



KONICA MINOLTA

KONICA MINOLTA

Environmental Report 2019



Giving Shape to Ideas

Our Philosophy
The Creation of New Value

Brand Proposition
Giving Shape to Ideas

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Editorial Policy

Konica Minolta reports on its major environmental efforts in Konica Minolta CSR Report 2019, and posts information in more detail on the website. The Konica Minolta Environmental Report 2019 is available in PDF format, with content focusing on the Group’s basic concepts and on activities in fiscal 2018.

Report Boundary

This report covers Konica Minolta, Inc., and its consolidated subsidiaries. When data is given on a specific subset of companies, the boundary is separately indicated.

* In this report, “Konica Minolta” refers to the Konica Minolta Group. “Konica Minolta, Inc.” refers to Konica Minolta, Inc., alone.

Reporting Period

In principle, the report covers activities from April 1, 2018 to March 31, 2019. Some sections may include information on earlier initiatives or more recent activities. In this report, “Fiscal 2018” refers to the fiscal year starting April 1, 2018 and ending March 31, 2019.

Publication Date

October 2019 (next report: scheduled for October 2020; previous report: November 2018)

Relevant Guidelines

In making this report, Konica Minolta referenced the GRI Sustainability Reporting Standards and the Environmental Reporting Guidelines 2018 issued by the Ministry of the Environment (Japan).

Disclaimer

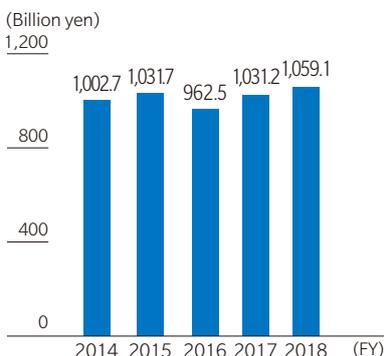
In addition to facts about past or present circumstances, this report contains descriptions of the Group’s current plans and projections for the future. These descriptions are based on information that is currently available and have been deemed reasonable based on the Group’s current status. The Group’s actual performance could differ from its predictions due to future changes in the business environment.

Overview of the Konica Minolta Group

Corporate Data

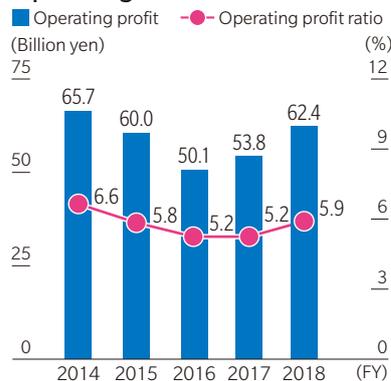
Company name Konica Minolta, Inc.
Head office 2-7-2 Marunouchi, Chiyoda-ku, Tokyo, Japan
President and CEO Shoei Yamana
Established December 22, 1936
Capital 37,519 million yen (as of March 31, 2019)
Fiscal year-end March 31
Number of employees Non-consolidated: 5,207
 Consolidated: 44,360 (as of March 31, 2019)

Consolidated Revenue

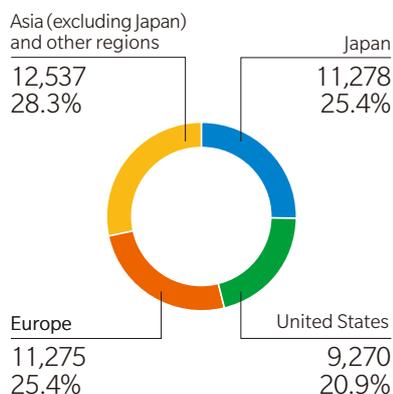


Note: The company uses International Financial Reporting Standards (IFRS).

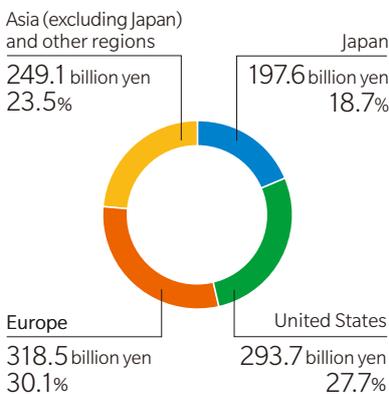
Consolidated Operating Profit / Operating Profit Ratio



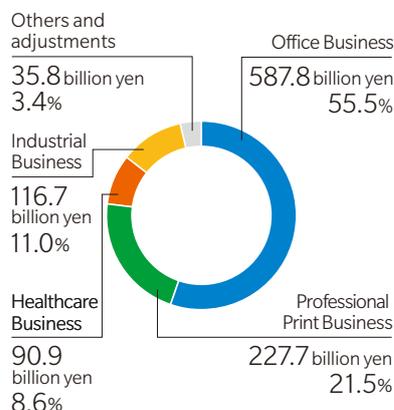
Number of Employees by Region



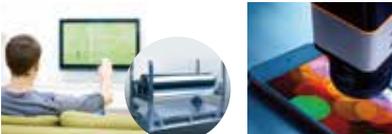
Revenue by Region



Revenue by Business Domain



Business Domains

Business Segments	Business Content
Office Business	Development, manufacturing and sale of multifunctional peripherals and related supplies, and provision of related solution services 
Professional Print Business	Development, manufacturing, and sale of digital printing systems and related supplies, and provision of various printing services and solution services 
Healthcare Business	Development, manufacturing, and sale of medical diagnostic imaging systems (such as X-ray photography and ultrasonic diagnostic imaging systems), provision of services related to those systems and other solution services for digitizing and networking medical treatment 
Industrial Business	<ul style="list-style-type: none"> Materials and Components Development, manufacturing and sale of TAC film used for liquid crystal displays, OLED lighting, ink jet heads for industrial use and lenses for industrial and professional uses, and other products Optical Systems for Industrial Use Development, manufacturing and sale of measuring equipment, and other products 

Konica Minolta Environmental Policy

The Konica Minolta Group aims to promote sustainable development and profitable growth. We integrate environmental, economic and social perspectives into our business strategies so that our business activities are implemented in harmony with human lives and with the environment in all aspects.

Our concept is to make steady progress toward resolution of environmental challenges based on quantitative measurement and analysis of reliable data in regard to environmental performance and impact. This basic concept is demonstrated in the following affirmation:

"Management Based on Facts"

1. Working toward a sustainable society as a global citizen

In response to the call for a sustainable society, we will conduct business activities from the perspective of on-going enhancement of performance in environmental preservation, economic growth and social responsibilities (ethics). Every one of us will enhance its knowledge and awareness on the environment, economies and societies on a global scale and act with responsibility in pursuit of a sustainable society.

2. Compliance with laws and other requirements

We will comply with legal requirements in respective countries and regions, as well as our Group standards. In addition, we will respect, in an equitable manner, expectations of our stakeholders and consensus in the international community.

3. Consideration for the environment throughout the entire life cycle of products and services

We are committed to reducing the environmental load in all stages throughout the entire life cycle of products and services, recognizing that responsibility for a product rests with its manufacture.

4. Initiatives to counter global warming

We will continuously reduce greenhouse gas emissions that derive from our business activities from the perspective of the life cycle of our products and services throughout the entire Group, recognizing that global warming is one of the most important world issues.

5. Initiatives toward a recycling-oriented society

We are always reviewing what we can do as a corporate citizen in order to create recycling-oriented society while striving for minimizing consumption of natural resources and promoting "Zero Waste Emission" activities. In addition, we will accelerate initiatives for the recovery and recycling of end-of-life products and packaging materials.

6. Prevention of chemical pollution and minimization of potential risks to the environment

We will take every countermeasure for preventing chemical pollutions, recognizing that chemical substances can impose significant impact on human health and safety and the environment. At the same time, we will continuously suppress use of chemicals and reduce discharge volume in order to minimize environmental risks.

7. Promotion of information disclosure

We will execute accountability to all the stakeholders by actively disclosing environmental information and ensuring risk communication. We will as well make every effort to accomplish our commitment to the societies. Our Environmental Policy is to be disclosed to the public.

8. Establishment of environmental objectives and targets

We establish and administer environmental objectives, targets, and management programs to translate this Environmental Policy into reality. We will continuously review such objectives, targets and programs for further improvement of our environmental performance.

April 1, 2017
Konica Minolta, Inc.
President and CEO



Shohei Yamana

In order for a company to grow sustainably in the future, it is essential not only to pursue economic value but also to address important issues facing society including environmental problems. Based on the environmental policy, Konica Minolta will continue to reduce environmental impact across the whole product lifecycle, from product development through procurement, manufacturing, distribution, sales, customer service and recycling, under the philosophy of "The Creation of New Value."

In the product lifecycle, we will expand our business by M & A and enter new projects in our business activities, including suppliers, outsourcing partners and customers.

Eco Vision 2050

“Carbon Minus” by 2050: The Evolution of the Long-Term Environmental Target Eco Vision 2050

Given the urgency of global environmental issues, global businesses have a great responsibility to help build a more sustainable society by reducing environmental impact.

With Eco Vision 2050, Konica Minolta exemplifies its determination to fulfill its long-term environmental responsibilities. The company is taking a series of actions to achieve “Carbon Minus” status.

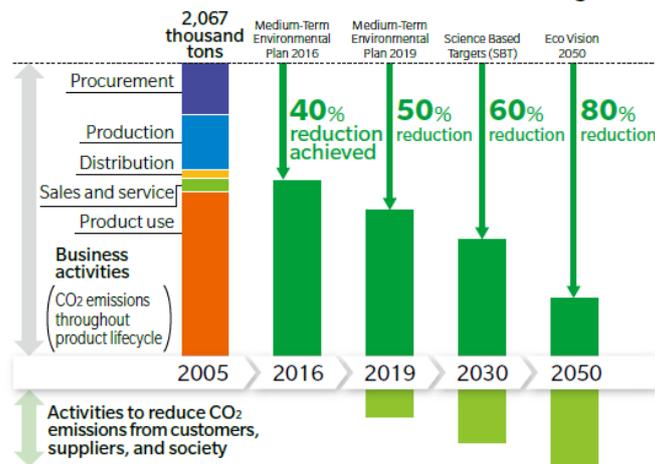
With Eco Vision 2050, Konica Minolta aims to reduce the CO₂ emissions from its products throughout their entire lifecycle by 80% compared to fiscal 2005 levels by 2050. The addition of “Carbon Minus” is Konica Minolta’s commitment to achieve a CO₂ emissions reduction effect that exceeds the CO₂ emissions produced by Konica Minolta’s business activities in cooperation with stakeholders such as business partners, customers and local communities.

If the company can reduce its CO₂ emissions by 80% by 2050, the remaining 20% will be approximately 400,000 tons. By helping stakeholders utilize Konica Minolta’s technologies and expertise to reduce their own CO₂ emissions by 400,000 tons or more, the net outcome will be that society’s overall CO₂ emissions resulting from Konica Minolta’s activities will be negative.

> [Medium-Term Environmental Plan](#) (Page 11)

- Eco Vision 2050**
1. Reduce CO₂ emissions throughout the product lifecycle by 80% by 2050, compared to fiscal 2005 levels. Also through cooperation with stakeholders, achieve CO₂ emission reductions greater than product lifecycle emissions, and realize Carbon Minus status.
 2. Promote recycling and effective use of Earth's limited resources
 3. Work to promote restoration and preservation of biodiversity

CO₂ Emissions Reduction and Carbon Minus Targets



Responding to the Task Force on Climate-related Financial Disclosures (TCFD)

The Task Force on Climate-related Financial Disclosures (TCFD), established by the G20 Financial Stability Board (FSB), released its final report, entitled “Recommendations of the Task Force on Climate-related Financial Disclosures,” in June 2017.

Konica Minolta believes that accurately assessing the risks and opportunities related to climate in its business operations and actively disclosing information to investors and a wide range of other stakeholders is essential for a company capable of sustainable growth. Being one of the supporters of the TCFD, Konica Minolta agreed to support the final report. As its first action based on the recommendations, Konica Minolta will begin using the TCFD’s framework when disclosing its climate change initiatives.

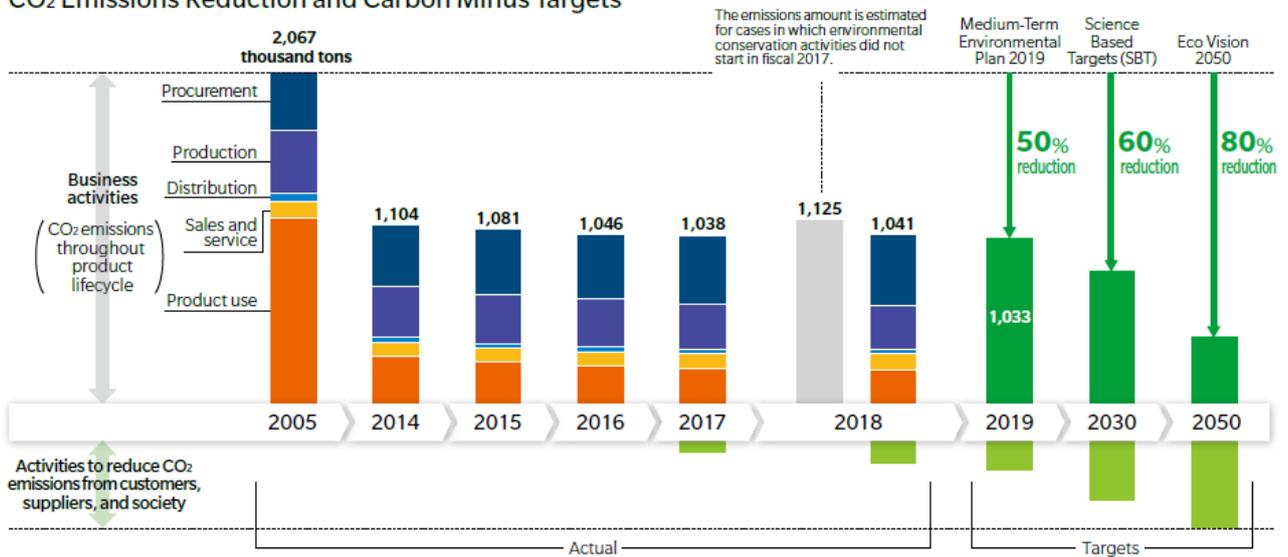
Items	Description of activities	Point of reference
Corporate Governance	<p>Konica Minolta recognizes that global warming is a serious risk for companies and, as a result, in 2008 the Board of Directors approved Eco Vision 2050, the company’s long-term environmental vision. This plan sets the ambitious target of reducing CO₂ emissions throughout the product lifecycle by 80% by 2050, compared to fiscal 2005 levels. Konica Minolta views climate change as an opportunity, and with this approach, in 2017 the company made a new commitment to becoming “Carbon Minus,” in other words helping to reduce society’s overall CO₂ emissions through its business activities. Konica Minolta is pursuing programs across its supply chain to achieve this goal. The President and CEO, who has the ultimate responsibility for as well as authority over climate change issues, appoints the Director of Environmental Management from among the executive officers. The Director of Environmental Management prepares the Medium-Term Environmental Plan, which is approved by the Board of Directors as the company’s overall management plan. The Director of Environmental Management reports to the President every month on the progress made in pursuing environmental management. The President and CEO reports to the Board of Directors on operations every month.</p>	<ul style="list-style-type: none"> > Eco Vision 2050 > Medium-Term Environmental Plan 2019 > Corporate Governance > Environmental management
Strategy	<p>As climate change becomes more apparent, it will create social problems and economic impacts, resulting in both risks and opportunities for Konica Minolta’s business. In the manufacturing industry in particular, it will be essential over the long term to find alternatives for fossil resources, pursue the optimal energy efficiency for production and products, and take mitigation and adaptation initiatives to fight climate change. In the short and medium terms, Konica Minolta anticipates rising prices for fossil resources, demand for energy savings, interruptions in the supply chain due to weather abnormalities, and a shift to a paperless system in industry. If steps are not taken to address these challenges, it will lead to substantial capital investments and higher costs, and a loss of business opportunities. This is why Konica Minolta is transforming itself into a digital</p>	<ul style="list-style-type: none"> > Participation in International Initiatives > CSR Targets and Results > Eco Vision 2050 > Medium-Term Environmental Plan 2019

	<p>company that provides solutions with insight into implicit challenges, creating solutions that help to solve social issues by actively incorporating cutting-edge technology into products and integrating them with digital input and output technology, which is Konica Minolta's strength. The company is also working to address environmental issues such as climate change, the depletion of resources, and waste, all as integral parts of its medium- and long-term business strategy. Companies in the manufacturing industry can reduce their environmental impact by decreasing production volumes, transport, inventory and waste. Konica Minolta is helping to resolve these issues, for example, by providing on-demand equipment for industrial printing for packages, labels and textiles. To reduce the consumption of paper in offices, Konica Minolta provides digital workplace solutions that foster the shift to a paperless system while improving the efficiency of operational flows. Addressing the problem of the massive amount of energy data centers use to analyze big data, Konica Minolta's edge-computing technology helps minimize energy consumption by enabling as much data analysis as possible to be done on-site.</p> <p>In all these ways and more, Konica Minolta is integrating business growth with its efforts to redress environmental issues and views environmental management as a key business strategy (refer to page 9 for details on risks and opportunities).</p>	
<p>Risk Management</p>	<p>Konica Minolta views environmental risk, including climate change, as one of its management risks. These risks are addressed by the Risk Management Committee, chaired by an executive officer appointed by the Board of Directors.</p> <p>This Committee conducts risk assessment on corporate activities, and confirms the risks thus identified as well as countermeasures, while also checking that the risk management system is functioning effectively and making changes as necessary. The Risk Management Committee regularly reports to the Audit Committee, which consists of directors who are not also executive officers.</p>	<ul style="list-style-type: none"> > CSR Targets and Results > Eco Vision 2050 > Medium-Term Environmental Plan 2019 > Corporate Governance
<p>Metrics and Targets</p>	<p>Konica Minolta has established its Eco Vision 2050, which aims to reduce CO₂ emissions over the product lifecycle and bring carbon emissions to negative levels, as its metric for managing the risks and opportunities posed by climate change. Results are reported every year.</p> <p>The goal for reducing CO₂ emissions across the product lifecycle includes all of Scopes 1 and 2 (CO₂ emissions generated during the production stage and the sales and service stage) and the main components of Scope 3 (CO₂ emissions generated during the procurement stage, transportation and distribution stage, and product use stage). In the long term, Konica Minolta aims to reduce CO₂ emissions by 60% by 2030 and by 80% by 2050, and in the short term, the company aims to cut emissions by 50% by 2019, all compared to fiscal 2005 levels. In fiscal 2018, emissions were down 49.6% (refer to the graph below for the targets and results).</p>	<ul style="list-style-type: none"> > CSR Targets and Results > Eco Vision 2050 > Medium-Term Environmental Plan 2019 > Green Products > Green Factory Activities > Environmental Data Summary

The Medium-Term Environmental Plan, which designates 2019 as the target year, sets the target for the company's Green Factory activities of reducing CO₂ emissions in the production stage by 19,000 tons and also sets cost-cutting targets. In fiscal 2018, Konica Minolta succeeded in reducing CO₂ by 26,500 tons and also achieved its cost-cutting targets. In its Green Products initiative, Konica Minolta has set targets of reducing CO₂ emissions in the product use stage by 17,200 tons in fiscal 2019 and generating 770 billion yen in sales of Certified Sustainable Green Products. In fiscal 2018, Konica Minolta reduced CO₂ by 15,000 tons and recorded sales of Sustainable Green Products amounting to 778.5 billion yen.

"Carbon Minus" refers to Konica Minolta's commitment that its business will have a net minus impact on the overall CO₂ emissions of society. If the company can reduce its CO₂ emissions throughout the product lifecycle by 80% by 2050, the remaining 20% will be approximately 400,000 tons. Accordingly, the company's Carbon Minus goal is to reduce the CO₂ emissions of society by at least 400,000 tons by 2050. There are limits to what a single company can do on its own to achieve Carbon Minus status, so Konica Minolta is expanding its activities to include business partners and customers, with the aim of more broadly reducing CO₂ emissions. Konica Minolta expects this effort not only to boost its contributions to the environment across the entire supply chain, but also to reduce costs and increase sales.

CO₂ Emissions Reduction and Carbon Minus Targets



Konica Minolta's Climate-Related Risks and Opportunities

The Paris Agreement provides a framework for the world to move more quickly and ambitiously to build a low-carbon global society. At the same time, there are concerns that the needed changes will not happen fast enough and climate change will have a harsh impact on the world.

If Konica Minolta does not take measures to address climate change, it faces a risk of higher costs and loss of business opportunities. Konica Minolta recognizes that it can create opportunities by taking action sooner. For example, Konica Minolta's proprietary IoT technology, such as edge computing, which does not require large-capacity servers, goes far in reducing energy load and reducing greenhouse gas emissions. Environmental issues could be an opportunity for higher demand for this kind of technology and stronger sales. As part of its ongoing energy conservation activities, Konica Minolta not only reduces costs at its own factories, but also strives to create new business initiatives by collaborating with suppliers and business partners.

Climate-related Risks and Opportunities along the Supply Chain

	Impact on procurement	Impact on direct operations	Impact on product and service demand
Transition risks and opportunities	Higher procurement and manufacturing costs <ul style="list-style-type: none"> Higher prices for fossil resources and fossil fuels Response to emissions regulations and laws in line with measures to mitigate impact of climate change Temporary suspension of production due to restrictions on electric power supply 		Increase in product development costs <ul style="list-style-type: none"> New regulations on product energy efficiency and the market in line with measures to mitigate impact of climate change Decline in product competitiveness due to unsustainable use of resources and non-reusable design
	Reduction in procurement and manufacturing costs <ul style="list-style-type: none"> Manufacturing and supply chain development that achieves sustainable use of energy and resources 		Higher sales <ul style="list-style-type: none"> Edge computing, which does not require a data center Digital workplace to support a paperless society Technology for upgrading recycled plastics Digital on-demand printing
Physical risks and opportunities	Lower revenue due to a reduction in production capacity <ul style="list-style-type: none"> Supply chain interruptions following large-scale natural disasters Depletion of water resources and restrictions on water intake 		Higher sales <ul style="list-style-type: none"> IoT solutions to improve farm employees' food productivity

Participation in RE100, Which Aims to Run Businesses with 100% Renewable Energy

In January 2019, Konica Minolta joined RE100, a global leadership initiative that brings together businesses committed to sourcing 100% renewable energy for their operations.

Konica Minolta aims to procure 100% of the power used in its own business activities from renewable energy sources by 2050. By doing so, Konica Minolta will accelerate its efforts to achieve Eco Vision 2050 while also helping to reduce global CO₂ emissions by expanding the use of renewable energy. As a medium-term step toward achievement of its long-term goal, Konica Minolta set an internal target of sourcing renewable energy for 30% of its energy use by 2030. The Group will start reviewing its power procurement contracts one by one at production sites and sales sites, starting with countries and regions where renewable energy power is relatively widespread, and switch over to renewable energy, beginning with those sites where it is possible.



CO₂ Reduction Target Approved by the SBT Initiative

When formulating the Medium-Term Environmental Plan 2019, Konica Minolta backcasted from Eco Vision 2050 to set a medium-term goal for the year 2030, to reduce CO₂ emissions by 60% from fiscal 2005 levels. The goal was approved by the international SBT Initiative* as a target with a scientific basis.

* SBT Initiative: Jointly established in 2015 by CDP (formerly the Carbon Disclosure Project), the United Nations Global Compact, the World Resources Institute (WRI), and the World Wide Fund for Nature (WWF). The SBT Initiative's aim is to promote the achievement of science-based targets (SBTs) for greenhouse gas emissions reduction, in order to keep the increase in global average temperature to well below 2°C above pre-industrial levels.



Participation in Japan Climate Initiative to Achieve Paris Agreement

The Japan Climate Initiative (JCI) is a platform in which companies, local governments, NGOs, and other organizations participate with the aim of achieving a decarbonized society. Konica Minolta joined as an initial member when the JCI was established in July 2018. As one of a diverse group of non-state actors, Konica Minolta promises to put itself at the forefront of global endeavors to achieve the decarbonized society sought by the Paris Agreement.



Medium-Term Environmental Plan

Concept of the Medium-Term Environmental Plan 2019

Greater Business Contribution by Helping Solve Environmental Issues

Under its management vision, Konica Minolta aims to be a global company that is vital to society. To realize this vision, it is necessary to identify social challenges as business opportunities and generate innovative solutions, which in turn will drive Konica Minolta's own sustainable growth.

The Medium-Term Environmental Plan 2019, launched in fiscal 2017, is an integrated environmental and business plan. The aim is to grow the business, including sales and profits, by helping to solve environmental challenges.



Creation of Shared Value with Stakeholders to Realize “Carbon Minus” Status

When working to overcome environmental challenges on a global scale, there is a limit to what can be achieved by just one company. This is why it is essential to expand the impact of environmental efforts by working with stakeholders such as suppliers, customers, and local communities.

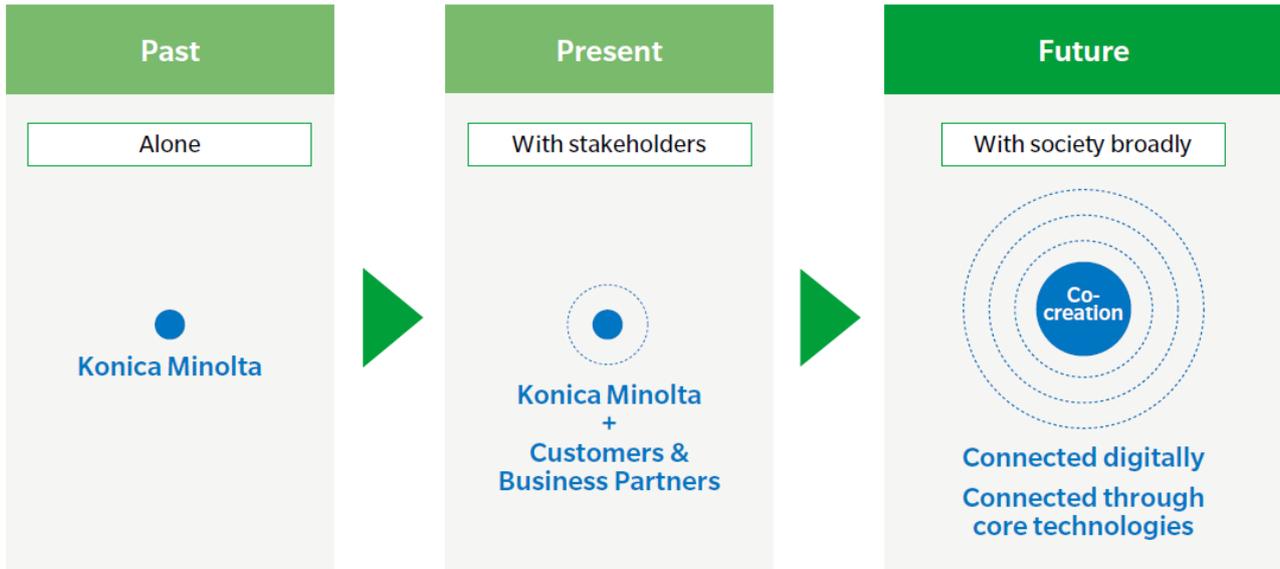
Under its Medium-Term Environmental Plan 2019, the company is working toward the Carbon Minus goal indicated in Eco Vision 2050. The aim is to reduce the environmental impact of society as a whole by collaborating with stakeholders, including business partners and customers.

Furthermore, the company has been developing an environmental digital platform since fiscal 2018 as a measure to collaborate with more companies.

For example, by creating a database of energy-saving methods used internally and sharing it with business partners, Konica Minolta can help suppliers to devise and implement their own energy-saving measures. By sharing these activities with customers and expanding the circle of cooperation globally, Konica Minolta believes that it can make a dramatic contribution to solving global environmental problems.

