

Recycling-oriented Society

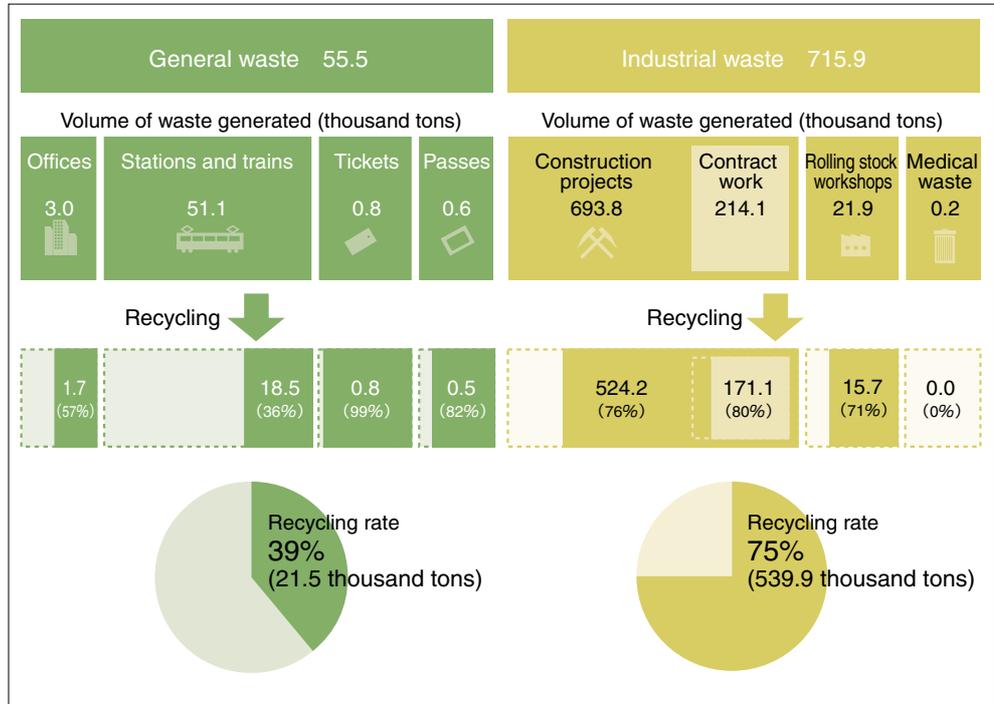
The transformation from a society of mass-production and mass-consumption that typified the 20th century into a recycling-oriented society in the 21st century has already begun. In the course of its business operations, JR East generates massive amounts of waste, including waste discarded at stations and on trains by passengers, and waste generated in the maintenance of rolling stock. For this reason, not only do we treat these discharged wastes appropriately in compliance with laws and regulations, but we are also working to reduce, reuse and recycle them wherever possible.

Item	Target value (to be met by fiscal 2005)	Actual achievement in fiscal 2001
Recycling rate of waste generated at stations and on trains	36%→40%*	36%
Recycling rate of waste generated at rolling stock workshops	75%	71%
Recycling rate of waste generated through construction projects	85%	76%
Usage rate of recycled paper as office stock	100%	97%

* Since we have already achieved a recycling rate of 36%, we are now aiming at a new target of 40%.

Recycling of waste materials

The volume of waste generated by JR East amounted to 771,000 tons in fiscal 2001. Since 561,000 tons of that amount were recycled (reuse is included), the recycling rate became 73%.



