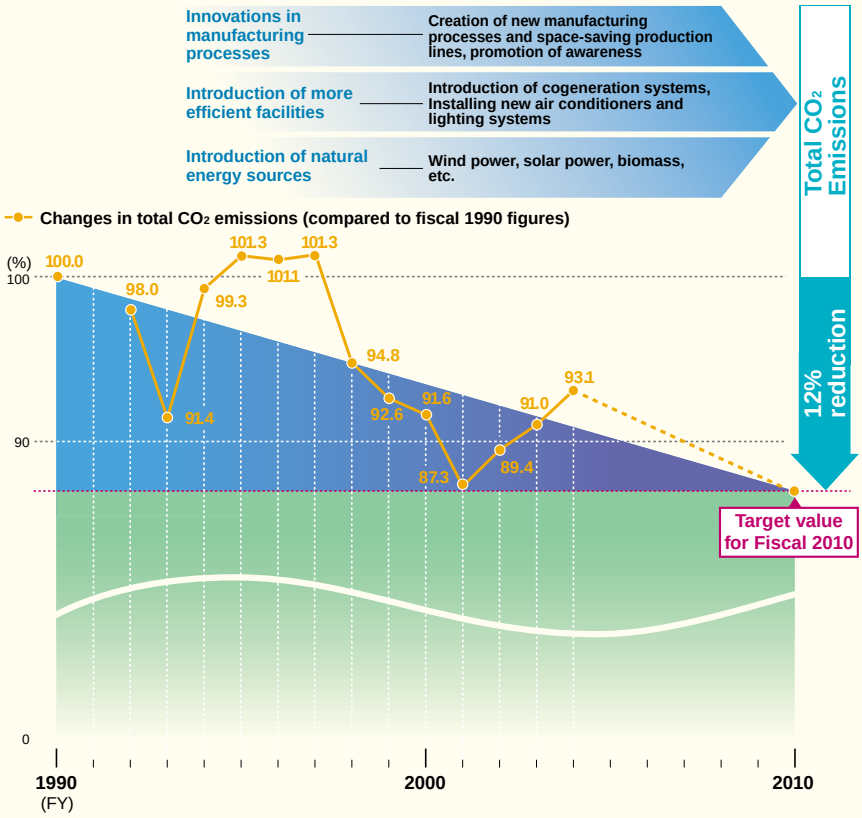
We will reduce total CO_2 emissions by 12% by the end of fiscal 2010 to help prevent global warming at a faster pace than set out in the Kyoto Protocol.

● Concept

The Ricoh Group has set goals that it wants to achieve by the end of fiscal 2010, aiming not only to attain the goals set out in the Kyoto Protocol, but also to lead the efforts to prevent global warming. Since a reduction in total CO_2 emissions is important in preventing global warming, the Ricoh Group companies in Japan have set a higher goal of reducing total emissions by 12% over the figures in fiscal 1990 by the end of fiscal 2010, compared with the goal for Japan of a 6% reduction set out in the Kyoto Protocol. Our group companies are striving to reduce global warming under this goal, which has been set in anticipation of an expansion in the scale of business. To attain this goal, the Ricoh Group is working to innovate its production processes[1], introduce more efficient facilities, and utilize natural energy sources. The Group positions its clean development mechanism (CDM)[2] as a scheme to prepare for the risks of unexpected expansions of production and fluctuating power supply rather than as a major CO_2 reduction measure. Efforts will be made to reduce greenhouse effect gases other than CO_2 by 10% over the level in fiscal 1995 by the end of fiscal 2010.

1. See page 35. 2. See page 37.

❶ Scenario for Reductions in Total CO_2 Emissions for Ricoh Group (production) in Japan up to Fiscal 2010



Segment Environmental Accounting of Energy Conservation Activities at Business Sites (The Entire Ricoh Group)

Costs			Effects			
			Economic benefits		Effect on environmental conservation	
Item	Main cost	Costs	Item	Benefits	Reduction item	Amount
Business area cost	Cost of global warming prevention	¥576.9 million	Reduction in lighting and heating expenses	¥284.6 million	CO_2 emissions	9,236.7 (t)

* Reduction in CO_2 emissions is a total of amounts reduced through measures to prevent global warming at production sites.

