

# Safety Systems Business

We will strive to expand new pyrotechnic devices while expanding our share of automotive safety components.

We will also pursue development of products that contribute to the safety of new mobility technologies, and will strive to be known as a global brand that resolves societal issues.

**Shigeyuki Kawamura**

Managing Director,  
Head of the Safety  
Systems Group



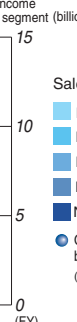
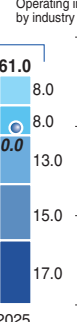
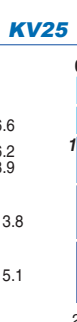
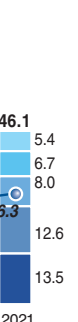
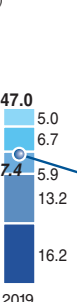
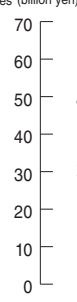
FY 2021  
Ratio to  
Total  
Net Sales

25%

FY 2021  
Ratio to  
Total  
Operating  
Income  
by Industry  
Segment

22%

Sales (billion yen)



\* The planned figures are based on the financial results presentation on May 13, 2022.

## Business Overview for FY 2021

- Although growth in operating income accompanied the rebound in the automobile market, the supply chain was destabilized by the global shortage of automotive components and the emergence of geopolitical risks. This decelerated the speed of the recovery in demand.
- The new types of inflators (disk-type and cylinder-type inflators put on the market in 2018) we are focusing on

maintained stable sales as the sluggish demand for global automobile production persisted, despite some regional differences.

- In December 2021, we began selling PARASAFE®, a safety device for drones used in industrial applications, as an initiative in responding to new types of mobility. It was used in a PoC trial for commercialization.

## KV25 Mid-term Business Plan and Business Vision

The global COVID-19 pandemic persisted in FY 2021 and caused supply problems for semiconductors and other products. Despite this, some regions saw a rebound in vehicle sales and this made outperformance of the previous year possible. In FY2022, the first year of **KV25**, the newly launched mid-term business plan, the geopolitical climate is unstable and we expect to see impacts from the shortage of semiconductors. Market demand is robust despite this and the automotive industrial revolution symbolized by CASE (Connected, Autonomous/Automated, Shared, and Electric) is progressing. We think this will increase global vehicle production and the number of safety devices installed per vehicle.

The safety systems business will continue to improve automotive safety components such as our conventional main-stay inflators and micro gas generators and expand share, and will expand pyrotechnic devices used in hood pop-up devices, electrical circuit breakers, and other devices. We will also develop products that contribute to the safety of drones and other new mobility technologies.

Our goals is to become a global brand that can deliver safety and security to customers while focusing on the perspective of meeting expectations on resolving societal problems such as SGD and carbon neutrality, which the entire world is grappling with.



Safety Systems Business

<https://www.nipponkayaku.co.jp/english/company/business/safety-systems/index.html>

## Strengths We Possess

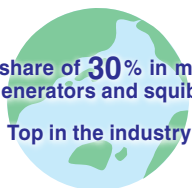
### 1 Technology for handling pyrotechnics safely and passing on that technology



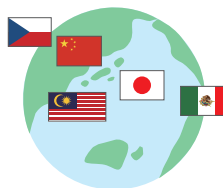
- High degree of expertise in technology accumulated from handling pyrotechnics for industrial use since the Company was founded is a strength
- System for passing on technology and training

### 2 Share of automotive safety components

Market share of **30%** in micro gas generators and squibs  
Top in the industry

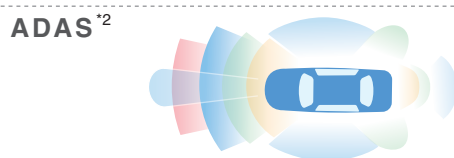
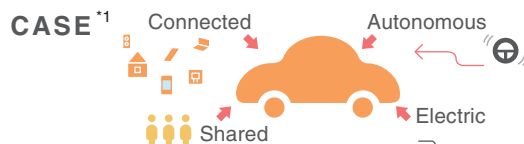


### 3 Structure for global expansion



- Optimal production and supply structure with five global locations
- Core functions are centralized at the mother plant (Himeji), and a wide variety of initiatives in technology, quality, safety, and other aspects are rapidly deployed to each location

### 4 Response to evolving mobility technologies



\*1 CASE: A technological revolution in new areas related to vehicles, such as Connected, Automated, Shared, and Electric technologies

\*2 ADAS: An acronym for Advanced Driver-Assistance Systems. This refers to systems that gather information from the environment surrounding the vehicle itself and display accurate indicators and warnings to achieve drive safety and comfort. This is a collective term for driving assistance functions that control vehicle operation.

- The Research & Development Division assumes the main role in researching development of the next generation of pyrotechnics safety technology

## Current Core Products

### Inflator

Inflators are devices used to instantly inflate airbags. Airbags are loaded with a gas generating agent, which applies explosive technologies to control the speed at which an airbag deploys at within 1/1000th of a second at the point of impact.



Disk-type

Cylinder-type

### Micro Gas Generators

Micro gas generators are compact gas generating devices used for seatbelt pretensioners, which are devices to retract seat belts in the event of a collision, safely restraining passengers in place.



### Squibs

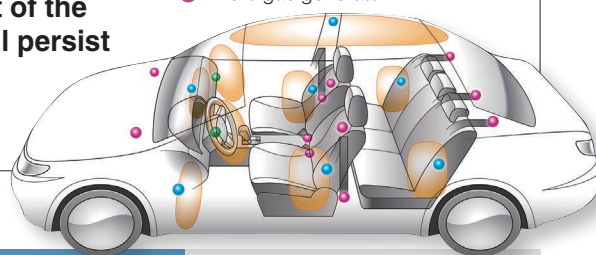
A squib is an ignition device embedded in inflators and micro gas generators. It receives electric signals from impact sensors to operate safety devices.



- Disk-type inflator
- Cylinder-type inflator
- Micro gas generator

### Growing Automotive Safety Components Market

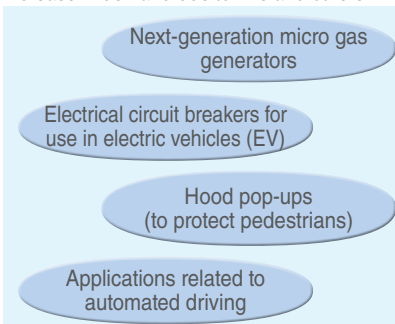
- Global vehicle production is rebounding from the impact of the COVID-19 pandemic and the semiconductor shortage will persist in the short term.
- The safety component installation rate is increasing, mainly in emerging countries.



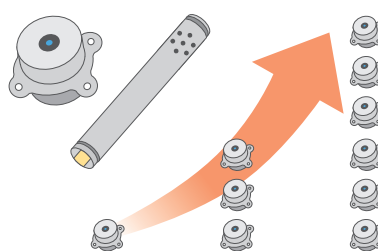
## Growth Areas and Things We Want to Achieve in 2025

### Expansion of new uses for automotive safety components

Increase in demand due to EVs and others



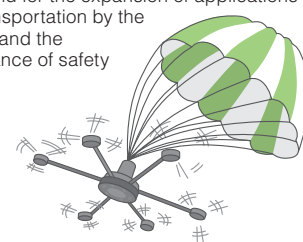
### Expand sales volume of inflators



- Target expansion of sales volume of inflators while maintaining global market share in micro gas generators and squibs

### Safety components for Drone

Demand for the expansion of applications such as transportation by the drone and the assurance of safety



Development that can address diverse needs

Make it the de-facto standard

Develop larger components



## Vision for the Safety Systems Business

**Become a global brand that contributes to society by providing safety to people around the world with products that respond to changing mobility technologies**

### Contribution to SDGs



### Key Areas

#### Inflators

- Expansion of production locations for cylinder-type inflators (Japan, China, and Malaysia)
- Expansion of sales to customers in China and South Korea
- Development of next-generation inflators

#### Micro Gas Generators/Squibs/Pyrotechnic Devices

- Acquisition of module proposals for next fiscal year
- Acquisition of proposals for an increase in number for rear passenger seats, etc.
- Expansion of uses to pedestrian protection, electrical current interruption, etc.
- Exploration of uses for new pyrotechnic devices

#### Safety Components for Drone

- Expansion of PARASAFE® sales for 25 kg drones launched in 2021
- Development and early market launch of PARASAFE® for 15 kg drones
- Development of safety components for flying cars and large drones

## Topics

### Targeting Businesses That Contribute to Going Carbon Neutral

The automotive market is demanding high environmental and safety performance. Amid this, Nippon Kayaku has devised ways to reduce the weight of the metal and other components in the new disk-type inflators we developed for airbags (for driver and passenger seats, production began in April 2018) by 25% while maintaining strength and durability. This improvement enabled the new types of inflators to achieve excellent environmental performance by reducing CO<sub>2</sub> emissions by 36% \*1 compared to emissions from conventional products and also contribute to improvement in fuel efficiency in the automobiles they are installed in.

