Annual Environmental Report 2000

EAST JAPAN RAILWAY COMPANY
Committee on Ecology

3. Efforts regarding zero emissions

The end of the 20th century marks the close of an era of mass-production and mass-consumption. Now, we stand at the threshold of a new era. It is truly a step forward in the realization of a recycling-oriented society. Now that we are aware of the planet's own capacities, which have suffered significant depletion, it is no longer acceptable to dissipate resources and generate massive amounts of waste.

Customers deposit huge quantities of refuse at the stations and trains of JR East, while from our maintenance and scrapping operation of rails, trains and other structures large quantities of waste are also generated.

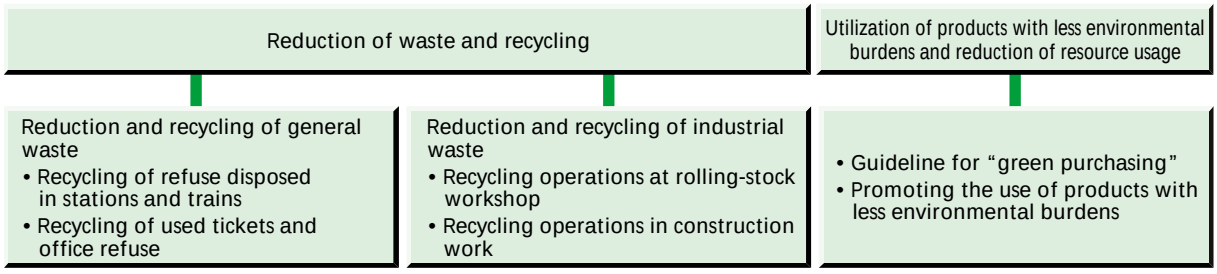
Therefore, as a means of achieving a true recycling-oriented society, JR East endeavors to reduce waste volume, above and beyond the processing stage, so that it can be treated in a manner compliant with laws and regulations.

We are also striving toward the achievement of zero emissions by recycling generated waste. The use of recycled products plays a key role in that effort.

■Goals and progress

Item	Targeted value (to be met by fiscal 2001)	Actual achievement in fiscal 1999
Recycling rate of waste generated at stations and trains	30%	33%
Recycling rate of waste generated at rolling-stock workshops and through construction work	70%	74%
Usage rate of recycled paper as office stock	95%	91%

