month to make legal and appropriate decisions upon fully discussing matters stipulated by law as well as important management matters. It also appropriately supervises the work of directors by holding discussions based on reports on business execution from the directors in charge of each operation. JR Central receives valuable broad-view advice on management from outside directors, which is brought into consideration in regulating the management of the Company.

Furthermore, each director and Audit and Supervisory Board member performs self-assessment of the effectiveness of the Board of Directors. The Company makes continuous efforts to further enhance the Board's functions by periodically reporting important matters in executing the business of the Company, such as the implementation state of internal audits and the occurrence of train and labor accidents, based on the content of discussions by the Board of Directors on the results of the aforementioned self-assessments. Additionally, round-table conferences for opinion exchanges between outside directors, outside Audit and Supervisory Board members (part-time) and members of management are held ahead of meetings of the Board of Directors in order to further improve the effectiveness of the Board.

Based on the above details, we find that, at meetings of the Board of Directors, the effectiveness of the entire Board of Directors is ensured to a satisfactory degree.



## Corporate Governance

### Remuneration for officers

Directors' remuneration is comprised of fixed basic compensation paid on a monthly basis and a bonus paid in June each year. The basic compensation amount is determined through a comprehensive assessment of a director's position, length of service, and other factors, while the bonus amount is determined mainly in consideration of the operating performance, such as ordinary income, as well as shareholder return and other factors. The specific bonus amount for each individual is determined in consideration of the degree of responsibility attached to the director's position, performance in ensuring safety, and performance of assigned duties. The ratio of the basic compensation and bonus we use as a guide is 3 to 1. The operating performance for FY2021 and other fiscal years is as described in the financial data on pages 43 to 46.

Outside directors' remuneration consists only of the fixed basic compensation paid on a monthly basis.

The Board of Directors has passed a resolution on the policy on determining the above directors' remuneration, as well as to leave the decision of the specific remuneration amount for each director to the discretion of President and Representative Director Shin Kaneko, who has knowledge of the performance of duties assigned to each director. For FY2021, however, bonuses will be unpaid since significant losses have been recorded. A decision was made at the 25th Ordinary General Meeting of Shareholders held on June 22, 2012 to keep the total annual amount of directors' remuneration at 1.2 billion yen or less (of which remuneration for outside directors is 50 million yen or less) and at the 35th Ordinary General Meeting of Shareholders held on June 23, 2022 to keep the total annual amount of outside directors' remuneration at 100 million yen or less. The amounts are ultimately decided by the president within these limits. The number of directors at the time of the conclusion of the 25th Ordinary General Meeting of Shareholders held on June 22, 2012 was 14 (three of whom were outside directors) and 12 (four of whom were outside directors) at the time of the conclusion of the 35th Ordinary General Meeting of Shareholders held on June 23, 2022.

The remuneration of Audit and Supervisory Board members consists only of fixed basic compensation paid on a monthly basis, and the appropriate amount is determined via discussions among Audit and

### Policy concerning cross-shareholdings

Our strategy for cross-shareholdings is based on a general consideration of the necessity thereof and is grounded in the belief that maintaining and bolstering long-term and stable business relationships through holding other companies' stock facilitate our operations and enhance our corporate value over the medium to long term. If any of our cross-shareholdings are deemed to be unnecessary in light of this policy, we will assess and possibly divest from them.

Additionally, our Board of Directors examines whether it is beneficial

### Policy for promoting constructive dialog with shareholders

JR Central positions the General Meeting of Shareholders as an important opportunity for dialog with shareholders and strives to improve the quality of question-and-answer sessions in the meeting as a means of contributing to sustainable growth and enhancing corporate value over the medium to long term. All dialog with shareholders is overseen by the general manager of the Administration Department, and questions, opinions and requests from shareholders are responded to, to the extent reasonable, in the form of an individual meeting or over the telephone, etc.

Of this, dialog with institutional investors is overseen by the director general of the Corporate Planning Division, and the IR team that is placed in the Business Administration Department, Corporate Planning Division, is in charge of the dialog response. The IR team strives to further improve shareholder dialog by organically coordinating with the Administration, Finance, Legal and other Departments. It also strives to improve upon dialog measures by not only holding individual meetings but also implementing online meetings and facility tours, etc., where necessary, in addition to holding quarterly financial results briefings. Dialog response is made, to the extent reasonable, together with senior management and directors or Audit and Supervisory Board members, based on a general consideration of the requests and interests put forth by the institutional investor. We conduct a questionnaire survey of institutional investors after individual meetings and financial results briefings and analyze the

Supervisory Board members. A decision was made at the 20th Ordinary General Meeting of Shareholders held on June 22, 2007 to keep the total annual amount of Audit and Supervisory Board members' remuneration at 250 million yen or less. The final amount is set within this limit. The number of Audit and Supervisory Board members at the time of the conclusion of this Ordinary General Meeting of Shareholders was five.

The Company established the Personnel Remuneration Committee on February 1, 2021. From the perspective of ensuring the enhancement of objectivity and transparency in the determination of remuneration of officers, the Committee consists of a total of five members: four independent outside directors and the president. The Committee deliberates on the policy on deciding officers' remuneration twice a year with the attendance of all of its members, prior to the Board of Directors' decision on remuneration. Decisions made by the Board of Directors regarding the policy on deciding remuneration are based on the content of deliberation by the Committee. Delegated by the Board of Directors, the president decides the specific amounts of directors' remuneration. As the amount of remuneration of each director is determined through the abovementioned procedures, the Board of Directors deems that the amounts conform with the decision policy.