Moreover, we are also providing squibs and other components to customers for devices that interrupt\*2 the high voltage electrical current supplied from EV batteries and this will be useful for the shift from gasoline powered vehicles to electric vehicles in recent years. We intend to continue focusing on expansion of this product group in the future.

\*1 Comparison of Category 1 (purchased components only) Scope 1, Scope 2, and Scope 3 emissions in 2020 to 2015 as the base year.

\*2 A safety device for sensing collisions or other abnormal conditions and interrupting electrical current to prevent the possibility of accidental electric shock. The application of pyrotechnics safety technology activates the device instantaneously and with high reliability, in the same way it activates air bags.

The Himeji Plant will eliminate its fossil fuel-burning boiler in FY 2025 and pursue complete electrification of the entire plant to switch to green energy. The plant is also actively pursuing digital transformation (DX). It is digitizing records, using accumulated operating data from lines to strengthen prevention and protection by replacing machine components before they fail, and achieving labor savings through automated inspection using image recognition. A solar power generation system was installed in 2014 and the plant intends to expand the system in the future.

We will continue to exercise creativity and ingenuity to reduce greenhouse gases from the entire safety systems business and will work toward going carbon neutral in the future.



Solar power generation system at the Himeji Plant

### Growth of Automotive Safety Components: Expansion of Production Locations for Cylinder-type Inflators

We aim to leverage the growth in use of the two new types of inflators that have been on the market since 2018 to expand global inflator sales volume in the safety systems business.

The line-up of new types of inflators consists of a disk-type inflator that we succeeded in making lighter, and a cylinder-type inflator (for side and knee airbags) with a smaller diameter and lighter weight achieved by improving the method of pyrotechnic ignition. The **KV25** mid-term business plan focuses on growth of the new cylinder-type inflators. Cylinder-type inflators are currently produced at the Himeji Plant, but we are planning capital investment and technology transfer to manufacturing locations in China and Malaysia in the future to establish a global supply structure from multiple locations and expand our target market to the China and the ASEAN market, where robust demand is anticipated.



Kayaku Safety Systems (Huzhou) Co., Ltd.



Kayaku Safety Systems Malaysia Sdn. Bhd.

# Agrochemicals Business

Nippon Kayaku will continue to contribute to the development of sustainable agriculture, mainly in the vegetable and fruit segments. We aim to achieve our vision by developing new products aligned with the strategy of each country along with providing existing products.

## Tomoo Shibuya

Member of the Board,  
Representative Senior  
Managing Director,  
Head of Strategic Corporate  
Planning Group,  
Head of the  
Agrochemicals  
Division,

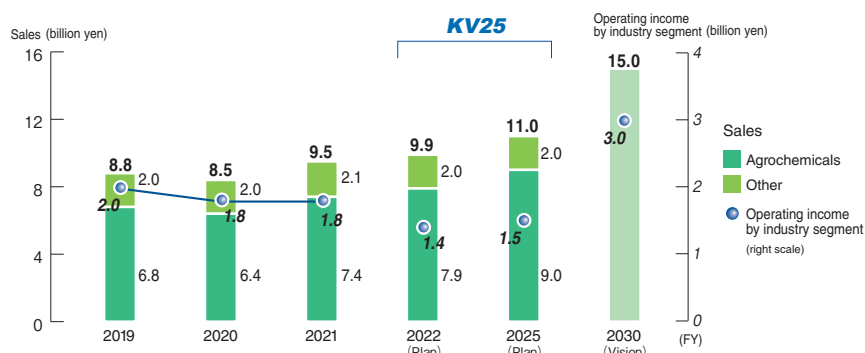


FY 2021  
Ratio to  
Total  
Net Sales

5%

FY 2021  
Ratio to  
Total  
Operating  
Income by  
Industry  
Segment

7%



\* The planned figures are based on the financial results presentation on May 13, 2022.

## Business Overview for FY 2021

- We achieved a strong start to domestic sales of TERONTM and ASAHI D-D Soil Fumigants. This boosted performance and achieved growth in revenues.
- Overseas export sales declined due to the trend in demand and impact on distribution during the COVID-19 pandemic.

## KV25 Mid-term Business Plan and Business Vision

The Agrochemicals business supports the food supply through provision of agrochemicals and agricultural materials, mainly to the vegetable and fruit segments, and will continue to contribute to the development of sustainable agriculture. Strategies for innovation to reduce the environmental burden in agriculture have been formulated amid cries about the importance of securing a stable, sustained food supplied as the world population continues to increase. Such strategies include the Farm to Fork Strategy of the EU, the Agriculture Innovation Agenda in the U.S., and the Green Food System Strategy in Japan. Nippon Kayaku aims to achieve the segment targets for FY 2030 established as our vision by developing new products aligned with these strategies and

providing existing products.

**KV25**, the new mid-term business plan, targets 9 billion yen in net sales. We will achieve this by maintaining staple products such as DIAZINON® to prepare fields and the soil fumigants Chloropicrin, TERONTM and ASAHI D-D; expanding sales of FINESAVE® insecticide in Japan and overseas; and adding the introduction of new products to these products. **KV25** is also considered the preparatory period for achieving our 2030 Vision. We will actively pursue development of new insecticides and new unique formulations, initiatives in biostimulants, and the introduction and acquisition of products.

## Topics

### About Biostimulants

The global population continues to increase and areas for cultivation are limited. It is said that the food supply per capita will certainly decrease if things continue as they are. Moreover, climate change caused by global warming and other factors is decreasing agricultural production efficiency and it is feared that this will threaten food security. Biostimulants are now drawing interest as materials for resolving these problems.

Biostimulants act on plant physiology by a different route than for nutrients. They increase the ability of plants to resist abiotic stresses such as damage from drought, freezing, salt, and physical damage (from hailstorms and wind). Biostimulants are consequently agricultural materials that increase yield and improve quality. More specifically, they are promising for promoting nutrient absorption, activating photosynthesis, promoting flowering and fruiting, and providing other benefits. Seaweed extract, amino acids, and humic acid are used as biostimulants. We think that our strengths in evaluation technology and formulation technology in our agricultural business will contribute to maximizing efficacy, and will facilitate progress and widespread use of biostimulants.





## Strengths We Possess

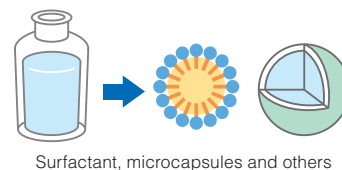
### Insecticides for fruits and vegetables, and soil fumigants

- We specialize in fruits and vegetables and can provide detailed support of needs for insecticides and soil fumigants



### Utilization of formulation technology in development

- In addition to the long development period for new active pharmaceutical ingredients, we utilize our extensive formulation technology to enable development of new forms of existing formulations



Surfactant, microcapsules and others

### Sales activities integrated with technical service and provision of information

- Listening to farmers' needs, soliciting feedback on implementation trials, and sharing information with customers through other forms of two-way communication
- Rapid customer service that combines technology and sales



### Structure for global provision of agrochemicals

- Provision of insecticides through alliances with local sales companies in Europe, Asia, Africa, Central and South America, and other regions
- FINESAVE® registered as an agrochemical in various countries and sales launched in 2020



## Current Core Products

### Insecticides and antimicrobials



- DIAZINON®
- FINESAVE®
- FUHMION®

Etc.

### Soil fumigants

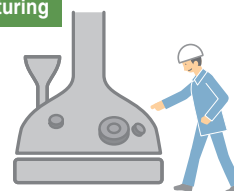


- Double Stopper®
- TERON™ and ASAHI D-D

Etc.