● Targets for Fiscal 2004 and Fiscal 2010

The Ricoh Group's Targets for Reducing CO_2 Emissions (Total Amount Emitted)

		Target for fiscal 2004	Target for fiscal 2010
Japan	Ricoh and Ricoh Group manufacturing subsidiaries	2% reduction (compared to fiscal 2000 figures)	12% reduction (compared to fiscal 1990 figures)
Japan	Ricoh Group non-manufacturing subsidiaries	2% reduction (company goals)	—
Outside Japan	Ricoh Group manufacturing subsidiaries	2% reduction (compared to fiscal 2000 figures)	10% reduction (compared to fiscal 1998 figures)

The Ricoh Group's Targets for Reducing Greenhouse Effect Gases Other Than CO_2 (Manufacturing, Total Amount Emitted)

	Target for fiscal 2004	Target for fiscal 2010
The Entire Ricoh Group	No more than a 1% increase (compared to fiscal 2000 figures)	10% reduction (compared to fiscal 1995 figures)

● Review of Fiscal 2004

CO_2 emission at production sites increased over the fiscal 2000 level (increased by 1.5% at home and by 2.2% abroad) (see graphs ❷ and ❺). This was because the increased energy consumption caused by the larger production of consumables supplied in Japan and France and the larger production of parts in China more than offset the amount of energy saved from improvements in manufacturing processes. CO_2 emissions at non-production sites decreased by approximately 1.1% over the previous fiscal year's levels (see graph ❸). New facilities were introduced for greenhouse effect gases other than CO_2 aiming at achieving the goal.

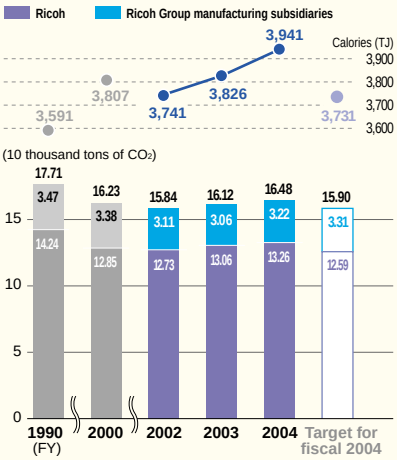
● Future Activities

In promoting activities to expand its business according to the 15th Medium-term Management Plan, which will start in fiscal 2005, Ricoh will strive to create a production process that uses less energy by taking various measures, such as developing an energy-saving production process through the concerted efforts of the development, design, and production divisions, to reduce CO_2 emissions at production sites. Additionally, efforts will be made to improve the energy efficiency of air-conditioning and illumination systems and introduce new energy sources as a long-term project. Ricoh will also promote the sharing and horizontal development of information on the improvement activities of each business site.

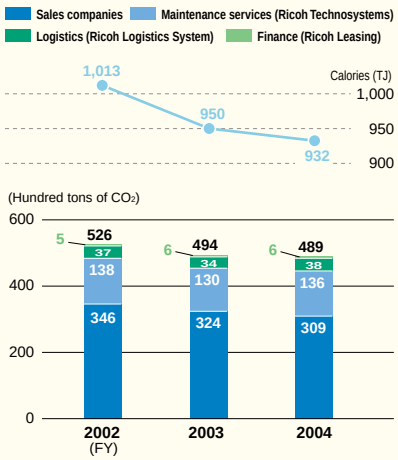
<Japan>

Energy Consumption (CO_2 conversion[1] and calories)

❷ The Ricoh Group (production)



❸ The Ricoh Group (nonproduction)



1. Calculated using a CO_2 emissions potential taken from an examination on greenhouse gas emission calculations issued by the Ministry of the Environment.

* Errors in converting to calories in graph ❸ are corrected retroactively.