#### Total amount of remuneration by officer category, total amount of remuneration by type, and number of target officers [FY2021]

Category	Basic compensation		Bonus		Total amount of remuneration (Million yen)
	Number of target officers	Total amount (Million yen)	Number of target officers	Total amount (Million yen)	
Director (Excluding outside director)	13	532	0	0	532
Audit and Supervisory Board member (Excluding outside Audit and Supervisory Board member)	1	47	-	-	47
Outside officer	7	144	-	-	144

Note: Directors (excluding outside directors) and the Audit and Supervisory Board members (Excluding outside Audit and Supervisory Board members) have voluntarily returned 10% of their basic compensation. The amount of basic compensation in the table above includes the amount of compensation that was voluntarily returned.

to retain specific cross-shareholdings after scrutinizing them in light of the medium- to long-term economic rationale and outlook, the purpose of continuing to own such cross-shareholdings, and other factors.

Furthermore, in exercising the voting rights of cross-held shares, JR Central closely examines the details of each agenda item and decides how to vote in consideration of the improvement of corporate value of the Company over the medium to long term, the continuous growth of its business partners, etc.

feedback and investor needs obtained to be used to enhance disclosure, consider the content of briefing materials, and enrich IR activities.

We also strive to enrich the broader provision of information to shareholders by posting the information presented at financial results briefings on TDnet and our website and enhancing the content of the convocation notice of the General Meeting of Shareholders. Moreover, we work to ensure that a sufficient degree of information concerning decisions made on important measures and important capital investments reaches as large a number of stakeholders as possible using the mass media services to deliver detailed information at press conferences held by the president and by presenting such information to the press.

The content of dialog with shareholders is reported to senior management and, if necessary, feedback is given to the Board of Directors.

#### Main activities (FY2021)

•Number of dialogs held with institutional investors and analysts:	191
•Number of financial results briefings and small meetings with institutional investors and analysts:	7
•Number of items of feedback from institutional investors:	193

### Fundamental Corporate Governance Policies

JR Central passed a resolution on the Fundamental Corporate Governance Policies\* at its Board of Directors' meeting.

\*Please refer to the following URL for the Fundamental Corporate Governance Policies.

URL <https://company.jr-central.co.jp/en/company/about/governance.html>

### Compliance & whistleblowing system

JR Central not only stipulates internal regulations based on laws and other regulations but also conducts employee education on various occasions with the aim of thoroughly complying with laws and regulations when executing business. In addition, we have also established a whistleblowing system, which enables employees, etc. to report any violation of laws or regulations they discover in the course of their work by providing contact points not only within the Company but also at an external law firm.

### Risk management system

JR Central has established the Railway Safety Promotion Committee, etc., at the head office, in the Shinkansen and Conventional Lines Operations Divisions, at branch offices, and in each area to prevent train and labor accidents and disasters, and it formulates and promotes safety measures through integrated organization that extends from the head office to each field office.

JR Central also manages a control center, which plays a key role in information communication, on call 24 hours a day in the Shinkansen and the Conventional Lines

### Response to internal control related to financial reporting

We periodically investigate the system and state of execution and other elements of internal control related to financial reporting within JR Central and JR Central Group companies in accordance with the basic framework offered by the Business Accounting Council in order to confirm that

We make thorough efforts to protect whistleblowers by allowing anonymous whistleblowing and clearly indicating in our internal regulations that the names of whistleblowers will not be disclosed and that whistleblowers will not be subject to disadvantageous treatment for whistleblowing. We also strive to disseminate information of the system by posting fliers in all workplaces describing the whistleblowing system, the protection of whistleblowers, and contact information of the contact points.

Operations Divisions to respond to emergencies, such as accidents and disasters, and has also established a fast-response restoration system in which employees can be gathered at any time according to the scale or impact of an accident or disaster. Additionally, in preparation for emergencies, such as large-scale natural disasters, we have established the Second General Control Center, which can substitute for the General Control Center for the Tokaido Shinkansen.

the internal control is effectively functioning. We are also engaged in efforts to maintain the level of internal control related to financial reporting by providing feedback from the investigation to our operations.

### Capital policy and approach to shareholder return

We will finance our projects by issuing corporate bonds and borrowing, in addition to a long-term loan totaling 3 trillion yen acquired using the Fiscal Investment and Loan Program (FILP) to promote the construction of the Chuo Shinkansen. We do not plan to use treasury stock or pursue a capital increase at this point.

Due to the nature of the railway business, which operates from a long-term perspective, the specific dividend amount is determined considering the business environment and operating results of each fiscal year based on the Company's consistent and basic policy for the continuation of stable dividends. JR Central considers that shareholder returns through dividends are appropriate in principle and does not plan to purchase

additional treasury stock at this point. When we say "from a long-term perspective," we mean that we will not cut corners to take the necessary steps to ensure that our rail services continue to operate steadily over the long term. For example, we will undertake such measures as large-scale renovations as well as derailment and deviation countermeasures for the Shinkansen, along with working on the Chuo Shinkansen, a major long-term project. We believe that continuing a stable dividends policy is necessary to gain shareholders' understanding toward the above approach. We will maintain this principle of stable dividends during the construction of the Chuo Shinkansen.



## Respond to the Corporate Governance Code

JR Central has announced its stance on, and the initiatives it has put in place, in relation to the Corporate Governance Code (hereafter, "the Code") found within Corporate Governance Report\*.

Further, The reasons for not implementing the principles of the code and matters disclosed based on each principle of the code are as follows.

\* Corporate Governance Report can be found on the Japan Exchange Group, Inc. website.

