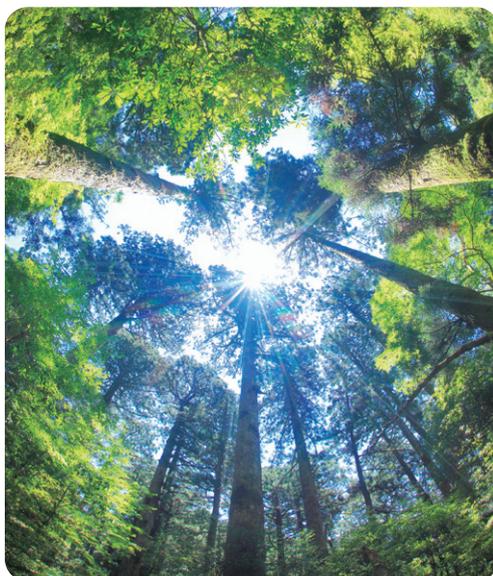
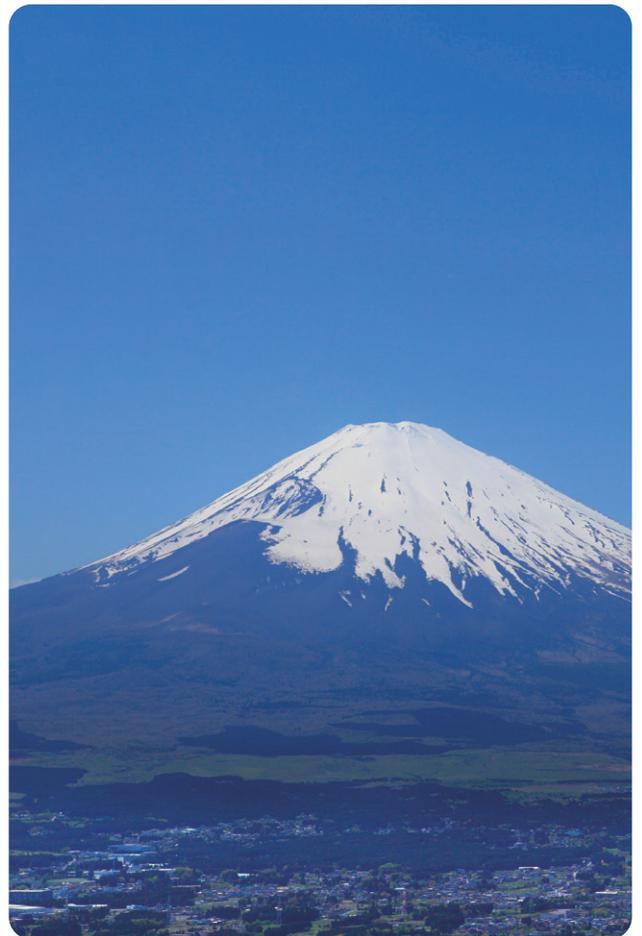


RICOH Eco Business Development Center

Innovating for a
Sustainable World



Building a friendly future for people and society through eco businesses

Ricoh was swift to embrace the United Nations' Sustainable Development Goals (SDGs). We are accelerating our drive to help materialize sustainability for societies around the world.

I believe that resolving social issues through business is vital to corporate prosperity. Companies that fail to support SDGs through fruition will not survive. With this in mind, the Ricoh Group endeavors to enhance the management of our businesses from both financial and ESG (environmental, social, and governance) perspectives.

We have specified seven material issues—key social challenges—for supporting SDGs throughout our operations. We hope to become indispensable to customers, business partners, investors, and other stakeholders by contributing to a better future in the communities around the globe that we are privileged to serve.

The RICOH Eco Business Development Center is on the site of the former Ricoh Gotemba Plant that we established in 1985 to manufacture photocopiers, printers, and other offerings.

We ceased production there in 2013. The location remained idle until we renovated it

to create a center for developing eco-related businesses.

Ricoh has prized sustainable environmental management for many years. This is a conceptual framework for generating profits while safeguarding the environment.

