



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 the 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 September 2016

Forest development along railway lines[☆]

Beginning in 1992, we have been organizing tree planting activities along JR East railway lines. By FY2017 a total of approximately 50 thousand people had participated in planting about 343 thousand trees. Today, planting has gone beyond the trackside and is done in cooperation with local communities.

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 CO₂, equivalent to 0.7% of the CO₂ that JR East emits (this is the actual amount in FY2017). 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)



Shigekura No.1 railway forest on the Joetsu Line (forest to protect against snow slides)



Safety



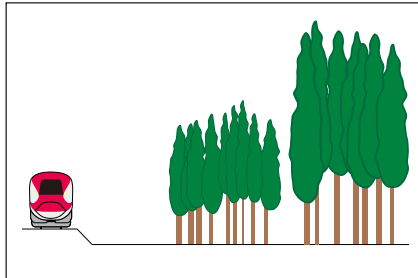
Society



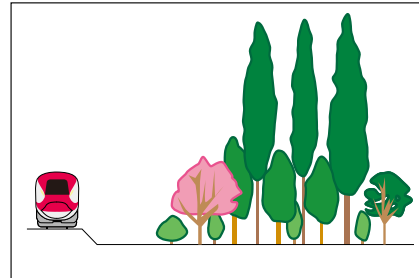
Environment

Railway trees — From single to multi-variety forests

Traditionally, railway trees were of a single variety, primarily cedar trees, because another function, in addition to protecting against natural disasters, was to generate profits through the production of timber. This has recently been less successful, however, as the demand for domestic timber has declined. In future tree replacement, we will plant several varieties suitable for the local climate and develop them to be more sustainable and ecologically resilient.



Conventional railway trees (single variety such as cedar trees)



New railway trees (mixture of different varieties of trees)

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 and participants from organized tours participating.

| Date | Location |
|-----------------|--|
| September, 2008 | Shin-etsu Main Line, Kakizaki No. 1 railway forest |
| July, 2009 | Okutama 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 |

Past Tree Planting Ceremonies



Tree planting ceremony for Akabuchi No. 1 railway forest on Tazawako Line (September 24, 2016)



Safety



Society



Environment

Basic thoughts on noise reduction

In the operation of trains, noise is created by the train cars moving through the air, 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 a track that is designed to resist deformation, JR East is reducing the volume of required maintenance work.



Safety



Society



Environment

Improvement of the Environment along Railway Lines

■ Restricting use of herbicides

Safe train operations require regular removal of weeds along railway lines. While we generally remove them manually, we also use a certain amount of herbicide. We keep the usage of herbicides to a minimum in both volume and range of use. When selecting herbicides for use, we select those with standard levels of toxicity to humans and animals, and with regard to their risk level (S value) in terms of impact on marine life, we normally use those classified as causing no particular problems.

■ Harmony with the landscape

Given that construction of a large-scale railway facility or its remodeling greatly affects the local area and surrounding environment, JR East endeavors to harmonize its completed facilities with surrounding landscapes and natural environments. In the fiscal year ended in March 2012, Agatsumagawa Bridge No. 3 received the Tanaka Award (for excellent bridge work or bridge engineering) from the Japan Society of Civil Engineers, in recognition of a landscape in harmony with the surrounding environment and the national road parallel to the bridge. Our efforts are indeed well recognized outside of the company.

For the Senseki Line, which resumed full operation in May, 2015, we gave extra consideration to the design, such as incorporating very wide spans for bridge piers and curving the under-beams so as to match the special scenic beauty of Matsushima in the relocated and restored section.



Agatsuma Line Agatsumagawa Bridge No. 3



Senseki Line (between Nobiru and Rikuzen-Ono)