### The reasons for not implementing the principles of the code

General principle	Supplementary principle	Disclosed contents
<b>Principle 4-1</b> Roles and responsibilities of the Board of Directors (1)	Supplementary principle <b>4-1 2</b>	<ul style="list-style-type: none"> <li>In the railway business, the core pillar of JR Central's business, ensuring safe and reliable transportation is an issue of utmost importance, and all aspects of our business, from our daily business operations, to employee training and capital investment, are implemented with the highest priority given to increasing the level of reliability of the services we provide and, as such, we do not implement a system of management whereby company-wide mid-term business plans are formulated and managerial targets are pursued in a manner that can neatly serve as a cross-sectional look at the state of the business at set moments.</li> <li>While JR Central neither formulate mid-term management plans nor establish numerical targets in this manner, the Company does promote its railway business from a long-term perspective. Specifically, in addition to the construction of the Chuo Shinkansen, which is now underway, other measures that require a long-term capital investment, such as large-scale renovation for the Tokaido Shinkansen, the implementation of earthquake countermeasures, and plans to upgrade rolling stock in service, are established with a long-term perspective in mind, and we are steadily proceeding forward these projects. Plans and results of other major measures are announced publicly as appropriate, and steady progress continues to be made in these areas. We will continue to announce annual income and expenditure plans, key measures, and capital investment plans each year in light of our immediate management environment, and will continue to steadily enhance our management foundation in order to firmly maintain a sound management outlook based on efficient operational management stemming from the securing of safe and reliable transportation.</li> </ul>
<b>Principle 5-2</b> Establishing and Disclosing Business Strategies and Business Plans		

### Disclosure based on Corporate Governance Code principles

General principle	Supplementary principle	Disclosed contents
<b>Principle 1-4</b> Cross-shareholdings		<p><b>[1] Policy concerning cross-shareholdings</b> Our strategy for cross-holdings is grounded in the belief that maintaining and bolstering business relationships through holding other companies' stock facilitates our operations and enhances our corporate value over the medium to long term. If any of our cross-holdings are deemed to be unnecessary in light of this policy, we will assess and possibly divest in them.</p> <p><b>[2] Assessment of cross-holdings</b> Our Board of Directors examines whether it is beneficial to retain specific cross-holdings after scrutinizing them in light of the medium- to long-term economic rationale and outlook, purpose of owning such cross holdings, etc.</p> <p><b>[3] Criteria for the exercising of voting rights</b> In terms of the exercising of cross-shareholding voting rights, JR Central closely examines the content of each resolution and decides how to vote in consideration of improving the corporate value of the Company over the mid- to long-term and the sustainable growth of business partners, etc.</p>
<b>Principle 1-7</b> Related party transactions		All transactions involving Directors which may pose a conflict of interest, and transactions between Directors and the Company, require the approval of, and reporting to, the Board of Directors as stipulated in relevant laws and regulations and rules governing the Board of Directors. Every year confirmations are made on a regular basis with officers as to whether related party transactions have been made between officers or relatives and the Company.
<b>Principle 2-4</b> Ensuring internal diversity including the utilization of women	Supplementary principle <b>2-4 1</b>	<p>At JR Central, we believe that it is extremely important from the perspective of management to employ diverse human resources and maximize their capabilities to drive sustainable corporate growth. With this in mind, in our recruitment process we carry out employment without making distinctions in terms of gender, nationality, or the like.</p> <p>With regard to women, we have actively employed female employees in response to the revision of the Labor Standards Act in 1997, which prohibited late-night work by women in principle. As a result of appropriately evaluating employees' competence and skills without regard to gender and appointing them to jobs that suit their evaluations, the number of female employees as of the end of FY2020 was approximately 2,130 (of whom 122 were in managerial posts). In addition to the appointment of JR Central's first female corporate officer in June 2021, women play an active role in various lines of duty, such as General Managers and Managers.</p> <p>In order to further promote women's participation and career advancement, we established a project team for promoting women's empowerment in FY2020 under the General Manager of the Personnel Department. In order to enhance the quality of human resources, it is essential to become a company where all employees, irrespective of gender, can fully demonstrate their abilities with enthusiasm. Especially for us as a railway company aiming to provide services that would satisfy a wide range of customers, we believe it is important for a diverse variety of</p>

### Principle 2-4

Ensuring internal diversity including the utilization of women

Supplementary principle  
**2-4 1**

employees, irrespective of gender, to exchange ideas and exercise their abilities to the full. Based on this concept, we established the Positive Action Plan for Promoting Women's Empowerment and the General Employer Action Plan in Accordance with the Act for Measures to Support the Development of the Next Generation, following discussions in the women's empowerment project. The Positive Action Plan, which covers FY2021 to FY2025, includes numerical targets such as a hiring rate of women of at least 25%, and at least 1.5 times more female managers (Assistant Managers and Supervisors or higher) compared to the end of FY2020. We will make efforts to achieve these goals going forward. Please refer to the following for details on the numerical targets and our efforts in human resources development based on the targets.