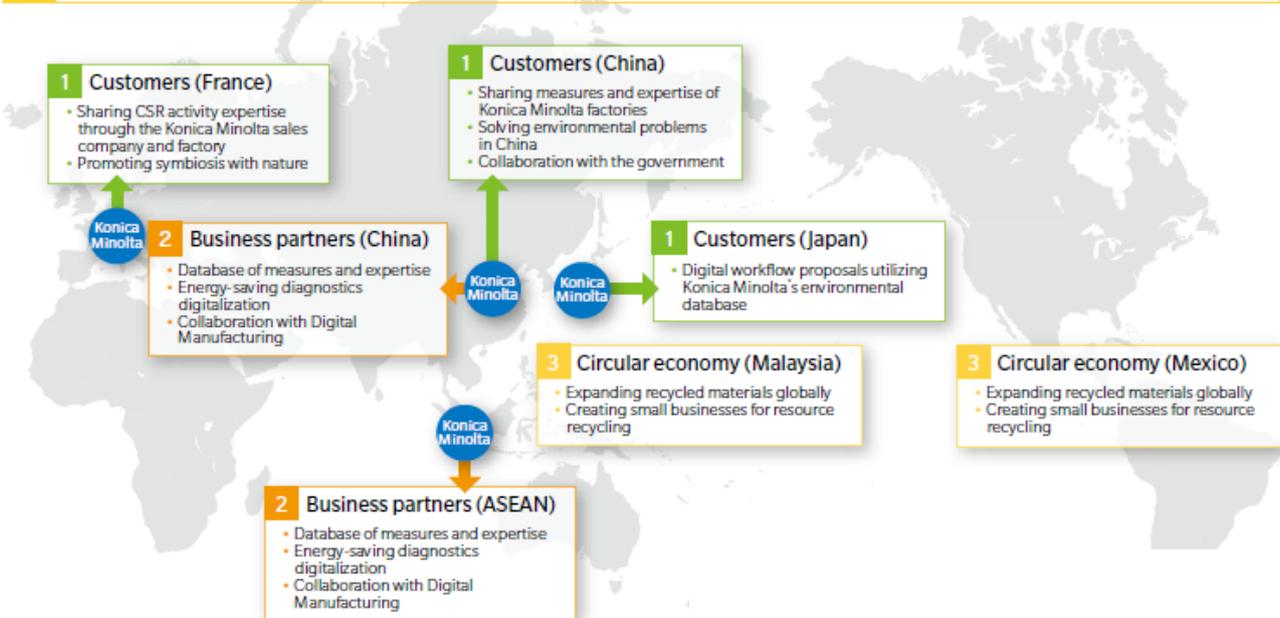
[> Environmental digital platform](#) (P.65)

Medium-Term Approach to Environmental Activities



Measures to Achieve “Carbon Minus” Status

- 1 **Solutions for customer environmental challenges:** Customer CO₂ emissions reduction, resource saving, and sales contribution
- 2 **Environmental support for suppliers:** Supplier CO₂ emissions reduction, resource saving, and cost reduction
- 3 **Circular economy (recycled materials):** CO₂ emissions reduction for society, waste problem solutions, and creation of new businesses and employment

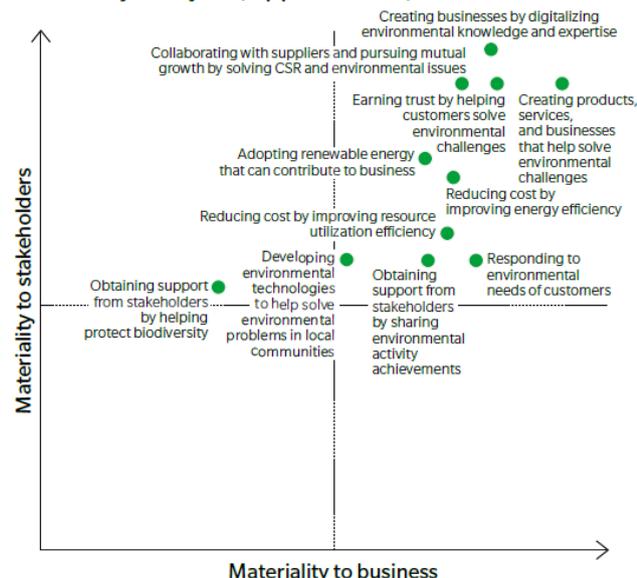


Identifying Material Issues from Both Risks and Opportunities

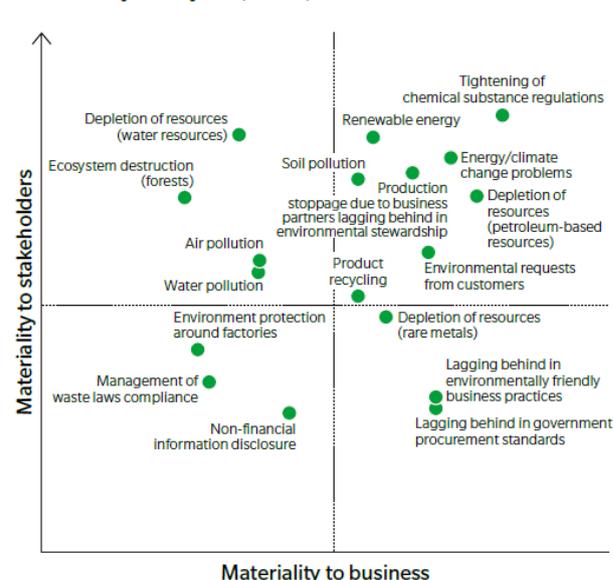
When formulating the medium-term environmental plan, Konica Minolta identified various environmental factors related to its business in terms of both risks and opportunities. Based on these findings, material issues were selected where solutions can lead to business growth. The company reviews each material issue annually to ensure the issues selected and related plans are appropriate.

Through this process, goals for reinforcing the business are matched with environmental targets. The plan then becomes a commitment for both top management and the entire organization, resulting in effective environmental management.

Materiality Analysis (Opportunities)



Materiality Analysis (Risks)



Goals of the Medium-Term Environmental Plan 2019

Green Products (planning and development)

Business Value	Environmental Value
Creation of Sustainable Green Products (SGPs) sought by customers and society	
Sales · Sustainable Green Products sales: 770 billion yen (sales ratio: 70%) Cost reductions · Resource-saving cost reduction	Preventing global warming · CO ₂ emissions reduction during product usage: 17.2 thousand tons · CO ₂ emissions reduction in the procurement stage: 45.9 thousand tons Supporting a recycling-oriented society · Effective resource utilization: 11.3 thousand tons Reducing chemical substance risks · Control emissions + Social issue solutions based on SDGs
Complying with government procurement standards and environmental label requirements	
Sales · Eliminate lost sales opportunities	Environment overall · Reduce environmental impact through compliance with standards
Dependably complying with product-related laws and regulations	
Risk avoidance · Eliminate effect on sales	Reducing chemical substance risks · Reduce hazardous chemical substance risk by conforming to laws and regulations

Green Factories (procurement and production)

Business Value	Environmental Value
Excellent Green Factory activities	
Cost reductions <ul style="list-style-type: none"> Energy and resource cost reduction 	Preventing global warming <ul style="list-style-type: none"> CO₂ emissions reduction in production activities: 19 thousand tons Supporting a recycling-oriented society <ul style="list-style-type: none"> Effective resource utilization: 2.8 thousand tons Restoring and preserving biodiversity <ul style="list-style-type: none"> Water consumption reduction: 220 thousand m³
Expansion of Green Supplier activities	
Cost reductions <ul style="list-style-type: none"> Supplier cost reductions Sales <ul style="list-style-type: none"> Measures and expertise database creation, and knowledge commercialization 	Preventing global warming <ul style="list-style-type: none"> CO₂ emissions reduction at suppliers: 5 thousand tons Supporting a recycling-oriented society <ul style="list-style-type: none"> Effective resource utilization at suppliers: 0.25 thousand tons + Social issue solutions based on SDGs
Expanded adoption of renewable energy	
Sales <ul style="list-style-type: none"> Eliminate lost sales opportunities 	Preventing global warming <ul style="list-style-type: none"> Renewable energy ratio: 1% + Social issue solutions based on SDGs
Supply chain risk response	
Risk avoidance <ul style="list-style-type: none"> Eliminate environmental impact from procurement, production, and sales 	Environment overall <ul style="list-style-type: none"> Environmental impact reduction through standards compliance

Green Marketing (distribution, sales and service, and collection and recycling)

Business Value	Environmental Value
Strengthening relationships with customers globally	
Sales <ul style="list-style-type: none"> Acquire sales opportunities 	Environment overall <ul style="list-style-type: none"> Reduce customers' environmental impact + Social issue solutions based on SDGs
Optimizing the supply chain and linking environmental initiatives	
Cost reductions <ul style="list-style-type: none"> Reduce cost of distribution and packaging 	Preventing global warming <ul style="list-style-type: none"> CO₂ emissions reduction in distribution: 0.3 thousand tons Supporting a recycling-oriented society <ul style="list-style-type: none"> Effective resource utilization: 0.04 thousand tons
Complying with laws on collection and recycling of used products	
Risk avoidance <ul style="list-style-type: none"> Eliminate effect on sales 	Supporting a recycling-oriented society <ul style="list-style-type: none"> Resource recycling through collection and recycling of used products

Fiscal 2018 Targets and Results

Fiscal 2018 Targets and Results

Self-assessment of performance 100% or above: ○ 80% or above, less than 100%: △ Less than 80%: ×

Green Products (planning and development)

Fiscal 2018 targets		Fiscal 2018 results			
Business Value	Environmental Value	Business Value		Environmental Value	
(1) Creating of Sustainable Green Products (SGPs) sought by customers and society					
Sales <ul style="list-style-type: none"> Sustainable Green Products sales: 700 billion yen (sales ratio: 65%) Cost reductions <ul style="list-style-type: none"> Resource-saving cost reduction 	Preventing global warming <ul style="list-style-type: none"> CO₂ emissions reduction during product use: 13.2 thousand tons CO₂ emissions reduction in the procurement stage: 39.8 thousand tons Supporting a recycling-oriented society <ul style="list-style-type: none"> Effective resource utilization: 10.4 thousand tons 	Sales <ul style="list-style-type: none"> Sustainable Green Products sales: 778.5 billion yen (sales ratio: 74%) Cost reductions <ul style="list-style-type: none"> Resource-saving cost reduction 	○	Preventing global warming <ul style="list-style-type: none"> CO₂ emissions reduction during product use: 15.0 thousand tons CO₂ emissions reduction in the procurement stage: 41.8 thousand tons Supporting a recycling-oriented society <ul style="list-style-type: none"> Effective resource utilization: 12.6 thousand tons 	○
(2) Complying with government procurement standards and environmental label requirements					
Sales <ul style="list-style-type: none"> Eliminate lost sales opportunities 	Environment overall <ul style="list-style-type: none"> Reduce environmental impact through compliance with standards 	Sales <ul style="list-style-type: none"> Eliminated lost sales opportunities 	○	Environment overall <ul style="list-style-type: none"> Reduced environmental impact through compliance with standards 	○
(3) Dependably complying with product-related laws and regulations					
Risk avoidance <ul style="list-style-type: none"> Eliminate effect on sales 	Reducing chemical substance risks <ul style="list-style-type: none"> Reduce hazardous chemical substance risk by conforming to laws and regulations 	Risk avoidance <ul style="list-style-type: none"> Eliminated effect on sales 	○	Reducing chemical substance risks <ul style="list-style-type: none"> Reduced hazardous chemical substance risk by conforming to laws and regulations 	○

Green Factories (procurement and production)

Fiscal 2018 targets		Fiscal 2018 results			
Business Value	Environmental Value	Business Value		Environmental Value	
(1) Excellent Green Factory activities					
Cost reductions <ul style="list-style-type: none"> Energy and resource cost reduction 	Preventing global warming <ul style="list-style-type: none"> CO₂ emissions reduction in production activities: 23.4 thousand tons Supporting a recycling-oriented society <ul style="list-style-type: none"> Effective resource utilization: 4.8 thousand tons Restoring and preserving	Cost reductions <ul style="list-style-type: none"> Energy and resource cost reduction 	○	Preventing global warming <ul style="list-style-type: none"> CO₂ emissions reduction in production activities: 26.5 thousand tons Supporting a recycling-oriented society <ul style="list-style-type: none"> Effective resource utilization: 7.1 thousand tons 	○

	biodiversity <ul style="list-style-type: none"> Water consumption reduction: 213 thousand m³ 			Restoring and preserving biodiversity <ul style="list-style-type: none"> Water consumption reduction: 274 thousand m³ 	
(2) Expansion of Green Supplier activities					
Cost reductions <ul style="list-style-type: none"> Supplier cost reductions 	Preventing global warming <ul style="list-style-type: none"> CO₂ emissions reduction at suppliers: 5.4 thousand tons Supporting a recycling-oriented society <ul style="list-style-type: none"> Effective resource utilization at suppliers: 0.35 thousand tons 	Cost reductions <ul style="list-style-type: none"> Supplier cost reductions 	○	Preventing global warming <ul style="list-style-type: none"> CO₂ emissions reduction at suppliers: 9.1 thousand tons Supporting a recycling-oriented society <ul style="list-style-type: none"> Effective resource utilization at suppliers: 0.63 thousand tons 	○
(3) Expanded adoption of renewable energy					
Sales <ul style="list-style-type: none"> Eliminate lost sales opportunities 	Preventing global warming <ul style="list-style-type: none"> Renewable energy ratio: 0.6% 	Sales <ul style="list-style-type: none"> Eliminated lost sales opportunities 	○	Preventing global warming <ul style="list-style-type: none"> Renewable energy ratio: 1.5% 	○
(4) Supply chain risk response					
Risk avoidance <ul style="list-style-type: none"> Eliminate environmental impact from procurement, production, and sales 	Environment overall <ul style="list-style-type: none"> Environmental impact reduction through standards compliance 	Risk avoidance <ul style="list-style-type: none"> Eliminated environmental impact from procurement, production, and sales 	○	Environment overall <ul style="list-style-type: none"> Environmental impact reduction through standards compliance 	○

Green Marketing (distribution, sales and service, and collection and recycling)

Fiscal 2018 targets		Fiscal 2018 results			
Business Value	Environmental Value	Business Value		Environmental Value	
(1) Strengthening relationships with customers globally					
Sales <ul style="list-style-type: none"> Acquire sales opportunities 	Environment overall <ul style="list-style-type: none"> Reduce customers' environmental impact 	Sales <ul style="list-style-type: none"> Acquired sales opportunities 	○	Environment overall <ul style="list-style-type: none"> Reduced customers' environmental impact 	○
(2) Optimizing the supply chain and linking environmental initiatives					
Cost reductions <ul style="list-style-type: none"> Reduce cost of distribution and packaging 	Preventing global warming <ul style="list-style-type: none"> CO₂ emissions reduction in distribution: 0.4 thousand tons Supporting a recycling-oriented society <ul style="list-style-type: none"> Effective resource utilization: 0.02 thousand tons 	Cost reductions <ul style="list-style-type: none"> Reduced cost of distribution and packaging 	○	Preventing global warming <ul style="list-style-type: none"> CO₂ emissions reduction during distribution: 0.6 thousand tons Supporting a recycling-oriented society <ul style="list-style-type: none"> Effective resource utilization: 0.03 thousand tons 	○
(3) Complying with laws on collection and recycling of used products					
Risk avoidance <ul style="list-style-type: none"> Eliminate effect on sales 	Supporting a recycling-oriented society <ul style="list-style-type: none"> Resource recycling through collection and recycling of used products 	Risk avoidance <ul style="list-style-type: none"> Eliminated effect on sales 	○	Supporting a recycling-oriented society <ul style="list-style-type: none"> Resource recycling through collection and recycling of used products 	○

Management System

Environmental Management System

Operating management system based on ISO 14001

To ensure efficient implementation of environmental management throughout the Group as a whole, Konica Minolta operates its management system based on ISO 14001, and it has established a basic policy of requiring that all group production sites around the world work to obtain ISO 14001 certification.

Konica Minolta is engaged in Green Product, Green Factory, and Green Marketing activities throughout the product lifecycle. In addition, targets are set within these activities to help solve business and environmental issues, and environmental efforts are integrated into the core business activities. This approach is consistent with ISO 14001:2015.

In order to promote environmental activities efficiently throughout the entire Group, Group companies in Japan acquired integrated Group ISO 14001:2015 certification in fiscal 2016. Meanwhile, activities under ISO 14001:2015 have also begun at Group sites outside Japan based on the approach of integrating environmental and core business activities. These companies completed certification in the first half of fiscal 2018.

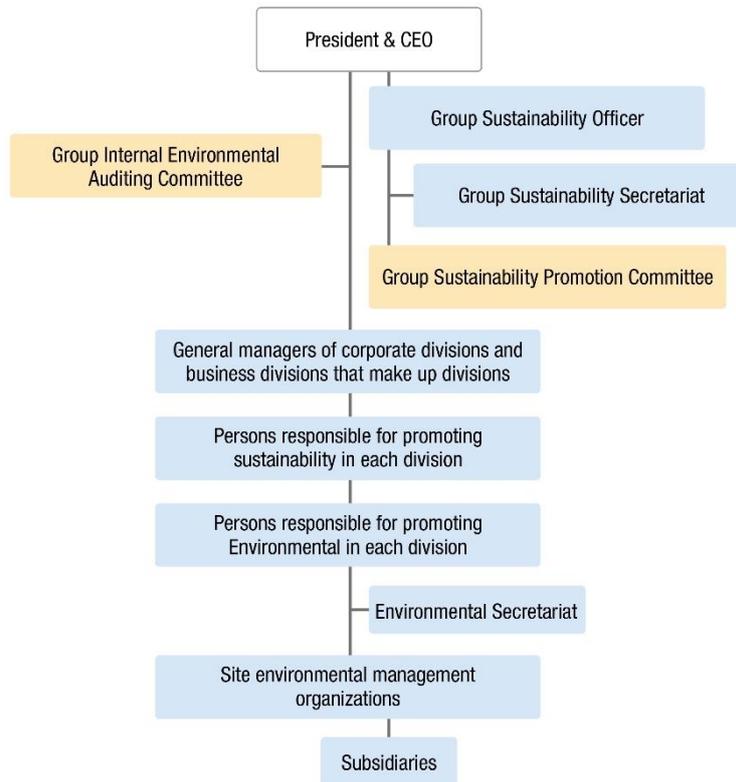
Organization

All aspects of environmental management are overseen by the President and CEO of Konica Minolta, Inc.

The President has ultimate responsibility for and authority over all environmental management and is also accountable for its effectiveness. Under the President, the Board of Directors appoints a Group Executive and General Manager responsible for the environment (Sustainability Officer) to oversee the company's environmental management.

This General Manager regularly reports on the progress of and issues with environmental management to the Audit Committee.

Furthermore, Konica Minolta has established a Group Sustainability Promotion Committee headed by the General Manager of the Sustainability Division as an organization to oversee the environmental target implementation plan for the whole Group. The committee, in which persons responsible for sustainability promotion in each key division participate, deliberates the Group's medium-term environmental plan and annual target implementation plans. It also checks quarterly progress and conducts investigations related to the Group's environmental issues.



Organization of Group Environmental Management

Environmental Audits

At Konica Minolta, the Group Internal Environmental Auditing Committee, which is chaired by the head of the Corporate Audit Division, directs the internal environmental auditing for the entire Group.

Through internal environmental audits, which are conducted at least once a year, the Group verifies the adequateness and effectiveness of management systems. Additionally, by checking the implementation status of the medium-term plan, audits ensure that management systems are functioning effectively in all the Group's organizations.

Environmental Risk Management

Konica Minolta treats environmental risks as business risks. Risks are managed under the Risk Management Committee, which is chaired by the executive officer in charge of risk management, who is appointed by the board of directors, to prevent risks from coming to a head.

The Group has also established management systems centered on environmental organizations in Europe, North America, China, and Japan so that production site and sales companies in each region can respond appropriately to applicable environmental laws. Under these systems, steps are taken to comply with relevant laws and regulations in each country (e.g. chemical substance regulations, restrictions on chemicals contained in products, recovery and recycling regulations, and energy saving regulations).

Compliance with Environmental Regulations

As environmental problems such as global warming and the depletion of energy resources increase in scope to encompass entire regions, and indeed, the entire planet, government policies and regulations at the regional and national levels around the world are being reconsidered and strengthened in order to ensure sustainable growth.

As a global business enterprise, Konica Minolta is strengthening its global compliance system to ensure that all of its production sites and sales offices comply with all legal regulations.

In fiscal 2018, the Group conducted compliance assessments of all Group production sites and confirmed the status of compliance in keeping with the new regulations and legal revisions at sales offices. No serious violations were found with regard to environment-related laws and regulations.

Evaluations and Commendations from Society

Konica Minolta has won high regard from various groups, companies, international ESG surveys and rating agencies for its environmental initiatives.

[> Evaluation of CSR by External Parties](#)

<https://www.konicaminolta.com/about/csr/csr/vision/evaluation.html>

Konica Minolta's Approach

Background and Issues

Given the widespread awareness of environmental and social challenges faced by the world today, the value that people seek is shifting from material wealth to improvements of the quality of society. By understanding the evolving values of society and contributing solutions, Konica Minolta is able to continue to develop competitive products which enhance its profitability.



Vision

While working to develop products that help reduce the environmental impact of customers and society, Konica Minolta also aims to encourage the widespread adoption of these products by broadly promoting their value. Through initiatives like these, while helping to realize the Sustainable Development Goals (SDGs), Konica Minolta strives to help build a sustainable society, earn social confidence, and achieve sustainable growth alongside the broader society as a company of choice.



Key Measures and KPIs

Creating Sustainable Green Products sought by customers and society

- Sustainable Green Products sales: ¥770.0 billion (sales ratio: 70%)
- CO₂ emissions reduction during product use: 17.2 thousand tons
- Effective resource utilization: 11.3 thousand tons

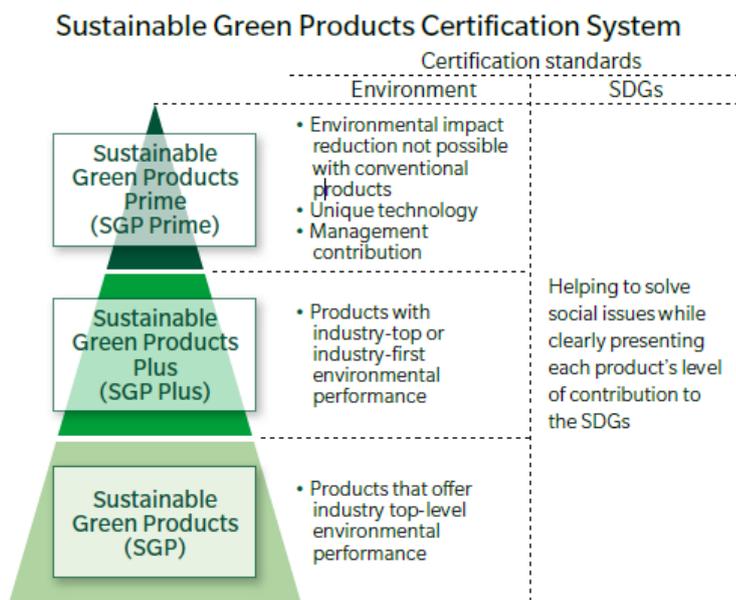
Sustainable Green Products Certification System

Outline of the Certification System

Konica Minolta introduced its original Green Products Certification System in fiscal 2011 to drive the creation of environmental value that matches business and product characteristics. The goal is to reduce the environmental impact of customers and society, while also raising profitability. The company has developed many Green Products since the program’s launch.

Under the Medium-Term Environmental Plan 2019, launched in fiscal 2017, Konica Minolta is combining optical, image processing, measurement, and other technologies with its strengths in digital technology to create products and services that can help provide solutions to environmental and social challenges based on the SDGs.

In order to accelerate these efforts, Konica Minolta launched a Sustainable Green Products Certification System in fiscal 2017, by expanding its original Green Products Certification System to include standards for resolving social issues. The company aims to increase sales of Sustainable Green Products to 770 billion yen (70% of the Group’s total sales) by fiscal 2019.

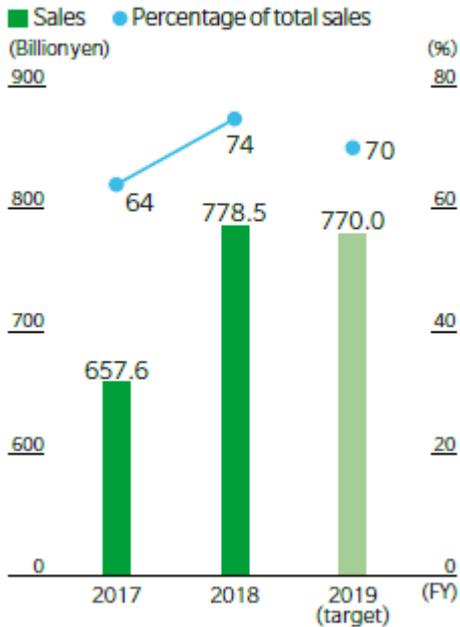


Fiscal 2018 Activity Results

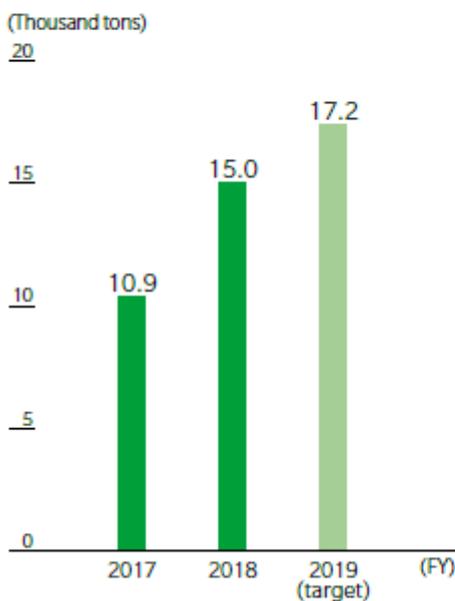
In fiscal 2018, Konica Minolta placed 144 new models of certified Sustainable Green Products on the market, bringing the total to 380. Sales of Sustainable Green Products in fiscal 2018 came to 778.5 billion yen, or 74% of the Group's total sales.

Due to improved environmental performance, these Sustainable Green Products also had a CO₂ emissions reduction effect during product use of 15.0 thousand tons and represented 12.6 thousand tons of effectively used resources.

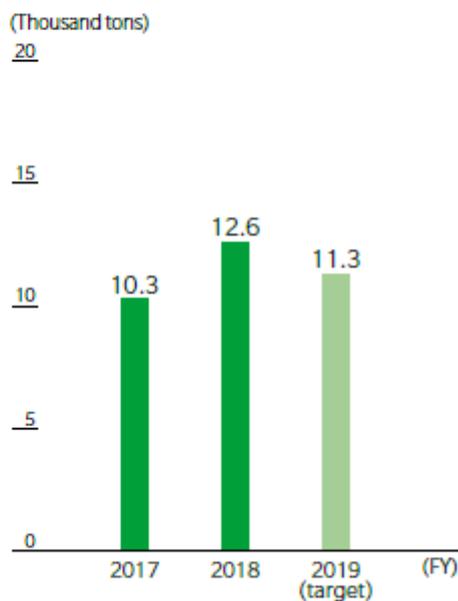
Sustainable Green Product Sales



CO₂ Emissions Reduction Effect During Product Use



Effective Resource Utilization



Green Products (Product Initiatives)

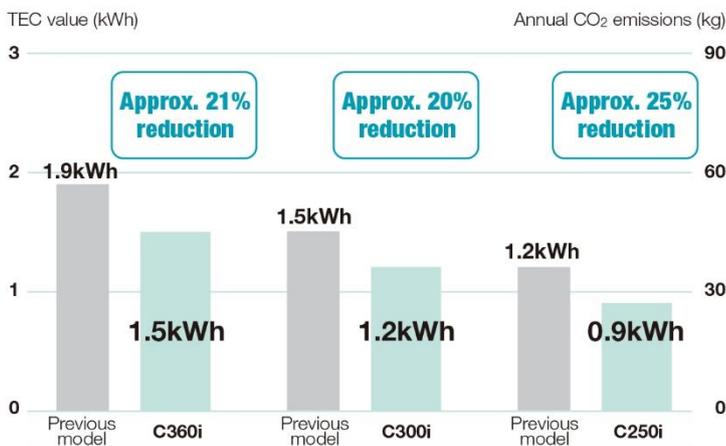
Saving Energy and Preventing Global Warming through Green Products

Energy Savings of Office Equipment

Reduction of Power Consumption During Product Use

Konica Minolta is working on the development of low-temperature fixing toner and efficient fixing systems to help save power. The bizhub C360i series released in 2019 offers standard power consumption (TEC value) for one week that is approximately 20% to 26% less than the previous model. By reducing the TEC value, CO₂ emissions are also greatly reduced.

Comparison of TEC values between a previous model and the bizhub C360i series

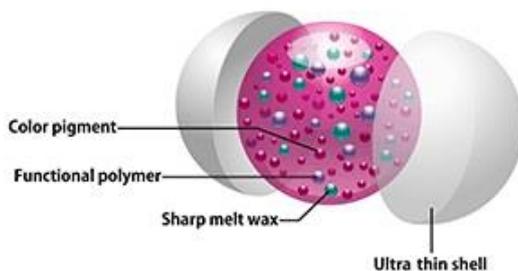


Simitri HD Toner Fixable at a Low Temperature

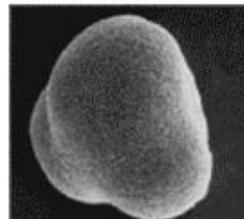
In MFPs, heat is needed to fix toner to paper, and the power used for that purpose accounts for more than 60% of total power consumption. Conducting R&D into toner that is fixable at lower temperatures, Konica Minolta developed Simitri HD Toner, a proprietary polymerized toner. The company successfully reduced the fixing temperature by about 25 degrees Celsius compared to conventional models, contributing to the reduction of power consumption.

Moreover, with polymerized toner, energy consumption is also reduced during the production stage to the extent that a pulverization process is not needed compared to the conventional pulverized toner.

Simitri HD^E toner



Toner particle observed with an electron microscope

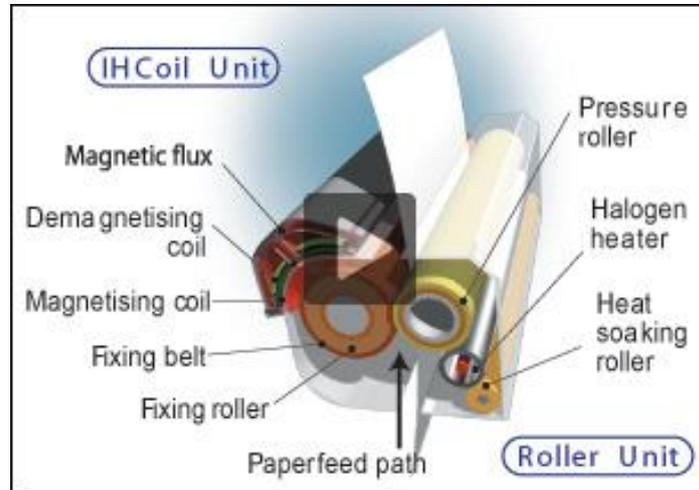


[> Simitri Toner](#)

<https://www.konicaminolta.com/about/research/business/toner.html>

IH Fixing System Reduces Standby Power Consumption

In order to start printing from an MFP, the fixing rollers have to be heated to a certain temperature. Konica Minolta uses induction heating (IH) technology, which has high heating efficiency, in its fixing units. This enables rapid heating from a low standby temperature, substantially reducing standby power consumption.