Breakdown of Major Energy Consumption

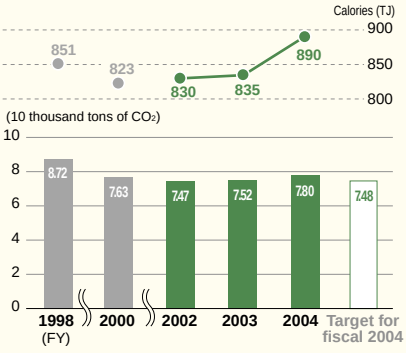
❹ The Ricoh Group (production)

	FY 2001	FY 2002	FY 2003	FY 2004
Kerosene (kℓ)	7,012	7,628	6,652	6,377
Heavy oil A (kℓ)	3,299	2,945	2,819	2,748
Town gas (1,000 m^3)	11,942	12,823	14,640	15,351
Electric power purchased (1,000 kWh)	281,175	284,554	289,770	298,640

<Outside Japan>

Energy Consumption
(CO_2 conversion and calories)

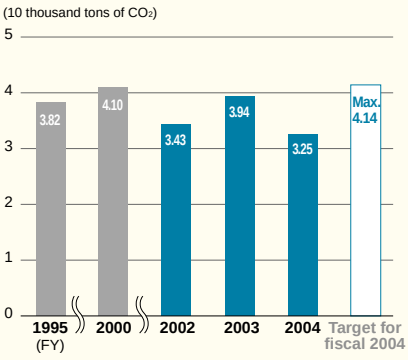
❺ The Ricoh Group (production)



<The Entire Ricoh Group>

Greenhouse Gas Emissions other than CO_2 [2] (CO_2 conversion)

❻ The Ricoh Group (production)



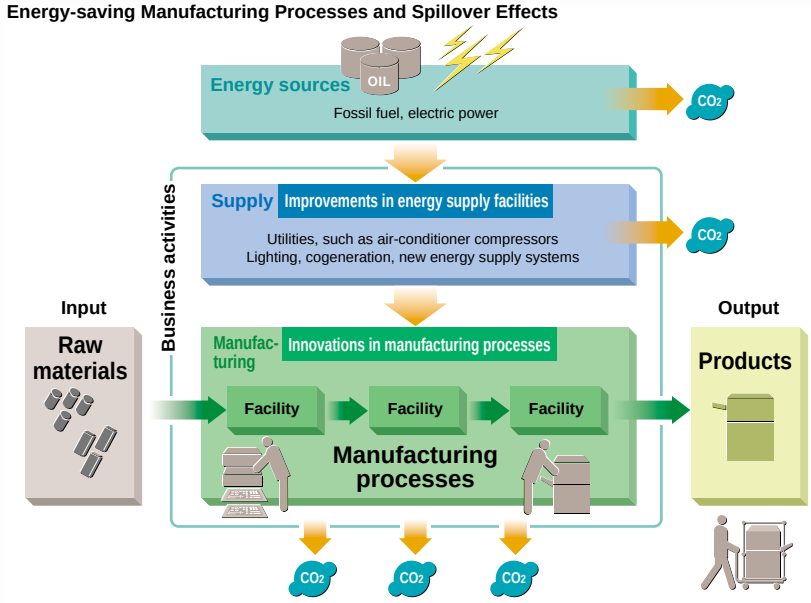
* The following formula was used to determine the greenhouse gas emissions.
Emission = Σ (amount emitted into the atmosphere × global warming potential)

2. NF_3 and substances that have a global warming effect and designated in the Kyoto Protocol

Innovations in Manufacturing Processes to Achieve the Goal of CO_2 Reduction <Ricoh Group (Japan)>

To achieve the ambitious goal of reducing CO_2 emissions by 12% of the fiscal 1990 level by fiscal 2010, the Ricoh Group established in fiscal 2004 an energy-saving production process committee made up of people in charge of the Group's major production sites in Japan. The committee checks the manufacturing processes of those production sites, identifies energy losses, and assigns a quota on reducing CO_2 emissions. Focusing on innovations in manufacturing processes may save energy at downsized production lines as well as have a spillover effect on associated equipment, such as air conditioners and air compressors, at production lines. The On-Demand Toner Filling Machine, developed in fiscal 2003, requires 1/40 of the installation space, and uses 1/4 of the electricity, compared with the conventional toner filler systems. This new machine also contributes to significant energy savings of associated equipment, such as air conditioners.