We have refined this concept to pursue sustainable environmental management that evolves with customers and business partners.

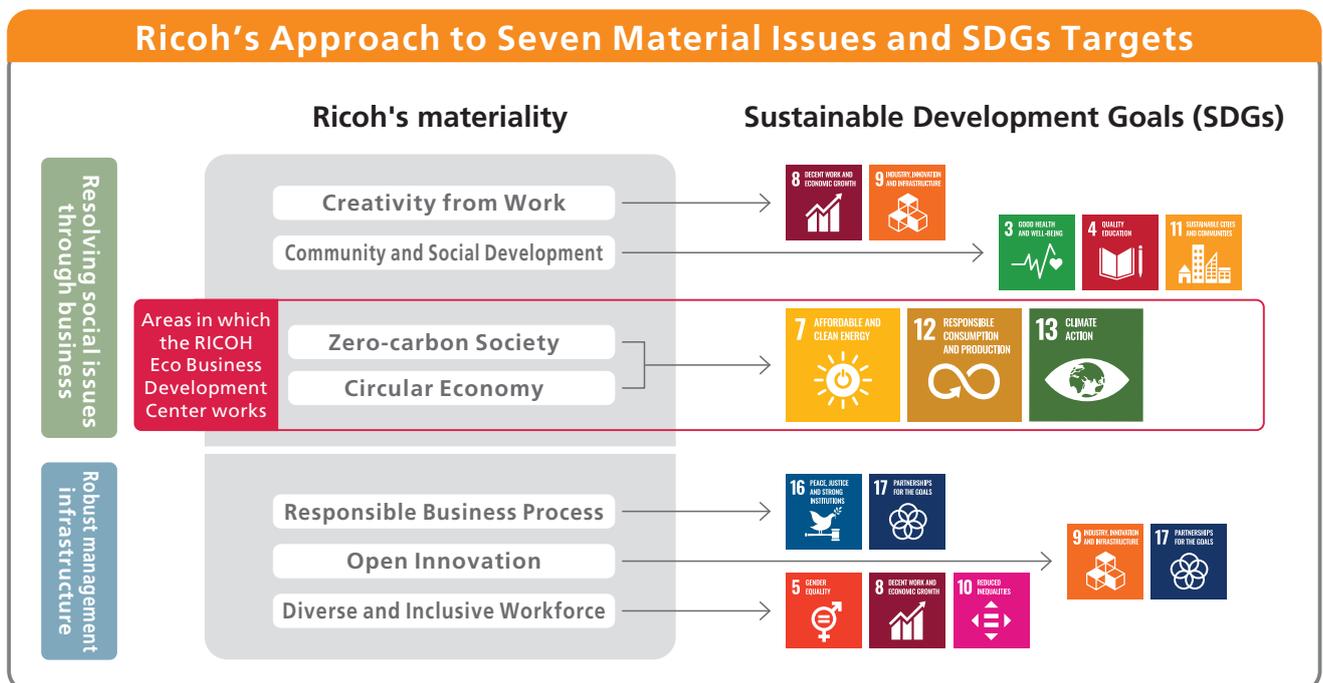
As well as offering a range of eco-friendly products, we will collaborate with customers, business partners, investors, and local communities to create eco businesses that go beyond conventional domains.

The RICOH Eco Business Development Center will play a leading role in tackling the challenges of materializing a zero-carbon society and a circular economy, which are two of seven material issues that Ricoh identified with respect to SDG's.

We welcome entities from industry, public institutions, and academia to the Center to leverage open innovation in collaboratively creating new eco businesses for better tomorrows.



