

Recycling

The Ricoh Group aims at securing profitability in the global recycling business.

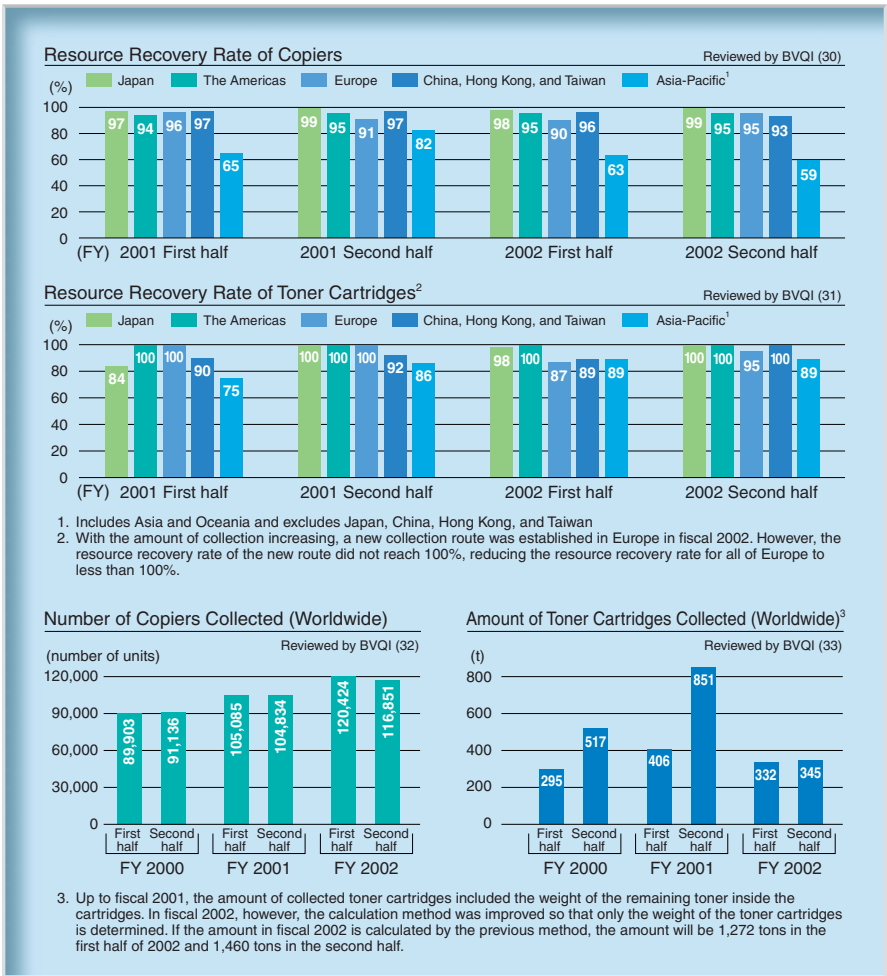
The Ricoh Group aims at securing profitability* in the recycling business in Japan by the end of fiscal 2004. The Group plans to do the same in the Americas, Europe, China, and the Asia-Pacific region. Efforts made in Japan include improving the quality and reducing the costs of collection, recovery, and recycling by making use of a recycling information sharing system and a nationwide recycling system, as well as by expanding sales of reconditioned machines. For regions other than Japan, it was decided that used products will be collected, re-covered, and sold within the same region. Efforts are being focused on establishing the recycling information sharing system, collecting a significant volume of recyclable resources, and expanding recycling sites. The recycling business conducted by sales companies in Europe has already turned profitable.

* Defined as a surplus in operating income, excluding social benefit.
* See page 16 for "Reconditioned digital copiers."

International

Global Development of the Recycling Information Sharing System

In the recycling business, used products are regarded as raw materials. It is therefore very important to collect a significant volume of recyclable resources as well as improve the quality of collection. To promote efficient collection, recovery, and recycling, the Ricoh Group plans to promote global development of the recycling information sharing system¹ by establishing and operating a worldwide infrastructure for recovered machines. The recycling information sharing system was



Environmental Conservation Costs and Effects in the Recycling Business in 2002 (Segment Environmental Accounting)

Costs		Effects			
Item of cost	Amount	Economic effects		Effects on environmental conservation	
		Item	Reduced Amount		
Product recycle cost	¥918 million	Sales amount	¥1,421 million	Resources recovered 26,422 t	Final disposal 37 t
Collection/resource recovery cost	¥2,772 million	Social effect	¥2,114 million	A 498-t increase from the previous year	A 313-t decrease from the previous year
Total cost	¥3,690 million				