Energy-saving Manufacturing Processes and Spillover Effects



In fiscal 2004, downsized production lines for photosensitive materials used in copiers were put in operation. (See below.)

Small-lot production lines suited to meet market demand for multipurpose, high-quality products

Employee feedback

INTERVIEW — Downsized production lines for photoconductor

Innovations in manufacturing processes cut CO_2 emissions to 1/3.

Yoshihiro Yamaguchi
OPC Production Equipment Group
OPC Production Center
RS (Reprographic Supply) Products Division

Small, cost-effective, easy to carry, ready to use Appropriate for sustainable environmental management

Photosensitive materials used to be manufactured at large-scale facilities and were financially and environmentally adverse. For future expansion, we began developing innovative technologies and relevant equipment geared toward more efficient production around 2001. In 2002, we expected the demand for small photoconductor used in printers and color copiers to increase and drew up a plan to establish appropriate production lines at Ricoh Asia Industry (Shenzhen) Ltd. (RAI), one of the major manufacturing subsidiaries of the Ricoh Group in China. The need to customize super-cost-effective assembly lines for RAI became urgent. We were required to build production lines that were small, inexpensive, easy to carry, ready to use, and environmentally conscious enough to fall under sustainable environmental management.

Breakthrough development of a downsized production line

When manufacturing photoconductor, photosensitive agents must be used in a clean environment. Large production lines require a huge space, and thus consume a tremendous amount of energy to clean the air completely. We threw out our stereotypical idea of the conventional production line, i.e., aligning several tens of photoconductor on a palette, and devised a one-at-a-time production method for an ultimately small, cost-effective facility. Consequently, our new line requires approximately 1/4 or less the installation space* and about 1/3 the capital investment of conventional lines. Furthermore, a local air-conditioning system was adopted to clean the environment—a different approach from that of previous systems, which cleaned the air throughout the entire facility. This resulted in an air-conditioned area that is only 1/92 the size previously needed.

Inspiration to reconsider the manufacturing process leads to success

In September 2004, the first downsized mass production line was put in operation at RAI. CO_2 emissions per line were cut considerably, to less than 1/3, which was much more than the original goal. This satisfied all of our requirements, such as reducing the time needed to rinse without using detergents and completely eliminating industrial waste. For this project, I am convinced that the significant reduction in environmental impact that we achieved is attributable to a drastic reconsideration of the manufacturing process. We will build on this achievement to develop a mass production line with the same scale but more than double the productivity. In such a way, we can continue contributing to the sustainable environmental management.

* Ratio of facility area to per-unit production capacity

All-employee Participatory Activities for Energy Conservation

<Ricoh Gotemba Plant (Japan)>

In recognition of its continuous efforts to improve, Ricoh Gotemba Plant won the top prize, the Minister of Economy, Trade and Industry Prize (electrical division), for Energy Conservation Month in fiscal 2004. The plant uses energy mainly for its air conditioners, lighting systems, and manufacturing facilities. The plant, therefore, concentrated on these three areas in order to conserve energy. Members of the energy conservation committee promoted employee awareness and encouraged all employees to participate in environmental conservation activities while improving the cost-effectiveness of the plant's facilities. For example, the employees themselves installed motion sensor switches designed to be used in homes rather than the more costly models for office use to save the expenditure as well as eliminate labor costs. For the production area, a remotely controllable canopy switch has been installed to control the lighting system in each section. When the operation of air compressors, a major component of manufacturing facilities, was switched from around-the-clock use to use only when the production lines were running, employees took the initiation to make improvements themselves on production lines by taking countermeasures against air leakage.

Switching Boiler Fuel and Boiler Types

<Ricoh Yashiro Plant (Japan)>

To reduce CO_2 emissions, Ricoh Yashiro Plant switched its boiler fuel from kerosene to town gas (13A) and switched boiler types from fire-tube boilers to small, once-through boilers for higher cost efficiency. The project was funded by subsidies from the Ministry of Economy, Trade and Industry's program to encourage facilities that consume a considerable amount of energy to switch to natural gas. As a result, Ricoh Yashiro Plant increased its energy efficiency from 85–90% to 96% and reduced its annual CO_2 emissions by about 35% (1,720 tons/year), NOx by about 74% (according to the actual figure monitored), and SOx to zero.

