JR-EAST GROUP

JR East Group

Sustainability Report 2018

JR East Group Philosophy

We will earn the trust of our customers as a whole group by aiming for ultimate safety levels as our top priority. We will strengthen our network capabilities focusing on technologies and information, and we are committed to helping our customers and people in communities to realize affluent lives.

Basic Principles

Pursuing safety : By pursuing ultimate safety levels, we will offer a peace of mind to our customers.

Customer-oriented : We will offer quality services to rise to the expectations of our customers.

Close to regional society : By utilizing our network capabilities, we will contribute to the development of regional society.

Autonomous and self-standing : With a broad perspective and willingness to confront challenges, we will think and act on our own initiative.

JR East Group's development : By fulfilling our social responsibility, we will aim to achieve sustainable growth by JR East Group.

Communication Slogan

TICKET TO TOMORROW

TICKET
TO
TOMORROW

Corporate Profile

Corporate name	East Japan Railway Company
Address	2-2, Yoyogi 2-chome, Shibuya-ku, Tokyo, Japan
Established	April 1, 1987
Capital	200 billion yen
Number of employees	54,884 (as of April 1, 2018)

Editorial Policy

The Sustainability Report 2018 sets forth various initiatives being taken in the JR East Japan Group. It is published for the purpose of providing an accurate and simple description of these initiatives as well as promoting communication with our diverse stakeholders. While our desire remains to offer as much information as possible related to safety, society, and environment, the report itself focuses in particular on areas where there have been notable changes. For more information on the overall activities of the JR East Group, please go to our website

This report has been written in accordance with the coreoption of GRI Sustainability Reporting Standards 2016(GRI Standards).
Furthermore, this report serves as a safety report required to be publicly announced by the Railway Business Act.

■ Compliant Standard

GRI Sustainability Reporting Standards 2016(GRI Standards).

■ References

Environmental Reporting Guidelines 2012
[Japan Ministry of the Environment]
Environmental Accounting Guidelines 2005
[Japan Ministry of the Environment]

■ Reporting period

This report basically covers our activities from April 1, 2017 to March 31, 2018, although some events presented here happened earlier or in the period between the end of March 2018 and the publication of this report in October 2018.

■ Boundary of reporting

East Japan Railway Company
JR East Group (consolidated subsidiaries (69 companies))
Economic report: JR East, consolidated subsidiaries, equity method affiliates (5 companies)
Environment report: JR East, consolidated subsidiaries
Social report: JR East, consolidated subsidiaries
Subsidiaries are listed on p.104.

■ Figures in this report

Totals may not match the sum of individual figures due to rounding.

Aiming for a Sustainable Society

JR East Group offers railway services as one of the essential infrastructures for society and communities, and is involved in the many aspects of the daily lives of customers. As a company with a mission to offer services in the public interest, JR East Group aims to develop the eastern part of Japan through our business activities by maintaining the safety of railways and offering stable transport services.
One of our social missions defined in our Group Philosophy is to "aim to grow continuously while meeting our social responsibilities as a Trusted Life-Style Service Creating Group." Based on our JR East Group Management Vision V—Ever Onward, JR East Group wishes to satisfy the trust that all our stakeholders place in us as a corporate group.
We will achieve these goals by fulfilling our Eternal Mission as expected by our customers and people in communities, pursuing the Group's Unlimited Potential, and striving to realize our Group Philosophy on a daily basis.

Top message

Challenges for the new era

Ever since its establishment, JR East Group has been striving to rehabilitate and revitalize its railway services. As a result, the number of railway accidents has halved and the railway network including Shinkansen lines has expanded. Additionally, our enhancement of service quality, etc. has resulted in an increase in transportation volume and productivity and an improvement in the financial standing of the company. Moreover, we have continued to expand our businesses to include lifestyle, IT & Suica services. This expansion has been made possible by the support from our customers, people in communities and all the people related to JR East Group, and we now feel that we have acquired solid capabilities.
We will continue to focus on safety as our top management priority while pursuing ultimate safety levels. Through these efforts, we will further deepen the trust that our customers and people in communities have in us, which is the foundation of JR East Group's businesses.

The creation of values and services focused more on people

Due to the drastic changes in our business environment such as the declining population and the practical application of autonomous driving, we can no longer continue to address these changes without adapting to new ways of thinking and actions. Under the JR East Group Management Vision "Move Up" 2027, to stay ahead of these changes we will boldly implement new growth strategies by shifting from services focused on railways to the creation of values and services focused more on people, and redirecting the Group to create new values.
Our strength lies in a multilayered "real" network that supports social infrastructure and stations, which are places where people interact. We are committed to helping our customers and people in communities to realize affluent lives, by accelerating open innovation by shared data and business fields and by strengthening our network capabilities through focusing on technologies and information.

ESG management

To achieve the goals in the JR East Group Management Vision "Move Up" 2027, and taking into consideration the Sustainable Development Goals set at the UN Summit, JR East will contribute to the sustainable development of local communities and society. To this end, we will implement ESG management by adopting three perspectives, Environment, Social and Governance, and solve social issues through our businesses. Through these efforts, we will heighten the trust of our customers and local communities, which will lead to the sustainable growth of the JR East Group.
Specifically, from the viewpoint of corporate governance, we will thoroughly ensure that all JR East Group employees share the common understanding that safety is a top management priority. Through the concerted efforts of the whole JR East Group, we will take further practical measures to achieve ultimate safety levels. Additionally, to respond to environmental changes we will continue to list and evaluate the potential risk involved in our operations and take appropriate measures and take appropriate measures to reduce them. By communicating closely with the employees who are at the forefront of our operations and taking concrete measures in JR East Group, we will thoroughly comply with all the necessary laws and regulations.
With the above in mind, to solve various social issues JR East will ceaselessly continue its service quality reforms by preventing delays and easing congestion in train operations. Moreover, we will also promote child-rearing support and the provision of universal customer services to all of our customers, foster global railway-related human resources, and support cultural activities. JR East has also set targets for its core railway business. By FY2031 we aim to reduce energy consumption by 25% and CO_2 emissions by 40% from FY2014 levels. To meet these goals, we will utilize a variety of energy sources by introducing new technologies that promote energy saving and energy creation, prevent global warming and utilize hydrogen fuels.

Treating changes as opportunities

As JR East Group will fully practice ESG management to achieve a sustainable society, we changed the name of this report from the CSR Report to the Sustainability Report.
Under the JR East Group Management Vision "Move Up" 2027, by looking ahead to the new era, we will treat changes as opportunities, continue to meet our challenges, and achieve the sustainable growth of the JR East Group, while rising to the expectations of our customers and people in local communities and contributing to the development of regional society as a whole group.

President and CEO
East Japan Railway Company

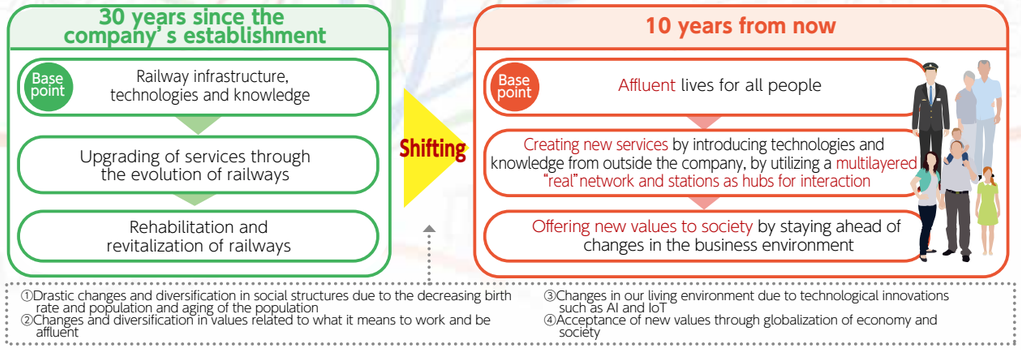
Yuji Fukasawa

JR East Group Management Vision "Move Up" 2027

In July 2018, in consideration of changes in management environment up to the year 2027, to challenge new growth strategies as JR East Group, we formulated the JR East Group Management Vision "Move Up" 2027.

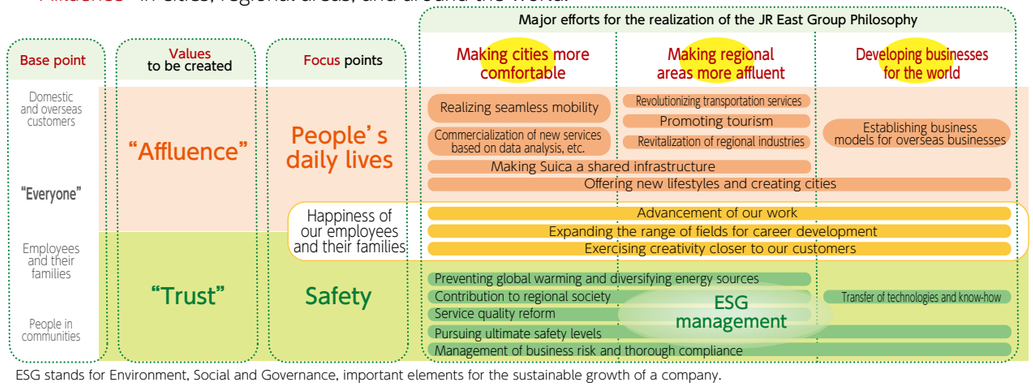
Basic Policies of "Move Up" 2027

■Stories to create values: From the provision of services with railway infrastructure as our basis to the introduction of new values to society, focusing on the affluence of everyone in their daily lives.



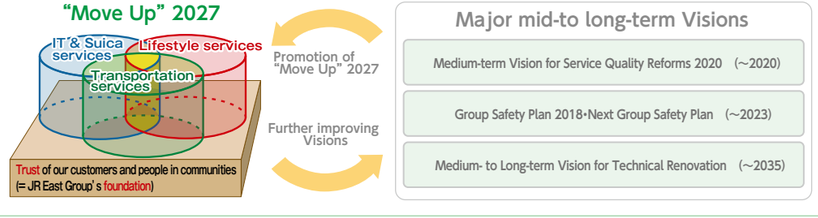
Overview of "Move Up" 2027

■With people ("everyone") as our base point, and with "Safety," "People's daily lives," and "Happiness of our employees and their families" as keywords, we will continue to create values of "Trust" and "Affluence" in cities, regional areas, and around the world.



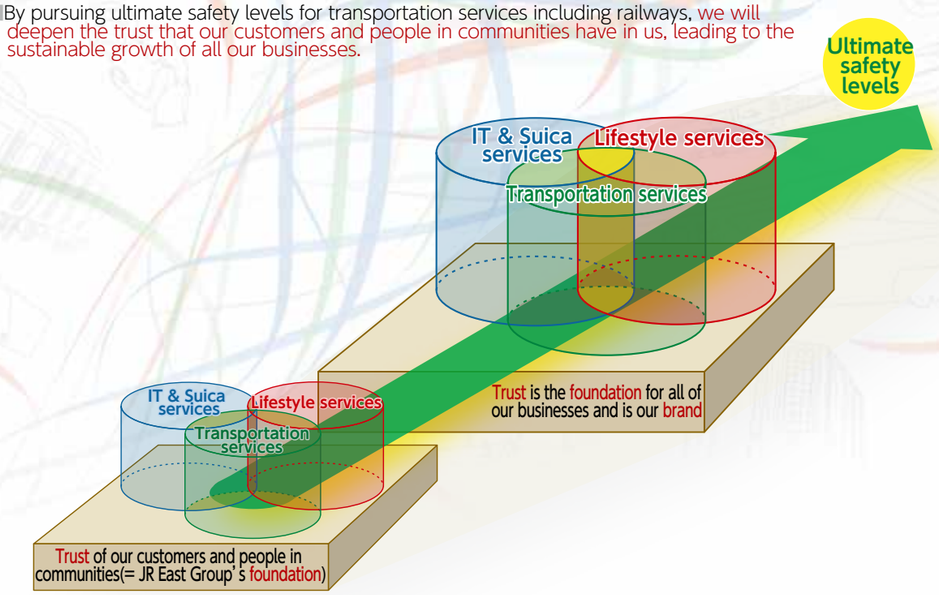
ESG stands for Environment, Social and Governance, important elements for the sustainable growth of a company.

(Reference) JR East Group Management Vision "Move Up" 2027 and major Mid- to long-term Visions.



[Focus point] Safety

By pursuing ultimate safety levels for transportation services including railways, we will deepen the trust that our customers and people in communities have in us, leading to the sustainable growth of all our businesses.



Safety is the top priority of JR East Group's management. This awareness needs to be shared thoroughly with all of our employees. We take concrete measures to further improve our ultimate safety levels through the concerted efforts of all group companies.

Completely eliminating accidents due to internal causes

Tangible measure
- Proper maintenance, management, strategic renewal and strengthening of facilities and rolling stock

Intangible measure
- Strengthening practical safety education and training
- Not only learning from failures, but also recognizing things that go well

- Understanding the true nature of each task, voluntarily and thoroughly searching for potential risks, and promptly responding to them

Advancing safety capabilities of each one of our employees

Evolution of safety management

- Efforts to further advance our safety culture
- Efforts to detect new risks and advance rules and systems
- Training personnel to respond to environmental change

Strategic and positive maintenance of safety equipment

- Properly responding to new risks by actively utilizing new technologies

Realization of safer station platforms and level crossings

Improving safety levels at station platforms

- By the end of FY2033, the introduction of platform doors at all stations (330 stations) for major conventional lines in Tokyo metropolitan area
- Development of high-precision Image Processing Type Fallen Passenger Detecting System

Improving safety levels at level crossings

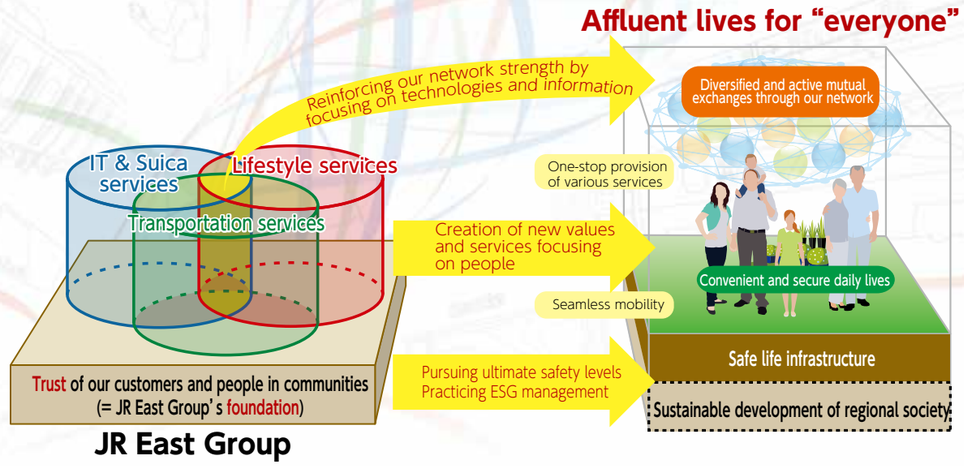
- Warning road users (drivers) by using the Intelligent Transportation System
- Introduction of highly functional 3D level crossing obstacle detectors
- Installation of crossing gates or alarms to class 4 level crossings

Reducing risk of disasters and terrorist incidents

- Accelerating plans for further seismic reinforcement against large-scale earthquakes
- Improving prediction accuracy for abnormal weather and serious disasters (wind gusts, heavy rain, etc.)
- Strengthening security against new threats such as terrorism, etc.

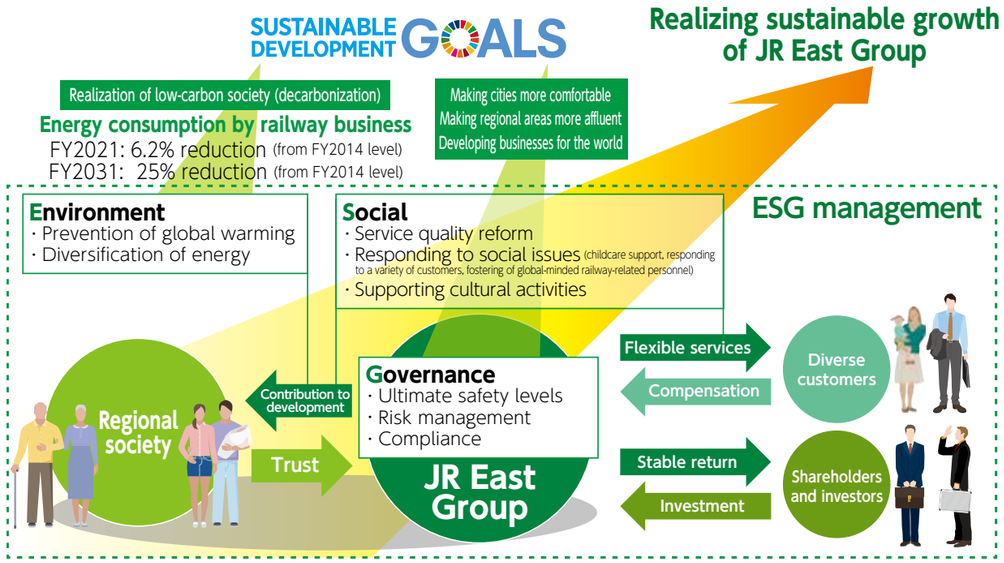
[Focus point] People's daily lives

By creating new values and services by focusing on people, and by reinforcing our network strength by focusing on technologies and information, we will help all people ("everyone") to achieve affluent lives.

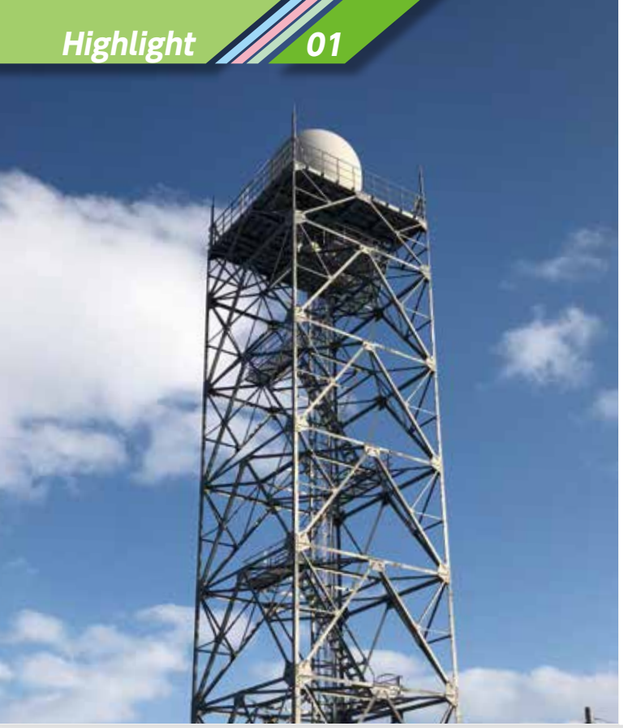


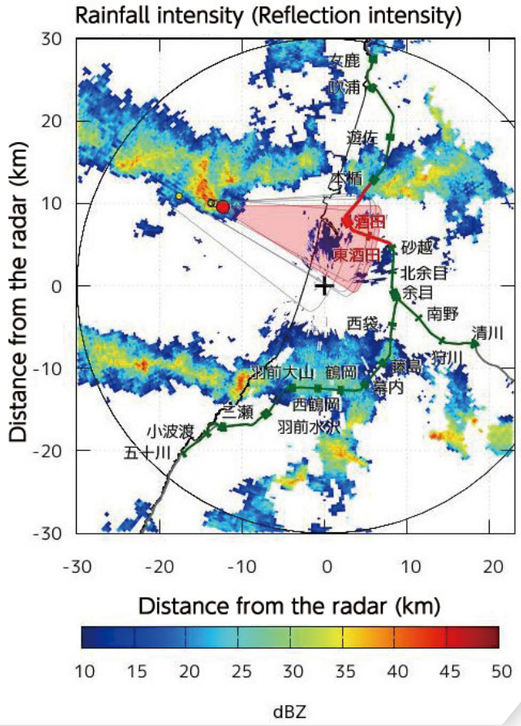
Practicing ESG management

JR East Group will strive to solve social issues through our businesses, contribute to the development of regional society, and deepen the trust that people in communities and customers have in us, leading to the sustainable growth of JR East Group.



SUSTAINABLE DEVELOPMENT GOALS: 17 Sustainable Development Goals the world agreed upon for 2030





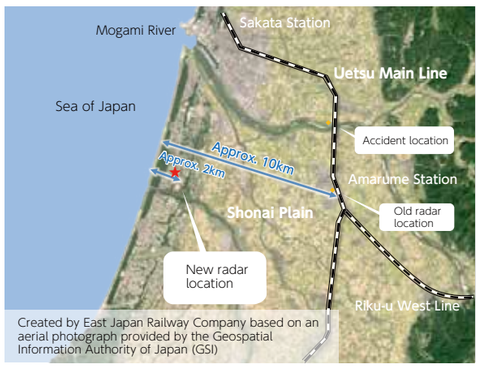
Utilization of a Doppler radar for train operation restrictions in the case of local gusts

Aiming for further improvement of safety levels for customers' safety and peace of mind

JR East Group sees safety as its top management priority and continues to pursue ultimate safety levels so that customers and people in communities can feel a sense of safety and security.
In 2005, a train accident occurred on the Uetsu Main Line between Sagoshi and Kita-Amarume due to local gusts. As one of the countermeasures to prevent such accidents, JR East has been researching how to utilize a Doppler radar for the application of train operation restrictions in the case of local gusts.

Train operation restrictions by utilizing a Doppler radar

When local gusts arise from the Sea of Japan, we detect and track a vortex in the air by using a Doppler radar and stop train operations if the possible route of the local gust is expected to cross train routes. After test observations, the system was introduced for full-scale utilization in Dec. 2017.
For the installation of the fully operational radar, we selected a more appropriate place for observations near the sea where local gusts are generated and the system's performance was improved by providing higher functionality.

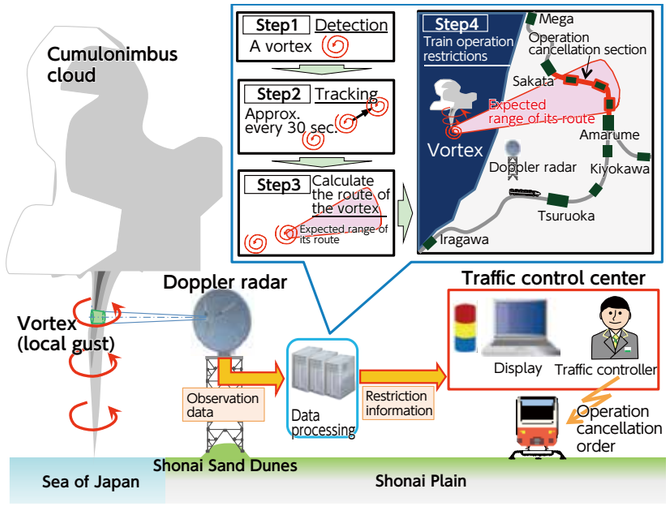


Item	Old radar	New radar
Antenna radius	1.2m	2.0m
Observation range	Radius: 30 km	Radius: 60 km
Distance from sea	Approx. 10 km	Approx. 2 km

Procedures for train operation restrictions

① A Doppler radar in Sakata City detects a vortex.
② The system tracks the movement of the vortex.
③ The system calculates the range of the vortex's expected route.
④ When the range of the vortex's route is expected to cross railway lines, the specific section is displayed on the screen at the traffic control center.
⑤ The traffic controller instructs trains to stop via train radio.

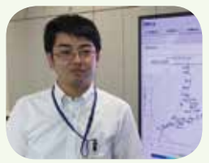
*The measure is implemented within a 30-km radius of the radar (Uetsu Main Line: between Iragawa and Mega; Riku-u West Line: between Kiyokawa and Amarume).
*Using this method, train operation restrictions were issued on 16 days (from Dec. 19th, 2017 to March 31st, 2018).



Future development

Besides the conventional measures for train operation restrictions in strong winds, through the above-mentioned additional measure against local gusts we can further heighten the safety levels of our train operations in the Shonai region during winter.
Currently, this method is utilized for train operation restrictions within an approx. 30-km range of the radar. By accumulating data for the radius of 60 km, which is the Doppler radar's maximum potential observation range, we will examine the possibility of expanding the train operation restriction area.

VOICE



Assistant Manager
Disaster Prevention Research Laboratory
Research & Development Center of the JR East Group

I am working on the development of methods to implement train operation restrictions during local gusts by utilizing a Doppler radar. When we started to develop the system, we had trouble with it because much was unknown about local gusts from the Sea of Japan during winter. So, based on knowledge about local gusts gained from observation, together with the Meteorological Research Institute of Japan Meteorological Agency, through a process of repeated trial and error we developed appropriate methods for train operation restrictions. I feel that my work is a responsibility, but at the same time it is fulfilling that our development activities contribute to the improvement of safety levels for train operations in the Shonai region.
As I believe that technologies can be advanced by being utilized in society, I will continue to work on improving the accuracy of the detection of local gusts and the expansion of the detection range for train operation restrictions.

Deputy Manager
Niigata Control Operation Center, Niigata Branch Office

I was assigned to the section in Oct. 2005 and on Dec. 25th of that year, the accident happened. I cannot forget about that accident – the train derailment incident on the Uetsu Main Line. The derailment that caused casualties among the passengers occurred in the railway section that I monitor in traffic control. Even though I was still new to the job, I could understand the graveness of the accident. I feel a sense of inevitability that I am now involved in the development and introduction of this system against local gusts, which were the cause of the derailment. With the aim of fulfilling our promise to the families of those who lost their lives not to allow such an accident due to local gusts to happen again, and also from the standpoint of a traffic controller, we will continue our efforts to further improve the system and protect the safety of our railways as one of the key priorities of the traffic control center.

See p.40-41 for related features.

Service Quality Reform Vision 2020

By responding to expectations of customers, and offering peace of mind and satisfaction, we will create the future for railways.

Ever since the foundation of the company, JR East Group has striven to offer high-quality services. Our daily operations create an environment that affects the lives of our customers. By ceaselessly enhancing our service quality, we will respond to ever increasing customer expectations, and offer peace of mind and satisfaction to our customers. At the same time, we will continue developing the JR East Group and create the future for railways.

Medium-term Vision for Service Quality Reform 2020

JR East initiated its new Medium-term Vision for Service Quality Reform 2020 in April 2018. To achieve the aim of JR East Group becoming No. 1 for customer satisfaction in the railway industry, the Vision describes the direction in which to further accelerate and develop our measures. To respond to drastic changes in the business environment and also to the expectations of customers, JR East will further upgrade the transportation services of the whole JR East Group by supporting each one of its employees to improve the level and also the quality of their work.

Specific measures to improve the quality of transportation services

Toward the direction described in the Vision, each one of JR East Group's employees thinks about what we can do and what we can change to offer peace of mind and satisfaction to our customers and we persistently continue to meet these challenges.


Snow melting mat to prevent point-switching failure


Comprehensive restoration drill


Customer service professional

Efforts at workplaces

Efforts to improve transportation quality (Chigasaki Station)

1.Drills for turn-back operations
To be prepared to implement turn-back operations on the Tokaido Line, we conduct drills so that customers can use our services safely and with peace of mind even at times of transport disruption.
2.Study sessions for transport operation staff
As our employees are getting younger, it is necessary to pass on technical expertise promptly. With the aim of further improving resistance against transport disruption at Chigasaki Station, we hold monthly study sessions exclusively on transport operations.

Drill for turn-back operations


Restriction at ticket gates


Drill to guide customers

Increasing levels of transport quality through the use of risk management (Niigata Electrical Power Technology Center)

1.Listing of vulnerable facilities
By listing vulnerabilities in facilities management and taking appropriate measures, we prevent potential problems from arising.
2.Tacit knowledge working efforts
By selecting and documenting the tacit knowledge that experienced employees possess about maintenance and management methods, we pass on technical expertise to the next generation.

Tacit knowledge working efforts


Measure against salt damage


Measure against snow damage

VOICE


Chigasaki Station Staff, Yokohama Branch Office

With the aim of improving transportation quality, I am working to secure the safety of customers by finding ways to prevent them from falling from stairs, platforms, and escalators, at crowded stations in the event of transport disruption.
At Chigasaki station, platforms and concourses used to become very crowded at times of transport disruption and safety was a concern. To solve this issue, we repeatedly exchanged opinions, held drills and created procedures and manuals to restrict entrance at ticket gates to prevent the station from becoming overcrowded and to secure safety. With this measure, we were able to clarify for new and young employees what needs to be done in such situations.
We will continue our efforts to further improve the quality of our transport services by securing the safety of customers at times of transport disruption at Chigasaki station.


Chief electrical engineer Niigata Electrical Power Technology Center, Niigata Branch Office

To prevent the occurrence of transport disruption, we have been working to identify vulnerabilities in facility management and their countermeasures. We listed possible vulnerabilities during regular inspections. Then, by taking into account the gravity of their effects on our customers, we prioritized each one of the listed vulnerabilities and formulated countermeasures. By doing this, we were able to identify the vulnerabilities in our facilities and share methods of preparedness among staff to prevent problems arising.
Additionally, as an increasing number of senior members of staff are retiring and a shift in power is rapidly taking place from the older to the younger generation, we have worked on visualizing tacit knowledge in order to steadily pass on the expertise of the older generation to the younger one.
All the employees at the Electrical Power Technology Center will continue in their efforts to further improve our technological capability and safe and stable transport so that our customers can use our transport services with peace of mind.

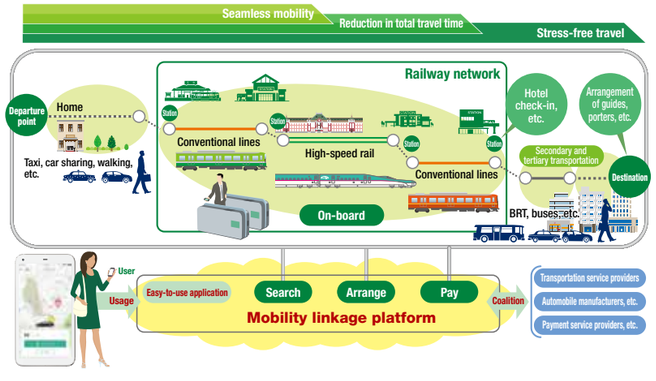
See p.49-50 for related features.

Realization of Mobility Innovations

By integrating railway technologies and IT, JR East will achieve innovations in customer service and train operations.

Based on the accumulation of railway technologies over approximately 140 years in Japan, and by utilizing IoT, big data, and AI, JR East will thoroughly review all of its services taking into consideration the various perspectives of customers. Going beyond the conventional framework, the company will then institute a Mobility Innovation revolution.

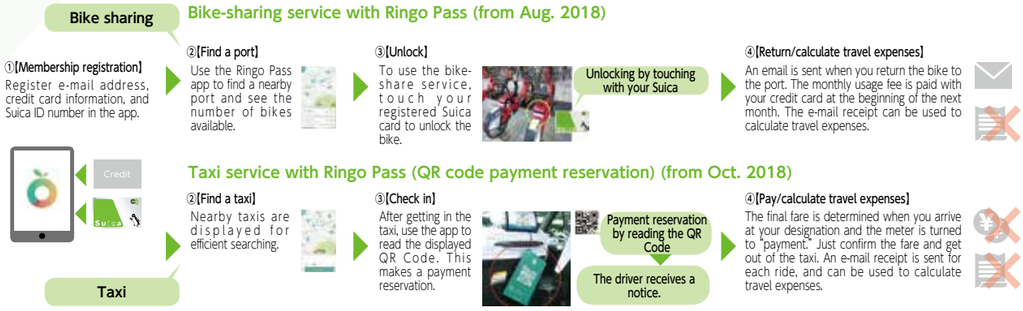
All-in-one offering of information, purchasing, and payment for mobility (Establishment of the Mobility Linkage Platform)



Over the years, JR East has been contributing to the revitalization of wayside areas by offering railway and other services mainly at stations. However, by redefining this service as one that ensures smooth mobility from one place to another, we will start addressing a new challenge in order to help to make customers' lives more affluent and fulfilling.
To achieve this goal, JR East is establishing the Mobility Linkage Platform to offer an all-in-one service to our customers, which includes information, purchasing and payment for mobility, in order to provide seamless mobility, a reduction in total transport time, and stress-free travel.

Verification experiments for the establishment of the Mobility Linkage Platform

As a part of our efforts to implement the Mobility Linkage Platform, we are conducting verification experiments on Ringo Pass, a smartphone application which customers can use for multiple transport modes. We are initially offering the application for bike sharing and taxi rides, with the aim of expanding its functions and application to encompass additional transport modes in the future.



*Some services are under development.

We have been working to make Ringo Pass available and easy to use on a variety of transport modes. With verification experiments, we ask employees of several monitor companies. Ringo Pass is an application with functions that enable the user to search for transport services, use Suica as a key to unlock a bike or to ride a taxi, and make payments with a registered credit card. Once you have registered for the application, you can start using Ringo Pass for various transport services.
*"Ringo" stands for "Ride and Go.

Research and development of the next-generation Shinkansen

E956 type Shinkansen train, ALFA-X (image)

We will newly manufacture the E956 type Shinkansen experimental railcar train, ALFA-X, to promote the development and realization of the next-generation Shinkansen.
For the next-generation Shinkansen, in addition to the conventional concept of providing a safe and high-speed means of travel, we aim to provide new added value, and will promote its development based on the concepts of "Pursuit of further safety and stability," "Comfort," "Environmental performance," and "Maintainability." The experimental railcar is planned to be completed in the spring of 2019.

VOICE

Assistant Manager, Mobility Innovation Group, IT Strategy Section, Technology Innovation Headquarters

For the realization of Mobility Innovation

Based on the spirit of open innovation, the Mobility Innovation Group of Technology Innovation Headquarters aims to innovate transport services. Specifically, we collaborate with more than 100 companies and organizations to achieve a nationwide door-to-door service and solve social issues. Additionally, at Technology Innovation Headquarters, experts in various fields including system management, technological development, data analysis, as well as the JR East application team work together. Going beyond the boundary of departments, we draw on all our strengths to achieve Mobility as a Service (i.e., the integration of various mobility services including railways, buses, taxis, rental bicycles).

Chief Rolling Stock Engineer, Shinkansen General Rolling Stock Center (High-Speed Train Test Project), Sendai Branch Office

Shinkansen speed increase project

In this project, we aim to create the next-generation Shinkansen which will provide added value in addition to fulfilling its role as a safe and high-speed transport mode.
Currently, for the introduction of the E956 type test train, ALFA-X, we are formulating in-house regulations, establishing inspection systems, and preparing various educational systems. Additionally, we are also planning for test runs and inspections after the introduction.
The new test train, ALFA-X, is equipped with numerous newly developed components and before the introduction of the test train, we expect to face various problems. In cooperation with project members, other Rolling Stock Centers, Head Office, Branch Offices, and JR East Group companies, we will establish systems to solve these issues as a whole Group.
Additionally, through rolling stock design meetings, we will actively propose improvement plans from the perspective of a frontline maintenance engineer, offering feedback for the manufacture of the mass-production railcars that will be introduced after the test train.

See p.59-60 for related features.

Akita Station Central Exit

Industry-Government-Academia Collaboration at Regional Core Stations Promotion of Urban Development

(Northern Station Gate Akita)

The provision of services that will increase the convenience of local residents and contribute to more affluent and enriched lifestyles

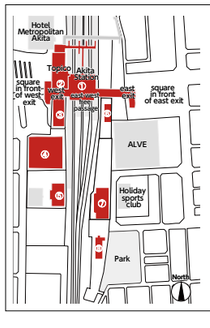
With the aim of increasing the affluence of local regions, JR East Group will provide services enabling all people to live more affluent lives. In September 2015, we concluded an agreement of cooperation for compact city development aiming at regional revitalization, with Akita City and Akita Prefecture, and we are now introducing initiatives that will create bustling city centers and increased tourism flow.

Northern Station Gate Akita

Northern Station Gate Akita is a regional revitalization and compact city project which we are promoting. The scheme is mainly centered around Akita Station, and is being organized in cooperation with the local administration, universities, and companies. Akita has recently been struggling with a declining population, slowing birth rate and an aging population, and is one of the areas of Japan where these problems are advancing most rapidly.

In April 2017, to commemorate the 20th anniversary of the opening of the Akita Shinkansen Komachi, the renovated Akita Station and west exit multilevel parking facility were opened. Furthermore, a sports clinic was opened in the east exit in May 2018 with the theme “Health and Sports.” A basketball arena and child care support facility are scheduled to open in the winter of 2019, followed by a student condominium and training camp facility in the spring of 2020. We plan to continue with the revitalization of Akita for the next 20 years.


Joto Sports Orthopedic Clinic



Northern Station Gate Akita
Akita Station Area Plans
①Renewal of Akita Station as a base for tourism
②Renewal of station building Topico
③ Reconstruction of Akita Station west exit parking facility
④ Akita Broadcasting System transfer plan
⑤Reconstruction of JR Akita branch building
⑥ Student condominium and training camp facility
⑦ JR Akita gate arena plan
⑧ Joto Sports Orthopedic Clinic

Industry-Government-Academia Collaboration-led Urban Development

With the aim of revitalizing Akita Station, the gateway to Akita Prefecture, JR East Group is carrying out urban development in cooperation with Akita Prefecture and Akita City. We have already realized an exquisitely designed space in Akita Station with the cooperation and supervision of Akita University of Art.

Integrated promotion through industry-government-academia collaboration


Exterior wall and furniture made of Akita cedar create a sense of coziness
(Photo: SATOSHI ASAKAWA)

Cooperation with Local Industries

Akita cedar has been used in the waiting lounge to provide a natural sense of the prefecture and increase the flow of tourists. We have also used furniture made of local wood and produced by local furniture manufacturers to bring both comfort and a distinctively Akita feeling.

The use of Akita cedar connects diverse people


The waiting lounge where all five senses can experience the feeling of Akita
(Photo: SATOSHI ASAKAWA)

Health and Sports Town Development

Akita Station east exit is proceeding with the platinum town concept where three generations can live comfortably through health and sports. We will develop a sports arena, child care facilities, a clinic, and a student condominium and training camp facility with the aim of revitalizing the town in collaboration with nearby parks and sports facilities.


The arena will be constructed in such a way that passers-by will be able to see into the interior, thereby creating a venue open to the whole community


A student condominium and training camp facility in front of the station will make it possible for younger generations to be active

Awards, etc.


Carbon dioxide fixation certificate through wood utilization
Certified buildings (JR Akita branch office building and JR Akita Station)
A system that evaluates the carbon dioxide fixation volume of wood in buildings, etc. using specific amounts of wood grown in Akita Prefecture.

JAPAN WOOD DESIGN AWARD 2017
Japan Wood Design Award 2017
Received the top prize in the Minister of Agriculture, Forestry and Fisheries' award
A system for the evaluation of products and initiatives to rediscover the benefits and values of wood.

VOICE


Professor,
Landscape Design Course,
Akita University of Art

In this industry-government-academia-led project, transcending our regular standpoints, we discussed space from the perspective of users, and this gave birth to the concept of “Akita Living.” The program was advanced because all people concerned shared this concept, making it possible to bring about the design of a space and place where not only station users but also ordinary citizens can feel comfortable. I hope that such advanced urban development will continue in and around JR Akita Station.


Deputy General Manager,
Regional Revitalization Promotion Office,
General Affairs Division, Akita Branch Office

After the conclusion of the agreement of cooperation between the prefecture and the city, the foundation to work on the revitalization of Akita Station and its surroundings with the administrations, private businesses, and other organizations was established. The station has long played a symbolic role as a public transportation hub, a gateway for prefectural tourism, and a place for citizens to gather. I really hope it becomes a place where all people, regardless of age, purpose, or transportation method can meet and mix. To that end, I will continue to think about various methods, both in terms of hardware and software, that will promote the revitalization of Akita.

See P64 for a related feature.

Ekiben boxed lunch sales inside Gare de Lyon in Paris (March-May, 2016)

Global Business Development

Centered on Asia and Europe, to provide more affluent lives

The JR East Group aims to establish an international business model that will help provide more affluent lifestyles in Asia and Europe. Under the Lifestyle Service Business Growth Vision (Next 10) formulated in November 2017, we are promoting overseas business utilizing the Group's experience and track record in Japan.

Global Development of Information Provision and Lifestyle Service Business

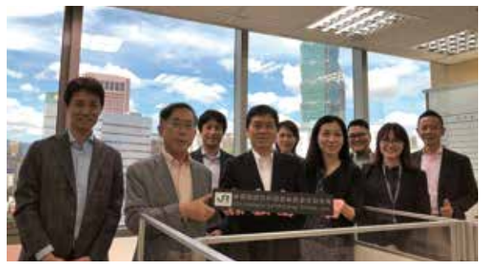
JAPAN RAIL CAFE Singapore

As a platform for providing information about Japan in Singapore, JAPAN RAIL CAFE Singapore was opened in December 2016 to promote visits to Japan through tie-ups with Japanese local governments, tourism organizations, and companies. The cafe has the functions of creating overseas tourism flow to local Japanese regions and expanding overseas sales channels for local products, and serves as a center for a global version of community revitalization.