History of JR East Group's environmental and social activities

| Year | Month | Environmental and social activities |
|------|-------|---|
| 1987 | Apr. | Japanese National railways divided, and East Japan Railway Company established. First Railway Safety Promotion Committee meeting held. |
| | June | Green Campaign began. Green Counter (now renamed customer help desks) opened for receiving customer feedback. |
| 1988 | Sep. | Company-wide "Challenge Safety Campaign" launched |
| | Dec. | ATS-P, an improved safety train-control system, installed on the Keiyo Line. |
| 1989 | Apr. | Safety Research Laboratory and General Training Center established. |
| 1990 | Sep. | "First Railway Safety Symposium" held. |
| | Oct. | "future 21," a management plan for the twenty-first century, announced. "Ladies' Cars," cars exclusively reserved for female passengers, introduced on sleeping-car limited express trains. |
| 1992 | Mar. | East Japan Railway Culture Foundation established. |
| | Apr. | Committee on Ecology established. |
| | May | Trees planted to commemorate the 5th anniversary of JR East's founding (later, an annual event called "Railway Lines Forestation Program" began). |
| 1993 | Aug. | Waste collection sorted into three categories began on a trial basis at Sugamo Station on the Yamanote Line. |
| | Mar. | All-day smoking ban extended to major stations in the Tokyo suburban areas. |
| 1994 | Feb. | Ueno Station Recycling Center started operation (with automatic system for separating used cans from bottles). Waste collection sorted into three categories started at 36 stations on the Yamanote and other lines. |
| | Mar. | "Basic Safety Plan" announced. |
| 1995 | Feb. | Recycling of used train tickets began in the Tokyo metropolitan area. |
| | Mar. | First measure to reduce Shinkansen noise completed. |
| 1996 | Apr. | Ecology education for all new recruits initiated. |
| | Mar. | JR East website set up. Quantitative environmental targets set for CO ₂ emissions and others. First annual Environmental Report published. |
| 1997 | Dec. | Autonomous Decentralized Transport Operation Control System (ATOS) became operational. |
| | Mar. | Recycling facility at Minami-Akita Operations Center started operation. Separate smoking zones established at all stations. Smoking prohibited on all local trains. |
| 1998 | Oct. | Recycling facilities at Nagano Shinkansen Rolling Stock Center and Tokyo Station started operation. |
| | Mar. | Second set of measures to reduce Shinkansen noise completed. |
| 1999 | Nov. | Shinkiba Recycling Center started operation (for separating used newspapers from magazines). JR East ranked as 27th on the list of world's most respected enterprises by Financial Times. |
| | Feb. | Safety Plan 21 announced. Niitsu Rolling Stock Plant acquired ISO14001 certification. |
| | Mar. | Omiya Recycling Center started operation (with automatic system for separating used cans from bottles). |
| | Apr. | Service managers deployed at some stations. |
| | May | Started utilizing copier paper recycled from newspapers collected at stations. |
| 2000 | Sep. | Information service on train operations made available by cell-phone. |
| | Apr. | JR East General Education Center established. Uniforms made from recycled PET bottles introduced. |
| 2001 | Nov. | Environmental targets revised with the announcement of New Frontier 21, the Group's medium-term management plan. |
| | Mar. | Oi Workshop, Kawasaki Thermal Power Plant, and Niigata Mechanical Technology Center acquired ISO14001 certification. |
| | July | "Women-Only" cars for female passengers introduced on the Saikyo Line on a trial basis. |
| | Dec. | JR East Research & Development Center established. |

| Year | Month | Environmental and social activities |
|------|-------|---|
| 2002 | Feb. | Test runs of the AC Train, a next-generation commuter train, began. Omiya Workshop acquired ISO14001 certification. |
| | Sep. | Sustainability Report including social and economic aspects published. |
| | Nov. | Sendai General Rolling Stock Workshop acquired ISO14001 certification. |
| 2003 | Mar. | Third set of measures to reduce Shinkansen noise completed. "Guide to Barrier-Free Station Facilities" pamphlet distributed. |
| | May | Test runs of the NE Train, world's first hybrid railcar, began. |
| | Sep. | First JR East Group Environmental Management Promotion Conference held. |
| 2004 | Dec. | Koriyama Workshop acquired ISO14001 certification. |
| | Mar. | "Safety Plan 2008" announced. |
| | Apr. | "F Program" launched, with the aim of creating a better working environment for female employees. |
| 2005 | May | Adataro Hometown Forestation Program held. |
| | Jan. | Environmental targets revised with the announcement of "New Frontier 2008," the Group's medium-term management plan. |
| | Feb. | Nagano General Rolling Stock Center acquired ISO14001 certification. |
| | July | Akita General Rolling Stock Center acquired ISO14001 certification. Customer Service Department established. |
| 2006 | Dec. | Office-wide JR East Eco Activities started at JR Hachioji Branch Office. |
| | Feb. | Disaster Prevention Research Laboratory established. |
| 2007 | Mar. | Smoking prohibited in all cars of Shinkansen and limited express trains. |
| | July | World's first diesel hybrid railcars in commercial service, the Kiha E200 type, commenced operation. |
| 2008 | Oct. | Railway Museum opened. |
| | Mar. | "JR East Vision 2020 - i do mu -" announced. |
| 2009 | June | Environmental targets revised. |
| | Mar. | 2013 Safety Vision Announced. |
| 2010 | Apr. | Environmental Engineering Research Laboratory Established. Total ban on smoking in specified locations in the Tokyo metropolitan area. |
| | June | Water intake restarted in Shinagawa Power Station based on the "Permission of the Use of River Water." Platform doors installed at Ebisu Station on the Yamanote Line. |
| 2011 | July | Environmental Management Promotion HQS established in the Corporate Planning Headquarters. |
| | Mar. | Operation of Tohoku Shinkansen, Hayabusa, started. |
| 2012 | Mar. | Use of "Ecoste" Yotsuya Station begins. |
| | May | Reconstruction Planning Dept. established in the Corporate Planning Headquarters. |
| | June | Use of "Ecoste" Hiraizumi Station begins. |
| 2013 | Oct. | JR East Group Management Vision V - Ever Onward announced. |
| | Sep. | Use of "Ecoste" Kaihinmakuhari Station begins. |
| 2014 | Feb. | Announced "JR Group Safety Plan 2018." |
| | Mar. | The EV-E301 Series railcar featuring storage-battery-driven electric car systems (ACCUM) started operations. |
| 2015 | Mar. | Use of "Ecoste" Yumoto Station begins. |
| | Apr. | Use of "Ecoste" Fukushima Station begins. |
| 2016 | Dec. | JR Akita Shimohama Wind Power Generation Station started operations. |
| | Mar. | The EV-E801 series accumulator railcar train for alternating current sections started operations. Use of "Ecoste" Urawa Station begins |
| 2017 | Apr. | Use of "Ecoste" Niitsu Station begins Use of "Ecoste" Musashi-Mizonokuchi Station begins |
| | July | Use of "Ecoste" Kobuchizawa Station begins |

Former names are used for some facilities