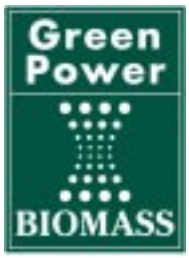
Introduction/Promotion of the Use of Natural Energy Systems

<Ricoh Unitechno, Tohoku Ricoh, Ricoh Elemex, Ricoh (Japan)>

Many of the Ricoh Group's plants are promoting the introduction of natural energy systems to utilize solar and wind power, as well as other natural sources. Ricoh Unitechno Co., Ltd. has reduced annual CO_2 emissions by 3 tons with a solar power generation system (10kW), while Tohoku Ricoh Co., Ltd. has achieved a 0.5-ton annual reduction in CO_2 emissions by using solar and wind power generation systems (1.5kW). Ricoh Elemex Corporation has reduced annual CO_2 emissions by 2.7 tons with a solar power generation system (6kW). In the meantime, Ricoh purchased energy produced by wind power from Japan Natural Energy Company Limited under the Green Power Certification System* in 2002, reducing annual CO_2 emissions by about 357 tons. Ricoh also concluded a five-year agreement in March 2003 to purchase biomass green electricity. This will lead to a reduction in annual CO_2 emissions of about 100 tons.

* This system is carried out by power companies to promote the expansion of natural energy.
http://www.natural-e.co.jp/english/press1-e.html#J01

Green Power certification mark



Reduction of Greenhouse Gases other than CO_2

<Ricoh Yashiro Plant (Japan)>

Ricoh Yashiro Plant, which manufactures semiconductors, carries out activities to reduce greenhouse gas (PFC) emissions by optimizing the flow of relevant processes. In fiscal 2004, additional PFC eliminators were installed, thereby reducing annual emissions by 1,700 tons (CO_2 conversion).

CarbonNeutral Office

<Ricoh UK Ltd. (United Kingdom)>

Ricoh UK Ltd., a sales company, is reducing CO_2 emissions generated by its head office by 731 tons/year through such energy-conserving efforts as upgrading the office lighting arrangement. In October 2004, the company successfully created a CarbonNeutral[1] head office in cooperation with Future Forests[2], a U.K. environmental consultancy that helps companies reduce or offset their CO_2 emissions. By shouldering the cost of planting 3,500 trees in Scotland, Ricoh UK offset 100% of the CO_2 emissions generated by its head office company cars, the electricity and gas used at the office, the trains/buses used by employees to commute, the airplanes used on business trips, and the hotels employees stayed at while on business trips. Ricoh UK plans to include company cars used to conduct field sales and services in its CarbonNeutral efforts in the future and to continue to look for ways to reduce CO_2 emissions still further by considering other energy saving opportunities.

1. "CarbonNeutral" describes a state in which CO_2 emissions are offset by the planting of trees and/or other natural means. CarbonNeutral is a registered trade mark of Future Forests.
2. http://www.futureforests.com/index.asp

Office of Ricoh UK Ltd.

Introduction of CDM

The Clean Development Mechanism (CDM) allows industrialized countries to conduct anti-global warming projects in developing countries, thereby helping those countries comply with their commitment to reduce greenhouse gas emissions specified under the Kyoto Protocol. If businesses in developed countries reduce greenhouse gases through projects in developing countries, they may use that reduction to achieve their own CO_2 reduction goals under certain rules. Developing countries benefit from this mechanism as well since they are given opportunities to receive investments and technology transfers. Ricoh uses CDM as one of its risk management strategies in achieving its CO_2 reduction goal for 2010, even if its production volume far exceeds expectation. When selecting CDM projects, Ricoh takes cost performance into account. In addition, by using networks that were created through environmental activities with environmental NPOs, Ricoh tries to choose projects that contribute to the conservation of ecosystems and improvement of living standards of the local people. In terms of the organizations that execute projects, Ricoh assesses their commitment to corporate social responsibility. In fiscal 2004, Ricoh signed agreements with the executing organizations on the following projects.

The Ricoh Group established the following criteria for the selection of CDM projects.