LED Light Source Reduces Power Consumption During Scanning

Konica Minolta uses LED, which has greater power-saving performance than fluorescent lamps, as the light source for scanners in its MFPs. This has also improved scanning speeds, since LED lights increase the brightness of manuscript exposure.

“Power Save” Feature Reduces Power Consumption When Product Not in Use

Konica Minolta equips its MFPs with a “power save” feature that puts the machine into an energy-saving state, such as automatically turning off the control panel display when the machine has not been used for a certain amount of time. This does not hinder everyday work, since the machine automatically returns to normal mode during power save when it receives a fax or a print signal from a PC.

Proximity Sensor That Can Save Electricity Without Lowering Operational Efficiency

Konica Minolta equips its MFPs with a proximity sensor that automatically returns the machine to normal mode from sleep mode just by bringing a finger close to the control panel. This allows energy savings without lowering operational efficiency, as no time needs to be spent pressing buttons to bring the machine out of sleep mode.



Energy-saving Designs That Power Only the Areas Needed

Konica Minolta minimizes power consumption through energy-saving designs that enable power supply only to areas needed for each function—for example, not starting up the printer control panel when printing from sleep mode or not turning on the toner fixing heater when using the scanner or fax.

“Print Preview” to Reduce Misprints

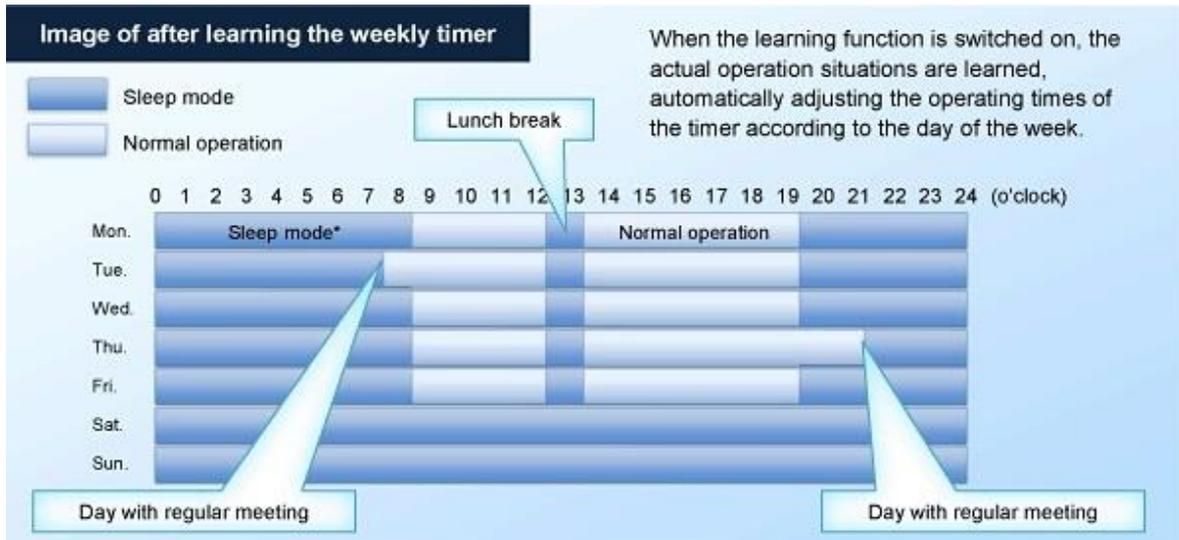
Misprints can be prevented, as it is possible to preview the finished document on the machine’s LCD screen before printing. This saves paper and also reduces wasteful power consumption.



Preview screen

Weekly Timer with a Learning Function

A weekly timer that automatically switches between normal mode and power-saving mode at pre-set times enables efficient electricity savings according to office use, such as at lunchtime, at night, and days off. The machines are also equipped with a learning function that automatically makes corrections when there is a difference between timer settings and actual usage, based on usage data for a four-week period. This enables operational management with greater energy-savings effects.



Eco Dashboard Increases Users' Environmental Awareness

Graphs showing environmental contribution are displayed to increase users' environmental awareness. Reductions for different indicators, such as power consumption and use of toner and paper are displayed on the control panel and can be checked by department and user.

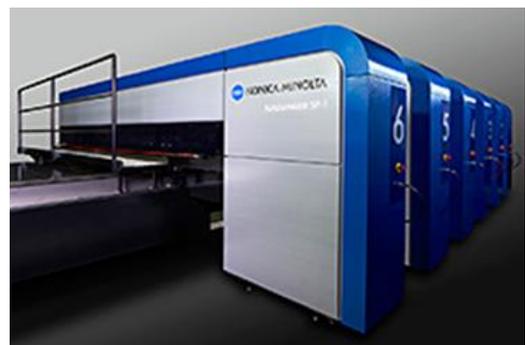


* The above feature is not available on all models.

Industrial Inkjets Contributing to Energy Savings in the Textile Printing Process

Textile Printer Reducing Electricity Usage through On-demand Production

The inkjet textile printer does not require the plate making and colored size mixing that is needed with conventional screen-printing. It also contributes to the reduction of energy usage, resources usage, and waste, since it enables on-demand production that uses only the amount of ink and material needed. It reduces environmental impact significantly, with a 57% reduction in electricity usage compared to conventional screen-printing. In addition, it helps save energy for operations such as air conditioning and lighting by increasing customers' production efficiency.



Nassenger SP-1 inkjet textile printer

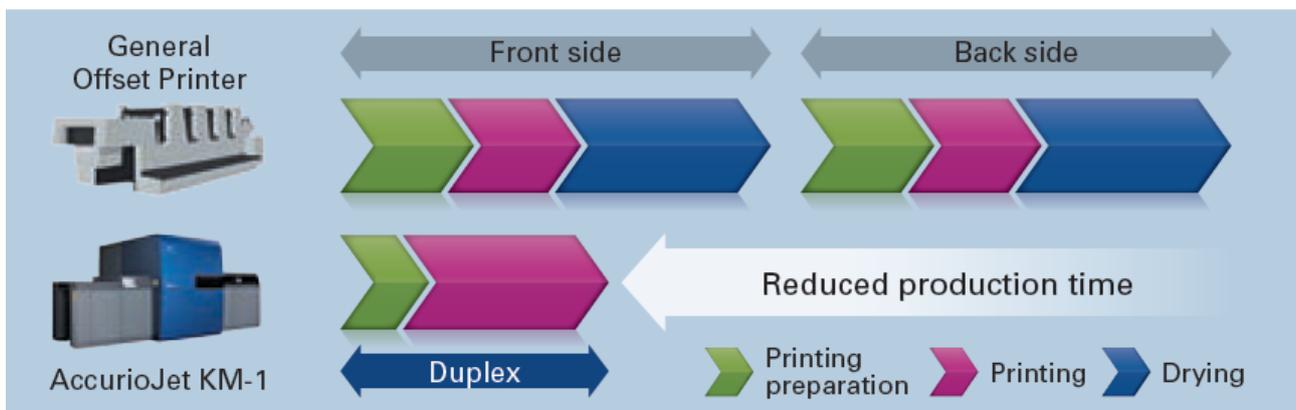
UV Inkjet Digital Printing Machine That Helps Save Energy During Printing

UV Inkjet Digital Printing Machine That Reduces Power Consumption by Realizing Automatic Duplex Printing without Drying Time

The UV inkjet digital printer, AccurioJet KM-1, offers high productivity. With newly developed UV inkjet ink, it can be used for various printing media that were difficult to accommodate with a conventional B2 digital printer and water-based inkjet ink. The AccurioJet KM-1 enables automatic duplex, high-quality printing. Unlike general offset printing, a printing plate is not required. Precise inkjet output control eliminates the need for color matching between devices, which is necessary when using multiple digital printers. This results in a significant reduction in printing preparation time.



UV inkjet digital printer, AccurioJet KM-1



Planetarium Projector Contributes to Energy Conservation

Planetarium Projector Reduces Energy Consumption by Using LED Light Sources

Konica Minolta's Cosmo Leap Σ is an optical planetarium projector for medium-sized domes. The new projector provides bright stars shining with an energy-efficient and compact design almost equivalent to the Infinium Σ , an optical planetarium developed to showcase the beauty of bright stars shining in the night sky.

By using ultra bright LEDs with optical technology, the stellar images projected on the screen are about 2.5-fold brighter than with the conventional model, but power consumption has been reduced by almost half.



Cosmo Leap Σ

Resource Conservation and Recycling of Products

Upgraded Recycling That Increases the Value of Materials (Application of Recycled Materials)

Recycling Used PET Bottles and PC Gallon Bottles into an Outer Casing Material for MFPs

Konica Minolta has been striving to develop innovative technologies to recycle various kinds of plastic. In addition to transforming PET and PC plastic from beverage bottles and gallon jugs into exterior materials for MFPs, the company is also recycling ABS resin recovered from used game machines into inner casing materials. The company has developed technologies that ensure that the recycled plastic components have the necessary strength, flame resistance and molding usability. Now, it has taken its chemical processing technology even further. For MFP products launched in fiscal 2019, the percentage of PCR* was raised to about 70% for PC/PET plastic in exterior materials and to about 95% for ABS plastic in inner casing materials. As a result, the use of recycled materials has increased to about 25% for total resin content by weight in the MFP main body.

* Percentage of post-consumer recycling (PCR): The percentage of material collected from the market that is used in recycled raw materials.



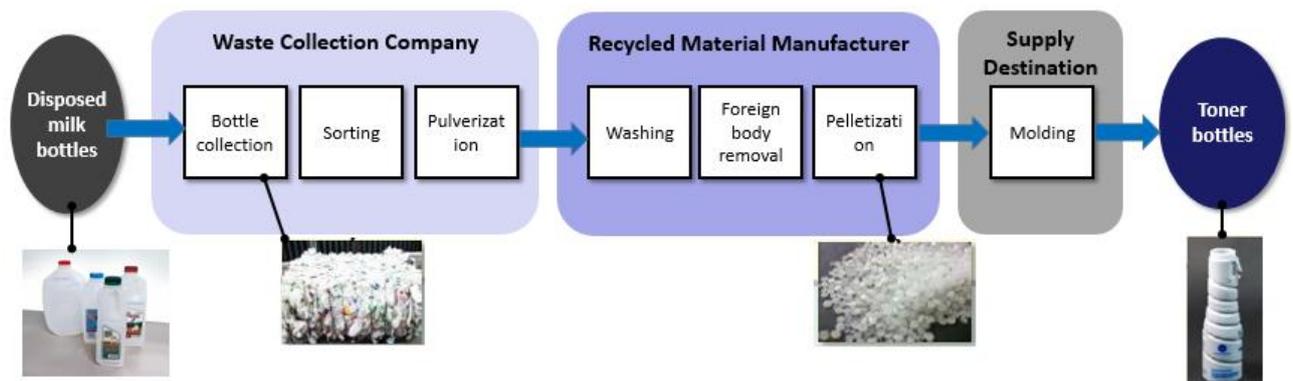
Bizhub C360i series using recycled PC/PET

Recycling Used Milk Bottles into Toner Bottles

Konica Minolta recycles milk containers made from polyethylene and turns them into toner bottles for MFPs. It developed washing technology that removes the smell of milk and minute cells that would lead to quality degradation and established a mass production system in Mexico and Malaysia. The company has succeeded in raising the percentage of PCR in the raw material used for toner containers to 40% and intends to increase it to 100% in the future.



Toner bottles made from recycled material



Milk Bottle Recycling Process

Making Office Equipment Smaller and Lighter

Making products smaller and lighter contributes greatly to reducing raw materials use and energy consumption during production as well as environmental impact during disposal. Through technical development leveraging its core technologies, Konica Minolta is working at reducing the size and weight of its office equipment while increasing their performance. It is also actively pursuing the development of new products with low environmental impact.

Example of a product with compact design launched in fiscal 2019

Space-saving A4 color MFP designed with a small footprint
(420 mm wide and 528 mm deep)



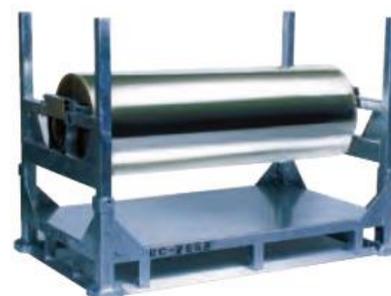
bizhub C4050i

Conserving Resources with Functional Materials

Making Thinner TAC Films to Protect Liquid Crystal Polarizers

Konica Minolta has drawn on its strengths in film making technology to make increasingly thin TAC film, which protects polarizers in liquid crystal displays. This not only reduces the weight of IT products such as note PCs and smartphones, it also reduces the materials used, thereby contributing to resource conservation.

* TAC: Abbreviation for the substance triacetylcellulose



TAC film

Dramatically Improving Productivity of Polarizer Manufacturers with Obliquely Oriented QWP Film

Utilizing its proprietary optical design technology and the optical properties of cellulosic materials, Konica Minolta has developed obliquely oriented QWP film, which allows users to see the exact colors of images on display even through polarized sunglasses. Furthermore, the oblique orientation of the optical axis eliminates the necessity of cutting the film into sheets and bonding them obliquely in the production process of polarizers. This enables roll-to-roll production of polarizers, thereby helping polarizer manufacturers to drastically increase productivity. Besides enhancing display visibility when viewed through polarized sunglasses, a piece of QWP film also serves as a polarizer protection film, thus contributing to reducing the thickness of displays and the number of parts required for their production.



The image of the “Display with PET film” is an example of how an image can appear when PET (polyethylene terephthalate) film is applied on a display in place of QWP film.

Making Healthcare Products Lighter

Cassette Digital Radiography Systems

The AeroDR series of cassette digital radiography systems is compact, light, and easy to carry around. These products are contributing to the spread of digital radiography (DR), which reduces patients’ exposure to X-rays compared to film radiography and enables the immediate display of high-precision images. As use increased, so did demand for even lighter models. Accordingly, in December 2016, Konica Minolta launched the AeroDR fine, which, at 2.6 kg, is among the lightest wireless DR detectors.* The grip was improved so that the panel can be easily held with one hand, and the portable DR is now easier to carry around.

* As of November 28, 2016, among 14x17 inch wireless portable DRs.



AeroDR fine

Diagnostic Ultrasound Systems

The SONIMAGE series of diagnostic ultrasound systems are used in a wide range of clinical fields, as they enable real-time viewing of images. The SONIMAGE HS1, launched in July 2014, weighs 35 kilograms, which is 45% lighter than the conventional model.*

* Conventional model: SONIMAGE 613



SONIMAGE HS1

Industrial Inkjet Printers Helping Reduce Use of Natural Resources in Textile Printing Process

Inkjet Textile Printer Reducing Use of Water Resources

The inkjet textile printer does not require the plate making and colored size mixing that is needed with conventional screen-printing. It also contributes to the reduction of resources usage and waste, since it enables on-demand production that uses only the amount of ink and material needed. Compared to conventional screen-printing, it reduces environmental impact significantly, with a 97% reduction in sizing usage, and a 62% reduction in water resources usage.



Nassenger SP-1 inkjet textile printer

Inkjet Press That Saves Resources During Printing

UV Inkjet Press

Rising environmental awareness is driving demands for the field of commercial and industrial printing to break away from conventional methods where large amounts are printed and surplus is discarded. In the world of marketing, meanwhile, labels and packages for each event are being produced in small lots, and product/marketing strategies targeting individual consumers, such as including specific people's names, is gaining ground.

Konica Minolta's digital inkjet printer AccurioJet KM-1 produces high image quality comparable to that of conventional offset printing and can handle a wide range of printing papers. It enables production of printed matter in just the quantity needed, at the time needed, to suit the customer's exact needs. This, in turn, reduces environmental impact by minimizing waste. This solution also helps to reduce the labor-hours needed in the printing process due to its user-friendly operability, even for unskilled workers.



UV inkjet digital printer, AccurioJet KM-1

Management of Chemical Substances in Products

Management of Chemical Substances Contained in Products

Konica Minolta manufactures and sells office equipment such as digital MFPs and printers, industrial printers, and chemical products such as toner and ink, which are consumables for the aforementioned products, as well as medical devices, measuring instruments, optical components, and performance materials. As chemical substances regulations for products have been tightened around the world, the Group has not only ensured its compliance with the law but also has established internal standards that ensure the environmental performance and safety of products, thereby practicing the appropriate management of chemical substances so that it can grow its business in these diverse products globally.

Compliance with the RoHS Directive^{*1}

Since the European RoHS Directive, which restricts the amount of specified hazardous substances that can be contained in products, came into effect in 2006, voices calling for compliance with the directive have spread to regions other than Europe. The scope of the directive has also been expanded step by step, with medical devices and control and monitoring devices becoming subject to the directive in 2014.

Konica Minolta has managed chemical substances based on the RoHS Directive since the directive first came into effect. In 2011, with the revisions made to the Directive, the Group reviewed its system for the management of chemical substances and made a declaration of conformity with the revised standards.

The RoHS Directive has become tighter due to revisions such as the addition of specific phthalates to restricted substances and the expiry of exemptions. Konica Minolta will continue to grasp the trend of revisions accurately and take systematic steps to remain in compliance.

^{*1} RoHS Directive: A directive relating to restrictions on the use of specified hazardous substances contained in electrical and electronic devices

Compliance with REACH Regulations^{*2}

European REACH regulations are comprehensive regulations on the management of chemical substances covering registration, evaluation, authorization, and restrictions when using any chemical substances, whether existing or new. The regulations apply to chemical substances included not only in chemical goods, but also various articles (e.g., devices and molded items). Since coming into effect in 2007, they have been put into force in a phased manner.

Konica Minolta systematically registered substances that only have preliminary registration as chemical goods in order to comply with the regulations. Then, it completed registration by the end of the registration period on May 31, 2018. With respect to articles, the company carefully monitors the authorization candidate substances (substances of very high concern) that are periodically added and investigates matters concerning their use as part of the Group's green procurement surveys. The Group then takes steps as needed with articles containing more than 0.1% of a substance.

^{*2} REACH regulations: Regulation on Registration, Evaluation, Authorization and Restriction of Chemicals

Prior Check of Substances Contained in Products

In addition to complying with chemical substance regulations in different countries, such as the RoHS Directive and REACH regulations, Konica Minolta has established standards for prohibited and monitored substances used for devices, standards for prohibited and restricted substances used for chemical products, and product safety standards in order to ensure the environmental safety of its products. Based on these standards, the Group verifies the status of parts and raw materials in advance and conducts product assessments right from the development stage, thereby eliminating hazards to the natural environment and people.

Green Products (Product Initiatives)

Helping Restore and Preserve Biodiversity through Products

Agricultural Support Solutions Using ICT

Konica Minolta jointly established Farm Eye Co., Ltd. with Yanmar Co., Ltd. in 2017. Konica Minolta operates an agricultural consulting business that provides field sensing and image analysis services for agriculture, diagnosis of crop growth, and proposed improvements for agricultural chemical use at Farm Eye.

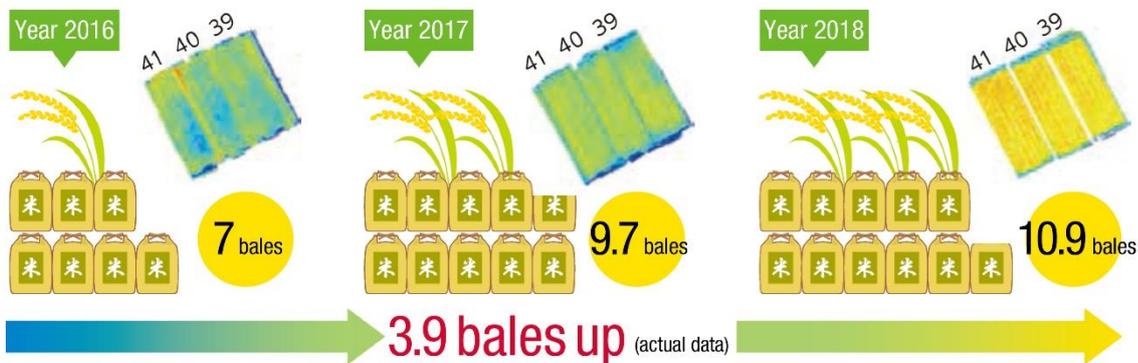
With drones collecting data, Konica Minolta's optical technology and unique algorithms are used to analyze the field conditions and visualize the growth of crops. In addition, by linking the analysis data with farm machinery, fertilizer can be applied according to the growth situation. The aim is to stabilize the quality of crops and maximize yield, while contributing to the development of the agricultural industry.



Obtaining aerial views of fields using drones



Visualizing the farming situation using sensing technology



Demonstration experiment in Akita Prefecture: Variable fertilizing eliminates growth differences on the farm, improving yield and quality

Chlorophyll Meters Contributing to the Management of Effects on the Environment from Chemical Fertilizers

The chlorophyll meter developed by Konica Minolta easily measures in a non-destructive manner the amount of chlorophyll in crops such as rice, wheat, and corn without damaging the plants. Periodically measuring the amount of chlorophyll makes it possible to practice appropriate fertilizer management according to the growth situation.

In this way, Konica Minolta contributes to the implementation of agriculture that is friendly on the surrounding biodiversity by avoiding the effects of over-fertilization on the ecosystem, including the soil and groundwater.



SPAD-502Plus chlorophyll meter

Evaluating Light Sources Related to Plant Growth

LED and organic EL technologies are attracting attention as next-generation lighting products. LED in particular has spread not only to general lighting, but also to plant-growing facilities.

The Spectrophotometer CL-500A produced by Konica Minolta can help manage lighting in plant-growing facilities. It can also measure photosynthetic photon flux density (PPFD) and the illuminance spectral waveform of light sources, in applications related to plant cultivation.



Spectrophotometer CL-500A

Provision of Product Environmental Information

Environmental Labels

Actively providing environmental information about products through environmental labels

Type I Environmental Labels

Type I environmental labelling refers to labels indicating that an independent certification body certifies that a product has a low environmental impact.

■ Blue Angel Mark

Launched in Germany in 1978 as the world's first environmental labeling system, the Blue Angel Mark is granted to certify products and services that have a small environmental impact. Since receiving the world's first Blue Angel certification in the field of copiers in January 1992, Konica Minolta has continued to receive certification for new products by clearing the certification bar each time it has been raised.



■ International Energy Star Program

Products that meet certain standards can be registered as Energy Star devices as part of an energy-saving program for OA equipment that was implemented in 1995 through an agreement between the Japanese and U.S. governments. Almost all of Konica Minolta's MFPs and laser printers meet the Energy Star standards.



■ Eco Mark

The Eco Mark was established by the Japan Environment Association in 1989 as a standard environmental labeling system in Japan. Konica Minolta's basic policy is to obtain Eco Mark certification for all its office equipment.



■ China Environmental Labelling

This is China's environmental labeling program, introduced by the Chinese government in 1994. Konica Minolta continues to earn this certification for its IT office equipment.



■ EcoLogo

Established by the Canadian government in 1988, EcoLogo is one of the most widely respected environmental standard and certification systems in North America. Since earning EcoLogo certification for MFPs in the newly established Office Machines category ahead of the competition in 2009, Konica Minolta has been proactive in obtaining certification.



■ Hong Kong Green Label Scheme

This environmental standard and certification mark is run by the Hong Kong Green Council, a nonprofit organization. To be certified, products are required to meet stringent standards concerning the reduction of harmful substances and consideration for environmental impact throughout the product life cycle. In March 2011, Konica Minolta received certification for three color MFP models, and they became the first MFPs to be certified. Since then, the company has been obtaining certification for its products proactively.



■ Thai Green Label

Konica Minolta products have been awarded the Thai Green Label operated by the Thailand Environment Institute in the areas of printers (TGL-37-R1-12) and photocopiers (TGL-27-R3-13). The Thai Green Label was systematized in 1993, and it is a requirement under Thailand's Green Public Procurement as a Type I environmental label based on ISO 14024, which started in August 1994.



Type II Environmental Labels

Type II environmental labeling verifies/certifies the environmental characteristics of a product according to a company's own standards.

■ Konica Minolta Green Products Certification System

Konica Minolta adopted its Green Products Certification System in fiscal 2011 to evaluate and certify products that have excellent environmental performance. The purpose of the system is to contribute to the reduction of customers' and society's environmental impact by creating environmental value in line with the Group's business and product characteristics, while increasing profits. In fiscal 2017, the company launched a Sustainable Green Products Certification System.



> [Sustainable Green Products Certification System](#) (Page22)

Type III Environmental Labels

Type-III environmental labeling provides information on the environmental impact of a product, based on quantitative measurement of environmental impact through the product's entire life cycle, from raw material procurement to production, sales, usage, disposal, and recycling.

■ Eco Leaf Environmental Label

The Eco Leaf Environmental Label is Type-III environmental labeling, and Konica Minolta has been disclosing environmental impact data concerning its office equipment under this label since 2002, the year when the system was started. Eco Leaf offers a system certification program whereby a third-party institution certifies that a company has mechanisms for the proper and effective gathering of environmental impact data. Konica Minolta has obtained this certification for its copier and printer businesses.



> [Eco Leaf Environmental Label](#)

<https://www.konicaminolta.com/about/csr/environment/communication/label.html>

EPEAT (Electronic Product Environmental Assessment Tool)

EPEAT has been a comprehensive environmental rating that helps identify green computers and other electronic equipment since 2006. Imaging equipment was added as a new product category in 2013. The EPEAT is managed by the Green Electronics Council, a non-profit organization based in Portland, Oregon. It ranks products as gold, silver or bronze based on 59 environmental performance criteria considering the life cycle of imaging equipment.



In October 2017, Konica Minolta further expanded the scope of its certifications beyond the United States and Australia and acquired Canada's EPEAT certification. Konica Minolta acquired its first "gold" ranking in Australia's imaging equipment category.

[> Information for EPEAT](#)

<https://www.konicaminolta.com/about/csr/environment/communication/epeat.html>

Products Registered in the Green Purchasing Network

Konica Minolta has registered products that comply with Japan's Green Purchasing Law and the guidelines of the Green Purchasing Network (GPN) in the GPN's online database of environmentally friendly products, and discloses that information.

* Green Purchasing Network (GPN): A network of companies, governments, and consumers established in February 1996 to promote green purchasing initiatives.

Recyclable Printing Materials

Recyclable Printing Materials are materials that do not interfere with the recycling of printed materials and are certified by the Paper Recycling Promotion Center. The purpose of such certification is to expand the use of waste paper, especially printed and information paper. The certification is also reflected in the determination standards for designated printing procurement items under the Act on Promoting Green Purchasing, overseen by Japan's Ministry of the Environment. Konica Minolta has been certified and registered in the area of recyclable dry toners.

Global Organic Textile Standard (GOTS)

In the past there were many systems certifying that the fibers in textiles were organic. An international working group was formed to unify those systems and create an international standard, and as a result, the Global Organic Textile Standard (GOTS) was established in 2005. GOTS has also established safety standards for things such as the inks used in textiles. In 2014, Konica Minolta applied for registration of reactive dye ink as ink that meets those standards. It became the first ink registered with GOTS by a Japanese manufacturer.

Material Safety Data Sheets (MSDS)/Safety Data Sheets (SDS)

Konica Minolta provides Material Safety Data Sheets (MSDS) with information such as the substances contained in a product and handling precautions in order to facilitate the safe handling of chemical products. MSDS are also called Safety Data Sheets (SDS) to comply with international standards.

Article Information Sheets (AIS)

Konica Minolta provides documents with information such as the substances contained in a product and its handling precautions in order to facilitate the safe handling of articles that are not covered by MSDS, such as printing products.

Konica Minolta's Approach

Background and Issues

Today's increasingly urgent environmental challenges require society to use energy and resources more efficiently. There is a limit to the degree of environmental impact reduction that can be achieved solely by one company. Leading global companies should increase their positive contribution to global environmental preservation by expanding the focus of their activities to suppliers of parts and materials, throughout the entire supply chain.



Vision

Konica Minolta engages in Green Factory activities to reduce both environmental impact and operating costs. This includes improving efficiency in its production processes, and the development and enhancement of production technology. The company also promotes Green Supplier activities to further reduce environmental impact. The aim is to make an immense environmental contribution across the company's supply chain as the company shares its own environmental technologies and expertise and works closely with suppliers.