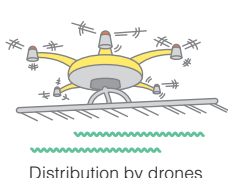
### Contract manufacturing

- Synthesis equipment at Kashima plant



## Growth Areas and Things We Want to Achieve in 2030

### Ongoing market launches of unique formulations



Distribution by drones

Establishment  
of a foundation  
for sustained  
growth

### Development of new active ingredients for insecticides

Research and develop new active pharmaceutical ingredients over the medium and long term while simultaneously developing unique formulations, etc.



## Vision for the Agrochemicals Business

**Continue to provide environmentally friendly agrochemicals together with their technologies and services, support food supply, and contribute to the development of sustainable agriculture**



### Key Areas

#### Domestic

- Expansion of Flometoquin formulation (FINESAVE), FUMON
- Expand sales by increasing the scope of agrochemical registration
- Expand sales of TERON, Asahi D-D
- Respond to DIAZINON and other agrochemical reevaluation system
- Increasing contract manufacturin

#### Overseas

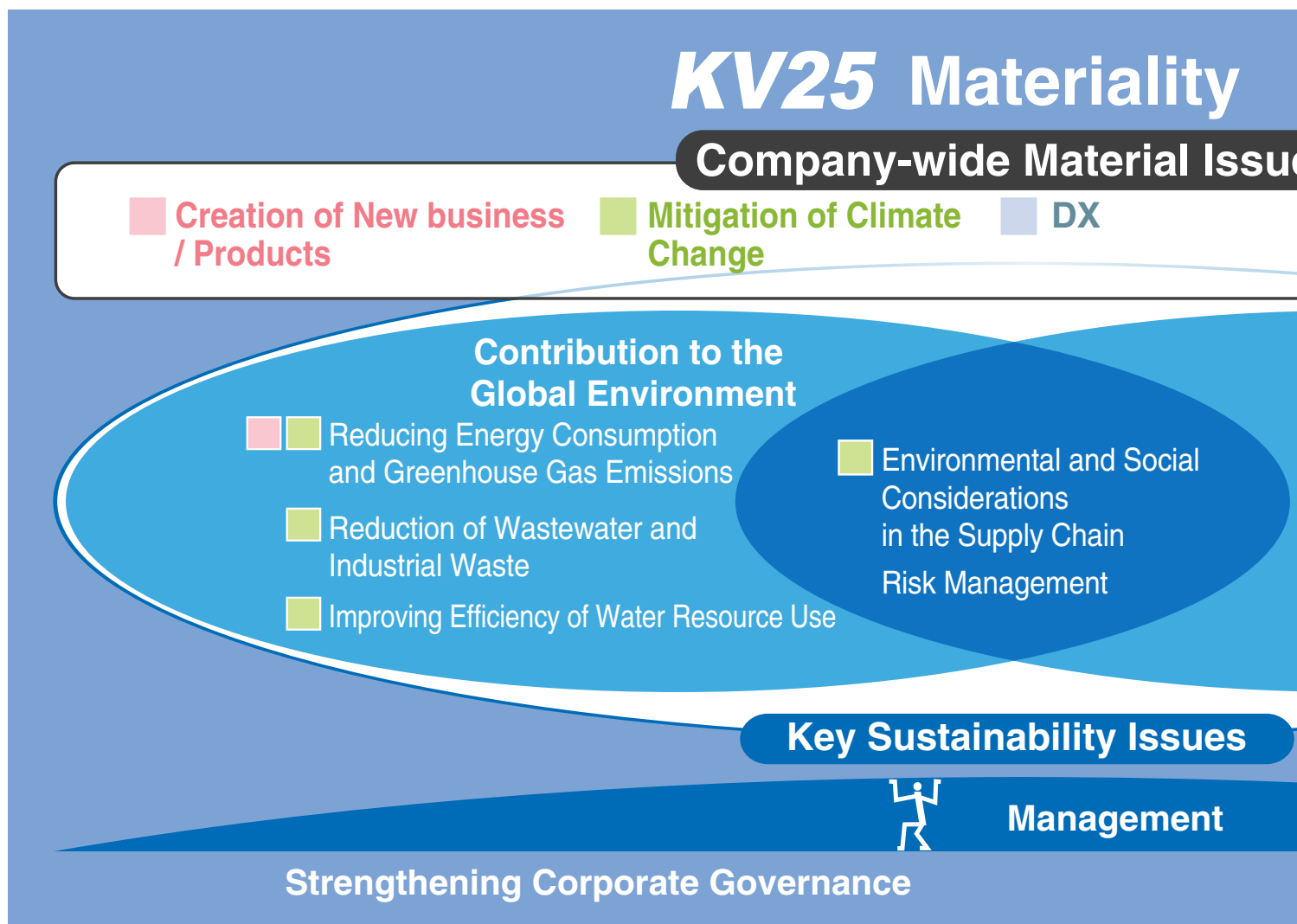
- Recovery of the EVISECT business through supply chain restructure
- Promote registration and expand sales of Flometoquin formulation

#### Towards to "The Vision" in 2030


- Development of new innovative formulation
- Development and induction of biostimulant
- Development of new insecticides

## KV25 Materiality

The Nippon Kayaku Group is working on **KV25 Materiality** to



### Company-wide Material Issues and M-CFT (Materiality Cross-Functional Teams)

Company-wide Material Issues	Initiatives
<b>Creation of New Business / Products</b> 	M-1 Team will collaborate with our four businesses to create new businesses / products in the four fields of Mobility, Environment & Energy, Electronics, and Life Science, transcending the boundaries of existing organizational units and contributing to the realization of our mission.
<b>Mitigation of Climate Change</b> 	We will work to prevent global warming—such as the reduction of greenhouse gases emissions—and achieve carbon neutrality, and make united efforts with each plant and research institute to combat climate change risks.
<b>DX</b> 	Our current goals are to drive DX (digital transformation) throughout the Group, increase sales through process transformation, and expand our businesses by reducing costs. Specifically, we will work to achieve DX in the areas of (1) IT education and awareness reform, (2) strengthening IT infrastructure through ERP and IT infrastructure restructuring, etc., (3) R&D, production, sales/marketing and management business processes.
<b>Business Process Re-engineering</b> 	We will work to improve our asset efficiency and earning power by reviewing our group business management, business operation / control (management) and cost control methods, and by improving work efficiency and productivity through A3 (KAIZEN) activities aimed at business process improvement—to eliminate all kinds of waste—and cost reduction.
<b>Work Style Reform</b> 	We will work to implement work style reforms and personnel system reforms to enable every employee to work energetically and increase employee engagement, with the aim of being a good, strong, energetic company.

contribute to the realization of a sustainable environment and society.

es

**Business Process Re-engineering** **Work Style Reform**

## Partnerships with Stakeholders

- Quality and Customer Safety
- Occupational Health and Safety in the Workplace
- Maintaining and Expanding Employment, Developing Human Resources, and Respecting Human Rights

## Foundation

## Ensuring Compliance

**KV25** Materiality consists of company-wide material issues and the key sustainability issues that supplement them. The color of the solid square in front of each material issue shows the relationship between the two.



The concrete activities of each M-CFT are listed on

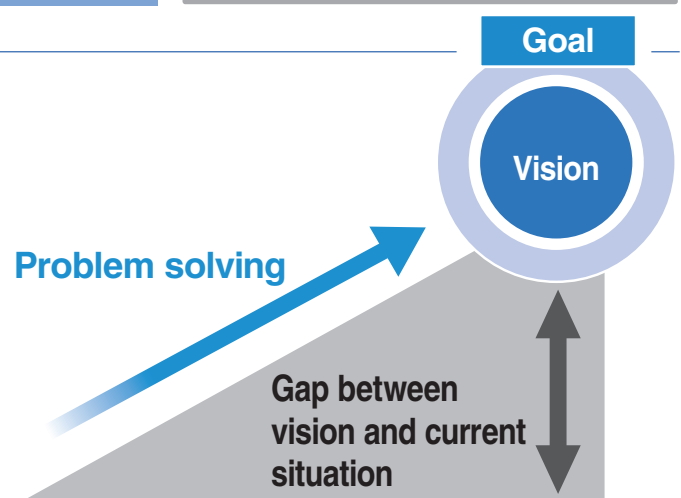
[p. 44-59](#)

## Company-wide Material Issues

In order to realize our vision, the Nippon Kayaku Group analyzed disparities between the goals of the Vision and the current situation and identified five key issues that should be prioritized in company-wide cross-organizational projects, as company-wide material issues: Creation of New Business / Products, Mitigation of Climate Change, DX, Business Process Re-engineering, and Work Style Reform.