■JR East's efforts regarding zero emissions

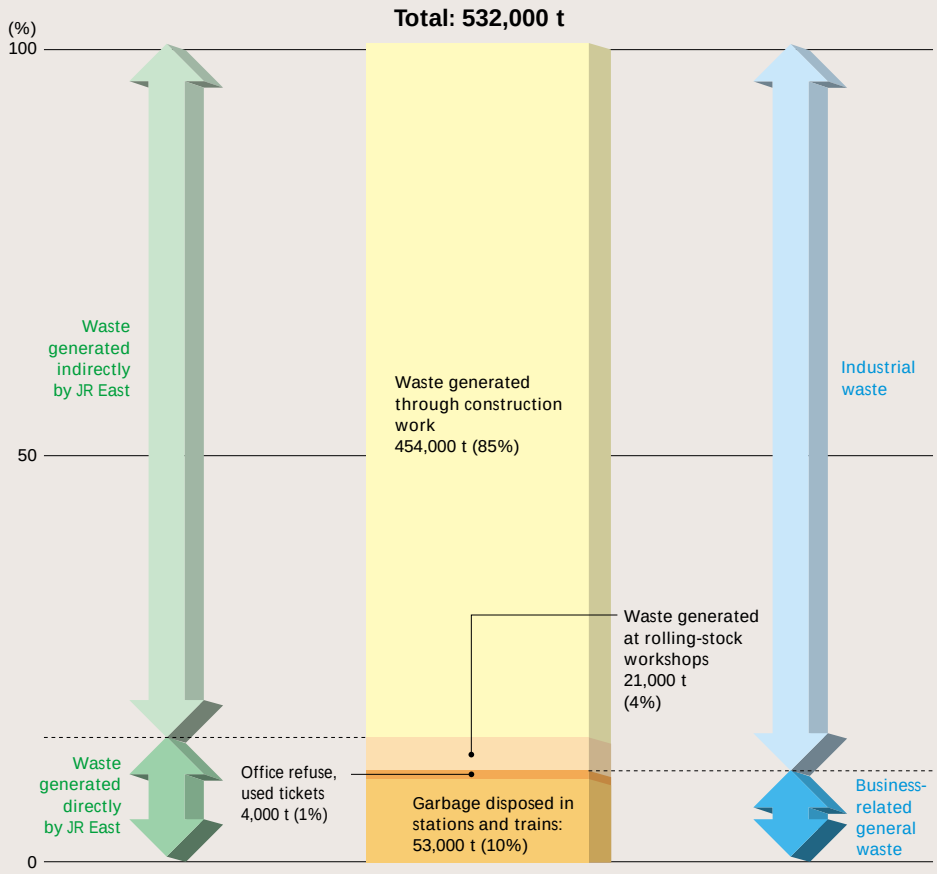


Waste generation by JR East

Waste reduction and recycling

The volume of waste generated directly and indirectly by JR East's business operations amounted to 532,000 t in fiscal 1999. Of that, 53,000 t (10% of the total) was refuse disposed by customers in stations and trains, while 476,000 t (89%) was industrial waste generated from maintenance and the scrapping of rails, trains, and other structures. The remaining volume consisted of 3,000 t of refuse generated at offices and 1,000 t of used tickets. JR East is trying its best to reduce the generation of waste, and is furthering that effort with the establishment of a recycling system.

■Breakdown of waste generated by JR East



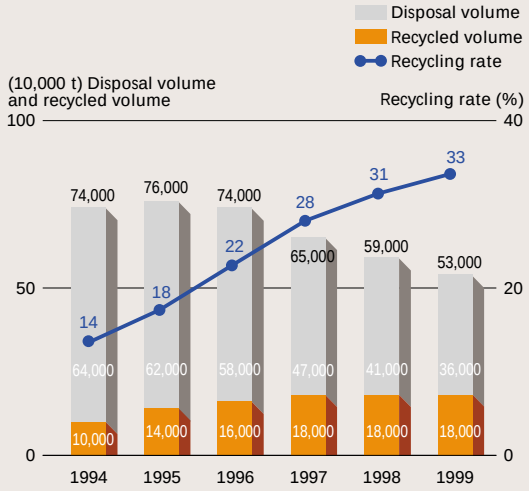
Reduction and recycling of business-related general waste

Recycling of refuse disposed in stations and trains

JR East carries approximately 16 million customers daily, and the volume of refuse they produce amounts to approximately 53,000 t a year. A large portion of that consists of recyclable material such as newspapers, magazines and steel and aluminum cans.

We are now busy installing refuse bins categorized for the efficient collection and separation of recyclable waste. These bins carry the designations “Newspapers and Magazines,” “Cans, Glass Bottles, and PET Bottles,” and “Others,” and customers are asked to follow those indications so that separation can be made that much easier. In this way, we are trying to place the collected recyclable matter like used paper, steel and aluminum on recycling routes. This measure has produced a 33% recycling rate for refuse generated in stations and trains in fiscal 1999.

■Trend in refuse generation at stations and trains



”Categorized refuse bins” placed on the platform for the promotion of refuse recycling

Recycling centers

Recycling centers have been built at Ueno Station, Omiya and Shinkiba in order to deal with large volumes of waste generated in the Tokyo metropolitan area. At the recycling centers in Ueno Station and Omiya, we collect and process the nearly 6,000 t of cans, glass bottles, and PET bottles that are disposed in the Tokyo and Saitama areas. We then separate them into their respective categories, and place them on the proper recycling routes.