Exterior view of JAPAN RAIL CAFE Singapore

Establishment of JRE Business Development Taiwan, Inc.

In March 2018, to promote our Lifestyle Service Business in Taiwan, JR East established a wholly-owned local subsidiary. In addition to opening an inbound center for travelers to Japan and providing information on the attractions of various Japanese regions, we are aiming to expand our hotel and other businesses by utilizing our development knowledge of JR East stations and their surrounding areas.


JRE Business Development Taiwan, Inc. opening ceremony

Overseas Shopping Center Business

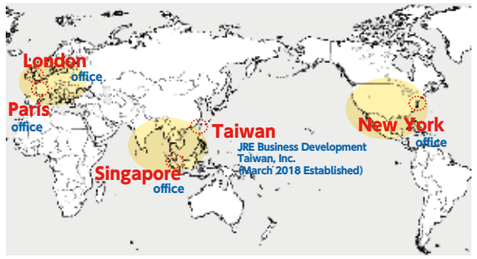
Lumine Co., Ltd. opened its first overseas outlet, Lumine Singapore, in November 2017. Meanwhile, Atre Co., Ltd., jointly with Mitsui & Co., Ltd. and Breeze, will roll out Atre floors in Breeze Nanshan, scheduled to open in the Xinyi District of Taipei City in FY2019.


Lumine Singapore

Exterior view of Atre in Breeze Nanshan

Further Overseas Business Development

JR Group employees in charge of our lifestyle service business are based in our Singapore, London, and Paris offices. Through them and by other means, we will continue to strengthen relationships with local companies and promote the development of a lifestyle service business centering on Asia and Europe.



VOICE


Marketing Manager,
Singapore Office

The JAPAN RAIL CAFE that opened in December 2016 as the JR East Group's first overseas project, functions as a PR information hub for Singaporeans about regions throughout Japan. One of the café's functions is to publicize Japanese food in collaboration with various local governments and farmers. In Singapore, a city-state with almost no agriculture, there is little opportunity for citizens to get in touch with the reality of food before it is processed. By publicizing Japanese food, we communicate the unique Japanese dietary culture, including the importance of agriculture and the awareness of Japanese people of the quality of food ingredients.


Senior Manager,
JRE Business Development
Taiwan, Inc.

My current role is to launch JAPAN RAIL CAFE Taiwan which is scheduled to open in fiscal 2019. I am working hard to make sure the café will provide ample information for all Taiwanese interested in Japan, including those who have never been to the country and those who have experienced it in the past and who wish to get further information. I am very much aware of the differences in culture and habits between Japan and Taiwan, but I feel that the key to our success is to accept those differences, learn from them, and think positively. Please drop in if you happen to be in our neighborhood.


Assistant Manager,
JRE Business Development
Taiwan, Inc.

I have a broad range of tasks, ranging from the development of our lifestyle service business, including JAPAN RAIL CAFE Taiwan, to managing general affairs. Since I have only taken up the post recently I am still slightly struggling with lingual and cultural differences, but, even so, I daily feel the high level of interest in Japan in all parts of Taiwan. From now on, I will build networks, carry out marketing surveys and business development, and organize other projects. I would also like to become a presence that connects the hearts of Taiwan and Japan through our various businesses.

See P.70–P.72. for related features.

Tokyo 2020 Official Partner (Passenger Rail Transportation Services)

In preparation for Tokyo 2020 Olympic and Paralympic Games

Leaving a Legacy Behind in the Regional Community through the Tokyo 2020 Games

As a Tokyo 2020 Olympic and Paralympic Official Partner (for Passenger Rail Transportation Services) and also as a corporation whose main business area is the East Japan area, JR East is making various measures to support smooth operation of the Tokyo 2020 event as well as to increase momentum toward the opening of the games. In addition, we consider it is what JR East is supposed to be as a corporation which satisfies the expectation of the people of the community to continue endeavors so that those will become a sustainable "legacy" even after 2020 to both the regional community and JR East.

JR East 2020Project Pillar of initiatives Ⅰ : Helping to ensure that the Games proceed without issues

- ●Provide safe and reliable railway infrastructure that is barrier free
- ●Provide information to facilitate usage and provide comfortable passenger rail transportation services

Provide safe and reliable railway infrastructure that is barrier free

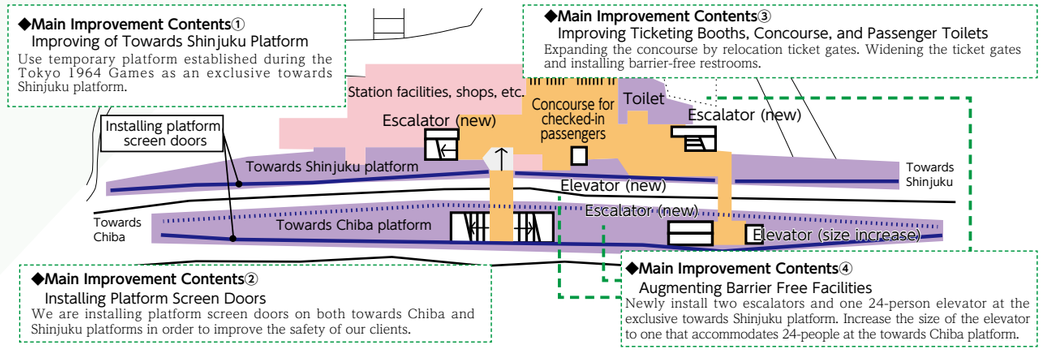
We are upgrading stations by expanding ticket gates, concourses, and barrier free facilities, etc., at stations near competition venues, where we are expecting many customers throughout the duration of the Tokyo 2020 Games, in addition to the main stations that will be used to transfer to competition venues in the Bay Area and to the airport access railway

Station upgrade example: Sendagaya Station

As Sendagaya Station is the nearest station to the New National Stadium and the Tokyo Metropolitan Gymnasium, station upgrades are underway targeting use before the Tokyo 2020 Olympic and Paralympic Games begin.

A façade design was adopted as it gave attention to visibility from around the station

Making a bright, comfortable space by constructing an atrium that connects the platform to the concourse



JR East 2020Project Pillar of initiatives Ⅱ : Contributing to the growing enthusiasm surrounding the event

- ●Stimulate tourism with a view to restoration of the Great East Japan Earthquake disaster area (Tohoku)
- ●Realize regional revitalization in eastern Japan
- ●Enhance the appeal of the Tokyo metropolitan area by upgrading large-scale stations
- ●Advance diversity with hosting of the Tokyo 2020 Paralympic Games
- ●Contribute continuously to local communities through support for sport

Advance diversity with hosting of the Tokyo 2020 Paralympic Games

The Paralympic Games are a sports festival for top athletes with disabilities, and it is often said that it is an opportunity to notice the potential that resides within humans. Perceiving the Tokyo 2020 Paralympic Games as an opportunity to realize a coexistence society where everyone can demonstrate their abilities and participate in society together, we are conducting the following initiatives.

- Conduct volunteer participation and events observation at the Paralympic sporting games
- Conduct experience-based learning of Paralympic sporting events, conduct para-athlete presentations and event participation events, participate in related events, etc.

VOICE

Shinjuku Building Technology Center, Tokyo Branch Office

(Shinanomachi)
Chief facilities Engineer

(Sendagaya)
Facilities Engineering Staff member

We are in charge of the station upgrades at Sendagaya and Shinanomachi Stations, which are the gateways to the New National Stadium, the main venue of the Tokyo 2020 Olympic and Paralympic Games. As construction is underway, we are daily cooperating with related parties so that we can provide safe and comfortable facilities to domestic and international customers who will use the stations during the Olympics. As we go to work daily, we try to keep, "facility maintenance from the customer's perspective" in the forefront of our minds. We have made special consideration and have planned our methods so that we do not cause inconvenience and to enable safe use during the construction period, while allowing for safe, convenient, and secure use for various customers even after the station upgrades are completed.
As railway construction engineers, our hope is to continue to impress our clients and create stations that are loved for many years to come.

Chiba Station Staff,
Chiba Office Branch

At Chiba Station, we are working towards the Tokyo 2020 Olympic and Paralympic Games under the slogan, "What can we do now?"
We also cooperate with people outside of the company, and have exchanged ideas with local student groups who have been involved in experiencing various para-sport events. This event was valuable as opinions were exchanged actively, and we decided to jointly host an event where people could experience boccia, as an initiative to help "people understand how people with disabilities feel."
In the future, we hope to continue to cooperate with people inside and outside of the company and utilize railway stations' ability to attract customers and disseminate information to further enhance the momentum surrounding the Olympic and Paralympic Games in 2020.

*JR East Japan is a Tokyo 2020 Official partner (for Passenger Rail Transportation Services).

Implementation of Environmental Education by Delivering Lectures on Request

Contribute to Sustainable Society through Environmental Education Targeting Local Children

In the fiscal year ending March 2010, in order to contribute to the development of a sustainable society, JR East initiated environmental education programs for local children to contribute to the development of a sustainable society. In FY2018, these initiatives were well-received, and we won an Excellence Award at the Career Education Awards sponsored by the Ministry of Economy, Trade and Industry.

Two Original Railway Themed Programs

Cooperating with people related to education so that we can meet the needs of schools, JR East Japan made original programs themed around railways, a public infrastructure, and related this to the environment and life.

Program 1: Exploring the Secrets of Environmentally Friendly Railways!

This program helps people understand the “role of railway companies” as a social infrastructure and the types of environmental initiatives they take while carrying out this role, allowing people to explore and think about different measures that are implemented in trains and at stations.

Program 2: Exploring the Secrets of Information and Railway Networks!

This railway themed program utilizes graphical and photographic analyses to allow people to think about the provision of transportation services which effectively utilize information networks. The program also conducts groupwork which helps people think about broadcasting that is easy to understand for exchanging information in emergency situations.

Employees Become Teachers and Give Regionally Relevant Classes

We have allocated employees responsible for delivering classes at our 12 branch offices in Eastern Japan, and work to conduct classes that meet the needs of the region.
In addition, current employees who have worked at stations, as conductors, as train drivers, as maintenance, etc., and people who have similar work experience become teachers at these events so that they can explain things in relation to their regular work and career.
While we usually conduct classes in elementary school classrooms, in January 2018, we used an in-use energy conservation railcar as our classroom, a measure implemented so that our company’s environmental initiatives could be felt up close.

【Example】 Class Delivered to Local Elementary School Students in Trains on the Karusayama Line

In January 2018, we hosted a class inside an accumulator railcar train EV-E301 (ACCUM) with approximately 90 elementary school students who live along the Karusayama Line.
After introducing JR East Japan’s environmental initiatives for trains and at stations at Taki Station where the elementary students boarded the train, they rode the train until Karasuyama Station. After arriving at Karasuyama Station, the drivers and railcar maintenance employees explained the railcars and their charging equipment, which allowed the students to deepen their understanding of our environmental initiatives while seeing ACCUM’s environmental technology up close.
One of the children who participated said, “I am glad that environmentally friendly trains operate in the area. I would love to ride the train again.”


Class inside ACCUM

VOICE


Office Affairs Senior Chief,
Utsunomiya District Center,
Omiya Branch Office

I participated in this class as an organizational staff member. When the children asked me various questions and responded with a smile when I answered them, I was filled with joy as well. In addition, as the class used ACCUM which actually runs on the local Karasuyama Line, it seemed that the children were extremely interested, and their serious expressions when they listened to the employees were moving.
I relearned the importance of tackling environmental issues as an employee of JR East Japan, through experiencing the difficulty and joy of explaining things simply. In the future, I hope to continue to work with increased awareness for energy conservation and cost reductions.


Assistant Manager,Utsunomiya Train Drivers' Depot,
Omiya Branch Office

I participated in this class as a train crew member who is in charge of driving ACCUM. While thinking of the local children’s smiles, I created a quiz themed on familiar things while sharing information with a colleague in charge of eco-activities, so that we could introduce the environmentally friendly ACCUM in a fun and simple way. On the day of the class, I was flooded with smiles, just as I had imagined, and one child even said, “I want to use the environmentally friendly ACCUM a lot!” It was a valuable experience for us as we were able to rethink environmental issues and feel a connection with the local community. In the future, I hope to use this experience and work to provide a class that is unique to my workplace.


Rolling Stock Staff Member,
Oyama Rolling Stock Center,
Omiya Branch Office

I participated in this class as an employee who is responsible for ACCUM’s railcar maintenance.
Utilizing handmade images related to the mechanisms of ACCUM and the actual railcar, I talked about how we tackle environmental issues and how JR East Japan installs its railcars with energy conservation technology, etc. It was an extremely valuable experience for me as I was able to interact with smiling local children, who I usually would not meet, through a fun class where they could learn about the environment through ACCUM. In the future, I will continue to recognize that our clients are our top priority, and will work to provide increasingly high-quality railcars to our customers.

See p.86 for a related feature.

Three pillars of JR East Group's Sustainability Report 2018

JR East Group Sustainability Report 2018 presents various efforts by JR East Group in relation to three pillars: Safety, Society, and Environment.

【Safety】
Based on the Group Safety Plan 2018 as our fundamental concept of safety, in this Safety section, we report on our efforts to achieve "extreme safety levels."

【Society】
This section describes initiatives for improving the quality of transport and other services, dealing with areas including inbound customers, contributing to communities through tourism promotion, child care support, and diversity, etc.

【Environment】
This section describes initiatives such as environmental activities, system reforms, and the introduction of new proactive energy reduction guidelines undertaken at each workplace, with the aim of achieving our FY2021 and FY2031 goals towards reduction of the environmental burden.

CONTENTS

GRI content index, JR East Group's materiality and stakeholders, are available on our corporate website.

For the website version of our sustainability report, please go to:

http://www.jreast.co.jp/e/environment/index.html

Note: External Assurance on environmental performance and environmental accounting data
KPMG AZSA Sustainability Co., Ltd. has been engaged to provide external assurance on a set of selected environmental performance and environmental accounting indicators so that the reliability of the data is ensured. The particular indicators that are assured are marked with a ☆ for clarity.

Safety

CONTENTS

Our fundamental concept of safety

Since the establishment of JR East, safety has been our top management priority, and we have worked relentlessly to heighten our levels of safety. Our earnest efforts to learn from unfortunate accidents in the past have enabled JR East to further the prevention of future accidents with our continued developments in both tangible and intangible aspects.
To further reduce potential risk, JR East is committed to steadily improve tangible countermeasures and also to ensure that each one of its employees takes all possible intangible measures.
Pursuit of safety measures can never end. We will continue to work tirelessly to improve safety by pursuing a goal of "zero accidents involving passenger injuries or fatalities and zero accidents involving employee fatalities (including employees of Group companies and partner companies)."

General principles of Safety

JR East has prescribed General Principles of Safety for the code of conduct for its safety-related employees.

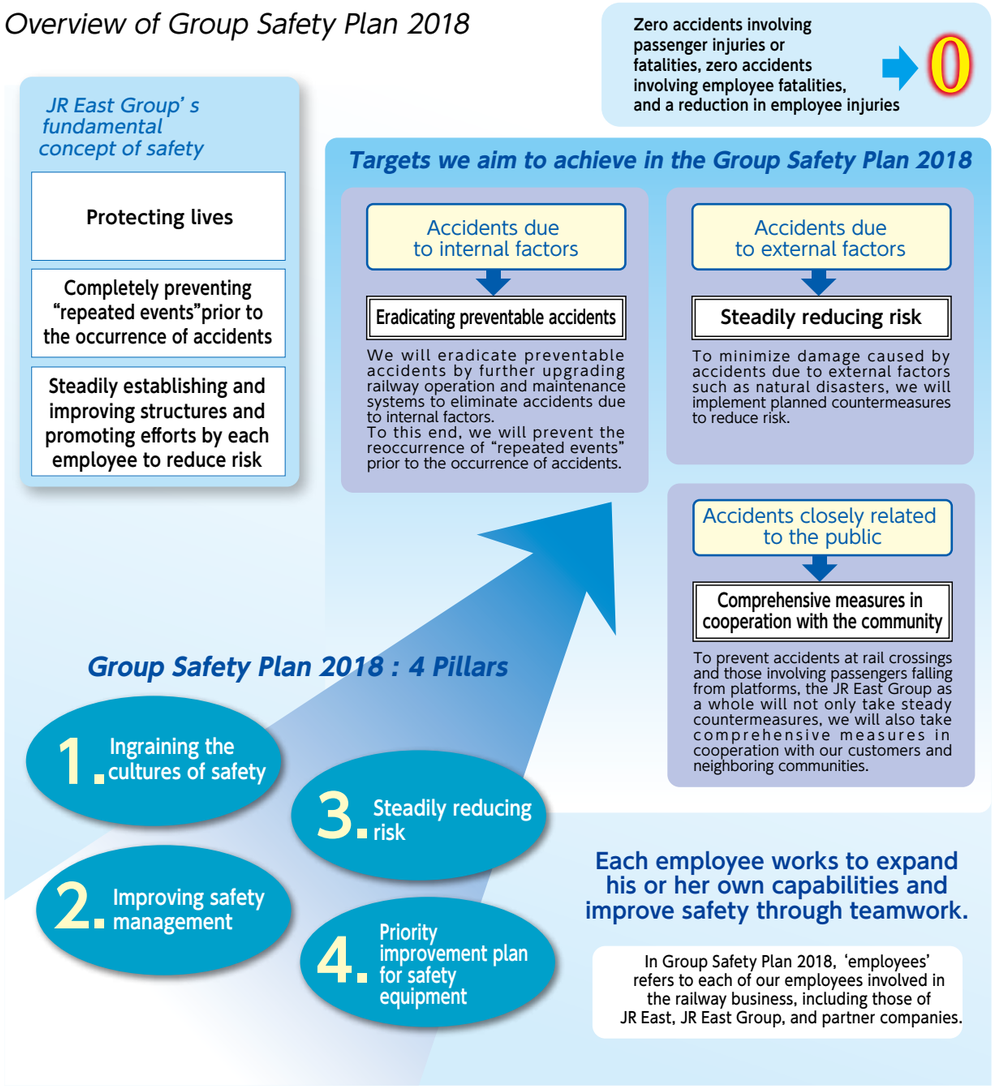
1. Safety is the most important mission in transportation.
2. Ensuring safety is based on exact observance of rules and procedures, and is achieved through constant practice.
3. Enforcement of confirmation and complete contact is most important for ensuring safety.
4. For ensuring safety we should cooperate together and go beyond our official responsibility.
5. When we have questions or must choose among several options, we should remain calm, think by ourselves, and take the safest course after thorough consideration.

Group Safety Plan 2018

Since our establishment, JR East has been implementing a series of five-year safety plans. From April 2014, guided by Group Safety Plan 2018, which is the 6th plan, each of us involved in the railway business committed to improve safety, and JR East as a whole group will continue to challenge ourselves to achieve "extreme safety levels."

In Group Safety Plan 2018, together with redefining the direction we are taking as a company such as preventing accidents resulting from internal factors, we outline specific measures. Additionally, through our ongoing efforts to pass on technologies and promote measures to comprehensively understand the severity of accidents, we aim to further enhance safety management through the fostering of safety-conscious personnel.

Overview of Group Safety Plan 2018



Group Safety Plan 2018: 4 Pillars

1 Ingraining the JR East Group's cultures of safety

■5 cultures

A culture of proper reporting

The prompt and proper reporting of accidents and incidents, and the prevention of the recurrence of accidents.

A culture of noticing

The recognition and sharing of information regarding the potential sources of accidents in order to prevent accidents and incidents.

A culture of learning

The open and honest discussion and exchange of opinion in investigating the causes of accidents and incidents in order to identify the causes of accidents and to take truly effective countermeasures against their recurrence.

A culture of action

The continuous awareness of others, learning from accidents and incidents which occur in all places of work, not just in one's own workplace, and the implementation of appropriate countermeasures.

A culture of direct meeting and discussion

Safety can be ensured only by taking safe actions. Think and act by yourself. This is at the core of our safety.

■Stopping trains when we feel it is not safe.

Safe and stable transport is important for our railways. Safety means protecting lives, while stability means ensuring on-time operations of our trains. However, though stable transport is important for us, safety comes first. Trying too hard to keep to schedule sometimes results in not properly following safety confirmation procedures, which leads to risking the safety of train operations. To secure the safety of our railway operations, the whole JR East Group will always follow our code of conduct to

"stop trains"

whenever we feel it necessary for safety reasons.

Train protection drill at General Training Center

■Sangen Principle: Three Actualities Principle

Accidents and incidents always occur at the Genba.* This means that the sources of accident prevention can also be found at the Genba. JR East continues its search for answers which cannot be found on paper, based on the "Three Actualities Principle" as its standard for action: actual locations, actual objects, and actual people.

*Genba: "Genba" means actual locations, objects, and people directly related to the safety of our operations including points of contact with our customers and fields or workplaces of transport or services.

The Three Actualities Principle

Actual locations:
Visiting actual locations to understand actual conditions

Actual objects:
Viewing actual objects in order to understand actual conditions

Actual people:
Meeting face to face with people involved to understand actual situations

■Challenge Safety Campaign

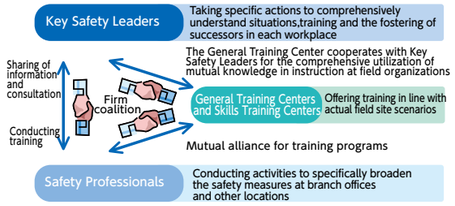
Since the company's foundation, we have been continuing our Challenge Safety Campaign with the aim of encouraging our employees to actively take on the challenge of further improving safety levels, rather than just passively maintaining safety. The campaign aims to encourage each one of our employees to actively endeavor to improve safety levels, think and discuss specific measures with each other and act upon them.

2 Improving safety management

■Fostering safety-oriented personnel

The safety of our operations is supported by our frontline employees. To respond to the rapid changing of generations, we will steadily work on fostering safety-oriented personnel.

■Fostering safety-oriented personnel with a strong mindset in cooperation between Key Safety Leaders, Safety Professionals, General Training Centers and Skills Training Centers



■Fostering capabilities to flexibly respond to disasters

From the Great East Japan Earthquake on March 11, 2011, we have relearned the importance of being prepared for disasters on a daily basis and to think and act by ourselves at a time of a disaster.
To respond to an accident or a disaster immediately after its occurrence, we are required to remain calm to review our choices and make prompt decisions to ensure the safety of our operations and take the necessary actions. By discussing the actions required immediately after the occurrence of an accident or a disaster and preparing ourselves through training on a regular basis, JR East helps its employees to foster capabilities to respond flexibly to an accident or a disaster.

■Steadily passing on necessary technologies

○Passing experiences and knowledge to future generations

JR East will steadily pass on valuable experiences and knowledge that veteran employees possess including the circumstances that led to accidents in the past and the processes that led to the creation of current rules and regulations. We will also continue our efforts to increase the volume of these valuable experiences and knowledge of veteran employees to be shared with future generations.

○Increasing opportunities for employees to learn and challenge themselves

In passing on technologies, we place importance on offering opportunities for each one of our employees to voluntarily learn and challenge themselves and we believe that this will eventually lead them to acquire knowledge of the technologies and improve their capabilities.

○Passing on experiences through the Chroniclers of Safety (narrators of oral history)

We have organized a group of ex-employees from various departments who possess an abundance of knowledge and applied skills in railway safety to act as our "Chroniclers of Safety." These Chroniclers of Safety share their safety-related experiences, such as the handling of accidents in the past, in the hope that they will pass their accumulated experiences and skills down to future generations.

■Providing easy-to-understand learning materials and information

By utilizing ICT technologies, JR East offers an environment for employees to learn whenever needed from various learning opportunities such as Challenge Safety campaigns, regular training and drills, study sessions and individual learning. The necessary materials and information can be easily searched and processed for learning.

○Development and improvement of the safety portal

JR East utilizes its safety portal site via the intranet as its safety-related information platform. Employees can access the necessary educational materials including videos whenever needed.

○Development of e-learning

By utilizing devices such as tablets, we offer e-learning so that employees can learn whenever they want.

■Further increasing the levels of safety through the concerted efforts of the whole JR East Group

To steadily and specifically promote our safety efforts, it is important that we share information and our safety values for the whole JR East Group including group and partner companies. We are committed to ensuring that all JR East Group employees share safety values and to continuing our efforts to further improve the levels of safety in our operations across the whole JR East Group.

■Simplifying to minimize human errors

Devices and equipment requiring complex rules and numerous operations could result in human errors. JR East promotes the simplification of its operations by unifying the specifications of its devices and narrowing down its safety rules and regulations.
However, since many of the safety rules have been created from lessons from past accidents, as a condition of this simplification we make sure we understand the background to and objectives of each safety rule.

■Deeply learning the dreadfulness of accidents

By engraving the dreadfulness of accidents in their memory, each one of our employees will take specific actions to prevent them from happening.

○Further utilization of the Accident History Exhibition Hall

Since FY2015, all JR East employees visit the Accident History Exhibition Hall where actual trains from accidents and disasters are exhibited. We also continue to improve the educational materials available at the Accident History Exhibition Hall.

○Publication of major accident encyclopedia

We will continue the publication of our major accident encyclopedia with notes from those who were involved in the accident response at the time.


Accident History Exhibition Hall

3 Steadily reducing risk

■Totally eradicating accidents due to internal factors

Our goal is to eradicate preventable accidents due to internal factors by further upgrading railway operation and maintenance systems. In addition to our risk reduction measures for personnel and management such as education and training, we will take all possible measures such as the utilization of technological developments in ICT, big data, and GPS. We will also review our safety-related procedures and further strengthen the countermeasures we have been putting in place.
To this end, we will focus primarily on preventing the reoccurrence of "events requiring attention" due to the same factors.

■Reducing risk of accidents due to external factors

When the Great East Japan Earthquake occurred, the earthquake countermeasures that had been steadily implemented by JR East up to that time proved effective to a certain extent. On the other hand, we continue to acknowledge the importance of being prepared for unforeseen natural disasters. Additionally, we will steadily reduce the risk of damage being caused by the increasing incidence of natural disasters such as abnormal weather like torrential localized rain and gusts of wind, floods and volcanic eruptions. To minimize damage caused by natural disasters due to external factors immediately after an occurrence, JR East will take planned risk reduction measures.

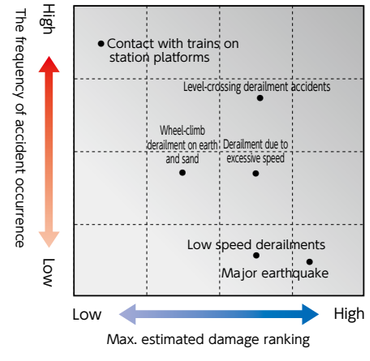
■Reducing risk of accidents closely related to the public

While we steadily take measures against accidents at road crossings and customers falling onto tracks, we continue our efforts to ask our customers and neighboring communities to understand the risks associated with railways and to prevent the occurrence of such accidents.
We will take comprehensive measures including accident prevention campaigns on platforms, escalators, or road-railway level crossings, and the elimination of level crossings in cooperation with local municipalities.

○Further prediction of possible risk and related countermeasures

Though some risk might not be recognized as risk, with changing circumstances surrounding railways some might evolve into a risk to operations in the future. We will monitor the changing risk on a regular basis so that we can predict the possible risk and implement proper countermeasures beforehand.

An example of our risk evaluation methods



By reviewing the changing risk of possible accidents on a regular basis by using risk evaluation methods, we can determine the priority of the necessary countermeasures

4 Efforts to further improve safety levels

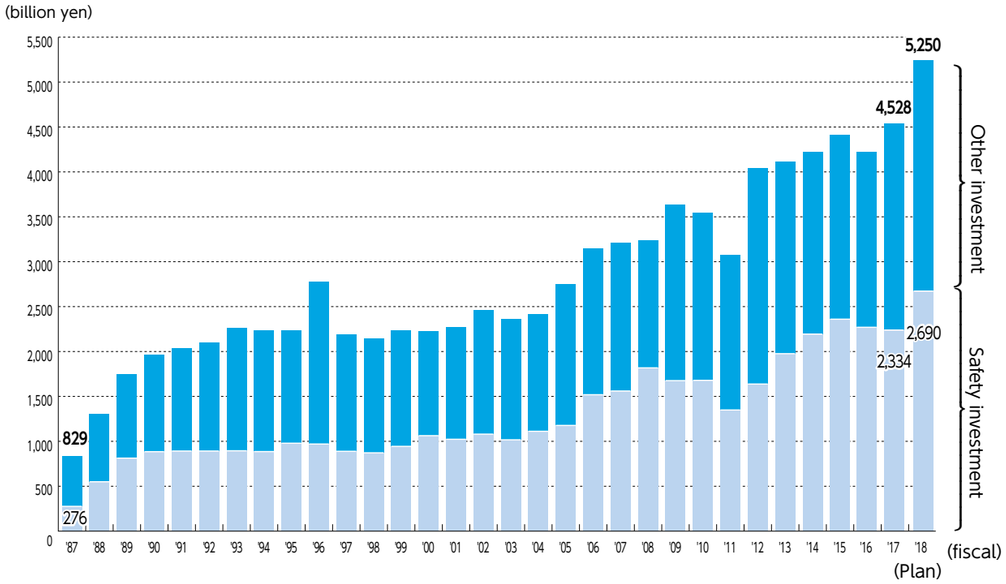
■Safety facilities investment

JR East has invested more than 3.9 trillion yen to date following the company's establishment. In our Group Safety Plan 2018, JR East's Five-year Safety Plan, which was announced in Feb. 2014, JR East plans to invest approximately 1 trillion yen in safety measures during the five years from FY2015 to FY2019.

■Major safety investment in FY2019

In FY2019, JR East will steadily implement measures against large-scale earthquakes, safety measures for level crossings, improvement of safety measures on platforms such as platform doors, improvement of ATS-P, and reinforcement of railway-related security.
JR East plans to invest 525 billion yen in total in its facilities and 269 billion yen of that total will be invested in safety.

[Trends in safety investment]

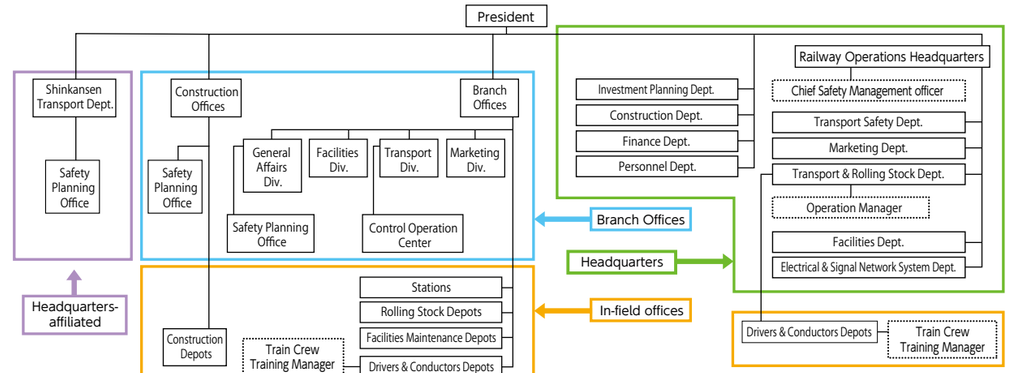


JR East's safety management organization

Safety management regulations

In response to a revision of the Railway Business Act, JR East formulated its safety management regulations in Oct. 2006. The safety management regulations make stipulations on various safety management-related matters such as the responsibilities of top management executives in ensuring the safety of operations and on organizational matters such as the selection of chief safety management officers, operation managers, and train crew training managers. The chief safety management officer is selected from the Director General of Railway Operations Headquarters or its equivalent.
The operation manager is selected from the General Manager of Transport & Rolling Stock Dept. or its equivalent. The train crew training manager is selected from the Manager of Drivers & Conductors Depots.

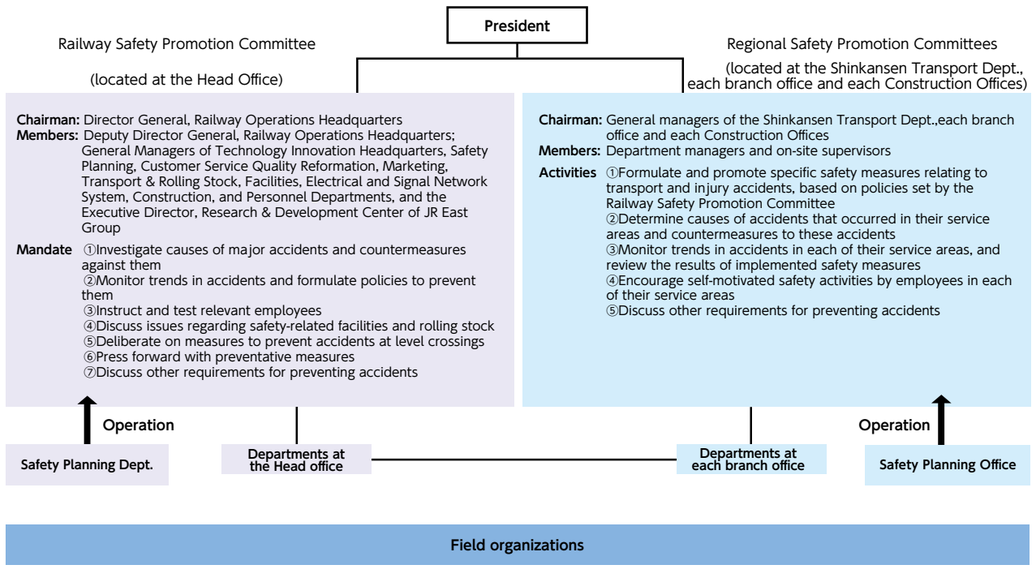
[Management structure for transport safety]



*The chief safety management officer, the operation manager, and the train crew training manager are terms designated by the Railway Business Act and related regulations.

Railway Safety Promotion Committee

JR East established the Railway Safety Promotion Committee at its Head Office, chaired by the Director General from Railway Operations Headquarters, as its safety promotion network in 1987 at the time of its corporate establishment.
The committee aims to improve safety in railway operations and prevent accidents by investigating the causes of major accidents, formulating preventive measures to avoid reoccurrences, and implementing safety-related countermeasures for facilities and trains.
There are also Regional Safety Promotion Committees at each branch office and the Shinkansen Transport Dept., chaired by the general managers of the branch offices and the department. These committees implement specific measures in cooperation with the Railway Safety Promotion Committee, and investigate the causes of accidents, implement concrete preventive measures, and promote activities to enhance safety in their service areas.



Efforts to further improve safety levels

Fostering safety-oriented personnel

■Safety education and training

To heighten safety awareness among employees by placing priority on safety education and training JR East is offering educational and training opportunities to its employees at the JR East General Education Center (Shirakawa City, Fukushima Prefecture) and General Training Centers (branch offices), and on-the-job training in each workplace.
The JR East General Education Center offers group training for personnel development and improvement of knowledge and skills, fostering the development of new train crews and also providing the necessary training for job transfers. The General Training Centers in each of our branch offices offer education and training to improve the skills of train crews by utilizing accident prevention simulators on a regular basis.
In OJT (on-the-job training), we offer education and training to suit the situations of each workplace.


JR East General Education Center



Train protection drills on training tracks

■Enhancement of educational and training facilities

We are conducting safety-related education and training based on the following principles:
① In basic education in classrooms and in on-the-job training at each workplace, importance is placed not only on work procedures, but also on the purposes, objectives, reasons, background, structures and working principles that underlie them so that trainees can think about and learn the sense of values that underpin the reasons for each action.
② During training to improve responsiveness, trainees can touch and feel actual devices and equipment so that they can encounter situations that are as similar as possible to actual situations. By experiencing failures in training, they can learn by practice and acquire the level of responsiveness required in daily operations.
③ By experiencing the most serious accidents, trainees can be ready for the worst-case scenario and take the necessary countermeasures. Engraving the importance of lives on the minds of employees will drive them to further improve their countermeasures.

To improve the levels of education and training, we are enhancing educational and training facilities at General Training Centers and Skills Training Centers at all of our branch offices by introducing cut models of actual devices and equipment. Furthermore, we are currently introducing simulators for training at all train crew offices.


Cut model of rolling stock equipment


Simulator for train crew training


Track facility at Skills Training Center

TICKET TO TOMORROW

Drive simulator for train drivers

Senior Chief Driver, Tachikawa Train Drivers Depot, Hachioji Branch Office

Tachikawa Transportation Depot is in charge of train driving for the Chuo Line, Ome Line, and Itsukaichi Line. The depot is the largest in the JR East service area with approx. 280 drivers. Currently, I am in charge of education and training for train drivers. In March 2017, a drive simulator for train drivers was introduced at the depot. Instead of CG images, the simulator uses real images of the railway line where the driver works, to make driver training more realistic.
Due to the introduction of the new simulator, we reviewed driver training methods to make them more practical and effective. Specifically, we introduced conformity in basic actions such as finger-pointing and calling, driving in bad weather, and the emergency response at a time of signal failure. We will further improve our level of driving for safer and more stable transport by fully utilizing the simulator.

■Education and training to understand the real nature of each action

For higher quality operations, it is necessary to truly understand the sense of values, objectives, and background for each basic action and rule.
For these reasons, in our education and training, trainees learn not only procedures including manuals, but also undertake practical training so that they can understand the true nature of the lessons including the reasons, structures, and working principles behind them.

■Accident History Exhibition Hall

Many of the safety-related rules and facilities have been created from our experiences of and reflection on past accidents. With the objective to further improve our safety levels by learning lessons from accidents, which is our basic policy for safety, we will never forget past accidents and are committed to pass on these valuable experiences learned from those lost lives. To this end, JR East established the Accident History Exhibition Hall at JR East General Education Center and the hall is used for various training to learn the importance of safety in railway operations.
In the 30th anniversary of the company's foundation, we are renewing the Accident History Exhibition Hall so that we can remember past accidents and pass on the lessons learned from these accidents to future generations.


Accident History Exhibition Hall

■Fostering integral safety leaders and professionals

In this time of rapid change in generations, since it is of the utmost importance to enable our employees to play major roles in securing safety in our operations, we are taking various measures as indicated below.

○Key Safety Leaders
We are fostering three capabilities in Key Safety Leaders in field organizations: comprehensively understand situations, training and fostering successors in each workplace. Key Safety Leaders have a thorough understanding of the safety rules, details of past accidents and safety weaknesses in their own workplace, offer guidance to other employees on a regular basis in the workplace, and contribute to the betterment of safety levels in field organizations.


Key Safety Leaders' meeting

○Safety Professionals
We have selected Safety Professionals from each branch office and construction work office to train them as Safety Professionals. They are expected to be professionals capable of guiding other employees through their long experience in railways and abundance of knowledge of safety rules and details of past accidents as well as their countermeasures.


Safety Professional certification ceremony

○Chroniclers of Safety (narrators of oral history)
JR East is currently experiencing a rapid change in the generations of its employees, including frontline staff and therefore needs to steadily instill successors with safety-related knowledge, leadership, and technical capabilities. We assigned ex-employees of JR who possess an abundance of knowledge and applied skills in railway safety to act as our "Chroniclers of Safety" (narrators of oral history).


Assignment of ex-employees of JR East who possess an abundance of knowledge and applied skills in railway safety to act as our "Chroniclers of Safety" (narrators of oral history)

Ingraining the cultures of safety

○The Challenge Safety Campaign

We started the Challenge Safety Campaign with the aim of encouraging our employees to actively take on the challenge of further improving safety levels, rather than just passively maintaining safety, with each one of our employees thinking about safety and autonomously taking actions. With initiatives of field staffs, in a consorted campaign with all employees JR East is working to create a corporate climate in which its employees actively engage in pursuing higher safety levels in our operations. In the campaign, each one of our employees finds their own safety issues and takes actions to solve these safety issues with support from branch offices and the Head Office.

Development of safety-related discussions in each workplace

Examples of CS Campaigns

○Challenge Safety Aoshingo (Challenge Safety Green Light)

Since April 1989, we have been publishing a monthly safety information magazine, Challenge Safety Aoshingo, to comprehensively distribute safety information to our employees. The magazine offers useful information for CS Campaigns in each workplace such as specific efforts of the campaigns in each workplace and details of past accidents.

Challenge Safety Aoshingo (Mar. 2018 issue)

○Railway Safety Symposium

With objectives to improve the safety awareness of each one of our employees and to further vitalize various safety improvement activities including Challenge Safety Campaigns, JR East started Railway Safety Symposiums in 1990. Symposiums are attended by approximately 700 people including employees of group companies. We invite key figures from outside of the company to host panel discussions and introduce detailed safety examples of other companies. Participants bring back what they learn at symposiums to their workplaces and share safety awareness with other employees.

The 25th Railway Safety Symposium in FY2017

○Round table discussions between front-line employees and executive officers

We are increasing the frequency of opportunities for the exchange of opinions between front-line employees and executive officers to further deepen mutual understanding.
Through direct discussions between front-line employees and Head Office executive officers, we have mutually confirmed efforts to solve safety-related issues in order to take specific measures to further improve the safety levels of our operations.