■ **Requirements for Ricoh's CDM projects**

① Projects should be valuable from the perspective of biodiversity and ecosystem conservation. As for environmental afforestation projects, they should be recognized by environmental NGOs.
② Projects should be socially recognized by every stakeholder.
③ Projects should satisfy the requirements described in ① and ② above and be approved by the CDM Council.

■ **Procedure to select projects and evaluation criteria**

Ricoh established evaluation criteria for each stage of selecting CDM projects, as shown below.

Procedure	Areas Evaluated
First evaluation	• Projects' basic elements
Second evaluation	• Value as a CDM project • Recipient country • Credit assessment of executing organizations/intermediaries
Third evaluation	• Contract

CDM Projects on Which Ricoh Signed Agreements in Fiscal 2004

Afforestation Project to Conserve Biodiversity <Ecuador>

In the Maquipucuna Nature Reserve and La Perla Forest in Ecuador, forests were cut down by stockbreeders who needed pastures for their cows, and the deforested areas were abandoned as the livestock business in Ecuador went into a recession. Conservation International (CI), an environmental NGO, has a plan to collect 15 different seeds to grow seedlings for reforestation purposes. CI plans to employ local people to conduct afforestation and maintain/manage virgin forests over the next five years. Ricoh decided to participate in this project because CI's project generates three benefits simultaneously, namely, ecosystem recovery, improvement in the local people's living standards, and CO_2 absorption through afforestation.

Wind Power Project <India>

The rapid economic growth in India has caused concern about the increased number of coal-fired power stations that satisfy the growing need for power. Ricoh is taking part in a number of wind power projects carried out in various parts of India. Switching from fossil fuel to wind energy can reduce CO_2 emissions.

Wind power facilities in India

Treadle Pump Project <India>

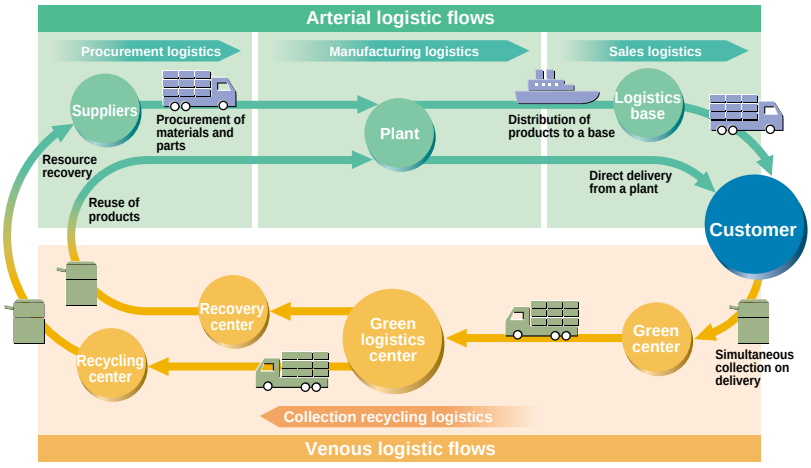
In India, small-lot farmers used to rent diesel pumps to draw underground water. In addition to their CO_2 emissions, diesel pumps were also a heavy burden for these farmers in rental fees and fuel costs. Ricoh participated in the project to introduce 20,000 treadle pumps.

Installation of a treadle pump

The Ricoh Group is working to reduce CO_2 emissions from transportation by creating a resource-recirculating logistics system and promoting modal shifts.

To achieve a sustainable resource-recirculating society, one important issue is the establishment of a logistics system for transporting products. The Ricoh Group is striving to create a resource-recirculating logistics system that integrates the arteries and veins of the logistics flow, including a system for direct transportation to and collection from customers. Another issue that Ricoh tackles is a reduction in environmental impact of transportation networks by promoting modal shifts and introducing low-emission vehicles. Examples that are successful in Japan will be introduced around the world, aiming at establishing global supply chain management (SCM).

