

# JR East conserves 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, protect the landscape, and prevent pollution.

## Reducing impact on the environment along railway lines

### Measures to reduce noise from Shinkansen

In accordance with the Japanese government's Environmental Quality Standards for Shinkansen Railway Noise, JR East takes a variety of steps to reduce this 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 75 dB or lower. 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 train, FASTECH 360. We are striving to establish a high-speed, eco-friendly Shinkansen technology that could reduce noise and micro-pressure wave in tunnels. \*2



Test train "FASTECH 360" uses a low-noise single-arm pantograph.

### Measures to reduce noise along conventional lines

Although there are no government-mandated environmental standards for conventional lines, we have implemented voluntary measures to minimize noise by installing long 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 work

Noise can be generated during track and other maintenance work. 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 double-track lines, we carry out maintenance work on one track during daytime while trains in both directions use the other track. We also endeavor to lessen the need for maintenance itself by increasing the number of labor-saving tracks with deformation-resistant rails.

### Dioxin measures at waste incinerators

JR East used to incinerate some waste in its own incinerators. They could generate dioxins under certain internal conditions. During fiscal 2002 we stopped using all but one of our incinerators, and this one, which was large, was retired in fiscal 2004. We are now dismantling and removing them.

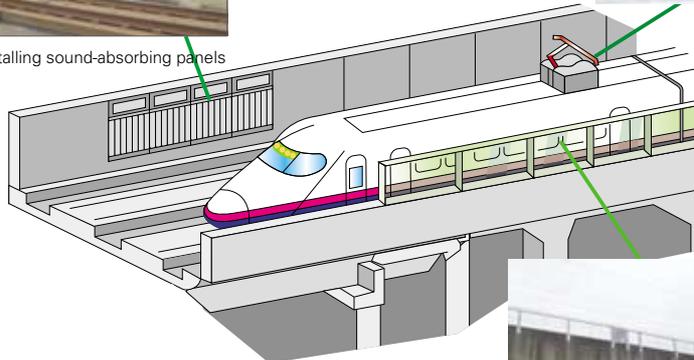
### Major strategies to reduce Shinkansen noise



Installing sound-absorbing panels



Pantographs that minimize noise



Raising the height of soundproof walls

#### \*1 Rail grinding

A measure to smooth out the unevenness of rails caused by wheels traveling over them. The measure allows trains to run more quietly because wheels are in close contact with rails at all times.

#### \*2 Micro-pressure wave in tunnels

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 Installing long rails

Rails that are made more than 200 meters long by welding rail joints. With fewer rail joints, these rails reduce noise produced at joints when trains pass.

#### \*4 Wheel truing

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

## Visual impacts

Large structures such as bridges, stations, and station buildings 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 in the design stage by giving awards to those who designed scenically attractive structures.



The bridge over River Tenma between Kamikita-cho and Ottomo on Tohoku Main Line, where serial concrete arch design is adopted in an effort to create harmony with the beautiful scenery of the mountains of Aomori.

## Reducing the usage of herbicides

For safe train operation, we must periodically remove weeds around railway tracks. In addition to manual weeding, we also use some herbicide.

We minimize the amount and area of herbicide usage, and use herbicides with the

lowest of three toxicity levels (ordinary substances) for humans and animals and with the lowest of five toxicity levels (A-type substances) for fish. We have also established rules to lessen the herbicide effects on surrounding areas, such as suspending herbicide spraying when conditions are not suitable. In fiscal 2006, our usage of herbicides amounted to 261 tons.

## Protecting railway trees

Railway trees are planted to protect railway tracks from being blocked or damaged by snowdrifts, landslides, 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 17thousand tons of CO<sub>2</sub> per year, an amount equivalent to 0.8% of the annual CO<sub>2</sub> emissions by JR East.

We are determined to preserve the trees along our rail lines as a means to secure safe railway operation and to protect natural environment.

## Utilizing spring water in tunnels

In cooperation with local governments, we have made joint efforts to improve the quality of river water by supplying spring water welling up from our underground tunnels to rivers nearby. In the Tokyo metropolitan area, we started supplying such spring water to the No River in fiscal 2001 and the Tachiai River in fiscal 2002, and began pumping spring water welling up from the ground near Ueno Station into the Shinobazu Pond in fiscal 2003.

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

## COLUMN

### Role of Railway Trees

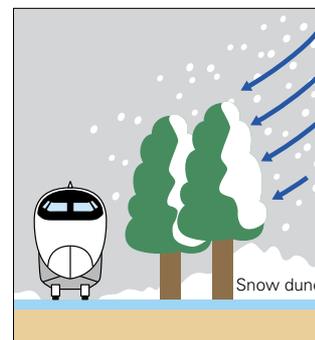
Railway trees along JR East are mostly found in the Tohoku and Joshin-etsu areas, and about 80% of these are snowbreak trees, planted where they will block snowdrifts or stop avalanches.

Trees to block snowdrifts are to keep railway tracks free of drifting snow. Trees to stop avalanches prevent snow on the slopes along the railway tracks from sliding down. Evergreens also can keep the snow on the slopes from being exposed to direct sunlight and melting suddenly.

In the long history of railway trees, they were installed for many different purposes. For example, in the days of steam locomotives, watershed trees were used to protect water sources near water supply points. We still have one such location on the Ou Line.



Snowbreak trees along the Tohoku Line.



The snowdrift problem arises when fallen snow is blown by strong winds and buries the railway tracks. Snowbreak trees act as a windbreak to keep tracks clear of snow.