### Key issues (materialities)

- Lack of new businesses and new products
- Strengthening measures for mitigation of climate change
- Delay in digital transformation (DX)
- Decline in earning power
- Lack of strictness in corporate culture



## M-CFT (Materiality Cross-Functional Teams)



M-CFT refers to company-wide cross-organizational teams consisting of members selected from multiple divisions to work on concrete initiatives targeting company-wide material issues.












The leaders of these teams are executive directors. The teams work on company-wide projects to speed up the penetration of initiatives aimed at company-wide issues and resolution of each issues during the **KV25** time period.

## KV25 Materiality

### Key Sustainability Issues and Action Plan

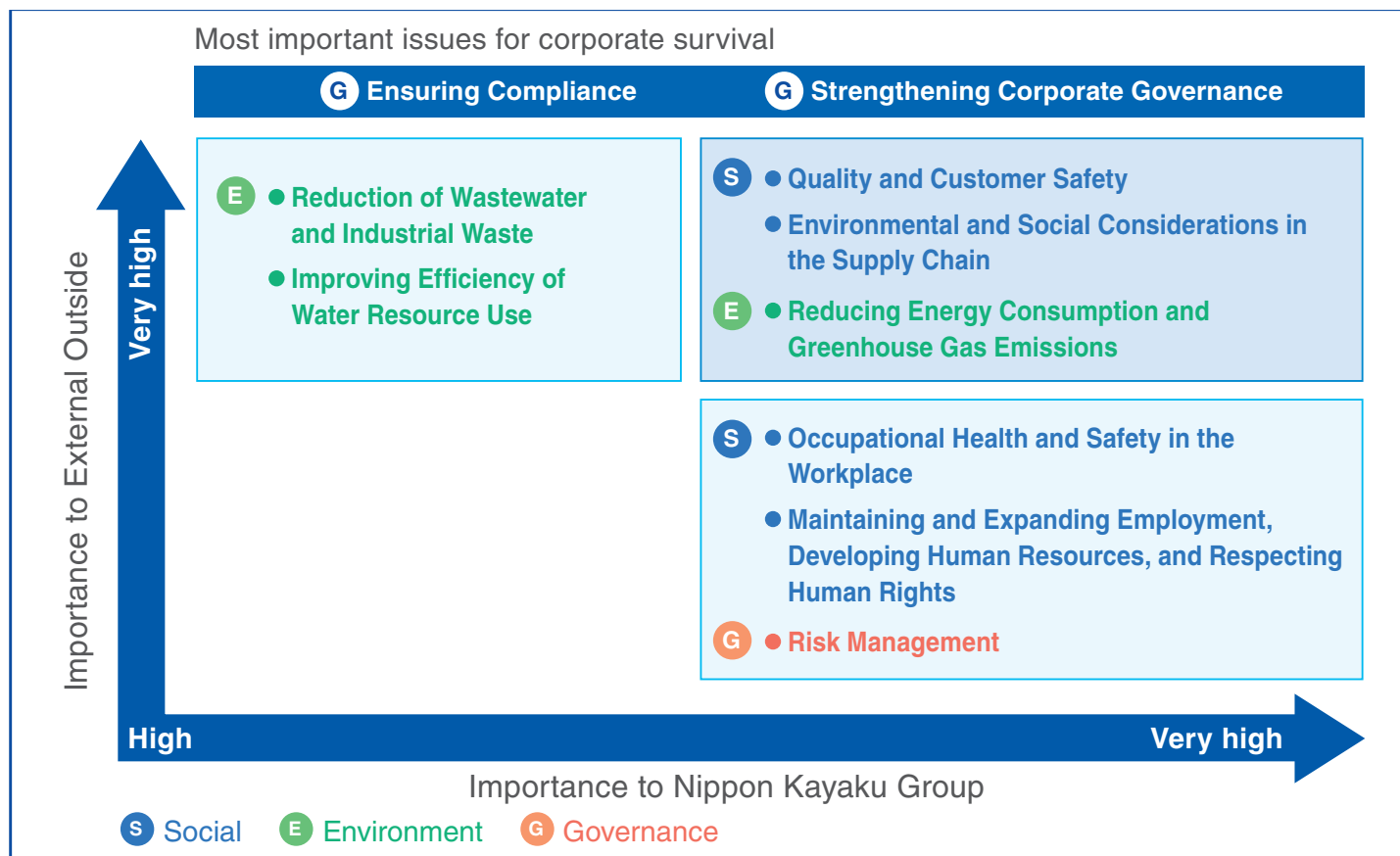
We have classified our key sustainability issues into three categories—most important issues for corporate survival, most important issues, and important issues—and established action plans for each issue.







Key Sustainability Issues	Corresponding SDGs	Action Plans	Indicators (KPI)	FY 2025 Targets
Most important issues for corporate survival		<ul style="list-style-type: none"> <li>Exercise thorough compliance, which is a basic principle for conducting corporate activities, and engage in fair business operations</li> <li>Maintain and enhance an open corporate culture with a high sense of ethics</li> </ul>	Number of serious compliance violations*1	0
			Compliance training rate	100%
			Percentage of group companies with compliance/whistleblowing hotlines	100%
		<ul style="list-style-type: none"> <li>Strengthen corporate governance of the entire group and manage in a highly transparent and sound manner</li> </ul>	Number of times the effectiveness of Board of Directors meetings is evaluated	Once per year
			Number of times internal business audits are performed by the Audit Division	60 times in four years

Key Sustainability Issues	Corresponding SDGs	Action Plans	Indicators (KPI)	FY 2025 Targets
Most important issues		<ul style="list-style-type: none"> <li>Enhance our quality control and quality assurance systems by continuously improving our quality management system and ensuring thorough quality-related governance</li> <li>Implement quality management, improve production efficiency and reduce process flaws through digitalization</li> </ul>	Number of serious complaints by customers*2	0
			Number of serious flaws in processes*2	0
	   	<ul style="list-style-type: none"> <li>Practice supply chain management with consideration for environmental and social aspects, based on the Sustainable Procurement Guidelines</li> </ul>	Response rate for confirmation of consent to Sustainable Procurement Guidelines	(Non-consolidated) 90% or higher
			Formulation and implementation of improvement plans using questionnaires to suppliers	(Non-consolidated) Disclose progress
	    	<ul style="list-style-type: none"> <li>Implement energy-saving and global warming countermeasures and achieve FY 2030 environmental targets</li> <li>Identify issues and clarify strategies for achieving carbon neutrality by FY 2050</li> </ul>	Greenhouse gas emissions (Scope 1+2)	(Targets to be achieved by FY2030) 87,132 tons or less (32.5% reduction or higher compared with FY 2019)
			VOC emissions	(Non-consolidated) Disclose results
			COD emissions	(Non-consolidated) Disclose results
			Total waste output	(Non-consolidated) Disclose results
			Recycling rate	(Non-consolidated) 80% or higher
			Zero emission rate	(Non-consolidated) 1% or less
			Goal setting in line with SBT and consideration and implementation of specific measures	Disclose progress
			Disclosure in line with TCFD recommendations	Disclose progress
			Develop products and technologies with consideration for environmental issues	Disclose progress
		<ul style="list-style-type: none"> <li>Improving Efficiency of Water Resource Use</li> </ul>		



