

How do we conduct environmental conservation along railway lines?

Since railroad tracks run through residential and other areas, minimizing environmental impact along the railway lines is one of our most important concerns. JR East is taking steps to reduce noise, improve urban landscapes and the surrounding natural environment, and otherwise minimize negative impact on local residents.

Noise reduction

Noise reduction along Shinkansen lines

Shinkansen noise levels are regulated by "Environmental Quality Standards for Shinkansen Super-express Railway Noise," issued by the Environmental Agency (currently Ministry of the Environment) in 1975. Till today, the Agency continues to instruct us on measures against noise pollution. For noise abatement, we specify sections along our railway lines as one of four types: "Super densely populated area," "Densely populated area," "Sub-densely populated area" or "Residential area."

By FY 2002 we successfully limited noise levels in such areas to below 75 dB. Measures taken included raising the height of soundproof walls; installing sound-absorbent materials, smoothing rails¹, and other on-the-ground improvements.

We have made additional improvements to railcars as well, with a new type of low-noise pantograph.

We will continue implementing noise-reduction measures to improve the quality of life along railway lines and meet increasing environmental standards.



Single arm pantograph reduces wind noise

Noise reduction along conventional lines

There are no certain government-mandated environmental standards which apply to existing conventional lines. However, JR East plans to reduce noise in these areas as well out of respect to nearby residents.

In addition to installing continuous welded rails² and conducting wheel truing³, we are conducting ongoing research on other noise reduction measures.

Since 1995, when the Environment Agency released its *Policy on Noise Measures for Construction of New Conventional Railways or Large-scale Remodeling*, we have been developing strategies to ensure compliance.



Rail alignment vehicle trims and flattens rails



Smoothing rail unevenness caused by train operation

Noise during maintenance work

JR East performs maintenance work on track beds late at night when the trains are not running. Local residents are notified in advance whenever such night work is scheduled, and we make every effort to minimize noise from construction machinery.

We also perform the work during the daytime on one side of double tracks, while temporarily utilizing the only other track for train operations. This method, which we refer to as "refresh construction," reduces after-hours maintenance work.

What is more, we are currently replacing conventional ballast roadbeds with TC-type low-maintenance roadbeds, to reduce the overall need for routine maintenance.

Preventing electromagnetic interference

Television interference is sometimes caused along Shinkansen lines by the high frequency waves generated when pantographs momentarily bounce away from overhead wires. We support the installation of communal television reception systems and other solutions for affected households.

Dioxins generated from incinerators

Under certain conditions, refuse incinerators may generate dioxins. In the past, JR East used incinerators to burn some of the refuse discarded at stations and on trains; we are gradually eliminating our incinerators and now consign disposal to the municipality under the *Law Concerning Special Measures Against Dioxins*. In FY 2002, we closed all but one company-owned incinerator, which has been retrofitted to meet current emission standards.

1 Smoothing rails

Train wheels constantly rolling over the rails force rails out of alignment. We can reduce excess noise from passing trains by realigning uneven rail segments.

2 Continuous welded rails

Extra-long 200-meter rails require fewer welded joints to connect rail segments; trains pass over fewer joints to generate less noise.

3 Wheel truing

Trimming and smoothing worn edges on train wheels for increased performance.

Harmonizing with surroundings

Structures like railway viaducts and bridges, stations and station buildings tend to be large and stand out in their surroundings, causing somewhat impact on the landscape. In order to help buildings and the other structures that we need fit in with the environment, we set up design committees within construction departments and other organizations that plan and design them. These committees analyze how proposed structures may affect the existing landscape, and are formally recognized for outstanding designs.



The design and color of Anegasaki Kawahashi Bridge on the *Uchibo* Line were selected to match surroundings



Above: Before refurbishing
Below: After refurbishing
Asagaya Station on the *Chuo* Line was refurbished as part of our *Station Renaissance* program (see page13). The project focused on harmonizing with surroundings.

Utilizing spring water from tunnels

JR East normally pumps out the water that at times wells up in underground tunnels, but we are now developing ways to use this water. One method is to pump water from underground springs into surrounding rivers to improve overall water quality. Since FY 2001, we began pumping spring water collected in tunnels into Tokyo's Nogawa River (via Sugataminoike Pond) and Tachiaigawa River. In 2003, we plan to begin pumping water from tunnels around Ueno Station into Shinobazu Pond.



In July 2002 we began pumping spring water into Tachiaigawa River, which runs through Shinagawa-ku, Tokyo.

Protecting railway trees

JR East currently has approximately six million trees on a total of 4,400 hectares of land. These trees absorb 17,000 tons of CO₂, about 0.7% of the CO₂ discharged by JR East annually. The trees also beautify local communities. Historically, railroads planted trees to prevent soil erosion and serve as windbreaks near tracks. For all these reasons, we plan to continue taking good care of the trees.



Railway trees along *Yamagata Shinkansen* Line

Environmental awareness in residential plot development

We take the natural environment and local communities into account in all our development and land use plans. In our *Fiore Kitsurengawa subdivision* (located at Kitsurengawa-cho, Tochigi Prefecture, 82 hectares, 1,115 houses) we plan to make extensive use of existing trees and natural topographic features, and establish covenants when selling the lots to insure the environment is protected.

Lots in the *View Verger Annaka Haruna* subdivision (Annaka City, Gunma Prefecture, 49 hectares, 700 houses) will go on sale in FY 2003. We are planting indigenous trees to protect hillsides on the sculpted landscape.



Trees are planted to protect hillsides at *View Verge Annaka Haruna* subdivision

Reducing herbicide use

To maintain visibility and increase safety, we use herbicide to eliminate weeds in the areas around tracks. We severely limit, however, both the amount of herbicide used and the areas to be sprayed. We use herbicides rated "Normal" for mammalian toxicity (the lowest of the 3 ratings), with the A rating for aquatic toxicity (the lowest of the 5 ratings).