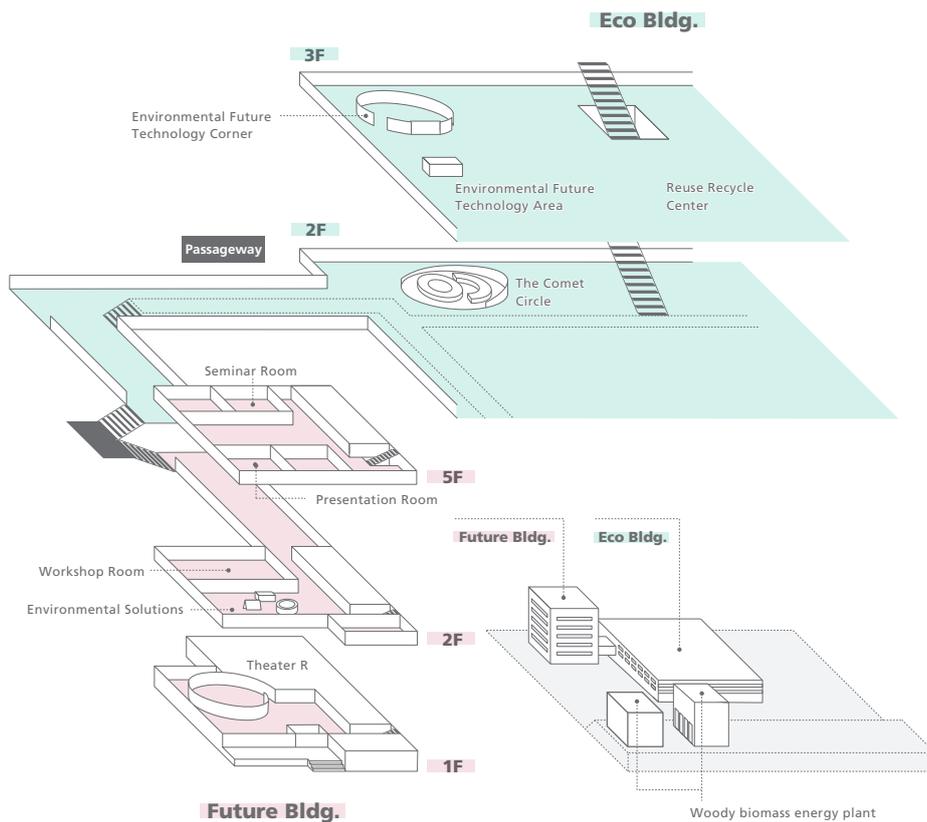
Yoshinori Yamashita
Representative Director, Chairperson
Ricoh Company, Ltd.



Three Functions of RICOH Eco Business Development Center



Floor Map



Create

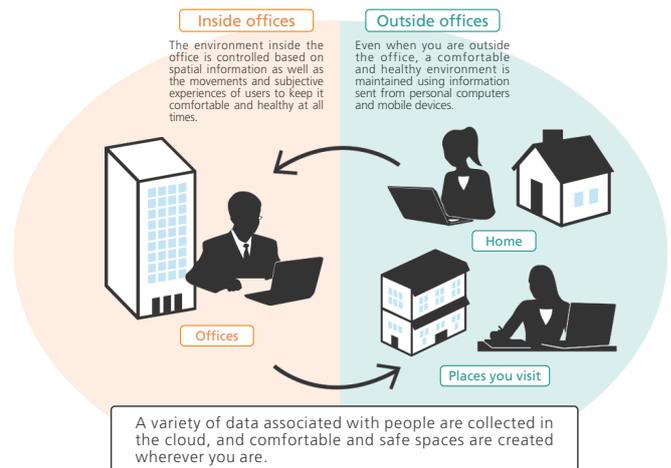
Leveraging open innovation to create new eco businesses for a sustainable future

Below, we highlight three examples of how we are tapping our myriad advanced technologies to develop and deliver sustainable solutions for ourselves and our customers.

Providing comfortable, healthy, and energy-efficient work environments

A shift toward hybrid offices is accelerating as people increasingly opt for satellite offices or working from home. Also, satellite offices and co-working spaces are not just in city centers. They are springing up in suburbs and rural areas.