► **Positive Action Plan for Promoting Women's Empowerment**

URL [https://company.jr-central.co.jp/others/action\\_plan/\\_pdf/woman.pdf](https://company.jr-central.co.jp/others/action_plan/_pdf/woman.pdf)

► **General Employer Action Plans in Accordance with the Act for Measures to Support the Development of the Next Generation**

URL [https://company.jr-central.co.jp/others/action\\_plan/\\_pdf/nurturing.pdf](https://company.jr-central.co.jp/others/action_plan/_pdf/nurturing.pdf)

At the same time, JR Central has been making efforts to enhance the work environment by creating an environment where employees can be motivated to work with enthusiasm in active roles over many years. For example, to support employees' childcare, we offer our employees longer childcare leave than the statutory period set, as well as flexible work arrangements, a system designed to rehire former employees who have resigned for childcare, etc., and a program that deems employees' childcare leave until their child is one year of age as attended work in terms of eligibility for promotion assessments. We also offer various subsidies. We will continue to actively make efforts to enhance various programs so that employees, irrespective of gender, can be motivated to work with enthusiasm in active roles over many years.

Please refer to the following URL for details of JR Central's initiatives in ensuring diversity and other efforts concerning human resources, which are described in "Initiative for human resources to support JR Central's sustainable growth" of the Integrated Report.

Integrated report: <https://global.jr-central.co.jp/en/company/ir/annualreport/>

JR Central has been striving to hire human resources with the skills and capabilities necessary to support our future business without making distinctions in terms of nationality, etc. Therefore, it is our recognition that we are not in a situation where we must implement measures or set targets for the specific appointment of foreign nationals in managerial posts.

We also believe that long-term employment will prove to be effective as high levels of most railroad technologies can only be achieved through the accumulation of experience. Therefore, we do not recruit mid-career employees en masse, and recognize that we are not in a situation where we must implement measures or set targets for the appointment of mid-career hires in managerial posts at this point. However, we will consider doing so accordingly if the need arises due to various measures in response to changes in the business environment surrounding the Company.

### Principle 2-6

Roles of Corporate Pension Funds as Asset Owners

Since we do not offer a corporate-type defined benefit corporate pension plan, this principle does not apply to us.  
We use a defined contribution pension plan instead. We provide employees who participate in the defined contribution pension plan with adequate training on asset management since the plan affects their asset accumulation.

### Principle 3-1

Full disclosure

**[1]** JR Central was founded in 1987 as part of the reform of the national railway system with a mission of integrally maintaining, developing and future-proofing the Tokaido Shinkansen, which serves as Japan's main transportation artery linking Tokyo, Nagoya and Osaka, and the conventional line network in the Tokai region with a central focus around Nagoya and Shizuoka.

Furthermore, JR Central established its management philosophy to "Contribute to the development of Japan's main transportation artery and social infrastructure" to reflect the direction the Company should aim at in line with the expanding scope of business activities going forward, including the operation, etc. of the three generations of railways, i.e. conventional lines, the Tokaido Shinkansen, and the Chuo Shinkansen. This management philosophy can be found on our website.

URL <https://global.jr-central.co.jp/en/company/about/outline.html>

• In the railway business, JR Central sets the highest priority on ensuring safe and reliable transportation. JR Central's fundamental policy is to stably and fully execute the long-term social mission described in detail above through the continuous efforts of providing services that are preferred by customers as well as the streamlining of work, etc. This Management Philosophy is included in the Business Strategy of the Integrated Report, and can be found at the following URL.

► **Integrated Report**

URL <https://global.jr-central.co.jp/en/company/ir/annualreport/>

• Specific measures to be implemented in the current business year based on this Management Philosophy are described in Key Measures and Capital Investment, and can be found at the URL below.

► **Key Measures and Capital Investment**

URL <https://company.jr-central.co.jp/company/achievement/capital-investment/>

**[2]** The basic outlook on corporate governance is described in I.1. Basic Outlook in the Corporate Governance Report.

**[3]** Details on the policy and procedures concerning the setting of Director compensation are described in "Disclosure of Policy for Determining the Amount of Compensation and the Calculation Method for Such" under II.1. Matters Concerning the Composition and Operation of the Organization in the Corporate Governance Report.

**[4]** It is our policy to appoint individuals who are most fit to perform the given duties for the company as directors and Audit and Supervisory Board members. In accordance with this policy, we select candidates based on a comprehensive review of their abilities, knowledge, work history, etc., regardless of age, sex and nationality, via a resolution of the Board of Directors and appoint them upon approval at a General Meeting of Shareholders. In appointing or dismissing a representative director, we follow the same policy as well as the provisions of relevant laws and the rules of the Board of Directors.



