

How does the JR East Group conserve the environment along railway lines?

As a railway operator, it is of crucial importance for the JR East Group to conserve the environment along our railway lines. We give due consideration to the surrounding living environment by undertaking a wide range of actions to reduce noise and protect the landscape.

Reducing impacts on the environment along railway lines

Measures to reduce noise from Shinkansen

Noise caused by Shinkansen trains is strictly regulated by the Japanese government's Environmental Quality Standards for Shinkansen Railway Noise. JR East takes a variety of steps to reduce their noise, such as the installation of sound-proof walls and sound-absorbent materials, rail grinding^{*1}, and the modification of our railcars to operate more quietly.

Although we have already completed the implementation of measures to reduce noise levels to 75 dB or lower in densely-populated residential areas along our railway lines, we plan to take further steps by expanding the scope of areas where noise levels need to be reduced to less than 75 dB. We are determined to continue to work to prevent or minimize noise, with the aim of

improving the living environment along our railway lines, and achieving our environmental targets.

As part of our research and development efforts, we have conducted test runs of a prototype high-speed Shinkansen FASTECH 360. We are striving to establish a high-speed, eco-friendly Shinkansen technology that could enable Shinkansen trains to run at a maximum speed of 360 km/h with lower noise and less sonic boom^{*2}.



Sound absorbent plates are installed on the bottom and lower side of prototype high-speed Shinkansen FASTECH 360 to reduce noise.

Measures to reduce noise along conventional lines

Although there is no government-mandated environmental standards for conventional lines, we have implemented voluntary measures to minimize noise by installing continuous welded rails^{*3} and performing wheel truing^{*4}. We also comply with the Japanese government's Policy on Noise Measures for Construction of New Conventional Railways or Large-Scale Remodeling when we carry out such construction or modification of our conventional lines.

Measures to reduce noise during maintenance works

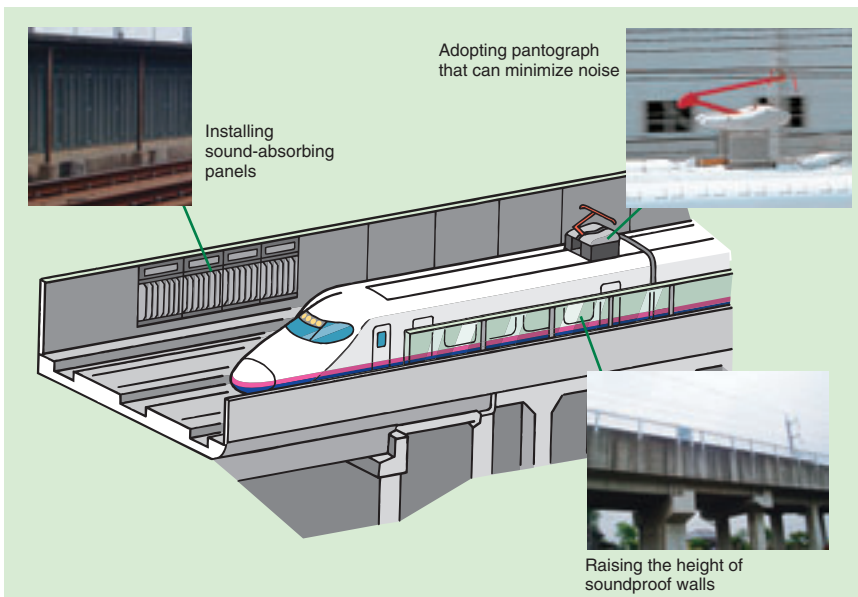
Besides noise from trains in operation, noise can be generated during track and other maintenance works. As maintenance work is usually done at night when trains are not running, we give advance notice about the schedule and details of this work to residents in surrounding areas. We also make utmost efforts to minimize noise by using modified equipment making lower noise.

On multiple-track lines, we carry out maintenance work on one of the tracks during daytime while keeping our trains in operation on other tracks. We also endeavor to lessen the need for maintenance itself by increasing the number of buckling-resistant rails.