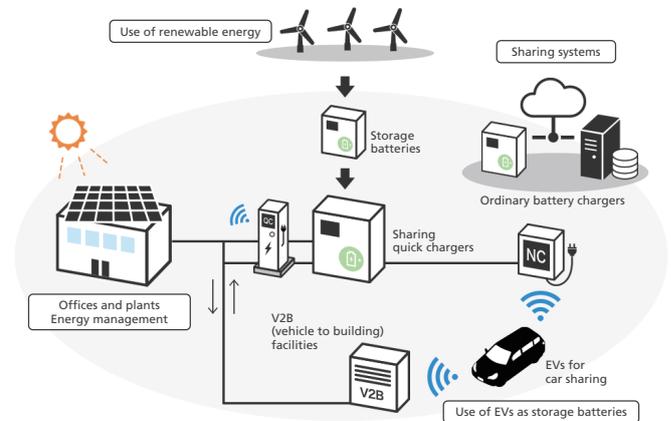
Organizations accordingly have to make workplaces more comfortable while offering more flexible working hours. Ricoh is cultivating sensing technology and cloud-based solutions that provide comfortable, healthy, and energy-efficient work environments.



Offering electric vehicle support and sharing services solutions

In the relatively near future, cities will become smart and environment-friendly, drawing on information and communication technologies, artificial intelligence, big data, and other advanced technologies to manage energy more efficiently. Electric vehicles will be key transportation modes.

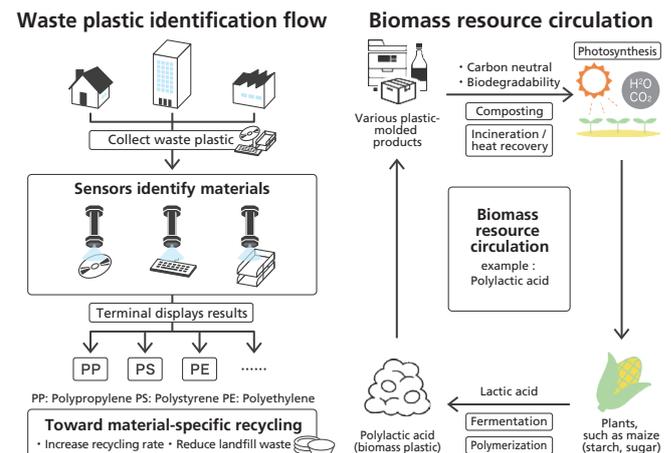
Ricoh will be poised by then to offer cloud-based corporate electric vehicle sharing services that harness knowledge and technologies that it has amassed as one of the first companies to deploy these vehicles in its corporate fleet. These services will help customers to cut greenhouse gas emissions and lower fleet costs.



Using recycling technology and new materials for lasting plastics solutions

People and businesses alike are increasingly aware of the need for environmental conservation. Companies that fail to consider their environmental impacts will fall by the wayside. Coming years should see more efforts to reduce plastic waste in the oceans and benefit ecosystems.

Ricoh has accordingly endeavored to cut its use of petroleum-derived materials in its products and conserve resources. It is also taking steps to identify materials so it can more easily recycle conventional plastics and eliminate burning and landfill disposal. It is also developing bioplastics.



Realizing a zero-carbon society



Lighting and air-conditioning control systems

Monitoring people movements and indoor environments to optimize lighting and air-conditioning

We created a system that draws on light, occupancy, and ambient temperature sensors to manage information in the cloud and optimize lighting and air-conditioning controls. This setup effortlessly enhances energy efficiency and savings without compromising comfort and convenience.



Energy-harvesting devices

Advanced solar cells employing material technology for organic photoreceptors

Advanced solar cells eliminate the need for power from outlets and coin cell batteries, resolving power problems in various usage environments. Solid-state dye sensitized solar cells are highly efficient, even under indoor light. Organic thin-film solar cells are light and flexible. Perovskite solar cells can generate electricity, even in space. Our clean, smart, and independent devices will contribute to the emerging Internet of Things.



Employing wood biomass

Local production and consumption model that encompasses everything from forest harvesting to energy utilization

We collaborate with local governments and forestry professionals to conserve forests, cut carbon dioxide emissions, and create energy. We aim to assist regional development through the Gotemba Model, a woody biomass energy circulation system that we developed to use thinned lumber and create jobs nationwide.



