

Social and Environmental Report
2002

EAST JAPAN RAILWAY COMPANY



Environmental Management

“Harmony with Society and Coexistence with the Environment” is one of the group visions that form part of the JR East Group’s “New Frontier 21” mid-term management plan. JR East launched the environmental management system before the announcement of the “New Frontier 21” plan. Currently, we are improving the existing system to create an effective mechanism for achieving this group vision.

In 1992, the “United Nations Conference on Environment and Development” (Earth Summit) was held in Rio de Janeiro, leading to the launch of a raft of global environmental conservation activities. In the same year, JR East established the “Committee on Ecology” and started systematic environmental conservation activities, while setting forth our Basic Philosophy and Policy on the Promotion of Ecological Activities. In 1996, we established guidelines and ecological goals, and have from that point been gradually introducing and promoting more specific initiatives. We revised the environmental targets to be achieved by fiscal 2005. These revised targets are set to coincide in 2005 with the culmination of New Frontier 21 as conceived in 2000.

Basic philosophy and basic policy

Basic philosophy (established in May 1992)

**The entire JR East Group, working together,
will diligently strive to reconcile environmental protection
with its business activities.**

Basic policy (established in May 1992)

**To contribute to customers’ lives and local communities by
providing a comfortable environment**

**To develop and provide the technology needed to protect
the global environment**

**To maintain an awareness of environmental protection and
raise the environmental awareness of our employees**

Activity guidelines and goals for the promotion of ecological activities

Activity guidelines (established in March 1996)

1. We work to prevent the waste of precious energy and to reduce CO₂ emissions—a known source of global warming—by enhancing our energy efficiency and introducing cleaner forms of energy.
2. We ensure the proper management and processing of environmental pollutants and ozone-depleting substances, in compliance with laws and regulations. Moreover, we do our best to reduce the usage and generation of these substances, and to adopt environmentally responsible substitutes when they are available.
3. We ensure the appropriate processing of various types of waste generated at our offices, establishments, stations, trains, etc. We strive to recycle waste and reduce the generation thereof, and to use more recycled and resource-saving products to minimize our burden upon the environment.
4. We respect the natural environment as a nurturer and source of life, and therefore, we endeavor to reduce noise and vibration caused by train operations, thus achieving a harmonious relationship with the communities we serve.
5. We work to make railways a more attractive and environment-friendly form of transportation.

Goals to be met by fiscal 2005 (based on figures in fiscal 1990)

(established in March 1996; partially revised in February 1998 and revised in November 2000)

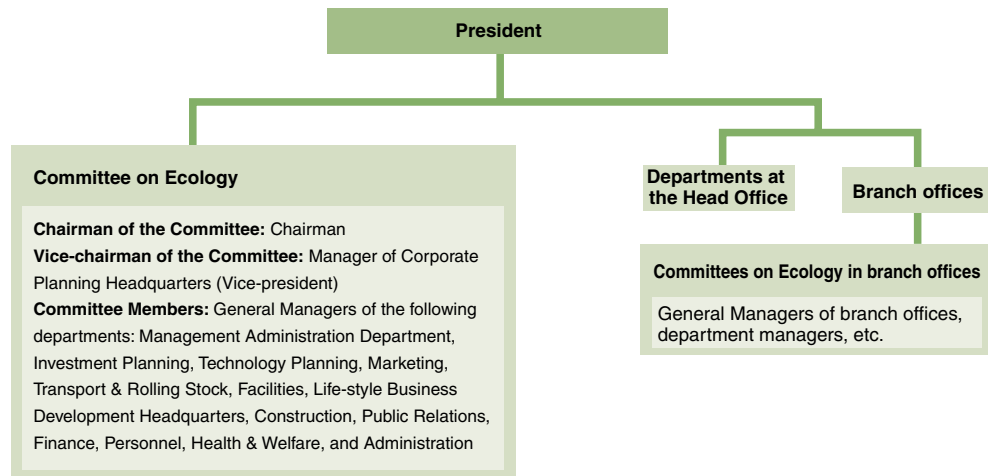
- A 20% reduction of CO₂ emissions in general business activities
- Realization of an energy-saving railcar ratio of 80%
- A 30% reduction of CO₂ emissions in proportion to unit electric power generation at company-run thermoelectric power plant
- A 15% reduction in energy consumption for train operations in proportion to unit transportation volume
- An 85% reduction in the number of large-size refrigerating machines using specific chlorofluorocarbons (CFCs)
- Realization of a 36% recycling rate for waste generated at stations and on trains
- Realization of a 75% recycling rate for waste generated in rolling stock workshops
- Realization of an 85% recycling rate for waste generated in construction projects
- Realization of a 100% rate for usage of recycled paper as office stock
- Reduction of noise to less than 75dB in designated residential areas along the Tohoku and Joetsu Shinkansen Lines*
- A 60% reduction of NO_x emissions at company-run thermoelectric power plant
- Implementation of specific environmental protection activities on an annual basis