The Shinkiba recycling center gathers newspapers and magazines disposed at stations throughout the Tokyo area. Each year approximately 4,500 t of used paper goes through separation and processing here.

These recycling centers are operated by our group affiliate, East Japan Eco Access Co., Ltd.

Omiya recycling center

A group-wide effort

JR East's Subcommittee on Zero Emissions is looking into the possibility of further reducing refuse generation in the stations and trains, and is studying the establishment of a recycling system. This will involve the cooperative efforts of the companies that sell goods to customers in our stations and trains, as well as the janitorial contractors.

Cases of group-wide effort

Higashinihon Kiosk Co., Ltd.; Nippon Restaurant Enterprise Co., Ltd. (NRE); and other companies are making a concerted effort to deal with environmental issues.

- Selection of materials for beverage bottles in consideration of recycling
  Efforts to select clear or brown glass bottles as often as possible
- Plastic bags for easy sorting
  Conversion to plastic bags that are hard to tie at the top, in order to make it easier to sort them out during refuse collection.
- Composting of the kitchen refuse generated at boxed-meal factories
  Composting of refuse generated through cooking for use in NRE's experimental organic farm.
- Simpler boxed-meal packaging
  Reduction of refuse volume through simpler packaging for key boxed-meal products.

Recycling of used train tickets and passes

Train tickets were traditionally considered hard to recycle, because many of them had a magnetic steel powder coating on the back. However, a new technology made it possible to separate the steel powder from paper fiber, and thus, used train tickets can now be reborn as recycled paper. In fiscal 1999, 96% of the approximately 900 t of used tickets were recycled into toilet paper, cardboard paper, employee business cards, and other items.

It has also become possible to recycle magnetic passes, which are made of PET resin, through the application of a new technology that removes the imprinted surface layers. We are planning to begin the recycling of certain used passes in fiscal 2000.

Recycling of office refuse

JR East separates its office refuse according to category. The disposing of such materials into designated bins allows us to place paper, metals and glass on the appropriate recycling routes. In fact, we recycled 50% of the approximately 3,000 t of refuse generated during fiscal 1999.

East Japan Eco Access Co., Ltd., which conducts cleaning operations in the stations of JR East and runs the Company's recycling centers, obtained ISO 14001 certification in November 1999.

NRE's organic farm

Used train tickets are recycled into toilet paper.

Categorized refuse bins at the JR head office

Reduction and recycling of industrial waste

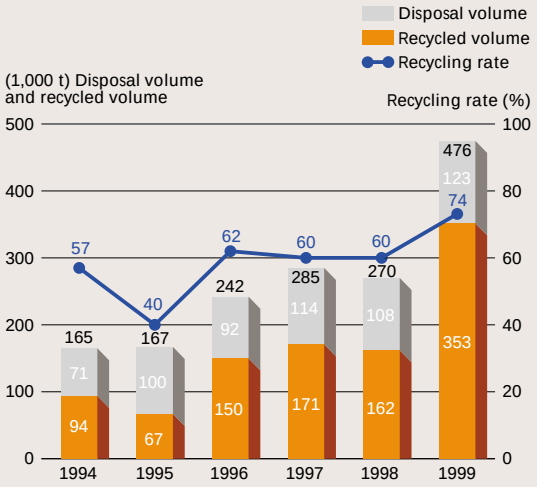
Recycling of waste generated at rolling-stock maintenance facilities and through construction work

New construction, renovation and maintenance work for railway-related establishments generates waste that includes metals (rails and electrical wire, etc.), sleepers, concrete, and sludge.

The work required to maintain rolling stock also generates waste, including metals, glass, rubber, cloth, wood chips, wastepaper, and waste oil.

To minimize waste, we are working to repair items where possible, and to secure recycling routes. Moreover, we act to preempt waste generation by selecting appropriate construction methods and materials during the design stage. The volume of waste generation in fiscal 1999 was 476,000 t, due to the increase in certain types of waste (sludge) as a result of increased construction. We nevertheless achieved a recycling rate of 74%.