Key Measures and KPIs

Green Factory activities

- Achieve Excellent Green Factory Certification at major production sites worldwide by fiscal 2019
- CO₂ emissions reduction in production activities: 19 thousand tons
- Effective resource utilization: 2.8 thousand tons

Green Supplier activities

- CO₂ emissions reduction at suppliers: 5 thousand tons
- Effective resource utilization at suppliers: 0.25 thousand tons

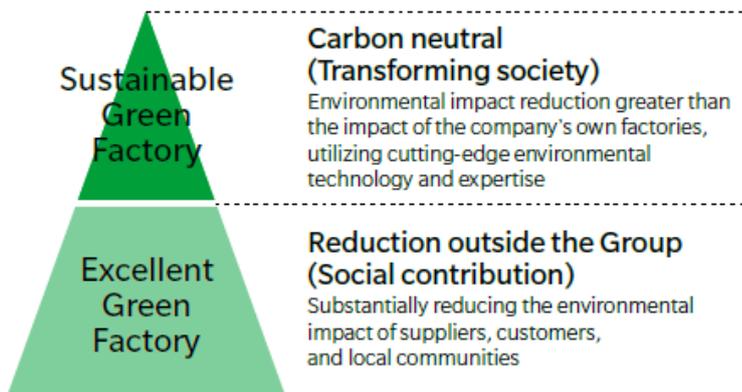
Green Factories (Production Initiatives)

Excellent Green Factory Certification System

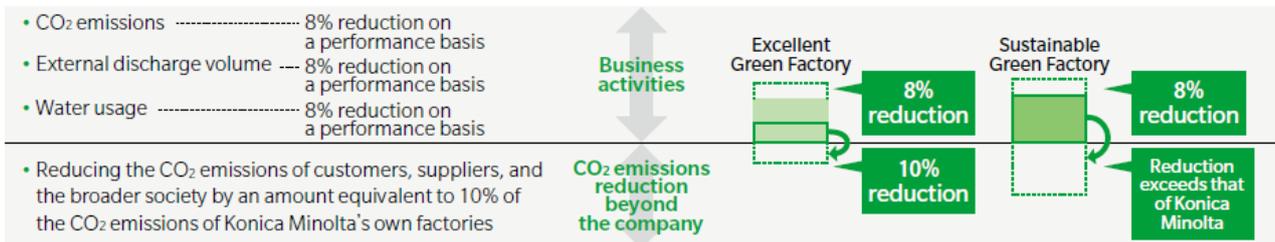
Initiatives in Production

Konica Minolta’s Green Factory Certification System aims to reduce both environmental impact and operating costs. All production sites had achieved the highest standard (Level2) by fiscal 2015. Moving forward, the company launched its Excellent Green Factory Certification System in fiscal 2016. An Excellent Green Factory is a site that has achieved the system’s certification standard of reducing CO₂ emissions from external sources by an amount equivalent to 10% of its own emissions by working in unison with suppliers, customers, and communities. This is in addition to complying with the previous certification standards for reducing environmental impacts from internal sources. The aim is for Konica Minolta to achieve the standards at all of its major production sites worldwide by fiscal 2019. Konica Minolta is also working to meet its own standards for Sustainable Green Factory Certification by sharing its environmental technologies and expertise with external stakeholders with the aim of reducing CO₂ emissions from external sources by an amount exceeding the CO₂ emissions reductions in its own business activities.

Excellent Green Factory Certification System



Excellent Green Factory Certification Standards

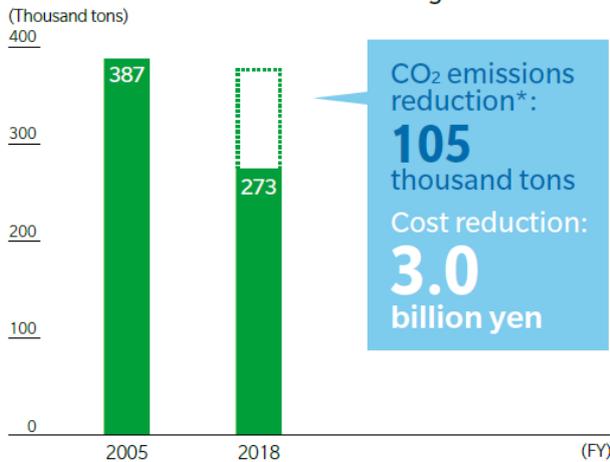


Fiscal 2018 Green Factories Activity Results

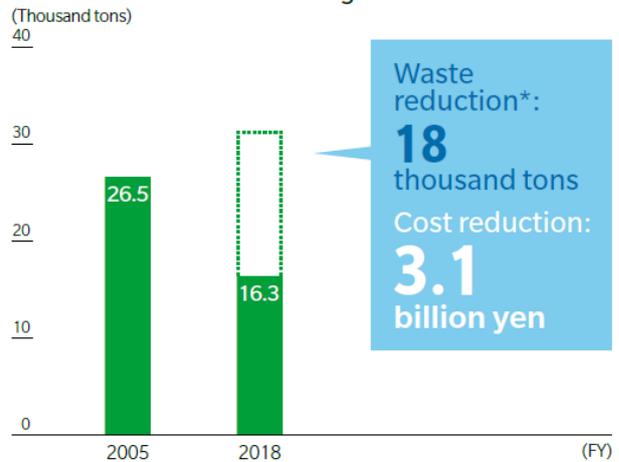
In the first half of fiscal 2018, Konica Minolta Business Technologies (Dongguan) Co., Ltd. (BMDG), a site in China that produces MFPs, achieved Excellent Green Factory status nearly two years ahead of schedule. In addition to its own environmental activities, BMDG shared its improvement measures with business partners and customers through factory tours and environmental seminars. It also visited their plants to jointly consider and implement environmental impact reduction measures. This support contributed to the reduction of CO₂ emissions from external sources.

In fiscal 2018, as a result of these activities in the production stage, 105 thousand tons of CO₂ emissions and 18 thousand tons of waste were eliminated compared to fiscal 2005, and a total cost reduction of 6.1 billion yen was achieved.

CO₂ Emissions Reduction Effect during Production



Waste Reduction Effect during Production



*The amount of reduction is calculated by subtracting the actual fiscal 2018 emissions amount from the estimated amount of emissions that would be produced if environmental conservation activities had not been implemented since fiscal 2005.

Green Factories (Production Initiatives)

Saving Energy and Preventing Global Warming in Production Operations

Promoting Energy Savings at Production Sites

In line with its Green Factory certification system for comprehensively evaluating environmental activities at production sites, Konica Minolta strives to increase energy productivity and to reduce CO₂ emissions from production operations through a variety of measures.

Energy Conservation Support Program

Konica Minolta has implemented an Energy Conservation Support Program in order to promote the reduction of CO₂ emissions at production sites. Under this program staff members within the Group who are experts in process design, production equipment design, and energy management visit production sites and conduct inspections of everything from the energy management situation to the status of utilities and production equipment such as air conditioning and boilers, based upon which they recommend measures suited to each site. Using these recommendations, the expert staff and personnel at each site conduct simulations of the energy-saving effects, which help with implementing the measures.



Energy Conservation Support Program

Examples of Main Measures

Improve productivity	Industrial engineering (IE) work analysis, yield rate improvement, installation of automatic machines, takt time reduction, production space optimization
Optimize equipment operation time	Shutdown during downtime, reduction of standby power consumption
Reconsider air conditioning operation	Temperature setting optimization, operating time optimization
Save energy in lighting	Thinning out lighting, conversion to high-efficiency lighting
Save energy in molding machines	Infrared heating, installation of servo motors, cylinder insulation
Save energy in compressed air	Installation of inverters, limited number of units, air pressure optimization
Reconsider refrigerator operation	Refrigerator integration, reconsideration of exit temperature setting
Use waste heat	Heat exchange at exhaust/intake, reduction of steam production by using waste heat from dehumidifiers
Reduce heat radiation loss	Steam piping insulation, piping integration, reduction of valve leaks

Participation in RE100, Which Aims to Run Businesses with 100% Renewable Energy

In January 2019, Konica Minolta joined RE100, a global leadership initiative that brings together businesses committed to sourcing 100% renewable energy for their operations.

Konica Minolta aims to procure 100% of the power used in its own business activities from renewable energy sources by 2050. By doing so, Konica Minolta will accelerate its efforts to achieve Eco Vision 2050 while also helping to reduce global CO₂ emissions by expanding the use of renewable energy. As a medium-term step toward achievement of its long-term goal, Konica Minolta set an internal target of sourcing renewable energy for 30% of its energy use by 2030. The Group will start reviewing its power procurement contracts one by one at production sites and sales sites, starting with countries and regions where renewable energy power is relatively widespread, and switch over to renewable energy, beginning with those sites where it is possible.

At Konica Minolta Business Technologies (Dongguan) Co., Ltd., one of Konica Minolta's MFP production sites in China, 100% of the energy consumed has come from renewable energy sources since 2019. In November 2017, the company installed a solar power generating system (25,000 m² footprint, 1.8 MW power generating capacity), accounting for about 15%^{*1} of power usage, and beginning in January 2019, it also switched the source of the remaining power to power purchased with green power certificates.^{*2} As a result, the manufacturing site now sources 100% of its energy from renewable sources.

Konica Minolta will adopt the optimal method for each world region, starting with manufacturing sites such as the aforementioned site in China, in order to strengthen its efforts to expand energy procurement from renewable sources.

*1 Achievements from March 2018 to February 2019

*2 I-REC certification that can be used domestically in China (International Renewable Energy Certificate)



Konica Minolta Business Technologies (Dongguan) Co., Ltd.



Solar power panels installed on the roof

Examples of Initiatives

Pursuing Energy Savings by Reviewing the Operation of Clean Rooms with High Energy Loads (Konica Minolta Business Technologies (Dongguan) Co., Ltd.)

Konica Minolta Business Technologies (Dongguan) Co., Ltd., which manufactures MFPs and other products in Dongguan, Guangdong Province, China, has achieved dramatic energy savings by conducting reviews of the operational status of clean rooms with high energy loads in the factory. Specifically, it took another look at the temperature and humidity conditions while keeping them within product specification requirements, optimized the ventilation frequency while maintaining cleanliness, reduced clean room equipment operating time by installing a timer, and reduced clean room floor space through layout review. The implementation of these measures has saved energy used by cold energy source equipment and ventilation equipment. In addition, in November 2017, full-scale use of renewable energy began, with the installation of photovoltaic equipment on the roof of the plant, and in 2019, the share of electricity consumption from renewable energy sources reached 100%. These measures have greatly contributed to the Excellent Green Factory Certification System, the Konica Minolta accreditation system launched in fiscal 2016.



Konica Minolta Business Technologies (Dongguan) Co., Ltd.

Energy Savings through Smaller Production Space and Shorter Production Time (Konica Minolta Business Technologies (Wuxi) Co., Ltd.)

Konica Minolta Business Technologies (Wuxi) Co., Ltd., located in Jiangsu Province, China, has adopted industrial engineering (IE) work analysis as a new endeavor aimed at reducing environmental impact through increased productivity. The analysis is based on specialized analytical knowhow cultivated in Japan by Konica Minolta. By thoroughly reconsidering operability and line of flow of production lines, the company reduced production space, shortened production times, and cut energy consumption, including that of air conditioning and lighting.



Konica Minolta Business Technologies (WUXI) Co., Ltd.

Utilizing Waste Heat from Production and Curbing Heat Dissipation to Ensure Energy Conservation (Konica Minolta Supplies Manufacturing Co., Ltd.)

With its head office in Kofu, Yamanashi Prefecture, Konica Minolta Supplies Manufacturing Co., Ltd. makes developers and photosensitive drums for multi-functional peripherals (MFPs). The company has achieved sharp reductions in energy consumption by utilizing the waste heat from the toner production process and curbing the heat dissipation from steam pipes.

Heat exchange with high-temperature water is typically used, but the company actively uses the waste heat from low-temperature water generated in the toner production process through heat exchange and produces heated water to be used in other processes. This significantly reduces the gas consumed to produce heated water.

The company also installed an automated control system to supply steam only when and in amounts needed to prevent heat from dissipating from the pipes.



Kofu head office at Konica Minolta Supplies Manufacturing Co., Ltd.

In addition, outside air is used for drying, but the amount of air required differs significantly depending on fluctuations in the humidity of the outside air. The company controls the dew point of the outside air sucked in constantly, then curbs the blower's air volume and number of rotations to conserve energy. It has also upgraded from NAS batteries to large-capacity lithium ion rechargeable batteries in order to adapt to momentary power interruptions and power outages. As a result, heaters no longer have to be used, conversion loss has been reduced and efficiency has improved, delivering significant energy conservation.

Pursuing Energy Savings with a High-Efficiency Air Conditioning System (Konica Minolta Business Technologies (Malaysia) Sdn. Bhd.)

Konica Minolta Business Technologies (Malaysia) Sdn. Bhd., which assembles MFPs, has achieved major energy savings by actively employing high-efficiency air conditioning systems.

Since Malaysia is a tropical country where air conditioning use is high, the company has installed a large-temperature-difference air conditioning system and a temperature-stratified air-conditioning system and reduced electricity consumption compared with conventional air conditioning.

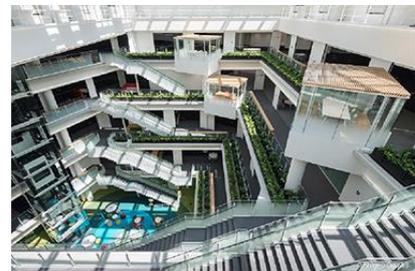
In the areas between each factory building, dedicated individual air conditioners had been required, but individual air conditioners were discontinued by supplying surplus cold air from air conditioners in other processes. In this way, the company has promoted high-efficiency air conditioning operations throughout the plant.



Konica Minolta Business Technologies (Malaysia) Sdn. Bhd.

TOPIC: New Environmentally Friendly Research Building SKT

The new R&D building (SKT) opened in April 2014 at Konica Minolta Tokyo Site Hachioji integrates environmental facilities that will contribute to environmental impact reduction, including solar panels on the roof, an atrium that brings in lots of natural light, daylight sensors to reduce lighting electricity consumption, effective natural ventilation, and use of well water. As a building with excellent environmental friendliness, SKT received the highest certification, "Class S," in the Comprehensive Assessment System for Built Environment Efficiency (CASBEE), which is an evaluation of the environmental performance of buildings led by Japan's Ministry of Land, Infrastructure, Transport and Tourism. The building also won a fiscal 2014 Good Design Award from the Japan Institute of Design Promotion (JDP).



SKT's atrium

TOPIC: Installing a Gas Turbine Cogeneration System That Provides High Energy Efficiency by Effectively Using Exhaust Heat

On February 1, 2017, the Konica Minolta Kobe Site began operating a gas turbine cogeneration system that uses city gas as fuel. This system provides distributed power generation (7,000 kW class power generation output) that generates power in the places where energy is needed. By effectively utilizing exhaust heat generated at that time, it is possible to achieve overall efficiency at a high 80-90% energy efficiency (general thermal power plants are at about 40%), which greatly contributes to energy saving and CO₂ emission reduction.



Gas turbine

This system is superior from the standpoints of both energy saving and environmental preservation because the fuel uses city gas with high combustion efficiency and low impurity, generates virtually no dust or sulfur oxides, and generates low amounts of nitrogen oxides thanks to the latest low-NOx combustion technology.

When it was installed, it was assessed as a Class 2 Project, the first such project under the city of Kobe's environmental assessment standards. The preliminary considerations of the environmental impact assessment were also disclosed to stakeholders, a briefing was held, and opinions were taken into account.



Boiler

Primary Advantage of Installation

CO₂ reduction: CO₂ reduction of 20% or more compared with previous methods

Peak cut: Leveling of electricity demand: Electric power peak cut rate is 70%

BCP: The system supplies power to the premises critical load in the case of emergency

Subsidies: Subsidy support was received from the Energy Use Rationalization Business Support Program, in recognition of the high energy savings of the installed equipment.

At this site, the company has continued to install energy-saving equipment, streamlined product manufacturing processes, and achieved per-unit reductions of energy consumption by an annual average of 4% or more. The operation of this system is positioned as the core of the energy saving and CO₂ emissions reduction plan in the Medium-Term Environmental Plan 2019.

Green Factories (Production Initiatives)

Resource Conservation and Recycling in Production Operations

Promoting Resource Conservation and Recycling at Production Sites

Konica Minolta has implemented a variety of measures to reduce and recycle waste generated from production operations and is striving to reduce the amount of waste discharged, with the aim of creating a recycling-oriented society.

Examples of Main Measures

Reduce material loss	Improvement in materials, parts, and product yield rates
Reduce packaging materials	Switching to simple packaging, increasing quantities inside packages
Reuse packaging materials	Switching to reusable shipping containers within the company, between production sites, and with parts suppliers
Reduce mold scrap	Adoption of dies with no molding scrap, minimization and internal recycling of molding scrap
Reduce press scrap	Minimization of feed pitch
Reduce support materials	Reuse of cleaning solvents, reuse of molding machine oil
Reuse pallets	Switching to reusable pallets with parts suppliers, changing the size of pallets for parts and using them to ship products

Examples of Initiatives

Reducing the Amount of Waste Discharged by Applying the 3Rs to Plastic Mill Ends

Konica Minolta makes an active effort to apply the 3Rs (reduce, reuse, and recycle) to the mill ends generated at production sites in the molding processes for plastic parts. Konica Minolta Business Technologies (WUXI) Co., Ltd. and Konica Minolta Business Technologies (Dongguan) Co., Ltd., which are companies producing business technologies products in China, reduced their use of plastic raw material by developing and installing molding dies that do not generate mill ends.

They reduced the material input through the use of hot runners in molding dies, the minimization of runner sizes, and the pulverization and reuse of runner mill ends. Then, they made effective use of unneeded mill ends as material in such things as parts racks used in factories and parts boxes used in the shipment of parts from suppliers.

Reducing Packaging Material Waste

Konica Minolta is making efforts to reduce the disposal of packaging materials used at production sites when procuring materials and parts. For instance, it has simplified packaging, such as switching from stretch film for wrapping parts boxes together to packing belts that can be reused, and it has reduced the amount of packaging materials used by changing the number of units purchased when procuring materials to increase the number of units packed into boxes. Additionally, it has changed parts boxes from cardboard to reusable foldable boxes made using mill ends recycled from plastic parts. It also does not dispose of packaging cushioning, but instead returns it to suppliers for reuse, in order to reduce waste discharge. Konica Minolta

Business Technologies (Malaysia) Sdn. Bhd., which assembles MFPs in Malaysia, uses ABS plastic recovered from used game machines as a material for containers used in procurement and in-process transport in an effort to efficiently use resources.

Reduction of Chemical Substances Risks in Production

Basic Concept

Working on reducing chemical risks based on the concept of the precautionary principle

There is international consensus on the need for companies that manufacture and use chemical substances to take steps to minimize the adverse effects of chemicals, not only on human health, but also on the environment. Based on this shared perception, many countries around the world are revising their regulations concerning chemical substances. Having taken a position in advance of this new international current, based on a concept known as the "precautionary principle," Konica Minolta has focused on enhancing its advance evaluation of chemical risks, reducing the emission of harmful substances into the atmosphere, and eliminating hazardous substances from production processes and products to improve safety management for workers and product users.

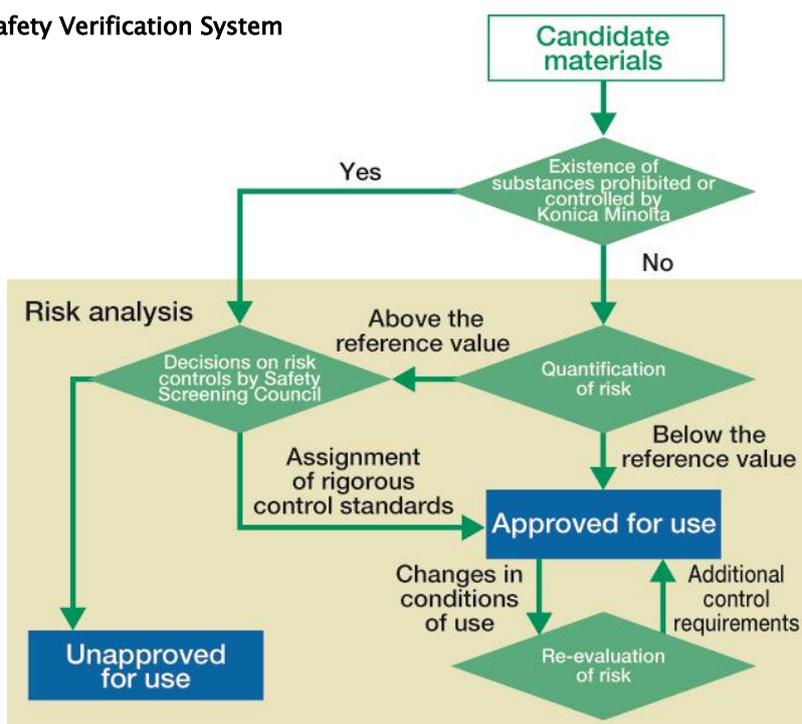
Prior Risk Assessment of Chemical Substances

Using its unique safety verification system to achieve the appropriate management of chemicals

Risk Assessment of Candidate Materials Using a Safety Verification System

Konica Minolta has established a safety verification system that assesses the risk of candidate materials when considering the use of new chemicals in the process of creating products. Using this system, the Group practices appropriate management based on comprehensive chemical risk assessment in terms of product safety, environmental safety, and work safety.

Safety Verification System



Designation of Prohibited and Restricted Chemical Substances

Konica Minolta designates prohibited and restricted chemicals based on its own criteria in order to eliminate chemicals with unacceptable hazards in the prior risk assessment carried out before the adoption of a chemical substance. These criteria include not only chemicals regulated by law, but also chemicals recognized as significantly hazardous by specialized institutions.

Calculating Risk Points for Chemicals

Konica Minolta calculates points for the hazard risk of substances based on a unique calculation method used in its safety verification system. This quantifies the hazardousness points based on three factors: (1) type and degree of hazardousness; (2) level of safety measures; and (3) amount used. Using these numbers, it is possible to compare different types of risks—such as the danger of an explosion or serious health effects such as carcinogenicity—on the same scale. In this way, Konica Minolta quantitatively assesses the potential risks of hazardousness in chemicals.

Risk Management That Envisions Substance Usage

Since risks differ depending on the form of exposure, Konica Minolta classifies substances into four categories that envision usage, ranging from use under strict safety controls (e.g., at production sites) to use by the general public, which cannot be assumed to take safety measures. It then specifies safety requirements according to the different risks in order to carry out more practical risk management.

When there is a necessity to use highly hazardous chemicals, Konica Minolta holds a safety determination meeting to stipulate rigorous management conditions for minimizing risks in terms of procurement, storage, handling, and disposal.

Risk Assessment During Continual Use

Even after incorporating a chemical into the production process after conducting a risk assessment, Konica Minolta checks periodically to make sure that there are no changes in the amount used or the conditions of use. If there are any changes, a risk assessment is performed again to ensure appropriate management.

Reducing and Fully Phasing out Chemicals

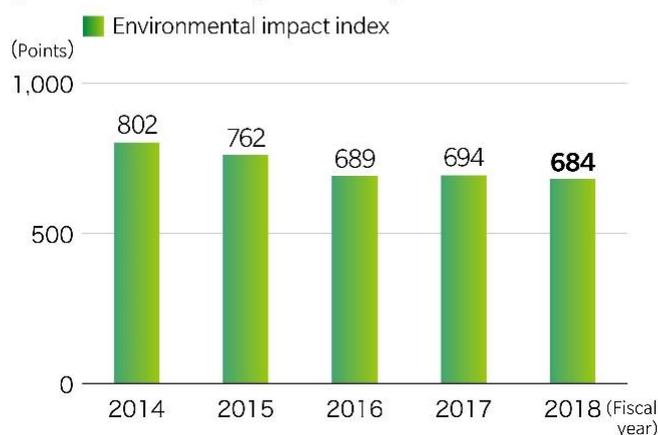
Reducing VOCs based on Konica Minolta's own risk management indicators

Konica Minolta assesses risk based on a chemical's hazardousness and amount of use and is committed to finding alternatives and reducing those substances judged to have a high risk. Since 1993 it has been making efforts to reduce atmospheric emissions of volatile organic compounds (VOCs) from production sites worldwide. It identified VOCs with particularly high risks for full phase-out, and has maintained the full phase-out status for those identified items.

Reducing Atmospheric Emissions of VOCs

Konica Minolta is systematically reducing VOCs in line with its own environmental impact index, which multiplies the impact on the human body and the environment by a location coefficient as a management indicator. Each site has established reduction goals in line with the Green Factory Certification System and is working to achieve them.

Atmospheric VOC Emissions (Environmental impact index)



> [Standards for Calculating Environmental Data](#) (Page 97)

Calculation of Environmental Impact Index

	Hazard coefficient	Example of substances
Substances that pose a risk to human health	×100	1, 2-dichloroethane
Substances that pose a risk to ecosystems	×10	dichloromethane, ethyl acrylate, n-heptane
Substances that pose a risk of atmospheric pollution		
Substances that pose a risk of having an indirect adverse impact on the environment	×1	isopropyl alcohol, methanol, ethanol, acetone, ethyl acetate

* Environmental impact index: An index unique to Konica Minolta.

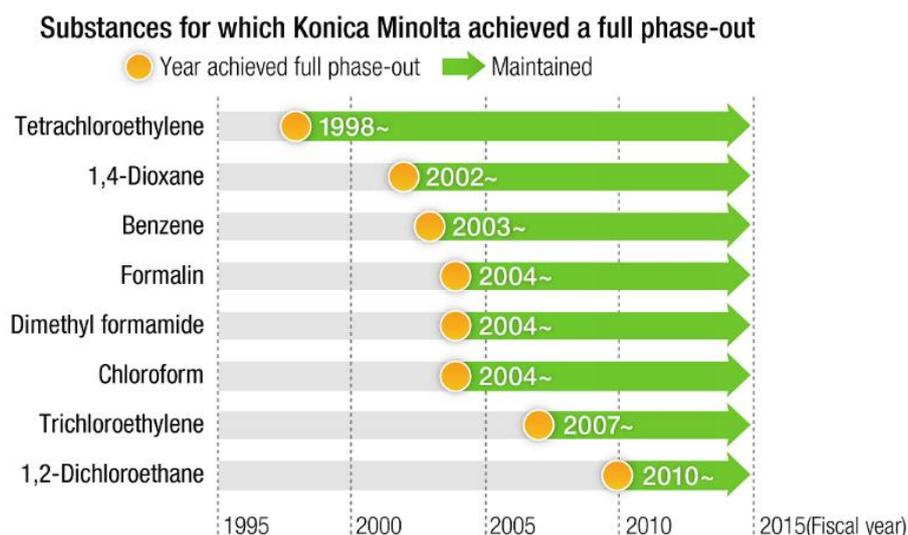
Environmental impact index (point) = Atmospheric emissions of VOCs [t] × Hazard coefficient × Location coefficient

Hazard coefficient: Set at 1-fold, 10-fold, or 100-fold depending on the severity of the impact on human health and the environment (set independently by Konica Minolta based on the coefficient used in the safety evaluations conducted by Kanagawa Prefecture in Japan)

Location coefficient: Outside the industrial park: 5; inside the industrial park: 1

Substances for Which Konica Minolta Achieved a Full Phase-Out

Konica Minolta earmarked the VOCs below for full phase-out, having judged them as having an especially high risk based on the hazardousness and amount of use of each substance and made systematic efforts from early on toward that end. Those efforts resulted in the achievement of a full phase-out in fiscal 2010, which has been maintained ever since.



Countermeasures against Contamination of Soil and Ground Water

Striving to manage the state of contamination through regular monitoring, to facilitate cleanup, and to prevent the spread of contamination

Konica Minolta has implemented countermeasures at sites where soil or ground water contamination has been identified to ensure that the contaminants do not affect the surrounding environment. This is followed up by periodic observation and managed strictly.

The Group has organized a specialist team to manage remediation of polluted sites and to prevent the spread of contamination. Detailed surveys conducted under the team's supervision serve as the basis for developing countermeasures and examining suitable purification technologies.

The Group reports the results of its observations and remediation efforts to local government agencies and to concerned neighboring residents.

> [Summary of Contaminated Soil or Ground Water at Operation Sites](#) (Page 100)

Dealing with Asbestos

Konica Minolta is conducting a survey into the usage of sprayed asbestos in the buildings of all its sites and affiliated companies in Japan. As of March 2014, it had confirmed that there are no health risks due to exposure. Going forward, it will continue to maintain and manage this situation while systematically removing the asbestos.

Dealing with PCBs (Condition of Storage)

Konica Minolta takes steps for the proper storage and management of PCB wastes kept in all its sites and affiliated companies in Japan. It also reports the condition of storage to the government in accordance with the law. Since 2007, it has been commissioning the disposal of wastes with high concentrations of PCBs to JESCO.* From here on the Group will continue to dispose of the waste as soon as possible according to JESCO's capacity to take in batches. Since fiscal 2012, it has also been gradually disposing of waste with low concentrations of PCBs, in light of the certification status for treatment.

* JESCO: Japan Environmental Storage & Safety Corporation

Condition of Storage of PCB Waste in Japan (March 31, 2019)

Stored items	Unit	Quantity	Figures in parentheses indicates low-concentration PCBs
Transformers	Units	3	(3)
Capacitors	Units	6	(6)
Fluorescent ballasts	Units	13	(0)
Other devices	Units	0	(0)
PCB oil	kg	335	(0)
PCB pollutants	kg	1017	(964)

Addressing Biodiversity in Production Activities (Consideration of Water Resources and Wastewater, Proper Management of Greenery at Factories)

Consideration of Biodiversity at Production Sites

Carrying out efforts in accordance with the Guidelines for Biodiversity Preservation

Konica Minolta is working to preserve biodiversity as part of its unique Excellent Green Factory Certification System for comprehensive evaluation of the environmental activities of its production sites. In April 2011, it established Guidelines for Biodiversity Preservation. Compliance with these guidelines is required, and efforts are made to reduce water consumption within the certification system.

Guidelines for Biodiversity Preservation

<Consideration of water resources>

- Reduction targets are set for total water consumption, or for water used on site, and reduction measures are implemented
- If groundwater is used, measures must be taken to reduce the amount used

<Consideration of wastewater>

- In order to prevent ecological damage to rivers and lakes, a risk management system must be established to eliminate highly polluted wastewater
- Checks are in place to determine the impact on ecosystems such as aquatic habitats of wastewater emitted into public water areas

<Proper management of greenery at factories>

- Invasive alien species that are likely to have a negative impact on ecosystems are not planted or sown on the factory's premises
- When planting trees on factory grounds, management and protection must be accorded to any rare species that are discovered

Consideration of Water Resources

Konica Minolta monitors and manages the volume of water use at each site and strives to reduce its total water consumption in line with the reduction targets it has established.

In initiatives for the Excellent Green Factory Certification System, Konica Minolta's key production sites around the world are currently working to reduce water intake to meet targets for reduction of water consumption.