*Projected for achievement by fiscal 2002

System for the implementation of ecological activities

A cross-departmental organization within JR East itself, the Committee on Ecology consists of general managers from each department, and is chaired by the Chairman of JR East. The Committee maintains an office within the Management Administration Department and a number of subcommittees, each of which is responsible for one of eight issues and is led by a chief supervisor from the respective business section. The Committee is involved in various activities, including the examination of the environmental impact of our business operations, the establishment of goals regarding our environmental activities, the implementation of conservation initiatives, confirmation of the degree to which goals are achieved, and executive oversight.

In fiscal 1998, each of our branch offices established its own Committee on Ecology, consisting of a branch manager and all department managers. Currently, each committee implements environmental conservation activities that focus on local circumstances and business. After fiscal 2000, these branch offices began publishing their own environmental reports (site reports) to track the progress of their environmental activities.



Subcommittees	Departments in charge of subcommittees	Main activities
Environmental Management System	Management Administration Dept.	Establishment and revision of goals and environmental measures
Energy Savings and Clean Energy	Electric Facilities Section, Facilities Dept.	Energy savings and the reduction of CO ₂ emissions
Environmental Pollutant Management and Reduction	Planning Section, Transport & Rolling Stock Dept.	Reduction of environmental pollutants and ozone-layer depleting substances
Zero Emissions	Passengers Facilities Section, Facilities Dept.	Reduction of waste volume and promotion of use of recycled products
Green Rail	Environmental Planning Section, Facilities Dept.	Environmental conservation along railway lines and noise reduction
Ecology Technology	Technology Planning Dept.	Development of environmental technologies
Intermodal Transportation	Marketing Dept.	Reduction of environmental burden by enhanced integration of railways into the general transportation infrastructure
Environmental Business	Lifestyle Business Development Headquarters	Environmental contributions through business operations

ISO 14001

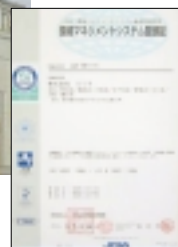
In fiscal 1998, our Niitsu Rolling Stock Manufacturing Factory obtained certification under ISO 14001, the international standard for environmental management systems in business and industry, for the first time in operating divisions of railway companies in Japan. In fiscal 2000, our Kawasaki Thermoelectric Power Plant, the Oi Rolling Stock Workshop, and Niigata Mechanical Technology Center obtained certification. The Omiya Plant also obtained ISO 14001 certification in fiscal 2001. Now, our Sendai General Rolling Stock workshop is working toward the acquisition of this certification. We will continue our efforts to obtain certification, primarily at our rolling stock workshops - each of which is engaged in operations with the potential to generate a significant environmental burden. Among our group companies, East Japan Eco Access Co., Ltd. obtained certification in 1999. It was followed by all eight Lumine Co., Ltd. buildings and the corporate headquarters through 2000 to 2001. Currently, the Production Operation Division for box lunches and other goods in Nippon Restaurant Enterprise Co., Ltd. is promoting activities in order to obtain certification.



Omiya Plant and certificate



Lumine and certificate



Internal environmental audits

JR East is in the process of implementing environmental management based on the PDCA (Plan-Do-Check-Action) cycle, primarily through the Committee on Ecology. At our rolling stock workshops, for example, we send some employees to outside workshops, who then conduct regular

audits for his/her own plants and other in-house plants concerning specific environmental activities.

Environmental risk management

We have compiled emergency response manuals for current operations that handle chemical and hazardous substances such as our thermoelectric power plant and rolling stock workshops. These manuals are used in study groups and are intended to thoroughly familiarize workers with risk control procedures. We also conduct on-site training exercises on how to handle these substances.



Environment-related accidents, etc.

In fiscal 2001, we did not experience a single instance of an environment-related accident and no fines were levied as a result.