Flow chart for waste in JR East

General waste

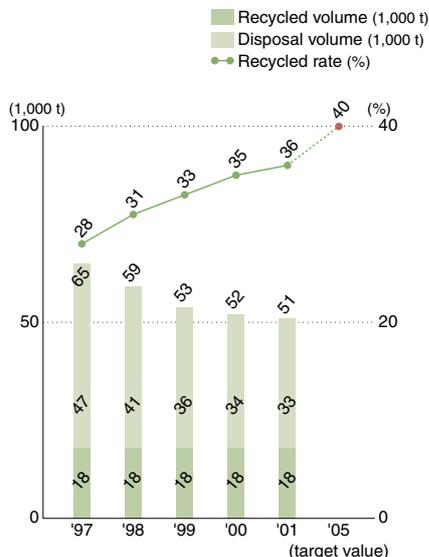
Refuse at stations and on trains

JR East carries approximately 16 million passengers on average a day, and the volume of refuse they generate at stations and on trains reaches approximately 51,000 tons a year. This is equivalent to the volume of household waste generated by 130,000 people annually. Because most of this massive amount of waste is recyclable newspaper, magazines, steel and aluminum cans and PET bottles, we are striving to recycle as much as possible through the use of efficient sorting systems. First of all, we install labeled refuse bins at stations and on trains, and together with passengers being asked to follow the separation instructions, we have installed a facility (the recycling center) which thoroughly compresses this waste in the next stage of the separation process that occurs after collection.



Refuse bins are labeled for five types of waste.

● Reuse generated at stations and on trains



Recycling centers

In the Tokyo metropolitan area where the largest volume of refuse is generated, recycling centers operated by East Japan Eco Access Co., Ltd. have been built at Ueno Station, Omiya and Shinkiba in order to collect and process the refuse. The recycling centers at Ueno and Omiya collect 5,700 tons of cans and bottles and 120 tons of PET bottles in Tokyo and Saitama Prefecture, and after sorting and compressing, this waste is sent to recycling contractors. In fiscal 2001, we established a facility to convert PET bottles handled at the Ueno Station recycling center into flakes in Minato-ku, Tokyo. The Shinkiba recycling center collects discarded newspapers and magazines from each station in the Tokyo area, and they are then sent to paper manufacturers as 4,000 tons of used paper. This used paper is born again as copier paper, which is being used at the office of JR East. Recyclable substances are conveyed into the proper recycling routes after separating and processing waste from trains by utilizing recycling equipment in such locations as Nagano Shinkansen Operations Center, Minami Akita Operations Center, and the Niigata Shinkansen First Operations Center. Steps which were taken made it possible to achieve a 36% recycling rate at the end of fiscal 2001 compared to 14% in 1994 when the Ueno recycling center was established. Thus, we have already achieved the target value for fiscal 2005. We have revised the target value to 40% and are striving to further raise recycling levels.



PET bottle recycling center



Recycled copier paper made of newsprint collected at stations

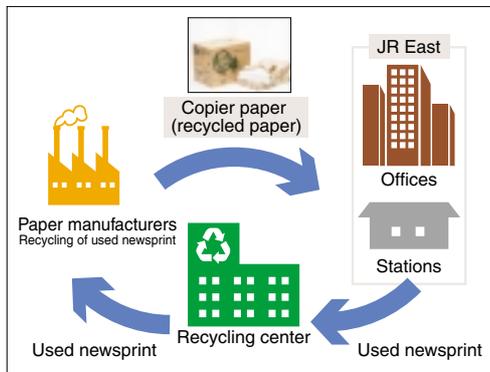


Image drawing of paper resources in circulation



Train tickets and passes

Although most train tickets are covered with a magnetic coating on the back so that they can be used in automated ticket gate machines, they can still be recycled because the technology to separate steel powder from paper fiber already exists. JR East is supplying the tickets discarded at stations to paper manufacturing factories. In fiscal 2001, 99% of approximately 800 tons of used tickets were recycled into toilet paper used in Yamanote Line stations and in offices, cardboard, and employee business cards for staff. Also, 82% of the approximately 600 tons of used passes collected are being used as a reducing agent in steel plant blast furnaces.