		<p>From the perspective of ensuring the improvement of objectivity and transparency in the determination of personnel, etc. of officers, JR Central established the Personnel Remuneration Committee comprising all independent outside directors (3 persons) and the President. The Committee is held twice a year for deliberation, attended by all committee members, prior to the personnel-related decisions of the Board of Directors, and decisions made by the Board of Directors regarding the determination of personnel, etc. are based on the content of deliberation by the Committee.</p> <p>[5] Director and Audit and Supervisory Board member candidates are appropriately selected in consideration of their career background provided in the General Meeting of Shareholders material. We disclose information concerning the change of a representative director as required by the Tokyo Stock Exchange's Timely Disclosure Rules.</p>
<p><b>Principle 3-1</b> Full disclosure</p> <p>Supplementary principle <b>3-1 3</b></p>		<p>[1] Initiatives in sustainability JR Central's specific initiatives in sustainability are described in "Positive Cycle of "ESG Management"" and "JR Central's "ESG Management,"" as well as "Building Safe and Resilient Infrastructure," "Building Relationships with Material Suppliers," "Improving the Convenience of Facilities," "Cooperation with Local Communities," and "Contribution to Global Environment Preservation" in the Integrated Report.</p> <p>[2] Investments in human capital and intellectual property JR Central's investments in human capital and intellectual property are described in "Initiative for human resources to support JR Central's sustainable growth" and "Promotion of technological development" in the Integrated Report.</p> <p>[3] Risks and opportunities related to climate change With regard to climate change, we have been making efforts to further reduce CO<sub>2</sub> emissions in accordance with the government's 2050 carbon-neutrality policy. We also endorsed the recommendations of the TCFD in May 2021. By analyzing the risks and opportunities related to climate change, we will strive to ensure stable business operation over the long term, as well as contributing to the achievement of a sustainable society. For further information, please refer to "Positive Cycle of "ESG Management"" and the Integrated Report.</p> <p>▶ <b>The Integrated Report can be found at the following</b> URL <a href="https://global.jr-central.co.jp/en/company/ir/annualreport/">https://global.jr-central.co.jp/en/company/ir/annualreport/</a></p> <p>▶ <b>Our approach to global environment conservation can be found at the following</b> URL <a href="https://global.jr-central.co.jp/en/company/environment/">https://global.jr-central.co.jp/en/company/environment/</a></p>
<p><b>Principle 4-1</b> Roles and responsibilities of the Board of Directors (1)</p>	<p>Supplementary principle <b>4-1 1</b></p>	<p>The Board of Directors is involved in decision making processes concerning matters stipulated in relevant laws and regulations and the articles of incorporation, matters put in their charge at a general shareholders' meeting, and important matters related to the execution of business. A specific outline of such matters is established in the rules governing the Board of Directors.</p> <p>Further, the Board of Directors clearly defines the division of duties and job functions for each department based on internal regulations, clarifies the scope of authority for Directors and corporate officers, while also defining the division of roles of Directors and areas in which corporate officers are put in charge.</p>
<p><b>Principle 4-9</b> Independence standards and qualification for Independent Directors</p>		<p>The Company determines the level of independence of Outside Directors and Outside Audit and Supervisory Board Members based on the criteria for independence established by the Japan Exchange Group, Inc. in order to ensure that the opinions provided by Outside Directors and Outside Audit and Supervisory Board Members on matters raised are formed from an independent standpoint, and are based on the high degree of experience and insight accumulated outside the Company.</p>
<p><b>Principle 4-10</b> Utilization of arbitrary mechanism</p>	<p>Supplementary principle <b>4-10 1</b></p>	<p>From the perspective of ensuring the improvement of objectivity and transparency in the determination of personnel and the remuneration of officers, JR Central established the Personnel Remuneration Committee consisting of a total of four members: 3 independent Outside Directors (Takashi Saeki, Haruo Kasama and Taku Oshima) and the President (Shin Kaneko). The Committee is held twice a year for deliberation, attended by all committee members, prior to the decision of the Board of Directors regarding personnel and remuneration. The independent Outside Directors provide opinions based on their past experience in corporate management or careers as prosecutors and lawyers. Decisions made by the Board of Directors regarding the determination of personnel and remuneration are based on the deliberations of the Committee. The secretariat is placed within the Secretarial Department.</p>
<p><b>Principle 4-11</b> Premises for ensuring the effectiveness of the Board of Directors and the Audit and Supervisory Board</p>	<p>Supplementary principle <b>4-11 1</b></p>	<p>The appointment of Directors is conferred to General Shareholders Meetings following a resolution of the Board of Directors concerning the appropriate election of candidates deemed to be the most fitting for the role as selected based upon a general consideration of their abilities, knowledge, and work history, etc., regardless of age, sex and nationality. The number of Directors elected, and the division of Director roles, etc. is determined based on a comprehensive consideration of the level of progress of each project at the time based on a policy of establishing the most appropriate management structure for the execution of the Company's business activities.</p> <p>Furthermore, from the perspective of ensuring the improvement of objectivity and transparency in the determination of personnel, etc. of officers, JR Central established the Personnel Remuneration Committee consisting of a total of four members: 3 independent Outside Directors and the President. The Committee is held twice a year for deliberation, attended by all committee members, prior to the decision of the Board of Directors regarding personnel, etc. Decisions made by the Board of Directors regarding the determination of personnel, etc. are based on the deliberations of the Committee.</p> <p>Of the director candidates, candidates for internal directors have been nominated for having the skills, knowledge and career history required to powerfully tackle JR Central's various management issues, such as ensuring safe and reliable transportation of the Tokaido Shinkansen and conventional lines and steadily promoting the Chuo Shinkansen project. They are expected to do so by exercising strong leadership to lead the administrative and technological departments and the overseas high speed railway project as well as the departments and organizations of the Conventional Lines Operations Divisions and the Chuo Shinkansen Promotion Division toward realizing our management philosophy of contributing to the development of Japan's main transportation artery and social infrastructure at a higher level, with the ultimate aim of maintaining the sound management and further development of the Group.</p>