Environmental education

Because JR East is now implementing environmental conservation activities, it has become very important that all our employees have an appropriate level of awareness with regard to environmental issues. We therefore provide environmental education for all our new recruits and new management staff, while organizing environment-related seminars and lectures for a wide range of staff. We incorporated ten courses, for instance, "Earth-friendly Environmental Seminar" and "Introduction to ISO 14001," into our correspondence training in order to increase staff awareness concerning these issues. In addition, our monthly in-house magazine "JR Higashi" also covers environmental topics in every issue, and carried a feature of JR East's environmental activities over a six-month period in fiscal 2001. Also, each of our branch offices provides information on environmental issues through its own public relations magazine and in-branch office LAN (information network).



"JR Higashi"

Training for new on-site supervisors	12 times	230 people
Training for new management staff	3 times	90 people
Training for implementation managers	Once	200 people
Training for new recruits	Once	1,390 people
Follow-up training for new recruits	Once	50 people
Environmental seminars	15 times	980 people

Ecological education programs implemented during fiscal 2001



JR East's ecology activities
URL: <http://www.jreast.co.jp/eco/>

Environmental publicity

JR East conducts a campaign on ecology issues every year. This is to highlight the importance of these issues to customers and people working and living along railway lines and to inform them of our environmental conservation activities. In fiscal 1999 and 2000, we operated trains displaying artwork to promote environmental issues along the Keihin-Tohoku and Yamanote Lines. In March 2002, we held an event in the event space referred to as "Break," at Tokyo Station, where families could enjoy handicraft activities. About 10,000 people visited this event site over a four-day period.

In addition to the above campaign, we are conducting public relations activities through various media such as newspapers and magazines to help the public gain a better understanding of how we are addressing environmental issues and also to increase society-wide environmental awareness. JR East has a page for ecological issues on its website to make information on our environmental conservation activities available and it also provides the full text of our Social and Environmental Report through PDF file format. Also, you can comment on this page through e-mail, while your opinions and views can be sent by fax or by mail through a questionnaire attached to this report.



Press advertising

Research and development

Research and Development Center of JR East Group

To quickly and precisely identify customer needs, which will become increasingly sophisticated and diversified in the future, and to contribute to social communities through the realization of the best railway system in the world (= e@train) in terms of safety, convenience, technological innovation, comfort and efficiency, we established a "JR East Research and Development Center" in Saitama City in December 2001. The three research and development organizations, previously situated in different places, were integrated into this new center. The Research and Development Center of JR East Group consists of the "Frontier Service Development Laboratory," "Advanced Railway System Development Center," "Safety Research Laboratory" and "Technical Center," each of which fulfills its own mission efficiently and functionally in the quest toward the realization of e@train.



Research and Development Center of JR East Group

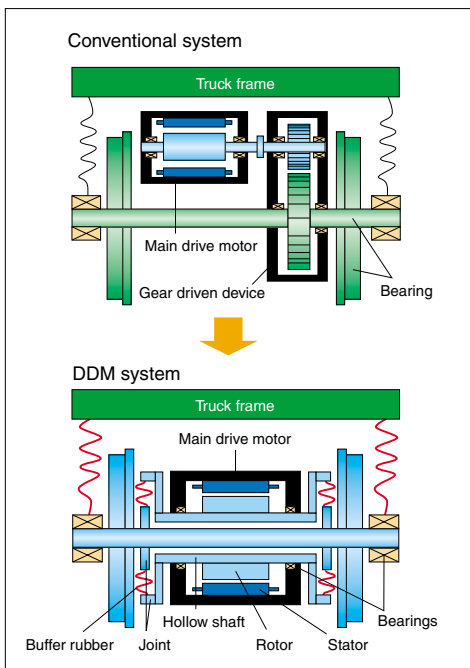
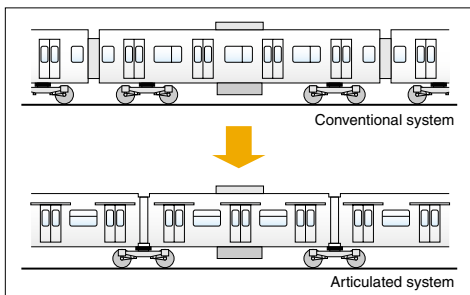
AC Train