* Data is for Japan only. The figure for "Social effect" is the amount that customers saved on the cost of waste disposal.

established as a part of the environmental management information system² to help users understand information on environmental impact and costs. Recovery and recycling centers can share information on the amount and rate of used products collected. Accurate information can be obtained simply by entering the model code of the product to be collected from customers. Collected information on costs is also useful for business management and environmental accounting. Aiming to streamline the PDCA cycle to improve

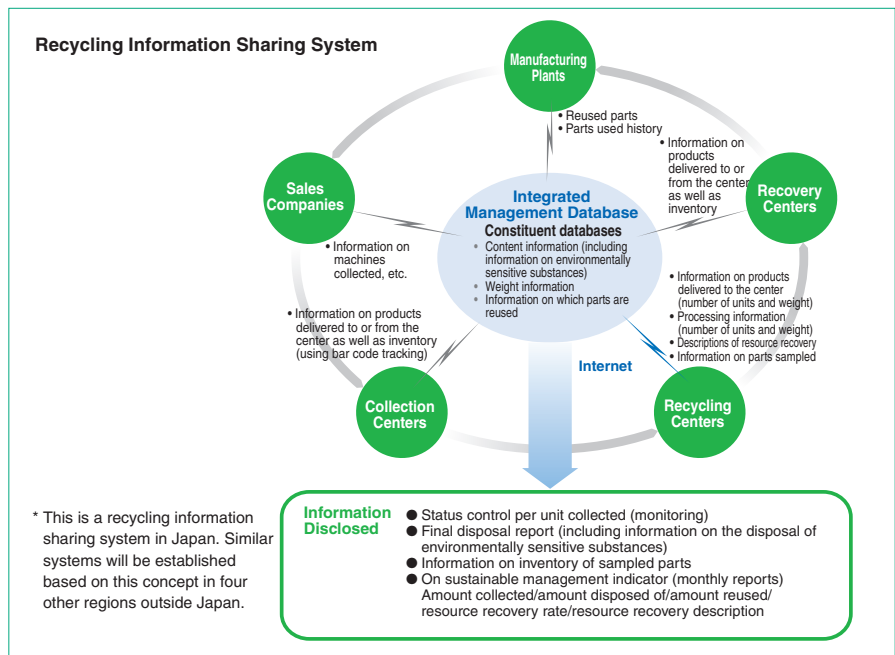
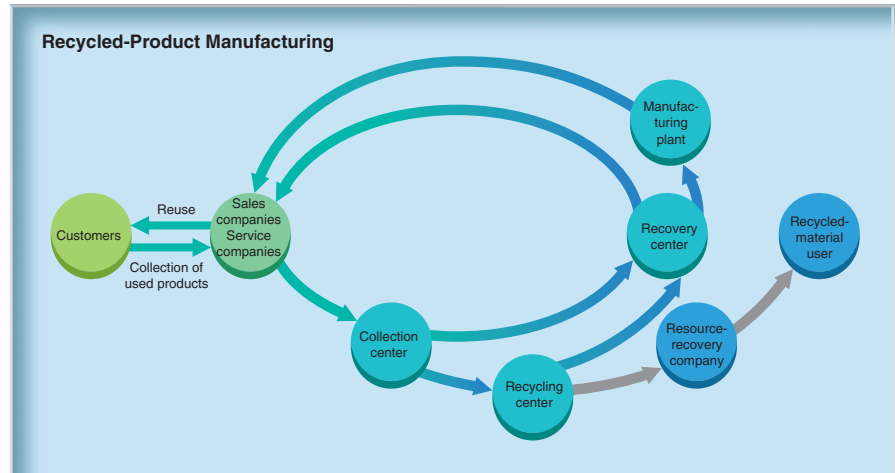
business activities in relevant regions and for the Ricoh Group as a whole, the recycling information sharing systems began operation in the Americas, Europe, and the Asia-Pacific region in fiscal 2003. These systems will identify monthly collection and recycling information as well as the environmental impact produced by the collection, recovery, and recycling activities of the Ricoh Group as a whole.