Round table discussions with front-line employees

Group-wide efforts to further improve safety

○JES-Net (JR East Safety Network)

As the division of work increasingly progresses among Group and partner companies, to further improve safety levels it is inevitable that there is a sharing of common safety values and cooperation. When we started the Safety Plan, the JR East Safety Network (JES-Net) was established in FY2005 as a safety promotion network consisting of 25 JR East Group and partner companies that are engaged in work directly affecting train operations. As of March 2018, the number of companies in this network had expanded to 37.
JR East Group continues to promote measures for improvement and share issues to enhance safety levels across the whole group through JES-Net Presidents' Meetings with presidents of each group and partner company and JR East's top management; through safety collaboration camps with safety-related managers of branch offices and JES-Net member companies to discuss safety issues; and through safety reviews where frontline staffs exchange various opinions on site.
Additionally, through active exchanges of human resources among JES-Net members, we are working to improve safety levels and sharing safety awareness across the whole group.

JES-Net presidents' meeting

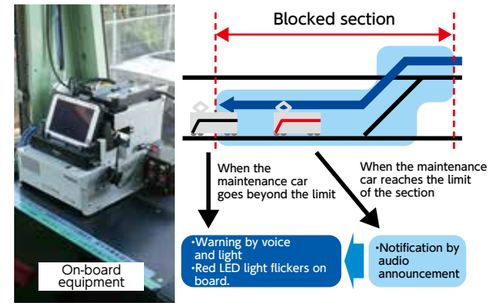
Safety-related research and development

JR East Group conducts various safety-related research and development activities with the Research & Development Center of JR East Group as its core.
Research themes at these organizations include those related to promoting the sharing of safety information and knowledge, in addition to efforts among employees; development of systems to prevent accidents due to failures in maintenance work procedures; research on safety evaluation of natural disasters such as wind, earthquake, heavy rain and snow; research on the safety of railcars to prevent flange climb derailment at low speed; and research to ensure the safety of customers at stations.
Research themes at these organizations include those related to major accidents such as derailments, systemization of maintenance work, promoting the sharing of safety information and knowledge among employees by utilizing human factors, safety evaluations of natural disasters such as strong winds, earthquakes, and heavy rain.

○Development of the maintenance car location detection system

As a countermeasure in light of the derailment accident at Kawasaki Station in Feb. 2014, we developed the maintenance car location detection system. The system activates an alarm when it detects an unauthorized maintenance car (including a road railcar) in an unblocked section, where train operations are not yet blocked for maintenance work.

We developed a rotary encoder method to detect a train location by the number of axle revolutions. As a method to support the prevention of train collisions with maintenance cars in the ATACS sections, we introduced the system to the Saikyo Line between Ikebukuro and Omiya in Nov. 2017.



Maintenance car location detection system (rotary encoder system)

○Development of a system to detect abnormality in the wheel load balance

We developed a warning system to detect wheel load unbalance by using a strain gage attached on the side of a rail. A wheel load unbalance could lead to a derailment accident.
We started test operations in Mar. 2018 and are currently conducting verification tests on the system.

Wheel load unbalance detection system

Strain gage

○R&D related to human factors

We developed a tool to measure the safety capability of employees so that they can identify their key strengths and then utilize and foster that strength in their work.

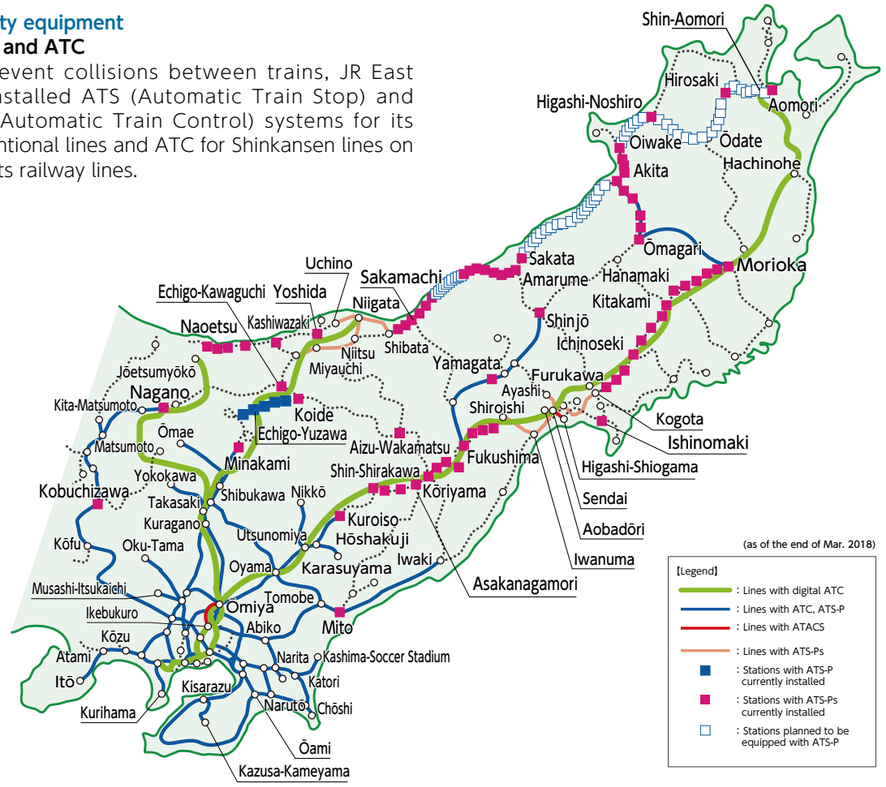
Development of a tool to measure safety capability of employees

Measures to prevent train collisions

■Safety equipment

○ATS and ATC

To prevent collisions between trains, JR East has installed ATS (Automatic Train Stop) and ATC (Automatic Train Control) systems for its conventional lines and ATC for Shinkansen lines on all of its railway lines.



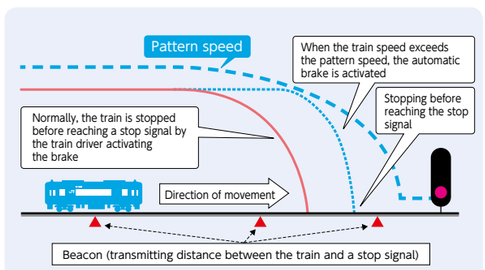
[Installation plan for ATS-P and ATS-Ps systems]

	Areas for planned installation	Installation status as of the end of FY2018
ATS-P system	Mainly for railway sections with frequent train operations in the Tokyo metropolitan area	Completed installation in 5 major stations and railway sections for 2,405.8km (service km)
ATS-Ps system	Provincial city areas and major railway sections excluding the Tokyo metropolitan area	Completed installation in 72 major stations and railway sections for 210.8km

○ATS (Automatic Train Stop)

Currently, JR East is installing ATS-P and ATS-Ps systems with improved safety capabilities on its railway lines.
With ATS-P and ATS-Ps, based on information from ground equipment, on-board equipment calculates the allowed train speed to stop at a stop signal. When the train exceeds the speed pattern, the system automatically activates its automatic brake to stop the train. The system also responds to speed limits for curves and turnouts.

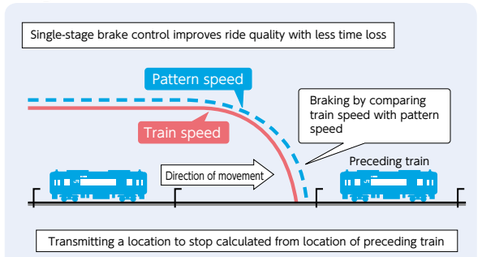
[Overview of ATS-P system]



○ATC (Automatic Train Control)

In this system, ground equipment continuously transmits signals to trains via the rails. The transmitted signals are indicated in the driver's cab and the system automatically activates the emergency brake if the train exceeds its permitted speed.
On the Shinkansen and the Yamanote, Keihin Tohoku and Negishi Lines, we have replaced the systems with digital ATC. This system transmits the location information of the preceding trains to the following train so that on-board equipment can control the train speed based on a speed pattern calculated from the information.

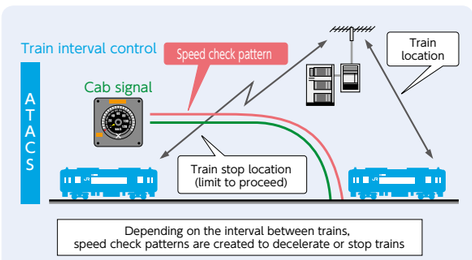
[Digital ATC]



○ATACS (Advanced Train Administration and Communications System)

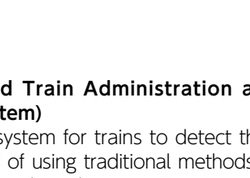
This is a totally new system for trains to detect their own locations instead of using traditional methods of train location detection with track circuits. By using radio communications for the transmission of train location information between ground and on-board facilities, we can control train operations. JR East began using ATACS on the Senseki Line between Aobadōri and Higashi-Shiogama in October 2011 and on the Saikyo Line between Ikebukuro and Omiya in Nov. 2017.

[ATACS]



TICKET TO TOMORROW

Introduction of ATACS and its further development



Chief, ATACS Saikyo, Tokyo Electrical Construction and System Integration Office

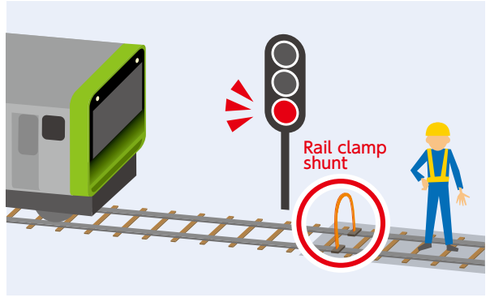
Following the introduction of the Advanced Train Administration and Communications System (ATACS) on the Senseki Line, we introduced the system on the Saikyo Line in Nov. 2017. This was the first implementation in the Tokyo metropolitan area. Though we faced some difficulties such as ensuring radio quality and arranging construction work to take account of other projects, thanks to detailed meetings with related parties and repeatedly reviewing construction methods we were able to complete construction and start to use the system.
Currently, I am in charge of the introduction of the level crossing control functions of ATACS. Compared with the conventional level crossing control method, we expect that the level crossing control method of ATACS will lead to further improvements in safety and the optimization of the alarm duration. With the aim of offering better systems, I will continue in my efforts to design systems as well as more safe and stable transportation, and we will also work on optimizing the functions of ATACS and assessing system for introduction on other lines.

■Others

○Dual safety measures

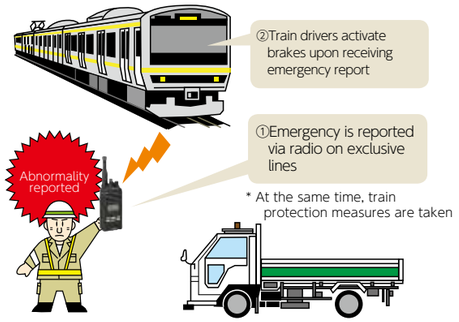
When conducting track construction, maintenance, or inspection, we close tracks so that other trains cannot enter these particular railway sections. However, in the case of a failure of a track closure as a result of human error, it could result in a train mistakenly entering a closed section during construction, maintenance or inspection. To prevent this from happening, we undertake dual safety measures. In addition to the above-mentioned track closure procedure, by installing rail clamp shunts on the closed section, signals will change to a stop signal to prevent trains from proceeding to that closed section.

[Dual safety measures]



○Collision prevention support radio system

Learning lessons from the derailment accident in the Kawasaki Station premises of the Keihin Tohoku Line in Feb. 2014, JR East introduced a collision prevention support radio system to help maintenance workers stop trains in case of an emergency during maintenance work.
The collision prevention support radio system alerts neighboring trains of an emergency by operating exclusive radio terminals in the case of an abnormality to immediately stop trains. The system is installed on all conventional line trains and when the emergency signal is transmitted, drivers receiving the signal promptly stop their trains.
However, depending on radio and line availability, the signal might not reach all neighboring trains. For this reason, the collision prevention support radio system is used as a supplementary method for train protection.

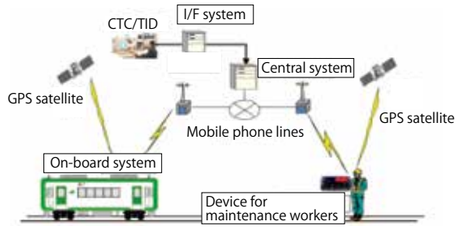


○Train approach alarm system

JR East utilizes alarm systems to warn maintenance workers on tracks of approaching trains. For railway sections with track circuits*installed, we use a TC-type wireless train approach alarm system to warn workers of approaching trains by track circuit. For railway sections without track circuits, we developed a GPS train approach alarm system to inform workers of train locations by locating the positions of trains and workers on GPS. We started use of these systems on both the Iiyama Line and the Hachikō Line from April 2016.

*Track circuit: A section of rail is used as a part of the electric circuit. By short-circuiting the rail using the wheels of the train, the position of the train can be detected.

[GPS train approach alarm system]



Preparedness against natural disaster

■Our measures against earthquakes

Learning from earthquakes in the past, JR East has employed the following three anti-earthquake measures:

①Preventing structural damage (seismic reinforcement measures)

②Stopping trains immediately (emergency train stop measures)

③Minimizing secondary accidents following derailment (preventive measures against derailed trains leaving the track area)

○Seismic reinforcement measures

In order to be prepared for the expected earthquake whose epicenter is anticipated to be located directly beneath the Tokyo metropolitan area, since FY2013 we have been working on the seismic reinforcement of embankments, cuttings, brick arch viaducts, power poles, and the prevention of the collapse of ceilings and walls on platforms and in other parts of stations. Additionally, we have proceeded with the seismic reinforcement of bridge pillars and elevated bridge columns ahead of schedule. Moreover, due to the Great East Japan Earthquake in 2011, we are pressing forward with the seismic reinforcement of station buildings that have daily passenger traffic of 3,000 persons or more and also of Shinkansen power poles that were greatly damaged by the earthquake at the time.
Based on changes in the expected intensity of the possible earthquake whose epicenter would be directly beneath the Tokyo metropolitan area and information on active faults, from FY2018, we started to work on the expansion of the reinforcement areas and also the implementation of new measures in order to manage the potential damage to each facility and the effects of the earthquake on our railway lines.


Seismic reinforcement of cuttings

[Seismic reinforcement measures taken after the Great East Japan Earthquake and progress made (As of the end of March 2018)]

Major measures		Total completed / Planned total	Completed ratio
Elevated bridge columns	Shinkansen	Approx. 8,640 units / Approx. 8,640 units	Completed
	Conventional Lines	Approx. 6,240 units / Approx. 6,600 units	95%
Bridge columns	Shinkansen	Approx. 620 units / Approx. 680 units	91%
	Conventional Lines	Approx. 1,640 units / Approx. 1,910 units	86%
Embankments	Near Ochanomizu (embankment on the river side)	Approx. 1.2 km / Approx. 1.2 km	Completed
	Height of 8m and over	Approx. 8 km / Approx. 8 km	Completed
	Height of 6m and over, and below 8m	Approx. 10.0 km / Approx. 11 km	91%
Cutting (Including near Ochanomizu)		Approx. 13.3 km / Approx. 23 km	58%
Embankments and anti-derailing guards before and after bridges		Approx. 74km / Approx. 74km	Completed
Station buildings		62 buildings / Approx. 85 buildings	72%
Ceiling of station buildings and platforms		Approx. 410 stations / Approx. 560 stations	73%
Walls of station buildings and platforms		56 stations / 56 stations	Completed

○% Completion ratio of 80% and over Completed Completed

[Additional reinforcement started from FY2018]

Major measures		Planned total
Elevated bridge columns	Shinkansen	Approx. 2,630 units
	Conventional Lines	Approx. 180 units
Embankments		Approx. 12 km
Embankments and anti-derailing guards before and after bridges		Approx. 50 km


Seismic reinforcement

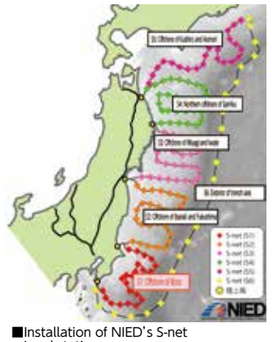
○Emergency train stopping measures

For Shinkansen lines, to automatically stop trains as quickly as possible JR East utilizes the Shinkansen early earthquake alert system, which is based on the installation of wayside and coastal seismometers to detect primary tremors (P-waves). Additionally, the time required for the activation of emergency braking is shortened by approx. 1 second. To be prepared for an earthquake with an epicenter directly beneath the Tokyo metropolitan area and also for inland earthquakes, seismometers are installed at 30 locations and JR East started using the Earthquake Early Warning of the Japan Meteorological Agency from October 2012.
For conventional lines, using information from the Shinkansen early earthquake alert system and also the Earthquake Early Warning of the Japan Meteorological Agency, JR East utilizes the Early Earthquake Alert System for conventional lines to activate the emergency brake of trains in the necessary sections at the time of a large-scale earthquake.
By further improving the functions of seismometers installed along Shinkansen lines, along the seashore, and inland of the Tokyo metropolitan area, we are shortening the time required to stop a train after the detection of an earthquake on Shinkansen and conventional lines.

Topics

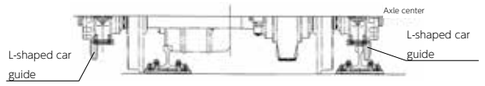
Early detection of earthquakes by utilizing information from ocean bottom seismographs

In Oct. 2017, JR East signed an agreement with National Research Institute for Earth Science and Disaster Resilience (NIED) to enable JR East to use the earthquake observation data of the Institute's S-net, a Seafloor Observation Network for Earthquakes and Tsunamis along the Japan Trench. From Nov. 2017, we have been using S-net's earthquake observation data for the offshore of the Boso peninsula (S1) for the Shinkansen Early Earthquake Detection System. We are currently preparing for the utilization of earthquake observation data for other areas. In comparison to earthquake detection by utilizing seismometers installed along the seashore, earthquake detection using earthquake observation data produced by seafloor seismographs enables us to shorten detection time by approx. 20 sec. at its fastest.



■Installation of NIED's S-net Land station
(Partial modification of NIED's figure)

○**Prevention of secondary accidents after derailment**
During the Niigata Chuetsu Earthquake in Oct. 2004, one of our Joetsu Shinkansen trains derailed. Fortunately, passengers and crew were uninjured. However, by learning lessons from the earthquake, JR East has taken preventive measures for Shinkansen trains and tracks. For Shinkansen trains, we have installed L-shaped car guides on bogies. By guiding the derailed trains along the rail, the L-shaped car guides prevent Shinkansen trains from completely leaving the track in a derailment. We have also improved glued insulated joints to reduce the impact of wheels and bogie parts in the event of a derailment. Additionally, we completed the installation of rail rollover prevention devices to guide the wheels along the rails following a derailment, thereby preventing a rail rollover and the rails from completely deviating from the track even after a train derails and the rail fasteners are broken.




L-shaped car guide


Before improving glued insulated joints


After improving glued insulated joints


Rail rollover prevention devices

■Preparing rescue kits and first aid kits
In the case of an earthquake directly beneath the Tokyo metropolitan area, many passengers might be injured and we might need to save the lives of passengers with the help of a limited number of our employees before the arrival of rescuers. For a major earthquake, placing top priority on saving the lives of the injured, JR East has prepared the following first aid kits and is also conducting drills to give personnel necessary first aid skills.

○**Rescue kits to save injured persons**
We installed rescue kits (crowbars, jacks etc.) at each station of the five branch offices in the Tokyo metropolitan area.


Rescue kits

○**First aid kits to provide first aid to injured persons**
We installed first aid kits (triangular bandages, etc.) at each station within 30km of Tokyo.


First aid kits


Rescue and life-saving training

○**General emergency drills**
JR East conducts general emergency drills to prepare for an earthquake during disaster preparedness week around Sep. 1st, every year. The drills include the following:
•Drills to operate an on-site disaster countermeasure headquarters at the Head Office and each branch office
•Drills for rescuing, life-saving, guiding passengers during an evacuation, and initial firefighting in each district.
Additionally, we participate in disaster drills run by local municipalities.

General emergency drills

■Measures against tsunamis
Before the Great East Japan Earthquake, we had set operational restriction methods and tsunami danger zones for each location, prepared manuals, and were holding study sessions and conducting drills on guiding passengers to de-board trains for evacuation. We believe that these efforts led to the prompt evacuation of passengers away from tsunami danger zones at the time of the earthquake.


Tsunami evacuation manual


Drill to guide passengers to alight from a train for evacuation

○**Formulating action guidelines for evacuation to avoid tsunamis**
To prepare for a case when there is no time before the arrival of a tsunami, JR East formulated action guidelines for evacuation during tsunamis for each one of its employees to follow in January 2012.

■Action guidelines for evacuation to avoid tsunamis
1. At a time of a large earthquake, be prepared for tsunamis. Gather information by yourselves and if communication lines are disconnected, make your own decisions for evacuation. (Do not be afraid to make a mistake.)
2. Once decided to evacuate, by judging the conditions of customers, promptly guide customers to evacuate.
3. In alighting from trains, evacuating and gathering information, ask customers and local people to cooperate.
4. Even after evacuation, go to a higher place without being satisfied and thinking this would be high enough.
5. Stay evacuated with customers and do not return to field offices or trains while tsunami warnings are still issued.

○**Tsunami evacuation navigation system**
We developed the Tsunami Evacuation Navigation System to assist train crews in evacuating passengers from unfamiliar places along railway lines through the use of their tablet devices.


Tsunami evacuation navigation system

○**Improvement of evacuation signs and routes and conducting drills for evacuation during tsunamis**
For railway lines such as the Hachinohe Line, which resumed operations following damage caused by tsunamis, we have improved the signs and routes for evacuation from tsunamis. We will also improve evacuation signs and routes for other railway sections.

Furthermore, in FY2018, we conducted drills on guiding passengers to alight from trains and escape from a tsunami at tsunami-prone locations, assuming that there was no time before the arrival of the tsunami. We will continue these drills every year at the same time of year.

Tsunami evacuation sign (Hachinohe Line)


Evacuation route (Hachinohe Line)


Drill to guide passengers to alight from a train during a tsunami

■Measures for rainfall

○**Measures for rainfall**
To protect tracks from landslides due to rainfall, JR East takes disaster prevention measures for wayside embankments in all railway sections in accordance with its plans. Especially in the Tokyo metropolitan area and for all Shinkansen routes, we take thorough measures to secure safe and stable transport.

[Countermeasures for rainfall]

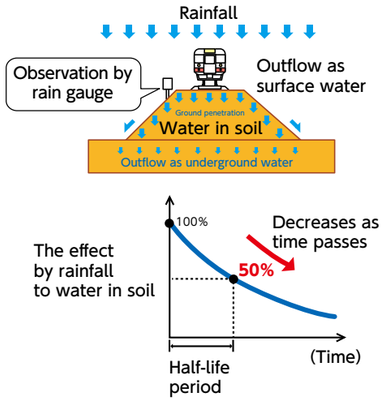

Cutting slope protection (spray frame work)


Embankment slope protection (spray frame work)


Natural slope protection (spray frame work)

○**Operational restrictions for rainfall**
For heavy rainfall, JR East ensures the safety of train operations by introducing operational restrictions such as limiting train speeds and suspending operations. Since June 2008, we have been using effective rainfall values which are highly related to landslide disasters due to rainfall. Effective rainfall is the amount of underground water remaining after changes over time in ground penetration and outflow. Since many of the disasters due to rainfall result from rainwater seeping into the ground, the effective rainfall index is more appropriate as an operational restriction index for railways.
With this indicator, we can more precisely predict the occurrence of landslide disasters, thereby improving the safety and reliability of our train operations.

[The concept of the effective rainfall]



■Efforts against wind

Uetsu Main Line train derailment accident
On December 25th, 2005, a derailment of the limited express train Inaho No.14 on the Uetsu Main Line between the Sagoshi and Kita-Amarume Stations caused the death of five passengers and injured 31 passengers. We would like to report on the measures we have taken since this accident.


State of derailment accident

○**Issuing tentative early restrictions for all lines**
For all railway sections of conventional lines with operational restrictions for wind, after the resumption of operations of the Uetsu Main Line on January 19th, 2006 we reviewed the criteria for operational restrictions as indicated below.
For locations with windbreak fences, we use prior general restrictions.

Restriction type	Wind speed (meters/sec.)	
	General restrictions	Early restrictions
Speed restriction (max. 25 km/h)	25 - 30	20 - 25
Operation halted	30 -	25 -

○**Installation of windbreak fences**
Since 1991, in order to reduce wind force on trains, we have installed windbreak fences at 29 locations as of the end of March 2018.


Uetsu Main Line, between Sagoshi and Kita- Amarume

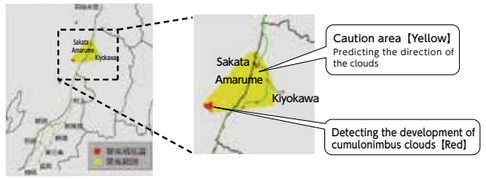

Keiyō Line, between Shiomi and Shin-Kiba

○**Foundation of Disaster Prevention Research Laboratory**
JR East founded the Disaster Prevention Research Laboratory at the Research & Development Center of the JR East Group in Feb. 2006. The Laboratory undertakes various research and development activities related to meteorological and terrestrial phenomena.

○**Expanded introduction of the gale warning system**
JR East has been using gale warning systems on the Keiyō Line since Aug. 2005 and has installed the systems in all 296 locations as of the end of Mar. 2018 on its conventional lines with a gale operational restriction, including the accident location between Sagoshi and Kita-Amarume of the Uetsu Main Line. The gale warning system restricts or suspends operations not only when the actual wind speed measured by anemometers exceeds restriction thresholds, but also when the projected maximum wind speed exceeds these limits.

○**Utilizing meteorological information to test methods for operational restrictions**
Local gusts are meteorological phenomena, and are difficult to observe with conventional observation equipment such as anemometers. Through meteorological information such as the intensity of rainfall obtained from the Japan Meteorological Agency's radars and Nowcast that supports detection of tornados, and by detecting the development of cumulonimbus clouds, we developed a method to forecast the occurrence of local gusts and to apply that information to our operational restrictions. Every year between November and the following March, we test the system in six sections of railway lines along the Sea of Japan including the Uetsu Main Line between Niitsu and Ugo Honjo.

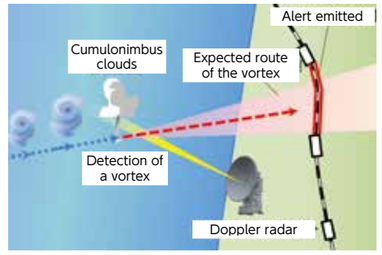
[Display of operational restriction area by utilizing
meteorological information (image)]



○**Research on a Doppler radar observation method**
Doppler radar is an observation system that can be used to ascertain the wide-area distribution of wind conditions. Jointly with the Meteorological Research Institute of the Japan Meteorological Agency, we have been developing a system that can detect a vortex of gusty wind in the air and emit an alarm to stations along the expected direction of the vortex to warn of possible adverse effects on train operations. In FY2017, we installed a higher performance Doppler radar on a hill of the Shonai Plain in Yamagata Prefecture, which is close to the ocean where local gusts are generated. In Dec. 2017, for part of the Uetsu Main Line and Riku-u West Line, we started to utilize the Doppler radar for train operation restrictions when there are local gusts.


Doppler radar


Antenna



Local gust monitoring (image)

○**Introduction of operational restriction methods by evaluating wind force on trains**
The wind force on trains constantly changes. We have been researching the following methods to properly evaluate the wind force on our trains and to further improve our operational restrictions to enhance the safety levels of our operations, while incorporating opinions from external experts.

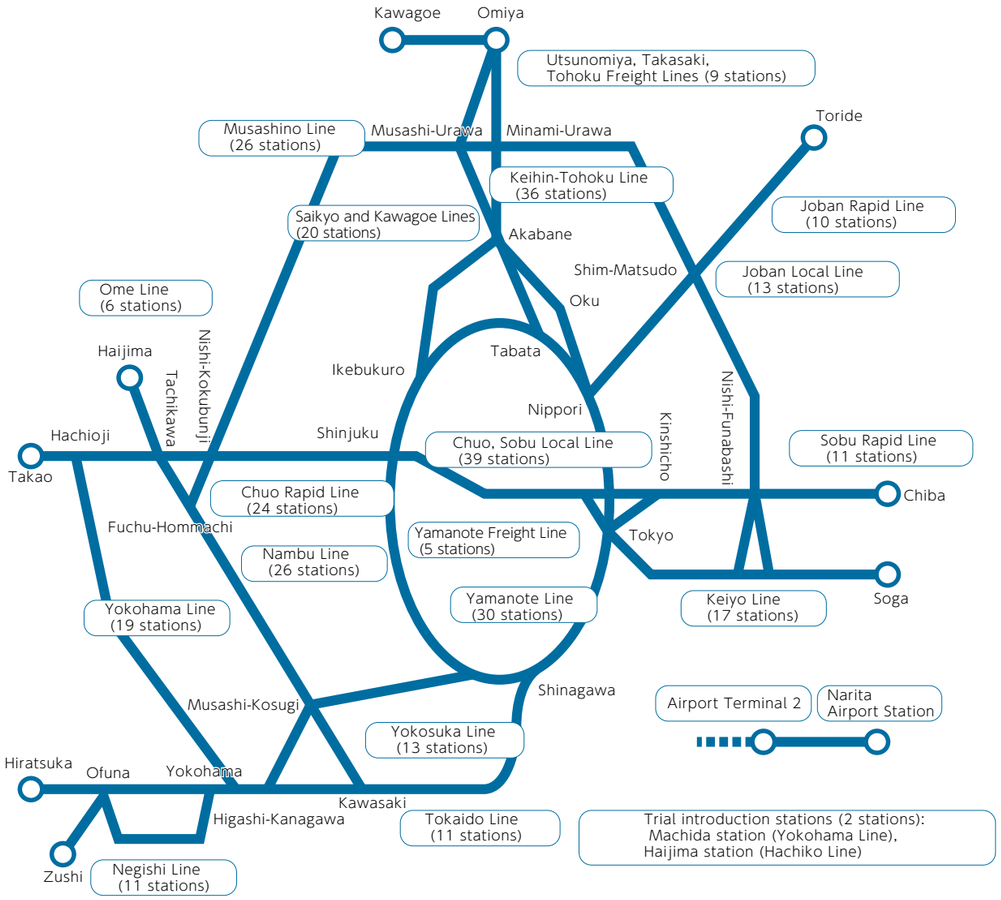
1) Further improved wind observation methods by anemometers
2) Calculation methods for rolling stock windproof stress taking account of track conditions and railcar shapes

These two methods have been utilized on railway lines including the Uetsu Main since Dec. 2011.

Safety measures at platforms

To prevent accidents involving customers falling from platforms or coming into contact with trains, we are installing platform doors.
By the beginning of FY2018, we had completed the installation at 24 out of 30 Yamanote Line stations (including Shinagawa New Station (provisional name)), excluding stations that have large-scale improvements in the pipeline, and at 6 stations on the Keihin Tohoku and Negishi Lines. We plan to further increase the number of stations with platform doors and also to accelerate the speed of installation, and by around the end of FY2033 we plan to have installed platform doors at all the stations on major conventional lines in the Tokyo metropolitan area (330 stations, including 32 stations to be completed by the end of FY2018).

[Platform door installations to be completed by around the end of FY2033 (330 stations)]



*No. of stations is counted by line, e.g., Tokyo Station is counted as 6 stations for 6 lines: Chuo Rapid Line, Yamanote Line, Keihin-Tohoku Line, Tokaido Line, Yokosuka and Sobu Line [Rapid Service], and Keiyo Line

Furthermore, JR East is currently working to install an increased number of emergency stop buttons on platforms and dot-Braille blocks that indicate which direction is away from the edge of the platform.
Moreover, to ask customers for their cooperation in preventing accidents, we are promoting platform zero accident campaigns.

Emergency stop buttons on platforms

By pushing an emergency stop button installed on platform pillars, people on platforms can notify drivers, conductors, and station staffs of danger.

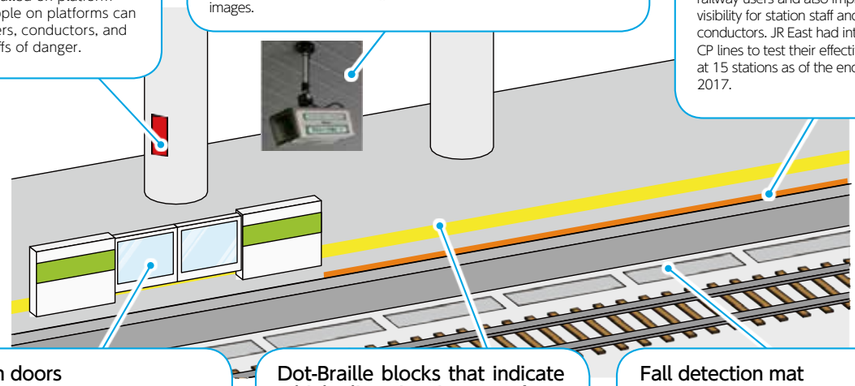
ITV for station platforms and concourses

Conventional ITV　　High resolution ITV

By installing monitoring cameras on station platforms and in concourses, we continue our efforts to improve safety on platforms and strengthen security in station premises. Additionally, at some stations, we have installed high resolution ITVs for more vivid monitor images.

CP (color psychology) lines

Painting the ends of platforms red or orange to create CP lines promotes awareness among railway users and also improves visibility for station staff and train conductors. JR East had introduced CP lines to test their effectiveness at 15 stations as of the end of Mar. 2017.



Platform doors

To improve visibility, glass is used for platform doors.

Dot-Braille blocks that indicate which direction is away from the edge of the platform

The inner line of the blocks is trimmed with lined bumps so that visually challenged customers can tell which side is away from the edge of the platform.

Fall detection mat

A mat placed on the tracks along the platform detects whether a person has fallen onto the tracks and notifies incoming trains to stop.

○About the trial introduction of new-type platform doors

On a trial basis, we are introducing smart platform doors with wider openings, at lower costs and a shorter construction period at Machida Station on the Yokohama Line.

Smart platform door®

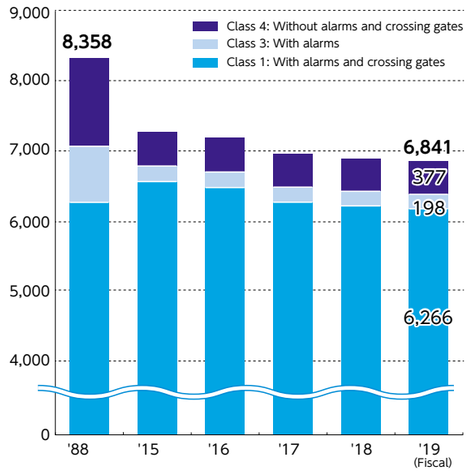
Functions to detect persons or objects stuck between railcar doors

209 Series and later railcars are equipped with a function to weaken the closing power of doors when the system detects that the bodies of customers or their belongings are stuck between train doors. For the rubber part of the door, from the floor to 30cm height, hard rubber is used so that the system can detect objects such as strollers.

Measures to prevent level crossing accidents

As safety measures at level crossings, in cooperation with local communities, JR East is working on the elimination of level crossings with the introduction of grade-separated crossings, thereby integrating and reducing the number of level crossings.
To further improve our safety measures, we are further increasing the installation of large obstacle detectors and level crossing alarm systems. Additionally, as a measure to improve visibility at level crossings, we are installing crossing warning devices in a higher position for better visibility.
Additionally, based on the Act on Promotion of Railway Crossings revised in April 2016, for level crossings requiring improvement, depending on the situation at each level crossing, we will take measures such as introducing overhead crossings instead of level crossings, and increasing the width of crossings. Where necessary, we will also apply colored paint to level crossings and overhead pedestrian bridges.
Moreover, we are promoting level crossing zero accident campaigns to ask for the cooperation of pedestrians and automobile drivers in accident prevention at level crossings.

[Changes to the number of level crossings (as of April every year)]



○Efforts to abolish level crossings

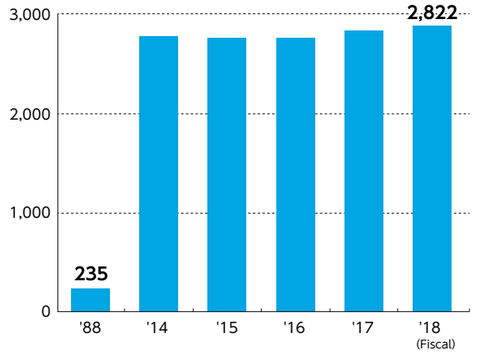
[No. of level crossings abolished due to measures such as the introduction of grade-separated crossings (excluding those transferred to semi-public sectors)]

FY	2013	2014	2015	2016	2017
No. of abolished level crossings	12	37	17	37	20

○Obstacle detectors

The detectors notify trains of danger by detecting a stalled automobile or an obstacle on a level crossing.
Currently, we are developing a highly-functional three-dimensional laser radar obstacle detector to expand the detection range.

[No. of locations with obstacle detectors]



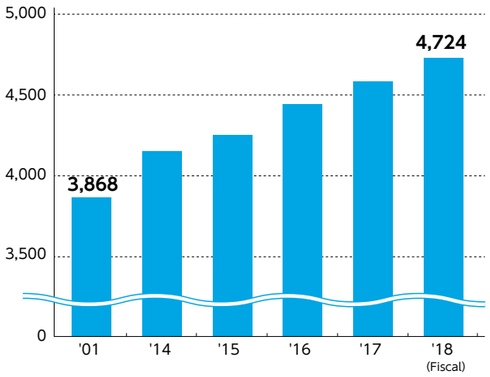
Three-dimensional laser radar obstacle detection method (large obstacle detector)

Based on three-dimensional data measured by laser beams, the system detects obstacles in monitoring areas.

○Level crossing alarm system

Automobile drivers or pedestrians can notify trains of dangers by using the system when they are stuck on level crossings.

[No. of locations with level crossing alarm systems]



Level crossing alarm system

○Increasing visibility of level crossing alarm system and standardization of display

We are improving the visibility of all level crossing emergency buttons so that pedestrians and drivers can immediately push the emergency button in case of an emergency on a level crossing. By using high-luminance reflective panels, furigana for Chinese characters, an English-language sign, and a pictograph, we will make it easier for children and people from abroad to use the emergency buttons.

Before ➡ After

○Measures to improve visibility at level crossings

JR East implements various measures to improve visibility at level crossings for pedestrians and automobile drivers.

[A crossing warning device located in a higher position for better visibility]

By installing alarms in a higher position, level crossings become more visible to pedestrians and drivers.

[Omnidirectional warning light]

The warning light can be seen from all directions.

○Separating level crossings for pedestrians and for automobiles

In cooperation with road administrators, we are increasing the width of level crossings and separating crossings for pedestrians from those and for automobiles.

○Efforts in snowfall areas

We utilize road heating for level crossings with heavy traffic in snowfall areas.

○Measures to prevent accidents at Class 4 rail crossings without crossing gates and alarms

For Class 4 level crossings that do not have crossing gates or alarms, in cooperation with neighboring communities, we are either closing them or upgrading them to Class 1 crossings by installing crossing gates and alarms. Additionally, to prevent accidents at level crossings, we are taking measures such as installing solar-powered illuminated signs or whistling signs to alert pedestrians to approaching trains.

Class 4 level crossing

Current safety record of JR East

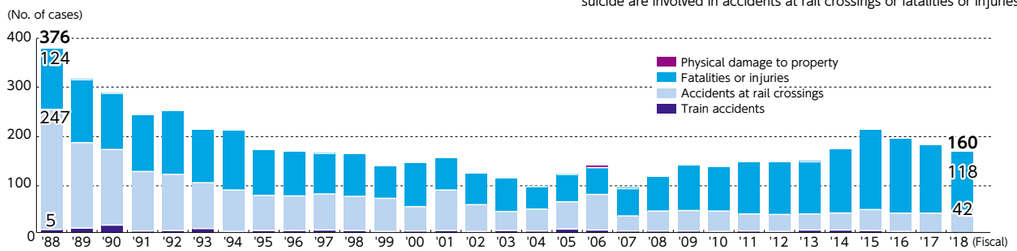
Railway accidents

In FY2018, JR East recorded 160 railway accidents, a reduction of nearly 50% since the company's foundation. Approximately 70 percent of the total number of accidents involved an injury or fatality.

Train accidents	Train collisions, derailments, and train fire
Accidents at rail crossings	People or automobiles being hit by trains
Fatalities or injuries	People killed or injured by train operation excluding suicide
Physical damage to property	Accidents causing more than 5 million yen damage to property by train operation

[Occurrences of railway accidents]

*From the third quarter of FY2014, incidents which could not be determined to be a suicide are involved in accidents at rail crossings or fatalities or injuries.



■Train accidents

JR East recorded zero train accidents in FY2017.

■Accidents at rail crossings

JR East recorded 39 accidents at road crossings in FY2017. The accidents were caused by automobiles stalling on the tracks (9 cases), pedestrians/automobiles crossing the track immediately prior to the passing of trains (29 cases), and others (1 case).

■Fatalities or injuries

JR East recorded 138 accidents involving injury or fatality in FY2017. A total of 77 of these accidents related to customers on platforms or trespassers on tracks coming into contact with trains, and customers falling onto the tracks from platforms. Approximately 60% of these involved intoxicated customers.