A variety of objectives such as "improved passenger services," "enhanced transportation stability," "reduced costs for system change," "ecology awareness" and "barrier free" are being pursued to realize a train appropriate for the 21st century. We have therefore developed a test car for the AC Train (Advanced Commuter Train) and carried out various evaluation tests on the car. The latest information technologies have been introduced into this test train to help improve passenger information services and increase transportation stability. These technologies will also assist our efforts to save energy by reducing the number of trucks, main circuit equipment and other devices, thus reducing overall train weight. The employment of a Direct Drive Motor (DDM) with high-energy efficiency will also help us to meet these objectives. In addition, the test train includes various new

technologies such as selection and application of recyclable materials that will help achieve our target of zero emissions. It will also include safety measures such as covering the gap between the platform and car entrance, and eliminating rails in the doorway to make access for handicapped passengers far easier. The introduction of a door open/shut audio announcement and door open/shut indicator light guide will greatly assist vision- and/or hearing-impaired customers.



AC train



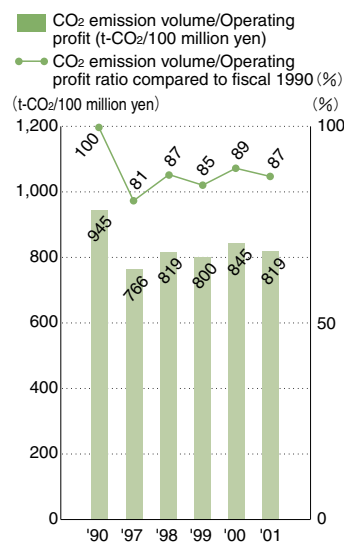
Environmental management index

JR East formulated an environmental management index and used it to elucidate the relationship between our social environment and economic activities and then applied the relation clarified in this way to making business assessments and decisions.

$$\text{Environmental management index} = \frac{\text{Environmental burden}}{\text{Economic value added}} = \frac{\text{CO}_2 \text{ emission volume (t-CO}_2\text{)}}{\text{Operating profit (100 million yen)}}$$

Concerning our environmental management index, we treated the volume of CO₂ emissions, the reduction of which is one of our top priority issues, as an environmental burden, while selecting operating profits as an added economic value. Accordingly, a smaller value indicates less stress on the environment, while creating added economic value. By continuously monitoring the indicator, we can verify whether environmental conservation activities are consistent with economic ones. Because of our efforts over the last decade, the value of 945 (t-CO₂/100 million yen) recorded in fiscal 1990 had been reduced to 819 in fiscal 2001.

● Environmental management index



Environmental accounting

JR East has performed environmental accounting since fiscal 1999 to identify environmental conservation costs and effects.

We have included economic effects associated with environmental conservation activities since fiscal 2000.

How environmental conservation costs and effects are determined

- Data refer to East Japan Railway Company itself, on a nonconsolidated basis.
- "Environmental conservation costs" covers only those that can be identified through our current system of management.
- Categorization of activities is based on the guidelines (edition of fiscal 2002) set forth by Ministry of the Environment of Japan.
- For activities that are multipurpose and have a significant environmental effect, the stated amount refers to total costs spent on behalf of those specific activities. (The cost for pollution prevention includes all the expenses for the introduction of continuous welded rails and PC sleepers, as long as they are considered to have contributed to enhanced functionality. The cost for global environmental conservation includes the total amount invested in energy-saving railcars.)
- Expenses do not include depreciation costs.
- Expenses for the processing of waste generated at stations and trains (within the category of resource-recycling costs) is calculated in the following manner: First, a model is set up for the cleaning of stations and trains. Second, the percentage occupied by waste recycling and processing is calculated, in proportion to the content of the entire model. By multiplying the cleaning expenses for stations and trains by this percentage, the amount of the said expenses is obtained.
- The amount of expenses for the processing of waste generated through construction work and by rolling stock facilities (under the category of resource-recycling costs) is calculated by multiplying the waste volume in fiscal 2001 by the standard unit price in each waste category and location.

