

We will reduce total CO₂ emissions by 12% by the end of fiscal 2010 to help prevent global warming.

■ Concept

The Ricoh Group has set goals that it wants to achieve by the end of fiscal 2010, aiming to lead effective efforts to prevent global warming. Since a reduction in total CO₂ 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 fiscal 1990 figure by the end of fiscal 2010, compared with the goal for Japan of a 6% reduction as 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. In addition, the Group is making preparations for the Clean Development Mechanism (CDM)¹ project as a scheme to prepare, as far as possible, for a rapid expansion of business through M&As and, although unlikely, increased CO₂ emissions due to worsening of power generation conditions. Efforts will also be made to reduce greenhouse effect gases other than CO₂ by 10% over the fiscal 1995 level by the end of fiscal 2010. In March 2009, the Group also set mid-to long-term goals of reducing total lifecycle CO₂ emissions by 87.5% by 2050 and 30% by 2020 from the fiscal 2000 level².

1. See page 40.

2. See pages 17 and 18.

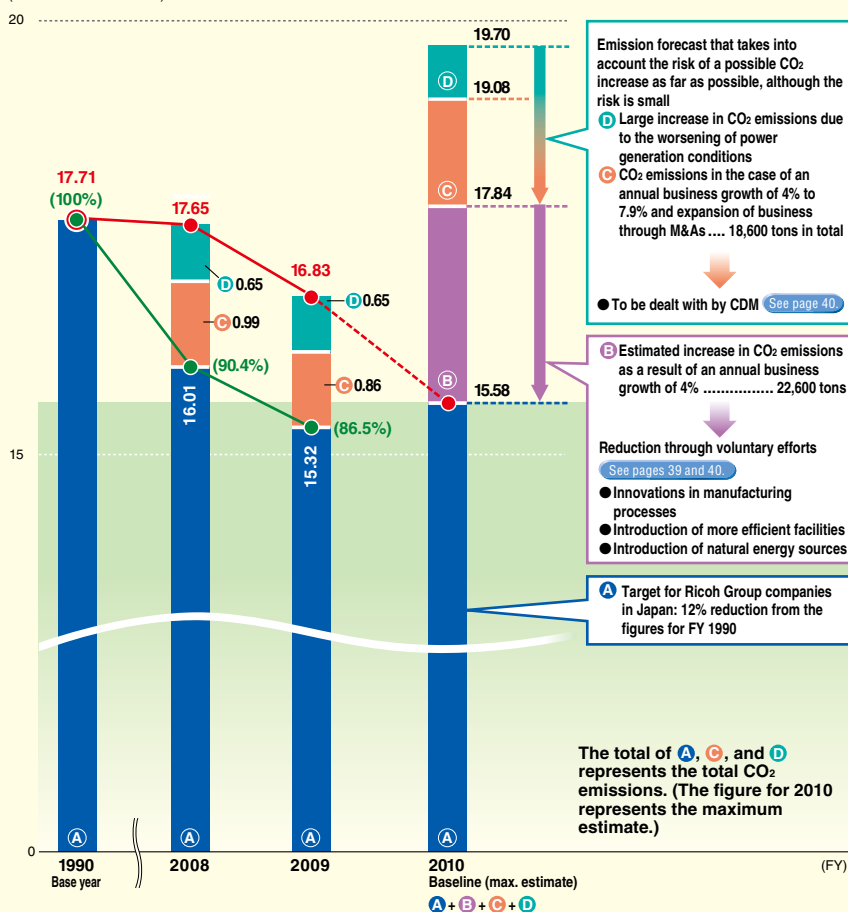
■ Targets for Fiscal 2010

- ◎ Reduce CO₂ emissions by 12% (Ricoh and manufacturing subsidiaries in Japan, compared to fiscal 1990 figures) by fiscal 2010.
- ◎ Reduce CO₂ emissions by 10% (manufacturing subsidiaries outside of Japan, compared to fiscal 1998 figures) by fiscal 2010.
- ◎ Reduce greenhouse gas emissions (except CO₂) in the semiconductor business division by 10% (compared to fiscal 1995 figures) by fiscal 2010.