■Physical damage to property

JR East recorded zero accidents involving physical damage to property in FY2017.

Incidents

JR East recorded four incidents in FY2017: 2 failures to close level crossings, 1 failure with signals, and 1 failure in maintenance work.

*Incidents	"Incidents" mean situations that could lead to a railway accident. The definitions of incidents are stipulated by the rules and regulations for railway accidents that require reporting.

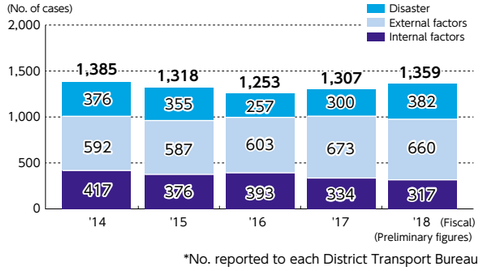
Transport disorders

JR East recorded 1,359 cases of transport disorder in FY2018.

Transport disorders	Apart from railway accidents, transport disorders means train service cancellations due to failures of trains or facilities, mishandling by employees, or disasters, or delays to passenger trains for over 30 min. or other trains for over 1 hour.

Disaster	Natural phenomena such as powerful storms, heavy rainfall, heavy snowfall, flooding, high tides, earthquakes, tsunamis, etc.
External factors	External factors such as trespassing or suicide
Internal factors	Internal factors such as those related to crews, trains, or facilities

[No. of transport disorders]



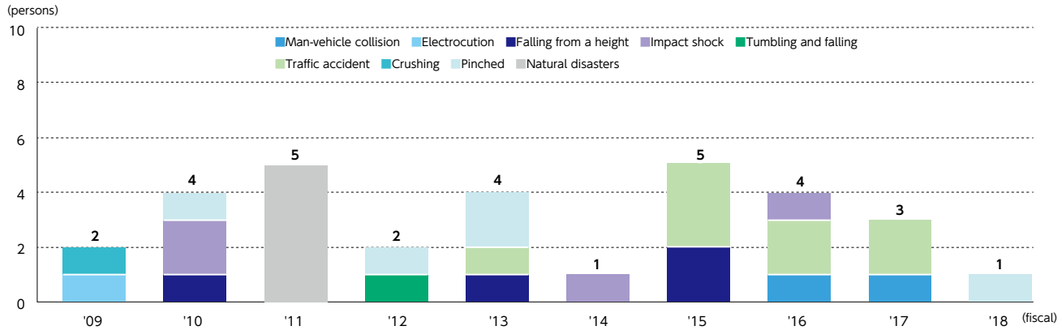
*No. reported to each District Transport Bureau

Current state of employee accidents

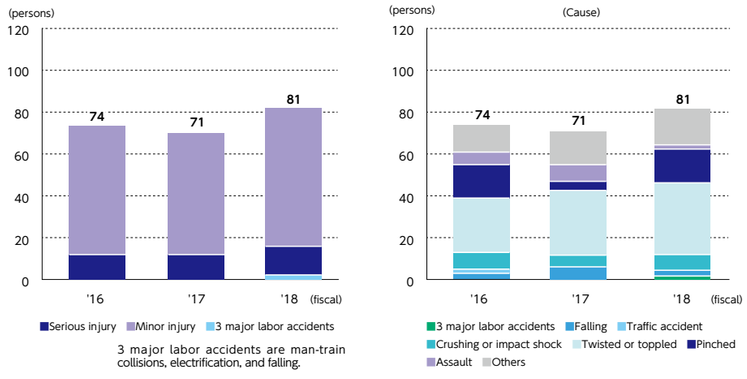
In FY2018, one lives were lost due to fatal accidents, and 196 accidents resulted in lost work time. Accordingly, as set out in Group Safety Plan 2018, we will continue our efforts to ensure that safety systems and rules are clearly defined and complied with across the entire JR East Group in our aim to achieve zero passenger accidents involving injury or fatality, and zero employee fatalities for both Group and Partner companies.

*Employees of Group companies, etc. include those of consolidated subsidiaries and partner companies with close relationships with JR East.

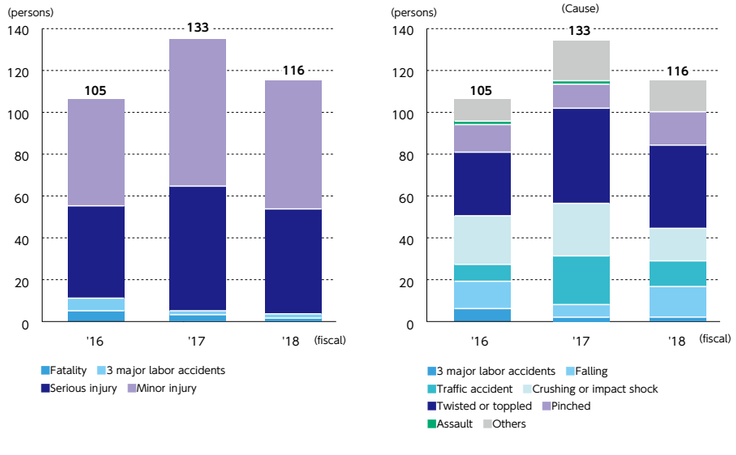
[Status of accident fatalities
(*Employees of JR East and Group companies, etc.)]



[Accidents with lost work time and fatality (JR East employees)]



[Accidents with lost work time and fatality (employees of Group companies, etc.)]



Cooperation with customers and communities to ensure safety

To ensure the safe use of stations and trains, we are implementing various measures so that our customers and people in communities can press emergency stop buttons when they sense danger.

○Platform zero accident campaign

We are conducting platform zero accident campaigns to alert customers to avoid coming into contact with trains or falling onto tracks at platforms. Additionally, the campaigns aim to ask customers to push emergency stop buttons when they sense danger.

Platform zero accident campaign

○Campaign to prevent dashing onto a departing train

26 railway companies are jointly implementing a campaign to prevent dashing onto a departing train to raise awareness among passengers that it is dangerous, and asking them to push an emergency train stop button when they notice danger.

Campaign to prevent dashing onto a departing train

○Level crossing zero accident campaigns

We ask our customers and neighboring communities for cooperation in the safe use of level crossings, through awareness increase activities with local police stations and by posting campaign posters at stations and showing TV and radio commercials.

During the campaigns, we post campaign posters and distribute pocketable tissue packs with campaign information at stations.

In cooperation with local police stations, we visit local elementary schools near Class 4 level crossings, which do not have crossing gates or alarms, for educational activities.

○Utilization of simulators for platforms and level crossings

We are offering opportunities for our customers to try pushing emergency stop buttons that can be found on platforms and at level crossings. Platform simulators are located at stations and local events, while level crossing simulators are located at driving license centers, etc. so that people can try pushing the button and see how it works.

Platform simulator

Level crossing simulator

TICKET TO TOMORROW

Level crossing safety lecture

Assistant Manager, Suigun Line Operations Office, Mito Branch Office

To prevent level crossing accidents involving children, since 2016 we have been visiting elementary schools near level crossings and offering level crossing safety lectures.
At a level crossing safety lecture, to show the children how to push an emergency train stop button in an emergency, we have them push an emergency button of a replica of a level crossing. Additionally, we teach them not to cross a level crossing when an alarm is activated and not to play near railway tracks, so that they will use level crossings safely.
We will continue our visits to elementary schools, kindergartens, and nursing homes near level crossings so that we can prevent level crossing accidents in coalition with local communities.

Society

CONTENTS

Relationship with Passengers

Medium-term Vision for Service Quality Reforms 2020

Since designating 2011 as the baseline year for service quality reforms, we have been working to improve our service quality by implementing a variety of measures, and in FY2019, we announced our new "Medium-term Vision for Service Quality Reforms 2020." This document outlines our vision for accelerating and further developing the initiatives we have implemented to date, with the aim of being number one for passenger satisfaction in the Japanese railway industry.

•Preventing transport disruption

We will resolutely strive to prevent transport disruptions from every aspect.

•Minimizing effects of disruptions on passengers

We will respond flexibly through actions such as turning trains back and promptly resuming train operations.

•Provision of information during emergencies

In order to help passengers decide on their next step, we will communicate information without delay during emergencies.

•Realizing railway services passengers can use comfortably

We will provide stations, railcars, and services that live up to passenger expectations of JR East.

•Providing impressive passenger service

We will offer services that inspire passengers to use our group again.

Confirm grasp of issues and effects of measures implemented through passenger satisfaction surveys

We conduct passenger satisfaction surveys via our JR East Passenger Questionnaires to enable us to gain an understanding of how passengers evaluate our services that we cannot get simply through passenger feedback and to quantitatively check levels of passenger satisfaction. Based on the survey results, we are addressing various measures while making it a rule to pick up such matters as the "stability of transportation" and "provision of information to passengers during transportation service disruptions" as issues we should most urgently address.

Provide reliable transportation services

We are implementing various measures to improve transport quality by striving to prevent transport disruptions and by stepping up early resumption of operations after transport disruptions, as well as preventing disruptions impacting on connecting lines, in order to minimize the impact on passengers.

■Preventing transport disruptions

By paying careful attention to the causes of disruptions that occurred in the past, we strive to prevent similar types of disruption occurring again. Specifically, we are moving forward with initiatives to upgrade facilities, install more durable facilities, and reduce the variety of facilities while continuing to implement measures such as the introduction of railcars with increased reliability through the duplication of major equipment, expanded installation of track switches with next-generation designs to make equipment failure less likely, and simplification and integration of electric facilities.

■Prompt resumption of train operations after transport disruptions and minimization of the effects of disruptions to other sections

For early resumption of operations, we maintain efforts to enhance our post-disruption response abilities by such measures as drills to deal with accidents resulting in casualties and rescuing passengers. Notably, concerning accidents resulting in casualties, cooperation with police and fire services is important and we implement drills, etc. for employees jointly with police and fire services on a regular basis. In addition, we try to turn trains back before they enter a disrupted section or operate on other routes wherever possible in an effort to minimize the impact on passengers.
When a disruption has occurred, each worksite involved reflects on how it was dealt with, learns the lessons from this, and uses the knowledge to study and implement measures to prevent recurrences, which are then widely disseminated in-house to raise the level of each and every employee.

Rescue drill

Enhance information provision during transportation service disruptions

■Information Enhancement

For better information provision in an emergency, JR East is taking steps to provide passengers with more accurate information by having the anticipated time at which operations should resume announced at an early point when operations and suspended, and giving subsequent updates depending on the situation.
In addition, as tools for providing transport information, we have installed “service disruption information displays” which are installed at 304 stations as of the end of March 2018. We also provide information through various media, such as onboard liquid crystal displays and directly to passengers' cellphones.
In addition, on our website, we provide information on service suspensions of conventional line limited express trains, etc. and distribute delay certificates on major lines in the Tokyo metropolitan area.

Information display during transport disruptions

■Timely Information Provision through Smartphones

In order to provide timely information to meet individual passenger needs, we released the smartphone app "JR EAST APP" in March 2014. "JR EAST APP" allows passengers to view information on train operations of not only JR East's trains but also of 15, other companies, including private railway companies. In addition to the above services, we launched "JR-EAST Train Info," an English version of the JR EAST APP which is based on the JR EAST APP and delivers information on operating status of individual trains, maps of major stations and such in English, in March 2015.
Furthermore, for smartphones, we instituted "JR East Train Operation Information Push Notification," a service for notifying information on our train operations. In addition, we provide "Doko-Train," a train operation information service that enables passengers to confirm the operating status of individual trains on their own.

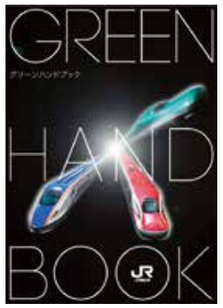
JR EAST APP

JR-EAST Train Info

Providing services tailored to passengers' situations

■Efforts to improve passenger service

We prepared a "Green Handbook," establishing the basics of passenger service, in 1987 and started distributing it to all employees. We have been utilizing it while making repeated revisions to inconporate changes to improve our passenger service since then.
In March 2016, we replaced the former six important passenger service terms with "hospitality terms" to further determine the needs of each passenger.



Cover and contents example of Green Handbook

A poster of words for expressing hospitality

■Assistance Campaign and Support

We have a campaign in which we personally greet all passengers in need, including those passengers with disabilities and elderly passengers, to make sure that they can use our stations and other facilities safely and with a sense of security.
In order to foster the momentum for supporting one another and to create a society where all people can live safely and comfortably with peace of mind, we are promoting the campaign by asking not only our own employees but also employees of other group companies and even passengers using our services to greet others.
We are currently aiming to expand the campaign by working with other railway business operators and developing activities in collaboration with the Tokyo Chamber of Commerce and Industry.

"Assistance Campaign and Support" poster

■Acquisition of Service Assistance certification

We have encouraged our employees to qualify themselves for Care-Fitter certification to acquire hospitality mindset and assistance skills, and approximately 13,000 employees in total from all job category groups were certified. In addition to acquisition of new qualifications by employees, we are also endeavoring to brush up their knowledge and technology. The qualified employees wear a "Care-Fitter" name tag so that passengers will be able to recognize them easily.

TICKET TO TOMORROW Assistance Campaign and Support Initiative

Assistant Manager the Tokyo Station City Operation PT, Planning Office, General Affairs Division, Tokyo Branch Office

As part of the Tokyo Station City Operation Committee, I work with other employees of Group companies who are working at stations to create a comfortable environment in Tokyo Station. In 2015, the committee began an initiative to increase the number of personnel with Care-Fitter certification. To date, 64 people have obtained the certification and are using their new skills to assist passengers.
In addition, following on from the seminars and passenger awareness activities that we implemented as part of our Assistance and Support Enhancement Campaign last year, this year we held an Assistance and Support Seminar: Understanding and Putting into Practice through Experience, which helped employees—including myself—to increase their level of knowledge.
Going forward, I will keep striving along with my colleagues to think of new mechanisms that enable us to provide passengers with support in a more confident manner and create an environment that ensures they feel comfortable every time they visit Tokyo Station.

Realizing railway services that passengers can use confidently and comfortably

■Barrier-free Stations

JR East has been working with local governments and other entities to install elevators at stations in accordance with the "new barrier-free law (Act on Promotion of Smooth Transportation, etc. of Elderly Persons, Disabled Persons, etc.)"As of the end of March 2018 we had completed the installation of elevators in 544 stations.

■Barrier-free Railcars

We have introduced the universal design E233 series railcars, in which the height of luggage racks and hand straps at the ends of railcars was changed, location of priority seats was clarified and information indicators for displaying operation information in texts were installed, sequentially, on the Chuo Rapid, Saikyo, Yokohama, Nanbu and other Lines. Furthermore, E235 series trains, which started operation on the Yamanote Line in 2015, now have priority seats in each railcar as well as free space in all railcars that can be used more safely by wheelchair users and baby stroller users, earling there was a space for wheelchair users only in the front railcar.
Spacious toilet rooms capable of accommodating advanced electric wheelchairs with improved handles have been introduced on new Narita Express railcars (E259 series and after) and new Shinkansen train railcars (E5 series and after).

Free space on E235 series

■Escalator Safety Measures

To prevent injuries to passengers on escalators, we are carrying out safety enhancements, including measures that will prevent sandals from getting caught, prevent falls during emergency stops, and prevent steps from descending when escalators stop. In addition, we are also working together with other railway companies, retailers and other facilities to carry out campaigns in an effort to draw the attention of passengers through such means as posters and handing out free pocket tissues that call for the safe and proper use of escalators.

"Escalator Safety" campaign poster

■Creating an environment where passengers with baby strollers can use our services safely

To increase safety for passengers with baby strollers who use our stations and trains, we have been working to improve the response of railcar doors in the event that baby stroller frames and other devices are caught by the doors. In addition, we carried out a campaign organized by the "Council for Use of Baby Strollers on Public Transportation, etc.," which was formed by the Ministry of Land, Infrastructure, Transport and Tourism, transport operators including our company, baby stroller manufacturers and others, to urge passengers with baby strollers to be careful, as well as asking passengers with baby strollers and other passengers to give way to each other when boarding trains. In FY2015, we posted baby stroller signs, which were selected by the council, in the spaces for wheelchair users on local trains, to create an environment where baby stroller users can safely use our services. In addition, we have baby rooms installed at 49 stations as of the end of March 2018.

Baby stroller sign

■Crime and terrorism countermeasures

In preparation for the Tokyo 2020 Olympic and Paralympic Games, improvement of railway security is a major issue of our Company to ensure that passengers feel safe and confident when using our services. As one of the measures, we are installing security cameras in key facilities, including stations (ticket gate areas, escalators, stairs, platforms, etc.) and onboard trains (in cars and deck areas). As for the trains, we expect that installation of security cameras will have been completed for all Shinkansen trains and conventional lines in the Tokyo metropolitan area, with the exception of certain railcars scheduled for retirement. Furthermore, we will endeavor to ensure a rapid response to any event through centralized management of information necessary for security, including footage of security cameras installed in railway facilities, and in close collaboration with police and other related parties.
In addition, SOS buttons that passengers can use to alert train crews when they sense danger are installed in cars as a measure against violence on trains. We will also newly install protective items including shields on Shinkansen trains and providings more first aid kits. In addition, we are implementing scenario-based training with the help of the police and other parties to deal with suspicious individuals in order to improve response capabilities of train crews.
We are also implementing drills on such as measures against terrorists, explosive ordnance disposals, helping injured persons (triage, etc.) on an ongoing basis in cooperation with police, fire services, etc.

■Measures against Female Molestation

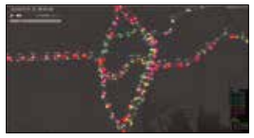
In addition to adding women-only cars during certain hours in various railway sections in the Tokyo metropolitan area, and with the aim of enabling female passengers to travel stress-free, we have been continuously installing SOS buttons on all railcars that women can use to alert train crews if they are improperly touched or otherwise molested. Furthermore, in cooperation with police and other railway operators we are actively conducting a campaign to eliminate on-train molestation and have significantly increased security surveillance on trains and in stations.

■Measures to reduce congestion in the morning commuter rush hours

For reducing congestion during the morning commuter rush hour, we have taken measures such as increasing train services and adopting railcars with widened passenger space. In conjunction with this, we are also working on measures aimed at dispersing passengers to different trains and promoting the shift of commuting to outside of peak hours. As congestion is a major cause of delayed trains during the morning commuter rush hour, we will continue seeking to reduce congestion by informing passengers about which trains become crowded in certain sections of the line and which railcars tend to become especially congested, using posters at stations and the JR East app.

■Real-time visualization of the status of conventional railway lines

We have developed a system that visualizes overall train conditions, including congestion, by indicating data for each train pertaining to its location, delays and number of passengers and overlaying the data on the map of regional railway lines. It was introduced in April 2017. This would lead to achieving higher quality in transportation services, as passengers can plan more accurately by being as they will be able to consider the impact of congestion in trains and delays.
As an additional function for this system, we are currently researching the visualization of congestion conditions within stations.



Visualization system for congestion on conventional railway lines (an image)

■Improvement of onboard service

As part of improvement of onboard service, in addition to liquid crystal display (LCD) on trains in the Tokyo metropolitan area showing guides and advertisements, LED displays in full color installed in new railcars for limited express trains and Shinkansen lines are showing newscasts as well as destinations and other transport information.
In addition, on Narita Express, Hitachi and Tokiwa trains, passengers can connect to the Internet using WiMAX and Wi-Fi. We have also launched free public wireless LAN services for passengers onboard the Shinkansen, and sequentially expanding target trains for the service. We will begin introducing the service on Super Azusa limited express trains on the Chuo Line in order to better meet the needs of overseas visitors to Japan on a continuing basis.
Furthermore, we are proceeding with the installation of power outlets on Shinkansen and conventional line limited express trains.

E235 series digital signage

■Improvements in Station Toilets

In order to dispel the image of station toilets as dark, dirty, and malodorous and to enable passengers to be able to use them comfortably, since its establishment JR East has been steadily upgrading its toilet facilities.
Measures taken include changings to western-style toilets, improved ventilation and the use of larger floor tiles. The upgrading also includes water-saving type toilets and automatic faucets in the washbasins to reduce water consumption.
During the fiscal year ended March 2018, we renovated the toilets in 22 more stations, as a way to increase passenger comfort and satisfaction.

Toilet in Hachioji Station

■System to respond to inquiries

JR East Center for Inquiries receives questions from passengers through telephone.
In order to quickly and correctly respond to the passengers' inquiries, the Center is addressing measures to introduce the work supporting system utilizing AI and to improve the function of the system for controlling lost and found objects as well as to enhance the quality of responses by regularly implementing the monitoring evaluation of calls and responses.

■System for handling lost property

JR East collects more than 2.2 million lost items annually, and the number is growing every year. With the aim of promptly returning lost property to the original owner, we are striving to facilitate searching for and providing information about missing items by managing this information using a centralized, searchable database and setting up a dedicated lost and found customer support center.

■Development of rolling stock manufacturing business

In October 1994, the Niitsu Rolling Stock Plant was established and has been mainly manufacturing commuting and suburban type railcars for use in the metropolitan area, for the purpose of acquiring know-how as well as enhancing technical capability.
In April 2012, in order to establish the rolling stock manufacturing business as the "Fourth pillar for management" of JR East, Japan Transport Engineering Company (former Tokyu Car Corporation) which manufactured Japan's first stainless steel railcar, joined our company. Furthermore, in April 2014, Japan Transport Engineering Company succeeded to the business of Niitsu Rolling Stock Plant.
Japan Transport Engineering Corporation has been offering not only rail cars for commuting and suburban use, but also a wide range of products having high quality and high added value, including limited-express E353-series, Hokuriku Shinkansen E7-series, TRAIN SUITE SHIKI-SHIMA and other railcars.
Among those railcars, we have been focusing on the stainless-steel "sustina" cars which are the company's main product making the use of strength of stainless-steel. "Sustina" aims to reduce the manufacturing cost by mass production on a common platform (specifications of car body structure and equipment systems made common and consolidated) as well as reducing lifecycle costs by leveraging the JR East Group's expertise to lower maintenance costs.

"sustina" stainless-steel railcars

TICKET TO TOMORROW

Developing Sustina and Expanding Sales Channels

Group Leader of Train Body Design Group, Technology Department, Technology Division, Japan Transport Engineering Company

Since developing and manufacturing the E235 series in 2015, the Japan Transport Engineering Company has provided a lineup of "sustina series" products that incorporate the essence of the E235 into the train body or equipment configuration.
We have now expanded our sales channels to include various public and private railway operators besides JR East, and in FY2018, we have sequentially delivered sustina cars for major public and private rail companies in the Tokyo metropolitan area, with mass production anticipated in the near future.
Going forward, we intend to further develop sustina cars using the new design method that incorporates a common platform concept and enables us to flexibly accommodate operators' different needs with regard to the number of doors, car length, and so forth, and we will strive to provide rolling stock that is both more comfortable for the passengers who ride it and highly cost-efficient from the perspective of the railway companies who introduced it.

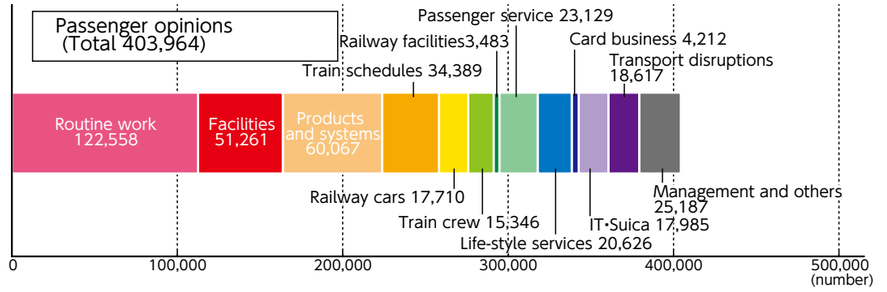
Increase mutual communication with passenger feedback as the starting point

■Constant attention to passenger comments

The starting point of enhancing the service quality at JR East is the passenger comments. To constantly improve our services, it is most important for us to listen carefully to passenger comments, including their interests and complaints, and then promptly respond to their requests through service improvements.
JR East is endeavoring to collect passenger comments on a daily basis including those which are received by each of our employees directly from passengers but also those posted on the Internet, those given over the telephone, and those which can be collected by utilizing various other tools. Such passenger comments amount to approximately 400,000 cases annually and all of these comments are quickly shared and analyzed via a companywide basis database system, New Green Information System, and form the core of our improvements. We believe that each and every individual passenger comment contributes to the core of improved passenger satisfaction.
Passenger comments are considered at various levels within the company. While actions of improvement are taken as much as possible for the passenger comments received, if action is difficult to take at that level, then the comments are passed on to the Passenger Comments Committee comprised of concerned executive officers, which considers the possible implementation of improvement measures based on collected passenger comments. Through this system, we are constantly striving for the attainment of improved passenger services.

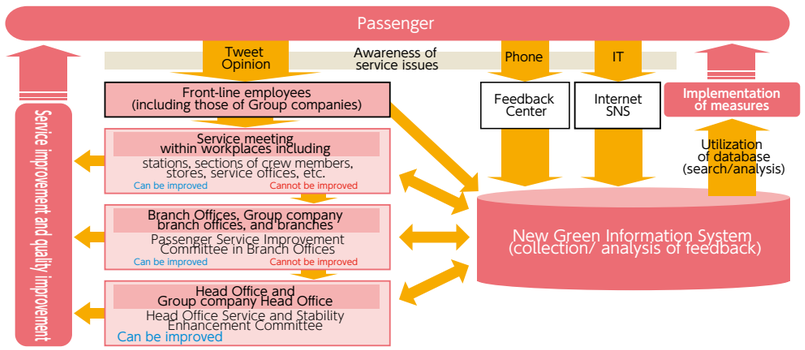
[Case of improvement based on passenger comments]

[Itemized breakdown of the Passenger comments in FY2018]



*The chart shows the number of comments on each subject. Some passengers commented on more than one subject.

[Systematic improvements based on passenger comments]



■Utilization of various channels

In order to ascertain our passengers' needs, JR East considers it necessary not simply to receive feedback directly from passengers but also to actively and widely collect and analyze passenger comments.
Therefore, we are also striving to comprehend their potential opinions that are transmitted through social media.

JR EAST Official Facebook

JR East Official Twitter account

Projects for Improving Service Quality (Crew Members Version)

Poster of example cases of improvement at each workplace

Through the JR East Official Facebook page launched in May 2012 and JR East Official Twitter account launched in April 2015, we proactively provide information to the public, including details about various measures we have implemented and publicity campaign-related notifications, with the aim of engaging in two-way communication with passengers.
Furthermore, in 2013, we began Projects for Improving Service Quality, which provides information about initiatives, policies, and solutions designed to improve our service quality.
We not only provide information on our entire company related to the enhancement of our service quality through posters, videos and other media, but also introduce example cases of improved service quality at each workplace based on passenger comments.

Improvement of service quality pursued by the entire Group working as a single team (SQ Network)

To rapidly promote improvements in the quality of our services by reflecting passenger comments deemed as the starting point as the JR East Group, our Company and group companies closely involved in transport service established the SQ (Service Quality) Network in 2011.
The SQ Network holds meetings of representatives of JR East and group companies in the frontlines of operating fields such as stations, branch offices and the head office, to share passengers' comments and devise solutions and improvements through teamwork, which goes beyond individual departments or group companies. In this way, the JR East Group as a whole can dedicate itself to enhancing passengers' satisfaction.

TICKET TO TOMORROW

Improvement Activities Inspired by Passenger Comments

Nagano Station Staff, Nagano Branch Office

Through my work as gate attendant at Nagano Station, I sometimes receive comments from passengers on what they felt when they are using the station or trains.
In collaboration with other group companies, our station established the Nagano Station SQ Network aimed at improving service quality, and we seek to make improvements based on passenger comments by making use of the Projects for Improving Service Quality, etc.
As an example of a recent improvement, based on passenger comments indicating that they don't want to put their bags directly on the floor when making fare adjustments, we added a space for baggage at the fare adjustment counter. In addition, to encourage more passengers to make use of enhanced services, we provided information by creating and displaying Posters for Improving Service Quality that introduce examples of improvements.
There's no more rewarding feeling than receiving praise from passengers regarding the improvement activities that we have carried out.
Going forward, we will continue to prioritize passenger comments to ensure that passengers can use our services comfortably and take the lead in working on improvement activities.

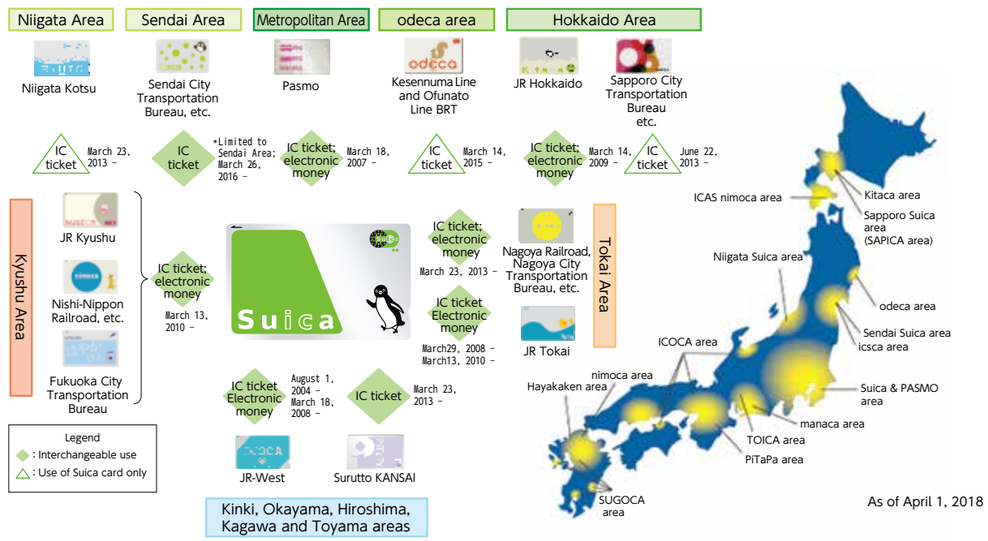
IT and Suica Business

■Suica as an IC ticket

The Suica service was launched at 424 stations in the Tokyo metropolitan area in November 2001. In March 2013, ten public transportation IC cards used throughout the country, including Suica, were made interchangeable. Usage of Suica was expanded further in March 2016, when it was made interchangeable in the Sendai region with the "icsca" IC card issued by the Sendai City Transportation Bureau. A new service, Touch and Go Shinkansen, was launched in April 2018 that makes it possible to use Suica and other public transport IC cards for certain standard non-reserved Shinkansen seats within the JR East network. This provides passengers with rapid, ticketless access to Shinkansen trains.
The number of stations where Suica can be used, including stations of railway companies accepting interchangeable use, is approximately 4,900 across the nation as of April 1, 2018.

【Number of Suica cards issued】 Approx. 69.42 million
【Number of Mobile Suica users】 Approx. 5.54 million
【Number of uses in March 2018】 Approx. 172.88 million
【Number of uses per day (record-high)】
(recorded on August 3, 2018) Approx. 7.838 million
【Number of shops accepting Suica】 Approx. 476,300
【Number of locations accepting Suica (number of terminals)】
Approx. 894,990
(As of the end of March 2018 unless otherwise specified)

【Interchangeable Use of IC Cards Area】



As of April 1, 2018

■Suica as Electronic Money

The electronic money service enabling Suica to be used for shopping was launched in March 2004. Thanks to the speed of the payment process and the convenience of not requiring small change, it has been adopted by many passengers, and the number of places where Suica can be used as electronic money has been increased to include shops not just inside but also outside stations. It may be used in major convenience stores, major supermarkets, restaurant chains, and drugstores. In 2017, Suica electronic money was introduced at large-scale chains such as McDonald's, Mos Burger, and Uniqlo.

■Mobile Device Usage/Information Usage

The Mobile Suica service was launched in January 2006, and with the subsequent launch of services such as Suica for Apple Pay in October 2016, Suica for Google Pay in May 2018 and Mizuho Suica in August 2018, the number of users is growing steadily.

We are also working on initiatives that will lead to enhanced passenger service, such as using information obtained from Suica and View cards to improve the convenience of our railway and life-style businesses.

Example of Suica for Apple Pay advertisement

Example of Suica for Google Pay advertisement

Mizuho Suica

■JRE POINT/JRE CARD

In order to build a service system that is attractive to both passengers and member stores by communalizing the multiple number of point systems existing within the Group, we launched in February 2016 the "JRE POINT" program centering on station building points.
Suica points were integrated in December 2017, followed by View-thanks points in June 2018, and it is now possible to collect points from purchases made with View card credit as well as purchases at station buildings and stores within stations.
Furthermore, in July 2018, we issued the new JRE CARD credit card, making shopping at JRE MALL and premium member stores more convenient and making it easier than ever to collect points.

JRE POINT

JRE CARD

■JRE MALL

JRE MALL is a shopping website whose purpose is to create closer connections with passengers centering on our JR East Group-wide point program, JRE POINT.
This site offers a selection of merchandise including railway-related goods, regional specialty products, and goods featuring the Suica penguin. Users can either buy these with JRE POINTs or earn points on purchases they make.
It is also possible to make advance purchases at eCute stores and the like online, then pick them up in person. We intend to further promote an omnichannel approach across the Group.

https://www.jreastmall.com

Product Category	Key Products
Railway-related products	Railway goods, items used in railways, etc.
Regional specialty products/souvenirs	Famous sweets and local specialties from various regions, Tokyo souvenirs, etc.
Other	Suica penguin goods

Service improvement for foreign visitors

We have been actively working on measures such as proposing attractive products and carrying out promotional activities in collaboration with local communities with the aim of expanding demand from overseas visitors to Japan, whose numbers are rapidly growing in recent years, and vitalizing communities by transporting passengers to regional areas. Furthermore, we are working to reinforce our capability to accept overseas visitors so that they can use the railway network safely and comfortably.

○Improved environment where foreign visitors can purchase products free of worry

We have established JR EAST Travel Service Centers at locations which are frequently used by passengers from overseas, including Narita International Airport Terminal 1 and Terminal 2 buildings, Haneda Airport International Terminal Station on the Tokyo Monorail Line, and major terminals such as Tokyo Station and Shinjuku Station. Following the opening of new locations at Shibuya Station in December 2017, Ueno Station in February 2018 and Hamamatsucho Station in July, we are aiming to further reinforce the system.
At those centers, foreign language speaking staff engage in sales of products for foreign visitors such as the "JR EAST PASS." At Tokyo, Shinjuku and Sendai centers, tourist information centers are also placed to help overseas visitors consider their trips using JR East. In addition, we have enhanced convenience for overseas visitors by setting up a duty-free counter, etc. in the stations.


JR EAST Travel Service Center at Tokyo Station


JR EAST Travel Service Center at Sendai Station

○Products that Appeal to Overseas Visitors

In order to encourage overseas visitors to take enjoyable trips using railways, we offer convenient, reasonable products that they can choose from according to their travel plans. In January 2018, we introduced the JR Tohoku-South Hokkaido Rail Pass, which may be used for unlimited travel at a reasonable price within both the South Hokkaido and Tohoku areas, enabling passengers to travel around a wide area.
Going forward, we will continue working in close collaboration with local communities to promote sightseeing routes covering a wide area so that more overseas visitors can enjoy their travels.

[Key Products]

JR EAST PASS	Pass providing unlimited travel within the applicable area (two products available: Tohoku area, Nagano/Niigata area)
JR TOKYO Wide Pass	Pass providing unlimited travel within the Kanto area
N'EX TOKYO Round Trip Ticket	Ticket providing access to the Tokyo area from Narita Airport
JR East-South Hokkaido Rail Pass	Pass providing traveling on the Hokkaido Shinkansen
Tokyo-Osaka Hokuriku Arch Pass	Pass providing traveling on the Hokuriku Shinkansen

○Seat reservation system allowing reservations from overseas

We offer "JR-EAST Train Reservation," which is a seat reservation website allowing reservations from overseas for Shinkansen and major limited express trains of JR East. Starting from February 2016, real time reservations became possible online, and reservation service in Chinese (traditional Chinese and simplified Chinese) and Korean in addition to English was made available, further enhancing convenience for overseas passengers.
Furthermore, we have expanded in February 2017 the areas for which reservations can be made in cooperation with JR Hokkaido and JR-West, and as a result, "all areas" of JR Hokkaido and "Hokuriku Shinkansen (up to Kanazawa Station)" are now covered by the system.

Online seat reservation site "JREAST Train Reservation"

○Free Public Wireless LAN Service for Overseas Visitors

As of March 31, 2018, we have installed free public wireless LAN service at 91 stations (mainly on the Yamanote Line, which is used by many overseas visitors), at JR EAST Travel Service Centers, and on board Narita Express trains.
Starting in FY2019, we are planning to steadily expand provision of the service on Tohoku, Joetsu, Hokuriku, Yamagata, and Akita Shinkansen trains as well as Chuo Line E353-series limited express trains.
(This service is provided in four languages: English, Chinese, Korean and Japanese.)

JR-EAST FREE Wi-Fi

○Strengthening service of multilingual business interpreters

In order to smoothly provide information service in stations and railcars, we have changed the service hours for multilingual business interpretation through telephone from the former 10:00 – 18:00 hrs. to 24 hours a day, starting from April 2017. For passengers to whom it is difficult to provide information in Japanese, our employees at stations and crew members call up the Interpreter Center, and information is provided over the phone through operators.

○Establishment of currency exchange centers/ dedicated cash machines for foreign-issued cards

To enhance the convenience of station buildings for overseas visitors to Japan, in February 2015, we established currency exchange centers in Shinagawa Station and elsewhere. Such centers are currently operating in seven locations. In September 2016, we also introduced dedicated cash machines for foreign-issued cards at Shinjuku Station and other locations. Ten of these machines are currently operational.


Currency exchange center/ dedicated cash machine for foreign-issued cards (Ikebukuro Station)

Technical renovation

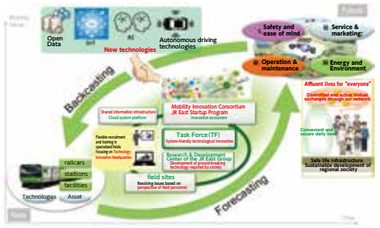
As stated in our Medium- to Long-term Vision for Technical Renovation established in November 2016, we will leverage IoT, big data, AI, and other technologies to thoroughly review the services provided by the JR East Group from the viewpoint of passengers, with the aim of going beyond conventional thinking to achieve a "mobility revolution."
To be concrete, we aim to create by means of AI and other technologies new values out of the data obtained through our Group's all business activities, in the four fields, namely, "Safety and Security," "Service and Marketing," "Operation and Maintenance," and "Energy and Environment." To that end, we will strive to promote further open innovations to incorporate the world's most advanced technologies, and thereby build the "Innovation Ecosystem*" which continues to provide innovative services in the area of mobility.

"Mobility Revolution" by the four fields

*Industrial cooperation among corporations to promote innovations

■Establishing task forces to promote the Medium- to Long-term Vision for Technical Renovation

We have established task forces to strongly promote the Medium- to Long-term Vision for Technical Renovation in order to carry out missions by formulating road maps and developing internal and external promotion systems while clarifying achievement targets for in-house cross-organizational measures. To date, we have established seven task forces and we will achieve innovation in the railway operation business by actively incorporating new technologies into our society, such as AI, IoT, and big data, while aiming to provide new value for passengers and enhance the safety and stability of transportation services.

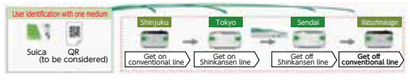


Establishment of task forces to promote the Medium- to Long-term Vision

The details of the seven task forces are: (1) smart maintenance (collect and analyze huge amounts of data concerning the status of facilities and consider optimum timing and methods of maintenance [please see page 61]), (2) driverless operation (expansion of one-man train operation and consider matters related to the introduction of automation technology for driving and controlling trains), (3) next-generation Shinkansen (production of test trains for realizing next-generation Shinkansen and implementation of test drives [please see page 13]), (4) measures against natural disasters (predict natural disasters by using screen sensors and other technologies as well as prediction technology and consider introduction of finely detailed operational restrictions [please see page 32]), (5) operation control using AI (consider automated train operation control using AI, etc. and introduction of flexible transportation planning methods that meet passengers' demands), (6) next-generation ticketing (consider matters related to achieving seamless ways to board trains without standing in line at the station counter or vending machines) and (7) JRE-BIM (Building Information Modeling: consider introduction of construction and production systems that utilize AI and IoT). We will set up new task forces as needed.

Task force (driverless operation)

Build an advanced monitoring system against intruders from areas around tracks and obstacles on tracks by using high-speed and highly accurate image-recognition technology, camera sensing technology that goes beyond far places and other technologies, and consider ways to achieve driverless operation.



Task force (next-generation ticketing)

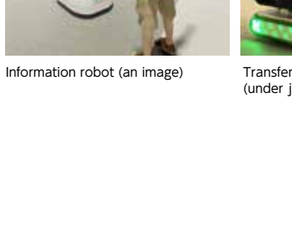
Consider mechanisms that enable stress-fee train riding with one IC or other media by making ticketing unnecessary for riding Shinkansen and conventional lines with the utilization of "e-ticket."