## Matrix of Key Sustainability Issues



Key Sustainability Issues	Corresponding SDGs	Action Plans	Indicators (KPI)	FY2025 Targets
Important Issues	 	<ul style="list-style-type: none"> <li>Strengthen the foundation for safe operation by thoroughly enforcing basic rules on safety and health and improving equipment and work procedures</li> <li>Implement health and productivity management and provide a workplace environment with a healthy work-life balance where employees can work with enthusiasm</li> </ul>	Number of serious accidents*3	0
			Acquisition of certifications under the Certified Health & Productivity Management Outstanding Organizations Recognition Program (Large Enterprise category)	(Non-consolidated) Continued certification
			Percentage of paid leave taken	(Non-consolidated) 70% or higher
Maintaining and Expanding Employment, Developing Human Resources, and Respecting Human Rights	   	<ul style="list-style-type: none"> <li>Promote diversity and inclusion through the recruitment of diverse human resources, effective HR assignment and exchanges</li> <li>Pass down and strengthen technical capabilities in monozukuri (manufacturing) and achieve globalization in human resources through ongoing human resource development</li> <li>Engage in business operations that consider and take care of the human rights of employees and all other people involved in the supply chain</li> </ul>	Percentage of female employees in management posts*4	(Non-consolidated) 10% or higher
			Percentage of employees with disabilities	(Non-consolidated) Achieve legal minimum employment rate
			Amount invested in education and training per employee	(Non-consolidated) Disclose results
Risk Management		<ul style="list-style-type: none"> <li>Respond to various business-related risks and ensure business continuity by maintaining production systems, ensuring the proper procurement of raw materials, and strengthening measures against disasters</li> </ul>	Training hours per employee	(Non-consolidated) Disclose results
			Number of training sessions held on human rights	Once or more per year
			Human rights due diligence: human rights impact assessment rate	(Non-consolidated) FY 2022: 100% (Consolidated) FY 2025: 100%
Risk Management			Implementation rate of risk control activities for business, etc., and top five risk control activities	100%
			Number of BCP drills conducted	Once or more per year

\*1 Number of serious accidents as judged by the Ethics Committee

\*2 Losses of 10 million yen or more

\*3 Accidents involving three or more people requiring time off work, or resulting in fatalities

\*4 Targets for the end of FY 2024

**M-CFT 1 (Materiality Cross-Functional Teams)****Creation of New Businesses / Products****>> Mission**

The Creation of New Business / Products Team will collaborate with our four businesses to create new businesses and products in the four fields of Mobility, Environment & Energy, Electronics, and Life Science, transcending the boundaries of existing organizational units and contributing to the realization of our vision.

**Yoshimi Inoue**

Corporate officer in charge of M-CFT 1  
Senior Managing Director  
Head of Research & Development Group

**Message from the Corporate Officer in Charge of M-CFT 1**

We have established four areas to target in company-wide research and development to contribute to realizing a sustainable society. Our goal is to achieve so-called ambidexterity in identifying new knowledge while also developing existing businesses in greater depth. One concrete example of this is the IP landscape activities we engage in to analyze market information and information on the intellectual property of our competitors. We are actively involved in open innovation with start-ups and academia, and are working to secure competitive advantages.

Amid these efforts, the M-CFT 1 team, which is targeting creation of new businesses and new products, is:

- ① Checking progress on company-wide R&D activities, including activities related to existing businesses.
- ② Intensively conducting R&D activities to create new businesses

- ③ Building an R&D structure that can only be found in the Nippon Kayaku Group

We are working toward the three targets mentioned above.

The M-CFT 3 team, which is pursuing company-wide digital transformation (DX), recognizes the need for digital transformation of research to improve the efficiency and enable more sophisticated R&D. To accomplish this, the team is equipping laboratories with IT infrastructure and introducing electronic experiment notes, and is also building a system for using AI and ML.

The Research & Development Group is teaming up with each business group in pursuing company-wide R&D activities with the M-CFT 1 team playing the central role to implement ambidexterity and achieve balance in R&D activities.

**Four Areas Targeted to Contribute to Realization of a Sustainable Society**

Mobility	Environment/Energy	Electronics	Life Sciences
<ul style="list-style-type: none"> <li>● Active use of open innovation (partnerships with industry and academia, collaboration and alliance with and investment in venture firms, venture capital, business acquisitions, etc.)</li> <li>● Selection and planning through marketing and IP landscape</li> </ul>			
<ul style="list-style-type: none"> <li>● Emergency parachute for drones used in industrial applications ⇒ <a href="#">p. 26</a></li> <li>● Safety devices for flying cars (corporate research theme)</li> <li>● Optical films for windshields, for heads-up displays (HUD) ⇒ <a href="#">p. 31</a></li> </ul>	<ul style="list-style-type: none"> <li>● Organic electrolytic solution for redox flow batteries</li> <li>● Anion exchange membrane used in water electrolysis for green hydrogen production equipment</li> <li>● Biomass epoxy resins ⇒ <a href="#">p. 31</a></li> <li>● Catalysts that contribute to a decarbonized society ⇒ <a href="#">p. 31</a></li> </ul>	<ul style="list-style-type: none"> <li>● Organic semiconductor materials (corporate research theme)</li> </ul> <div style="border: 1px dashed black; padding: 5px; margin-top: 10px;"> <p>Will also continue to collaborate with the functional chemicals business on planning and marketing</p> </div>	<ul style="list-style-type: none"> <li>● About Biostimulants ⇒ <a href="#">p. 38</a></li> </ul> <div style="border: 1px dashed black; padding: 5px; margin-top: 10px;"> <p>Will also continue to collaborate with the pharmaceuticals and agrochemicals businesses on planning and marketing</p> </div>

## Policy on Creation of New Businesses / Products

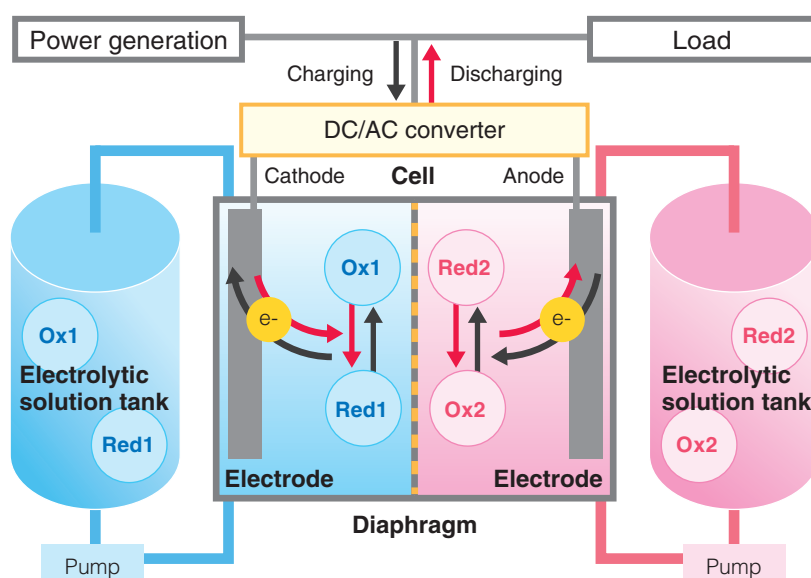
- Build a system for creating new businesses from the identification of new knowledge
- Promote open innovation with external organizations in industry, academia and with start-ups
- Formulate plans for market-oriented development

## Development of Organic Electrolytic Solution for Redox Flow Batteries — Case Using Open Innovation —

Redox flow batteries are storage batteries that use oxidation reduction reactions of ions contained in an electrolytic solution. They have long life spans, do not pose the risk of ignition, and are highly safe. These characteristics are drawing interest for use as storage batteries for renewable energy and other applications. The vanadium used in the electrolytic solution can only be sourced from the main producing countries and is subject to large price fluctuations, so supply stability is a problem.

To resolve this problem, the Nippon Kayaku Group is pursuing initiatives to make redox flow batteries highly safe and even lower in cost and by developing an organic electrolytic solution as an alternative to the vanadium-based electrolytic solution.

In addition to using the basic technology we possess in designing and synthesizing organic compounds, we will also focus on actively incorporating elemental technology from external partners\* and will pursue this as a theme where an alliance can contribute to the Environment and Energy areas.



\*In February 2022, Nippon Kayaku invested in LE SYSTEM Co., Ltd., which develops, manufactures, and sells electrolytic solutions for redox flow batteries.

## Development of Safety Devices for Flying Cars to Contribute to Future Mobility

We began development of safety devices for flying cars as a corporate research theme\* in January 2022. This is an R&D theme that utilizes our record in development of drone safety components.

We envision manned flights of flying cars to proliferate from around 2030 onward. Since flying cars are much heavier than drones for industrial applications, we expect the safety devices for them to also be larger. We are beginning with a proposal for an emergency safety device from a parachute that is similar to PARASAFE® and will search for the optimal form of safety device through information exchanges with cooperating partners and the industry.

The Aero Business Promotion Department and Research & Development Group will take the lead on advancing development of the pyrotechnics safety technology cultivated in the safety systems business and drone safety components while also providing safety and security in new types of air mobility.