Scenario for reductions in total CO₂ emissions for Ricoh Group (Production) in Japan up to fiscal 2010

(ten thousand tons of CO₂)

30 _____



* Figures for **B** and **C** on the FY 2010 baseline were revised based on previous sales results.

* Figure for **P** on the FY 2010 baseline was revised based on previous electricity conversion coefficients.

* The figures for fiscal 2001 and the following years include the results for Ricoh Printing Systems, Ltd. and Yamanashi Electronics Co., Ltd., while those for the preceding years have been adjusted accordingly (included in (C)).

■ Targets for Fiscal 2020 and 2050

	Target for fiscal 2020	Target for fiscal 2050
Ricoh Group Total lifecycle CO₂ emissions (including emissions of the five gases converted into CO₂)	30% reduction* (compared to fiscal 2000 figures) <small>*Equivalent to a 34% reduction compared to the fiscal 1990 level (CO₂ emissions in Japan)</small>	87.5% reduction (compared to fiscal 2000 figures)

■ Review of Fiscal 2009

CO₂ emissions at production sites decreased 5.0% in Japan from the fiscal 1990 level and increased 8.3% outside Japan over the fiscal 1998 level (see graphs ① and ③). This suggests that efforts to reduce CO₂ emissions, particularly those to innovate production processes, have brought steady results, in consideration of business growth since fiscal 1990. In real terms, this represents a 13.5% reduction over fiscal 1990 levels, exceeding the goal set for fiscal 2010 as Ricoh will introduce CDM to cope with any increase in CO₂ emissions due to changes in CO₂ emissions conversion coefficients (see ④, fiscal 2009 results, in Scenario for reductions in total CO₂ emissions for Ricoh Group (Production) in Japan up to fiscal 2010, on [Page 37](#)). The CO₂ emissions reduction achieved 8.6% even when including the results for Ricoh Printing Systems, Ltd. and Yamanashi Electronics Co., Ltd., which both joined the Ricoh Group after the 1990 base year (see ④ + ⑤, fiscal 2009 results, in the Scenario). As for greenhouse gases other than CO₂, the semiconductor business division achieved a 47% reduction, and the entire Ricoh Group, a 40% reduction, over fiscal 1995 levels (see graph ④).

■ Future Activities

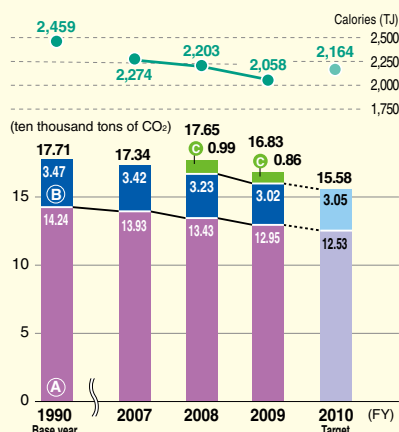
Ricoh will continue working to reduce CO₂ emissions at production sites with a focus on innovating production processes to reduce energy consumption in manufacturing in fiscal 2010 and thereafter. Reduction efforts will be focused on CO₂ emissions that are expected to increase due mainly to the supply sector and the parts business in China, which have shown marked growth. Regarding the introduction of high-efficiency equipment and new energy sources, we will take a cost-effective approach by seeking alternatives with high cost-benefit performance and studying the most effective usage of such systems. Also, we are preparing for the introduction of CDM in order to realize a 12% reduction over fiscal 1990 levels in total CO₂ emissions in Japan, taking into consideration the maximum possible increase in CO₂ emissions, in case the increase surpasses the more likely forecast.