■Launch of Mobility Revolution Consortium

In September 2017, we launched the Mobility Revolution Consortium as a venue for creating and strengthening "links" between our Group companies, external companies, universities, research institutions, etc. and driving innovation in the field of public transportation. There were 111 members as of April 2018.

The purpose of this Consortium is to work on resolving social issues that are challenging for a single company to tackle alone by collaborating and combining the respective strengths of various transportation operators (including JR East), domestic and international manufacturers, universities, research institutions, and other stakeholders with the aim of developing an innovation ecosystem.

[Image of Mobility Revolution Consortium's Structure]



*1Neologism formed from "idea" and "marathon." An ideathon is an event where ideas for resolving a specific issue are intensively brainstormed and collected during a set period of time.
*2 Neologism formed from "hack" and "marathon." A hackathon is an event where programs and apps for resolving a specific issue are intensively developed during a set period of time.

■Research and development of service robots

For the purpose of supporting passengers who are not accustomed to railways and passengers with physical disabilities as well as performing tasks for which labor shortages are becoming an issue (cleaning, security, baggage transportation, etc.), we are considering expanding the usage of service robots in station premises to expand. Accordingly, we are pursuing research and development of a cloud system that will monitor station conditions (congestion, etc.) in real time and autonomous mobile robots that can operate in pedestrian areas via a link to this system.

In addition, in order to accelerate the development and introduction of service robots, we established JRE Robotics Station, a limited liability partnership (LLP) centering on the JR East Group, in July 2017. In FY2019, it is identifying needs and issues, recruiting technical and development partners, and beginning to consider the introduction of robots to handle tasks such as providing information (including information for overseas visitors) and assisting the transfer of passengers.

Information robot (an image)

Transfer-assisting robot (under joint development)

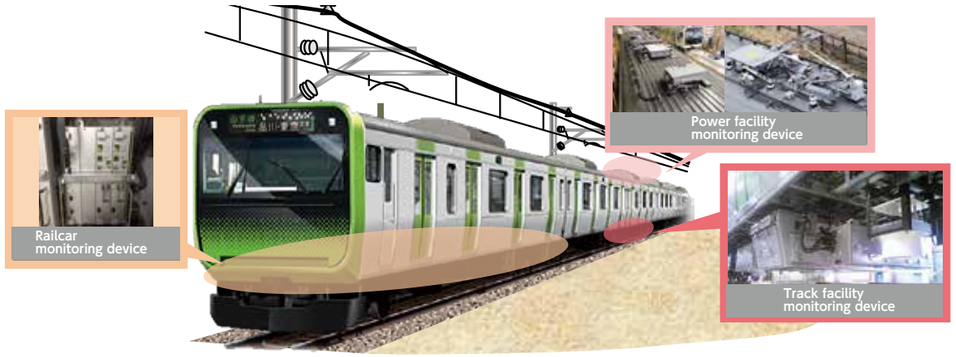
■Realization of smart maintenance

By loading devices for monitoring not only equipment on railcars but also tracks and power facilities from trains while they are running, at normal operating seed it becomes possible to Observe the condition of facilities very frequently. By utilizing these data, we aim to realize maintenance at optimum timing by means of CBM. We will collect a great deal of data, predict degradation from the data, and capture changes in facility conditions, and manage optimum timing and method of maintenance. At present, we have established a method for data analysis and evaluation and introduced it in railway sections in the Tokyo metropolitan area including the Keihin Tohoku Line, Chuo Line and Yamanote Line. We will continue to introduce it in a sequential manner.

[Examples of CBM]

Railcar — Currently, the condition of major equipment is being monitored from both devices on board and devices on the ground, and we plan to utilize the system for detecting failure signs and promptly effecting restoration in case of failure.
Tracks — We will continue to collect data on track displacement (slight distortion and/or gap of track width).
Electric power — We aim to collect data on abrasion of trolley wire (wear of wire caused by friction), etc.

*CBM: Condition Based Maintenance



TICKET TO TOMORROW — Contributing to Railway Service Improvement with CBM

Senior Staff, Track Facility Monitoring Center,
Japan Railway Track Technology Consultants Co., Ltd.

My workplace is involved in tasks ranging from management and operation of track facility monitoring to processing and analyzing data.

I am involved in processing and analyzing data, and there is an extremely large volume of data, since we perform measurement using equipment installed on railcars in actual operation. Even when limited to the Yamanote Line, data for twenty times the 34.5-km circuit of the Yamanote Line, which is equivalent to the distance between Tokyo and Okayama are processed every day. I am looking for ways of processing and analyzing this huge quantity of information so that it can be used to optimize track maintenance.

Going forward, as a member of the JR East Group, I will continue working to support optimal track maintenance using CBM and contribute to the development of tracks that passengers can use more comfortably and confidently.

TICKET TO TOMORROW — The Infinite Possibilities of Monitoring Data

Assistant Manager, Track Maintenance Section, Facilities Division,
Niigata Branch Office

Until June 2018, I was assigned to the Japan Railway Track Consultants Co., Ltd.'s Track Facility Monitoring Center, where I provided integrated management of a series of tasks, ranging from processing of track facility monitoring data to equipment inspection.

At the Center, I worked on establishing monitoring data processing and analysis from the outset, but I have now returned to my position at JR East, where I am engaged every day in track maintenance and management on the side of those who use the processed and analyzed data.

I believe that monitoring, which enables information on the status of facilities to be obtained very frequently, has infinite applications in fields other than track maintenance. By actively developing the knowledge and expertise acquired at the Center, we will continue promoting the practical application of data using CBM to not only achieve optimal track maintenance but also to Plan actual tasks that contribute to further improve passenger services.

Topics

Promoting Open Innovation : Collaborating with Venture Companies

In order to swiftly create new businesses and services as passengers' needs and the management environment change rapidly, JR East requires expertise in unknown technologies and business fields where we lack experience. Therefore, in addition to leveraging our internal resources, we are also collaborating with venture companies, universities, and other research organizations and will be proactively adopting their technologies and expertise. As part of these efforts, in February 2018, we established JR East Startup Co., Ltd. for the purpose of speeding up the promotion of open innovation. By creating new businesses and services through the provision of funding for venture companies and promotion of collaboration, we will contribute to further vitalize local communities and improve the standard of living.

■JR East Startup Program

In FY2018, we launched the JR East Startup Program to solicit, refine, and implement proposals for businesses and services making use of stations, railways, and the Group businesses's management and information resources from venture companies and individuals with various ideas. In FY2018, the program received 237 proposals, from which 19 were selected for development. Of these, 11 have been implemented on a trial basis, including an unstaffed store at Omiya Station and baggage check service at Tokyo Station. Collaboration with a view to commercialization is currently under way for several other proposals. For the second edition of the program in FY2019, there will be expanding themes to include new areas such as partnerships with communities (local governments, etc.) and collaboration with foreign venture companies.

JR East Startup Program logo


Unstaffed store at Omiya Station


Baggage check service at Tokyo Station

Relationship with Society

Strengthening Collaboration with Communities

The very existence of the JR East Group depends on the health of the communities and of Japan as a whole. As a company responsible for a form of social infrastructure (i.e., railways), and as a member of the community, we work together with communities in order to take actions aimed at achieving their desired future. We are actively implementing community vitalization and tourism promotion measures that leverage the unique capabilities of our group, as well as pushing forward with the creation of appealing urban areas centering on railway stations.

■Development of large-scale terminal station

In the Shinagawa area, we are aiming to realize town development where advanced businesses and human resources will gather from all parts of the world and new businesses and culture will be created from their interactions, and the construction of a new station which will be the core of the new town has been launched between Shinagawa and Tamachi Stations.
At Shibuya Station, with the move of part of the Tokyu Toyoko Line to underground tracks as the turning point, we are proceeding with renewal and reorganization of the functions of the station, rearrangement and expansion of surrounding infrastructure, and construction of jointly developed buildings, in cooperation with related business operators.
At Yokohama Station, with increasing momentum in the surrounding community for further urban redevelopment, we are proceeding with reconstruction of West Entrance Building under theme of enhancing attractiveness of the station and town, strengthening disaster-prevention strength, addressing environmental issues, reinforcing it as a place for pedestrians, etc., in cooperation with the local government.

Shibuya Station development


(provisional name) Development of Yokohama Station West Entrance Building

■Creation of new stations to develop the railway network

We are also cooperating with local governments in the creation of new stations in line with their city planning, based on requests from local governments, etc. In April 2018, we opened a new station, Ashikaga Flower Park Station, on the Ryomo Line.


Ashikaga Flower Park Station, Ryomo Line

TICKET TO TOMORROW

Opening New Station in Collaboration with the Local Community

Ashikaga Station Staff, Takasaki Branch Office

On April 1, 2018, Ashikaga Flower Park Station opened on the Ryomo Line. With the cherry blossoms in full bloom, the opening ceremony, attended by around 800 people, was a magnificent occasion.
The station is located next to Ashikaga Flower Park, which is famous for its wisteria arbors. Normally, the station is unstaffed, but during the Great Wisteria Festival in Golden Week, which is the best time for viewing the wisteria, it was used by a large number of passengers, so staff from the Takasaki Branch Office, including personnel from Ashikaga Station, were present to assist passengers.
Ashikaga Flower Park is very popular even among passengers from other countries as well, so in addition to providing information using multilingual signs created by Ashikaga Station employees, I tried to make P.A. announcements in English and Chinese that would be easy for visitors to understand.
Going forward, I will strive to provide information that enables passengers to use our facilities confidently and contribute to vitalize local communities.

Topics

Opening of Tokyo Station Marunouchi Station Square

JR East has been working with the Tokyo Metropolitan Government to develop an urban space in the district around Tokyo Station commensurate with its status as the gateway to the capital city of Tokyo. Following the completion in October 2012 of preservation and restoration work at the Tokyo Station Marunouchi Building (designated as an important cultural property) development of the plaza in front of the Marunouchi exit was completed in December 2017, marking the end of work on the Marunouchi side covering a period of around 10 years.
Tokyo Station is a landmark building that is a terminal used by the Emperor and Empress of Japan and other VIPs, while also being the starting point for some of Japan's main railway lines. The recently completed work has created a new, upscale, bustling urban landscape befitting the gateway to the capital city of Tokyo that is integrated with the surrounding district, including Gyoko-dori Street.
To celebrate the work's completion and express our gratitude to the many people involved, we held a ceremony to commemorate the completion of Tokyo Station Marunouchi Station Square on December 7, 2017, and the public was able to use the entire space beginning on that date. At this ceremony marking the start of a new chapter in the station's history, we were honored by the presence of the Emperor and Empress, and guests, including Prime Minister Shinzo Abe.


2012: South Dome following restoration


2012: Station building following preservation and restoration


2017: View from hotel


2017: Following completion of Station Square

■Establishment of a lineside brand that will be chosen by passengers

Across the metropolitan Tokyo network, we are working on "creation of preferred lineside brands" that will make people want to visit or live in those areas by promoting development and renewal of not only the areas around stations but also locations under elevated tracks between stations through projects such as the Chuo Line Mall Project (Chuo Line), Kurasu Class (Nambu Line), Keiyo Bayside Line Project (Keiyo Line), FUN TOKYO! (Yamanote Line), and Saikyo Line Lineside Branding, as well as providing information about areas along the lines.

Chuo Line Mall Project: Musako Garden

Kurasu Class

TICKET TO TOMORROW Ensuring that Passengers Keep Choosing the Keiyo Line

Tsudanuma Station staff, Chiba Branch Office

I have been the member of the Keiyo Bayside Line Project at my prior workplace, the Shin-Kiba Station. The project was launched in 2015 with members who included various field personnel, such as station staff, train crew, rolling stock center employees, and technology-related employees. Through its monthly activities, it has developed a variety of ideas.
To date, the project has worked on a range of initiatives, including the launch of the Keiyo Line Facebook page, creation of Rurubu Keiyo Line, station-front flash mob in collaboration with the Chiba Institute of Technology's brass band club, and Keiyo Team 6 (a promotion in conjunction with top sports teams along the line).
In December 2018, the Keiyo Line will celebrate the 30th anniversary of the opening of the section between Soga and Shin-Kiba Stations, and in March 2020, it will celebrate the 30th anniversary of the entire line's opening. To express our appreciation to the passengers who use the line and the communities alongside it, we are considering some commemorative events that will surprise and delight attendees. Please stay tuned for more from the Keiyo Bayside Line Project in the future.

■Town development focused on stations in core regional cities

JR East is promoting town development focusing on central stations in conjunction with central urban district revitalization projects, urban planning projects, and so forth being undertaken by local governments in the vicinity of Akita Station, Niigata Station, Matsumoto Station, and others. In June 2018, in order to promote an initiative relating to urban development of the Aomori Station area, four parties—Aomori Prefecture, Aomori City, the Aomori Chamber of Commerce and Industry, and JR East—signed an agreement of cooperation. We are contributing to the revitalization of core regional cities by proceeding with the functional restructuring of station areas in alignment with town development projects of the communities.

Event marking signature of agreement of cooperation between Aomori Prefecture, Aomori City, the Aomori Chamber of Commerce and Industry, and JR East

TICKET TO TOMORROW Contributing to Community Development through Elevation of Tracks at Niigata Station

Assistant Manager, Niigata Construction Section, Joshinetsu Construction Office

My workplace is part of the project to develop the Niigata Station area being undertaken by Niigata City, elevating conventional line tracks near Niigata Station and development of platforms for cross-platform transferring between Shinkansen and conventional line trains.
In April 2018, when track switching work was implemented as part of phase 1 of the track elevation project, relevant parties from our company and partner companies worked diligently to establish a construction plan, made various preparations (such as making arrangements for alternative transportation plans based on a special schedule, informing passengers, and holding a meeting to brief local residents on the work), and started construction. In total, some 1,400 people from JR East and partner companies combined worked on the switching project as one, and the work was successfully completed without problems.
I felt a great sense of achievement whenever I heard feedback from satisfied passengers who have used the new-look Niigata Station following the switching work. Today, we are continuing to move forward with construction in order to elevate and open all the tracks. Going forward, we will continue contributing to the development of communities by creating stations that live up to passengers' expectations while prioritizing safety.

■Signing of agreement with Japan Post on revitalization of community and society

In June 2018, JR East signed an agreement with Japan Post Co., Ltd. in an aim to reinforce our efforts on revitalizing community and society.
Specifically, functions of post offices and stations will be linked. As for urban areas, we have a plan to establish an office with a new business format that specializes in financial consulting out of various over-the-counter services of post offices in Tachikawa Station (third floor of eCute Tachikawa). As for regional areas, we are making considerations to enable unified operation of over-the-counter services of post offices and stations, including the relocation of post offices into stations. In addition, we are planning to sell local produce of Sendai areas at Tokyo Station and Sendai Station on the day they are harvested by utilizing the transportation network of Japan Post as well as the Shinkansen. Furthermore, we are considering measures for community revitalization over a wide scope such as promotion of sightseeing.

Tachikawa Station (third floor of eCute) store image

*This is the projected image at the current time. It is subject to change based on future considerations.

■Restoration of railway sections devastated in the Great East Japan Earthquake

We have been steadily proceeding with restoration work and resumption of operations in railway sections on the Pacific Coast that suffered extensive damage due to the tsunami, beginning with sections where safety can be ensured.
In areas within 20 km of Fukushima Daiichi Power Station where evacuation orders have been lifted, we are progressively resuming operations with the support and collaboration of national and local governments regarding the necessary environmental measures, such as decontaminating areas along lines and making preparations for the return of residents. The section between Namie and Odaka resumed operation in April 2017, followed by the section between Tatsuta and Tomioka in October 2017. For the remaining section of line between Tomioka and Namie, where operations are suspended, we are proceeding with restoration work aimed at resuming operations in the spring of 2020.
For the section between Yanaizu and Kesennuma on the Kesennuma Line and the section between Kesennuma and Sakari on the Ofunato Line, in order for communities to achieve further development as full-scale urban recovery efforts progress in disaster-hit areas, we proposed that operation of our BRT service continue as a sustainable transport mode that will contribute to restoration. The proposal has been approved by all lineside municipalities. Based on the requests of lineside municipalities in both sections, we are proceeding with other initiatives such as the establishment of new stations, relocation of stations, and further development of exclusive roads.
With the agreement with lineside municipalities, the section between Miyako and Kamaishi on the Yamada Line will be jointly operated with the Sanriku Railway South and North Rias Lines. We are moving forward with restoration work aimed at reopening the section in March 2019.
As of April, 2018, the total length of the sections where operations were suspended had been reduced from approximately 400km immediately after the earthquake to approximately 76km, with resumption of services for approximately 224km by railway and for approximately 99km by BRT.

With regard to the section of the Tadami Line between Aizu-Kawaguchi and Tadami (damaged by heavy rains in Niigata and Fukushima in July 2011), there was strong demand to restore the railway from Fukushima Prefecture and lineside municipalities. Based on this, we reached an agreement with Fukushima Prefecture in June 2017 to resume service by means of separating infrastructure and operation. At present, we are carrying out restoration work aimed at resuming operations on the entire line.

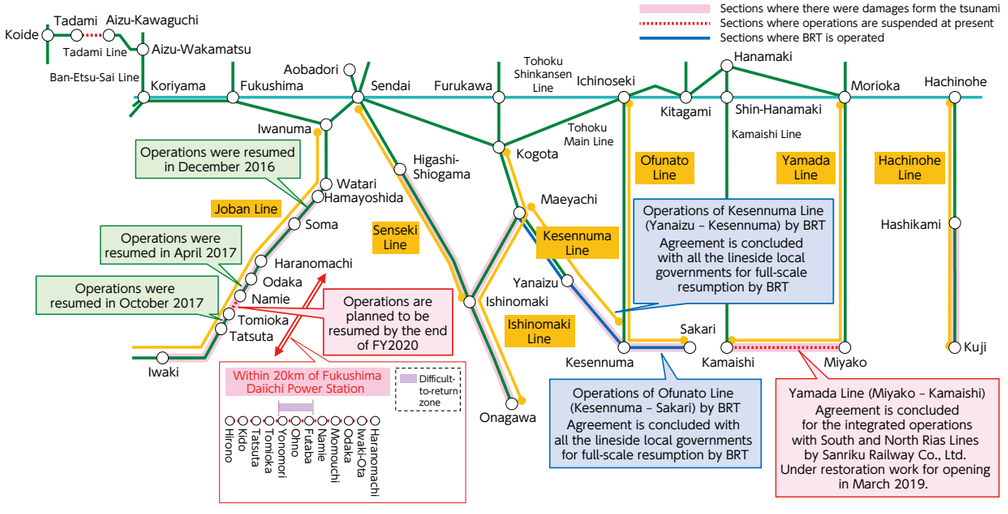
Resumption of operations between Tatsuta and Tomioka on the Joban Line

Kesennuma Line BRT on exclusive roads

Otsuchi River Railway Bridge, Yamada Line

Groundbreaking ceremony, Tadami Line

[Sections where operations were suspended as of April 1, 2018]



Rediscover the Region Project

■Development of the Rediscover the Region Project

Under the "Create Together" strategy, which specifies enhanced cooperation between JR East and local communities, we are promoting the Rediscover the Region Project. The aim of the project is to create new potential markets that bring increased circulation of people and goods between the Tokyo metropolitan area and other regions and also attract overseas visitors to Japan. The JR East Group has railway networks, stations that serve as centers of local communities, business know-how, sales channels and advertising power that all radiate out from the Tokyo metropolitan area. The strategy utilizes JR's unique abilities to discover traditional cultures, local produce and other tangible and intangible tourist resources as well as to promote the interactive exchange of information and to expand sales channels between the Tokyo metropolitan area and local communities.

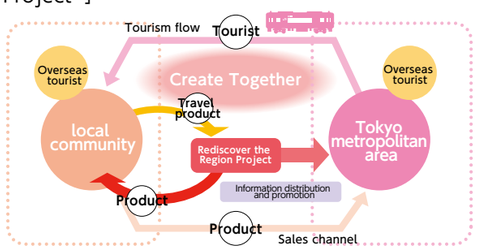
In the Tokyo metropolitan area, in collaboration with destination campaigns and other marketing tools, we are hosting a "Farm Fresh Market" at Ueno Station and opened permanent NOMONO shops where producers present their products and the appeal of their regions at Tokyo Station and other locations.

Furthermore, in 2017, as a new initiative at our Farm Fresh Markets promoting the appeal of local communities, we held the Asatore Shinkansen Marché, which features vegetables and fruits picked in various regions of Japan the same morning and delivered directly by Shinkansen, at Tokyo Station's Dorin Square and elsewhere.

NOMONO Gransta Marunouchi branch, Tokyo Station

Asatore Shinkansen Marché

[Conceptual diagram of "Rediscover the Region Project"]



■Participation in primary industry

In order to find solutions to issues in primary industries and to enhance the appeal of food through agricultural produce, we entered the agribusiness field in collaboration with local farmers in the spring of 2016. The JR Tomato Land Iwaki Farm in Iwaki City, Fukushima Prefecture, produces high-quality tomatoes at its sunlight-based plant factory, which are used as ingredients for food served by Group companies. "JR Niigata Farm" in Niigata City is an agricultural corporation established by taking advantage of the status of Niigata as a National Strategic Special Zone. It is bearing a part in developing Niigata's sake culture through production of rice suitable as an ingredient of sake. In addition, JR Agri-Sendai in Sendai City produces goods suited to market needs through integrated management covering everything from production to sales activities. We will continue seeking to increase the non-resident population and revitalize regional communities by enhancing their appeal through the stable production of safe, secure agricultural produce.

JR Tomato Land Iwaki Farm

JR Niigata Farm

JR Agri-Sendai

Addressing measures to promote tourism

■Destination campaign (DC)

Destination campaign (DC) means a large-scale tourism promotion campaign implemented by local governments, tourism-related people, JR Group and other related organizations and persons working together for the purpose of developing local sightseeing resources and implementing nation-wide advertising, to attract visitors and promote use of JR. One of the targets is to cause the event to continuously create new superb tourist resorts that will lead to the promotion of tourism in the communities, by holding "Pre-DC" just one year in advance of the DC period as well as "After-DC" just one year after the DC, So that the DC is not a merely temporary event. Since we held "Twinkling Kishuji" in Wakayama Prefecture in 1978, we have continued to hold DCs and the number is an average of four per year.

Following the Great East Japan Earthquake in March 2011, the JR Group conducted DCs for all six Tohoku prefectures as its measure to support reconstruction. We also ran a Tochigi DC from April to June 2018. Going forward, we will continue to strengthen the cooperation with local communities and local governments in an aim to revitalize local tourism and establish a strong tourist base.

Tochigi Destination Campaign ceremony

TICKET TO TOMORROW Further Vitalization of Communities Thanks to the DC Legacy

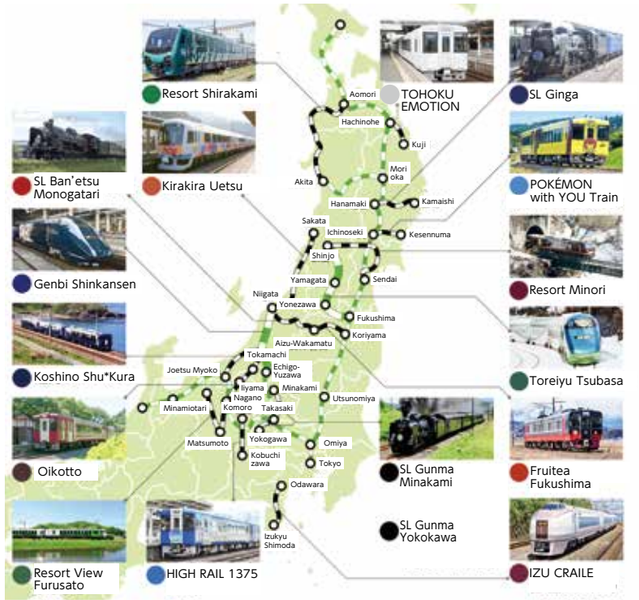
Station Master, Nikko Station, Omiya Branch Office

Many prefecture residents participated in the "Tochigi: Discover the Real Thing" DC, resulting in a remarkable DC where the entire prefecture was united in showing hospitality to visitors.
Starting in July 2017, as part of the Prefectural Tourism and Exchange Section, I was involved in preparing for the campaign by creating travel products, conducting tourism PR activities outside the prefecture, and coordinating various issues with various governmental offices. Municipalities within the prefecture were divided into five regional sub-committees. It required a lot of effort to prepare numerous special plans leveraging local resources, but we were able to interact and develop partnerships with people from various businesses, which I believe is the true legacy of the DC.
As Nikko Station Master, I began welcoming visitors in April 2018, with the help of station staff, Tobu Railway personnel, and people from the community. The DC is a stepping stone leading to further stimulated tourism. Going forward, we will work with local people to increase our capability to accept passengers created by the DC and develop new transportation services to sightseeing destinations from stations, sightseeing routes, etc., while continuing to contribute to the promotion of tourism by using Nikko Station as a base for providing information about the area and showcasing its appeal.

■Trains for enjoying riding

JR East operates various "Trains for enjoying riding" which provide passengers enjoyment in riding in them itself. Those include Shinkansen, limited express, SL and other trains, each of which has its own theme and is so elaborately and uniquely designed that they remind us of something like a running theme park. The trains offer travel with such new feeling that passengers fully enjoy meals, sweets, arts, music, and even a "foot bath" on board, and upon alighting from the train, they feel excited to wonder which train they should select for their next trips.

In support of the aim of "POKÉMON with YOU," an activity by The Pokémon Company to support disaster-affected areas, JR East operates POKÉMON with YOU trains with the cooperation of the company.



[Major trains for enjoying riding and efforts made in cooperation with local communities]

Train names	Characteristics of train name and efforts made in cooperation with local communities
Resort Shirakami	Live performances of Tsugarujamisen music, talks by a "storyteller" in the Tsugaru dialect, Tsugaru Traditional Kinta Mamejo puppet plays, and other shows are offered on board. In addition, Fureai Hanbai is held, when local residents board the train during a stop at a station and sell fresh light meals.
TOHOKU EMOTION	People of Hirono-cho across which the JR Hachinohe Line, runs have been continuing to gather and wave their colorful "tairyobata" fisherman's banners and their hands with their whole hearts to passing trains, which has coined a new phrase, "HIRONO EMOTION."
Fruitea-Fukushima	Original sweets which are made sumptuously using fruits grown in Fukushima Prefecture are offered on board. As the menu is changed in accordance with the season, passengers can enjoy seasonal fruits grown in Fruit Kingdom Fukushima.
Koshino Shu*Kura	Through collaborations with local sake breweries, musicians, universities, and others, events are held at which passengers may sample local sake, hear stories about sake, and enjoy live music, especially jazz.
HIGH RAIL 1375	Along with a brunch featuring vegetables that are cultivated in areas along railway lines without the use of agri-chemicals and sweets from Saku, renowned as one of Japan's top three towns for cake, passengers on the HIGH RAIL Hoshizora train that runs at night may enjoy stargazing sessions at Nobeyama Station, with explanations provided by a local expert.
IZU CRAILE	Aboard this stylish, elegant resort train, passengers can partake in casual conversation while enjoying original dishes made with Izu ingredients and drinks as they travel through spectacular natural scenery.

Childcare Support Services HAPPY CHILD PROJECT

■Childcare Support Facilities — Support for Working Parents

JR East has opened childcare support facilities such as "nursery schools near stations" located in easily accessible areas usually within a five-minute walk from stations in order to support the combination of childcare and work. A total of 128 childcare support facilities were opened from 1996 through April 2018, and JR East aims to increase the number of these facilities to 130 by April 2020. These nursery schools near stations provide added convenience as they allow parents to drop off and pick up their children on the way to and from work. As evidenced by children who are accompanied to nurseries by their fathers, our childcare support encourages paternal participation in childcare as well.

In May 2017, to commemorate reaching 100 childcare support facilities, we published 20 Years of Childcare Support Services at JR East Group: A History.

View of a "nursery school near station" (Sakuraso Nursery School in front of Toda Station)

Commemorative publication 20 Years of Childcare Support Services at JR East Group: A History

■Childcare Support Events

Each year, we hold an exhibition of craftworks produced by children who attend our nursery schools near stations at the Railway Museum in Saitama City, Saitama Prefecture.

With "trains" as its theme, original, creative and fantastic works created by children are enjoyed by many visitors. It also provides a space for displaying the daily activities of nursery schools and observing child development.

Eighth Children's Train Craftwork Exhibition

Development of COTONIOR

We have opened complexes for childcare support and eldercare themed with multigenerational interaction, "COTONIOR."

COTONIOR is a coined word formed from "kodomo" (Japanese for "children"), "to" (Japanese for "and"), and "senior." By May 2018, COTONIOR facilities had been opened in Kichijoji, Akabane, Nishi-Funabashi, Kunitachi, and Koshigaya-Laketown. In addition, at Cotonior Garden Shin-Kawasaki—which includes rental housing, a commercial complex, and more—we have also opened a nursery school and an elder care facility based on the concept of urban planning that promotes interaction between multiple generations. With a well-thought-out facility layout, seasonal events and such, COTONIOR has created a heartwarming place where children and senior generations interact that brings together a wide range of generations.

COTONIOR Kichijoji

Cotonior Garden Shin-Kawasaki

TICKET TO TOMORROW The Idea Behind Cotonior Garden Shin-Kawasaki, a Project Fostering Urban Development

Assistant Manager, Office and Housing Operational Headquarters JR East Urban Development Corporation

I was involved in Cotonior Garden Shin-Kawasaki from the development stage.

Based on the concept of creating a neighborhood that will make people think "I want to keep living here," Cotonior Garden Shin-Kawasaki is an urban planning initiative integrated with the community to interactively develop commercial facilities, rental housing, an elder care facility, a nursery school, and a plaza space, providing a venue for multi-generational interaction. It has spaces open to the local community, including a terrace that anyone can use and community exchange center, which are encouraging interaction on a daily basis.

At the time of the opening, we held an inauguration ceremony in collaboration with tenants, neighborhood associations, a junior high school, and NPOs. Through the events we have held to date, we have heard from local residents that they are keen to use Cotonior Garden Shin-Kawasaki's facilities.

Going forward, we will continue to build the community by holding events that involve the local community. In this way, we will achieve our goal of creating a neighborhood where people want to keep living."

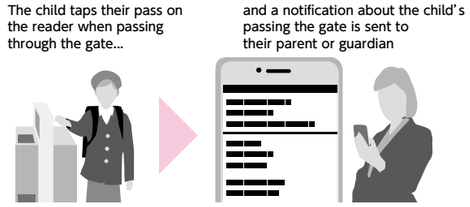
Launch of Mamorail: JR East's Child Watching-Over Service

In October 2017, we launched a new addition to our childcare support lineup: Mamorail, a child watching-over service developed as a joint venture with Central Security Patrols Co., Ltd. Its slogan is "Notifications from stations for your peace of mind." By April 2018, the service had been rolled out to 244 stations in the Tokyo metropolitan area.

【Service Overview】

■Usage fee: 500 yen per month (plus tax)
■Persons eligible for service: elementary, junior high, and high school students
■Applicable cards: Suica, PASMO
■Notification method: Email or JR East app

【Image of message notification】



Cultural Activities

■East Japan Railway Culture Foundation

In order to continuously utilize its management resources for social contributions, in 1992 JR East established the East Japan Railway Culture Foundation, which became a public interest incorporated foundation in April 2010. This organization has successfully promoted local culture through our railway business, studies and research on railways, and taken part in driving international cultural exchanges related to railways. The Foundation's major activities include operating the Railway Museum, Tokyo Station Gallery, the Old Shimbashi Station building, Old Manseibashi Station and Ome Railway Park, sponsoring local cultural activities and accepting trainees from railway operators in Asian countries.

○The Railway Museum

On October 14, 2007, Railway Day, the Railway Museum, based on three major concepts, was opened in Saitama City, Saitama Prefecture. It was designed to be a museum that systematically conducts surveys and research using railway-related heritage and reference materials, a history museum that depicts the history of railways focusing on exhibits of locomotives and cars, and an educational museum where visitors can learn about railway principles, systems and technologies through hands-on experience.

The Railway Museum has attracted a huge number of visitors, with the total number exceeding 10 million people in May 2018. On July 5, 2018, it evolved into a museum that showcases an overview of railways as well as its significance, and makes appeals based on the concept of conveying the "Job" of railways, unfolding its "History" and creating railways of the "Future." At the Job Station in the new building, visitors are enabled to experience various tasks in the business with the purpose of helping them recognize the depth and complexity of the railway business. As such, the museum enhanced its hands-on exhibit and technological exhibit in addition to the rolling stock exhibit it had offered before.

Opening ceremony

E5 simulator

○Tokyo Station Gallery

In the spring of 1988, a year after the foundation of JR East, Tokyo Station Gallery was born in Tokyo Station Marunouchi Building out of the desire to offer everyone a place for fragrant culture rather than simply being a passing point through the station.

We continue to be active while deeply recognizing the significance of carrying out our activities as a gallery in the important cultural property of Tokyo Station Marunouchi Building that is located at the geographical and historical heart of modern Japan.

Tokyo Station Gallery

○Supporting local cultural activities

Starting in FY1994, we have been supporting local cultural activities by providing financial support for the purpose of conserving and succeeding precious cultural heritage and traditional performing arts in our company's area and development of community, aiming at promotion of regional culture.

By the end of FY2018, we had supported a total of 182 activities, and in FY2019, we plan to provide support for 16 new activities as well as supporting five ongoing projects.

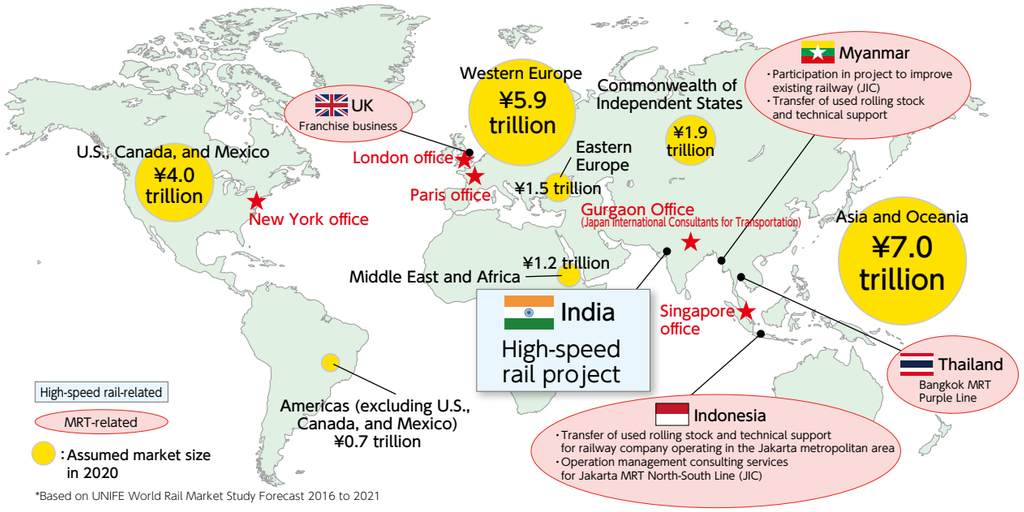
Supporting local cultural activities

Developing Our Business on the World Stage

■Global Development

Given the current increase in awareness of global environmental issues and the economic growth of emerging nations, there is growing interest around the world in railways as an environmentally friendly form of public transportation. The global railway market is expected to grow by an average of 2.6% a year through 2021, expanding in size to an annual average of approximately 24 trillion yen from 2019 to 2021.

In November 2011, the JR East Group, in partnership with domestic railway companies with a variety of track record and expertise relating to high-speed, MRT, and freight railways, launched Japan International Consultants for Transportation Co., Ltd. (JIC) to provide railway consulting services overseas. At present, JIC is actively developing our overseas railway consulting business, focusing on the areas of operations and maintenance. In addition, we established an International Affairs Headquarters at our head office in June 2017, which is leveraging our experience, technology, and expertise to explore new business areas, with the aim of driving future growth. Specifically, through our overseas projects, we will develop the JR East Group's human resources and incorporate the knowledge and technical skills acquired in the process into our domestic operations. Furthermore, while working to promote Japan's railway standards, we are establishing a business model for international projects that will enable us to expand high-quality, high-efficiency railway infrastructure systems of JR East Group using the JR East Group's combined strengths—including both our railway business and lifestyle business. In all projects, we are striving to achieve sustainable operations aimed at long-term profitability by controlling the risks and returns.



*Based on UNIFE World Rail Market Study Forecast 2016 to 2021

[Locations of International Railway Projects and Overseas Offices]

■Participation in Indian High-Speed Rail Project

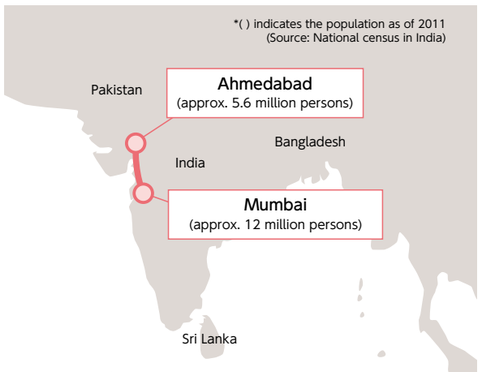
For the Mumbai-Ahmedabad Line, one of the seven high-speed railway lines announced by the Indian government, the "Memorandum of Cooperation between the Government of Japan and the Government of the Republic of India on High Speed Railways" was entered into in December 2015, and it was decided that Japan's Shinkansen method was adopted for the Ahmedabad-Mumbai high speed railway plan.

At present, consultations about the high-speed railway plan of India including concrete business scheme are underway, and at the consultation between the two governments held in November 2016, a progress report for the high-speed railway plan was announced, indicating the schedule for the work to be commenced in 2018 and operations to be commenced in 2023. Through a public-private cooperation, JR East is providing technical support for these discussions, based on our extensive experience as a Shinkansen operator.

In addition, in March 2016, one of the companies in our group, Japan International Consultants for Transportation (JIC), received an order from JICA for the Indian High-Speed Railway-Related System Development Support Project, which is to provide consulting services relating to the formulation of high-speed rail technical standards. We have also enhanced our internal organization through measures such as appointing executives with responsibility for the Indian high-speed rail project.

Furthermore, in December 2016, a joint venture (JV) formed by three companies, namely, Japan International Consultants Global for Transportation Co., Ltd., Nippon Koei Co., Ltd. and Oriental Consultants Co., Ltd. received an order from JICA for the "Detailed Design Study on the High Speed Railway Construction Project in India to Commence" which is for formulation of design and tender documents (draft) for the Mumbai-Ahmedabad High Speed Railway Construction Project as well as supporting bidding, and the JV is now implementing the work.

Furthermore, in September 2017, a ground-breaking ceremony for this high-speed railway project was held in Ahmedabad (Sabarmati) in conjunction with the 2017 Japan-India Summit Meeting.



■Participation in Thailand's Purple Line Project

We are also involved in a project to provide comprehensive maintenance for rolling stock and ground installations for the MRT Purple Line in Bangkok, Thailand. The Purple Line is a railway line in Thailand's capital of Bangkok intended to link the Bang Sue district in the northern part of the city to the Bang Yai district in the northwestern suburbs, which began operation in August 2016. In December 2013, through a joint investment with Marubeni and Toshiba, we established the maintenance company Japan Transportation Technology (Thailand) Co., Ltd. (JTT) in Bangkok. JTT is providing maintenance services for a ten-year period, including the rolling stock, signaling systems, tracks, power systems, platform doors, automated fare collection system, and depot facilities. In addition, Japan Transport Engineering Company (J-TREC) has manufactured stainless-steel rolling stock for use on the Purple Line, and delivered a total of 21 train-sets (63 cars).


A running Purple Line train


Track Maintenance vehicle

■Participation in U.K. Railway Operation Project

With regard to railway operations in UK, the "Scheme of separating infrastructure and operation" has been incorporated, under which the railway operation sector and infrastructure sector are separated, and currently, the country's railway service for passenger transportation is divided to be provided by 20 train operating companies.

The UK franchise system means a system under which each train operating company's right to operate trains is selected by performing bidding, and the right to operate trains, effective for 7 to 10 years, is granted by the Ministry of Transport or relevant government authorities of the country.

Our company obtained the right to operate the West Midlands project in collaboration with Mitsui & Co., Ltd. and Abellio UK, a Dutch Railways-affiliated company. Operation began in December 2017. It is JR East's first project involving operation of an overseas railway. Services include commuter lines to London, a long-distance line connecting London and Liverpool, which is located in the northwestern region of England, and transportation in the metropolitan area of Birmingham, the country's second-largest city, which is located in the central Midlands region.


Image of a train in operation after commencement of services for this project


Ceremony marking start of operations

■Providing Technical Support to Overseas Railway Operators

In Jakarta, the capital of the Republic of Indonesia, there is extreme traffic congestion, and public transportation infrastructure is being developed to address this issue. Since the carrying capacity of existing railways also needs to be rapidly increased, over a period of three years starting in 2013, we transferred 476 205-series railcars formerly used on the Saikyo Line and other lines to the railway company that operates Jakarta's commuting trains, and during the three-year period starting in 2018, we are planning to transfer another 336 205-series railcars, formerly used on the Musashino Line. At the same time, to ensure stable operation of the transferred railcars in Indonesia, we have been providing support for rolling stock maintenance as well as providing various cooperation such as inspection and maintenance of rolling stock by crew members and service improvements.