Reusing hybrid electric vehicle batteries

Employing lithium-ion batteries

An absence of hybrid vehicle lithium-ion battery recycling and reuse techniques has fueled concerns about disposing of numerous such batteries in the years ahead. In view of a shift to electric vehicles and decentralized energy sources, we are developing ways to reuse lithium-ion batteries from these vehicles as assistive power sources at electric vehicle charging stations and in stationary power storage systems.



Creating a circular economy



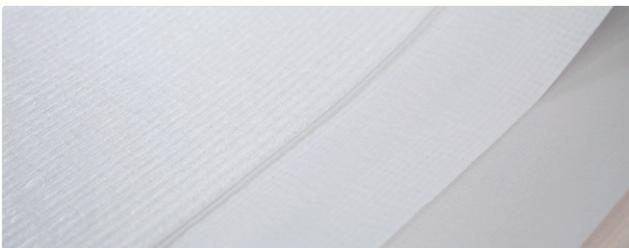
Foamed PLA sheets

A new alternative material to fossil-derived plastic

To realize a zero carbon and circular economy, we have developed a lightweight and strong foamed PLA sheet by using our proprietary foaming control technology.

PLA is a material derived from plant sugars. Therefore, while it emits CO₂ when it is incinerated, its raw material, the plant from which the sugar is derived, absorbs part of it during its growth process, helping you to minimize the increase of CO₂ on the earth. It can also be decomposed into water and carbon dioxide in a controlled environment such as industrial compost*.

*Result verified in accordance with ISO 14855-2 at 58°C with aerobic micro-organisms.



Sorting plastics

Helping streamline plastic recycling

Japan disposes of around nine million metric tons of plastic waste every year. Most waste plastic once shipped overseas for processing is building up in Japan amid import restrictions in China and other countries. There is an urgent need to develop plastic waste treatment facilities in Japan. It is hard to recycle waste incorporating varying types of plastic. Ricoh identifies materials in plastics to add waste sorting and recycling, thus helping to create a circular economy.



Continue

A reuse and recycling facility

Conserving limited resources

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* Unit reuse gain for office equipment collected by using ultra-simple packaging and shipping



RICOH MP C4504RC SPF

Reuse and recycling technologies in remanufactured equipment



Automating machine retrieval and storage

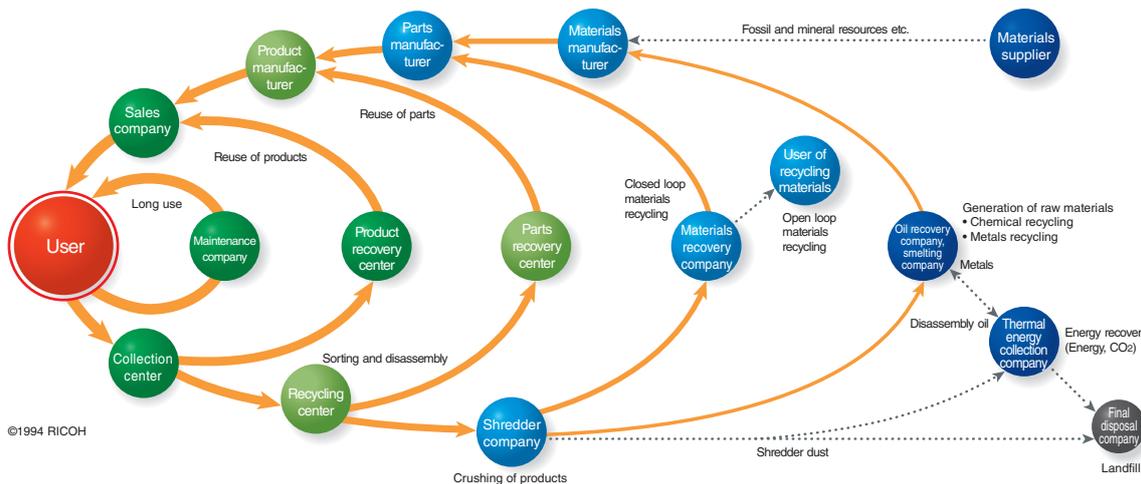


Automated guided vehicles store and retrieve machines to streamline operations and save space.