Konica Minolta's key production sites are also reviewing their use of water in plants and working to make reductions. These include measures to reduce the volume of heated water used and the energy required to produce the heated water, such as changing temperature controls to only steam rather than a two-stage control process involving steam and hot water during in-process regulation of reaction temperatures. In addition, after considering the impact on users and the backup system in the event of problems, the sites decided to reuse drain water, which has relatively few impurities and is easy to reuse, as a supplementary feed for the cooling tower. The sites are also working to efficiently use water resources outside of the production process as well

through measures such as installing water-saving faucet valves, checking for leakage from piping and repairing piping damage.

In fiscal 2013, the Group adopted an analysis method using the World Resources Institute's (WRI)¹ Aqueduct² to conduct a comprehensive risk assessment on usage of water resources at the Group's production sites and R&D sites and major suppliers around the world. Every year since, the results have confirmed that the Group has no sites with an extremely high risk.

In the future, the Group will continue to conduct water risk assessments when establishing new sites and changing the business environment, and it will take measures to reduce water use as necessary.

Additionally, production sites that use groundwater as their main intake source have set reduction targets with an indicator of the percentage of groundwater use accounted for in production output (i.e., per unit of production). They are making efforts to reduce the use of groundwater, such as by turning off the supply of cooling water when production is stopped.

*1 WRI (World Resources Institute)

*2 Aqueduct: World maps and information showing the latest water risks published by the WRI. Produced based on 12 key water risk indicators such as physical water stress and regulatory risk related to water resources.

Consideration of Wastewater

Konica Minolta regularly conducts compliance assessments on a global basis to confirm the status of compliance with laws, ordinances, agreements, and other relevant regulations related to effluent, with the aim of preventing water pollution from effluent.

The Group has assessed the effect of effluent on the ecosystem at production sites that release effluent used in the production process into rivers. It adopted WET,* a new effluent management method using bioassays that is gaining worldwide attention, when conducting the assessments. With the cooperation of Japan's National Institute for



Environmental Studies, the Group conducted tests using three aquatic species (algae, crustaceans, and fish). The results indicated that there was no negative impact (algae: inhibition of growth; crustaceans: inhibition of breeding; fish: reduced hatching rate or reduced survival rate after hatching) on any of the three test organisms.

* WET (Whole Effluent Toxicity): A method that assesses the aggregate toxic effect of wastewater on aquatic life rather than the evaluation of individual chemical substances. Unlike conventional effluent management methods, it enables holistic assessment of the effect of an effluent, detecting impact caused by any non-regulated chemical substance or the combined impact of multiple substances.

Proper Management of Greenery at Factories

Konica Minolta practices proper management of greenery on the grounds of the Group's production sites. By preparing greenery management lists for each site and conducting periodic checks, it makes sure that there are no invasive species, including sowing seeds. Additionally, when rare species are discovered at a site, efforts are made to protect the species by making employees and visitors aware of its presence by putting up signs and fences. For instance, the Tokyo Site Hino is managing and protecting Golden Orchid (*cephalanthera falcata*) and Japanese lily (*lilium speciosum*), which are endangered species.



Golden orchid at the Tokyo Site

Consideration of Biodiversity in Procurement

Procuring copy paper in consideration of forest resource conservation

Konica Minolta Japan, Inc., a sales company in Japan, has established the PPC Paper Purchase Standards, which have been implemented since 2007. The Standards stipulate that copy paper supplied to customers should be procured by taking into account the impact of forest destruction and degradation on the living environments of animals, plants, and people.

Green Factories (Procurement Initiatives)

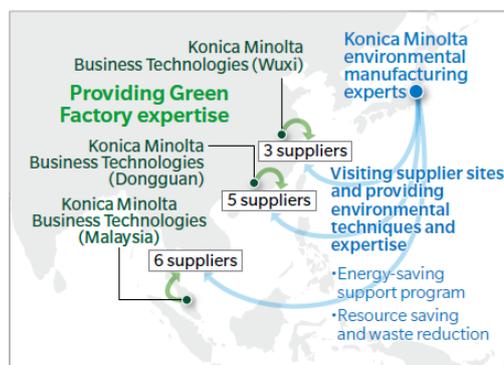
Green Supplier Activities

Overview of the Activities

Konica Minolta conducts Green Supplier activities to reduce both environmental impact and operating costs by providing suppliers with environmental technologies and expertise that it has developed via its Green Factory activities. Konica Minolta's environmental experts visit supplier production sites and propose suggestions for improvement, outlining cost reduction benefits, investment rationale, and other information. They then cooperate with suppliers as they take action to reduce their environmental impact.

Fiscal 2018 Activity Results

In fiscal 2018, Green Supplier activities were initiated with three new companies, bringing the total number of companies Konica Minolta is working with to 17. By the end of fiscal 2018, a total of six companies had achieved their Green Supplier activity targets, which are equivalent to the level of the Green Factory Certification Standards.



Green Supplier Activity Targets

Issue	Management Index	Target (2.5 years after activity launch)
Prevention of global warming	CO ₂ emissions	5% reduction (compared to the last year before activity launch)
	Energy costs	5% reduction (compared to the last year before activity launch)
Waste reduction	External discharge quantity	12.5% reduction (compared to the last year before activity launch)
	Material / waste costs	Cost reduction greater than waste expenses
	Final disposal rate	0.5% or less
Reduction of chemical risk	Reduction of chemical risk	Compliance with chemical substance guidelines

Companies That Achieved Green Supplier Activity Targets

Achievement Date	Company	Activity Launch
Mar. 2016	Shenzhen Changhong Technology Co., Ltd.	FY2014
Mar. 2017	Toyo Communication Technology (Shenzhen) Co., Ltd.	FY2014
Mar. 2017	Allied Technologies (Saigon) Co., Ltd.	FY2015
Aug. 2017	Szepak Precision (Wuxi) Co., Ltd.	FY2015
Aug. 2017	Catthai Manufacturing & Trading Co., Ltd. (CATHACO., Ltd.)	FY2016
Mar. 2018	Well King Plastic Manufacturing Co., Ltd.	FY2015

Voice of a Supplier | Well King Plastic Manufacturing Co., Ltd.

We view environmental conservation as an extremely important initiative in the context of China's recent pursuit of rapid economic growth and the advancement of its manufacturing industry. Konica Minolta's Eco Vision 2050 is aimed at sustainable growth, which is an approach that matches the course we wish to follow.

In the manufacturing industry, resource and energy consumption increase with business expansion and rises in production. This is why I believe that the "waste elimination activities" we worked on as part of the Green Supplier activities are essential for a growing manufacturing industry. Moreover, Konica Minolta's sharing of its environmental expertise enabled us to reduce our environmental impact while increasing our performance, giving us the experience of simultaneously contributing to the environment and supplying competitive products. We will continue to practice environmental conservation and energy reduction activities and will do our best to pursue sustainable development in collaboration with Konica Minolta.

Happy Tsai
President
WELLMEI HOLDING CO., LTD.

Voice of a Supplier | Szepak Precision (Wuxi) Co., Ltd.

Through the Green Supplier activities, we received a wealth of advice on things such as energy conservation, resource reduction measures, and calculation methods. Thanks to Konica Minolta, we were able to take the first steps toward environmental contribution. For environmental measures requiring investment, we received proposals from a management perspective, including measures sorted into short-, medium-, and long-term investments, as well as by depreciation period. The government also has several requirements for environmental conservation measures, and we were able to work even more positively on them by pursuing the Green Supplier activities. In the future, we would like to develop self-diagnosis mechanisms while applying diagnostic tools from Konica Minolta.

Yushi Ueda
Director / General Manager
Szepak Precision (Wuxi) Co., Ltd.

Voice of a Supplier | Allied Technologies (Saigon) Co., Ltd

In our daily lives, we receive much information about global warming, the greenhouse effect, and CO₂ emissions, which are contributing to environmental risk with rising temperatures, rising sea levels and extreme weather conditions that affect the lives of human beings and other living organisms around the world.

Konica Minolta introduced the Green Activity program at Allied Vietnam in 2015. Through the Green Activity program, my team has been introduced to the benefits these activities can have for the company. We understand that it can contribute to cost reduction, increased sales opportunities, reduced business risk, and the environmental awareness of every employee.

Through the program, Konica Minolta, working with Allied, evaluated ways to save energy and reduce waste, took productive measures to make plans, and executed to meet the targets set. This, in turn, met the wider goal of working to curb global warming and supporting a recycling oriented society.

During the activity, Konica Minolta continuously shared with Allied many methods for reducing energy use, and also shared their experience with best practices to enable us to execute the program effectively.

Moving forward, Allied will continue to sustain the activities that are in place, and will also continue to make plans for reducing energy and recycling waste, working to be part of a company that exercises its social responsibility to the community.

Tung Gee Khim
Group Operation Manager
Allied Technologies (Saigon) Co., Ltd.

Voice of a Supplier | Changhong Technology Co., Ltd.

As part of the Green Supplier activities, Konica Minolta environmental manufacturing experts visited our production site, and we discussed environmental measures for molding machines and utilities use. Preparing for the actual implementation of the suggested measures, we visited a Konica Minolta production site in China, and we were able to address our situation while discussing specific ways to proceed. The local government places great importance on energy-saving activities, and we received a monetary incentive after reporting the energy-saving initiatives we took through the Green Supplier activities. We were able to reduce our emissions by 800 tons per year, and also contributed to CO₂ emissions reduction in China.

Xu Yanping
President
Changhong Technology Co., Ltd.



Visiting a Konica Minolta site to see environmental measures

Voice of a Supplier | Toyo Communication Technology (Shenzhen) Co., Ltd.

I think the biggest feature of the Green Supplier Initiative is the way in which Konica Minolta is committed to coming into suppliers' sites and working with them to make improvements.

Indeed, the people who visited our factory did not just bring the methods cultivated in Japan as-is; rather, they thought together with us about what kinds of measures we need. This method improved the motivation of our employees, and an attitude of thinking on one's own and devising improvements started to spread throughout the company.

Going forward, we are determined to keep cooperating with Konica Minolta to form and implement environmental plans and measures, and foster a system and culture that values environmental management.

Lou Yiliang
Chairman and Managing Director
Toyo Communication Technology (Shenzhen) Co., Ltd.

Activity Policies for the Medium-Term Environmental Plan 2019

Under the Medium-Term Environmental Plan 2019, Konica Minolta is continuing the expansion of its Green Supplier activities. Until now, Konica Minolta has been promoting its efforts by sending environmental experts to visit suppliers. With this approach, however, the number of improvement cases was limited. To increase the impact, the company is now using its energy-saving diagnosis method via a digital environmental platform and accumulating and sharing environmental expertise. As a result, suppliers can now identify their own areas for improvement and take action to improve their practices and cost-effectiveness. This database is expected to have a broad impact and result in an even greater contribution to environmental sustainability.

Green Factories (Procurement Initiatives)

Green Procurement System

Implementing green procurement to assess the chemical constituents of parts and components and give preference to those with the least environmental impact

Green Procurement System

Konica Minolta operates a Green Procurement System in compliance with laws and regulations for chemical substances.

In the operation of the SIGMA Green Procurement System, the Group ensures its compliance with the RoHS directive,¹ and also rapidly complies with more stringent regulations on chemical substances in products by expanding its coverage to include substances of very high concern (SVHCs) on the candidate list for authorization and other substances restricted under REACH regulations.² Through these efforts in assessment and management of chemical substances in products, the Group is keeping an eye on trends in regulations and alternative technologies and is working on plans to eliminate hazardous materials in order to be sure it avoids risks.

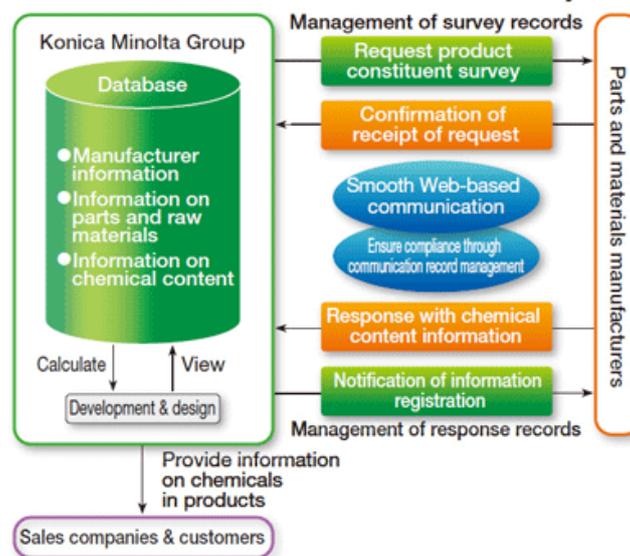
In addition, in order to ease the workload of suppliers, the Group uses the chemSHERPA³ scheme to define the substances covered in its survey. Moreover, the Group regularly holds briefings on trends in environmental laws and regulations for its suppliers to ensure understanding of Konica Minolta's initiatives.

*1: RoHS directive: Directive on the restriction of the use of certain hazardous substances in electrical and electronic equipment

*2: REACH regulations: Regulations enacted by the EU in June 2007 concerning the registration, evaluation, authorization and restriction of chemicals, to consolidate existing regulations concerning chemical substances.

*3: chemSHERPA: A scheme developed by Japan's Ministry of Economy, Trade and Industry to facilitate the sharing of information on chemical substances contained in products in the supply chain. The Joint Article Management Promotion-consortium is responsible for its administration.

Overview of the SIGMA Green Procurement System



Main Features

- Japanese, English and Chinese language support
- Supports a standard chemical substance survey (chemSHERPA)
- Separates the procedures for checking for prohibited substances and for collection of information on reported substances in products
- Sharing of information from surveys and responses with business partners
- Storage of communication records in databases ensures compliance through tracking
- Simplifies the response to changes in regulations and substances subject to control

[> Green Procurement Guidelines \(Japanese, English, Chinese\)](#)

<https://green2.konicaminolta.net/sigma/index.jsp>

Environmental Collaboration

The Business Technologies Business has implemented Environmental Collaboration to establish strong partnerships through on-site evaluations and educational support for suppliers in order to strengthen suppliers' environmental management.

This is an initiative to help suppliers develop independent environmental management. Konica Minolta employees go directly to suppliers' factories and provide guidance based on assessment results for the management of chemical substances as well as to provide guidance in document management, including for measurement results and materials information.

Every year Konica Minolta provides education to suppliers' employees and certifies those who pass as internal evaluators for suppliers. In addition, each year the Group also conducts e-Learning for new evaluators as well as paper-based follow-up education for existing internal evaluators.

Konica Minolta's Approach

Background and Issues

Environmental issues such as global warming and resource depletion cannot be solved by the efforts of just one company. All companies need to raise their level of contribution to global environment preservation throughout the value chain. This can be achieved by going beyond the company's immediate range of activities, and creating shared value with customers, communities and other stakeholders.



Vision

Konica Minolta seeks to make a substantial contribution to the entire value chain by sharing its expertise and experience with customers to help resolve their environmental challenges. The goal is to strengthen relationships with customers and continually create shared value, building on the foundation of trust they have with Konica Minolta.



Key Measures

Strengthening relationships and helping customers solve their environmental challenges

- Reduce customers' environmental impact
- Generate sales opportunities

Green Marketing

Supporting Customers to Solve Their Environmental Issues

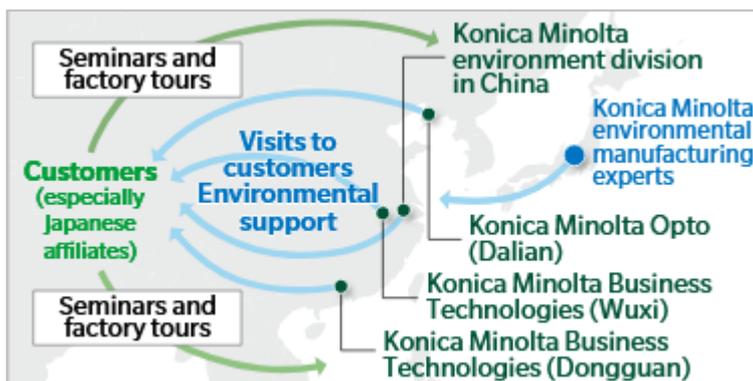
Overview of Activities

The solutions provided by Konica Minolta include not only products and services, but also environmental expertise that is useful to customers. Through Green Marketing activities that provide the proven environmental expertise the company already possesses, Konica Minolta seeks to build corporate relationships by working with customers who appreciate its approach to environmental management to help them solve environmental issues. The aim of these efforts is to become the business partner of choice for companies around the world.

Fiscal 2018 Activity Results

Konica Minolta provided environmental seminars, lectures and factory tours in Japan to a total of 800 people from 415 companies to introduce Konica Minolta's approach to environmental management, including practical examples. At EcoPro 2018 held in December in Tokyo, visitors were introduced to Konica Minolta's environmental management approach to solving environmental issues linked with a business plan, and the response was very favorable. The company's environmental consultation corner offered advice to visitors from 239 companies. Along with providing the environmental expertise practiced by Konica Minolta over the years, Konica Minolta representatives also visited some of the consultation recipients after the event to talk about environmental performance.

In China, where environmental laws and regulations have been substantially tightened, Konica Minolta exhibited at the China International Environmental Protection Exhibition & Conference (CIEPEC 2018) held in June 2018. Over 200 people attended an environmental management seminar given by Konica Minolta at the exhibition, and 101 customers visited its booth to ask about the environment. The company also held a total of six environmental exchange meetings with its customers at two of its factories. A total of 145 people from 93 companies toured the frontlines, gaining from the expertise developed at Konica Minolta production sites in China. In some cases, expertise was mutually shared concerning a wide range of fields in addition to environmental performance, such as quality, production technology, and human resources development. There are also ongoing exchanges now being carried out between Konica Minolta sites and other factories.



Voice of a Customer | TOYODA GOSEI CO., LTD.

Toyoda Gosei is conducting environmental activities in line with our TG 2050 Environmental Challenge, which aims to minimize our environmental impact, including CO₂ emissions and waste reduction, by 2050. To push these activities forward, we hold an annual environmental lecture. This year, we had a lecture about environmental management given by Takenori Takahashi, General Manager of the Corporate Sustainability Division at Konica Minolta, a leading company in environmental activities. The lecture was attended by 193 people, including the president and other executives, representatives from each department, and representatives from affiliate companies in Japan. It was very motivating to learn about another company's initiatives. Indeed, the feedback I heard included, "I learned that environmental activities actually tie into sales and profits," and "There were improvement examples that sounded like things we could do, and so I took it in a positive way."

I hope to enhance our efforts through the sharing of energy-saving expertise and practical examples, and look forward to continued cooperation with Konica Minolta.

Kazuhiko Nagao
General Manager, Environment Division
TOYODA GOSEI CO., LTD.



Members of Toyoda Gosei listening to an environmental lecture

Expansion of biz-Library Content Support Service

Konica Minolta believes that digitizing and sharing the environmental management expertise it has accumulated with even more companies will dramatically increase its contribution to the environment. It has provided an online content service, biz-Library (environmental management), since fiscal 2016. This service provides videos and documents featuring practical case studies from Konica Minolta. The content targets four challenges faced by many companies: formulating environmental strategy, responding to revised environmental ISO standards, energy saving and cost reduction in factories, and management of chemical substances. Customers can also utilize the manuals and tools actually used by Konica Minolta, allowing them to promote effective and efficient environmental impact reduction activities inside their companies.

In fiscal 2018, in response to requests from many customers, Konica Minolta expanded the biz-Library to seven subjects with the addition of three topics: efficient use of resources and cost reductions in factories; methods of calculating Scope3 CO₂ emissions; and waste management by companies.



Efficient use of resources and cost reductions in factories; Methods of calculating Scope 3 CO₂ emissions; Waste management by companies

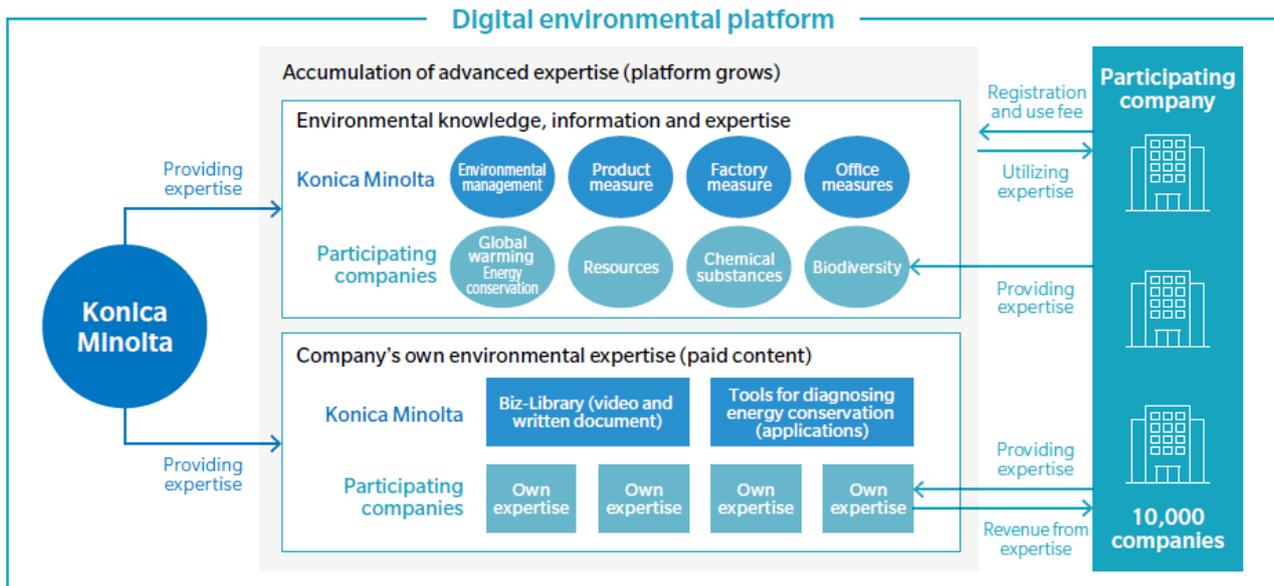
Building a Digital Environmental Platform

Konica Minolta is in the process of building the framework for a digital environmental platform with the aim of creating value by sharing environmental expertise. In order to achieve “Carbon Minus” status, Konica Minolta must help external organizations reduce their environmental impact, in addition to its internal efforts. It is believed that sharing knowledge and expertise about sustainability and technology throughout the industry is necessary to pass down information to the next generation of employees.

Konica Minolta’s solution is to digitize and provide environmental expertise, including in a biz-Library of environmental management support content and an energy-saving diagnostics tool. The platform will grow by accumulating Konica Minolta’s environmental expertise and the knowledge of other participating companies. Konica Minolta believes that this will support long-term environmental sustainability efforts.

Konica Minolta introduced this concept to customers at EcoPro 2018 and received positive feedback. Referencing customers’ opinions, the company will compile environmental knowledge, information, and expertise and make it fit for practical use.

Digital Environmental Platform



Providing Services to Solve Customers' Environmental Issues

Helping Customers Reduce Environmental Impact through Optimization of Their Document Printing Environments

Contributing to workflow streamlining and lower environmental impact in offices through optimization of the document printing environment

The Optimized Print Services (OPS) offered by Konica Minolta is a solution that delivers benefits including optimized equipment arrangement and improved capacity utilization through an all-in-one contract for the operation of printing devices such as printers and MFPs. Konica Minolta offers OPS globally, and the companies that have signed global contracts with Konica Minolta thus far are located around the world in diverse industries that range from insurance and financial services to international logistics services and industrial equipment and consumer electronics manufacturers.

Optimization of the printing infrastructure through OPS not only helps customers streamline workflow and reduce costs in their offices; it also contributes to the reduction of environmental impact. For example, consolidating several printing devices into an MFP and updating to the latest models providing energy-saving effects can reduce power consumption significantly. Moreover, continuous monitoring of device usage leads to a reduction of wasteful printouts, while the digitalization of documents translates into reduced storage space and less consumption of paper resources.

Examples of Support to Reduce Environmental Impact through OPS

Konica Minolta Business Solutions (UK) Ltd., a sales company in the UK, has provided OPS to a local university since 2012. Completely reconsidering the work of creating documents on campus resulted in a reduction of printing paper used from 10 million sheets a year to 3.5 million sheets two years later. This also led to the removal of printing facilities established on campus, which had a major cost-reduction effect.

Konica Minolta Business Solutions France S.A.S., a sales company in France, examined the paper usage and energy consumption situation for a marine transportation company. The sales company identified wasteful practices and made a proposal to reduce CO₂ emissions by 10% in 3 years.

Support to Reduce Environmental Impact through Office Reforms

Enhancing the ability to provide solutions through actual practice in its own offices

Konica Minolta offers office solution services that contribute to work style reforms, on top of reducing environmental impact, through optimization of office environments. When Konica Minolta Business Solutions Japan Co., Ltd. moved its head office, it took a variety of measures in its new office in order to verify for itself the effects of its solutions and also to enhance its ability to propose solutions to customers by demonstrating actual practice.

For example, it implemented such wide-ranging office solutions as the optimal positioning of MFPs, the reduction of printouts and document storage space through document digitization, the reduction of business

trips and transportation through the adoption of teleconferencing, and the increase of information management sophistication using the cloud environment.

These solutions led to reductions in environmental impact and costs, including a 24% reduction in copy paper printouts, a 44% reduction in electricity consumption, and a 44% reduction in CO₂ emissions. They also freed up more than 200 square meters of space within the office. Additionally, work style improvements stimulated communication among employees, creating a highly productive office environment marked by on-target communication. What is more, this new office is used as a live showroom that customers can experience.

Eco Calculator

The Eco Calculator provided on the website can calculate the annual power consumption of products in Konica Minolta's bizhub series of MFPs, allowing customers to conduct a simulation of reductions in energy costs and CO₂ emissions that would result from replacing models.

> [Eco Calculator](#)

https://www.biz.konicaminolta.com/environment/eco_calculator/index.html

Contributing to the Reduction of Environmental Impact through Print on Demand (POD) Service

Contributing to cost reductions and energy savings by undertaking customers' printing work

The POD service offered by Kinko's Japan Co., Ltd. handles printing in a short time according to customers' requests. For example, by using this service during their busy seasons, customers no longer need to always have enough of their own printers ready to handle the print volume of peak times. This allows customers to keep down costs for installing and maintaining equipment, and it also translates into resource and energy savings for society as a whole.



Reducing Environmental Impact in Sales Activities

Reducing CO₂ Emissions Associated with Sales Activities

Introducing Eco-friendly Vehicles to Its Sales Fleet and Promoting Eco-driving

Konica Minolta promotes the management and reduction of CO₂ emissions from the business vehicles operated by its sales companies around the world. The Group is promoting measures such as reducing the amount of travel through more efficient sales and service activities, introducing eco-friendly vehicles with low emissions of CO₂, and eco-driving to reduce energy consumption.

Eco-driving Initiatives at a Sales Company in Japan

Konica Minolta Japan, Inc. has installed a vehicle operation management system in company-owned vehicles. This system constantly gathers and stores data about the way company-owned cars are being used, including dangerous driving habits such as sudden acceleration and deceleration, as well as driving time, fuel consumption, and so on. Based on the data, drivers of company vehicles are given safe driving guidance. It is also used in eco-driving initiatives to lower fuel costs and reduce the environmental impact of company vehicle use.

Adoption of Renewable Energy

Renewable Energy Initiatives

Konica Minolta is generating and using renewable energy at multiple sites. Konica Minolta Business Solutions (Belgium) N.V./S.A. has been generating electricity with a photovoltaic installation on the roof of its building since 2010 and uses electricity to power its offices and showrooms. Meanwhile, Konica Minolta Business Solutions, U.S.A., Inc. built a photovoltaic installation in a parking lot in 2013 to generate electricity to power its offices.

Konica Minolta Business Solutions Europe GmbH, based on Germany, switched to 100% hydro-energy-derived power at all of its sites, including branches, through a contract with a power company in 2016.



Operating on 100% hydro-energy-derived power (Germany)



Photovoltaic installation in the company parking lot (United States)

Carbon Offsetting Service

Carbon Offsetting for Office and Production Printing

Enabling carbon neutrality is a carbon-offsetting service that uses emissions credits to offset CO₂ emissions at every stage of the product lifecycle, from procurement to use. Konica Minolta Business Solutions Europe GmbH introduced the service for office and production printers in July 2015 and offers it across the whole of Europe.

So far it has been introduced in 11 countries, including Germany, France, and the Netherlands, to offset CO₂ emissions throughout the product lifecycle. In addition to these activities, the company uses carbon offsetting for CO₂ emissions from commuting and business trips as well as events such as international exhibitions. It has offset a total of over 16,000 tons of CO₂ emissions thus far as a result. Konica Minolta will increase the number of countries eligible in order to contribute more to the creation of a sustainable planet and society.

Environmental Contribution Activities and Initiatives to Raise Employees' Environmental Awareness

"Sustainable Day" to Raise Employees' Environmental Awareness

Konica Minolta Business Solutions France S.A.S., a sales company in France, holds a Sustainable Day that encourages eco-friendly initiatives and participation in charitable organizations, in an effort to raise employees' awareness of CSR. Enabling contact with various initiatives, such as education about environmental policies, the sale of honey harvested by the company, the use of eco-friendly vehicles (electric cars), and appropriate waste disposal, this event is an opportunity for each and every employee to gain even greater awareness about the creation of a sustainable society.



Beekeeping with the Aim of Raising Awareness of Biodiversity

Konica Minolta Business Solutions France S.A.S. has greened the roof of its building in Paris and set up bee nest boxes to keep bees. There is a tradition of valuing honeybees in France, and people understand the importance of beekeeping, especially in a city with such a high population density. The honeybees raised in these nest boxes help to pollinate many kinds of plants such as fruit trees, vegetables, and flowers in the surrounding area.

Moreover, the honey that was collected was bottled and sold to employees, with the proceeds donated to a charity fund. Through this initiative, the company is raising employees' awareness of the preservation of biodiversity and also contributing to the community.



