# What Environmental Conservation Activities Does the Group Conduct in the Vicinity of its Railway Lines?

**As a railway company we take a keen interest in improving and maintaining the environment along our railway lines. JR East is doing its utmost to reduce noise, protect the natural beauty of the landscape along railway lines, and ensuring that we do not negatively impact the life of local residents.**

## Noise Reduction along Railway Lines

### Noise reduction measures

Among all the noise caused by railways, *Shinkansen* noise levels are the most strictly regulated by the *"Environmental Quality Standards for Shinkansen Super-express Railway Noise"* established by the national government. Building soundproof walls, using sound-absorbent materials, and smoothing rails*1 as well as noise reduction of the railcars themselves are some of the measures JR East takes to reduce the noise. By FY 2002 we had succeeded in reducing noise levels in "residential areas" to below 75 dB. We will continue implementing noise-reduction measures to improve the quality of life along railway lines and fulfill environmental standards.

Although no specific government-mandated environmental standards apply to conventional lines, we are carrying out measures such as laying continuous welded rails*2 and performing wheel truing*3 to reduce noise. For new construction projects or large-scale remodeling, we observe the "Policy on Noise Measures for Construction of New Conventional Railways or Large-scale Remodeling" enacted by the national government.

### Measures to reduce maintenance work noise

In addition to train operation noise, noise is also a problem during maintenance work, particularly since it has to be carried out late at night when trains are not operated. Local residents are notified in advance of maintenance work, the type of work to be done and its duration, and we make every effort to minimize the noise caused by construction equipment. On double-track lines, we carry out what we refer to as "refresh installation work" that involves performing work during the daytime on one track while the other track is used for train traffic. To reduce the overall need for routine maintenance, we are currently replacing conventional ballast roadbeds with TC-type low-maintenance roadbeds.

We are developing a rail track vehicle*4 for overhead line work with a platform that can be lowered, raised and rotated using a battery powered motor, rather than an engine, to reduce noise during operation. Tests conducted on a prototype vehicle in FY 2003 were successful.

### Preventing electromagnetic interference

Television interference is sometimes caused along *Shinkansen* lines by the high frequency electromagnetic 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.

### Reducing herbicide use

JR East uses herbicides to eliminate weeds in the areas around tracks but we strictly limit the amount used and the areas applied. Only herbicides with the lowest zoonotic and aquatic toxicity are sprayed. In FY 2003, 255 tons of herbicides were used.

Rail alignment vehicle trims and flattens rails between Iidabashi and Ichikawa Stations on the *Chuo/Sobu* Line.

A low-noise rail track vehicle for overhead wire work operates using batteries with a high degree of quietness

***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 thereby generating less noise.

***3 Wheel truing**
Trimming and smoothing worn edges on train wheels for increased performance.

***4 Rail track vehicle**
A vehicle that uses tires on roads and flanged wheels on railway tracks.

## Considerations for aesthetic impact

Bridges, stations, and station buildings are often large and tend to impact the aesthetics of the landscape. JR East sets up a design committee within construction departments and other organizations undertaking the planning and designing to ensure that low-impact architectural concepts are applied to any construction work undertaken, so the resulting structure harmonizes with the landscape. In addition to revising projects whenever there are concerns for a negative impact on the landscape, awards are given to designs that harmonize with the landscape in order to encourage taking the landscape into consideration at the design phase.

## Protecting railway trees

JR East owns about six million trees on a total of 4,300 hectares of land along its railways. These trees fulfill vital environmental roles such as preventing soil erosion, serving as windbreaks near tracks, and absorbing 17,000 tons of $CO_2$ emitted by JR East (equivalent of 0.8% of its annual emissions). The rich greenery of these trees is a source of delight to local residents. JR East sees it as its mission to contribute to local communities through protecting the trees along our railways.

## Utilizing spring water from tunnels

With cooperation from local governments, we have been promoting a program to improve the water quality of nearby rivers by pumping the water that wells up in tunnels. In Tokyo, we pumped water into the Nogawa River in FY 2001, and into the Tachiagawa River in FY 2002. In FY 2003, we started pumping water from tunnels around Ueno Station into Shinobazu Pond.

Water pumped up in the Echigo-Yuzawa area along the *Joetsu Shinkansen* Line has been used since the line was brought into service to melt snow on the tracks.

The bridge between Minamikoshigaya and Yoshikawa Stations has v-shaped bridge supports to harmonize with the surrounding environment

The railway trees protect railways from natural phenomena and contribute to the local environment

Since FY 2003 we have been conveying water to Shinobazu Pond to improve the quality of its water

## Building Annaka-Haruna – Environmental consciousness in housing-land development

In the fall of 2003, JR East opened "View Verger Annaka-Haruna" as a residential area based on the concept of a "21st century suburb that integrates nature and culture" near Annaka-Haruna Station on the *Nagano Shinkansen* Line. As a part of promoting forestation and community building by hands of citizens, we have held events, such as planting trees indigenous to the area and nurturing those planted trees. About 25% of Annaka-Haruna is a green area with seven parks. They are linked by a network of greenways paved with porous pumice stone to let rainwater permeate, and walls of natural stone to harmonize with the surrounding environment.

Natural stone walls and greenways paved with pumice stones