<Japan>

Energy consumption (CO₂ conversion and calories)

① The Ricoh Group (Production)

④ Ricoh ⑤ Ricoh Group manufacturing subsidiaries
⑥ Ricoh Printing Systems + Yamanashi Electronics



Breakdown of major energy consumption

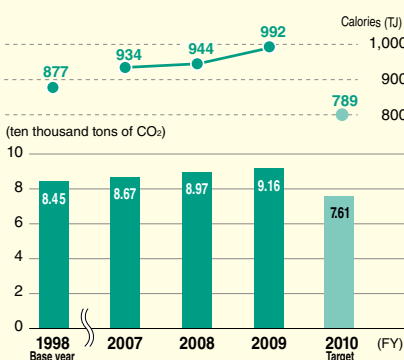
② The Ricoh Group (Production)

	FY 2006	FY 2007	FY 2008	FY 2009
Kerosene (kℓ)	1,525	1,389	1,404	1,398
Heavy oil A (kℓ)	2,730	2,706	2,945	2,194
Town gas (1,000 m ³)	15,899	15,789	14,059	12,678
Natural gas (1,000 m ³)	7,219	7,257	6,450	6,374
Electric power purchased (1,000 kWh)	291,276	296,150	313,902	309,490

<Outside Japan>

Energy consumption (CO₂ conversion and calories)

③ The Ricoh Group (Production)



* Results for fiscal 2008 were revised.

* For CO₂ emissions coefficients and global warming coefficients used in the graphs above, the relevant authorities are shown below:

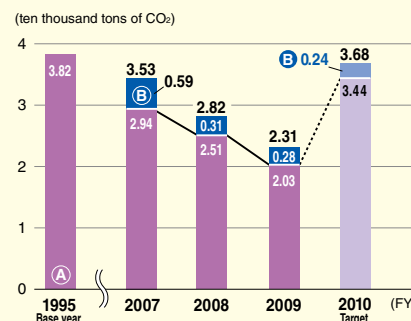
- ①: Electric power purchased: Guidelines for accounting and reporting of greenhouse gas emissions from industrial commercial sectors (draft); Fuels: Greenhouse gas emissions accounting and reporting manual (ver. 1.1). Both by the Japanese Ministry of the Environment.
- ③: Electric power purchased: Official data released by respective governments; Fuels: GHG Protocol
- ④: Global warming coefficients: Order for Enforcement of the Japanese Act on Promotion of Global Warming Countermeasures

<The Entire Ricoh Group>

Greenhouse gas emissions other than CO₂* (CO₂ conversion)

④ The Ricoh Group (Production)

④ Semiconductor business ⑤ Businesses other than the semiconductor business



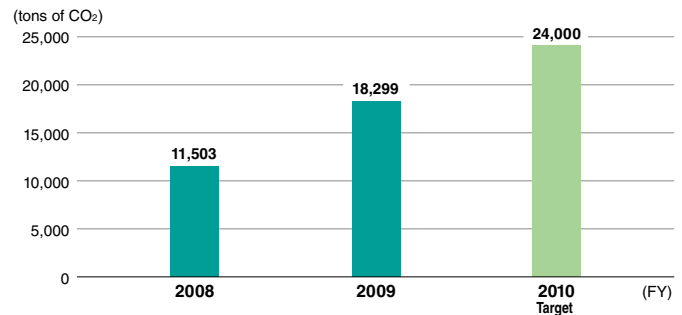
* NF₃ and substances that have a global warming effect and designated in the Kyoto Protocol

Setting a target for CO₂ reduction through improvements in business activities

<Ricoh Group (Japan)>

In its activities, the Ricoh Group gives priority to innovations in production processes and the introduction of high-efficiency equipment and natural energy so that it can achieve the goal of reducing total CO₂ emissions in Japan by 12% by fiscal 2010 from the fiscal 1990 level. To ensure that we achieve this goal, it is necessary to make systematic reduction efforts. In 2003, Ricoh estimated growths in business up to 2010 (4% annually), and set a target for CO₂ reduction of 61,000 tons through voluntary efforts such as improvements in business activities without relying upon the Clean Development Mechanism (CDM). Of that amount, the Group aims to reduce 24,000 tons in the period between fiscal 2008 and 2010. By clarifying a mid-term reduction target, activities can be implemented systematically, although it may be a long time before the effects start to appear. In fiscal 2008 and 2009, CO₂ emissions were reduced by about 18,299 tons through sustained efforts, including innovations in production processes.