In the Republic of the Union of Myanmar, since 2007 we have also been transferring rolling stock to Myanmar Railways, which operates passenger trains and freight transportations in Myanmar. In 2015, we transferred 19 diesel railcars (Kiha 40 series/ Kiha 48 series) that had been used in the Tohoku and Niigata areas, in addition to providing technical support for rolling stock maintenance.

205-series train in service in Jakarta following transfer to commuting train company in Indonesia

Service improvement seminar

Diesel train transferred to Myanmar

■Developing Lifestyle Business Overseas

By placing "NOBIRU" ("Grow") in our Life-Style Service Business Growth Vision (NEXT 10), we are leveraging the JR East Group's track record and experience in the domestic market to promote our lifestyle business even overseas.

In December 2016, we opened the JAPAN RAIL CAFE in Singapore, which provides information about tours to Japan and offers a "venue" where locals with a strong interest in Japan interact with us. Furthermore, in March 2018, we established JRE Business Development Taiwan, Inc. a local company which is a wholly owned subsidiary of JR East and is working to develop business in Taiwan, raise awareness of the JR East Group brand, support overseas expansion of Group companies, and develop services for travelers visiting Japan.

■International Cooperation

Our company actively offers railway-related professionals from overseas the opportunity to observe our operations; in FY2018, we hosted some 1,100 observers from around 60 countries worldwide. These observers included government- and railway-related persons from various nations as well as researchers from overseas research institutes. Their visits play a valuable role in promoting mutual understanding.

Observation of maintenance of Shinkansen railcars

Observation of coupling of Yamagata Shinkansen train

■Global Contribution through International Institutions

We actively collect and provide information through international conferences organized by the International Union of Railways (UIC), International Association of Public Transport (UITP), Community of European Railway and Infrastructure Companies (CER), Association of American Railroads (AAR), American Public Transportation Association (APTA), and other international railway organizations to which we belong.

We have been working toward the global development of railways and public transportation and the resolution of various related issues by serving as president of the UITP from June 2015 to May 2017 and president of the UITP Asia-Pacific regional assembly since May 2017, among other activities.

In order to showcase features of Japanese railway systems to overseas railway-related parties, we have been actively participating in overseas exhibitions, seminars and so on as well as extending invitations for international conferences.

May 2017 to present
Vice Chairman Ogata is serving as President of the UITP Asia-Pacific regional assembly

May 2017
UITP Global Public Transport Summit (Montreal)

November 2017 UITP Asia-Pacific regional assembly (Tokyo)

Relationship with Employees

In order to enhance the power of human resources

The nature of our work is "to have consciousness of social duty and to act up to it" that we should support daily life of passengers and contribute to the progress of the community. In order for JR East Group to continue its sustainable growth, it is indispensable to foster professionals of each area of endeavor who think and act by themselves and are trusted by passengers and people in the community.

Therefore, in fostering human resources, we aim to enhance the power of human resources of the entire JR East Group by addressing measures to strengthen the managers' controlling power, to succeed technologies and to foster human resources including those of the Group companies while responding to the motivation of employees.

■Focused items to be implemented

	Target	Focused items to be implemented
Development of human resources	General employees	Responding to the motivation of employees and providing more challenges and growth opportunities
	Manager	Addressing measures to enhance managers' controlling power
	Group companies	Enhancing power of human resources of entire JR East Group
Succeeding technologies	Employees of all generations	Implementing assured succession of technologies and skills and education for learning the nature of work

■Responding to the motivation of employees and providing more challenges and growth opportunities

With the aim of responding to the motivation of employees and draw out their potential abilities, we have improved our "application-based training." In our "training for fostering practicing managers," which is the core of this training, we are developing foreman-class employees to become "managers who lead the next generation" by holding training camps lasting around two and a half months at the JR East General Training Center. In response to the motivation of employees, we plan to offer the courses to approximately 300 people in FY2019—a 20% increase over the previous fiscal year. In addition, we are providing opportunities for younger employees to take external seminars, as well as opportunities for employees who have completed the seminars to receive training from external instructors, including "Global" and "Technical Innovation" editions.

Moreover, as a system for further responding to employees' diverse work-related motivations, we are transferring employees based on open recruitment, including employees aiming to become professionals in jobs that require specialized skills (e.g., finance, public relations) and employees who wish to pursue activities in strategic growth areas such as international business or tourism strategy.

In addition, we are striving to keep quality management at a high level through measures such as measuring the effects of seminars by implementing questionarries to attending employees and endeavoring to improve the content of training.

Training for fostering practicing managers

On-site experience education at technology academy

■Addressing measures to enhance managers' controlling power

Since the essence of fostering human resources is with managers at workplaces, we strive to increase the opportunities to take trainings such as "Newly appointed field leaders training" for the purpose of letting manager-class personnel recognize the importance of fostering human resources and revitalization of workplaces.

Since FY2018, we have also been implementing "Training to Create the Work Environment of the Future" for employees who are expected to become field leaders in the near future and promoting workplace manager development that supports motivated employees.

■Addressing measures to enhance the power of human resources of the entire Group

Our company aims at realization of the integrated Group management and enhancement of the Group value, promoting positive human resource exchanges in terms of fostering human resources. Specifically, with such programs as the "JR East Group seminar for fostering management personnel (General Manager course and Section Manager course)" for the purpose of fostering managements of the Group companies to widen their views, and "JR East Group exchange training" for the purpose of creating sense of unity among the foreman-class employees of our company and Group companies, we are proceeding with endeavors to enhance the power of human resources of the entire Group.

■Addressing measures for the succession of technologies

Our company is facing a period of rapid generation

change, and the succession of technologies has become an important issue to us. Therefore, we are proceeding with a countermeasure of designating employees having a high level of motivation to foster human resources and technology as "Technical specialists," employees who have been re-hired after reaching retirement age as "Advisers" or "Meisters," who will take pivotal roles to overcome the issues. As part of this endeavor, we are enriching the training facilities at the "General Training Center" and "Skill Training Room" in each Branch Office in order to lead employees to understand the "essence of work" and implement practical and experience-based training at each workplace, introduction of crew simulation at each workplace and other efforts.

TICKET TO TOMORROW

Succeed Instinct of Engineers

Assistant Manager, Tokyo Electrical Construction & System Integration Office

I am a member of the Power Distribution and Planning Section, and in my role as a technical specialist, I am involved in human resources development and technology succession for all workplaces within our office's power distribution department.
During this time of rapid generational change, how to quickly and accurately pass on the essence of both documented technology and "tacit knowledge"-type technology that is difficult to explain in writing is an issue. With the methods used to date, it is becoming difficult to keep up with the speed of generational change.
I believe that it is not enough to wait until you are asked a question; even if people will think of me as being overbearing, I am determined to reach out to younger colleagues, identify their concerns, teach them the fundamentals, and pass on the technology I have cultivated for 40 years, the ability to sense danger, and the judgment capability and courage required to consider and resolve problems on your own.

Promotion of Diversity Management

We recognize that the strength of JR East Group lies with the diversified viewpoints and differences in values that reflect gender and other attributes, experience and skills possessed by employees and others working at the JR East Group.
While not only specific employees but also all generations from young persons to veteran employees work together in mutual cooperation, we promote "diversity management" with an aim to create a company group where such diversified personnel can exert their capabilities to the fullest. We make an recruitment plan for each fiscal year and aim to hire People as planned while forecasting the number of employees required for our services in the future, and hiring and developing our talented human resources.

■Efforts on globalization of corporate culture

In addition to the overseas study program for obtaining MBA, etc. (about 10 persons travel overseas every year) which we have been offering for some time, we have an "overseas experience program", in which employees are dispatched to various cities in the world (including non-English speaking countries) for three months to experience local culture, mainly through learning the language while in a homestay or at other facilities.

OJT trainees (Myanmar)

Due to strong demand from employees for this program, in FY2019 we are planning to dispatch 150 people abroad, which is 50% more than the previous fiscal year.
There is also our "overseas railway consulting OJT training program" (for around 30 people), in which employees participate in an overseas railway consulting project centering on Japan International Consultants for Transportation Co., Ltd., which is our group company, for about three months. Other programs include overseas training (for about 500 people) taking place mostly in Southeast Asia, and altogether more than 600 employees are provided with opportunities for overseas experience every year. Many front-line employees participate in these overseas studies and trainings with the motivation. As an endeavor to improve the language skills of our employees, we encourage them to take the TOEIC® test at the company's expense (once a year). Each year, more than 4,000 employees take the test.
In addition, with a view to developing our business overseas, we are striving to recruit global personnel irrespective of their nationality. At present, we have around 50 employees whose nationality is not Japanese.

TICKET TO TOMORROW

A Special Ticket from Today to the Future

Assistant Manager, Hachioji Electric Power Technology Center, Hachioji Branch Office

After joining JR East, I mostly worked at electrical power workplaces in the Hachioji area, but in 2012, I applied to the overseas OJT training program and was assigned to a subway project in Egypt. After that, I spent two and half years working abroad in Thailand in order to set up a maintenance company for the Purple Line.
In Thailand, I mainly established the organization for the electrical power department, was involved in recruitment of local personnel, and instructed on electrical equipment maintenance. Through my work overseas, I gained a renewed awareness of the JR East Group's strengths: the precision and safety of our railway operations, the links between our employees, and our wealth of experience.
Going forward, I will keep working hard on railway equipment maintenance in order to provide a basis for promoting the excellence of Japanese railways around the world. And I will devote particular effort to developing the next generation of employees to ensure that everyone can continue to use our railways with peace of mind into the future.

■Promoting Involvement of Female Employees

JR East Group is supported by the power of each single employee. The fundamental attitude of JR East for its human resources lies in its wish to recruit employees chiefly based on their personal character and real ability, foster them taking sufficient time, and let them show off their abilities. Among the measures to accomplish this with regard to promotions participation by female employees, as many employees are working under an irregular work schedule, we have treated involvement of female employees as a key test for diversity and have been strongly pursuing it with focused efforts. As a result of various measures to expand the positions available to women, including appointment as train crew, in order to realize gender equality, all positions now have working female employees. As we want to prolong the careers of female employees, we will swiftly implement necessary measures that develop personnel capable of playing an active role in management going forward. Specifically, we have set the following targets for each stage of "employment," "development" and "appointment."

JR East was certified as an "Eruboshi" company (the highest rank, Grade 3) from the Ministry of Health, Labour and Welfare based on the Act of Promotion of Women's Participation and Advancement in the Workplace.

○Targets for promoting involvement of female employees

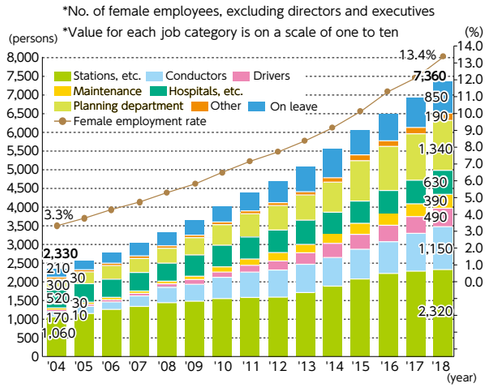
・Aim for a female new graduate employment rate of over 30% by the end of FY2019.
Of the recruited, aim for 40% in the rate of female employees who wish to become train crew in the future.
・Develop an environment where diversified working styles are accepted and all employees can continue working with enthusiasm.
・Aim for a female manager rate of 5% by the end of FY2019.

	Target by the end of FY 2019	Result (as of April 1, 2018)
Female new graduate employment rate	Over 30%	30.8% (570 persons)
Rate of female employees who wish to become train crew among new graduates employed	40%	40.9% (317 persons)
Female manager rate	5%	4.7% (501 persons)

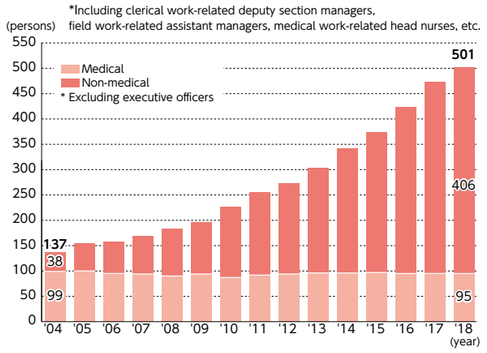
The number of female employees occupying important positions such as general managers at the head office and branch offices, supervisors of facilities in the field (station managers, etc.), and directors of group companies is on the rise. As of the end of June 2018, we have appointed one female outside director and three executive officers.

Rate of female employees out of all employees	13.4% (7,364 persons)
Rate of female executives in directors/ executive officers	Approx. 7% (4 persons)

[Expansion of Employment Opportunities for Female Employees]



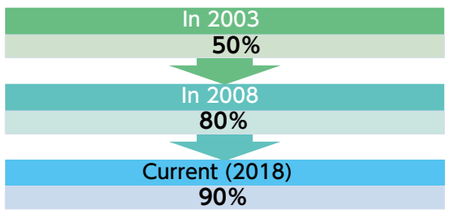
[Changes in Number of Female Managers Over Time]



[Average length of service]

	Overall	Male	Female
Average length of service	19.9 years	21.5 years	10.0 years

[Female employee retention rate 10 years after joining JR East]



■General Business Operator Action Plan

Next-generation certified logo ("Kurumin")

JR East has formulated "general business operator action plans" in line with the Act of Promotion of Women's Participation and Advancement in the Workplace and the "4th phase general business operator action plan" based on the Law for Measures to Support the Development of the Next Generation.
Duration: April 2016– March 2019
In November 2008, August 2012 and in January 2018, we were certified by the Minister of Health, Labour and Welfare as a company supporting the upbringing of the next-generation of children.

■Initiatives to Promote Understanding of LGBT Employees

With the aim of promoting understanding of LGBT employees, we are undertaking initiatives based on the following approaches:
1) Understanding sexual minorities
2) Changing systems and conventional standards
3) Raising awareness and transforming perceptions
Specifically, through various training courses and seminars aimed at executives, employees, Group companies, etc., we are conducting educational activities to provide a deeper understanding of sexual minorities (LGBT). Moreover, in October 2017, we included a section on LGBT in the Compliance Action Plan Handbook and educated all employees about it. These initiatives have received positive feedback, and JR East was awarded the highest rating of "Gold" in the 2017 PRIDE Index (an index evaluating LGBT initiatives by companies and organizations).
We are also enhancing our systems. In April 2018, our HR system and benefits program were updated to recognize same-sex partners of LGBT employees.

■Diversity promotion with the entire JR East Group working as one

We are addressing measures to establish corporate culture in which all people working in the JR East Group will mutually recognize diversity, under the theme, "Creating sense of unity" in the entire JR East Group. In addition, we have provided information for the purpose of deepening each company's endeavors in future, by holding in December 2017 the "JR East Diversity Forum," through which successful examples of each Group company were shared by all companies, and other events.
Moreover, since 2010, we have also been implementing networking activities in the respective organizations in which we discuss issues such as "diversity" and "work-life balance" via cross-organizational connections that transcend individual workplaces and job categories.

■Employing Persons with Disabilities

As of June 2018, 2.56% of our workforce consisted of employees with disabilities. These members of our staff work alongside other employees in a broad range of positions. We further increased our ability to employ people with disabilities in April 2008, when we established JR East Green Partners Co., Ltd. which was charged with the task of promoting their employment and helping us meet our social responsibility to improve the work environment for such employees.

JR East Green Partners Co., Ltd.

JR East Green Partners, a special JR East subsidiary, was started in April 2009 and charged with the task of overall management of uniforms used in JR East. Since then, the subsidiary has begun additional business such as printing, tree planting maintenance and management, and collecting, delivery and sorting of business items in our continued efforts to expand work opportunities for people with disabilities.
In addition to employing people with disabilities, JR East Green Partners now cooperates with support organizations and special support schools and provides work training opportunities for disabled persons wishing to secure corporate positions. By carrying out a broad range of activities, the company supports the entire JR East Group in the fulfillment of its social responsibilities.

Uniform sorting

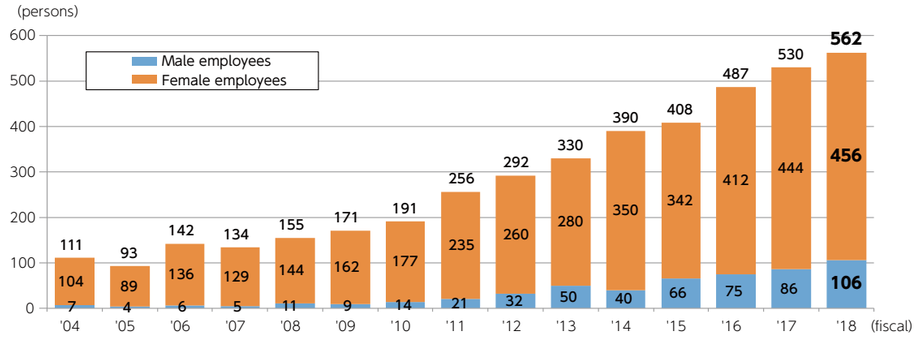
Plant maintenance in collaboration with local communities

■Various systems aiming to realize work-life balance

Believing that achieving a healthy work-life balance will produce a synergistic effect, JR East is proceeding with various initiatives such as revamping its systems.
In order to address working irregular hours, we have introduced initiatives such as "shorter working hours" and "fewer working days." Furthermore, as of April 2018, we had opened eight workplace daycare facilities that can provide 24-hour childcare, and we plan to open more in the future.
In April 2018, we improved the "banked leave system" for accumulating paid leave that would have been forfeited by increasing the number of reasons for which it can be applied and the number of days that may be accumulated. The system has been revised so that leave may be taken for reasons such as child care, nursing care, medical examinations, etc. Also, in order to dispel gender role stereotypes by encouraging male employees' involvement in child care, we have newly introduced "spousal childbirth leave." These initiatives have greatly expanded employees' options with regard to working while raising a child or providing nursing care. More than 100 male employees took childcare leave during FY2018, and approximately 20% of all employees taking childcare leave were men.
We are also providing support through activities such as seminars for supporting the achievement of balanced work and home life. As a result, our employee retention rate is steadily growing.

A seminar for supporting the achievement of balanced work and home life (childcare)

[Number of employees taking childcare leave]



TICKET TO TOMORROW Creating a work environment that facilitates taking childcare leave

Assistant Manager, Hachinohe Maintenance Center, Morioka Signal and Telecommunication Technology Center, Morioka Branch Office

When I took childcare leave, I was a member of the Signalling and Communications Section in the Facilities Department at the Morioka Branch Office, where I was involved in process management and ordering for various construction projects.
At that time, since I was entrusted with important work, it actually required quite a lot of courage for me to apply for childcare leave. However, when I discussed it with my supervisor, senior colleagues, and other co-workers, they encouraged me, saying, "Work is something you can leave to us. Taking care of your family is something only you can do."
Today, although my workplace has changed as I became a manager, I believe that encouraging subordinates who need to take child care leave will be the repayment. I am therefore striving not only to thoroughly manage my team's work but also to develop a system that enables work to be surely passed between employees.

■Promotion of "Renovation of way of working"

The JR East Group views "renovation of way of working" as follows:

・"Advancement of our work" by improving productivity through work reform and making employees focus on "creative roles that only humans can do".

・Achieve sustained growth for both employees and the Group through fostering an open corporate culture and creating rewarding work for all employees in the Group by "expanding the range of fields for career development".

・Achieve happiness of the Group's employees and their families through making them have "a sense of achievement and satisfaction in their work" and "improving their working conditions".

In order to achieve the future sustainable development of the JR East Group in alignment with this vision, we believe it is necessary to urgently move forward in a time conscious manner with measures relating to the issue of "work reforms and productivity improvements" based on technological innovation and the promotion of diversity. In the Planning Department in particular, where there is a tendency to work long hours, we are aiming to improve productivity by using RPA to streamline tasks and by realizing a flexible work style based on work style reforms such as telecommuting, and office innovations, in order to address the issue of long working hours and make employees' work more rewarding.

*RPA is the abbreviation of Robotic Process Automation. The aim is to have robots automate the work process.

■Elder Employee System

As a means of enabling retired employees to enjoy more stable life-planning until they reach the age when they start receiving their full pension and to promote HR development and technology succession by leveraging these employees' individual knowledge and skills at Group companies, we established an Elder Employee System in FY2009.

During this time of major upheaval in the environment surrounding our company, in order for the JR East Group to achieve sustained growth, it is essential that we ensure that the younger generation inherits fundamental technical skills and expertise from our veteran employees.

Beginning in FY2019, with the aim of applying the expertise possessed by retired employees not just at our Group companies but also in areas such as business operations, HR development, and further technology succession at JR East, we have expanded the scope of the work done by elder employees and also partially revised their working conditions from the standpoint of making their work more rewarding.

■Consultation Desk for Diversity

In February 2017, we opened the "Consultation Desk for Diversity" as a system for providing individual consultations including those about career support and support for the achievement of balanced work and childcare and nursing to employees who need them, including those with disabilities, those having foreign nationalities, and sexual minorities (LGBT).

To Improve Working Environment

■Health Management

At JR East, based on our belief that employees' well-being is fundamental to our business, we are implementing various measures to maintain and improve their health, particularly through dedicated departments at the head office and branch offices, the JR East Health Promotion Center, JR Sendai Hospital Health Management Center, and seven other railway staff health checkup centers.

Disease Prevention

・Comprehensive medical examinations (for employees and spouses aged 35 or over)

・Influenza vaccination (FY2018: vaccination rate of 77.2%)

・Breast cancer and uterus cancer examinations (for female employees under 35; participation rate in FY2018: 32.8%)

・Special health guidance (for employees aged 40 or over; implementation rate in FY2017: 43.9%)

Mental Health Care

・Stress checks (for all employees; participation rate in FY2018: 78.9%)

・Distribution of "Kokorono Self-care" booklet (to all employees)

・Conducting mental health-related training (for onsite supervisors)

Health education and fostering awareness

・Providing training materials such as health-related e-learning (for managers)

・Conducting education and training for new employees and others of the young generation

・Providing health information via our internal magazine and intranet

In addition, if an employee requires a medical examination at a health care facility, we support their health needs in collaboration with two hospitals under our management, the JR Tokyo General Hospital and JR Sendai Hospital.

These initiatives have received positive feedback, resulting in JR East being designated as a Company with Excellent Health Management (White 500), a joint initiative of the Ministry of Economy, Trade and Industry and the Nippon Kenko Kaigi (Japan Health Conference), in both 2017 and 2018.

2018 健康経営優良法人 Health and productivity ホワイト500

■Human Rights Enlightenment

In order to clarify our system for educations our employees on the necessity for enhanced human rights, we have established a human rights enlightenment promotion committee at the head office, which is working to improve awareness of human rights by holding seminars on this topic and training for employees who are in charge of human rights promotion. In addition, we are striving to establish an inclusive corporate culture for everyone.

Furthermore, we are undertaking initiatives that encourage employees and their families to think about human rights, such as articles on everyday human rights issues in our internal magazine and calling for human rights promotion slogans.

We have also joined the Industrial Federation for Human Rights, Tokyo, and are actively involved in external activities as well, such as information exchange and mutual education initiatives with other member companies, and apply the information we obtain to our internal activities.

Human Rights Seminar

■Company Sports Initiatives

Company sports teams such as the JR East Hardball Club (Tokyo, Miyagi), JR East Running Team (Tokyo), JR East Women's Judo Club (Tokyo), and JR East Basketball Club (Akita) are active while based in their respective regions and actively contributing to their communities by organizing initiatives such as sports classes for local elementary schools.

Judo class given by Women's Judo Club

"Basket Clinic" held by Peckers, the basket ball club of Akita Branch Office

TICKET TO TOMORROW Promoting Health Measures

Chief Nurse, JR East Health Promotion Center

At the JR East Health Promotion Center, we provide special health guidance (Smart Shift courses) for employees deemed to have metabolic syndrome or be at high risk of developing it, based on the results of routine medical checks or comprehensive medical examinations.

Special health guidance was designated in the Act on Assurance of Medical Care for Elderly People in 2008, and we have adopted it as one of our measures for promoting health.

It is offered on an ongoing basis for half a year. Seeing participating employees making an active effort to improve their health is inspiring for staff such as myself, who feel a sense of reward as we are providing health guidance.

Employees' well-being is an asset for the company. Going forward, in order to support effective and enjoyable health improvement for employees, I will keep working to develop customized health guidance suited to the needs of each individual by emphasizing their own individuality.

Environment

CONTENTS

Basic Concept for Ecology Promotional Activities

■Basic philosophy and basic policies for promoting ecological activities(established May 1992, partially revised in September 2012)

The JR East Group formalized its basic philosophy and policies in 1992 and established activity guidelines in 1996.
Our specific environmental protection measures are based on these.

【Basic philosophy】

• The entire JR East Group, as a member of society, will diligently strive to balance global environmental protection with our business activities.

【Basic policies】

• To contribute to creating a global environment for the future through our business activities for our customers and local communities.
• To develop and provide the technology needed to protect the global environment.
• To maintain our concern for the global environment and raise global environmental awareness of our employees.

■Activity guidelines for the promotion of ecological activities (established March 1996 and partially revised in February 1998 and September 2012)

1. While working to reduce total energy consumption by enhancing energy efficiency and introducing cleaner forms of energy, we endeavor to reduce CO_2 emissions, a contributor to global warming.
2. We ensure the proper management and processing of environmental pollutants and ozone-depleting substances, in compliance with laws and regulations. Moreover, we do our best to reduce generation of such substances and adopt environmentally responsible substitutes as much as possible.
3. We ensure the appropriate processing of various types of waste generated at our offices, establishments, stations, trains, and other locations. We strive to recycle waste and to reduce its generation, and to use more recycled and resource-saving products to minimize the burden we place on the environment.
4. We respect the natural environment, which nurtures diversified life, and endeavor to reduce noise and vibrations caused by train operations, thus achieving harmony with the environment along railway lines.
5. We are looking carefully at the impact of railways on the environment once again, in order to enhance the environmental superiority of railways and to spread that awareness throughout the world.

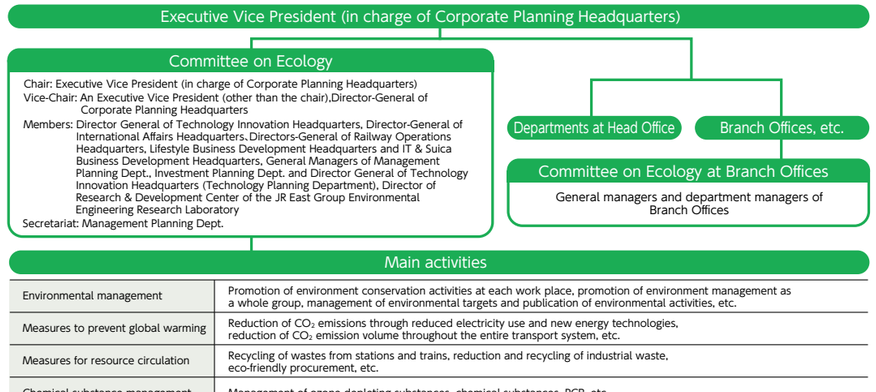
■Committee on Ecology

Established in 1992 as a top management organization to promote environmental activities and chaired by the executive vice president of JR East, the Committee on Ecology Promotion surveys the environmental impact of business activities, sets environment-related targets, implements environmental conservation activities and monitors progress toward target achievements, etc. which is also examined by top management. Furthermore, the "Environmental Management Office" was established in our Management Planning Dept., and oversees environmental management for the entire JR East Group.

■Compliance with environmental laws and regulations

There were no major violations of environment-related laws and regulations resulting in penalties in FY2018.

[Organizational structure to promote environmental management (as of July 2018)]



Environmental Management

Management of Environmental Goals

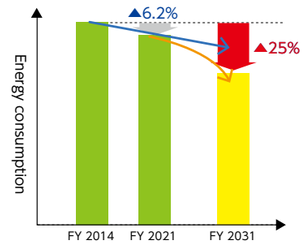
■FY2031 goals

With the 21st Conference of the Parties to the United Nations Framework Convention on Climate Change (COP21) held in December 2015 adopting the Paris Agreement which will be a new international framework for global warming countermeasures after 2020, JR East has set environmental goals to be achieved in FY2031.

Category of environmental conservation activities	Performance indicators	Targets to be met by FY2031
Measures to prevent global warming	Energy consumption from railway business activities	25% reduction (compared to FY2014)
	CO_2 emission volume from railway operations	40% reduction (compared to FY2014)

○25% reduction of energy consumption for railway operations (compared to FY2014)

Towards realizing the FY2031 goals, we pursue achieving a reduction of 25% energy consumption for railway operations (compared to FY2014) by accelerating the reduction pace to FY2021 through activities such as installation of power storage facilities, using renewable energy, and increasing the introduction of E235 series trains.
In addition, we aim to achieve further system innovation such as enabling energy-saving automated operation.



○40% reduction of CO_2 emission volume from railway operations (compared to FY2014)

Based on the assumption that power company emission factors will be 0.37 kg-CO_2/kWh in FY2031, we have set goals on CO_2 emission volume, and a 25% reduction in energy consumption.

■State of progress toward FY2021 goals

○**FY2021 Goals**

Since 1996, JR East has been conducting environmental conservation activities with a focus on specific goals.

Note: External Assurance on environmental performance and environmental accounting data

KPMG AZSA Sustainability Co., Ltd. has been engaged to provide external assurance on a set of selected environmental performance and environmental accounting indicators so that the reliability of the data is ensured. The particular indicators that are assured are marked with a ☆ for clarity.

Figures in parentheses are in comparison to FY2014

Category of environmental conservation activities	Performance indicators	Unit	Reference value (FY2014)	FY2021 goal	FY2018 result
Measures to prevent global warming	Energy consumption from railway business activities	Billions of MJ	51.7	48.5 (6.2% reduction)	50.6☆ (2.1% reduction)
	Electricity consumption for train operation (Shinkansen lines)	kWh/car-km	2.49	2.36 (5.1% reduction)	2.44☆ (1.9% reduction)
	Electricity consumption for train operation (conventional lines)	kWh/car-km	1.59	1.46 (8.3% reduction)	1.50☆ (5.6% reduction)
	Energy consumption at branch offices, etc.	kL/m²	0.0407	0.0366 (10.0% reduction)	0.0379☆ (6.9% reduction)

Progress of Environmental Measures

Category of environmental conservation activities	Performance indicators	FY2021 goal	FY2018 result
Measures to prevent global warming	Implementation of more ecoste Model Stations	Total of 12 Stations	Total of 9 Stations
	Switching Platform and Concourse Lighting to LEDs	Total of 36 thousand units (reduction of 83 million MJ)	Total of 39 thousand units (reduction of 84 million MJ)
	Improving Efficiency of Large-scale Air-conditioning Systems	Total of 10 Locations (reduction of 82 million MJ)	Total of 7 Locations (reduction of 61 million MJ)

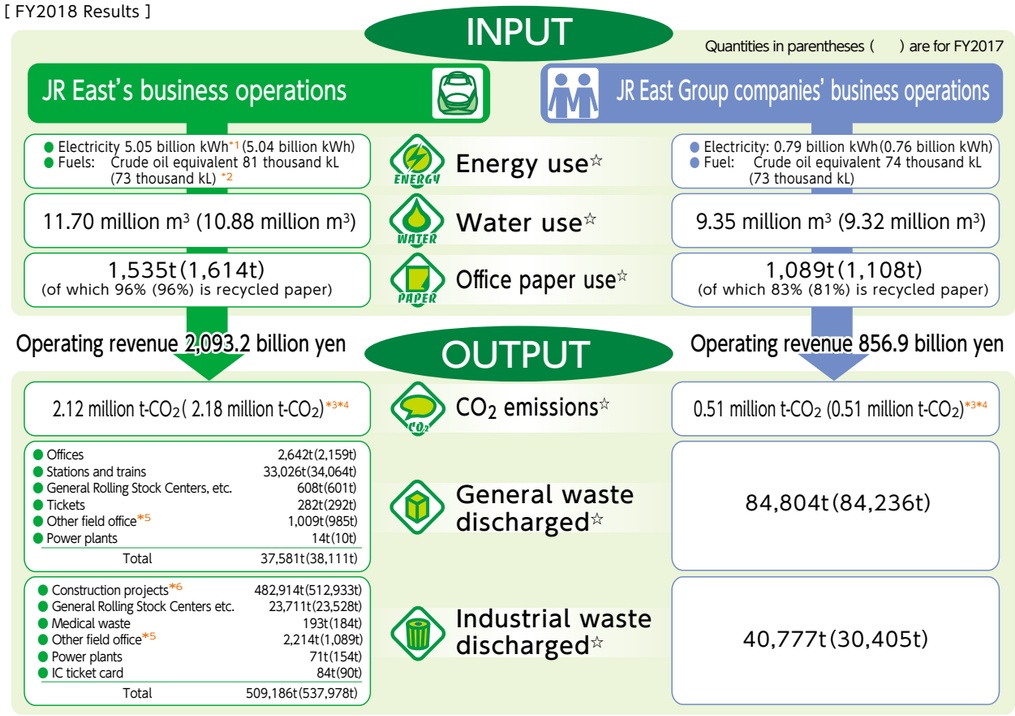
Annual Targets through FY2021

Category of environmental conservation activities	Performance indicators	Goal	FY2018 result
Measures to prevent global warming	Reduction Rate of Energy Consumption Intensity of Each JR East Group Company	Every year 1% reduction in each group company	2.3% reduction by all group companies
Measures for resource circulation	Recycling rate for waste generated at stations and on trains	94%	94%☆
	Recycling rate for waste generated at General Rolling Stock Centers, etc.	96%	95%☆
	Recycling rate for waste generated in facility construction projects.	96%	94%☆
	Implementation Rate of Recycling by Group companies	100%	100%
Environmental management	Setting of numeric targets by Each JR East Group Company	Targets to be revised continually	Established

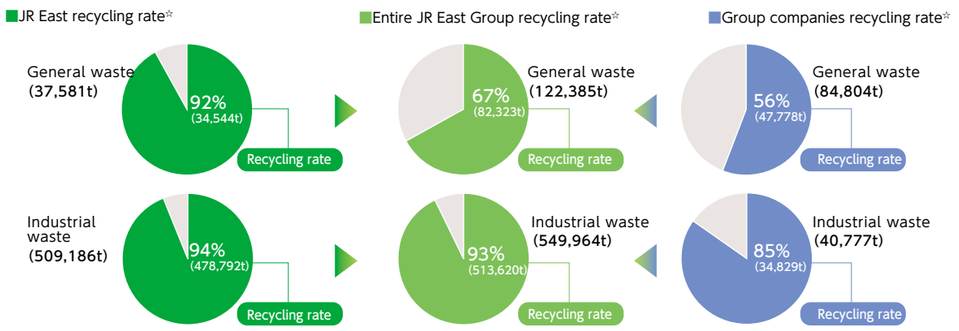
Targets for Group companies

■JR East Group's environmental impact

[FY2018 Results]



*1 Electricity: Both electricity generated in JR East's power plants and used internally and electricity purchased from electric companies are included. Please refer to the "JR East Energy flow map" on page 87 for details about electricity generation and use. *2 Fuels: Natural gas and other fuels used for generating electricity in JR East's thermal power plants are not included. *3 CO_2 emissions by Scope: Scope 1 emissions of the entire Group are 1.52 million tons CO_2☆ and Scope 2 emissions 1.65 million tons CO_2☆. (please see page 88) *4 CO_2 emissions attributable to electricity purchased from external suppliers are calculated based on the adjusted emissions coefficient. *5 Other field office: Technical centers, equipment maintenance centers, and other locations such as train crew depots. *6 Construction projects: Waste generated by our construction projects, but for which contractors legally become the waste-discharging entities, is included in industrial waste.



Definition of waste disposal

- Waste includes salable waste.
- Recycling includes thermal recycling* where general waste is treated at incineration plants etc. and industrial waste is incinerated as intermediate treatment for heat recovery.

* Thermal recycling is a recycling method in which the heat arising from the incineration of waste is used to create steam and hot water, which in turn are used to generate electricity and for hot-water supply.

Environmental Accounting and Environmental Management Indicators

In FY2018, our environmental conservation costs amounted to approximately 13.5 billion yen in investments and 20.6 billion yen in expenses. By introducing new type of cars, we estimate we will reduce CO_2 emissions by about 120 thousand tons per year.
JR East has its own Environmental Management Indicator to assess the relation between our business activities and environmental impacts. These are calculated by dividing CO_2 emissions, which are a major factor in our environmental impacts, by operating profits, which represent our economic value added. A smaller value of the indicator means that we are making a smaller impact on the environment to create the same economic value added. For FY2018 the value of the indicator was 5.37t- CO_2 /million yen, compared to 9.45t- CO_2 /million yen for FY1991.

[Environmental accounting for fiscal year ended March 2018☆]

( ):FY2017

Category	Environmental conservation costs (billion yen)		Environmental conservation benefits in relation to environmental targets		Economic benefit of environmental conservation activities (billion yen)
	Investments	Expenses			
Environmental conservation (pollution prevention) activities along railway lines	5.31(4.80)	12.07 (12.72)	—		—
Global environmental conservation activities	8.16 (10.88)	—	Energy consumption from railway business activities	50.6 billion MJ	10.24(12.82)
			Electricity used for railway operations per unit of transport volume	Shinkansen 2.44 kWh/car-km	
				Conventional Lines 1.50 kWh/car-km	
			Energy consumption per unit of floor area at branch offices, etc.	0.0379 kL/m²	
Resource circulation activities	—	6.46(5.64)	Recycling rate for waste generated at stations and on trains	94%	1.78(1.05)
			Recycling rate for waste generated at General Rolling Stock Centers, etc.	95%	
			Recycling rate for waste generated in construction projects	94%	
Environmental management	—	0.36(0.35)	—		—
Environmental research & development	—	1.70(1.62)	—		—
Social activities	—	0.03(0.03)	—		—
Total	13.47 (15.68)	20.62 (20.36)			12.02(13.87)

Notes
Capital investment for the period: 452.8 billion yen
Total R&D costs for the period: 18.1 billion yen (Consolidated)

The above table's relations up to with the table for Targets and Results is as follows:
"Environmental conservation activities along railway lines" = "Environmental activities along railway lines" and "Chemical substance management"
"Global environmental conservation activities" = "Measures to prevent global warming" and "Chemical substance management"
"Resource circulation activities" = "Measures for resource circulation"
"Environmental management" = "Environmental management" and "Environmental communication"
"Environmental research & development" = "Research & development"
"Social activities" = "Environmental communication"

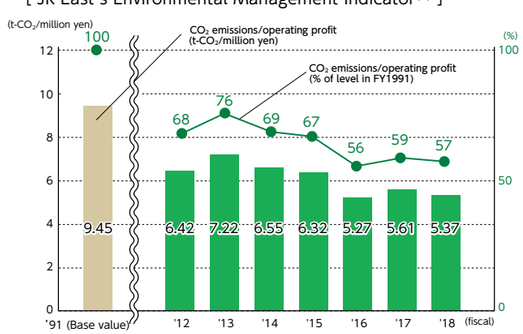
〈Notes on calculation of environmental conservation costs and benefits〉

Environmental conservation costs
○Data are for East Japan Railway Company only (i.e.,non-consolidated data) .
○Environmental conservation costs are mainly based on data available in the current management system.
○To date, we have declared the total amount of investments in energy-saving rolling stock, but starting from FY2016, we will not declare amounts corresponding to upgrades of aging rolling stock.
○Expenses do not include depreciation charges.
○In the costs for resource recycling activities, expenses for treating waste generated at stations and by trains are calculated by multiplying the allocations by the expenses for cleaning stations and train cars, based on a model for cleaning stations and trains.
○In the costs for resource recycling activities, the expenses for treating waste generated through construction projects are calculated by multiplying waste volume for FY2018 by standard unit costs for the type of waste in that region.

Environmental conservation benefit
○Environmental conservation benefits are calculated based on figures set as our environmental targets.
Economic benefit of environmental conservation activities
○Economic benefit of global environmental conservation activities is calculated by multiplying annual savings (estimates are used in some cases) in electricity and repair costs resulting from the introduction of energy-efficient trains by the expected useful life, to determine useful-life economic benefit.
○Income from the sales of waste generated at General Rolling Stock Centers and through construction projects is included in economic benefit of resource circulation activities.

$$\text{Environmental Management Indicator} = \frac{\text{Environmental Impacts}}{\text{Economic Value Added (EVA)}} = \frac{\text{CO}_2\text{ emissions (t-CO}_2\text{)}}{\text{Operating profit (million yen)}}$$

[JR East's Environmental Management Indicator☆]



Progress of Environmental Conservation Activities at Each Workplace

■Creating an environment-conscious culture

JR East believes it is important to promote environmental activities with clear goals established for the entire JR East Group, and to have every employee actively involved. We are expanding the scale of our environmental activities by promoting "JR East Eco Activities" at each work place, developing leaders through environmental education, and sharing recognition of outstanding environmental efforts through the presentation of awards.