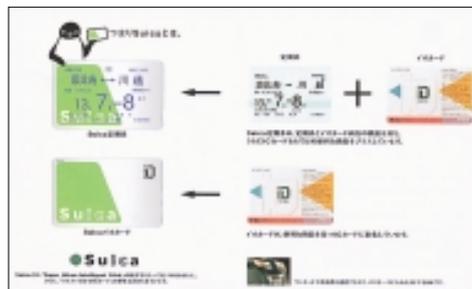
Further, we are also moving ahead with ticketless technologies to reduce the volume of tickets and rail passes discarded. A new type of IC card called "Suica," which began use in November 2001, has a rewritable function for the printed data on the face, meaning that these rewritable cards can be renewed and used repeatedly in purchasing train passes. This has allowed us to reduce greatly the volume of discarded train passes.



Labeled refuse bins in branch offices

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)	Rainwater and used water
Tokyo Station	Rainwater
Akabane Station	Rainwater
Shinagawa Station	Rainwater
Saitama-Shintoshin Station	Rainwater

Examples of water reuse



Suica IC card-based rewritable ticket/train pass

Office refuse

JR East offices are promoting conversion to a paperless environment by making use of LANs. If conventional printing on paper is unavoidable, we are endeavoring to conserve paper resources by making aggressive use of double-faced printing and printing multiple pages on one sheet. In addition, we place recyclable waste paper into the appropriate recycling routes after sorting and collecting it to facilitate recycling. In fiscal 2001, waste generated amounted to approximately 3,000 tons out of which approximately 1,700 tons were recycled through these approaches.

JR East is using 12.6 million tons of water in offices, stations and rolling stock workshops. In

order to utilize these water resources effectively, we are aggressively promoting water reuse at our Head Office, branch offices, and station buildings. For example, rainwater collected from rooftops of buildings and platforms and wastewater from washbasins are purified and reused as toilet flushing water. In the head office building, 14,000 tons out of 42,000 tons of water used in fiscal 2001 was reused water.

Industrial waste

Rolling stock workshops

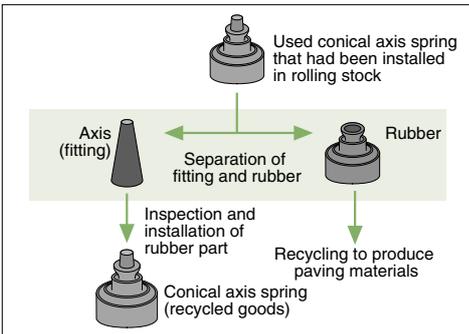
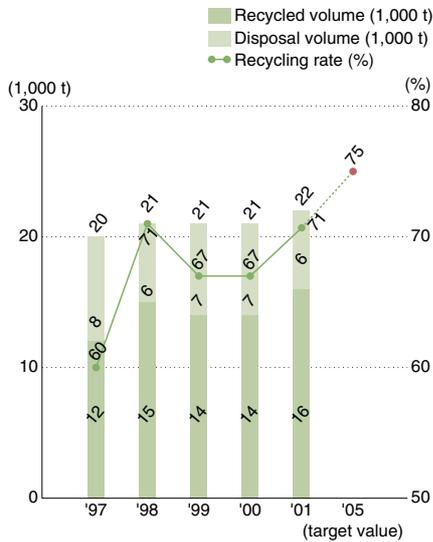
JR East maintains and repairs railcars in seven rolling stock workshops in addition to manufacturing commuter type electric railcars in the Niitsu rolling stock manufacturing factory. Since these work processes generate waste such as metals, waste plastics, glass, cloth, wood chips, wastepaper and waste oil, we are promoting recycling while minimizing the levels of such waste.

In another initiative to reduce waste, we are working to change packaging materials used in delivery of members, from cardboard boxes to returnable boxes.

As part of our recycling activities, we are endeavoring to recover resource materials by separating as many as 20-30 categories of waste products from a diverse range of materials. Collected resource materials are delivered to waste materials vendors, or in some cases, recycled in our own operations. For example, we are casting brake parts from molten metal scrap at the Nagano general rolling stock facility. Also, in fiscal 2001, we started to reuse, without modification or processing, the fittings of conical axis springs which absorb axle shaft vibration. In addition, we are preparing a device which returns the washing water used in coating processes back into circulation as rolling stock workshops use a relatively large amount of water.