Supporting the Green Marathon, the Objective of Which Is Reforestation in Ethiopia

The Green Marathon has been held in Rennes, France since 2011 with the objective of reforestation in Ethiopia. In an endorsement of this goal, Konica Minolta Business Solutions France S.A.S. has continued to support the marathon since its inception.

The marathon intends to contribute to society in various ways, including the spirit of sport and the protection of the natural environment. It conducts an initiative to plant one tree per kilometer run by each participant, in order to support the restoration of forests in Ethiopia, a country where 1,400 square kilometers of forest is lost every year.



"Eat Green Week" Held to Improve Employee Environmental Awareness

Each year Konica Minolta Business Solutions (HK) Ltd. holds an event to raise employee awareness of environmental protection based on a theme rooted in daily life. This year, the company promoted "Eat Green Week." The aim of the project was to raise awareness that CO₂ emissions are much lower for vegetable production than for meat production. Employees were encouraged to make greener meal choices, thereby reducing their environmental impact. Everyone who participated was able to deepen their understanding of environmental protection.



Eat Green Week promotion

Reducing CO₂ Emissions from Distribution

In order to reduce CO₂ emissions associated with distribution, transportation must be streamlined and means of transportation with little environmental impact must be chosen. Konica Minolta is reducing CO₂ emissions derived from distribution operations by measures such as shortening transportation distances through optimization of logistics facilities and routes worldwide, reducing the number of containers through improved loading efficiency.

Major Initiatives

Optimizing Shipping Container Loading Efficiency

Konica Minolta is reducing CO₂ emissions and increasing the efficiency of shipping container loading during transportation by employing consolidated services based on loads. In the Business Technologies Business, for example, when Konica Minolta delivers office equipment to various European countries from its distribution center in Germany, achieving optimal loading efficiency according to the size, shape and changes in the logistic quantity of products is one of the key challenges. The company has been improving loading efficiency through the introduction of a loading simulation program.

Furthermore, since fiscal 2016, Konica Minolta has improved loading efficiency by optimizing the packaging form to suit the shipping conditions, focusing on marine transportation of parts procured in Japan to plants in China and ASEAN for assembly, shipment of products from Chinese warehouses to distributors worldwide, and land transportation of products manufactured in Mexico into the U.S. As a result of these efforts, Konica Minolta reduced CO₂ emissions by about 210 tons in fiscal 2018.

Promoting a Modal Shift

Konica Minolta has been promoting a modal shift for the transportation of products and parts, switching from aircraft and trucks to ships, railways, and other means that emit less CO₂.

In Europe, for instance, it uses barges that run along the Rhine River as the means of transportation from the Port of Rotterdam in the Netherlands to its base warehouse in Emmerich, Germany. In the U.S., it has reduced CO₂ emissions by using railroads when transporting cargo from the Port of Los Angeles on the West Coast to the interior and the East Coast.

Reconsidering Distribution Routes and Consolidating Logistics Facilities

Konica Minolta is reducing CO₂ emissions from its distribution processes by restructuring its logistics facilities both in Japan and outside of Japan.

In fiscal 2018, the company continued its efforts from the previous fiscal year to streamline logistics by optimizing distribution routes for products and service parts shipped from office equipment production and distribution sites in China and ASEAN to customers worldwide.

In production procurement, at its Malaysian factory, Konica Minolta took the external warehouses and parts supplier production sites dotted around distant locations and consolidated them in the vicinity of the factory, establishing a Smart Industrial Center (SIC). This reduced the transportation distance considerably, enabling achievement of just-in-time (JIT) supply to the factory. Transportation distances were also reduced considerably by changing parts shipped to Malaysia from Chinese parts suppliers to Malaysian production.

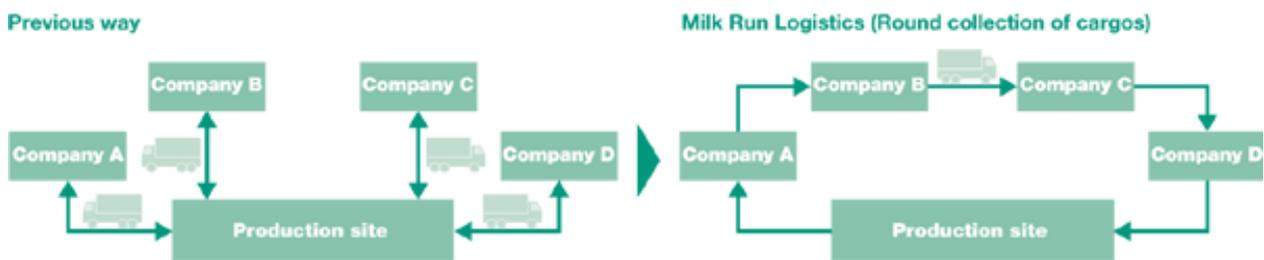
Moreover, with the proactive utilization of a lead logistics provider (LLP) for distribution in Japan, Konica Minolta reorganized distribution sites, revised routes, and utilized joint transportation with other companies, thereby strategically reducing CO₂ emissions from distribution activities. Improving the efficiency of distribution routes and sites has also led to reductions in the space and energy used at distribution warehouses. These initiatives resulted in a reduction of around 470 tons in CO₂ emissions in fiscal 2018.

Milk Run Logistics (Common Collection of Cargos)

The term "milk run" originally came from the milk collecting system of dairy producers who visited dairy farms to collect milk in a single vehicle. In the manufacturing industry, it refers to a collection method in which a single vehicle is used to make rounds picking up goods from various suppliers instead of requesting each supplier to deliver goods individually.

Konica Minolta is using milk run logistics in the suburbs of Wuxi City in Jiangsu, China. This helps to reduce CO₂ emissions by shortening the total driving mileage of the trucks.

In addition, the Group is also reducing waste by using re-usable boxes instead of cartons to transport the parts.



Joint Transport

Konica Minolta Japan, Inc., a sales company, carries out joint distribution of office equipment with Epson Sales Japan Corporation, including installation work, in the Kanto and Koshinetsu areas in Japan. These initiatives result in high-quality delivery and installation operations that raise the satisfaction of customers and help reduce CO₂ emissions.

Reduction of Use of Packaging Materials

Konica Minolta is reducing packaging material usage by optimizing shapes and recycling.

Major Initiatives

Reducing the Size of Packaging for MFPs, Production Printing Machines and Consumables

Konica Minolta has developed new buffer materials, in addition to techniques to optimize conventional buffer materials, for its multi-function peripherals (MFPs) for offices and production printing machines, thereby substantially reducing the use of packaging materials. In order to confirm the actual transportation environment, the development, production and sales departments worked together to conduct an experiment in 2016. Products were sent from production sites in China on various routes by ship, truck and railway to sales companies worldwide. After arrival, they were checked to see what impact they underwent during shipment. Using these measurements as a reference, the company reexamined its packaging design concept and succeeded in streamlining the cushioning material while maintaining the equivalent shock resistance. This greatly reduced the amount of styrene foam used.

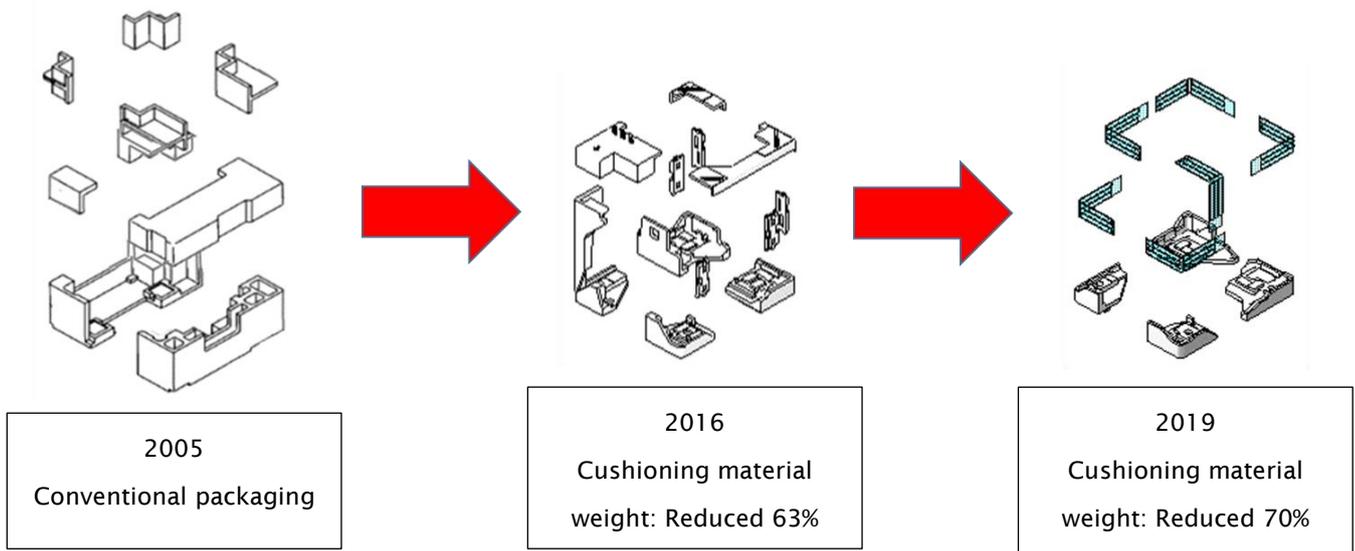
In 2019, Konica Minolta developed a new air cushioning material* that converts the various impact energies produced during transport into heat energy and succeeded in increasing the cushioning efficiency. Compared to conventional packaging from 2005, new packaging that includes this cushioning material uses 70% less styrene foam by weight ratio.

This improvement resulted in smaller packing boxes and a substantial reduction in the use of styrene foam, contributing to greater transportation efficiency, which in turn helped to substantially reduce CO₂ emissions during distribution.

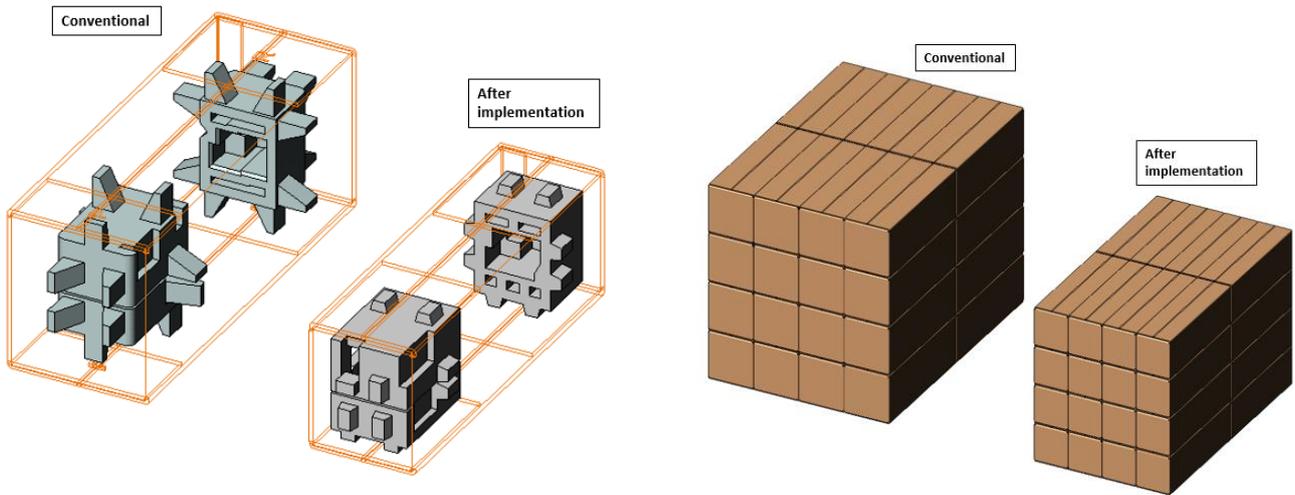
In order to expand the effects, in addition to increasing the types of office MFPs and production printing machines covered by this initiative, the company also expanded it to peripheral equipment and consumables.

*The new air cushioning material won the President's Award of the Japan Productivity Center, one of the top-ranked Japan Star awards at the Japan Packaging Contest 2019 sponsored by the Japan Packaging Institute.

Example of downsized packaging for office MFPs and the application of new air cushioning material



Example of downsized packaging for consumables



Recycling Used Packaging Materials

Konica Minolta's sales companies worldwide are also working hard to recycle used packaging materials. Konica Minolta Business Solutions (UK) Ltd., a sales company in the UK, established the "Greenhub" recycling center inside its logistics warehouse. It separates used packaging materials for MFPs and production printing machines into cardboard, styrene foam, film, and wood, and then sells them to a local recycling operator as material for recycling. In the Greenhub, it pulverizes and compresses styrene foam, which has poor transportation efficiency due to its large volume relative to weight, in an effort to reduce environmental impact associated with its transportation. The Group is carrying out similar initiatives at sales companies in France, Belgium, Germany, Japan and China.



Foamed polystyrene crusher

Green Marketing

Product Recycling

Konica Minolta has developed recovery and recycling programs for used products in regions around the world, each one tailored to local legal systems and market conditions.

Recovery and Recycling of Used Products

Konica Minolta has a program for collecting used MFPs, printers and other products from customers through the Konica Minolta Group's sales companies around the world. These products are recycled by contractors that have received approval or otherwise met regulatory requirements in each country.

Konica Minolta's recovery and recycling program complies with the waste disposal laws in each country. When forming agreements with contractors, Konica Minolta asks them to comply with the necessary laws and regulations in each location. Moreover, Konica Minolta conducts audits using reports on recycling conditions and appropriate disposal obtained via regular on-site monitoring. In Japan, Konica Minolta carries out on-site inspections once every three years to confirm recycling conditions, including compliance with environmental laws and regulations.

For example, in Japan, after collecting used MFPs and printers from eight collection centers, the products are recycled at 7 designated contractors. The collected products are taken apart by hand, rather than crushed mechanically, to raise the recycling rate. After dismantling, the parts are separated according to whether they are metal or plastic, for example, and many are reused as materials. Those that cannot be reused as materials are reused as fuel.

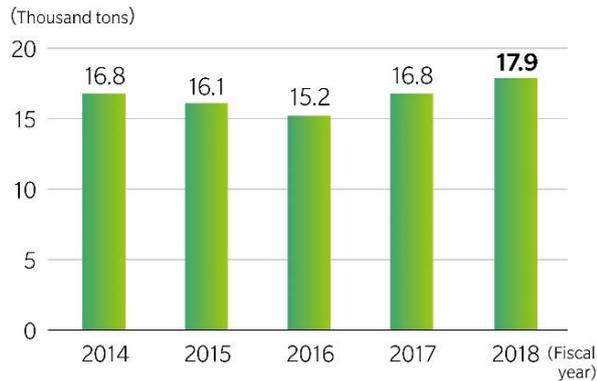


Recycling process at a partner company

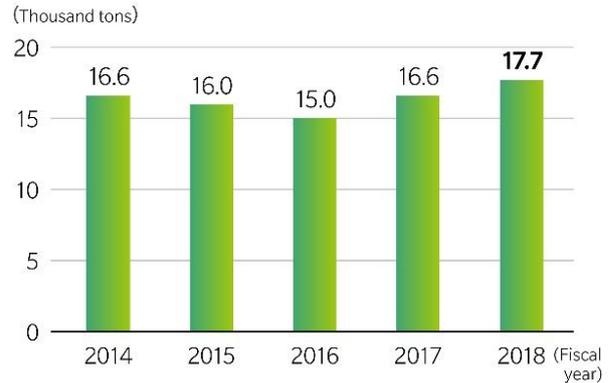
In addition, Konica Minolta has received approval from Japan's Ministry of the Environment to dispose of copiers, MFPs and printers that it has sold based on a special system for wide-area treatment of industrial waste. Konica Minolta operates a fee-based recovery program for collecting and recycling used printers and copiers from corporate clients.

Outside Japan, Konica Minolta is undertaking recycling programs tailored to conditions in specific countries. In Europe, for example, the company has adopted measures in compliance with the EU directive on the disposal of waste electrical and electronic equipment (WEEE). It meets the legal and environmental labeling requirements in various countries including Asian countries such as China and India.

Product Recovery Volume (Worldwide)



Recycling Volume for Recovered Products (Worldwide)



Machines collected in Japan in fiscal 2018

- Estimated collection rate: 70%
- Recycling rate: 99%

Participation in Industry Organizations and Networks

Example in Japan

Konica Minolta participates in the recovered equipment exchange system run by the Japan Business Machine and Information System Industries Association (JBMIA). Through this initiative, equipment turned in by manufacturers of copiers, MFPs and digital printers, including Konica Minolta, are collected at shared collection centers and returned to manufacturers, thus promoting the recovery and recycling of products in the industry overall. There are 35 collection sites and nine exchange centers for collected machines from Hokkaido to Okinawa, covering all of Japan.

Example in Europe

In France, Konica Minolta Business Solutions France S.A.S. established CONIBI with joint investments from 17 office equipment manufacturers and contracted recovery operations to this joint company. COIBI created its own free collection system and promotes the recycling of toner cartridges and consumables.

≥ [CONIBI](https://www.conibi.fr/) 
<https://www.conibi.fr/>

Communication with Society

Participating in Shows and Exhibits

EcoPro Environmental Exhibition

Konica Minolta has participated in EcoPro, Japan's largest environmental exhibition, held every December since 1999 at Tokyo Big Sight (Tokyo International Exhibition Center).

At the exhibition, the company introduces various group-wide initiatives to reduce environmental impact, including presentations of the Konica Minolta Environmental Policy, environmental initiatives, and environmentally friendly products.

Dialogue with Customers

Konica Minolta aims to increase its contribution to the global environment throughout the value chain. To do so, it promotes Green Marketing activities while offering its own environmental technologies and expertise to support the environmental management activities of customers.

In Japan, the company holds environmental seminars, lectures and factory tours, and in fiscal 2018, a total of 800 customers from 415 companies participated. Konica Minolta exhibited at EcoPro 2018 in December, and provided environmental consultations to 239 customers. In China, a total of 6 environmental management exchanges and factory tours were held at 2 Konica Minolta sites in fiscal 2018, and a total of 145 customers from 93 companies. Many customers were impressed by Konica Minolta's environmental management and requested environmental support.

Dialogue with Shareholders

In recent years, "ESG investment," which takes into account not only financial information, but also corporate approaches to the environment, social, and governance, has been rapidly growing. Konica Minolta proactively disseminates information in response to the interests of such investors.

In February 2018, Shoei Yamana, President and CEO of Konica Minolta, Inc., took the podium at a seminar for finance executives organized by a major Japanese telecommunications company. He conveyed Konica Minolta's ESG initiatives by delivering a keynote speech and participating in a panel discussion at this seminar, which was attended by top executives of financial institutions.



Keynote speech at a seminar for finance executives

Environmental and Social Contribution Activities

Konica Minolta is involved in various environmental and social contribution activities.

> [Protecting the Natural Environment](#)

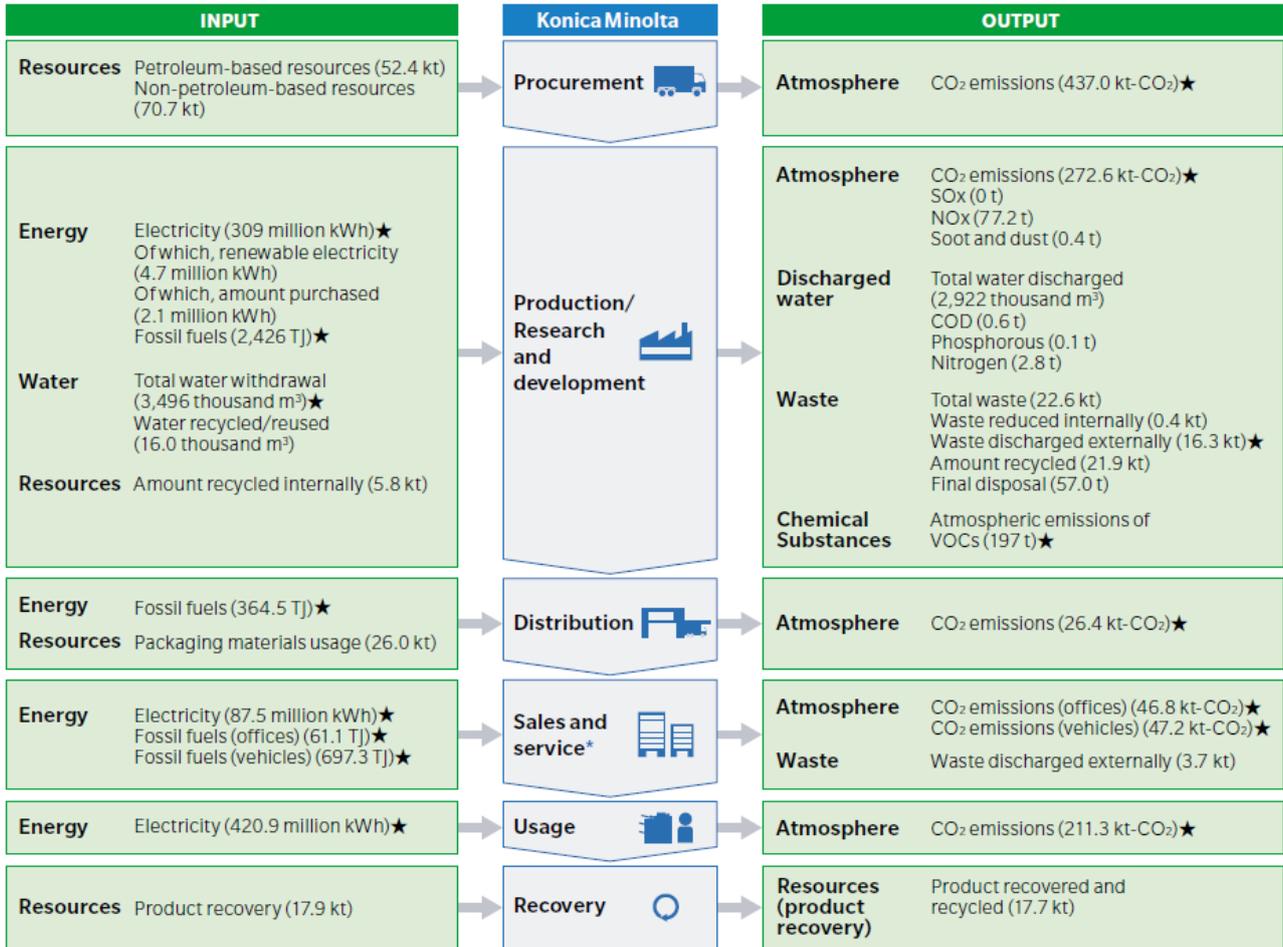
<https://www.konicaminolta.com/about/csr/contribution/environment/index.html>

Environmental Data

Konica Minolta measures the amount of energy and resources used in all its business activities, as well as the amount of greenhouse gases emitted and the amount of waste produced at each stage of a product's life cycle. These results are analyzed and used to facilitate concrete approaches to improvement.

Overall View of Environmental Impacts Resulting from Business Activities

(Fiscal 2018)



* Boundary: All consolidated sales companies worldwide

★: Indicators assured by KPMG AZSA Sustainability Co., Ltd.

Standards for Calculating Environmental Data

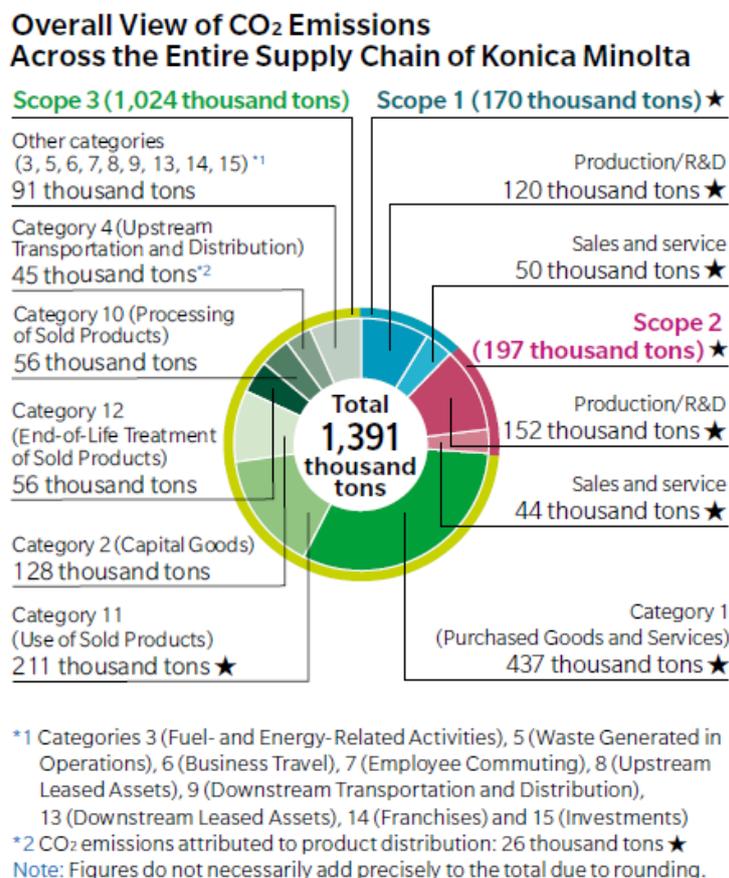
See pages 97 to 99 for the standards for calculating environmental data for each stage of the product lifecycle related to Konica Minolta business activities.

Calculating CO₂ Emissions Across the Entire Supply Chain

Konica Minolta has calculated the CO₂ emissions associated with the Group's activities across its entire supply chain, from the upstream to the downstream aspects of its operations, based generally on the standards of the GHG Protocol,* the international standard. In fiscal 2018, the calculation showed that CO₂ emissions throughout the supply chain were approximately 1.39 million tons, which represents an increase of approximately 3.9% from fiscal 2017. Emissions from the Group's activities including direct emissions from fuel use (Scope 1) plus indirect emissions from the consumption of purchased electricity, heat or steam (Scope 2) totaled approximately 0.37 million tons, or approximately 26% of all emissions. Other indirect emissions (Scope 3) associated with the Group's activities totaled approximately 1.02 million tons, accounting for approximately 74% of all emissions. CO₂ emissions for "purchased goods and services" accounted for 31.4% of emissions across the entire supply chain. Although the amount of resources needed per product declined thanks to the development of new models with resource-saving designs, the number of products sold in the Office Business and Professional Print Business increased significantly, resulting in an overall increase in CO₂ emissions. In terms of the "use of sold products," which accounted for 15.2% of emissions, the Group is working to develop features that encourage customers to save energy, in addition to reducing the power consumption of the products themselves. Konica Minolta will share information with relevant stakeholders in the future based on the results of these calculations and move forward with CO₂ emissions management and reduction activities throughout the supply chain.

***GHG Protocol:** Initiatives for developing an international standard for addressing greenhouse gas (GHG) emissions and climate change

(Fiscal 2018)



★: Indicators assured by KPMG AZSA Sustainability Co., Ltd.

Environmental Data

CO₂ Emissions Across the Entire Supply Chain in Fiscal 2018

Calculation Result for Each Category

Scope 1,2,3 (Category)	Overview	CO ₂ emissions (t)	Percentage of total	
Scope 1	Production / R&D	120,324	8.6%	12.2%
	Sales and service	49,511	3.6%	
Scope 2	Production / R&D	152,319	10.9%	14.1%
	Sales and service	44,423	3.2%	
Scope 3	1 Purchased goods and services	437,036	31.4%	73.6%
	2 Capital goods	128,100	9.2%	
	3 Fuel- and energy-related activities	12,062	0.9%	
	4 Upstream transportation and distribution	45,350	3.3%	
	5 Waste generated in operations	26,276	1.9%	
	6 Business travel	24,153	1.7%	
	7 Employee commuting	11,798	0.8%	
	8 Upstream leased assets	624	0.04%	
	9 Downstream transportation and distribution	13,532	1.0%	
	10 Processing of sold products	55,665	4.0%	
	11 Use of sold products	211,282	15.2%	
	12 End-of-life treatment of sold products	55,722	4.0%	
	13 Downstream leased assets	0	0%	
	14 Franchises	553	0.04%	
	15 Investments	2,326	0.2%	
Total		1,391,055	100.0%	100.0%

Note: Figures may not add up precisely to the total due to rounding.

Method of Calculation in Each Category of Scope 3 Emissions

Category	Overview	Method of Calculation
1	Purchased goods and services	Calculated by multiplying the sales amount or production amount of office equipment and consumables by a cradle-to-gate CO ₂ emission factor for each of the materials that make up a product; and for other products, multiplying the amount of material used by a cradle-to-gate CO ₂ emission factor for that material.