	<p>Supplementary principle <b>4-11 1</b></p>	<p>Candidates for outside directors have been nominated for having the skills, knowledge and career history required to perform an outside director's important role of appropriately supervising the work of directors. They are expected to do so by providing valuable advice on the economy, social situation and all aspects of management with regard to corporate management, finance, accounting, the maintaining of compliance, and the development of local communities from a legal standpoint, including corporate governance and compliance, based on their broad-ranging experience gained outside the Company and their deep insight.</p> <p>The specific skills, knowledge and career history of each director are described in the Appendix. Upon our next nomination, we plan to disclose the skills, etc. of each director in a skills matrix.</p>
<p><b>Principle 4-11</b> Premises for ensuring the effectiveness of the Board of Directors and the Audit and Supervisory Board</p>	<p>Supplementary principle <b>4-11 2</b></p>	<p>The status of Directors and Audit and Supervisory Board Members holding important concurrent positions is as described in business reports and General Shareholders Meeting Reference Materials. All currently held positions bear no hindrance on the Director or Audit and Supervisory Board Member's ability to fulfill the roles and responsibilities of such a position for the Company.</p>
	<p>Supplementary principle <b>4-11 3</b></p>	<p>The Board of Directors of the Company meets once or more a month to make legal and appropriate decisions upon fully discussing issues stipulated by law as well as important matters, following conscientious briefings that are given to bring all concerned up to speed on the policy objectives discussed and the progress on such matters. Further, the status of the execution of duties by Directors is monitored by having the Directors report back on business functions under their charge when needed. JR Central receives valuable broad-view advice on management from Outside Directors, which is brought into consideration in regulating the management of the Company.</p> <p>Directors as well as Audit and Supervisory Board members also self-evaluate the effectiveness of the Board of Directors, and after discussing the self-evaluation results and other matters at the board meetings, implement initiatives that will help improve the functions of the Board of Directors. Additionally, round-table conferences for opinion exchanges between Outside Directors, Outside Audit and Supervisory Board Members, and members of management are set up ahead of meetings of the Board of Directors in order to further improve the effectiveness of the Board of Directors.</p> <p>Through the above-mentioned initiatives, we find at meetings of the Board of Directors that the effectiveness of the entire Board of Directors is ensured to a satisfactory degree.</p>
<p><b>Principle 4-14</b> Director and Audit and Supervisory training</p>	<p>Supplementary principle <b>4-14 2</b></p>	<p>All Directors and Audit and Supervisory Board Members of the Company have the sufficient ability and insight to fulfill their roles and responsibilities, and perform their duties with an appropriate sense of responsibility as entrusted by all shareholders, while continuing to refine their skills and knowledge by actively participating in external training programs, etc.</p> <p>JR Central takes necessary measures to ensure that all Directors and Audit and Supervisory Board Members perform the duties required of them, such as in instances where relevant laws and regulations are revised, for example, by making the content of such revisions commonly known through meetings, etc., and by holding training events to share management issues faced by the Company so that the Company can make decisions concerning such issues in an appropriate manner.</p>
<p><b>Principle 5-1</b> Policy for constructive dialog with shareholders</p>		<p>JR Central has established a Policy for Promoting Constructive Dialog with Shareholders as follows.</p> <ul style="list-style-type: none"> <li>JR Central positions the General Meeting of Shareholders as an important opportunity for dialog with shareholders and strives to improve the quality of questions and answers sessions in the meeting as a means of contributing to sustainable growth and enhancing corporate value over the mid- to long-term. All dialog with shareholders is overseen by the General Manager of the Administration Department, and questions, opinions and requests are fielded from shareholders and responded to in the form of an individual meeting or over the telephone, etc. where it is reasonable to do so.</li> <li>Of this, dialog with institutional investors is overseen by the Director General of the Corporate Planning Division, and the IR team that is placed in the Management Supervision Department, Corporate Planning Division is in charge of the dialog response. The IR team strives to further improve shareholder dialog by organically coordinating with the Administration, Finance, Legal and other Departments. It also strives to improve upon dialog measures by not only holding individual meetings but also implementing web conference and facility tours, etc., where necessary, in addition to holding quarterly financial results briefings. Dialog response is made, to the extent reasonable, together with members of management and Directors or Audit and Supervisory Board members, based on general consideration of the requests and interests put forth by the institutional investor.</li> <li>We also strive to enrich the broader provision of information to shareholders, on top of posting this information on TDnet and our website and enhancing the content of the convocation notice of the General Meeting of Shareholders. Moreover, we work to ensure that a sufficient degree of information concerning decisions made on important measures and important capital investments reaches as large a number of stakeholders as possible using the mass media services to deliver detailed information at press conferences held by the President, and by presenting such information to the press.</li> <li>The content of discussions with shareholders is reported to members of management and, if necessary, feedback is given to the Board of Directors.</li> <li>Under no circumstances is insider information communicated during discussions with shareholders. Furthermore, the 14-day period in the lead up to the day in which financial results are announced each quarter is designated as a silent period, in which the Company refrains from discussing financial results.</li> </ul>