It is important to review components in the design phase in order to promote the reduction of waste and recycling. As an example, we have been taking action to replace the urethane resin used for seats with materials such as polyester resin, as these offer a greater degree of recyclability. Aluminum has been substituted for fiber reinforced plastic (FRP) in window frames wherever feasible.

●Waste disposal and recycling at rolling stock workshops



Reuse of conical axis spring fittings

Construction of facilities

Waste is generated in the construction of new facilities and in the renovation and repair of stations and other structures. In fiscal 2001, 694 thousand tons of such waste was generated, but of that, 214 thousand tons was generated in the course of contract work (work that municipalities contract to JR East to ensure the safe operations of trains). Because construction contractors undertake all kinds of work under the contract agreement, the waste generated is the responsibility of contractors under the waste disposal law. However, at JR East, we have launched a comprehensive company-wide campaign mandating at the design stage the adoption of construction methods that minimize waste and facilitate the reuse of such waste that is generated. To assist the easy and appropriate disposal of construction by-products, waste issues need to be addressed at the design phase applying the civil engineering works

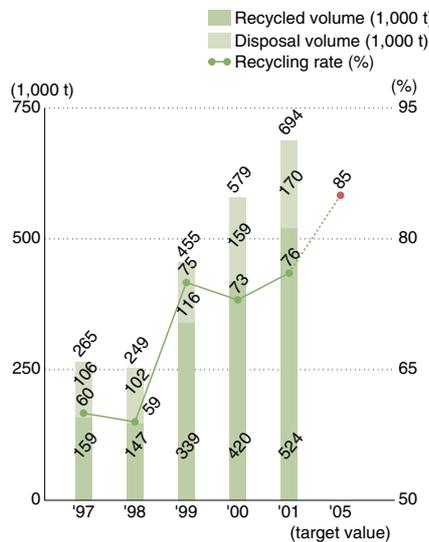
standard specifications. For example, in the construction of road tunnels under rail tracks, we are backfilling fluidized soil (which is a mixture of surplus soil generated by excavation, water and cement) into gaps between the structure and temporary retaining earth.

Totetsukogyo Co., Ltd. is operating a facility in Shinagawa-ku, Tokyo, to crush ballast (gravel) and waste concrete generated during construction to a certain size so that it can be resold as construction material (aggregate). By adopting this process it was possible to recycle approximately 14,000 tons in fiscal 2001. In JR East, in addition to using recycled aggregate, we are using paving tiles produced from recycled glass bottles in station passages and on platforms as part of our green procurement activities. JR East is also promoting recycling in land development projects in residential areas, and is using wood chips as dustproof process materials. These are made by chipping the trees felled within the zone at the site in View Verger Annaka Haruna (Annaka City, Gunma Prefecture, 49ha in total area, approximately 700 houses planned).