2	Capital goods	Calculated by multiplying the amount of investment in capital goods purchased over the year by a CO ₂ emission factor per investment value.
3	Fuel- and energy-related activities	Calculated for emissions from the extraction, production, and transportation of fuels purchased by the Group or by electricity producers for the electricity purchased by the Group. (Fuel) Calculated by multiplying the annual purchased volume by a cradle-to-gate CO ₂ emission factor for each type of fuel. (Fuels purchased and used by electricity producers) Calculated by multiplying the annual purchased volume of electricity by source, by a CO ₂ emission factor for each source. Proportion of sources in electricity generation for each country is identified from the Proportions of Generated Power by Source in Major Countries, published by the Federation of Electric Power Companies of Japan.
4	Upstream transportation and distribution	Emissions in this category are the sum of: A) emissions related to transportation of parts and raw materials the Group purchases, and B) emissions related to transportation of the Group's products. A) Calculated for emissions related to procurement distribution from suppliers to Konica Minolta's plants. Calculated by multiplying transport distance by cargo weight, and then multiplying that value by the CO ₂ emission factor for each means of transportation. B) Calculated for emissions related to shipping and distribution internationally, within Japan, within China and within Malaysia. Calculated by multiplying transport distance by cargo weight, and then multiplying that value by the CO ₂ emission factor for each means of transportation.
5	Waste generated in operations	Calculated for waste (not including valuables) from production, R&D, and sales offices. Calculated by classifying waste into different types and multiplying the amount of each type of waste entrusted to a party outside the company by a CO ₂ emission factor for each method of waste disposal.
6	Business travel	For business travel by employees of Group companies in Japan, the emissions are calculated by multiplying the annual business travel expenditure by a CO ₂ emission factor per expense for travel for each means of transportation. The CO ₂ emission factor used is that for travel by domestic air flight in Japan, which is the highest among the emission factors for all methods of travel. For Group companies outside Japan, it is estimated by multiplying the number of employees of each company by the emission amount per employee calculated based on the result in Japan.
7	Employee commuting	Calculated by multiplying the annual commutation cost by a CO ₂ emission factor per expense. The CO ₂ emission factor used is for "automobiles (buses and ride-sharing in sales vehicles)," which is the highest among the emission factors for all commuting methods. For Group companies outside Japan, it is estimated by multiplying the number of employees of each company by the emission amount per employee calculated based on the result in Japan.
8	Upstream leased assets	Most leased assets are calculated as Scope 1 and 2 emissions. Scope 3 applies only to some leased assets (e.g., data centers). Calculated by multiplying the actual annual power consumption for the leased servers by a CO ₂ emission factor for electrical power.

9	Downstream transportation and distribution	Calculated for emissions related to distribution of Konica Minolta products sold by dealers. Estimated by identifying a CO ₂ emission factor per unit of sales based on the emissions from distribution for direct sales by the main sales companies and multiplying this by dealer sales volume.
10	Processing of sold products	Konica Minolta's product lineup includes semi-finished product. Emissions in this category are calculated by identifying a CO ₂ emission factor per unit of sales based on the Scope 1 and Scope 2 emissions and sales volume of the main parts sales destinations and multiplying this by overall sales volume.
11	Use of sold products	Calculated by multiplying the number of units operating in the market (inferred from sales units each year and the life of the product) by the estimated annual amount of electrical consumption* for each model and the CO ₂ coefficient equal to the fiscal 2005 world average value specified by the GHG Protocol. The calculation method used by Konica Minolta is slightly different from the GHG Protocol method, but it enables the Group to calculate the emissions that more accurately reflect the Group's business operations and thus allows it to implement initiatives to reduce CO ₂ emissions smoothly.
12	End-of-life treatment of sold products	Calculated for emissions related to the end-of-life treatment of products themselves and their containers and packaging. Calculated by multiplying the weight of materials that make up the products sold by a CO ₂ emission factor for each type of disposal method. The calculation is made for anticipated future emissions from the end-of-life treatment of products sold in the previous fiscal year, which will be reported as the data of that fiscal year.
13	Downstream leased assets	All of Konica Minolta's product leasing is done through leasing companies. Konica Minolta does not enter into lease agreements directly with customers. Also, Konica Minolta did not lease out any large buildings or equipment. It was therefore judged that there were no emissions in this category.
14	Franchises	Emissions from Kinko's franchises in Kyushu, Hiroshima, and Shikoku fall under this category. Estimated based on the proportion of employees, based on energy usage at the head office of Kinko's Japan Co., Ltd.
15	Investments	Calculated for the emissions from the main companies in Konica Minolta's investment portfolio, in which Konica Minolta holds specified investment stocks. Calculated by multiplying the invested companies' CO ₂ emissions by Konica Minolta's shareholding ratio (%) in those companies (number of shares held by Konica Minolta / number of shares issued).

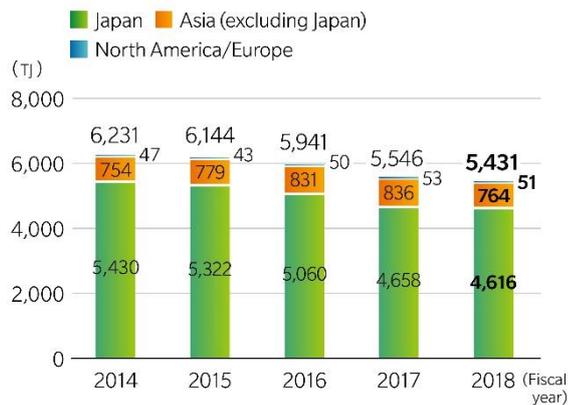
* The annual amount of electrical consumption for office equipment is estimated based on the Typical Electricity Consumption (TEC) value set by the International Energy Star Program, and for equipment for healthcare system it is estimated based on each product's specifications.

Environmental Data

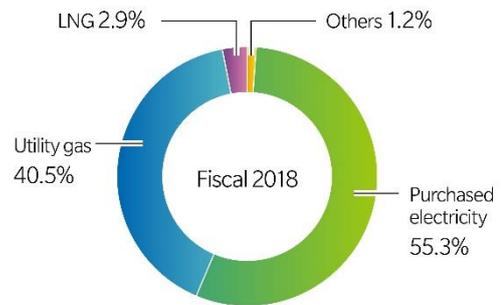
Energy / CO₂

Energy

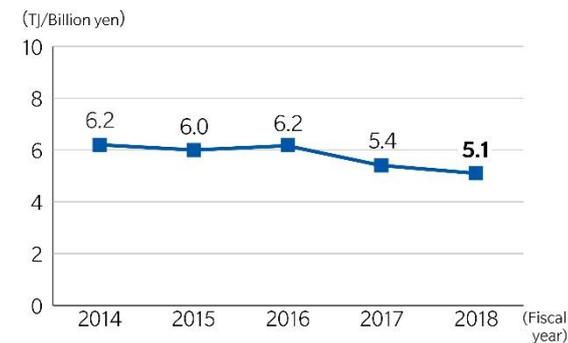
Total Energy Inputs*



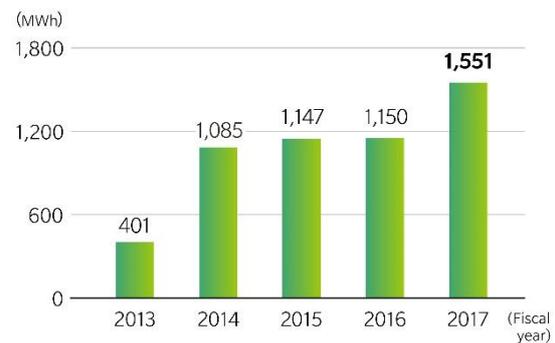
Energy Use by Type



Total Energy Inputs (per unit of sales)

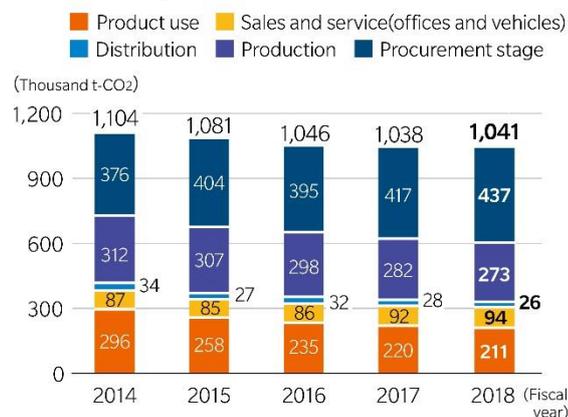


Electricity Generated Using Renewable Energy



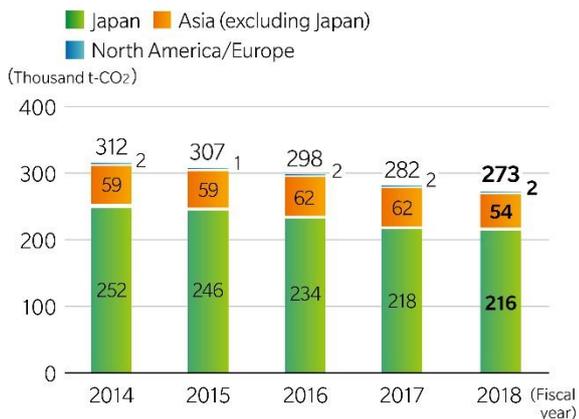
CO₂

Product Lifecycle CO₂ Emissions*

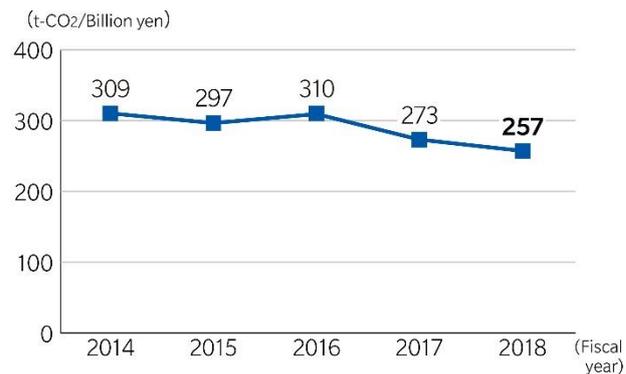


Notes: Figures do not necessarily add precisely to the total due to rounding.

CO₂ Emissions at the Production Stage*



CO₂ Emissions at the Production Stage (per unit of sales)



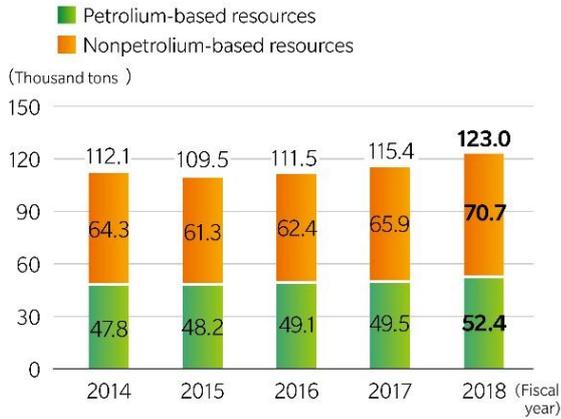
★: Indicators assured by KPMG AZSA Sustainability Co., Ltd.

Environmental Data

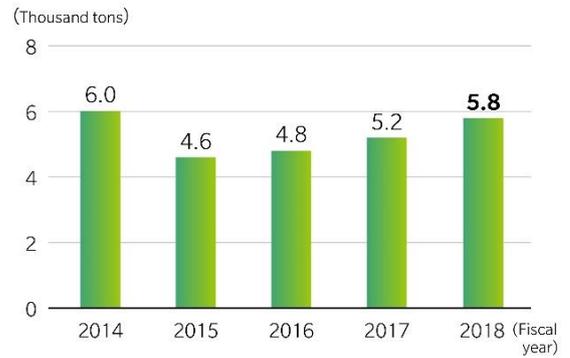
Resources

Input of resources

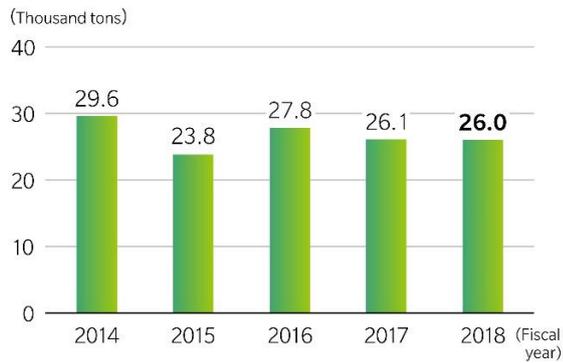
Petroleum-based and nonpetroleum-based resources input



Internal recycling

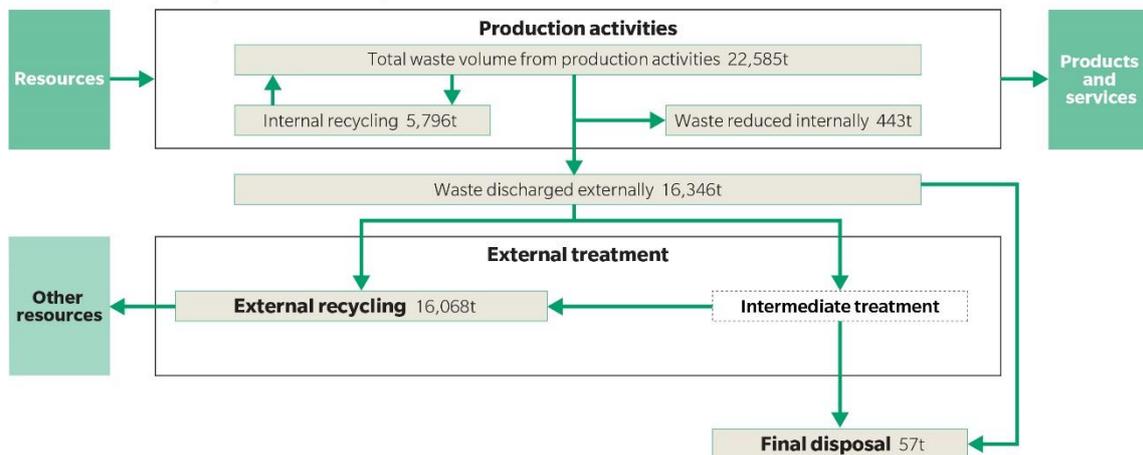


Packaging materials used

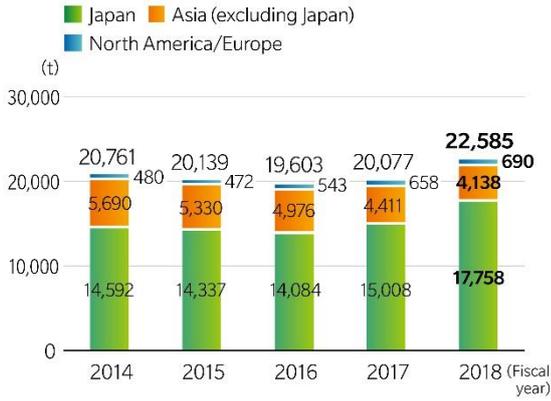


Waste

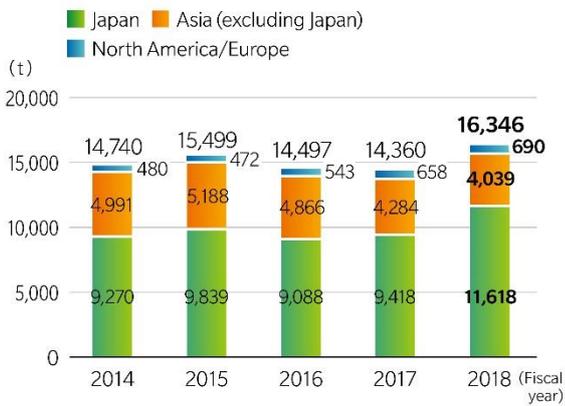
Flow of waste (Fiscal 2018)



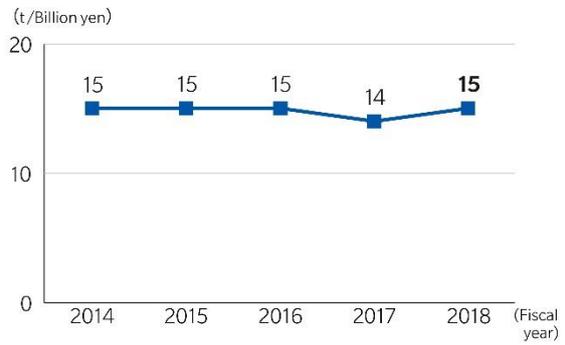
Total Waste Volume



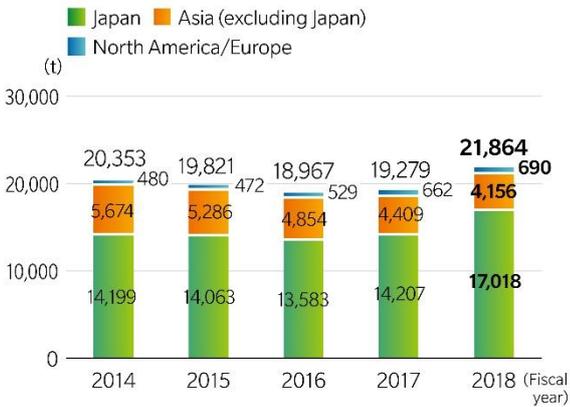
Waste discharged externally*



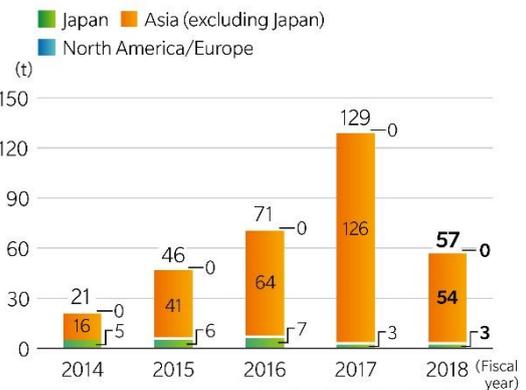
Waste discharged externally (per unit of sales)



Total Volume of Recycled Resources (Internally and Externally Recycled)

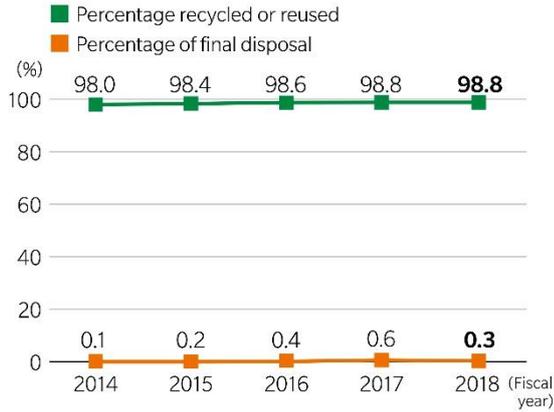


Total Volume of Final Disposal (Landfill Waste)*



* The figures are the sum of direct landfill and landfill of residual after intermediate treatment.

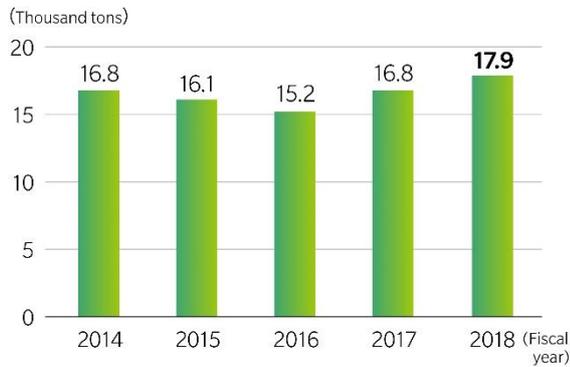
Percentage Recycled or Reused/ Percentage of Final Disposal



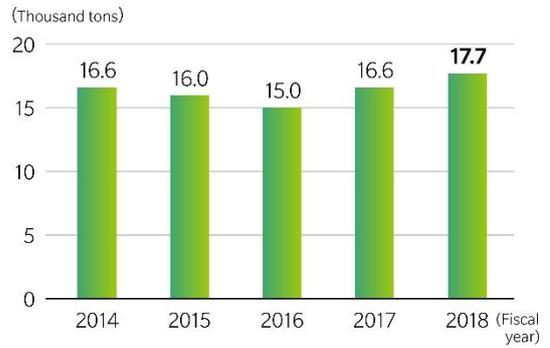
Figures do not necessarily add precisely to the total due to rounding.

Product recovery and recycling

Product Recovery Volume (Worldwide)



Recycling Volume for Recovered Products (Worldwide)



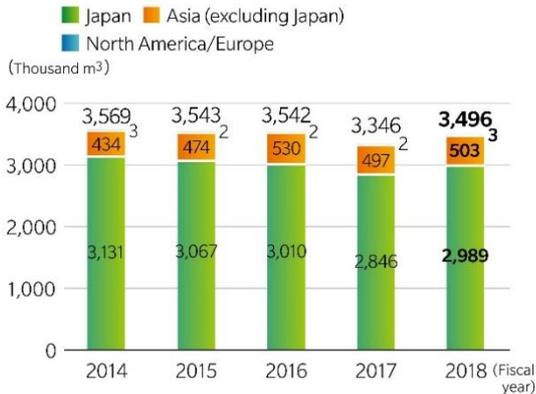
★: Indicators assured by KPMG AZSA Sustainability Co., Ltd.

Environmental Data

Water

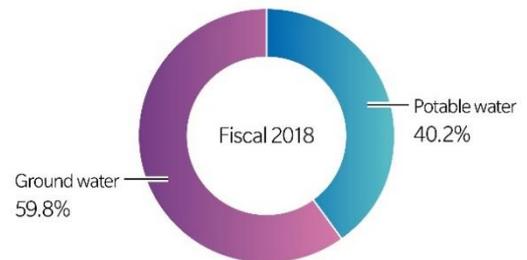
Water Consumption

Total Water Withdrawal*



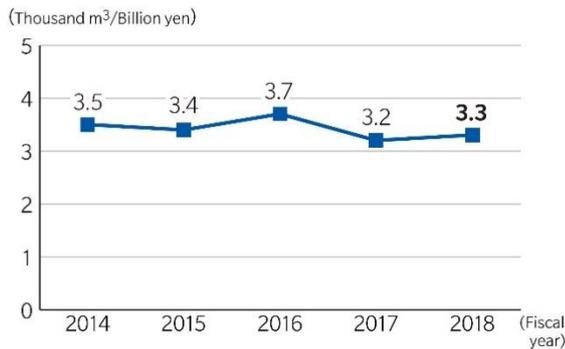
Note: The figures from fiscal 2014 onwards include water used for soil and groundwater remediation.

Water Withdrawal by Type

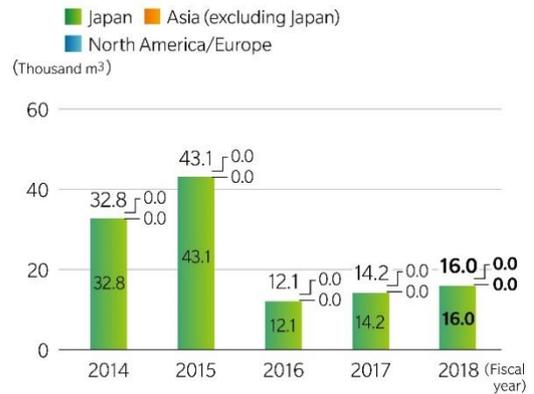


Note: Industrial water is included in potable water from fiscal 2016.

Total Water Withdrawal (per unit of sales)

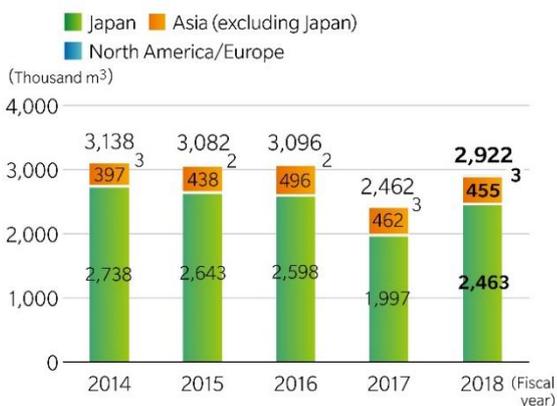


Use of recycled water

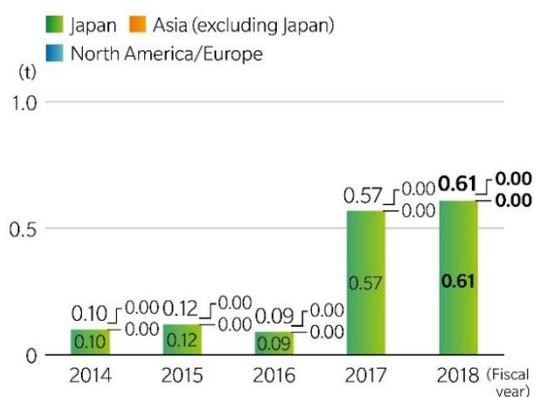


Waste Water

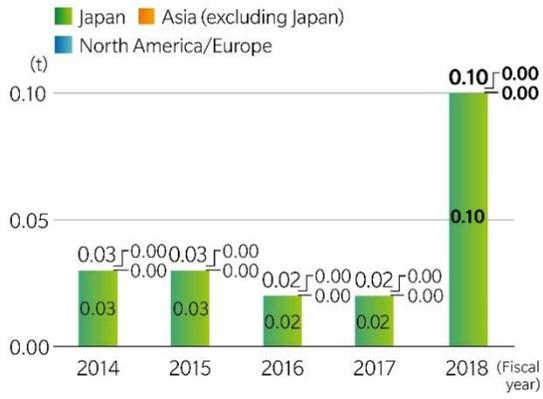
Total Wastewater



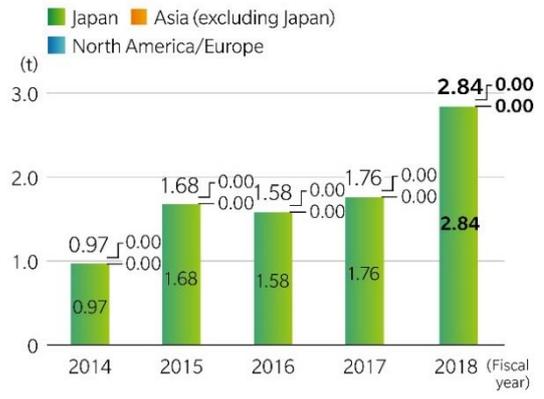
COD into Public Waters



Phosphorus Discharged into Public Waters



Nitrogen Discharged into Public Waters

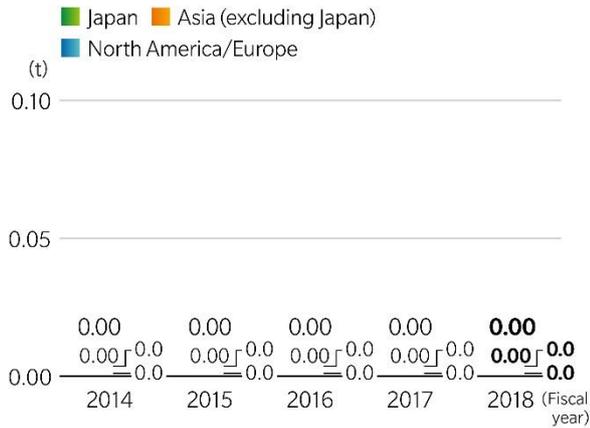


★: Indicators assured by KPMG AZSA Sustainability Co., Ltd.

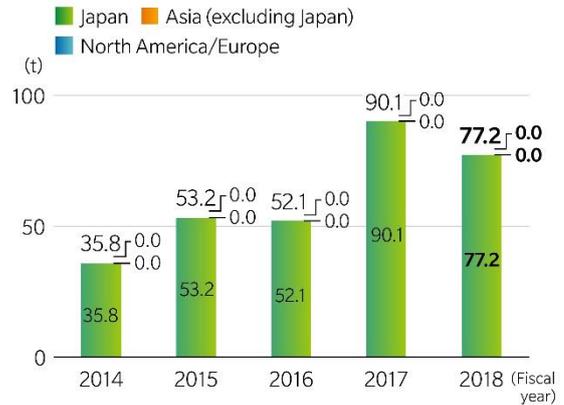
Atmosphere and Chemical Substances

Atmosphere

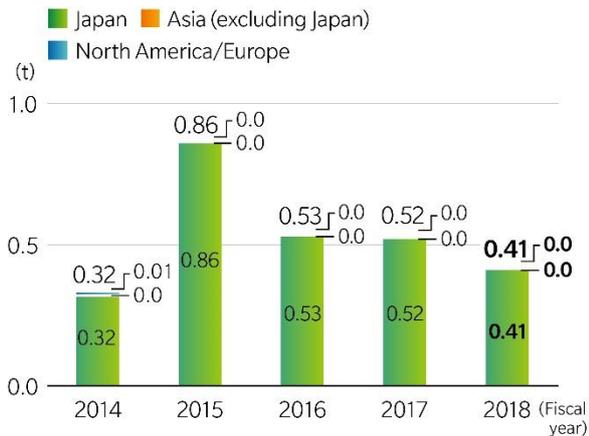
SOx Emissions



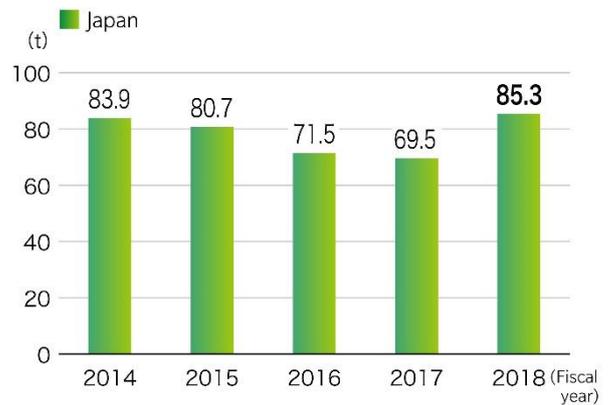
NOx Emissions



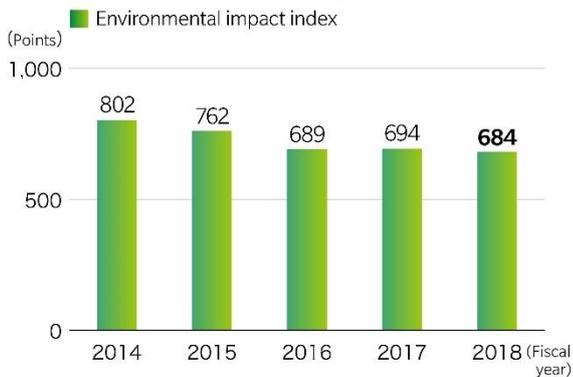
Soot and Dust Emissions



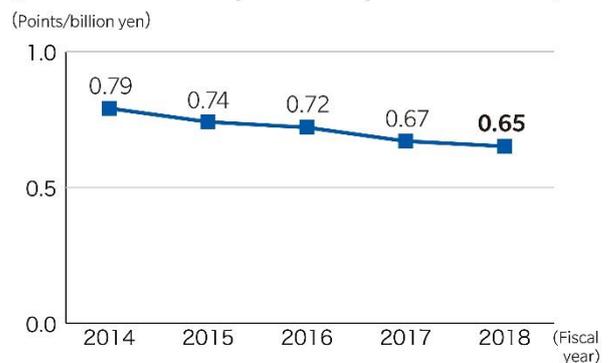
Atmospheric Emissions of PRTR Substances



Atmospheric VOC Emissions (Environmental impact index)



Atmospheric VOC Emissions (Environmental impact index per unit of sales)



*NOx, soot and dust emissions were revised due to errors in their calculation at some sites for fiscal years 2014 - 2017.