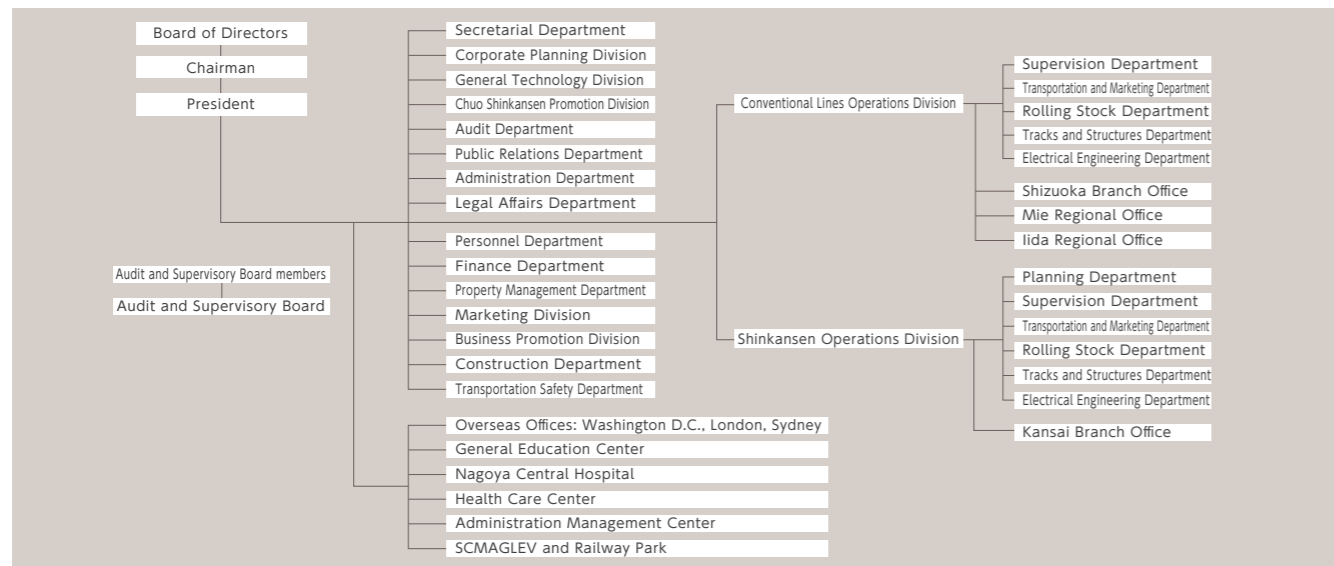
Corporate Data

Company Profile

Name	CENTRAL JAPAN RAILWAY COMPANY (JR Central) Central Japan Railway Company (JR Central)
Established	1-Apr-87
Business activities	Railways business and related businesses
Key data	(As of the end of March 2022)
Capital	112.0 billion yen
Operating revenues	726.0 billion yen
Number of shares outstanding	206 million
Share listings	Nagoya and Tokyo Stock Exchanges
Number of shareholders	121,666
Number of employees	18,723
Operating kilometers	1,970.8km
Number of stations	405
Number of rolling stock	4,857
Double- and multi-tracked sections	55.1% (1,086.8km)
Electrified sections	76.7% (1,511.0km)
CTC system adoption rate	97.5% (1,922.3km)
Automatic signaling system adoption rate	97.8% (1,927.3km)

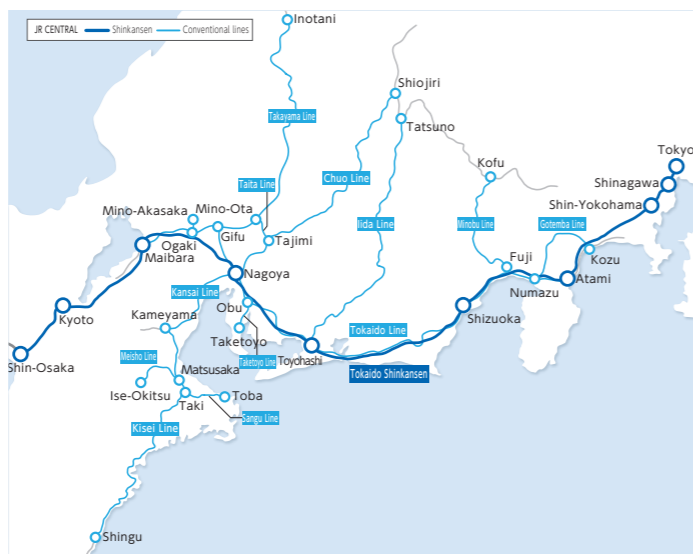
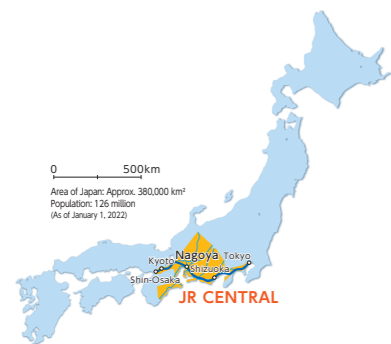
Head office and other main offices	Head office JR Central Towers, 1-1-4 Meieki, Nakamura-ku, Nagoya-shi, Aichi 450-6101, Japan
	Head office (in Tokyo) JR Central Shinagawa Building A Wing, 2-1-85 Konan, Minato-ku, Tokyo 108-8204, Japan
Conventional Lines Operations Division	JR Central Taiko Building, 1-3-4 Meieki, Nakamura-ku, Nagoya-shi, Aichi 453-8520, Japan
Shizuoka Branch Office	4 Kurogane-cho, Aoi-ku, Shizuoka-shi, Shizuoka 420-0851, Japan
Mie Regional Office	Ust-Tsu 12F, 700 Hadokoro-cho, Tsu-shi, Mie 514-0009, Japan
Iida Regional Office	5356 Kami-Iida, Iida-shi, Nagano 395-0000, Japan
Shinkansen Operations Division	Marunouchi Chuo Building, 1-9-1 Marunouchi, Chiyoda-ku, Tokyo 100-0005, Japan
Kansai Branch Office	Shin-Osaka Hankyu Building 10-11F, 1-1-1 Miyahara, Yodogawa-ku, Osaka-shi, Osaka 532-0003, Japan
Washington D.C. Office	900 17th Street, N.W., Suite 520, Washington, DC 20006, U.S.A.
London Office	6th Floor, 4 Eastcheap, London, EC3M 1AE, U.K.
Sydney Office	Suite 5.01A, Level5, 20 Hunter Street, Sydney, NSW 2000, Australia

Organization Chart



Operating Areas

JR Central operates the Tokaido Shinkansen, the main transportation artery linking Tokyo, Nagoya and Osaka, and a network of 12 conventional lines centered on the Nagoya and Shizuoka City areas.