TICKET TO TOMORROW

Eco-Friendly Exhibit on the Frontlines

Chief Conductor, Yokohama Transportation Depot, Yokohama Branch Office,

At the Eco-Friendly Promotion Committee where I work as a leader, we operate under the mantra, "Let's actively engage in eco-friendly activities that everyone can do! Tackling eco together."
In FY 2018, we held an eco-friendly exhibit inside our workplace to raise our employee's eco-consciousness, exhibiting slippers made of newspapers, which are useful in disasters, eco-friendly scrubbing brushes made of acrylic yarn, etc. An employee who participated gave a favorable review saying, "I physically felt closer to eco," and it was a good opportunity to entrench eco-consciousness.
In the future, we hope to utilize other eco-friendly exhibits and events such as eco-cap art, which uses the bottle caps of plastic bottles, to not only engage our employees but also allow our clients and people in the community to enjoy eco-friendly activities.

■Environmental education & training system

For effective environmental management, it is essential that all employees have appropriate knowledge on environmental issues. We provide environmental education lectures to our employees in training in order to develop environmental activists in the local organization of JR East and group companies.

Education of environmental-activity promoters at each organization of JR East and group companies

「Training of those responsible for the environment」

- Persons trained: those responsible for the environment at local organizations, etc.
- Objective: improvement of ability in environment-related matters as trainers to field offices, etc.
- Number of participants: 13

「Environment countermeasures of Shinkansen practical training」

- Persons trained: those responsible for the environment at each Branch Office
- Objectives: learning of basic knowledge about relevant rules and regulations for noise and vibration
- Number of participants: 10

「JR East Group Environmental Management Promotion Conference」

- Persons participating: those responsible for the environment at all group companies (twice a year)
- Objective: promotion of environmental management for the entire JR East Group

Implementation of training and lectures on the environment in Branch Offices

■Internal environmental audits

At our General Rolling Stock Centers and others which obtained ISO 14001 certification, in-house auditors are trained through external training programs, and conduct routine audits at the centers in order to evaluate environmental activities.

[ISO14001-certified facilities]

Certified facilities	Year and month of certification
〈JR East〉	
Kawasaki Thermal Power Plant	Mar-01
Tokyo General Rolling Stock Center	Mar-01
Omiya General Rolling Stock Center	Feb-02
Shinkansen General Rolling Stock Center	Nov-02
Koriyama General Rolling Stock Center	Dec-03
Nagano General Rolling Stock Center	Feb-05
Akita General Rolling Stock Center	Jul-05

Certified facilities	Year and month of certification
〈Group companies〉	
East Japan Eco Access Co., Ltd.	Nov-99
Nippon Restaurant Enterprise Co., Ltd. (CK headquarters)	Sep-02
JR East Mechatronics Co., Ltd.	Mar-08
East Japan Marketing & Communications, Inc.	Aug-08
JR East Railcar Technology & Maintenance Co., LTD.	Dec-10
Japan Transport Engineering Company	Oct-14

■Development of Environmental Education by Delivering Lectures on Request

In FY2010, to contribute to the development of a sustainable society, JR East initiated environmental education programs for children to understand environmental issues and their relationship to society. JR East employees working in each area are visiting neighboring schools for the programs. In FY2018, the program was implemented at 80 schools, primarily elementary schools, in the JR East area. As these initiatives were well-received, we received an Excellence Award at the Career Education Awards sponsored by the Ministry of Economy, Trade and Industry in FY2018.

Delivering Lectures

■Initiatives for: environmental activities of the Shinanogawa Power plant

In July 2016, we opened the "Citizen house; Ojiya Shinanogawa Hydroelectric Plant House" as a part of popularization activities for the Shinanogawa Hydraulic Power Plant to give the opportunity to learn about the mechanism of hydraulic power generation which is a source of clean energy. We have been popular among the people of the local community, and in December 2017, the number of visitors reached 100,000.
Also that, we release juvenile salmon as a part of initiatives to harmonize water usage and the river environment of the Shinanogawa River with the people of the local community.

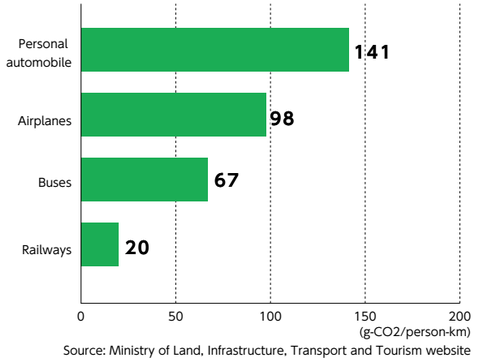
Ojiya Shinanogawa Hydroelectric Plant House

Measures to Prevent Global Warming

■Energy conservation and CO_2 reduction

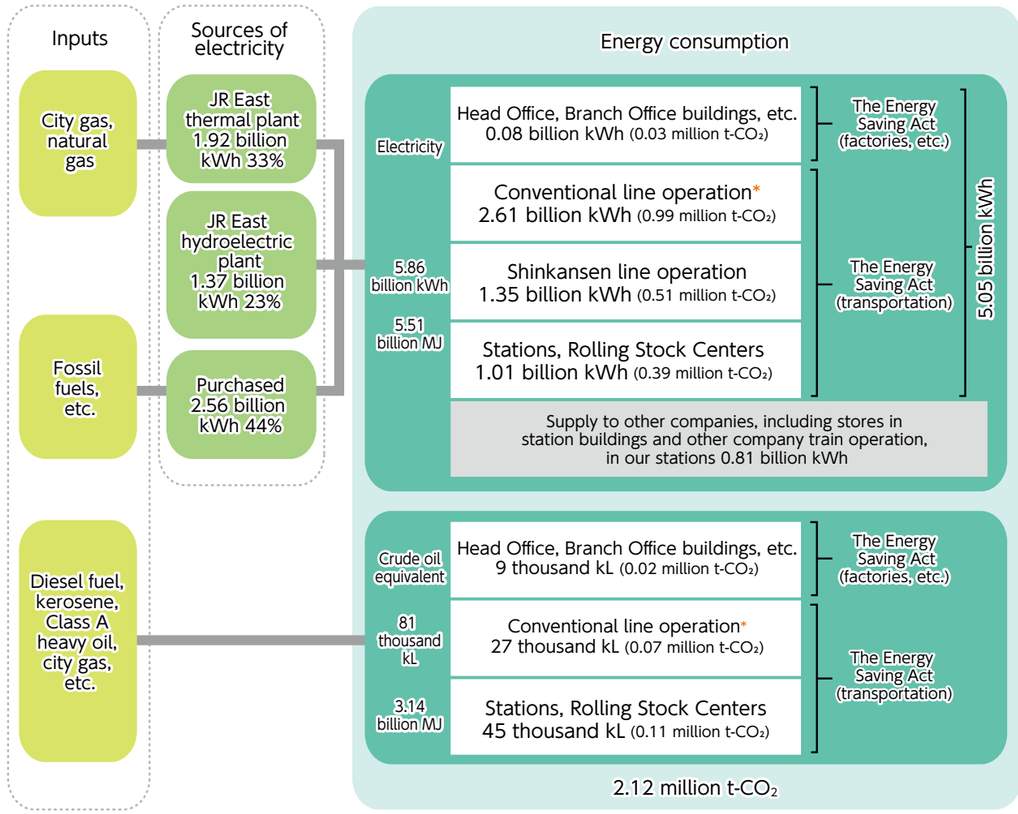
Railways are an environmentally friendly mode of transportation that accounts for a low share of the total CO_2 emissions produced by the transportation sector relative to their share of transportation volume.
However, JR East consumes around 5 billion kWh of power each year, which is a massive amount corresponding to approximately 1.4 million households.
We will therefore strive to save energy for train operation, which accounts for about 80% of our total energy consumption, and furthermore, it will be necessary to conduct energy saving activities even in offices and others.
The energy flow map shows the flow of energy from input through consumption. Power supplied by our own power plants and power companies is used for train operation and for station and office lighting and air-conditioning. Diesel fuel and kerosene are also used to operate diesel trains and stations and office air-conditioning.

[CO_2 emissions per transportation amount (FY2017 passengers)]



Source: Ministry of Land, Infrastructure, Transport and Tourism website

[JR East Energy flow map]☆



(CO_2 emissions are the amount calculated with' adjusted' emission coefficients)

* Including BRT (Bus Rapid Transit)

●Boundary

Though, in principle, the boundary for energy consumption is only JR East, it nonetheless includes energy consumption for the applicable operations of the companies with whom we entrust station operations. On the other hand, the energy consumption of shops on station premise which are operated by group companies is not included in the boundary. Thus, we match the boundary for the energy consumption for the entire JR East business with that of transportation, plants and others defined by the Act on the Rational Use of Energy (the Energy Saving Act).

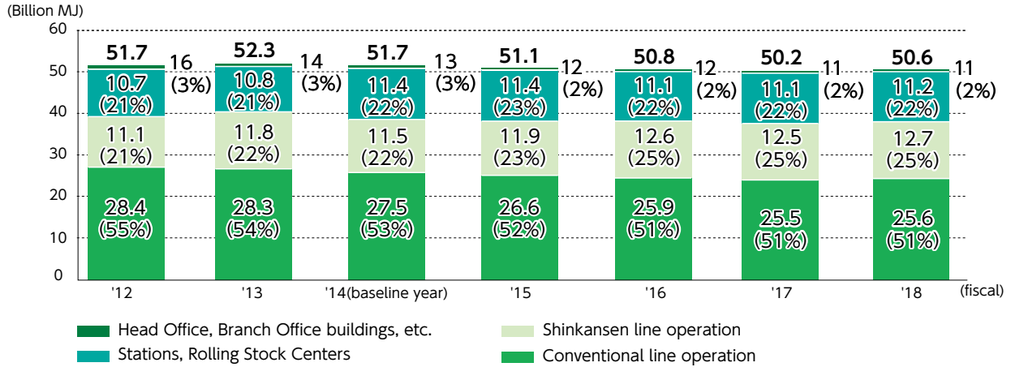
●Calculation method

Energy consumption was calculated by the method defined by the Energy Saving Act.

●Hydraulic power generated by JR East

The foregoing energy consumption is calculated by the idea of the Energy Saving Act, but hydroelective power generated by JR East is calculated by multiplying by 9.76MJ/kWh. For hydroelective power generated by JR East, reports required by the Energy Saving Act are reported by the 0 MJ.

[Composition of energy consumption by JR East]☆



■Trends in CO_2 Emissions of JR East☆

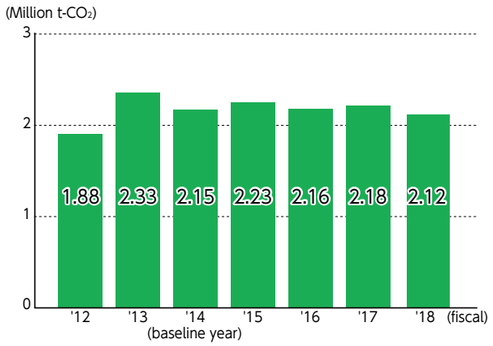
Our CO_2 emissions in FY2018 totaled 2.12 million tons, a decrease of 30 thousand tons compared to FY2014 (the baseline year). This is due to an improvement of the CO_2 emission coefficients of JR East's electric power due to an efficient operation of its Kawasaki Thermal Power Plant and other factors. In this report, we are also reporting CO_2 emissions in Scopes 1 and 2 in accordance with the definition of the GHG Protocol*.

We are moving forward with activities to reduce all CO_2 emissions resulting from our business activities by calculating CO_2 emissions* in Scope 3 and identifying supply chain emissions.

*GHG protocol The standard for calculation and reporting of greenhouse gas emission which was formulated by the organization which was established mainly by the WRI (World Resources Institute) and WBCSD (World Business Council for Sustainable Development)

*Supply chain CO_2 emission Sum of Scope 1, 2 and 3 which is the CO_2 emissions resulting from the whole organization activities of business operations such as raw material procurement, production, capital investment goods, business trips, commuting and others.

[Trends in JR East's total CO_2 emissions]



●Boundary

The boundary of CO_2 emissions is the same as that for the energy consumption described in p. 87.

●Calculation Method

CO_2 emissions have been calculated based on the method specified in the Act on Promotion of Global Warming Countermeasures. However, the CO_2 emissions attributable to the purchased electricity are calculated, including those from the electricity used for rail transport, by using adjusted emission coefficients for each electric power company. The CO_2 emissions in the FY2018 calculated by using actual emission coefficient is 2.15 million tons CO_2, down 50 thousand tons CO_2 compared to the previous fiscal year.

Item	Scope 1	Scope 2
FY2018 Emission Volume	1.39 million tons CO_2	1.33 million tons CO_2

Scope 1…CO_2 emissions directly attributable to fuel consumed in the operation of diesel railcars and the operation of JR East's thermal electric power plant.

Scope 2…CO_2 emissions indirectly emitted from the use of electricity purchased from electric power companies.

Scope 3…CO_2 discharged by the other companies which are related to our business activities.

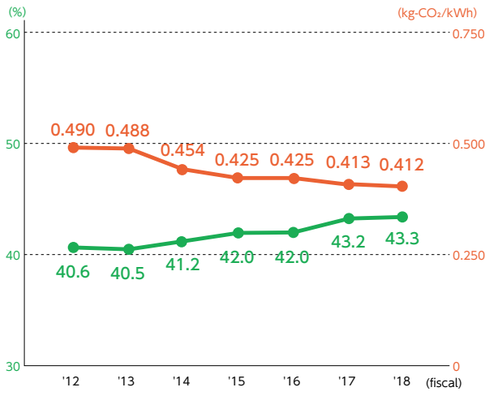
*The sum of the Scope 1 and Scope 2 emissions and the total CO_2 emissions do not match, since the former includes emissions associated with the production of electricity supplied to other companies.

■Thermal Power Plant of JR East

JR East operates a thermal power plant in Kawasaki City, Kanagawa Prefecture, with a total capacity of 741 thousand kW. The plant uses combined-cycle power generation units* with improved efficiency and switched fuel from oil to natural gas when the plant was renovated to reduce CO_2 emissions. Unit 1 is currently undergoing construction that will update it from kerosene to natural gas, targeting operation in 2021.

*A combined-cycle power generation unit is a power generation unit that combines gas turbines propelled by combustion of gas with steam turbines driven by steam from the exhaust heat.

[CO_2 emission factor and power generation efficiency at the JR East thermal power plant]☆



●Calculation method

CO_2 emissions from the thermal power plant of JR East are calculated based on the method stipulated in the Act on Promotion of Global Warming Countermeasures, and power generation efficiency is based on the method stipulated in the Energy Saving Act.

●CO_2 emission factor of all power generated by JR East (thermal power and hydraulic power)

Emission factor adjusted in FY2018 was 0.277 (kg-CO_2/kWh)

■Reducing energy consumed for train operations☆

We are putting into service more new-generation energy efficient railcars, with features such as regenerative brakes, which can convert kinetic energy during deceleration into electric energy, and Variable Voltage Variable Frequency (VVVF) inverters, which control motors without wasting electricity. By the end of March 2018, JR East had 12,160 energy-efficient railcars in operation. This accounts for 97.3% of our railcar fleet.

E235 series:
The Yamanote line was equipped with a state-of-the-art train information management system

E7 series:
The Hokuriku Shinkansen that incorporates the highest level of cutting-edge technology

E233 series:
VVVF inverter cars for commuter and suburban transportation

■Diesel-powered, electric-motor-driven hybrid railcars and the accumulator railcar train

The Kiha E200 type cars, which entered service on the Koumi Line in July 2007, are the world's first diesel-powered, electric-motor-driven hybrid railcars. Compared with the previous trains, fuel consumption rate has been reduced by about 10% and the noise level of the trains idling at stations and accelerating on departure has been lowered by 20–30 dB. Moreover, starting from October to December 2010, we began operating the HB-E300 Series, a new type of resort train equipped with a hybrid system similar to the Kiha E200 type, in the Nagano, Aomori and Akita areas, and in May 2015, we began operating HB-E210 Series cars on the Senseki-Tohoku Connecting Line. Additionally, as a new measure toward reduction of the environmental burden in non-electric zones, we are proceeding with the development of an accumulator system, which debuted in March 2014 with the EV-E301 ACCUM railcar train, put into service on the Karasuyama Line. The introduction of the EV-E301 has enabled an elimination of emissions, as well as a reduction in CO_2 emissions and noise associated with diesel engines. In March 2017 we started operation of the accumulator railcar train of the "EV-E801 series" which is designed for usage on the alternating current (AC) section between Akita station and Oga station.

EV-E801 series
Accumulator railcar train for use on alternating current (AC) section

■Promotion of proactively adopting LED lighting for all new cars

On our conventional lines, LED lighting has been introduced on new rolling stock manufactured since 2013.

For Shinkansen cars, LED lighting has been introduced on newly produced E5-series trains and E7-series trains.

At the end of March 2018, a little over 20% of cars owned by JR East, including newly manufactured cars and renovated cars, have LED lighting. We are determined to continue making efforts for further energy saving in railway operations.

LED railcar lighting

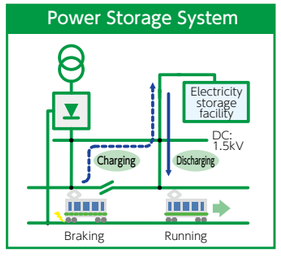
■Effective Use of Regenerative Power

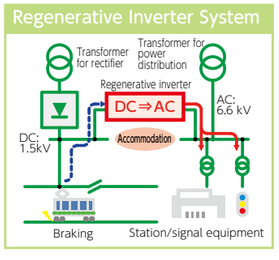
As a measure to reduce energy consumed from ground installations for train operation, we are proceeding with efforts to make more efficient use of regenerative power generated by trains when stopping.

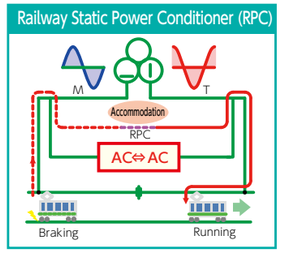
On direct current sections, we are working to introduce power storage systems that temporarily store regenerative power and use it when needed. We have introduced these systems starting with the Ome Line Haijima substation (lithium-ion battery) that entered use in 2013, which was followed by the Takasaki Line Okegawa substation (lithium-ion battery) and the Tohoku Main Line Kuki substation (nickel-metal hydride battery), and are working to introduce it at the Joban Line Kita-Senju substation. In addition, we are developing a superconductivity flywheel electricity storage system as a new medium to store electricity.

Moreover, we are proceeding with the introduction of regenerative inverter systems, which convert direct current regenerative power generated by rolling stock into alternating current power for use by station facilities, signal equipment, etc., at the Takasaki Line Fukiage substation and Keiyo Line Kajibashi substation.

Meanwhile, with regard to alternating current sections, we introduced a railway static power conditioner (RPC) that makes it possible to alternatively accommodate regenerative power generated on feeding sections that previously could not be used, at the Joban Line Ushiku sectioning post. It has been in use since 2015.







■Progress of introducing renewable energy

We have installed solar and wind power generators at stations and rolling stock centers, furthering our self-consumption (utilizing generated energy at our own facilities) initiatives. At some stations such as Tokyo Station, we have installed solar powers on top of platforms and on the roofs of stations, utilizing them for the station's facilities, etc. In addition, the electricity generated at the solar power generator installed inside the Keiyo Rolling Stock Center is used not only at the rolling stock center, but also to operate railways via our own distribution lines. With these initiatives, we self-consumed approximately 1.63 million kWh in FY2018.

For initiatives using the feed-in tariff (FIT) scheme for renewable energy, we have sequentially set up and started operating solar power generators known as mega solar power plants and large-scale wind power generators, and have generated approximately 18.2 million kWh of electricity in FY2018. We will continue to gradually introduce these generators. Moreover, regarding biomass power generation, we began the operation of the joint venture Hachinohe biomass power plant (output approximately 12 MW: Hachinohe City, Aomori Prefecture) in April 2018. For geothermal power generation, we are conducting a development study on geothermal resources in Shizukuishi-cho, Iwate Prefecture. In addition, in November 2017, Group company JR-East Energy Development Co., Ltd. started operating a joint venture with Tomioka-machi, Fukushima Prefecture, the Tomioka Revitalization Mega Solar Power Plant SAKURA (output approximately 30 MW). Going forward, we will continue to actively introduce and use renewable energy.

Wind

Between Michikawa and Shimohama on Uetsu Main Line
JR Akita Shimohama Wind Power Generation Station
Power generation output approx. 2 MW
(Began use in December 2016)

Solar light

Tomioka Revitalization Mega Solar Power Plant SAKURA
Power generation output Approx. 30 MW
(Began use in November 2017)

Biomass

Hachinohe biomass power plant
Power generation output Approx. 12 MW

Geothermal

Omatsukurayama southern region geothermal resource development survey
Surface study currently underway

TICKET TO TOMORROW

Fell, Use and Replant

Technical Director, Hachinohe Biomass Electric Power Co., Ltd.

While biomass power generation is a type of renewable energy that does not produce CO_2 like solar and wind power generation, it has an advantage in that it can stably generate electricity without the influence of natural conditions such as the weather.
At Hachinohe Biomass Power Generation, we conduct an initiative where branches, leaves, short pieces of lumber that are left behind at felling sites, bark that used to be processed as waste at sawmill factories, etc., are utilized as fuel. Moreover, combustion ash produced at the power plant is reused as a part of raw materials at cement factories. We resourcefully utilize our valuable forest assets.
We wish to achieve our mission to continue operating our facilities without trouble and contribute to global environment conservation and the revitalization of the local community through the cycle of "fell, use and replant."

■Development of the "Eco-station" model station

We are implementing "eco-stations" which introduce various environmental conservation activities into stations such as energy saving and renewable energy. By July 2018 we had completed the development of ten "Eco-station" model stations.
Our basic policy in developing these has been to incorporate "Ecomenu" green technologies based on to four pillars. Our goal is to establish 12 stations by 2020.

【Four pillars】

Saving energy: Promoting better energy-saving measures
Creating energy: Actively introducing renewable energy
Eco-consciousness: Developing facilities that enable customers to be eco-conscious
Environmental harmony: Creating a dynamic balance between people and the environment

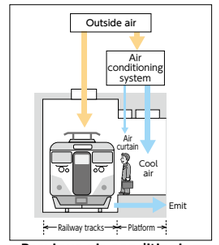
Oga Station

[Established Eco-station model stations (as of July 2018)]

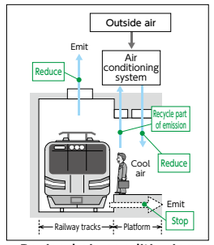
Station Name	Operation Start Date
Yotsuya	March 2012
Hiraizumi	June 2012
Kaihimmakuhari	September 2013
Yumoto	March 2015
Fukushima	April 2015
Urawa	March 2017
Niitsu	April 2017
Musashi-Mizonokuchi	April 2017
Kobuchizawa	July 2017
Oga	July 2018

■Saving energy at stations

As we have done for office buildings, we have promoted energy conserving initiatives at stations, such as revision of air conditioning systems in line with the upgrading of facilities and replacing platform lighting into LED lighting.
In FY2018 we replaced a total of about 7 thousand platform lights with LED lighting and through this replacement we were able to reduce annual power consumption by about 1.5 million kWh.
As for the air conditioning system for underground platforms at Tokyo Station (Sobu Line and Keiyo Line), we had been bringing in outside air, cooling it, and then sending that cooled air up to the concourse and emitting the air to the outside. However, starting in 2015, we started construction to upgrade this to recycle and reuse the cooled air, and this was completed in FY2018. The combination of the reduced air conditioning load and improved efficiency due to the renewal of air conditioning facilities has reduced CO_2 emissions by 60%.



Previous air conditioning method
Cool outside air to cool concourse, etc. and emit it.



Revised air conditioning system
Cool outside air and recycle part of the cool air to reduce the air conditioning load.

High-efficiency turbo refrigeration and air conditioning units after facility upgrading

We are also pursuing further energy-saving efforts, such as using the BEMS* that we introduced in conjunction with the air conditioning facility upgrading and modifying how we use our air conditioning based on data analysis.

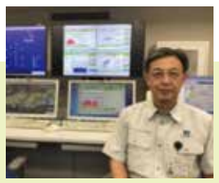
Example of BEMS screen

*BEMS (Building Energy Management System) : system that plays a role in saving energy by measuring building energy use and indoor environment conditions.

TICKET TO TOMORROW

Energy Saving Initiatives at Stations

Tokyo Station Facility Monitoring Center Manager, Tokyo Branch Office, JR East Facility Management Co., Ltd.



We work to improve operations by monitoring daily in order to stably and efficiently operate Tokyo Station's air conditioning facilities. Unlike office buildings, the conditions of stations are intricately related and constantly changing including the number of customers, drafts caused by trains, and train stoppage time. For this reason, we analyze the facilities' operation data gathered by BEMS at over 2,000 points, and conduct eco-tuning that corresponds to the station's conditions. Moreover, as we can detect the operational conditions of facilities, we also contribute to increasing the efficiency of inspection operations.
In the future, as a member of the JR East Japan Group, we hope to utilize the BEMS data with the PDCA cycle to provide comfortable spaces inside stations.

■Environmentally friendly and energy efficient office buildings

We have pursued energy saving initiatives by hardware measures such as introducing LED lighting and high efficiency devices into office buildings and also by software measures such as implementation of "cool-biz" initiatives, thermal control of air conditioners and scrupulous shutting off lights by employees. JR Shinjuku Miraina Tower, which opened in 2016, has acquired a class S rating as an environmentally friendly and energy-efficient office building, which is the highest rating under the CASBEE environmental labeling system, an initiative of the Ministry of Land, Infrastructure, Transport and Tourism.

Thanks to their superior performance as office buildings reducing CO_2 emissions, seven offices—including GranTokyo South Tower, GranTokyo North Tower, JR Shinagawa East Building, and Sapia Tower—earned recognition as Offices Taking Excellent Specific Global Warming Countermeasures (top-level office building) under the Tokyo Metropolitan Ordinance on Environmental Preservation. During the first planning period under the ordinance (FY2011 to FY2015), we were able to reduce CO_2 in the amount largely exceeding the obligatory amount. We will use the exceeded amount of reduction for emission trading within the Group and others as stipulated in the ordinance.

Top-Level Offices	Semi-Top-Level Offices
Sapia Tower, JR Shinagawa East Building GranTokyo South Tower, GranTokyo North Tower JP Tower, JR Minami-Shinjuku Building	JR Tokyo Meguro Building

JR Shinjuku Miraina Tower, ranked "S" in the CASBEE

JR Minami Shinjuku Building recognized as a top-level workplace

Top-level establishment certification presentation ceremony (July 2018)

■Shinagawa Development Project

As part of our efforts to take a leading role in addressing climate change at the global level, the Shinagawa Development Project, with the support of the Tokyo Metropolitan Government, joined the Climate Positive Development Program[*1] run by C40[*2], which recognizes low-carbon urban development projects, in FY2016. Going forward, we will continue to contribute to the creation of a sustainable society.

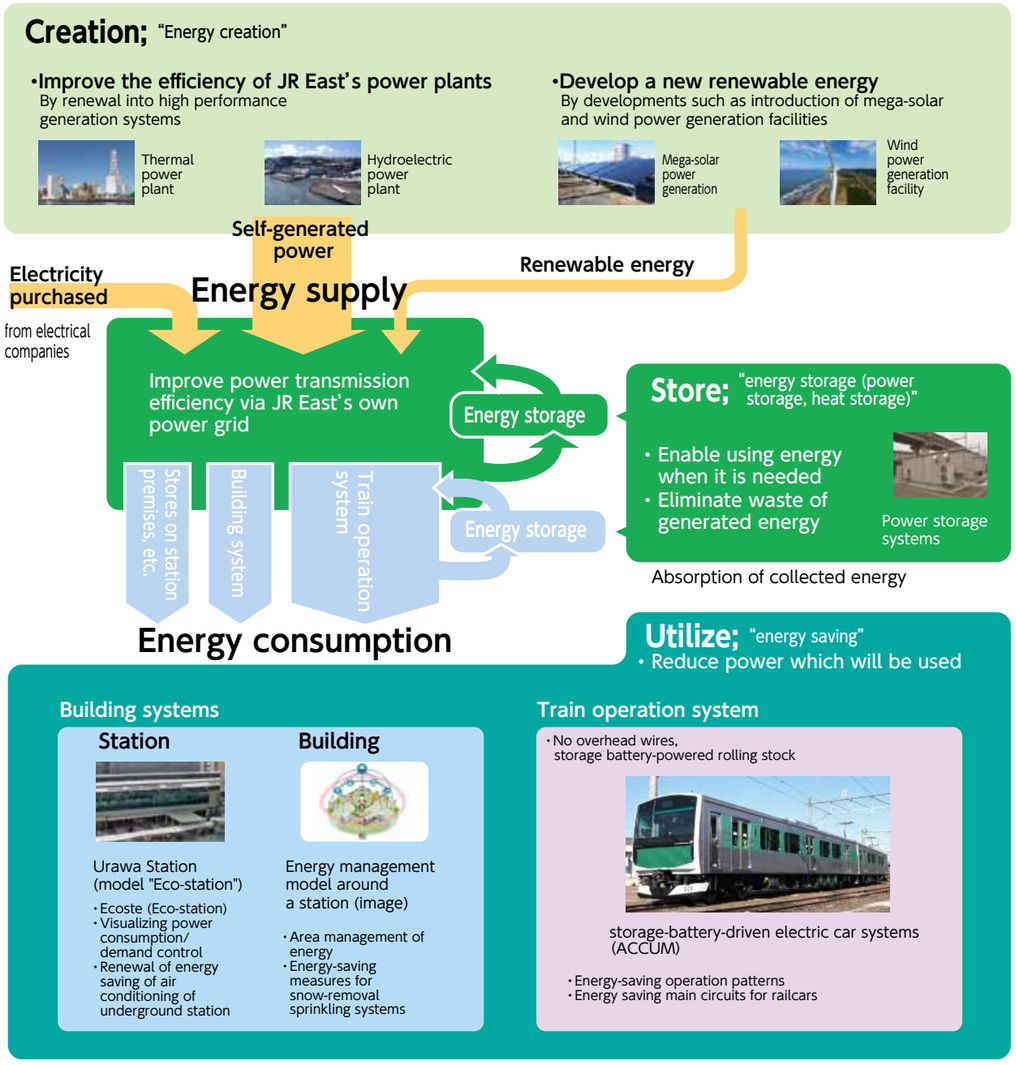
*1 Climate Positive Development Program A program that creates models for highly sustainable urban development. Its purpose is to be a leader for global society as a whole by widely promoting examples of pioneering development models around the world.

*2 C40(C40 Cities Climate Leadership Group) Established in 2005 as a network of cities around the world that work together to reduce greenhouse gas emissions. As of August 2018, there are 96 participating cities, including Tokyo, which joined in 2006.

Shinagawa Development Project "Global Gateway Shinagawa" image

Research and development for reduction of environmental loads

The JR East Group possesses a comprehensive energy network from power generation, transmission, and distribution to usage. We are aiming to establish a railway energy management system that combines these with creation (energy-creating technology such as mega-solar and wind power generation facilities of renewable energy), use (energy-saving technology such as energy-saving operating patterns), and storage (energy-storing technology such as power storage systems).

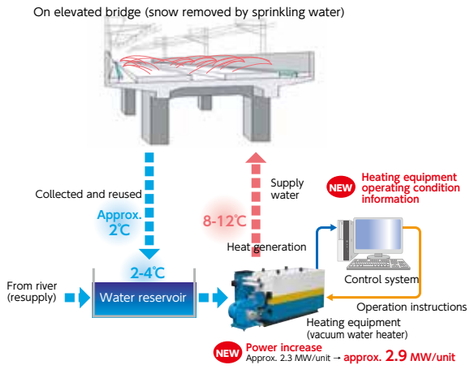


○**Energy-Saving Measures to Improve the Efficiency of Snow Removal Sprinkler Equipment**

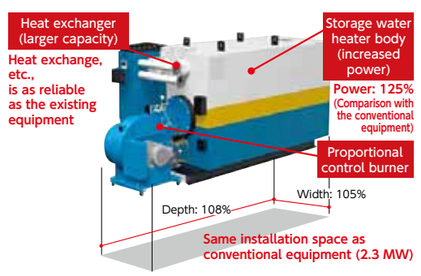
In addition to replacing aging snow removal sprinkler equipment, which helps to ensure stable Shinkansen transportation in regions with heavy snowfall, we are working on energy-saving by improving the equipment's efficiency. Snow removal sprinkler equipment is a system that prevents accumulation of snow on elevated bridges by sprinkling warm water that is heated using a heating device. At the same time, these systems also consume a huge amount of energy, and equipment on the Tohoku, Joetsu, and Hokuriku Shinkansen Lines uses 10,000 to 15,000 kL of kerosene per year in winter alone; converted into CO_2 emissions, this corresponds to 25,000 to 37,000 t.

We therefore developed a new, high-efficiency control system that uses heating equipment operating condition information and heating equipment that has a higher output while still occupying the same installation space as conventional equipment, and implemented it first at the Joetsu Shinkansen Nakajima Snow Removal Base (Nagaoka City, Niigata Prefecture), in FY2018. With this, we are working to reduce fuel consumption by 10%.

[Overview of Snow Removal Sprinkler Equipment and Key Developments]



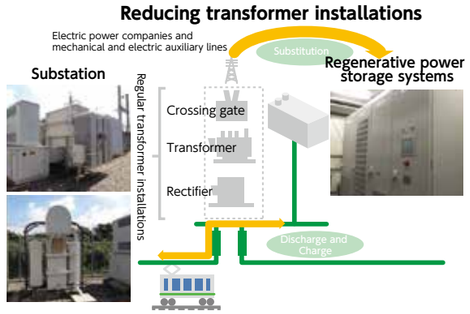
[Development machine (heating equipment)]

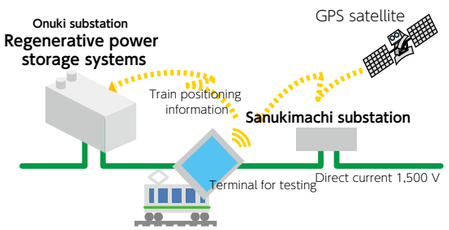


○**Slimming Down Transformer Substations Utilizing Regenerative Power Storage Systems**

By replacing the multiple machines located at substations with regenerative power storage systems, we are aiming to economize maintenance manpower by reductions transformer installations. At the demonstration experiment that has been conducted since October 2017 at the Onuki substation on the Uchibo Line, we are testing whether regenerative power storage systems can supply the electric power that trains need without the functions of a substation.

With this development, we control appropriate amounts of discharge and charge when trains are located at the appropriate sections, utilizing train positioning information gathered from GPS, and discovered that we can potentially reduce battery capacity by approximately 30%. In the future we hope to coordinate train energy conservation operation patterns with above ground facilities control, aiming for energy conservation by railways.





Measures for resource circulation

■Waste reduction and recycling

JR East generates many kinds of waste through its railway operations, including daily general trash removed from trains and stations and industrial waste from our General Rolling Stock Centers. Restaurants and retail stores in our lifestyle businesses also produce garbage and general waste. In order to reduce all these various forms of waste, JR East actively supports the approach known as "reduce, reuse, and recycle." For recycling in particular, goals are set for each type of waste.

■Recycling waste collected from stations and trains☆

Since trash from stations and trains contains recyclable materials, we placed separation bins in stations to have customers cooperate in separating trash. In October 2010, to further improve recycling rates by implementing thorough separation of trash, we built the JR East Tokyo Materials Recycling Center (operated by East Japan Eco Access Co., Ltd.) and started its operation.

JR East Tokyo Materials Recycling Center

○**Recycling trash generated at stations within the company**

Magazines, newspapers and similar paper items collected from our segregated trash boxes at stations and trains are being recycled into coated paper and stationery and used in our offices.

Newspapers and other papers collected in stations and elsewhere are recycled into office paper used by our company.

■Reducing and recycling tickets☆

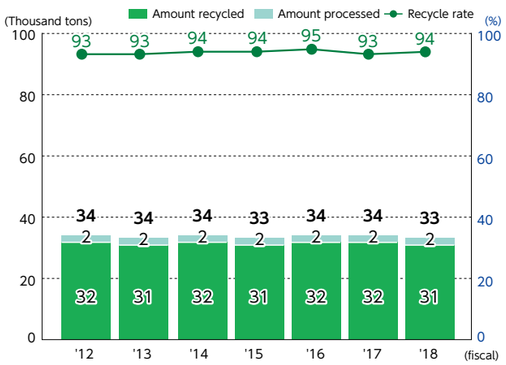
Collected used tickets are sent to a paper mill. After the iron powder has been separated from the backs of the tickets, the paper is recycled to make toilet paper and corrugated cardboard.

Used tickets collected at stations are recycled into toilet paper.

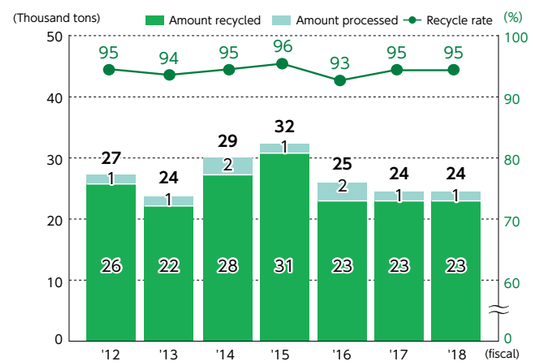
■Recycling at General Rolling Stock Centers☆

JR East Group is recycling waste generated during the manufacture and maintenance of rolling stock. At our regional General Rolling Stock Centers, waste is sorted into 20 to 30 categories to reduce waste generation and promote recycling. Starting in FY2006, we have been collecting data on the volume of retired railcars that are sold as scrap to be recycled so as to monitor our progress.

[Waste from stations and trains]



[Waste from General Rolling Stock Centers]

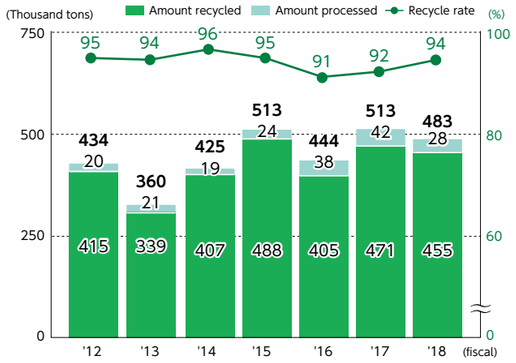


■Reducing construction waste☆

JR East endeavors to reduce waste from construction by standardizing design and construction methods that help to properly dispose of construction byproducts and to minimize waste.
JR East reduced waste from construction and maintenance works at stations and other structures, including approximately 59 thousand tons of waste from work entrusted to JR East*.

*Work entrusted to JR East Construction work contracted to JR East by local governments etc., to be done at non-JR East facilities, for such purposes as to ensure safe train operations.

[Waste from construction projects]



■Reducing waste at offices☆

In departments at the Head Office and Branch Offices, we strive to reduce waste by promoting elimination of paper and by recycling, including the use of creative, employee designed trash cans. In FY2018, we recycled 2,145 tons out of a total of 2,642 tons of waste (81%).

■Efficient use of water resources☆

As a consumer of 11.70 million m³ of water annually, JR East actively promotes the use of recycled waste water*, using, for example, rainwater and water already used for washing hands to flush toilets. At the Head Office building, 24 thousand m³ out of 33 thousand m³ of water was reused in FY2018.

*Recycled waste water Defined as water of a quality level between clean water and sewage water. It is used for limited purposes as a recycled resource.

■Promoting green procurement

JR East is procuring products with lower environmental impact. As part of those efforts we formulated the "JR East Green Procurement Guidelines." Outlined in these guidelines is our philosophy with regard to materials, conservation of resources, and packaging. We also are promoting the procurement of environmentally friendly office supplies.

Topics

Participating in Initiative to Recycle Food Waste into Biogas

In August 2016, JR East Japan Group entered the food recycling business with J Bio Food Recycle Co., Ltd., established as a joint venture with the JFE Group. The Yokohama Factory completed in August 2018 receives a maximum of 80 t of food waste a day across the city, starting with JR East Japan Group's station buildings, and generates power by Biogasification through methane fermentation treatment. It expects to generate power to be used as renewable energy by approximately 3,000 ordinary homes, and a part of the waste heat will be effectively utilized inside the factory. Since much of the food waste generated at station buildings, etc. has a high amount of fat, salt, and packaging, etc. mixed in with it, it was difficult to recycle this waste by making it into livestock feed. The Food Recycling Business aims to improve the food recycling rate of the JR East Group and generate environmentally friendly renewable energy, contributing to the prevention of global warming.

■CSR Procurement

With regard to selecting suppliers for material procurement, we have published a Code of Conduct Regarding Material Procurement of JR East on our website, which states that we focus on the fulfillment of our corporate social responsibilities when procuring materials by considering factors such as legal compliance and environmental preservation. We also request that all our suppliers comply with the relevant laws and regulations and seek to reduce their environmental footprint.
In addition, we seek to understand the current status of all material-related suppliers by conducting a survey of their CSR initiatives once a year, as a rule, which indicates whether or not they are implementing initiatives relating to green procurement and environmental footprint reduction, initiatives that consider employees' human rights, other compliance initiatives that have an impact on society, and so forth. The results of these surveys are used as one of our decision-making criteria when selecting suppliers.