Substances Controlled by Pollution Release and Transfer Register (PRTR) System

Substances Controlled by Pollution Release and Transfer Register (PRTR) System Fiscal 2018

(t)

Identification Number	Name of Chemical Substance	Releases			Amount Transferred Externally		Recycled
		To Air	To Water	To Soil	Waste*	Sewage	
7	n-Butyl acrylate	1.5	0.0	0.0	6.1	0.0	0.0
13	Acetonitrile	1.3	0.0	0.0	2.5	0.0	0.0
81	Quinoline	0.0	0.0	0.0	7.5	0.0	0.0
181	Dichlorobenzene	0.0	0.0	0.0	2.8	0.0	0.0
186	Dichloromethane (also known as methylene dichloride)	52.8	0.0	0.0	471.8	0.0	10.2
232	N, N-Dimethylformamide	0.0	0.0	0.0	364.5	0.0	0.0
240	Styrene	6.3	0.0	0.0	18.6	0.0	0.0
275	Sodium dodecyl sulfate	0.0	0.0	0.0	0.0	1.0	0.0
300	Toluene	9.4	0.0	0.0	309.8	0.0	0.0
392	n-Hexane	0.4	0.0	0.0	54.2	0.0	0.0
395	Water-soluble salts of peroxodisulfuric acid	0.0	0.0	0.0	1.5	0.0	0.0
412	Manganese and its compounds (Mn equivalent)	0.0	0.0	0.0	2.2	0.0	0.0
415	Methacrylic acid	0.3	0.0	0.0	1.5	0.0	0.0
420	Methyl methacrylate	0.0	0.0	0.0	0.0	0.0	0.0
438	Methylnaphthalene	13.3	0.0	0.0	0.0	0.0	0.0

* In accordance with PRTR system definitions, even if materials were recycled later, they were counted here as waste if they were not sold at a profit.

* Boundary of data: Charts cover Konica Minolta Group production sites in Japan.

Environmental Data

Environmental Performance Data for Each Site

Sites of Konica Minolta, Inc. in Japan (FY2018)

Site name / Location	Main Business Contents	CO ₂ Emissions (t-CO ₂)	Waste discharged externally (t)	Final Disposal (t)	Total Water Inputs (m ³)	Water		Wastewater (m ³)	Atmospheric VOC Emissions (t)	Atmospheric Emissions of PRTR Substances (t)
						Ground Water (m ³)	Drinking Water (m ³)			
Tokyo Site Hino (Hino, Tokyo)	Development, manufacturing and sales of healthcare and printing equipment materials and peripherals	18,990	833	0.0	362,347	362,347	-	326,407	*1	0.0
Tokyo Site Hachioji (Hachioji, Tokyo)	Development and sales of office equipment, optical devices, and healthcare products	16,526	668	0.0	105,477	90,841	14,636	105,477	*1	0.0
Kofu Site (Kofu, Yamanashi Prefecture)	Manufacturing of parts for illumination	5,688	34	0.0	146,111	72,909	73,202	110,173	*1	0.0
Mizuho Site (Toyokawa, Aichi Prefecture)	Development and manufacturing management of office equipment-related products	4,400	433	0.03	20,511	-	20,511	19,771	*1	0.0
Mikawa Site (Toyokawa, Aichi Prefecture)	Development of office equipment-related products	756	116	0.0	8,782	-	8,782	6,558	*1	0.0
Toyokawa Site (Toyokawa, Aichi Prefecture)	Manufacturing management of office equipment-related products, and development and manufacturing of planetariums	374	15	0.0	6,409	-	6,409	5,747	*1	0.0
Osakasayama Site (Osakasayama, Osaka)	Development and manufacturing of optical products	5,812	108	2.1	74,411	35,303	39,108	52,906	2.4	0.0
Sakai Site (Sakai, Osaka)	Development, manufacturing and sales of measuring instruments for industrial applications	1,549	67	0.0	36,790	25,448	11,342	36,790	*1	0.0
Itami Site (Itami, Hyogo Prefecture)	Office equipment software development	823	71	0.0	14,084	722	13,362	9,461	*1	0.0

Takatsuki Site (Takatsuki, Osaka)	Development of office equipment-related products and optical systems for industrial use	1,214	18	0.0	9,755	-	9,755	5,843	*1	0.0
Kobe Site, Seishin Site, Kobe Second Site* (Kobe, Hyogo Prefecture)	Development, manufacturing and sales of electronic materials (TAC films)	125,239	2,955	0.1	825,662	333,103	492,559	544,985	57.6	49.6
Kumamoto Site (Tamana, Kumamoto Prefecture)	Manufacturing of ink jet heads for industrial use	2,333	77	0.0	17,707	17,707	-	16,822	*1	13.3

* Includes data of some group companies.

Affiliate Production Sites in Japan (FY2018)

Site name or Company name / Location	Items produced	CO ₂ Emission (t-CO ₂)	Waste discharge externally (t)	Final Disp osal (t)	Total Water Inputs (m ³)	Wastewater		Atmos pheric VOC Emission (t)	Atmosphe ric Emission of PRTR Substance s (t)	
						Ground Water (m ³)	Drinking Water (m ³)			
Konica Minolta Supplies Manufacturing Co., Ltd. (Kofu, Yamanashi Prefecture)	Consumables for MFPs, laser printers and printing equipment	11,689	419	0.0	386,040	368,891	17,149	404,436	48.3	17.0
Konica Minolta Supplies Manufacturing Co., Ltd., Tatsuno Site (Tatsuno-machi, Nagano Prefecture)	Consumables for MFPs, laser printers and printing equipment	8,293	975	0.0	420,502	419,108	1,394	420,502		
Konica Minolta Mechatronics Co., Ltd., Ueda Site* (Toyohashi, Aichi Prefecture)	Parts for consumables for MFPs and laser printers	1,521	534	0.0	121,187	120,727	460	121,187	*2	0.0
Konica Minolta Mechatronics Co., Ltd., Head Office* (Toyokawa, Aichi Prefecture)	Consumables and mechanism elements for MFPs and printers	767	327	0.0	4,364	-	4,364	4,364	*2	0.0
Konica Minolta Mechatronics Co., Ltd., Tsuru Site (Tsuru, Yamanashi Prefecture)	Electrical plates for MFPs and printers	1,005	46	0.0	6,047	-	6,047	6,047	*2	0.0
Konica Minolta Mechatronics Co., Ltd., Fuefuki Site (Fuefuki, Yamanashi Prefecture)	Optical devices and inkjet printheads	4,672	692	0.6	241,994	241,994	-	241,444	*2	0.0
Konica Minolta Technoproducts Co., Ltd., Head Office (Sayama, Saitama Prefecture)	Healthcare imaging equipment	2,083	87	0.0	7,831	-	7,831	7,831	*2	0.0
Konica Minolta Chemical Co., Ltd., Shizuoka Site (Fukuroi, Shizuoka Prefecture)	Chemicals	2,658	3,141	0.0	173,260	-	173,260	159,999	26.5	5.5

Affiliate Production Sites Outside Japan (FY2018)

Site name or Company name / Location	Items produced	CO ₂ Emissions (t-CO ₂)	Waste discharged externally (t)	Final Disposal (t)	Total Water Inputs (m ³)	Water		Wastewater (thousand m ³)	Atmospheric VOC Emissions (t)
						Ground Water (m ³)	Drinking Water (m ³)		
Konica Minolta Business Technologies (Wuxi) Co., Ltd. (China)	MFPs, printing equipment and consumables	8,272	918	0.0	86,089	-	86,089	64,222	*2
Konica Minolta Business Technologies (Dongguan) Co., Ltd. (China)	MFPs, printing equipment and consumables	7,931	1,316	0.0	139,976	-	139,976	139,976	*2
Konica Minolta Supplies Manufacturing U.S.A., Inc. (U.S.A.)	Consumables for MFPs and laser printers	1,271	277	0.0	829	-	829	829	*2
Konica Minolta Supplies Manufacturing France S.A.S. (France)	Consumables for MFPs and laser printers	509	413	0.0	2,541	-	2,541	2,541	*2
Konica Minolta Business Technologies (Malaysia) Sdn. Bhd. (Malaysia)	Consumables for MFPs and printing equipment	11,404	1,431	50.5	141,882	-	141,882	141,882	*2
Konica Minolta (Xiamen) Medical Products Co., Ltd. (China)	Healthcare imaging equipment	194	191	0.0	515	-	515	210	*2
Konica Minolta Opto (Dalian) Co., Ltd. (China)	Optical devices	24,300	162	3.7	122,300	-	122,300	97,840	64.6
Konica Minolta Optical Products (Shanghai) Co., Ltd. (China)	Optical devices	2,368	20	0.05	12,565	-	12,565	11,309	*2

* Sites outside Japan are not controlled by Japan's PRTR System.

* The amount of substances subject to the PRTR Law released to the atmosphere from sites in Japan do not need to be calculated if the quantity handled is no more than 1 ton.

*1 Outside the scope of calculation or under the threshold defined in Standards for Calculation

*2 Under the threshold defined in Standards for Calculation

Standards for Calculating Environmental Data

Standards for Calculating Environmental Data (CO₂ Emissions)

Boundary and Standards for Calculation

Stage		Methods of Calculation
1. Procurement	1) Boundary	Office equipment and consumable supplies, optical systems for industrial use, equipment for healthcare system manufactured and sold by Konica Minolta, Inc.
	2) Standards	Calculated by multiplying the sales amount or production amount of office equipment and consumables by a cradle-to-gate CO ₂ emission factor for each of the materials that make up a product; and for other products, multiplying the amount of material used by a cradle-to-gate CO ₂ emission factor for that material.
2. Production / R&D	1) Boundary	All production and R&D sites around the world
	2) Standards	CO ₂ emissions are calculated by multiplying the amount of energy used at each site by the following Fuel: Coefficients stipulated in Japan's Act on Promotion of Global Warming Countermeasures Electricity in Japan: Fiscal 2005 average value of all electrical power sources, as specified by the Federation of Electric Power Companies of Japan Electricity outside Japan: Fiscal 2005 emissions coefficients applicable to each country, as specified by the GHG Protocol
3. Distribution	1) Boundary	Japanese domestic distribution, Chinese and Malaysian production distribution (from factory to port), and international distribution of office equipment, optical systems for industrial use, performance materials, and equipment for healthcare systems
	2) Standards	CO ₂ emissions are calculated by multiplying transport distance by cargo weight, and then multiplying that value by the CO ₂ emissions coefficient of each means of transportation. ¹⁾ Chinese and Malaysian production distribution and international distribution: Coefficients specified by the GHG Protocol Japanese domestic distribution: Coefficients stipulated in Japan's CO ₂ Emissions Calculation Method for Logistics Operations—Joint Guidelines Ver.3.0
4. Sales and service	1) Boundary	All consolidated sales companies around the world
	2) Standards	Offices: CO ₂ emissions are calculated by multiplying the amount of energy used at sites ^{*2} by the following coefficients. Fuel: Coefficients stipulated in Japan's Act on Promotion of Global Warming Countermeasures Electricity in Japan: 2005 average value of all electrical power sources, as specified by the Federation of Electric Power Companies of Japan Electricity outside Japan: 2005 emissions coefficients applicable to each country, as specified by the GHG Protocol Vehicles: CO ₂ emissions are calculated by multiplying the amount of vehicle fuel used ³⁾ by the following Fuel: Coefficients stipulated in Japan's Act on Promotion of Global Warming Countermeasures
5. Usage	1) Boundary	Office equipment and equipment for healthcare system

		* Optical products are excluded since they are used as parts of other companies' products
	2) Standards	CO ₂ emissions are calculated by multiplying the number of units operating in the market (inferred from sales units each year and the life of the product) by the estimated annual amount of electrical consumption ^{*4} for each model and the CO ₂ coefficient equal to the fiscal 2005 world average value specified by the GHG Protocol.

*1 Estimated for optical systems for industrial use based on sales.

*2 The amount of energy used includes some estimated values.

*3 The amount of fuel used includes some estimated values.

*4 The annual amount of electricity consumption for office equipment is estimated based on the Typical Electricity Consumption (TEC) value set by the International Energy Star Program, and for equipment or healthcare systems it is estimated based on each product's specifications.

Note: Figures in graphs may not add up to totals due to rounding.

Standards for Calculating Environmental Data (Emissions Other Than CO₂)

Boundary and Standards for Calculation

Item		Methods of Calculation
1. Petroleum-based resource usage in products	1) Boundary	Office equipment and consumable supplies, performance materials, optical systems for industrial use, and equipment for healthcare systems produced and sold by Konica Minolta, Inc..
	2) Standards	Calculated by multiplying the raw material or part weight by content percentage of petroleum-based resources set for each material, based on the product specification
2. Packaging materials usage	1) Boundary	Raw material and parts used in packaging for office equipment and consumable supplies, performance materials, optical systems for industrial use, and equipment for healthcare systems
	2) Standards	Calculated by multiplying the weight of packaging material per single product (based on product specifications, etc.) by the number of units of the product sold, based on sales results
3. Waste discharged Externally from manufacturing	1) Boundary	All production and R&D sites around the world
	2) Standards	The total actual weight of waste discharged externally from production ^{*1}
4. Final disposal	1) Boundary	All production and R&D sites around the world
	2) Standards	The total weight of final disposal ^{*2} (Weight of waste discharged externally from production × Percentage of final disposal ^{*3})
5. Atmospheric emissions of VOCs	1) Boundary	Production sites around the world with ten or more environmental impact index ^{*4} points, when points are added for every compound that is rated of one point or more.
	2) Standards	The sum of the environmental impact index for atmospheric emissions of VOCs ^{*5}
6. Water consumption	1) Boundary	All production and R&D sites around the world
	2) Standards	The total amount of water intake (city water, ground water, industrial water)

*1 Of the waste (refuse, etc.) generated at production and research and development sites for which Konica Minolta has responsibility as generator of waste, the amount discharged outside the Konica Minolta site. However, some wastes unrelated to production are excluded.

*2 Except for residues after recycling.

*3 Percentage of final disposal are calculated based on the value from industrial waste disposal companies.

*4 Environmental impact index: An index unique to Konica Minolta.

Environmental impact index (point) = Atmospheric emissions of VOCs [t] × Hazard coefficient × Location coefficient

Hazard coefficient: Set at 1-fold, 10-fold, or 100-fold depending on the severity of the impact on human health and the environment (set independently by Konica Minolta based on the coefficient used in the safety evaluations conducted by Kanagawa Prefecture in Japan) Location coefficient: Outside the industrial estate 5, inside the industrial estate 1

*5 The overall picture of environmental impact does not take into account the hazard coefficient and location coefficient, and the atmospheric emissions are shown as is.

Note: Figures in graphs may not add up to totals due to rounding.

Soil and Groundwater

Surveys and Measures Taken on Soil and Groundwater Contamination

Efforts Regarding Soil and Groundwater Contamination

Konica Minolta is striving to manage the state of contamination through regular monitoring, to facilitate cleanup, and to prevent the spread of contamination.

It conducts robust management through periodic observation at sites where soil or groundwater contamination has been identified to ensure that the contaminants do not affect the surrounding environment.

The Group has organized a special team to manage remediation of polluted sites and to prevent the spread of contamination. Detailed surveys conducted under the team's supervision serve as the basis for developing countermeasures and examining suitable purification technologies.

The Group reports the results of its observations and remediation efforts to local government agencies and to concerned neighboring residents.

Summary of Contaminated Soil or Groundwater at Operation Sites

Operation Site	Substances	Progress in Fiscal 2018
Tokyo Site Hino (Hino, Tokyo)	Fluorine, Boron, Mercury, Benzene, Lead	The company has continued to periodically monitor groundwater at the site boundary and has confirmed that amounts of these substances do not exceed standards.
Tokyo Site Hachioji (Hachioji, Tokyo)	Hexavalent chromium	The company has continued to purify groundwater and prevent dispersion by pumping water at the site. It has periodically monitored the groundwater and confirmed that there is no runoff of these substances from the site.
Kofu Site (Chuo, Yamanashi Prefecture)	Fluorine	The company has continued to periodically monitor groundwater at the site boundary and has confirmed that amounts of fluorine do not exceed standards.
Mikawa Site, Western Zone (Toyokawa, Aichi Prefecture)	TCE ¹ , Fluorine	The company implemented purification measures for fluorine. It will periodically monitor groundwater for two years to confirm the effects. It has continued to periodically monitor groundwater for TCE, and has confirmed that amounts of this substance do not exceed standards.
Itami Site (Itami, Hyogo Prefecture)	Lead, Arsenic, Cadmium, Fluorine, Boron	The company has continued to purify and prevent dispersion by pumping water at the site. It has confirmed that amounts of lead, arsenic and cadmium do not exceed standards at periodically monitored wells.
Sakai Site (Sakai, Osaka)	TCE, PCE ² , c- DCE ³ , Boron, Lead, Arsenic, Cadmium	The company has continued to purify and prevent dispersion by pumping water at the site. It has found that amounts of lead, arsenic, and cadmium do not exceed standards at periodically monitored wells.
Osaka Sayama Site (Osaka Sayama, Osaka)	TCE, PCE, c-DCE	The company has continued to purify and prevent dispersion by pumping up water at the site.

Site of the former Nankai Optical Co., Ltd. (Kainan, Wakayama Prefecture)	TCE, PCE, c-DCE	The company ended the purification effort after confirming compliance with groundwater standards over a period of two years after completion of purification work at the site.
Konica Minolta Mechatronics Co., Ltd. Ueta Site (Toyohashi, Aichi Prefecture)	TCE, c-DCE, Hexavalent Chromium	The company has continued groundwater purification by pumping water at the site and has confirmed through periodic monitoring that there is no runoff of these substances from the site.
Konica Minolta Mechatronics Co., Ltd. Fuefuki Site (Fuefuki, Yamanashi Prefecture)	TCE, PCE, c-DCE	The company has implemented remediation of ground water through pumping, permeable reactive barriers, and bio-barriers, and continued periodic observation to confirm that there is no runoff of these substances from the site.
Konica Minolta Supplies Manufacturing Co., Ltd. (Kofu, Yamanashi Prefecture)	TCE, PCE, c-DCE	After the bioremediation work conducted in fiscal 2014, the company has continued to confirm the effects through periodic follow-up observations of groundwater at monitored wells located on site.

*1 TCE: trichloroethylene

*2 PCE: tetrachloroethylene (perchloroethylene)

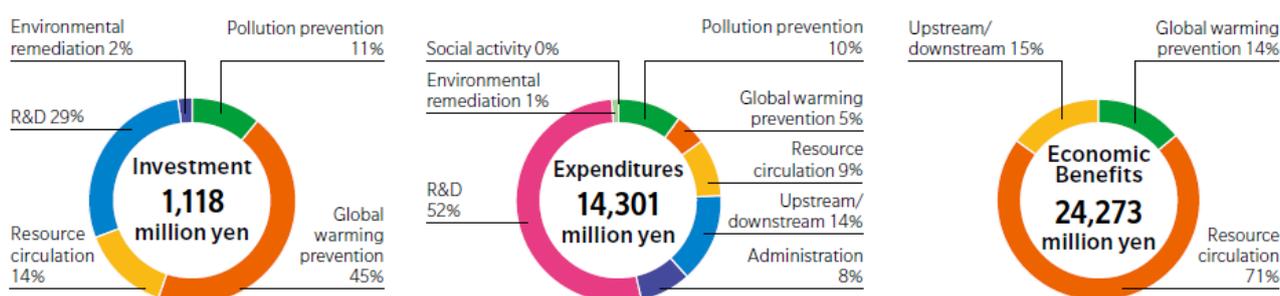
*3 c-DCE: cis-1,2-dichloroethylene (resolvent of TCE and PCE)

Environmental Data

Environmental Accounting

Konica Minolta has implemented global-scale, consolidated environmental accounting in order to quantitatively assess the costs of environmental preservation in business operations and the benefits obtained from those activities.

Expenditures in fiscal 2018 were approximately 14.3 billion yen, almost the same as in fiscal 2017. Investments increased slightly from the previous fiscal year to 1.1 billion yen. Investments in fiscal 2018 consisted of regular equipment renewal only, and there was no large-scale investment. Economic benefits increased mainly due to a change in the calculation method for economic benefits in fiscal 2018.



Note: Percentages do not necessarily total to 100 because of rounding.

Results for Fiscal 2018

(Million yen)

Types of Environmental Conservation Activities	Major Initiatives	Fiscal 2018 Results		
		Investment	Expenditures	Economic Benefits
1. Business area cost		788	3,446	20,613
1) Pollution prevention cost	Implemented wastewater treatment facilities maintenance, reduced atmospheric emission of VOCs, and carried out chemicals management	126	1,378	0
2) Preventing global warming cost	Promoted energy conservation	504	758	3,362
3) Resource circulation cost	Recovered solvents	158	1,309	17,251
2. Upstream / downstream costs	Collected and recycled products	0	0	1,988
3. Administration cost	Implemented environmental management systems	0	0	1,194
4. R&D cost	Developed energy-saving products and products containing no hazardous substances	317	7,504	0
5. Social activity cost	Implemented environmental conservation activities	0	3	0
6. Environmental remediation cost	Restored contaminated soil	13	166	0
7. Other costs		0	0	0
Total		1,118	14,301	24,273

Fiscal 2018 Results: Environmental Conservation Benefits

Stage	Type of benefit	Benefits
Production	Water use reduced *1	111,834 t
	Electricity reduced *1	194,428 MWh
	Natural gas reduced *1	15,265 thousand m ³
	Heavy oil reduced *1	0 kl
	Emissions of target chemical substances reduced *1	16 t
	Resource input reduced *1	105,326 t
	External recycling and reuse of waste *2	14,189t
Sales	Packaging reduced *1	38 t
	Recycling and reuse of materials from used products *2	17,739 t
Usage	CO ₂ emissions reduced *3	15,005 t

*1 Calculated by subtracting the actual consumption amount from the consumption amount estimated for cases in which the environmental conservation activity was not implemented.

*2 The environmental conservation benefits are calculated as the volume recycled and reused.

*3 CO₂ emissions are calculated for major new products that were shipped in fiscal 2016 by subtracting the estimated CO₂ emissions associated with the new products in use from the estimated CO₂ emissions associated with the conventional products in use.

Fiscal 2018 Results: Impact of End User Usage

Stage	Type of benefit	Benefits
Usage	Electricity consumption reduced *4	29,890 MWh
	Electricity bills reduced *5	430 million yen

*4 Electricity consumption reduced is calculated for major new products that were shipped in fiscal 2017 by subtracting the estimated energy consumption of the new products in use from the estimated energy consumption of the conventional products in use.

*5 Calculated by multiplying the average electrical power unit price over the Group's production sites in Japan by the amount of electricity consumption reduced.

Boundary for Fiscal 2018 Results

Konica Minolta, Inc.

12 Japanese affiliates

- Konica Minolta Planetarium Co., Ltd.
- Konica Minolta Information System Co., Ltd.
- Konica Minolta Supplies Manufacturing Co., Ltd.
- Konica Minolta Mechatronics Co.,Ltd.
- Konica Minolta Chemical Co., Ltd.
- Konica Minolta Opto Products Co., Ltd.
- Konica Minolta Opto Device Co., Ltd.,
- Konica Minolta Technoproducts Co., Ltd.
- Konica Minolta Japan, Inc.
- Konica Minolta Technosearch Co., Ltd.
- Konica Minolta Business Associates Co., Ltd.
- Kinko's Japan Co., Ltd.

22 affiliates outside Japan

- Konica Minolta Business Technologies (Dongguan) Co., Ltd.
- Konica Minolta Business Technologies (Wuxi) Co., Ltd.
- Konica Minolta Business Solutions (China) Co., Ltd.
- Konica Minolta Supplies Manufacturing U.S.A., Inc.
- Konica Minolta Business Solutions U.S.A., Inc.
- Konica Minolta Business Solutions Europe GmbH.
- Konica Minolta Business Solutions Deutschland GmbH
- Konica Minolta Business Solutions (UK) Ltd.
- Konica Minolta Supplies Manufacturing France S.A.S.
- Konica Minolta Business Solutions France S.A.S.
- Konica Minolta Business Solutions Australia Pty. Ltd.
- Konica Minolta Business Technologies (MALAYSIA) SDN. BHD.
- Konica Minolta Opto (Dalian) Co., Ltd.
- Konica Minolta Optical Products (Shanghai) Co., Ltd.
- Konica Minolta Opto (Shanghai) Co., Ltd.
- Konica Minolta Sensing Americas, Inc.
- Konica Minolta Sensing Europe B.V.
- Konica Minolta Sensing Singapore, Pte. Ltd.
- Instrument Systems GmbH
- Konica Minolta Healthcare Americas, Inc.
- Konica Minolta Medical & Graphic Imaging Europe B.V.
- Konica Minolta Medical & Graphic (SHANGHAI) Co., Ltd.

External Assurance

Konica Minolta engaged KPMG AZSA Sustainability Co., Ltd. to provide assurance on whether its CO₂ emissions from procurement, production/research and development, product distribution, sales and service, and product usage; energy use; waste discharged externally from manufacturing; atmospheric emissions of volatile organic compounds (VOCs); and water consumption have been measured, gathered and disclosed in accordance with the criteria set by the Group. Indicators that have been assured by KPMG AZSA Sustainability Co., Ltd. are marked with ★.



Independent Assurance Report

To the President and CEO of Konica Minolta, Inc.

We were engaged by Konica Minolta, Inc. (the "Company") to undertake a limited assurance engagement of the environmental performance indicators marked with ★ for the period from April 1, 2018 to March 31, 2019 included in its Environmental Report 2019 (the "Report") for the fiscal year ended March 31, 2019.

The Company's Responsibility
The Company is responsible for the preparation of the Indicators in accordance with its own reporting criteria (the "Company's reporting criteria"), as described in its website.

Our Responsibility
Our responsibility is to express a limited assurance conclusion on the Indicators based on the procedures we have performed. We conducted our engagement in accordance with the 'International Standard on Assurance Engagements (ISAE) 3000, Assurance Engagements other than Audits or Reviews of Historical Financial Information' and the 'ISAE 3410, Assurance Engagements on Greenhouse Gas Statements' issued by the International Auditing and Assurance Standards Board. The limited assurance engagement consisted of making inquiries, primarily of persons responsible for the preparation of information presented in the Report, and applying analytical and other procedures, and the procedures performed vary in nature from, and are less in extent than for, a reasonable assurance engagement. The level of assurance provided is thus not as high as that provided by a reasonable assurance engagement. Our assurance procedures included:

- Interviewing the Company's responsible personnel to obtain an understanding of its policy for preparing the Report and reviewing the Company's reporting criteria.
- Inquiring about the design of the systems and methods used to collect and process the Indicators.
- Performing analytical procedures on the Indicators.
- Examining, on a test basis, evidence supporting the generation, aggregation and reporting of the Indicators in conformity with the Company's reporting criteria, and recalculating the Indicators.
- Visiting one of the Company's domestic factories selected on the basis of a risk analysis.
- Evaluating the overall presentation of the Indicators.

Conclusion
Based on the procedures performed, as described above, nothing has come to our attention that causes us to believe that the Indicators in the Report are not prepared, in all material respects, in accordance with the Company's reporting criteria as described in its website.

Our Independence and Quality Control
We have complied with the Code of Ethics for Professional Accountants issued by the International Ethics Standards Board for Accountants, which includes independence and other requirements founded on fundamental principles of integrity, objectivity, professional competence and due care, confidentiality and professional behavior. In accordance with International Standard on Quality Control 1, we maintain a comprehensive system of quality control including documented policies and procedures regarding compliance with ethical requirements, professional standards and applicable legal and regulatory requirements.

KPMG AZSA Sustainability Co., Ltd.
KPMG AZSA Sustainability Co., Ltd.
Tokyo, Japan
October 7, 2019

Period: March to June 2019
On-site audit of the Tokyo Site Hachioji of Konica Minolta, Inc.



Comment from the Assurance Provider

This CSR report discloses climate-related information for the four core elements—Governance, Strategy, Risk Management, and Metrics and Targets—in line with recommendations of the Task Force on Climate-related Financial Disclosures (TCFD). As investors' interest concerning the impact of the transition to a low-carbon economy on companies' financials continues to grow, we believe this report can be recognized as a first step toward disclosure of climate-related information based on the international framework. However, considering the details in light of the TCFD's recommended disclosures, there are some elements that are still inadequate in disclosure. In addition, as examples of climate-related disclosure based on the TCFD's recommendations increase in the future, the company may be required to enhance its climate-related disclosure in order to meet investors' needs for information.

Shutaro Takakura, KPMG AZSA Sustainability Co., Ltd.

The company provides its CO₂ emission performance data in connection with its "Carbon Minus" targets. This enables a clear description of the progress of emission reductions in light of the "Carbon Minus" targets in the Medium-Term Environmental Plan 2019 and Eco Vision 2050.

With respect to human resources data, while targets and achievements in terms of gender diversity, such as the percentage of women in management positions or new hires, are disclosed, there are some indicators which are not accompanied by specific company goals, such as the percentage of non-Japanese nationals among new hires. Regarding indicators for which goals have not been formulated, I hope that the company will explain what goals it will set in the future and what policies and approaches it will adopt.