\* In research and development aimed at creating new businesses and products, we strategically allocate company-wide management resources to themes that are expected to become major growth areas in the future, and promote them as "corporate research themes" by integrating internal and external technologies, products, and intellectual property.



## Intellectual Property Initiatives

To achieve the Nippon Kayaku Group Vision, we formulated an Intellectual Property Policy and an Intellectual Property Strategy to develop existing business in more depth and identify new knowledge at the same time. We will clarify our policy on the use of intellectual property and its value, and will work to maximize the value of intellectual property as we work with each laboratory and business.

### Intellectual Property Policy

The Nippon Kayaku Group has positioned intellectual property as a business resource for sustained development of the Nippon Kayaku Group.

We actively create and utilize intellectual property while respecting the intellectual property of other companies.

### Intellectual Property Strategy

1. Work together with business divisions and laboratories on creating and utilizing intellectual property.
2. Use information to create new knowledge and strategies.

We formulate our intellectual property strategy and pursue intellectual property activities based on the business strategy of each business and the R&D strategy.

## 1. Creation and Utilization of Intellectual Property

The Intellectual Property Division works with each business division and laboratory to create intellectual property based on the business strategy and R&D strategy in each business. Decisions on whether or not to apply for a patent and acquire rights is made after considering the contribution to our business and products. We use time stamps and other means of recording and managing manufacturing technology, other core technology, and expertise. Investments in intellectual property are reassessed by regularly checking the contribution of registered rights to business in each business division.

### ● Building an Intellectual Property Strategy

The strategies for creating, acquiring rights on, and utilizing intellectual property differ according to the business division. We are currently working to visualize intellectual property in the business portfolio strategy described in the mid-term business plan. We ask what the strengths of the business and products are, analyze how intellectual property contributes in that context, and use this sort of analysis to secure a competitive advantage.

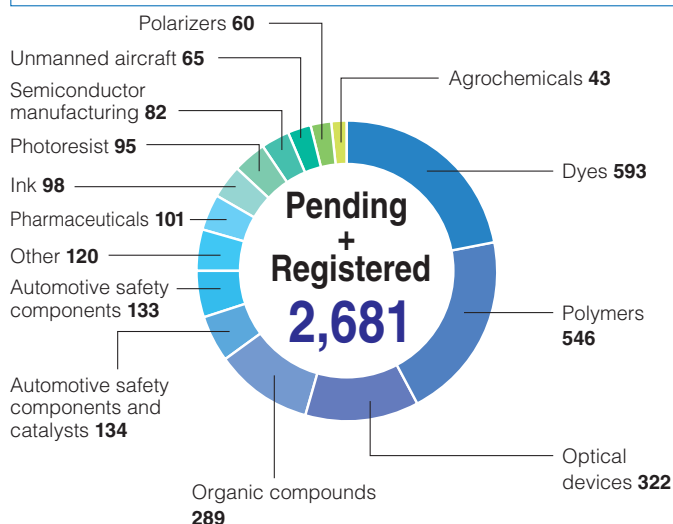
### ● Risk Reduction Activities

We are constantly checking to make sure that our products do not infringe on the rights of other companies from the R&D stage to the post-sale stage in order to minimize intellectual property risk. We also act to eliminate business risk from intellectual property as necessary.

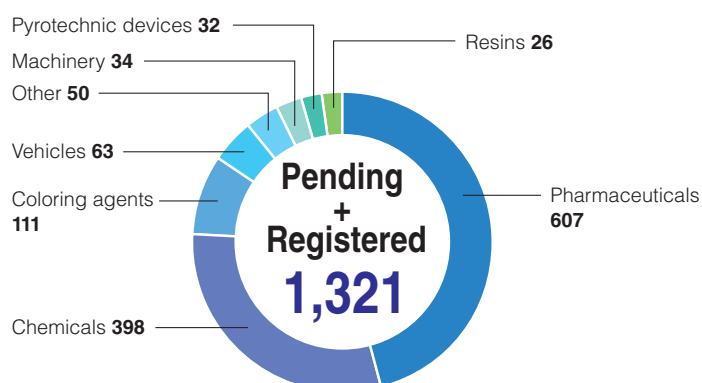
### ● Development of Human Resources

To develop human resources with expertise in intellectual property, we deepen understanding of intellectual property through ongoing systematic internal training of researchers. Researchers are also encouraged to take external short courses on intellectual property and obtain related qualifications.

Global Patent Application Status (as of March 31, 2022)



Global Trademark Applications (as of March 31, 2022)





## 2. Information Use

The Research & Development Division and the Intellectual Property Division work together on creation of new businesses and new products by using the IP landscape (analysis of patent information on non-patented information to provide new insights, develop hypotheses, etc.) to analyze and advise on business strategy and R&D strategy.

### ● Support for Idea Generation, and Invention and Discovery

We support the generation of ideas by researchers by providing information sources that are useful for research and development and training on researching information. Researchers and the Intellectual Property Divisions also hold regular meetings in each laboratory. They both contribute ideas and results of verification at these meetings and work to generate ideas and discover inventions.

## Overview of the Laboratories for Each Business

### Functional Chemicals R&D Laboratories



The Functional Chemicals R&D Laboratories develop products that combine our materials with multiple other materials by applying our core technologies in resins, colorants, catalysts, and optical processing.

We develop epoxy resins with a high heat resistance, maleimide resins and other distinctive materials that contribute to the realization of Society 5.0—which calls for a 5G information communications society and other such technological advancements. We also look to further our extensive knowledge base in colorant synthesis technologies in the development of colorants for inkjet printers and other feature-led functional color materials as a step towards realizing the sustainable development goals (SDGs). In addition, we are furthering development of high-performance catalysts for manufacturing basic chemicals such as acrylic and methacrylic acids, and we are successively putting them on the market. We are contributing to a society with diverse modes of mobility and safe, comfortable living through the development of products that integrate polarizing film manufacturing technology and colorant synthesis technologies.

### Pharmaceuticals Research Laboratories

The Pharmaceutical Research Laboratories are vigorously pursuing R&D on new anti-cancer drugs using small molecule drug development, biotechnology, and polymer synthesis technology. In response to extremely high prices for biomedicines, we have become involved in the development and introduction of biosimilars as the low-cost formulations that society needs, and are taking on the challenge of manufacturing high-quality, high-yield biomedicines. The Pharmaceutical Research Laboratories are also actively involved in development of generic anti-cancer drugs that can meet therapeutic needs.



### Research & Development Division (Safety Systems Business)



In the Research & Development Division (Safety Systems Business), we work on development of pyrotechnic devices that use our explosive technologies for various applications in vehicles such as disk type inflators (for driver's and passenger seat airbags), cylinder type inflators (for side, curtain, seat cushion, and knee airbags), and micro gas generators for seatbelt pretensioners. We are also building a research and development system to provide low-cost, high quality safety components in a timely manner to customers spread across the globe by combining the safety component technologies from production bases located around the world.

### Agrochemicals Laboratories

In the Agrochemicals Laboratories, we launched FINESAVE® in June 2018. This is a new insecticide for fruits and vegetables that we had been working to bring to the market.

We are proposing good uses of FINESAVE® to increase market penetration, searching for new agrochemicals that are safe and easy to use, and actively working to develop unique formulations. We also continue to expand indications for existing products.



Nippon Kayaku Group's Research and Development  
<https://www.nipponkayaku.co.jp/english/rd/index.html>

**M-CFT ② (Materiality Cross-Functional Team)****Mitigation of Climate Change****>> Mission**

The team will set targets for reducing greenhouse gas emissions and other ways to prevent global warming and targets for carbon neutral initiatives, and will work with each business and laboratory to mitigate climate change risk.