Reference: Code of Conduct Regarding Material Procurement of JR East (on our corporate website)
https://www.jreast.co.jp/e/data/procurement/code_of_conduct.html

Chemical substance management

■Compliance with laws and regulations and reduction of chemical substances

When using chemical substances, the effects on human health and ecological systems must be fully considered. The JR East not only rigidly adheres to established standard values, but restrict the use of such substances and adopt substitutes that have less impact on the environment.

■Reducing and replacing ozone depleting substances☆

We endeavor to reduce the use of substances specified as controlled substances under the Ozone Layer Protection Law and adopt substitutes that have less impact on the environment. Under the Act for Rationalized Use and Proper Management of Fluorocarbon, we reported a leakage amount of around 5,000t-CO_2e for FY2018.
• Cooling units(large refrigerators)—We are steadily replacing air conditioning units using specified chlorofluorocarbons (CFCs) with systems that do not use them and completed the removal of such units from buildings.
• Rolling stock—Except for some diesel railcars, all of our cars use HCFC or CFC substitutes. As of the end of March 2018 we were using 0.6 tons of CFCs and 86 tons of HCFC or CFC substitutes. We routinely check for gas leaks, and collect the refrigerants when scrapping retired railcars in accordance with applicable laws and regulations.
• Fire-extinguishing agent—Although 64 tons of halon gas was still in use as a fire-extinguishing agent as of the end of March 2018, we have it under proper control and are replacing it with non-halon agents (such as powder agents and CO_2) when building new facilities or renovating existing ones.

■Chemical substance management

As JR East uses chemical substances primarily for painting and repairing our railcars, we take rigorous steps for their use and management in order to prevent spills. We are a company that handles a certain amount of specified chemical substances, and 12 JR East facilities submitted the data regarding the release and transfer of these substances to relevant authorities in FY2018, pursuant to the PRTR System*.
We have also been introducing stainless steel railcars that do not require painting. At the end of March 2018, as many as 88.3%☆ of the 10,589☆ cars operated on our conventional lines were stainless steel railcars. Beside their use for railcars, we used 421 tons of organic solvents for painting railway facilities and stabilizing track beds in FY2018.

*PRTR system A system where companies notify their releases and transfers of chemical substances as required by the Act on Confirmation, etc. of Release Amounts of Specific Chemical Substances in the Environment and Promotion of Improvements to the Management Thereof (Law concerning Pollutant Release and Transfer Register / PRTR). It encourages the monitoring and control of toxic chemical substances emitted into the environment and measures to prevent negative impact on the environment.

[Amount handled, released and transferred from 12 reporting-required facilities (kg)]

Chemical substance	Handled	Released into air	Transferred into sewerage	Transferred to other facilities
1,2,4-Trimethylbenzene	93,044.9	10,347.0	0.0	2,038.1
Ethyl benzene	1,029.0	1,000.0	0.0	0.0
Xylene	74,483.2	6,147.7	0.0	134.0
Toluene	13,652.7	4,550.0	0.0	88.6
Nickel	4,673.4	0.0	0.0	0.0
n-Hexane	1,538.5	170.0	0.0	0.0
Methylnaphthalene	56,097.5	278.0	0.0	0.0
1,3,5-trimethylbenzene	2,809.8	2,800.0	0.0	0.0
Chrome and trivalent chrome compounds	1,261.3	0.0	0.0	25.0
Molybdenum and its compounds	1,453.2	7.0	0.0	0.0
Total	250,043.4	25,299.7	0.0	2,285.7

■Management of PCBs(polychlorinated biphenyls)

Equipment containing PCBs is securely stored in exclusive storage locations and reports on it are filed as required by the Act on Special Measures concerning Promotion of Proper Treatment of PCB Wastes. We render this equipment harmless to the extent that can be done by PCB waste treatment facilities. In FY2018, we had equipment such as stabilizers, transformers and capacitors treated at PCB waste treatment facilities.

Environmental Conservation Activities along Railway Lines

Biodiversity

■Hometown Forestation Program

In 2004, in order to protect biodiversity and contribute to a sustainable society, while cherishing our sense of gratitude for nature, we began Hometown Forestation Programs to plant trees native to each region and revitalize the forests. We undertook these programs with the cooperation of Fukushima Prefecture from 2004 to 2009 and with the cooperation of Niigata Prefecture, the town of Tsunanmachi and Tokamachi and Ojiya Cities in the prefecture from 2010 to 2014. In FY2017, we began forestation activities in Naruko Hometown in Osaki City, Miyagi Prefecture.

Naruko Hometown Forestation Program in October 2017

■Forest development along railway lines☆

Beginning in 1992, we have been organizing tree planting activities along JR East railway lines. By FY2018 a total of approximately 51 thousand people had participated in planting about 347 thousand trees*. Today, planting has gone beyond the trackside and is done in cooperation with local communities.

*The number of trees includes flower seedlings

■Development of railway trees

Along some JR East railway lines, we have planted railway trees to shield the tracks from blowing snow and wind.

The first railway trees were created in 1893 for disaster prevention. As living disaster prevention facilities, railway forests are playing their role. JR East now owns approximately 5.8 million railway trees on a total of about 3,900 hectares along our lines at approximately 1,080 locations. The trees absorb 15 thousand tons of CO_2, equivalent to 0.7% of the CO_2 that JR East emits (this is the actual amount in FY2018). In this way, they also contribute to preserving the environment.

In 2008, after fundamentally reviewing the role of railway trees from the viewpoints of both disaster prevention and environmental preservation, we launched a new project to plant trees to replace those that will require replacement over the coming 20 years.

Sashimaki No.1 railway forest on the Tazawako Line (forest to protect against blizzards)

Planting new railway trees

Ceremonies for the planting of new railway trees have been held in various locations, as shown in the table below, starting with the Kakizaki No. 1 railway forest in September 2008. During these ceremonies, native tree species were planted, with many local residents participating.

[Past Tree Planting Ceremonies]

Date	Location
September 2008	Shin-etsu Main Line, Kakizaki No. 1 railway forest
July 2009	Okitama No. 2 railway forest
May 2010	Ōu Main Line, Jinguji No. 2 railway forest
September 2012	Tazawako Line, Ōkama No. 1 railway forest
September 2013	Ōu Main Line, Sekine No. 1 railway forest
September 2014	Uetsu Main Line, Hirakida No. 3 railway forest
September 2015	Ōu Main Line, Kado No. 6 railway forest
September 2016	Tazawako Line, Akabuchi No. 1 railway forest
September 2017	Banetsu-Sai Line, Nakayamajuku No. 6 railway forest

Tree planting ceremony for Nakayamajuku No.6 railway forest on Banetsu-Sai Line (September 2017)

Basic thoughts on noise reduction

In the operation of trains, noise is created by the train cars pushing air aside, by the wheels travelling on the rails, by the motors, and by other sources. In order to reduce noise, we are working in various ways to improve both the trains and our ground equipment.

JR East also endeavors to reduce noise during maintenance work on track and structures to further improve the lineside environment.

■Measures for the Shinkansen

In accordance with the Japanese government's Environmental Quality Standards for Shinkansen Superexpress Railway Noise, JR East has taken many steps to reduce this noise, such as with the installation of soundproof walls and sound-absorbent materials, rail grinding*1 and the modification of our railcars to operate more quietly. We have already completed the implementation of measures to reduce noise levels to 75dB or lower in densely populated residential areas along our railway lines. At present, we plan countermeasure construction for the other areas in incremental steps. Also, based on the knowledge gained from running tests using the Shinkansen "FASTECH" test train, JR East is working to improve the environment even as we increase train speed, including further reduction of noise and micro-pressure waves in tunnels*2.

*1 Rail grinding A measure to smooth out uneven places in rails caused by wheel movement.This reduces noise by controlling car vibration.
*2 Micro-pressure waves in tunnels An explosive sound caused by forced air compression.

E5 Series trains have low-noise pantographs

■Measures for conventional lines

We have implemented measures for conventional lines to minimize noise, such as installation of long rails*1, rail-grinding and wheel-truing*2. We also comply with the Japanese government's Policy on Noise Measures for Construction of New Conventional Railways or Large-Scale Remodeling when we engage in this kind of construction or modification of our conventional lines.

*1 Installing long rails Rail joints are welded such that the length of a single rail becomes more than 200 meters. With fewer rail joints, these rails reduce noise produced at joints when trains pass.
*2 Wheel truing A measure to grind the unevenness of wheels caused by wear, to restore their circular shape.

■Measures for maintenance work

As maintenance work is usually done during the night, we give advance notice to residents in surrounding areas about the schedule and details of the work. We also make utmost efforts to minimize noise by using modified equipment that produces lower noise. Furthermore, by using types of track that are designed to resist deformation, JR East is reducing the volume of required maintenance work.

Corporate Governance

■Basic Corporate Governance Philosophy of JR East

JR East aims to meet the expectations of all our stakeholders, including shareholders, customers, and local communities, by making transparent, fair, firm, and timely decisions with regard to management issues such as ensuring safe, comfortable transportation and reforming service quality, in order to achieve sustained business growth centering on stations and railways and improvement of our medium- and long-term corporate value.

We are focused on making decisions from a long-term perspective, taking into account the nature of the railway business that is our core activity, and we consider it appropriate to strengthen our corporate governance in future, based on our existing auditing system.

In addition, JR East has set "Guidelines of corporate governance", which shows concrete activities and the basic concept of
corporate governance by resolution of the Board of Directors, and publishes it on the JR East website.

■The Reasons Why JR East Adopted the Present Corporate Governance System

In the railway portion of our main business, since a variety of knowledge and experience in security and decision-making based on mid- and long-term perspectives are necessary, we, JR East, set up a board of auditors which is composed of auditors who is independent from the board of directors.

■Basic Explanation of Our Organizations

Our 15-member Board of Directors, including three outside directors (as of June 22, 2018), normally meets monthly to decide key operational matters relating to statutory requirements and other matters, and to supervise overall operations. Under the Board of Directors is the Executive Committee, which includes all directors with executive functions and senior executive officers. Usually meeting every week, this committee deliberates on matters to be decided by the Board of Directors and other important management issues. In addition, meetings of the Group Strategy Formulation Committee, which consists of all directors with executive functions and others, are held as required to discuss major issues affecting the Group as a whole, including management strategy for each business field.

■Internal Audits, Audits by Corporate Auditors and Status of Accounting Audits

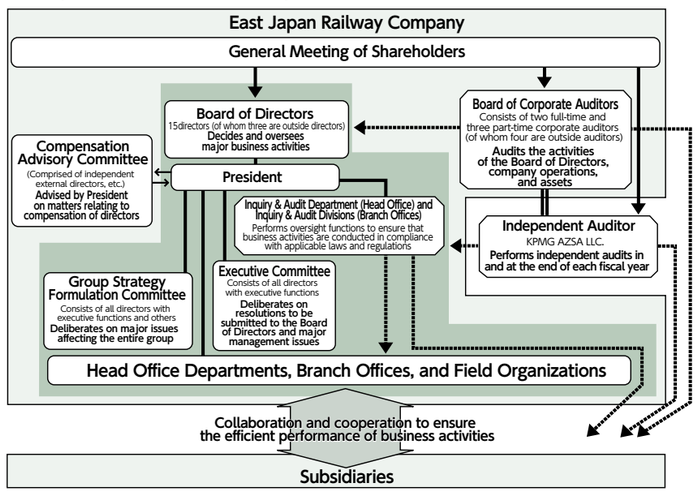
JR East has established an internal auditing system involving approximately 100 full-time employees in the Inquiry & Audit Department at the Head Office and Inquiry & Audit Divisions in branch offices, and these units work to ensure that corporate operations are executed appropriately and efficiently. The Inquiry & Audit Department also undertakes the auditing of Group companies.

Our Board of Corporate Auditors usually meets every month and holds regular liaison conferences with auditors of group companies. The audit by corporate auditors is supported by approximately 10 specialized members of staff. They oversee executive actions carried out by directors, with a focus on full-time auditors, in accordance with the rules established by the Board of Corporate Auditors by attending the Board of Directors, the Executive Committee and the other important in-house meetings, and by investigating their normal operations and financial situations.

JR East financial statements are audited under contract by an independent auditor (accounting auditor), KPMG AZSA LLC., in and at the end of each fiscal year.

Incidentally, there were no major violations of laws or regulations relating to the products and services in FY2018.

[Corporate Governance System (as of June 22, 2018)]



Compliance

■Basic Concept of Compliance

JR East sets legal and regulatory compliance and corporate ethics as fundamental management tools to build a better relationship of trust with society.

We adopted our Policy on Legal and Regulatory Compliance and Corporate Ethics as the Group's corporate activity guidelines. Concomitantly, in various business fields such as the railway business, lifestyle service business and Suica business, we comply with all related laws and conduct business in accordance with corporate ethics. In addition, we conduct education for our group companies' employees and also established Compliance Hotlines, both inside and outside the company, and are promoting efforts on compliance.

■Policy on Legal and Regulatory Compliance and Corporate Ethics and the Compliance Action Plan

The Policy on Legal and Regulatory Compliance and Corporate Ethics stipulates our approach to regulatory compliance and corporate ethics based on the Group's philosophy and principles. In order to heighten the efficacy of these guidelines, we have notified the entire Group about them by distributing a Compliance Action Plan Handbook that indicates the nature of the actions that we expect everyone employed by the Group to take. This handbook has been revised for fiscal year 2018 to reflect the recent changes in laws and the social environment so that the actions expected of the employees may be made more concrete.

Furthermore, in conjunction with the development of overseas business, a basic policy for the prevention of bribery relating to foreign public officials was formulated and announced.

■Promotion of Compliance

In order to deepen understanding of the importance of compliance and the intent of "compliance and corporate ethics" by each employee, we have been providing annual compliance education for all Group employees. Taking into account recent corporate scandals, we have been reconsidering our own mission and the pride we have about our work, while also recognizing the importance of good workplace communications. In addition, we will nurture a culture of "compliance by thinking for yourself" through such means as constructing curricula incorporating cases suited to each individual's workplace. Recently, education has taken the format of study groups held in each department under the head of the department, using materials prepared by the head office. Taking up familiar cases of violations, the study groups lead employees to take another look at" why one has to observe rules" and" what happens if one fails to observe them."

Furthermore, we formulated basic compliance issues which should be periodically confirmed by each applicable chief of business into the "Confirmation Support Sheet of Basic Issues" and we undertake continuous inspections and confirmations using this sheet. To ensure more effective utilization of this arrangement we have made it possible to monitor the use of this sheet in the field through the Intranet. Additionally, in order to thoroughly disseminate the significance of obeying rules, we have selected representative cases of violations for use as teaching materials and for presentation on the Intranet as examples of compliance violations.

■Compliance Hotline

"When an employee wonders how to conduct themselves regarding compliance and corporate ethics" and "when an employee recognizes activity which is against compliance or corporate ethics or which may be against compliance or corporate ethics", in order for the employee to report and consult, we established "Compliance Hotlines", both inside and outside the company. We accept consultations and reports from business partners and retirees and publish how we accept them on our website.

In FY 2018, we received 208 consultations and messages on a wide range of issues such as the handling of laws and regulations, and problems in human relations and harassment, and responded to them properly and respectfully.

■Risk Management

JR East established the Crisis Management Headquarters to centrally collect and manage information, and to promptly respond in the event of major crises affecting business operations of the JR East Group, etc. On top of this, we established the Crisis Management Office, a full-time bureau in the Administration Department at Head Office that takes responsibility for Headquarters' secretarial work. We are striving to be prepared for any potential risks JR East Group may face. We have established a system enabling us to promote compliance and to respond to various emergencies from overseas—terrorist threats, pandemics such as influenza, and other possibilities.

With respect to business risks faced by our Group, we review them periodically in terms of their importance and the impact they may cause when they become apparent. Furthermore, we identify risks inherent in all of our business operations, analyze and evaluate them and take actions to reduce them in accordance with their priority.

■Ensuring Information Security

In recent years, on the internet, cyberattacks have increased in sophistication worldwide, and even in public organizations and private companies in Japan, a large scale of information leakage has continuously occurred. Furthermore, the threat of cyber terrorism through computer viruses and other infections, which cause dysfunction in information systems related to the social infrastructure, is increasing.

JR East, as a corporate group which supports the social infrastructure of railways, has designed and introduced an information security management system based on the Group's basic policy for information security, and regularly carries out security measures including upgraded information system functions.

The Group will actively develop human resources specializing in security in cooperation with external organizations and by sharing information with other companies, with the aim of improving cyber security-related knowledge. At the same time, we will conduct problem response drills aimed at minimizing effects in the event of a problem, by promptly constructing an initial framework and taking measures through departmental cooperation.

All employees are kept constantly up to date on the importance of information security and the strict handling of information through our rule book on information system use and our internal magazine. All Group employees also receive information security education with the aim of raising awareness about how they should guarantee workplace information security.

■Personal Data Protection

Pursuant to applicable laws and regulations including the Act on the Protection of Personal Information, the JR East Group published its Privacy Policy, formulated the Regulations for the Management of Personal Information and appointed Chief Privacy Officers who have the responsibility of strictly protecting personal data. Furthermore, as one of several measures responding to the government's General Data Protection Regulation, which came into force in May 2018, we have now published an English-language version of our privacy policy on our website.

Through leaflets for raising employee awareness, articles in our internal magazines and compliance education, we are also working to ensure that all employees remain fully aware of the necessity of the strict handling and management of personal data. Furthermore, in order to ensure proper control of personal data, the Group conducts periodic internal workplace audits.

Impropriety at Shinanogawa Power Station

In March, 2009 JR East received an administrative sanction because the company's water intake had exceeded the maximum allowed at our hydroelectric plant, Shinanogawa Power Station (the collective name for the Senju, Ojiya and Ojiya Daini power plants in Ojiya and Tokamachi Cities, Niigata Prefecture).

The sanction was issued in accordance with the River Act and included the revocation of a permit to draw water from the Shinano River. Subsequent to receipt of this sanction, we have taken corrective actions in accordance with the directions in the sanction and have endeavored to implement measures to prevent recurrence and to cultivate close cooperation with the local communities.

In June 2010, having obtained a permit from the Director of the Hokuriku Regional Development Bureau of the Ministry of Land, Infrastructure, Transport and Tourism to again take water from the Shinano River through to June 2015, we resumed operation of the Shinanogawa Power Station.

Following resumption, we conducted a trial sluice for coordinating river environment and water use. With the results of the investigation and opinions collected from local residents, we filed a renewal application in May 2015 and received approval in June 2015.

We are sincerely committed to fostering harmony with the river environment and enhancing coprosperity with communities. Furthermore we are promoting compliance management to prevent occurrence of similar incidents.

Corporate Info

■Service Area

Due to the effects of the Great East Japan Earthquake, operations of the Yamada and Joban Lines are partially suspended.

Due to damage by torrential rain in July 2011, operations of the Tadami Line are partially suspended.

As of July 2018

Passenger line network	Shinkansen lines: 1,194.2km Conventional lines: 6,263.1km
Number of stations	1,667
Total number of trains in operation per day	12,236 (Timetable revised in March 2018)
Total number of passengers per day	approx. 17.70 million

Businesses Outline of the JR East Group (as of September, 2018)

Our company and our affiliated companies are engaged in transportation business, distribution and services business, real estate and hotel business, and other businesses. In each business our company's position in relation to each of our affiliated companies is described below:

■Transportation Business

In addition to passenger transportation business centered around railway operation, we provide travel services, cleaning and maintenance services, station operation services, facilities maintenance services and rolling stock manufacturing and maintenance work.

■Distribution and Services Business

We are providing life services business, such as retail and restaurant business, wholesale business, truck transportation business and advertising agency.

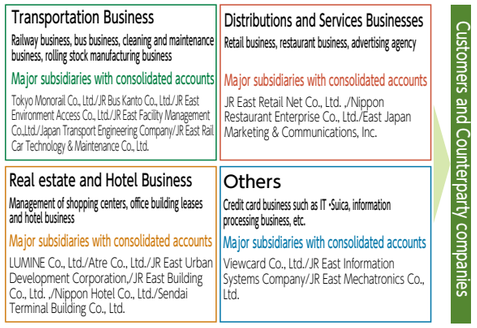
■Real estate･Hotel Business

We are providing life services business, such as shopping center operations, leases and rentals of office buildings, and hotel operations.

■Others

In addition, we are providing credit card business such as IT･Suica, and information processing business.

Following is a schematic of JR East businesses



In relation to the supply chain, it can be divided into two parts, the railway business and non-railway businesses.
For the railway business, JR East generates electricity at its own power stations or directly purchases electricity from electrical companies. Electricity is provided to trains through substations and overhead contact lines. Additionally, we operate railways and offer transport services to our customers through the provision of continuous comprehensive services, while also maintaining station staff members, conductors and other various facilities.
With regard to non-railway businesses, while pursuing synergetic effects with the railway business itself, each business operates its own specific supply chain, as it provides various services to customers.

Businesses of the JR East Group (as of September 1, 2018)

■ Transportation services

JR Bus Kanto Co., Ltd. / JR Bus Tohoku Co., Ltd. / Tokyo Monorail Co., Ltd.

■ Shopping center operations

Tetsudo Kaikan Co., Ltd. / atre Co., Ltd. / LUMINE Co., Ltd. / Yokohama Station Building Co., Ltd. / Shonan Station Building Co.,Ltd. / JR Chuo Line Mall Co., Ltd. / JR East Department Store Co., Ltd. / JR Tokyo West Development Co., Ltd. / Kinshicho Station Building Co., Ltd. / Chiba Station Building Co., Ltd. / JR East Aomori Business-Development Company Co., Ltd./ Tokky Co., Ltd. / Station Building MIDORI Co., Ltd.

■ Office operations

JR East Building Co., Ltd.

■ Hotel operations

Nippon Hotel Co., Ltd. / Sendai Terminal Building Co., Ltd. / Morioka Terminal Building Co., Ltd. / Akita Station Building Co., Ltd.

■ Retail shop and restaurant businesses

JR East Retail Net Co., Ltd. / Nippon Restaurant Enterprise Co., Ltd. / JR East Food Business Co., Ltd. / JR East Water Business Co., Ltd. / Kinokuniya Co., Ltd. / JR East Tohoku Sogo Service Co., Ltd.

■ Trading and logistics businesses

East Japan Railway Trading Co., Ltd. / JR East Logistics Co., Ltd.

■ Travel agent and car rental services

JR EAST VIEW Travel Service Co.,Ltd. / JR East Rental & Lease Co., Ltd.

■ Sports and leisure businesses

JR East Sports Co., Ltd. / GALA YUZAWA Co., Ltd.

■ Real estate management

JR East Urban Development Corporation

■ Information, financial, and personnel services

JR East Japan Information Systems Company / JR East Net Station Co., Ltd. / JR East Management Service Co., Ltd. / JR East Personnel Service Co., Ltd. / JR East Green Partners Co.,Ltd.

■ Credit card business

Viewcard Co., Ltd.

■ Advertising and publishing

East Japan Marketing & Communications, Inc. / JR East Media Co., Ltd. / The Orangepage, Inc.

■ Cleaning and linen supply services

JR East TESSEI Co., Ltd. / JR East Transportation Services Co., Ltd. / East Japan Eco Access Co., Ltd. / JR East Station Service Co., Ltd. /JR Takasaki Railway Services Co., Ltd. / JR Mito Railway Services Co., Ltd. / JR Chiba Railway Services Co., Ltd. / JR Technoservice Sendai Co., Ltd. / Morioka Railway Servicing Co., Ltd. / JR Akita Railway Services Co., Ltd. / JR Niigata Railway Services Co., Ltd. / JR Nagano Railway Services Co., Ltd. / JR Higashinihon Linen Co., Ltd.

■ Construction consulting and maintenance services

JR East Consultants Company / JR East Design Corporation / JR East Facility Management Co., Ltd. / JR EAST MECHATRONICS Co., Ltd. / Union Construction Co., Ltd. / Japan Railway Track Technology Consultants Co., Ltd.

■ Rolling stock manufacturing and maintenance

Japan Transport Engineering Company /JR East Rail Car Technology & Maintenance Co., Ltd.

■ Overseas railway consulting

Japan International Consultants for Transportation Co., Ltd.

■ Global development of Lifestyle Service Business

JRE Business Development Taiwan, Inc.

■ Generation and district heating and cooling

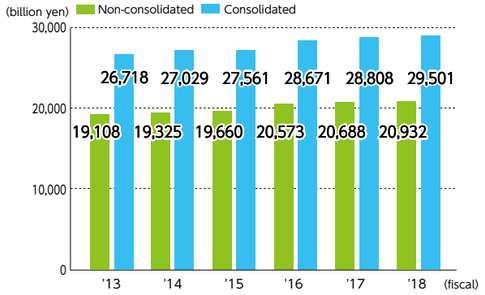
JR East Energy Development Co., Ltd. / Shinjuku South Energy Service Co., Ltd.

■ Corporate Venture Capital

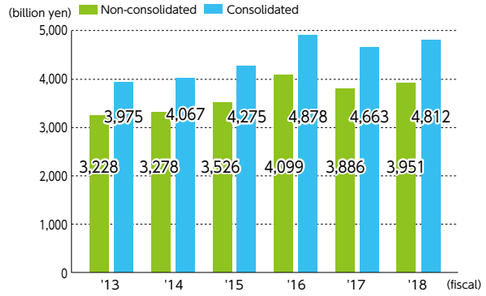
JR East startup Co., Ltd.

Management Information

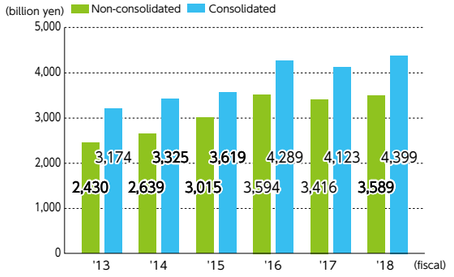
〈Operating Revenues〉



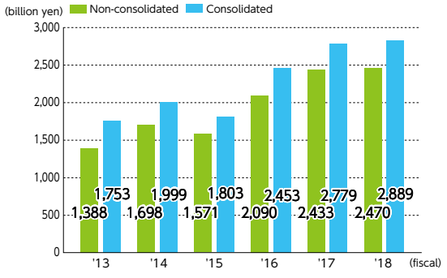
〈Operating Income〉



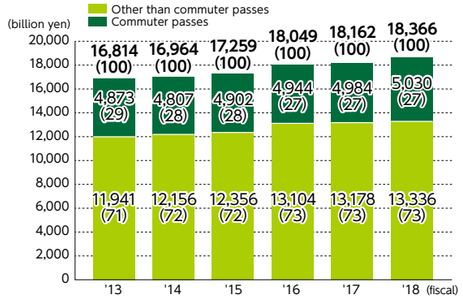
〈Ordinary Income〉



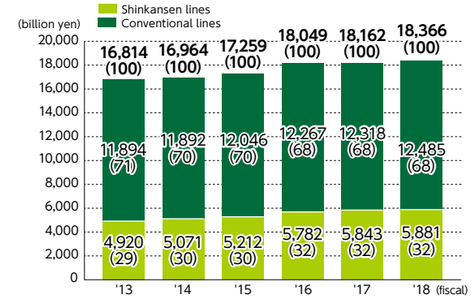
〈Net Income (Non-consolidated) and Profit attributable to owners of parent(Consolidated)〉



Revenues from Passenger Tickets

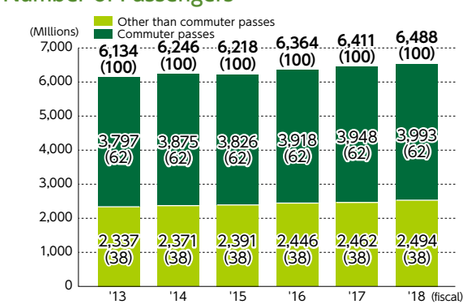


( ) shows the percent of the total.

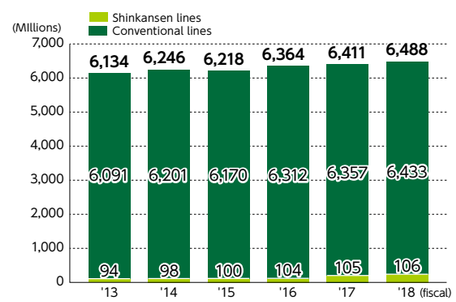


( ) shows the percent of the total.

Number of Passengers



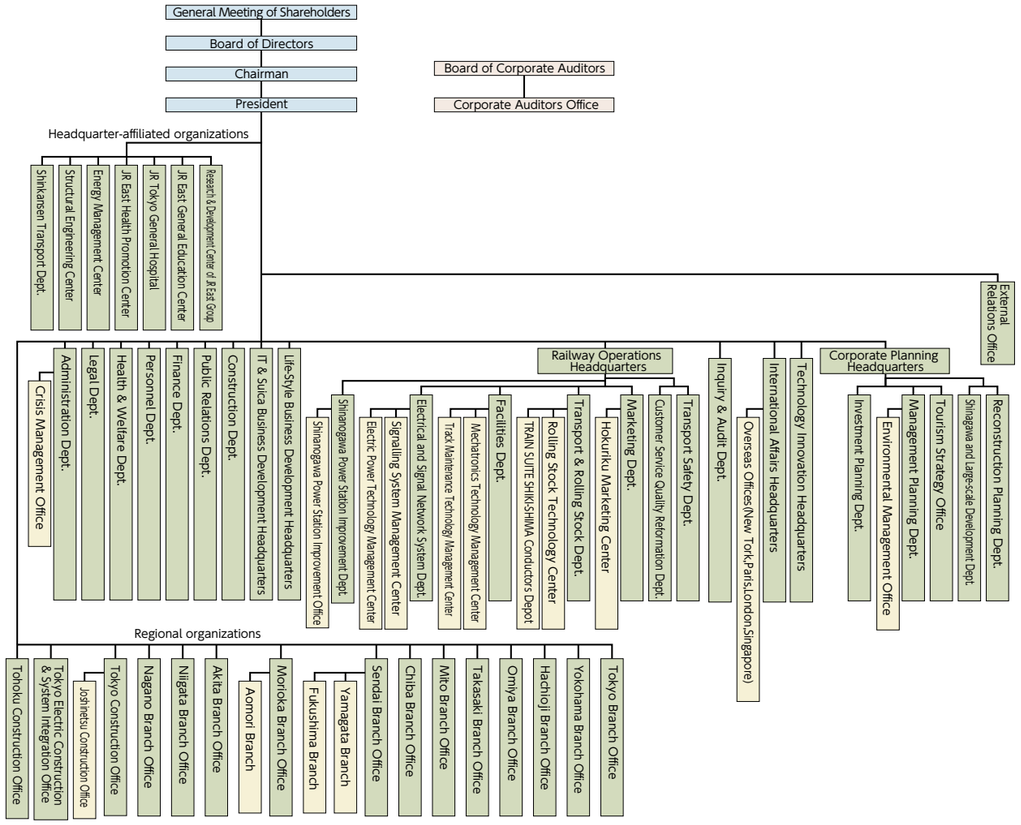
( ) shows the percent of the total.



Note 1) Fractions of 100 million yen have been omitted.
Note 2) Fractions of 1 million passengers have been omitted.
Note 3) The sum of the numbers of passengers on the Shinkansen and conventional lines is greater than the passenger total because some individual passenger trips include both.

Organization

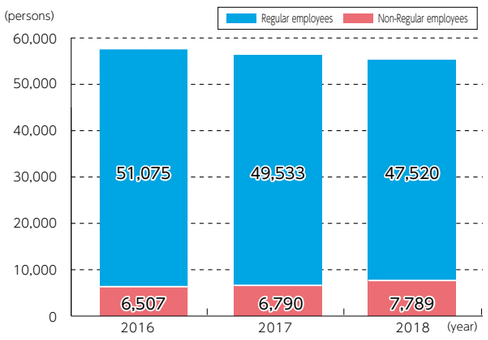
As of June, 22, 2018



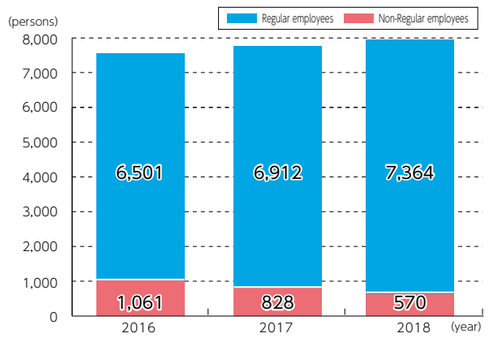
Personnel-related data

[Total number of employees by employment type and gender (As of April 1, 2018)]

〈Male〉



〈Female〉



* No. of employees in this report includes those seconded.

[Total number of new employees and resignees(New employees are those employed within the fiscal year (Regular employees only))]

(persons)

	New employees			Resignees		
	FY2016	FY2017	FY2018	FY2016	FY2017	FY2018
Male	1,325	1,320	1,292	2,759	2,873	3,340
Female	584	579	572	114	130	130

(persons)

	New employees			Resignees		
	FY2016	FY2017	FY2018	FY2016	FY2017	FY2018
Under 30 years of age	1,575	1,498	1,563	99	79	103
30 to 50 years of age	328	386	296	124	158	164
51 years of age and over	6	15	4	2,650	2,766	3,203

(persons)

	New employees			Resignees		
	FY2016	FY2017	FY2018	FY2016	FY2017	FY2018
Headquarters	169	153	153	127	150	183
Tokyo Branch Office	440	438	470	482	476	464
Yokohama Branch Office	180	196	158	208	184	204
Hachioji Branch Office	116	127	139	152	137	147
Omiya Branch Office	151	151	154	218	201	191
Takasaki Branch Office	79	76	84	136	184	215
Mito Branch Office	55	48	59	137	167	171
Chiba Branch Office	155	180	177	160	199	268
Sendai Branch Office	150	148	153	415	477	542
Morioka Branch Office	82	76	79	306	242	305
Akita Branch Office	61	62	40	148	163	241
Niigata Branch Office	99	88	73	161	209	294
Nagano Branch Office	74	57	42	101	129	160
Shinkansen Transport Dept.	—	—	—	3	6	1
Tokyo Construction Office	28	27	32	62	40	39
Tokyo Electric Construction & System Integration Office	40	40	35	17	15	24
Tohoku Construction Office	30	32	16	40	24	21

[Average annual training time per employee]

(Time, person)

	FY2016	FY2017	FY2018
Total annual training hours	2,601,210	2,039,400	1,809,560
Number of employees	58,551	57,576	56,445
Average annual training hours per employee	44	35	32

[Number of employees by area and gender (As of April 1, 2018)]

(persons)

	Male			Female		
	2016	2017	2018	2016	2017	2018
Headquarters	3,395	3,449	3,691	938	947	982
Tokyo Branch Office	9,478	9,222	9,019	1,475	1,570	1,654
Yokohama Branch Office	4,109	4,043	3,932	572	628	681
Hachioji Branch Office	3,295	3,257	3,196	401	434	485
Omiya Branch Office	3,877	3,778	3,688	425	461	504
Takasaki Branch Office	2,358	2,245	2,106	267	288	304
Mito Branch Office	2,240	2,147	2,027	208	220	240
Chiba Branch Office	3,887	3,816	3,694	566	607	640
Sendai Branch Office	5,191	4,876	4,507	565	578	615
Morioka Branch Office	3,190	3,013	2,777	231	257	286
Akita Branch Office	2,309	2,198	1,995	167	184	198
Niigata Branch Office	3,257	3,118	2,886	258	273	294
Nagano Branch Office	2,324	2,242	2,129	206	215	225
Shinkansen Transport Dept.	220	217	—	11	17	—
Tokyo Construction Office	694	672	646	77	87	107
Tokyo Electric Construction & System Integration Office	825	833	836	92	101	104
Tohoku Construction Office	426	407	391	42	45	45
Total	51,075	49,533	47,520	6,501	6,912	7,364

From FY2019, Shinkansen Transport Dept. (male: 221; female: 20) is included in Head Office.

[Ratio of employees eligible for collective bargaining agreement s (as of April 1, 2018)]

(persons)

	2016	2017	2018
Number of union members	50,546	49,467	20,857
Number of employees	57,576	56,445	54,884
Ratio	87.8%	87.6%	38.0%

Independent Assurance Report

Independent Assurance Report

To the President and CEO of East Japan Railway Company

We were engaged by East Japan Railway Company (the "Company") to undertake a limited assurance engagement of the environmental performance indicators and environmental accounting indicators marked with ☆ for the period from April 1, 2017 to March 31, 2018 included in its Sustainability Report 2018 (the "Report") for the fiscal year ended March 31, 2018, and the Company's self-declaration that the Report is prepared in accordance with the Global Sustainability Standards Board's GRI Sustainability Reporting Standards 2016 ("GRI Standards") at a core level.

The Company's Responsibility

The Company is responsible for the preparation of the Indicators in accordance with its own reporting criteria (the "Company's reporting criteria"), as described in the Report, and for self-declaring that the Report is prepared in accordance with the criteria stipulated in the GRI Standards.

Our Responsibility

Our responsibility is to express a limited assurance conclusion on the Indicators based on the procedures we have performed. We conducted our engagement in accordance with the 'International Standard on Assurance Engagements (ISAE) 3000, Assurance Engagements other than Audits or Reviews of Historical Financial Information' and the 'ISAE 3410, Assurance Engagements on Greenhouse Gas Statements' issued by the International Auditing and Assurance Standards Board. The limited assurance engagement consisted of making inquiries, primarily of persons responsible for the preparation of information presented in the Report, and applying analytical and other procedures, and the procedures performed vary in nature from, and are less in extent than for, a reasonable assurance engagement. The level of assurance provided is thus not as high as that provided by a reasonable assurance engagement. Our assurance procedures included:

- Interviewing the Company's responsible personnel to obtain an understanding of its policy for preparing the Report and reviewing the Company's reporting criteria.
- Inquiring about the design of the systems and methods used to collect and process the Indicators.
- Performing analytical procedures on the Indicators.
- Examining, on a test basis, evidence supporting the generation, aggregation and reporting of the Indicators in conformity with the Company's reporting criteria, and recalculating the Indicators.
- Visiting two of the domestic business sites of the Company selected on the basis of a risk analysis.
- Evaluating the Company's self-declaration that the Report is prepared in accordance with the GRI Standards at a core level against the criteria stipulated in the GRI Standards.
- Evaluating the overall presentation of the Indicators.

Conclusion

Based on the procedures performed, as described above, nothing has come to our attention that causes us to believe that the Indicators in the Report are not prepared, in all material respects, in accordance with the Company's reporting criteria as described in the Report, and the Company's self-declaration that the Report is prepared in accordance with the GRI Standards at a core level does not conform to the criteria stipulated in the GRI Standards.

Our Independence and Quality Control

We have complied with the Code of Ethics for Professional Accountants issued by the International Ethics Standards Board for Accountants, which includes independence and other requirements founded on fundamental principles of integrity, objectivity, professional competence and due care, confidentiality and professional behavior. In accordance with International Standard on Quality Control 1, we maintain a comprehensive system of quality control including documented policies and procedures regarding compliance with ethical requirements, professional standards and applicable legal and regulatory requirements.

KPMG AZSA Sustainability Co., Ltd.

KPMG AZSA Sustainability Co., Ltd.
Tokyo, Japan
October 19, 2018

Closing

Thank you for taking the time to read JR East Group's Sustainability Report 2018.

This Report was prepared to offer an overview of JR East Group's current business activities to all stakeholders. This Report includes quantitative data on the activities relating to safety, society and the environment that are undertaken by our Group. All the data are presented in an easy-to-understand manner through the use of photographs and diagrams. Additionally, the major events that have occurred since the last Report are introduced as "Highlights" in the first part of the Report, while our specific efforts are presented as "Topics" in the main part of the Report. Also, in the main part of this year's Report, we have included numerous articles to describe the specific efforts made by some of our employees, such as "TICKET TO TOMORROW", in order to demonstrate the understanding and shared awareness that each employee has of JR East Group's various policies and measures.

We hope that this Report will be of assistance to all stakeholders in further deepening understanding of JR East Group.

JR East is committed to practicing ESG management as described in the JR East Group Management Vision "Move Up" 2027 and to solving social issues through its businesses. At the same time, we will strengthen communication with all stakeholders and respond to the trust placed in us by all our customers as a whole group by reporting on the progress of the Management Vision on a timely basis.

We sincerely ask for your continued understanding in regard to JR East Group's business operations, and your honest opinions are always welcome. Thank you.

Hideki Nemoto

Executive Officer & General Manager of
Management Planning Department
Corporate Planning Headquarters
East Japan Railway Company

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MSCI 2018 Constituent MSCI ESG Leaders Indexes

MSCI 2018 Constituent MSCI Japan ESG Select Leaders Index

JR East Group Sustainability Report 2018

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East Japan Railway Company
Committee on Ecology
2-2 Yoyogi 2-chome,
Shibuya-ku, Tokyo
151-8578, Japan
E-mail: eco@jreast.co.jp
http://www.jreast.co.jp/e/environment/