

► Environmental Accounting and Environmental Management Indicator

How Does the JR East Group Utilize Environmental Accounting and Its Environmental Management Indicator?

JR East utilizes environmental accounting to understand the cost effectiveness of its expenditures and investments for environment-related activities. The results, together with our own environmental management indicator, are used to assist management decision-making.

► Environmental Accounting for FY 2004

Category	Environmental conservation costs (billion yen)		Environmental Conservation Benefits in Terms of Environmental Goals	Economic Benefits of Environmental Conservation Activities (billion yen)		
	Investment	Expenditures		FY 2003	FY 2004	
Environmental conservation (pollution prevention) along railway lines	4.85	4.66	Reduction of noise to 75dB or less in designated residential areas along Tohoku and Joetsu Shinkansen lines NOx emissions at JR-East thermal power plant	100% achieved 341t	100% achieved 417 t	–
Global environmental conservation	62.64	–	CO ₂ emissions from business activities CO ₂ emissions (per unit of electricity generation) at JR East-operated thermal power plant Ratio of energy-efficient railcars to total rolling stock Energy consumption to operate trains per unit of transport volume Number of large refrigerators using specified chlorofluorocarbons (CFCs)	2.20 million t-CO ₂ 504 g-CO ₂ /kWh 72% 18.3 MJ/car-km 14 units	2.39 million t-CO ₂ 510 g-CO ₂ /kWh 76% 17.9 MJ/car-km 13 units	28.86
Resource-recycling	–	5.40	Recycling rate for waste from stations and trains Recycling rate for waste from general rolling stock centers, etc. Recycling rate for waste from construction projects Percent of recycled paper used in offices	39% 81% 86% 99%	43% 82% 91% 98%	1.07
Environmental management	–	0.69	Railway Line Forestation Programs Tree Planting under the Adatara Hometown Forestation Program	15 locations 12,000 trees planted 2,400 participants	17 locations 25,000 trees planted 3,200 participants	–
Research & development (environment-related technologies)	–	1.46				–
Social activities	–	0.06				–
Total	67.49	12.27				29.93

Notes

Investment in facilities for the period: 241.4 billion yen
Total expenditures for research and development for the period: 15.3 billion yen^{*1}

Correlation with the table of Goals and Results (pages 22 – 23) is as follows:

"Environmental conservation along railway lines" = "environmental activities along railway lines" and "chemical management"
"Global environmental conservation" activities = "Measures to prevent global warming" and "chemical management"
"Resource recycling" = "Measures for resource conservation"
"Environmental management" = "Environmental management" and "Environmental Communication"
"Research & development (environment-related technologies)" = "Research & development"
"Social activities" = "Environmental Communication"

***1 Total R&D costs:**

This amount includes basic R&D (6.0 billion yen) that was commissioned to the Railway Technical Research Institute under a research agreement.

Environmental Accounting

Summary of FY 2004 results

In fiscal 2004, environmental conservation costs in the form of investments amounted to about 67.5 billion yen, while expenditures amounted to about 12.3 billion yen.

"Global environmental conservation" activities, which account for a major part of the investments, amounted about 62.6 billion yen, an increase of 3 billion yen over the previous fiscal year, due to the introduction of energy-efficient railcars on conventional lines, including the Yamanote and Tokaido lines. The introduction of those energy-efficient railcars and facilities will reduce CO₂ emissions over their total service life by 520,000 tons of CO₂.

Investment in environmental conservation along railway lines declined by 1.8 billion yen, bringing the total to about 4.9 billion yen, due to a decrease in work to convert to continuous welded rails.

JR East's Environmental Management Indicator

JR East has created its own Environmental Management Indicator as a management decision-making tool to assess the correlation between business activities and environmental impacts. It is calculated using CO₂ emissions (one of the top-priority items of our environmental initiatives) as an indicator of *environmental impacts*, and operating profits as the basis for calculating the company's *Economic Value Added (EVA)*.

The number produced by the indicator reflects profit made in relation to environmental damage: a small number means more profit with less environmental impact. The indicator (in units of tons-CO₂/billion yen) was 94.5 in fiscal 1990, and 76.9 in fiscal 2004.

Note that the fact that the indicator rose from fiscal 2003 to fiscal 2004 was due to stoppage in operation of a JR East hydropower plant from the Niigata-Chuetsu Earthquake, resulting in an increase in CO₂ emissions from alternative electricity sources.

Environmental Management Indicator

$$= \frac{\text{Environmental impact}}{\text{Economic Value Added (EVA)}} = \frac{\text{CO}_2 \text{ emissions (t-CO}_2\text{)}}{\text{Operating profit (billion yen)}}$$

JR East's Environmental Management Indicator



Notes on Calculation of Environmental Conservation Costs and Benefits

Environmental conservation costs

- Data refer to East Japan Railway Company only (i.e., non-consolidated data).
- Based on "Environmental Accounting Guidelines" (FY 2005 edition), Ministry of the Environment of Japan.
- "Environmental conservation costs" cover those that are identifiable by the current management system.
- For expenditures that have multiple objectives, the total amount is counted where the expenditure results in significant environmental benefits. ("Pollution prevention" costs include the total amount spent for enhancing performance, such as the cost of rails to install continuous welded rails, and "global environmental conservation" costs include the total amount invested in energy-efficient railcars.)
- Expenditures shown here do not include depreciation.
- "Resource-recycling" costs include the cost of handling waste from stations and trains, calculated based on a model case for the cleaning of an actual station and trains. The percentage of total cleaning costs spent on recycling and waste handling (in the model case) is then multiplied by total cleaning expenses for JR East stations and trains to obtain the relevant figure for JR East.
- "Resource-recycling" costs also include the cost of processing waste from construction projects and rolling stock workshops, calculated for each facility by multiplying the amount of waste in fiscal 2004 by a standard per-unit cost (different for each type of waste and each region).

Environmental Conservation Benefits

- Environmental conservation benefits are calculated based on figures determined by the stated environmental goals.

Economic Benefits of Environmental Conservation Activities

- For "global environmental conservation" activities, economic benefits are calculated by determining the annual reduction (including estimates in some cases) in electricity and maintenance costs through the introduction of energy-efficient railcars, cogeneration, etc., and then multiplying this amount by the number of years of service life under official depreciation schedules, to obtain the life-time economic benefits.
- For "Resource-Recycling" activities, the figure for economic benefits indicates the revenues the resale of reusable resources from waste arising from rolling stock workshops and construction projects.