	Category	Environmental conservation costs (unit: ¥billion)	
		Investment	Expenses
1 Environmental conservation activities along railway lines (pollution prevention)	<ul style="list-style-type: none"> Noise reduction measures along Shinkansen and conventional lines (construction of sound barriers, introduction of PC sleepers and continuous-welded rails, etc.) Reduction of environmental pollutants from company-run Kawasaki Thermoelectric Power Plant Renovation of large-size incinerators; elimination of small-size incinerators Appropriate management and treatment of organic solvents etc., based on PRTR regulations 	3.63	6.32
2 Global environmental conservation activities	<ul style="list-style-type: none"> Introduction of energy-saving railcars Energy conservation at stations and office buildings (introduction of co-generation) Promotion of intermodal transportation (Park & Ride, Rail & Rent-a-Car, etc.) 	55.09	—
3 Resource-recycling activities (zero emissions program)	<ul style="list-style-type: none"> Reduction and recycling of waste generated at stations and on trains (categorized collection, establishment of recycling centers, etc.) Recycling of train tickets and passes Recycling of waste generated at rolling stock workshops and in construction projects Recycling of newspaper collected at stations, and introduction of recycled office paper, etc. 	—	5.71
4 Environmental management	<ul style="list-style-type: none"> Implementation of environmental management by Committees on Ecology at JR East Head Office and branch offices Activities for obtaining ISO 14001 certificate at the Omiya Plant Afforestation along railway lines Publication of the Environmental Report, environmental publicity, etc. 	0.14	0.53
5 Research and development of environment-related technologies	<ul style="list-style-type: none"> Development of next-generation commuter trains (AC Train); energy savings and recycling Development of technologies for noise reduction Development of measures to eliminate engine idling for diesel railcars 	0.01	0.86
6 Social activities	<ul style="list-style-type: none"> Support for environmental conservation-related organizations 	—	0.03

Reference Amount of facilities investment for the period ¥227.0 billion
 Total amount of research and development costs for the period ¥ 13.5 billion*

* Includes research contracted (¥5.9 billion) to the Railway General Research Institute based on the Agreement on Research Activities, etc., concerning research and development in fundamental fields.

Targets		Environmental conservation effects			Economic effects (¥billion)	Reference pages
Item	Reference value (fiscal 1990)	Target value	Actual achievements in 2001			
<ul style="list-style-type: none"> ●Reduction of noise to less than 75dB in designated residential areas along the Tohoku and Joetsu Shinkansen Lines ●NOx emissions at company-run thermoelectric power plant 	—	100% (to be completed in 2002)	75% improvement	—	—	Environmental conservation along railway lines p.27 to p.31
<ul style="list-style-type: none"> ●CO₂ emissions in general business activities ●CO₂ emissions in proportion to unit electric power generation at company-run thermoelectric power plant ●Ratio of energy-saving railcars ●Energy consumption for train operations in proportion to unit transportation volume ●Number of large-size refrigerating machines using specific CFCs 	2.76 million t-CO ₂ 726 g-CO ₂ /kWh	▲ 20% ▲ 30%	▲ 17% ▲ 26%	2.29 million t-CO ₂ 539 g-CO ₂ /kWh	34.60* ²	Prevention of global warming p.14 to p.20
	—	80%	63%	—		Reducing ozone layer-depleting substances p.21
<ul style="list-style-type: none"> ●Energy consumption for train operations in proportion to unit transportation volume ●Number of large-size refrigerating machines using specific CFCs 	20.6 MJ/ car-km	▲ 15%	▲ 9%	18.8 MJ/ car-km		
<ul style="list-style-type: none"> ●Number of large-size refrigerating machines using specific CFCs 	82 units	▲ 85%	▲ 72%	23 units		
<ul style="list-style-type: none"> ●Recycling rate for waste generated at stations and on trains ●Recycling rate for waste generated at rolling stock workshops ●Recycling rate for waste generated by construction projects ●Usage rate of recycled paper as office stock 	—	36% → 40%* ¹	36%	—	0.26* ³	Zero emissions programs p.22 to p.26
	—	75%	71%	—		
	—	85%	76%	—		
	—	100%	97%	—		
<ul style="list-style-type: none"> ●Specific environmental preservation activities 	—	—	—	12 locations 20,000 trees planted 2,000 people participated	—	Environmental management system p.6 to p.13
					—	p.10 to p.11, p.27, p.29
					—	p.10, p.31

*1. JR East has achieved a recycling rate of 36% and set its new goal at 40%.

*2. After determining the annual reduction of electricity and maintenance costs generated from the introduction of energy-saving railcars, the economic effect is calculated by multiplying the reduction amount with the legally accepted depreciation life-span. The reduction in consumed electricity translates into a cut of 580,000 tons of CO₂ over the legally accepted life-span.

*3. For waste generated through construction work and by rolling stock facilities, an economic benefit can be represented by revenue gained from the sale of some types of waste (valuable resources) that have a market value.