Realizing a circular economy

The Comet Circle is a conceptual representation of Ricoh's approach to materializing a circular economy. We aim to reduce the environmental impacts of products throughout entire lifecycles. As the figure below shows,

smaller loops closer to users reduce environmental impacts and increase economic efficiency. We develop reuse and recycling technologies to make these loops as small and close as possible to customers.



Promote

A center for environmental communications

Informing about Ricoh's current and future environmental activities

Future Building

1_F



Theater R

Visitors can learn about Ricoh's concept and its approach to the environmental business and experience our vision for the future.

2_F



Environmental solutions

Our eco solutions showcase presents state-of-the-art products from trade shows. With our One Message for One Tree program, visitors can use a proprietary digital signage-based technology for our meeting, incentive tour, convention, conference, and exhibition solution to record eco declarations on their photographs. We donate a tree for each declaration.

2_F3_F



Stairwell illustrations and art

The stairwell displays illustrations of local animals and plants and art made from repurposed waste materials.

3_F



Projection mapping of Eco Garden City Project

Visitors can view a video of Gotemba's Eco Garden City Project.

Eco Building

2_F



The Comet Circle

This area uses products and components to present Comet Circle.

3_F



Environmental Future Technology Corner

This space is for discussing and exploring ideas with visitors. Here, we present environmental themes for the future, including in terms of our vision, backdrops, technological features, benefits, business concepts, and commercialization roadmaps.

Access

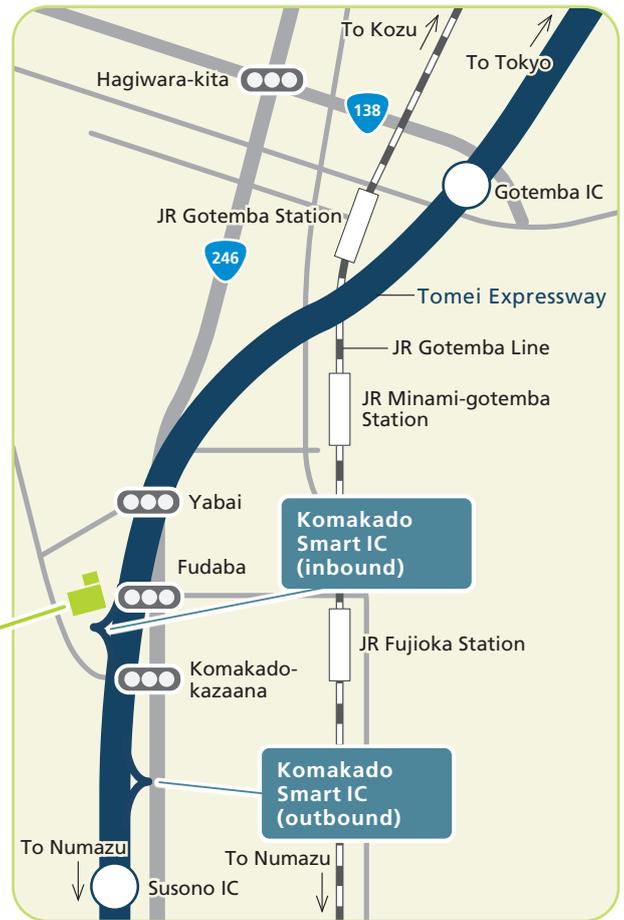
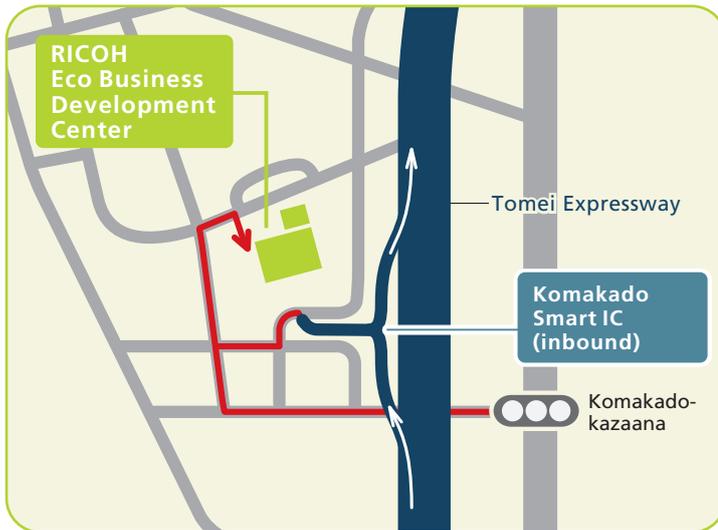
By Car