■Trend in disposal volume and recycling rate of waste products generated from construction work and at rolling-stock maintenance facilities



Improvement of recycling rate in rolling-stock workshop

We scrapped a total of 517 cars during fiscal 1999. Currently, we are scrapping units from the 103 Series commuter cars and the 200 Series Shinkansen cars. Their recycling rate is 91%.

Traditionally, we used urethane resin for seats in the E231 Series, which was employed on the Sobu Line and others. Now, however, we are applying other materials that offer a greater degree of recyclability. This includes the replacement of urethane resin for polyester resin and the conversion from FRP (fiber reinforced plastic) to aluminum for use in some parts. Again, this is part of our preemptive effort to reduce waste in the design stage.

We are also planning to secure a recycling route for the glass formerly used in railcars, and to improve the recycling rate for waste metals via more thorough collection and separation. We are now in the process of examining the possibility of FRP recycling, too. In fact, we are making a great effort to realize 100% recyclability for the next-generation AC commuter trains now under development. To achieve that, every possible aspect of resource efficiency and recyclability is being examined in the design phase.

In the Nagano Rolling Stock workshop, waste metal is recycled into parts for railcar brakes and others.

An improved recycling rate for construction work

Regarding the waste generated from facilities installation and maintenance, we endeavor to share relevant information with recycling centers and establish a promotional plan for construction recycling. This will then be reflected in its building specifications and execution scheme.

Our Tokyo Ballast Processing Center, located within the Tokyo Freight Terminal, features a plant for the manufacturing of paving aggregate, where approximately 37,000 m^3 of ballast, waste concrete and concrete sleepers was processed in fiscal 1999. The plant will be enhanced to accommodate the expansion of recycling operations.

Tokyo Ballast Processing Center

Recycled ticket-vending machines

Currently, JR East is in the process of replacing outdated ticket-vending machines, which were manufactured approximately twenty years ago. In the process, we have developed a technology for the recycling of parts and materials—a process that allows us to transform such materials via the production of new vending machines. Through the combination of reused parts and recycled materials, we have achieved an 80% recycling rate (by weight) for these new machines. In fiscal 2000, we will begin introducing recycled ticket-vending machines.

Recycled ticket-vending machine

Utilization of environment-friendly products and reduced resource consumption

"Green Purchasing"

The term "green purchasing" refers to the acquisition of goods and materials in consideration not only of their costs and quality but their environmental burden, as well. Through the propagation of "green purchasing" among companies and consumers alike, this practice will raise environmental awareness on the part of product suppliers, who will then work to develop more environment-friendly products and methods of distribution. Ultimately, the purpose of "green purchasing" is to build a society that harmonizes with the environment rather than burdening it.

JR East established its Guidelines for "Green Purchasing" in February 1999.

JR East's Guidelines for "Green Purchasing"

Established in February 1999

1. Foreword

JR East conducts various ecological activities with a view toward reconciling business operations with the need for environmental preservation. Accordingly, when obtaining the goods and materials we need, we give priority to products posing less of an environmental burden.

Guidelines for "Green Purchasing" describes JR East's basic stance with regard to the purchase of products offering a reduced environmental risk. We therefore ask that our suppliers respect such guidelines and cooperate with us toward the realization of a more efficient, environmentally responsible society.

Please note, however, that the guidelines depict general items only. More detailed descriptions for different product types are given in specification sheets and others provided elsewhere by JR East.

2. Scope

The guidelines apply to products that JR East procures directly.

3. Definition

Definitions of terms used in the guidelines are described below, and are also prescribed in JISQ 14001/ISO 14001.

Product assessment: It is specified in Section 7 of Ministerial Ordinance No. 55 (October 1991) for the Law for Promoting Utilization of Recycled Resources (the Recycling Law). This refers to the whole action in the design phase of a product, being implemented for the reduction of environmental burden. It begins with examinations of possible environmental burden generated at each stage the product enters, from the procurement of parts and materials to production, distribution, use, recycling, disposal, etc., and ends with the implementation of changes necessary to perfect the product's final design.