**Takao Izawa**

Corporate officer in charge of M-CFT 2  
Managing Director  
Head of Technical Operation Group

**Message from the Corporate Officer in Charge of M-CFT 2**

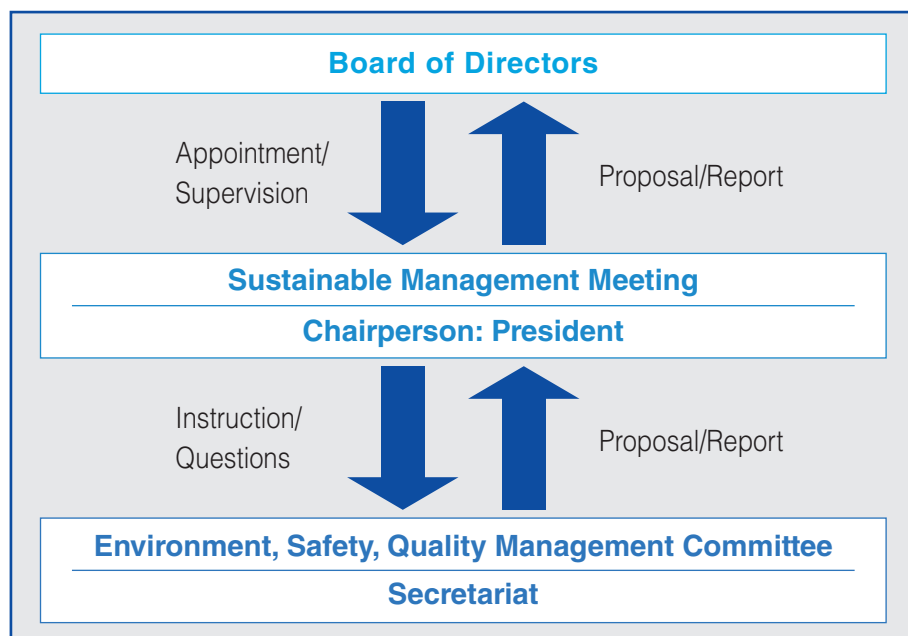
As a producer of chemical products, we recognize that climate change is an important issue facing the international community and believe the Nippon Kayaku Group must actively fulfill our responsibility toward the planet. In July 2020, we set a medium-term environmental target\*1 for reducing greenhouse gas emissions. In April 2022, we endorsed TCFD\*2 and began the **KV25** mid-term business plan to better promote sustainable management. Nippon Kayaku will disclose information based on the TCFD recommendations from this fiscal year onward.

\*1 Reduce greenhouse gas emissions from Group business activities (Scopes 1 and 2) by 32.5% in FY 2030 compared to FY 2019.

\*2 The Task Force on Climate-related Financial Disclosures (TCFD) established by the Financial Stability Board (FSB) in 2015.

The Mitigation of Climate Change Team is pursuing initiatives aimed at reducing greenhouse gas emissions company-wide as the basic policy for achieving carbon neutrality in 2050. In pursuing these plans, it is necessary to systematically and steadily make environmental investments in the introduction of new types of distributed electric power, conduct technological surveys on energy conversion, and take other steps while also engaging in more extensive conventional energy-saving activities. I also think it is important for the entire Group to work as one team on such initiatives. This includes not just the production divisions but also the business groups and indirect divisions related to procurement and information disclosure.

The Nippon Kayaku Group aims to further enhance corporate value and contribute to solving global environmental problems through the dual pursuit of a sustainable society and creation of business opportunities through activities to mitigate climate change.

**Information Disclosure Based on TCFD Recommendations****Governance**

In the Nippon Kayaku Group, the Sustainable Management Meeting is chaired by the president. It deliberates the business plan and other matters, and reviews and evaluates all activities related to the Nippon Kayaku Group's future responses to climate change. The results of such deliberations, reviews and evaluations are reported to the Board of Directors, which monitors and supervises them under this structure.

The Environment, Safety, Quality Management Committee (chaired by the head of the Technical Operations Group) has been created as one of the specialized committees under the Sustainable Management Meeting to oversee the implementation of measures to combat climate change. This committee delves deeper into issues related to climate change from a standpoint that extends across the entire Group.

## Strategy — Climate-related Risks and Opportunities —

The Nippon Kayaku Group operates multiple businesses globally and various risks and opportunities accompany each business area. We evaluated climate-related risks for the entire Group based on the TCFD recommendations to specify the impact of climate change on each business and considered the opportunities for each business area.

We have defined the timeframe for the materialization of risks as follows when specifying climate-related risks and opportunities.

	Period	Reason
Short-term	Four years up to FY 2025	Set the period for the <b>KAYAKU Vision 2025 (KV25)</b> mid-term business plan which began in FY 2022
Medium-term	Through FY 2030	Aligned with the FY 2030 target specified in the medium-term environmental goals of the Nippon Kayaku Group
Long-term	Through FY 2050	Aligned with the target year for NDC (Nationally Determined Contribution, determined by the Japanese government)

### • Climate-related Risks

Business risks related to climate change are based on the IPCC's (United Nations Intergovernmental Panel on Climate Change) Representative Concentration Pathway (RCP 2.6, 8.5) scenarios, IEA's (International Energy Agency) Sustainable Development Scenario (SDS) and the Stated Policies Scenario (STEPS) for both the 2°C and 4°C scenarios.

#### Risks in Transitioning to a Decarbonized Economy for the 2°C Scenario

Category	Major Risks	Period of Risk Emergence	Financial Impact	Major Countermeasures
Policies & Regulations	Increased operating costs from tighter emissions regulations	Short to long term	Medium	● Implement distributed power for each site, such as solar power and high-efficiency cogeneration power generators
	Rising price of electricity, LNG, etc.	Short to long term	Medium	● Reduce material loss by utilizing material flow cost accounting (MFCA) and implement comprehensive energy-saving activities
	Increased raw material costs from tighter emissions regulations	Short to long term	Medium	● Encourage suppliers to reduce emissions through engagement activities
Market & Reputation	Increased costs from disclosure of environmental information, life cycle assessment (LCA) calculations, etc.	Medium to long term	Small	● Streamline the emissions calculation method at each site and systemize the LCA calculations

#### Physical Risks from the 4°C Scenario

Category	Major Risks	Period of Risk Emergence	Financial Impact	Major Countermeasures
Acute & Chronic Physical Risks	Increased costs from flood damage caused by typhoons, heavy rain, high tides, etc.	Short to long term	Medium	● When building new plants, account for the possibility of flooding when considering the geographical situation and the configuration and placement of equipment
	Impact on operations due to water shortage	Medium to long term	Small	● Strengthen efforts to save water used during production, and consider reusing and recycling water
	Reduced labor productivity due to increased temperatures	Medium to long term	Small	● Enhance the work environment by improving air-conditioning, promoting the automation of high-temperature work processes, etc.

### Topic

### — MFCA Initiatives —

Material flow cost accounting (MFCA) is a method for visualizing the quantity and cost of material losses for raw materials and other inputs in the production process. By clearly visualizing reduction of material losses, we can expect benefits from reducing the burden on the environment by reducing costs and improving resource efficiency, and from reducing energy consumption.

We began using MFCA for products at the Fukuyama Plant in FY 2019. Installation of equipment to recycle previously discarded solvents with a high boiling point made a substantial economic contribution and enabled us to contribute to resource efficiency.

We are expanding the use of MFCA to the Asa and Tokyo Plants, which manufacture synthetic chemicals, and the Joetsu Plant, which processes film, and are considering introduction at the Himeji Plant, which assembles safety components. Our ultimate goal is to roll MFCA out to the entire Group.



## ● Opportunities in Each Business Area in Transitioning to a Decarbonized Economy for the 2°C Scenario

Business Area		Business Environment	
Functional Chemicals	Functional Materials	Tightened regulations against greenhouse gas emissions in various countries & regions	<ul style="list-style-type: none"><li>● Advances in social changes, such as growth of smart cities</li><li>● Heightened demand for increased energy efficiency of electronics products</li><li>● Increased demand for storage batteries that are able to handle large output fluctuations and green hydrogen as an alternative to fossil fuels in response to expansion of renewable energy</li><li>● Global expansion of demand for mobility/transport methods that have relatively low emissions</li></ul>
	Color Materials		
	Catalysts		
	Polatechno		
Pharmaceuticals		Tightened regulations against greenhouse gas emissions in various countries & regions	● Direct impact is limited
Safety Systems			<ul style="list-style-type: none"><li>● Global expansion of demand for mobility &amp; transport methods that have relatively low emissions</li><li>● Significant restrictions on sales of internal combustion engine vehicles, depending on the region</li></ul>
Agrochemicals		Tightened regulations against greenhouse gas emissions in various countries & regions	● Direct impact is limited

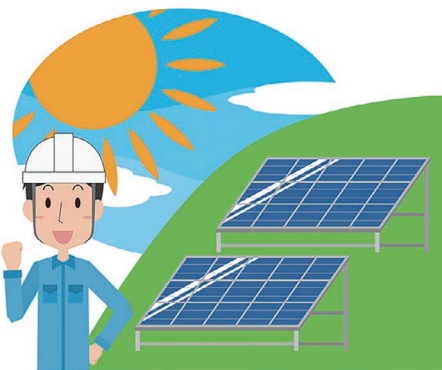
## Risk Management

The Nippon Kayaku Group identifies reducing energy consumption and greenhouse gas emissions as a key sustainability issue related to climate change. (⇒ [p. 42](#) Key Sustainability Issues and Action Plan)

The M-CFT Mitigation of Climate Change Team was created to coincide with the start of the **KV25** under a governance system comprised of the Board of Directors, the Sustainable Management Meeting and the Environment, Safety, Quality Management Committee. This response team plays a central role in identifying and evaluating climate change risks, while also executing other specific measures such as actively implementing energy-saving efforts and pushing forward with environmental investments.