Total reduction in CO₂ through improvements in business activities



* Results for fiscal 2008 were revised.

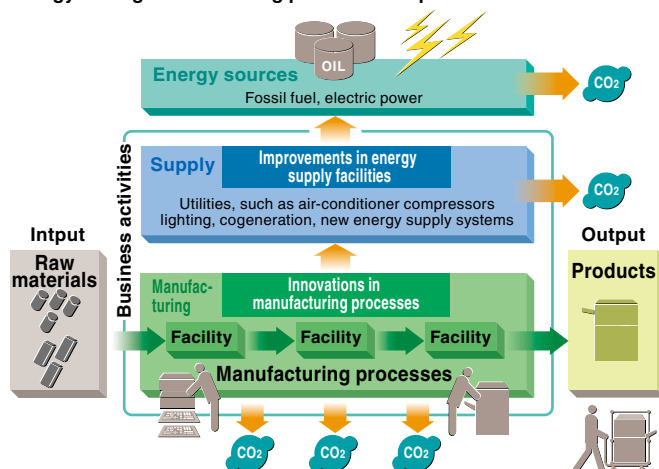
Innovations in Manufacturing Processes, Introduction of High-Efficiency Equipment, Introduction of Natural Energy

Innovations in manufacturing processes to achieve the goal of CO₂ reduction

<Ricoh Group (Global)>

To achieve the goal of reducing CO₂ emissions in Japan by 12% of the fiscal 1990 level by fiscal 2010, the Ricoh Group's energy-saving production process committee, which is made up of people in charge of the Group's major production sites in Japan, checks the manufacturing processes of those production sites, identifies energy losses, and assigns a quota to each for reducing CO₂ emissions. Focusing on innovations in manufacturing processes may save energy at downsized production lines and also have a spillover effect on associated equipment, such as air conditioners and air compressors, at production lines. To date, downsized production lines for organic photoconductors have been put in operation, while the size of toner filling devices has been dramatically reduced. In addition, innovative processes have been realized, including changes in the toner crush lines and thermal sheet painting methods. These technologies are being successively introduced into production lines outside Japan, with the aim of achieving the ambitious goal of reducing total CO₂ emissions by 10% (compared to the fiscal 1998 level) at manufacturing subsidiaries outside of Japan.

Energy-saving manufacturing process and spillover effects



Introducing RECO-View RFID tag sheet to optimize parts management

<Ricoh Gotemba Plant (Japan)>

In August 2009, Ricoh Gotemba Plant introduced Ricoh's original RECO-View RFID* tag rewritable sheet, in pursuit of efficient parts management and environmental impact reduction. The plant uses the innovative sheet for process management concerning manufacturing sites, as well as for management of parts received from and shipped to Atsugi Plant, which delivers parts and units on shelf carts to Gotemba's copier assembly lines. Information about deliveries, such as item name and quantity, stored in a RECO-View tag sheet, is picked up in the form of RF signals by each gate-type antenna installed at multiple check points along the delivery routes as the cart with the tag sheet attached passes by. This tool supports efficient management of delivery information, including receiving/shipping times, item name, quantity, and destination, by reducing the manual operations involved in receiving/shipping, which typically involves reading bar codes. In addition, the tool is capable of providing visual data regarding inventory status, in particular inventory period, thus assisting users to efficiently control processes and reduce inventory. Information stored in a RECO-View tag sheet is also available in printing on the sheet surface to allow visual checks, which contributes to smooth operations at Gotemba. The Plant anticipates that these efforts will reduce the man-hours required for receiving/shipping by 75% and the average inventory period of the parts by 40%. An additional benefit from the introduction of RECO-View is the reduced consumption of paper, previously used for identification tags and instructions/manuals. The resulting effects overall are equivalent to 8.8 tons of CO₂ emissions reduction.