1. See page 59.
2. See page 25.

Japan

In Japan, a nationwide system for collection, recovery, and recycling of used products was put in place in fiscal 2001. As a result, Ricoh collected a significant volume of recyclable resources and achieved a high level of resource recovery for used copiers and toner cartridges. Development and mass production of reconditioned digital copiers* began in fiscal 2001 and the number of models available was expanded in fiscal 2002. Prior to that, in 1998, Ricoh began full-scale collection of used toner cartridges. Depending on their condition, recovered cartridges are either reconditioned and resold, or disassembled, sorted, cleaned, and inspected for reusable parts. Some cartridges are recycled for raw materials. In addition, parts replaced for maintenance are also collected for recovery and recycling. Ricoh continues its efforts to collect a significant volume of recyclable resources and improve the quality of collected parts so as to provide customers with more reconditioned machines and recycled toner cartridges.

*See page 16.



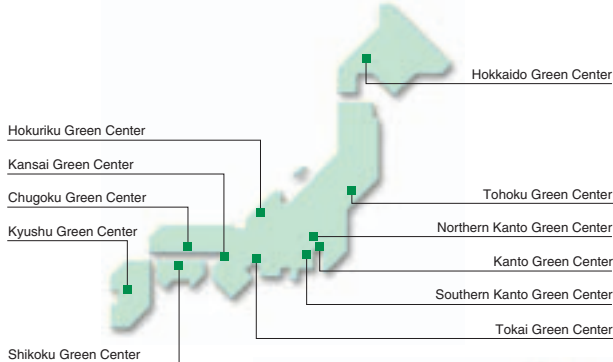
Nationwide Recycling System

A well-run nationwide recycling system is needed to efficiently collect and recycle Ricoh products, which are used throughout the country. Ricoh has begun collaborating with green centers (collection centers), recovery and recycling centers, and plastic parts manufacturers to establish a nationwide network that will facilitate more economically efficient recovery and recycling of used machines, toner cartridges, and parts collected from around Japan.

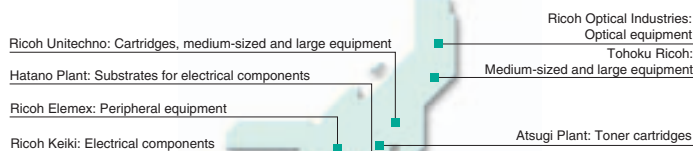
● Green Centers (Collection Centers)

Based on customer collection order information, personnel are dispatched from the nearest green center to pick up products and/or toner cartridges from the customer's office. The products and toner cartridges collected at 80 green centers throughout the country are sent to 11 major green centers, and then sent to recovery centers or recycling centers according to selection standards.

● Major Green Centers (Collection Centers) in Japan



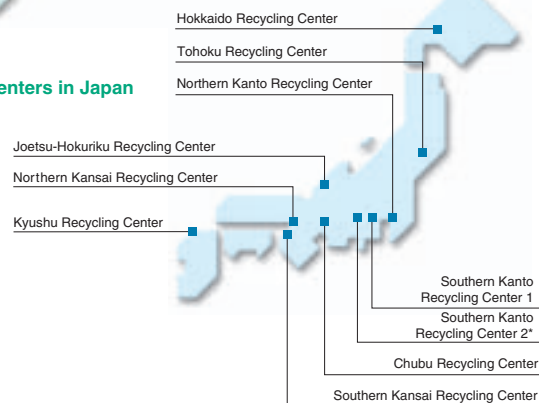
● Recovery Centers in Japan and Products Handled



● Recycling Centers in Japan



Kyushu Recycling Center



* Only supplies

● Recovery Centers

At recovery centers, used machines and toner cartridges are disassembled, cleaned, reassembled (with some parts being replaced), and inspected before being shipped as recovered products. In addition, centers sort reusable parts. Ricoh Group companies and plants that have manufacturing lines for targeted products serve as recovery centers.

● Recycling Centers

Used products and toner cartridges forwarded to recycling centers are disassembled, and the parts and units that can be reused or recycled are sorted out. Those that can be reused are sent to recovery centers to be used in manufacturing new or recycled products. Aiming to reduce the final disposal amount, three recycling centers achieved a 100% resource recovery rate. Recycling centers in Japan also achieved a 90% material recycling rate (except for energy recovery) for machine bodies.

Recycling of Replaced Parts

Ricoh Technosystems Co., Ltd. collects all the replaced parts and waste produced by equipment maintenance at customers' offices. The replaced parts are collected and recycled through the Ricoh Group's nationwide system. The company thus promotes the Zero-Waste-to-Landfill* activities, considering the customer's office, as well as company sites, as a part of its responsibility.