[From Tokyo]

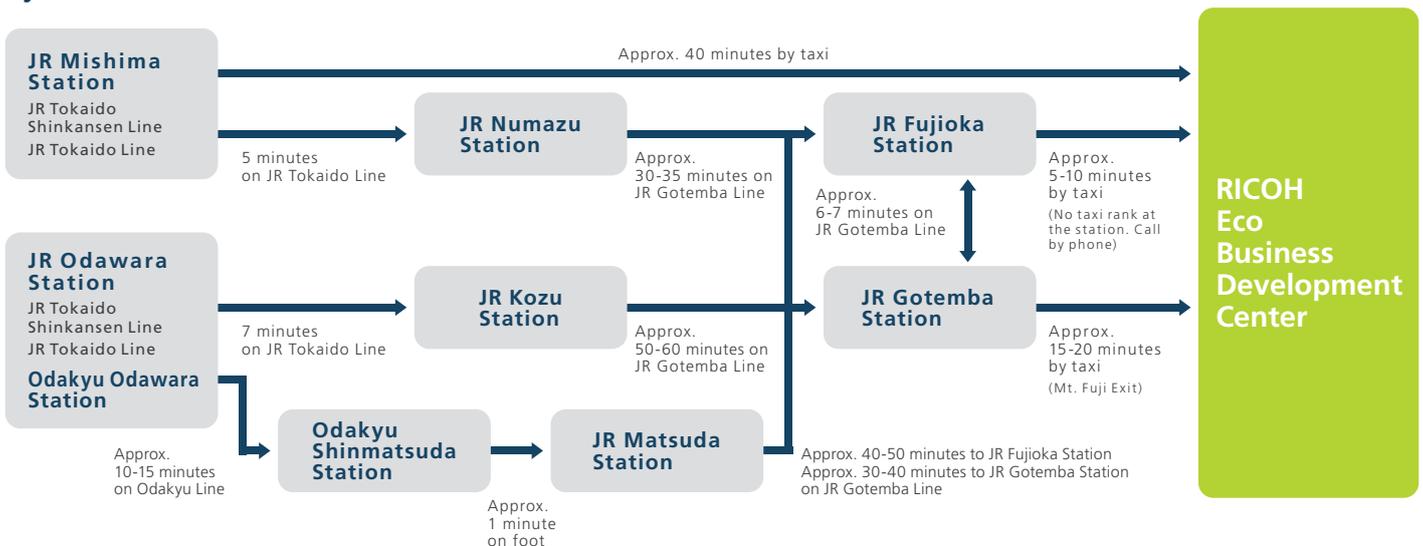
- Very near the Komakado Smart I/C on the Tomei Expressway.
- Exit the Tomei Expressway at Gotemba IC and take R138 towards of Lake Yamanaka. Turn left at R246 crossing and drive towards Numazu. Turn right at Yabai crossing to Komakado Industrial Estate.

[From Nagoya]

- Directly connected to Komakado Smart IC, the Tomei Expressway
- Exit the Tomei Expressway at Susono IC and take R246 bypass route towards Tokyo. Turn left at Komakado-Kazaana crossing to Komakado Industrial Estate.



By Train and Taxi



RICOH
imagine. change.

RICOH Eco Business Development Center

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https://www.ricoh.com/environment/eco_business_center