* Radio Frequency Identification (RFID) generally refers to authentication technology using radio frequencies. Recently the term has commonly been used for "non-contact smart cards (chip card)."



RECO-View RFID tag sheets attached to carts

Introduction of highly efficient humidifying systems <Ricoh Microelectronics Co., Ltd. (Japan)>

Ricoh Microelectronics Co., Ltd. (RME), a manufacturer of electronic circuit modules, has been working to improve the energy efficiency of its energy-intensive humidifying systems in the middle and long term. In fiscal 2009, four steam humidifiers on the first floor of its factory were replaced with highly efficient evaporative humidifiers. Air conditioning is necessary on the first floor throughout the year due to the heat from the manufacturing machines. The introduction of these evaporative humidifying systems has eliminated the need to use energy to generate steam, and has taken much of the load off the air conditioning due to lower room temperatures achieved through the power of vaporization. In addition, one of the four air conditioners has been equipped with an inverter that minimizes the air volume to control the factory temperature when it is not operating. These measures are expected to reduce the consumption of Bunker A fuel oil by



35.4 kℓ, or approx. 30% of the annual amount used and annual electricity consumption by 118,787 kWh.

These improvement activities became eligible for a fiscal 2009 subsidy from NEDO* for business operators working to improve the efficiency of energy use.

* NEDO: New Energy and Industrial Technology Development Organization

Installing an inverter compressor and improving the control method reduces energy consumption

<Ricoh RS Division (Fukui Plant) (Japan)>

Ricoh Fukui Plant has had energy monitoring systems installed since 2000 to measure the energy used on the production line and by the processes on a real time basis. The data obtained is used to identify and prioritize areas for improvement, enabling the plant to carry out energy-saving activities effectively and efficiently.

When producing toners, compressed air is used to crush the raw materials against the panel to produce the toner particles. The air compressors used for this purpose account for approximately 45% of the total CO₂ emissions in the toner production process.

To reduce CO₂ emissions, the plant replaced one of the air compressors used in toner production with an inverter controlled model. Mainstream compressors usually operate with an on-off control system, which inevitably

involves unnecessary energy consumption when adjusting the pressure to the change in the airflow requirements. In January 2009, the plant installed an inverter controlled compressor based on the result of an elaborative calculation. The introduction of this one inverter compressor unit improved



the compressor control system, optimized the number of compressors in action, and thus eliminated 98% of the energy lost under the existing system.

As a result, the Fukui Plant reduced its annual power consumption by 888.7 MWh, CO₂ emissions by 335.9 tons, and related costs by approximately 12 million yen.

Construction of environmentally friendly plant

<Ricoh Manufacturing (Thailand) Ltd. (Thailand)>

The production plant of Ricoh Manufacturing (Thailand) Ltd. (RMT), a new manufacturing subsidiary which started operation in September 2009, boasts a number of environmentally friendly designs and facilities in various parts of the building, including in the manufacturing area, the warehouse, the administrative office, and the cafeteria. Examples of the green equipment installed include natural lighting and ventilation systems, a highly efficient air-conditioning system utilizing water-cooling freezers, an insulated roof, heat-reflective glass panels, highly efficient ballast for HF lamps, and occupancy sensors. The annual CO₂ emissions reduction is expected to exceed 250 tons.



Manufacturing area in which natural daylight is used

Approach for CDM Project

Approach for CDM project

Ricoh has been preparing for and is implementing Clean Development Mechanism (CDM) projects in order to offset the possible increase of its CO₂ emissions that could be caused by a rapid business expansion resulting from M&A transactions or by other external factors. Under the CDM scheme, if businesses in advanced nations reduce greenhouse gases through projects in developing countries, they may have that reduction reflected in their own CO₂ reduction goals under certain rules, and ultimately such reduction is used by the governments of their countries to meet national targets. Developing countries benefit from this mechanism as well

since they are given opportunities to receive investments and technology transfers. During fiscal 2009, a 42,547-ton credit for emissions regarding wind power generation projects in India was transferred to Ricoh's account, resulting in aggregate credit from the projects totaling 73,179 tons.