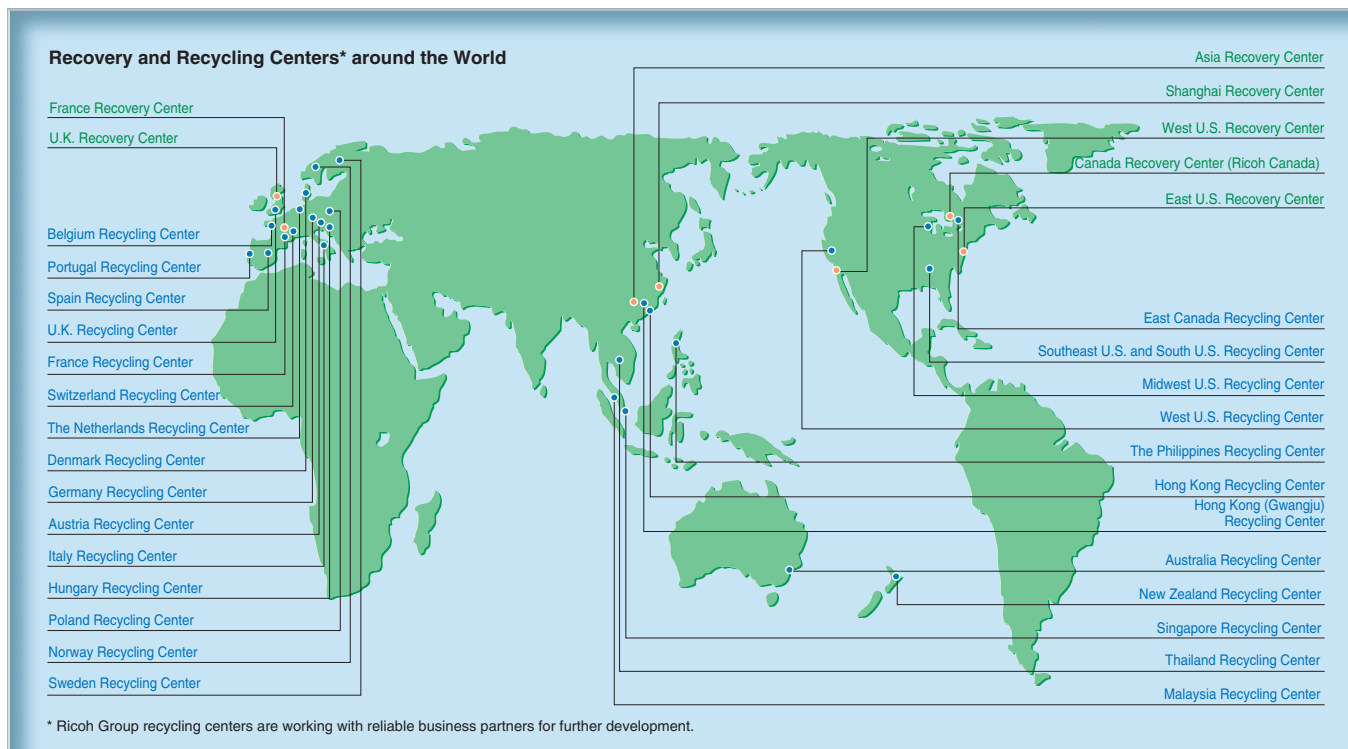
* See page 49 for the definition of Zero-Waste-to-Landfill.

The Americas

The manufacturing plants of Ricoh Electronics, Inc., (REI) in California and Mexico are used as recovery centers for toner cartridges and other products. The collecting of toner cartridges for recovery began in 1995. REI conducted joint research into recovery methods and quality assurance with Ricoh Corporation, a regional sales headquarters, to promote more eco-friendly recycling activities that focus on the reuse of parts. Furthermore, REI engages in activities that improve employee awareness of resource collection and recovery rates.



Toner cartridge recovery line at REI



Europe

In order to collect used toner cartridges efficiently on a Pan-European basis, RICOH Europe B.V., the European Headquarters of RICOH Group sales companies has entered into a partnership with Spring*—a cross border mail joint venture between TPG, Royal Mail Group and Singapore Post. In the meantime, RICOH Group sales companies are also keeping their efforts to collect used toner cartridges from their customers locally. The recyclable toner cartridges collected by Spring and local sales companies are sent to Ricoh UK Products Ltd. and Ricoh Industrie France S.A., where they are basically recycled into new products. To cope with the Directive of the European Parliament and the Directive of the Council on Waste Electrical and Electronic Equipment (WEEE), which came into effect on February 13, 2003, the two companies started recycling printed circuit boards and photo-sensitive materials, both of which are used in copiers and other machines. A number of sales companies are engaged in the recovery of products at their service/ maintenance divisions.