Resource-recirculating Logistics System that Integrates the Arteries and Veins of the Logistic Flows (Japan)



Arterial logistic flows
- Establishment of a direct transportation system from plants to customers
- Modal shift from truck to railway and marine transportation
- Uses of reusable packaging materials

Venous logistic flows
- Establishment of a direct collection system for used products
- Expansion and improvement of infra-structure including collection centers

Promoting Modal Shift

<Ricoh Logistics System Co., Ltd. (Japan)>

Ricoh Logistics System Co., Ltd. is actively promoting a modal shift to transportation methods that have less environmental impact. The company shifted 25 transportation routes. For example, the transportation of large copiers from Tohoku Ricoh to the Sapporo, Osaka, and Kyushu areas, and toners from Fukui Plant to the Shizuoka, Kanagawa, and Osaka areas were shifted to railroads. The modal shifts so far have resulted in four maritime routes and 21 railroad routes.

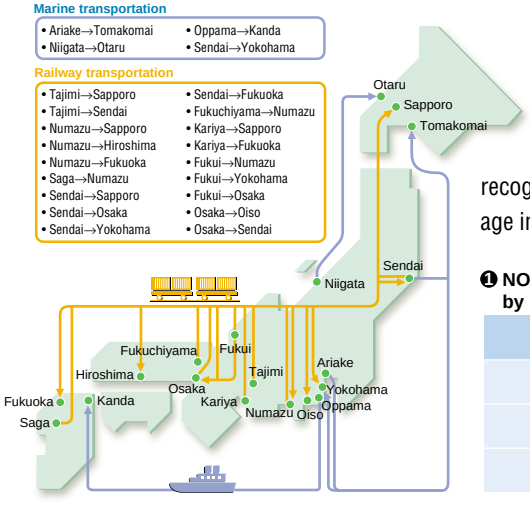
Major Cases of Modal Shift in Japan

Marine transportation

• Ariake→Tomakomai	• Oppama→Kanda
• Niigata→Otaru	• Sendai→Yokohama

Railway transportation

• Tajimi→Sapporo	• Sendai→Fukuoka
• Tajimi→Sendai	• Fukuchiyama→Numazu
• Numazu→Sapporo	• Kariya→Sapporo
• Numazu→Hiroshima	• Kariya→Fukuoka
• Numazu→Fukuoka	• Fukui→Numazu
• Saga→Numazu	• Fukui→Yokohama
• Sendai→Sapporo	• Fukui→Osaka
• Sendai→Osaka	• Osaka→Oiso
• Sendai→Yokohama	• Osaka→Sendai



These shifts contributed to a reduction of 3,718 tons of CO_2 emissions per year from transportation compared to when truck transportation was used.

Improvement in Vehicle Mileage and Introduction of Low-Emission Vehicles

<Ricoh Logistics System Co., Ltd. (Japan)>

Ricoh Logistics System Co., Ltd. is striving to improve vehicle mileage by utilizing digital tachometers and giving energy-conservation and safety education to drivers. As of March 2005, 60% of the vehicles (155 vehicles out of a total 261) were equipped with digital tachometers. As a result of drivers recognizing their own eco-drive levels, mileage improved by 25%. Other initiatives, such as improving transportation efficiency by introducing joint-delivery and roundtrip distribution, were taken to reduce fuel consumption.

❶ NOx and SOx Emissions in Transportation by Ricoh Logistics System

	NOx (t)	SOx (t)
2002	4.0	0.4
2003	2.6	0.4
2004	2.8	0.4

Promotion of an Eco-Drive Campaign

<Lanier (Schweiz) AG (Switzerland)>

In Switzerland, where there are relatively fewer industries that have a large environmental impact, reducing CO_2 emissions from transportation is important. Lanier (Schweiz) AG, a sales company, launched its company-wide Eco-Drive Campaign in 2004 for the prevention of global warming. In addition to the change from gasoline to diesel cars—started at the beginning of 2003—the company has prepared a course in "eco-driving" for all sales and service staff to show them how to reduce the fuel consumption of company cars. After receiving the "eco-driving" training, participants are encouraged to practice smart driving to reduce the average consumption and emissions. In fiscal 2004, CO_2 emissions fell 12% compared to the previous fiscal year thanks to the promotion of "eco-driving". Overall, a reduction of 26% has been achieved since the start of this program in 2003.