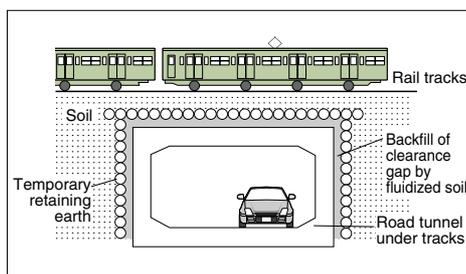


Sorting and collection at rolling stock workshops

●Waste disposal and recycling for construction projects



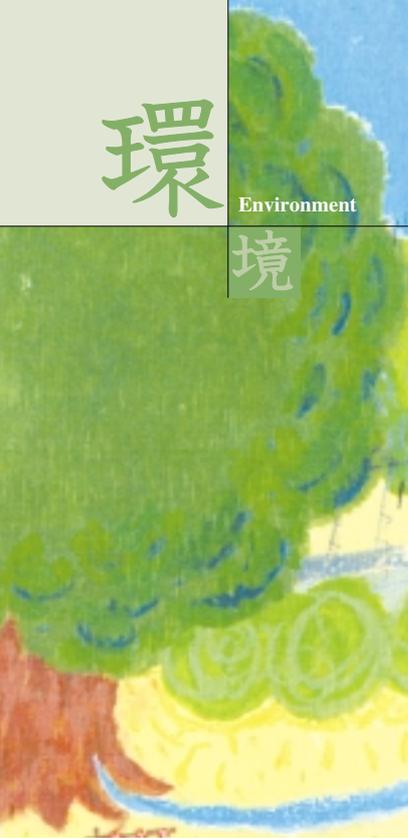
Turning felled trees into wood chips



Use of fluidized soil



Construction wastes recycling center



Inside stations, station buildings and hotels

Higashinihon Kiosk Co., Ltd. and Nippon Restaurant Enterprises Co., Ltd. are providing retail shopping services and meals & beverage services in JR East stations and on trains. Here we are also aggressively working to reduce and recycle waste. The staff of Higashinihon Kiosk Co., Ltd. will confirm whether customers wish to use bags (to cut down on plastic use) after purchasing a few items at “New Days” convenience stores. Packaging materials are being reduced by changing from cardboard cartons to collapsible containers for some of the incoming merchandise. Nippon Restaurant Enterprises Co., Ltd. produces and sells boxed lunch with simplified packaging, and is working to recycle foodstuff leftovers. In 1998 we started to convert food waste from a boxed lunch factory (Toda City, Saitama Prefecture) to compost, then set up a foodstuff recycling center in Shinagawa-ku, Tokyo in fiscal 2001. Nippon Restaurant Enterprises Co., Ltd. expanded its recycling activities to cover food waste generated by the eating-establishments it operates.



Foodstuff recycling center

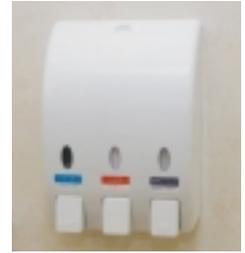
A variety of waste materials are also generated by tenant businesses in station buildings. Tenants are working to assist in the recycling of these materials by sorting and collecting them in each building. As an example, in Granduo (Tachikawa), composting facilities are actually installed within the building, and processed compost is being sold. In addition, we hold regular flea markets on the roof of several station buildings in order to support the recycling activities of community residents.



Flea market

The Metropolitan hotel is changing shampoo, body soap, etc. from individual packs to dispensers that can be refilled to reduce waste. Also, In Folkloro and Familio long-stay type hotels, we only exchange linen such as bed

sheets for multi-night guests at their request.



Shampoo and body soap provided in dispensers

Medical waste

In JR Tokyo General Hospital and JR Sendai Hospital, JR East provides medical services to members of the community and employees as well as conducting medical check-ups for staff in the central health management office and at railway medical examination centers in each branch office. 213 tons of medical wastes were generated in these facilities in fiscal 2001, but it is stored and disposed of in compliance with strict guidelines as specially controlled industrial waste.

Green procurement

In compliance with the “Green procurement guidelines” established in 1999, JR East encourages its business partners to use recycled materials and to reduce waste by improving environmental management systems as well as strives to procure products with the lowest possible impact on the environment. It does this by prioritizing its purchase of materials to favor those that are environmentally friendly. In addition to having introduced green procurement, since fiscal 2000, we have adopted uniforms which incorporate material produced through the recycling of PET bottles, and has expanded the use of record paper used in the MARS terminal (a ticket dispenser used for reserved tickets and other items) and of recycled paper in mail order brochures called “NRE Train Shop” distributed in trains in fiscal 2001. Further, 97% of all paper used in fiscal 2001 was recycled paper.



NRE train shop



Compost made of recycled garbage