Measures for dioxins from incinerators

Waste incinerators could generate dioxins under certain internal conditions. Although JR East has been combusting some of our waste in our own incinerators, in fiscal 2002 we stopped using all of our incinerators except for a large-scale one, which was retired in fiscal 2004. We are now dismantling and removing them.

Major strategies to reduce Shinkansen noise



*1 Rail grinding

A measure to smooth out the unevenness of rails caused by wheels rolling on them. The measure allows trains to run more quietly, because wheels are in better contact with rails.

*2 Sonic boom

An explosive sound caused by compressed air being forced out of a tunnel when a Shinkansen train enters it at a high-speed. The sound is produced at the end of the tunnel.

*3 Continuous welded rails

Rails that are more than 200 meters long by welding rail joints. Such rails can reduce the noise produced at rail joints as train wheels pass over them.

*4 Wheel truing

A measure to grind the unevenness of wheels caused by wearing, to restore their circular shape.

Visual impacts

Large structures such as bridges, stations, and station buildings could affect the landscape and cityscape of surrounding areas. In order to harmonize structures with the surrounding landscape and cityscape, JR East has set up Design Committees in our construction offices responsible for planning and designing of these structures. We also encourage our employees to pay more attention to the surrounding areas at a designing stage by giving awards to those who designed scenically attractive structures.



Hakonegasaki Station on the Hachiko Line, an open-plan structure with a dome-shaped roof and many glass panels.

Utilizing springwater in tunnels

In cooperation with local governments, we have made joint efforts to improve the quality of river water by supplying springwater welling up from our underground tunnels to rivers nearby. In the Tokyo Metropolitan

Area, we started supplying such springwater to the No River and the Tachiai River in fiscal 2001 and fiscal 2002 respectively, and began pumping springwater welling up from the ground near Ueno Station into the Shinobazu Pond in fiscal 2003.

We also have been using springwater to melt snow on Joetsu Shinkansen tracks in the Echigo-Yuzawa area ever since this line opened.

Reducing the usage of herbicides

We periodically trim weeds and use herbicides to prevent the weeds from overgrowing on our railway tracks. We minimize the amount and area of herbicide usage, and use herbicides with the lowest toxicity in three levels (ordinary substances) for humans and animals and with the lowest toxicity in five levels (A-type substances) for fish. We have also established rules to lessen the herbicide effects on surrounding areas, such as the suspension of herbicide spraying when conditions are not suitable. In fiscal 2005, our usage of herbicides amounted to 283 tons.

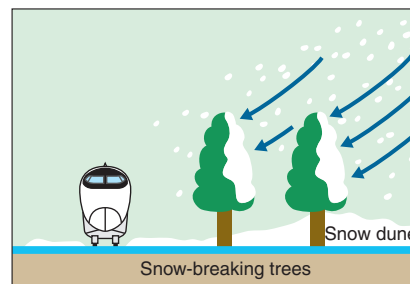
Protecting railway trees

Railway trees are planted to protect railway tracks from being blocked or damaged by snow drifting, land slides, fallen rocks, and avalanches. The planting of railway trees

began during the Meiji Period (1868–1912) in Japan, and at that time it was also profitable as a forestry business.

Besides playing their original role in preventing natural disasters, these trees now help protect the natural environment along our rail lines.

JR East owns approximately six million railway trees on a total of about 4,200 hectares of land—about 1,000 times as large as the area of the National Stadium—along our railways. These trees help prevent global warming by absorbing 17,000 tons of CO₂ per year, an amount that accounts for 0.7% of the annual CO₂ emissions by JR East. We are determined to preserve the trees along our rail lines as a means to contribute to the natural environment and local communities.



Fallen snow on the ground could be blown by strong wind and bury train tracks in snow drifting. Railway trees act as a windbreak to keep train tracks clear of snow.



Snow-breaking trees along the Tohoku Line.

Research on weed reduction

We eradicate weeds by using herbicides, because overgrown weeds on railway tracks become obstacles to safe train operations. In our efforts to reduce the use of herbicides, we are currently researching the ways to control the growth of weeds at the JR East Research & Development Center.

We now monitor the growth and development of weeds sprayed with a mixture of such natural substances as baking powder on a trial basis, since the substances could control the growth of weeds.