4. Guidelines

Suppliers are encouraged to establish an environmental management system.

Suppliers are encouraged to prepare and practice product-assessment methods.

a. Materials

i. Selection of materials: As component materials for the product, the utmost effort should be made to select materials that afford easy recycling.

ii. Minimal number of material types: The number of material types to be used for the product should be reduced to a minimum.

iii. Chemical substance management: For products, parts and materials, substances (such as PCBs) subject to legal regulations should not be used.

b. Resource savings

i. Use of recycled materials: As component materials for the product, recycled materials should be used as much as possible.

ii. Weight reduction: The product's size and weight should be reduced to the maximum extent possible.

c. Ease of disassembly and processing

The utmost effort should be made to structure the product so that it can be easily disassembled into reusable parts, recyclable materials, etc.

d. Indication

For the purpose of recycling, the product and its constituent parts should have an indication, as detailed as possible, of component materials.

e. Energy savings

The utmost effort should be made to reduce the product's energy consumption, i.e., electric power and fossil fuel.

f. Packaging materials

Materials should be prepared in consideration of the following as much as possible;

i. Packaging materials should accommodate repeated use.

ii. Recycled materials should be used for packaging materials, and their volume should be minimal as well.

iii. Packaging materials should have an indication, which will not fade easily, of component materials.

g. Disposal

The product should be designed so that it has the least possible environmental impact when it is disposed.

h. Recycling and disposal method

Information concerning the product's recycling and disposal methods should be disclosed, as detailed as possible, upon request from JR East.

i. Others

The above guidelines are subject to revision when necessary due to changes in social conditions, technology development, new discoveries, etc.

Promoting the use of environment-friendly products

Given our use of various types of paper in business operations, we are making a great effort to maximize the use of recycled paper.

Old newspaper disposed in stations throughout the Tokyo district is gathered at the Shinkiba recycling center. It is then processed there into copier paper, and is eventually put to use in the offices of JR East. Ninety-one percent of the copier paper we used in fiscal 1999 was recycled stock, including the aforementioned newspaper collected from train stations.

We have also introduced various products into our operations for the purpose of reduced environmental burden. We developed refuse bags by compounding polyethylene and a powder made from used newspaper. To be recycled this way, newspaper collected in stations is powdered to a particulate size equivalent to cigarette smoke. These bags are used for refuse collection in our stations, and are used as official refuse bags in the cities of Tama and Kawasaki. Furthermore, we are replacing employees' uniforms for new ones made from used PET bottles.

In April 2000, we changed the material to be used for the VIEW Card, our credit card, to chloroethene-free PET-G. We use the ballast and concrete generated from construction work for roadbed materials, and we use recycled tiles—made from glass bottles disposed in stations and trains—for passageways and platforms.

Recycled copier paper made of newspaper, collected in stations

Recycled uniforms made from used PET bottles

Recycled paving tiles made from glass bottles (train passageway at Ueno Station)

Reuse of water

JR East is constantly increasing the use of rainwater and used water. It is used as toilet water following collection from the head office, branch offices, station buildings, roofs of platforms, etc., whereupon it is processed for purification.

Our water-conservation activities go even farther, including examinations of possible leakage, the use of water-saving toilets, water-saving spigots and the reuse of bath water for other purposes.

■Examples of water reuse

Location	Type of water
Head office building	Rainwater and used water
Tokyo branch office building	Rainwater
Hachioji branch office building	Rainwater
Yokohama branch office building	Rainwater
Oimachi Station building	Rainwater
Ebisu Station building	Rainwater
Tachikawa Station building (Granduo Tachikawa)	Rainwater and used water
Tokyo Station	Rainwater
Akabane Station	Rainwater
Shinagawa Station	Rainwater
Saitama-Shintoshin Station	Rainwater

eco-train

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