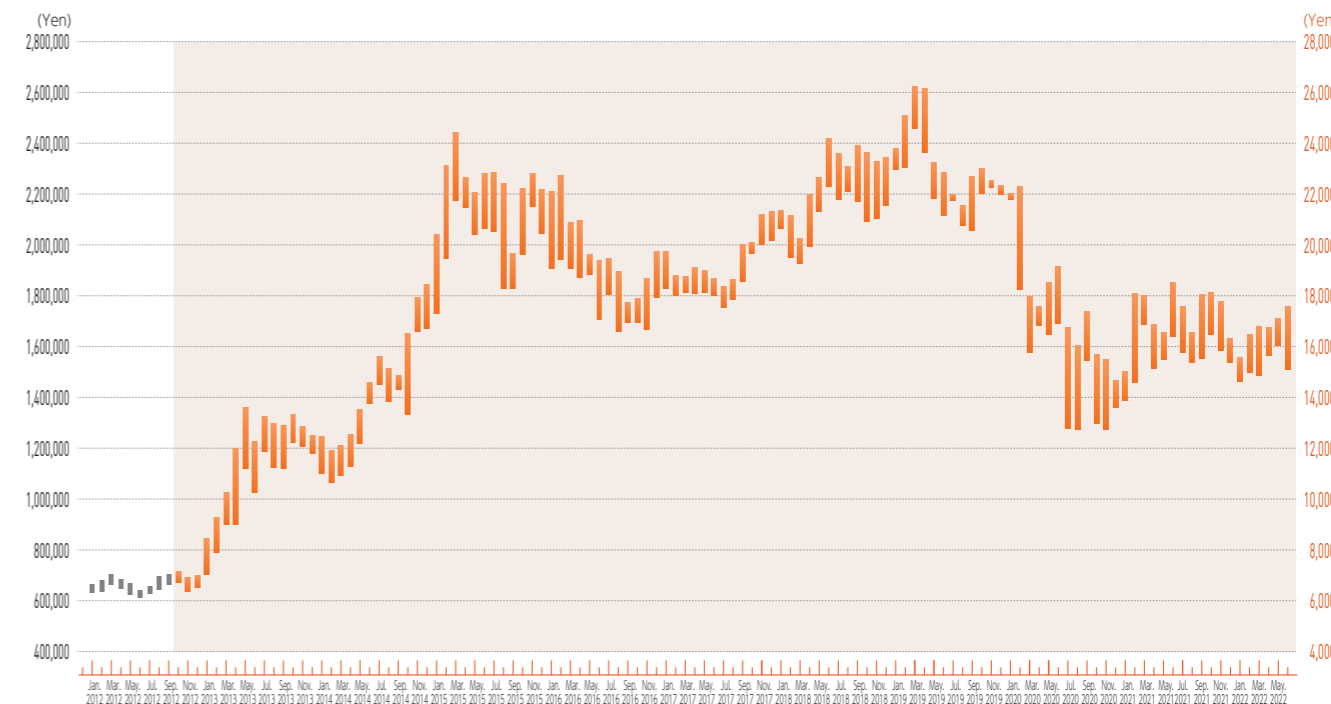


Operating kilometers by line

Tokaido Shinkansen	552.6km
<b>Conventional lines</b>	
Tokaido Line	360.1km
Gotemba Line	60.2km
Minobu Line	88.4km
Iida Line	195.7km
Taketoyo Line	19.3km
Takayama Line	189.2km
Chuo Line	174.8km
Taita Line	17.8km
Kansai Line	59.9km
Kisei Line	180.2km
Meisho Line	43.5km
Sangu Line	29.1km
Conventional lines total	1,418.2km
<b>Total</b>	<b>1,970.8km</b>

Stock Information

JR Central's stock price



Note: On October 1, 2012, the Company implemented a 100-for-1 stock split for its ordinary stock and employed a share unit system by which one share unit equals 100 shares. Please refer to the left axis for stock prices before September 2012 and the right axis for stock prices after October 2012.

Major shareholders

Name	Number of shares held	Percentage of total shares outstanding (excluding treasury stock)
The Master Trust Bank of Japan, Ltd. (Trust Account)	25,882,200	13.14%
Custody Bank of Japan, Ltd. (Trust Account)	12,326,800	6.26%
Mizuho Bank, Ltd.	7,832,300	3.98%
The Nomura Trust and Banking Co., Ltd. (Holder in Retirement Benefit Trust for MUFJ Bank, Ltd.)	7,125,000	3.62%
MUFJ Bank, Ltd.	5,878,100	2.98%
Nippon Life Insurance Company	5,000,000	2.54%
The Norinchukin Bank	3,350,000	1.70%
JR Central Employee Stock Ownership Program	2,995,400	1.52%
STATE STREET BANK WEST CLIENT-TREATY 505234 (Standing proxy: Settlement & Clearing Services Department, Mizuho Bank, Ltd.)	2,614,940	1.33%
Sumitomo Mitsui Banking Corporation	2,502,800	1.27%
<b>Total</b>	<b>75,507,540</b>	<b>38.33%</b>

Note: In addition to the above, JR Central holds 8,999,231 shares of treasury stock.

[As of March 31, 2022]

For more information, please visit the following:

- Safety Report  
<https://company.jr-central.co.jp/others/report/>
- Linear Chuo Shinkansen  
<https://linear-chuo-shinkansen.jr-central.co.jp/>
- Fact Sheet  
<https://company.jr-central.co.jp/ir/factsheets/>



URL: <https://global.jr-central.co.jp/en/>  
 Tel: +81-52-564-2413, Fax: +81-52-587-1300  
 E-mail: [ir.msd@jr-central.co.jp](mailto:ir.msd@jr-central.co.jp)