* Spring is a joint venture between the TNT Post Group (TPG), Royal Mail Group plc, and Singapore Post.



Product recovery line at Ricoh UK Products



Toner cartridge recovery line at Ricoh Industrie France

The Netherlands: NRG Benelux

In 1987, NRG Benelux B.V., a sales company, began the collection, recovery, and marketing of used products by making use of the expertise of its service/maintenance division. Working in close cooperation with its sales division, NRG Benelux continued to expand its operation, selling several thousand recovered products in fiscal 2002. In addition to the low level of environmental impact, the attractive prices of the products contributed to the company's favorable results. For this, the company won the Ricoh Sustainable Development Award.*

* See page 15.



A product recovery line and recovered products

UK: Keymood UK and NRG Group

NRG Group Headquarters together with the NRG Group UK Ltd sales company, are working with Keymood UK Ltd. to promote the sorting, recycling and disposal of used office equipment. As of January 2003, Keymood recycled 86% (mass ratio) of the products collected, to comply with the forthcoming regulations pursuant to the requirements in Waste Electronic and Electrical Equipment (WEEE) .

China

In China, Ricoh Asia Industry (Shenzhen) Ltd. (RAI), a manufacturing plant, also works as a recovery plant for toner cartridges. To improve economic efficiency in its business operations, RAI is making efforts to collect a significant volume of recyclable resources. Ricoh Electronic Technology Ltd. (RET), a Shanghai service company, has also begun product recovery operations.

China: Asia-Pacific Enterprise (Japan) Co., Ltd.

Working with Asia-Pacific Enterprise (Japan) Co., Ltd. recycling and recovery of toner cartridges collected in Hong Kong has begun at the Asia-Pacific Enterprise (Japan) Co., Ltd. plant in Guangzhou. A new facility was constructed that stresses health and safety and prevents explosions caused by scattered toner dust. These efforts helped the plant achieve a 100% resource recovery rate: 99.7% in materials recycling and 0.3% in energy recovery.



Asia-Pacific Enterprise (Japan) Guangzhou plant

Asia-Pacific Region

Sales companies in the Asia-Pacific region used brochures to ask customers for their cooperation in collecting a significant volume of used toner cartridges. The parts recovery and reuse rate can be improved by enhancing the quality of collected parts.

Australia: Ricoh Australia

Ricoh Australia Pty. Ltd. provides collection boxes at its customers' offices to boost the recovery rate of toner cartridges and bottles. The company formed a partnership with Commonwealth Bank, one of its major clients, to collect cartridges and bottles from all the bank's branches across Australia. This also contributes to improving the bank's image.

Australia: Close the Loop Ltd. and Ricoh Australia

Close the Loop Ltd., in cooperation with Ricoh Australia, a sales company, developed the Green Machine, which crushes collected toner cartridges and bottles and sorts the materials for recycling. The Green Machine began operating at Close the Loop's Melbourne plant in July 2002. The machine can crush and sort at least 400 toner cartridges an hour. The sorted plastic is used in various products, including rulers, pliers, and frames.

Singapore: Ricoh Singapore

Ricoh Singapore Pte. Ltd., a sales company, started a gift-giving campaign for customers who cooperate in the collection of toner cartridges. Collected toner cartridges are sent to Citiraya Industries Pte. Ltd. for recycling.



Environmental conservation staff of Ricoh Singapore

Thailand: Ricoh Thailand

Ricoh Thailand Ltd., a sales company, carries out a campaign in which the company asks its customers to send back their used toner cartridges. When customers return cartridges they receive coupons that can be exchanged for prizes. As a result, by the end of fiscal 2002, approximately 2,000 facsimile toner cartridges were collected and reused at the China plant. In addition, Ricoh Thailand restores Ricoh machines at its service division and sends those that cannot be repaired to Good Morning Inc. to be disassembled and sorted into such raw materials as aluminum, iron, and plastic to be recycled by subcontractors. Good Morning Co., Ltd. sends Ricoh Thailand a report noting the quantity of materials obtained after sorting.



Disassembling and sorting at Good Morning Co., Ltd.