### FY 2021–FY 2022 Initiatives

- Company-wide roll-out of MFCA: Introduce at each location in Japan and to overseas production locations in the future
- Introduce the optimal distributed energy sources for each business location
  - Fukuyama Plant** : Solar power generation PPA\* (Plan to begin operation in FY 2022)
  - Takasaki Plant** : Co-generation system (Considering introduction)
  - Himeji Plant** : Solar power generation PPA\* (Begin construction in FY 2023)
- \* Power Purchase Agreement: An agreement to sell electric power
- Consider indirect investments such as purchase of low-emissions electric power and acquisition of Non-Fossil Certificate (NFC)





\* Financial impact: Large = 2 billion yen or more; Medium = 0.5 to 2 billion yen; Small = 0 to 0.5 billion yen

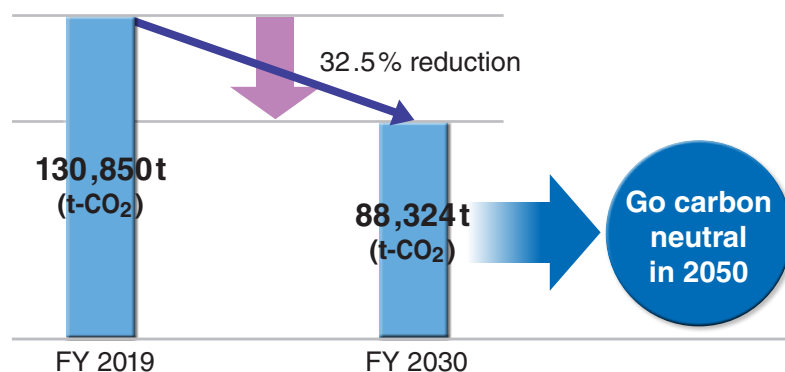
	Opportunity	Period of Opportunity Creation	Financial Impact*
	<ul style="list-style-type: none"> <li>Expansion of semiconductor-related products from growth of smart cities and DX</li> <li>Expansion of functional materials that help reduce energy consumption of display devices</li> <li>Expansion of low-emission materials due to the increased shift toward use of biomass for raw materials ⇒ R&amp;D on Epoxy Resins Using Biomass as Raw Material <a href="#">p. 31</a></li> <li>Expansion of resin materials that help make mobility frames more lightweight</li> </ul>	Short to long term	Large
	<ul style="list-style-type: none"> <li>Expansion of ink for digital on-demand printing that enables low-carbon printing ⇒ Expansion of Inkjet Inks Used in Industrial Applications That Make Environmentally Friendly Printing Possible <a href="#">p. 31</a></li> <li>Expansion of dimming glass/film that controls incident sunlight</li> </ul>	Short to long term	Large
	<ul style="list-style-type: none"> <li>Growth of catalysts for producing green energy, such as hydrogen ⇒ Development of Catalysts That Contribute to Realization of a Society That Uses Hydrogen as an Energy Source <a href="#">p. 31</a></li> <li>Growth of catalysts for promoting the use of biomass-derived raw materials</li> </ul>	Medium to long term	Large
	<ul style="list-style-type: none"> <li>Growth of sensors, HUD, and other safety display device components, brought on by the development of EV and automated driving</li> <li>Growth of polarizing plates that help reduce energy consumption of display devices</li> </ul>	Short to long term	Medium
	<ul style="list-style-type: none"> <li>Studying items within the entire range of business activities that will become opportunities</li> </ul>	Short to medium term	Small
	<ul style="list-style-type: none"> <li>Rise of EV and automated driving brings increased diversification in smallness of size, lightness of weight, and shape to automobile safety parts ⇒ Targeting Businesses That Contribute to Going Carbon Neutral <a href="#">p. 37</a></li> <li>Expansion of safety parts for unmanned aircraft such as drones ⇒ Sales Launch of Emergency Parachute System for Drones <a href="#">p. 26</a></li> </ul>	Short to long term	Large
	<ul style="list-style-type: none"> <li>A certain level of temperature increase is expected even for the 2°C scenario, thus expanding the use of biostimulants that help maintain and improve agricultural productivity ⇒ About Biostimulants <a href="#">p. 38</a></li> <li>Expanded use of existing agrochemicals to deal with new problems with pests</li> </ul>	Medium to long term	Small

## Metrics and Targets

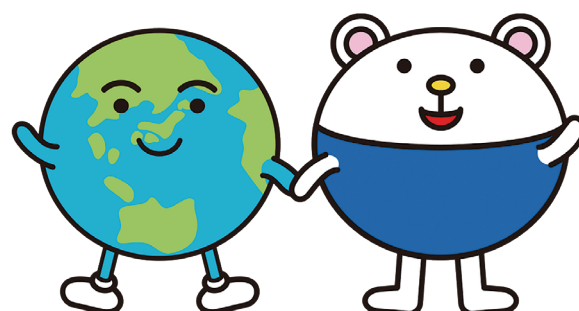
The Nippon Kayaku Group has established the KPI (long-term environmental target) of reducing greenhouse gas emissions (Scope 1 and 2) for the entire Group by 32.5% in FY 2030 compared to FY2019 as a metric to combat the risk of climate change. To achieve this target, we are beginning by targeting a 3% reduction in emissions every year during **KV25**.

To prepare for setting Scope 3 targets in the future, we have also been working on improving the accuracy of our Scope 3 calculation methods to make it possible to individually determine emissions for each product (carbon footprint). Our FY 2021 aggregation results for Scope 1, 2 and 3 were verified by a third party.

To pursue even greater reductions in 2030 and beyond, we are considering actions we need to take to reduce emissions in the entire supply chain and have an action plan for conducting advance surveys aimed at conversion to hydrogen, ammonia, and other sources of green energy. Our long-term goal is to achieve Scope 1 carbon neutrality in 2050.



Reduction in greenhouse gas emissions (Scope 1 + Scope 2)



## Topic

# Aggregation of CO<sub>2</sub> Emissions Data throughout the Supply Chain

## Disclosure of CO<sub>2</sub> Emissions Data Throughout the Supply Chain (Scope 3)

In a report published in 2021, the United Nations Intergovernmental Panel on Climate Change (IPCC) sounded the alarm on the frequency and intensity of heat waves, torrential rains, and events caused by global warming judged to be the result of human activities. We must reduce greenhouse gases substantially by acting in cooperation with the chemical industry, which has prospered while using fossil fuels, in order to mitigate global warming and achieve carbon neutrality. The Nippon Kayaku Group calculates CO<sub>2</sub> emissions in our supply chain (Scope 3) in order to ascertain the total volume of greenhouse gas emissions generated in corporate

activities and formulate a plan for reducing emissions in the entire supply chain.

In FY 2021, we improved the accuracy of calculations by using more appropriate emissions base units and improved efficiency and reduced the amount of labor involved by automating part of the aggregation work. We also implemented independent verification of aggregation results. As we review the results, we will discuss them with our internal procurement departments and other departments to set specific targets that encompass the entire supply chain.

- Scope 1 Direct emission of CO<sub>2</sub> from emission source that the business owns or manages (emissions from fuel use, manufacturing process, etc.)  
 Scope 2 Indirect emission from the use of electricity, heat, and steam supplied by another company (use of purchased electricity, etc.)  
 Scope 3 Indirect emissions outside of scope 2 (procurement of raw materials, employees' commute, business trips, waste treatment consignment, use of products, disposal, etc.)

Category		Emissions (thousand tons-CO <sub>2</sub> /year)		
		FY 2019	FY 2020	FY 2021*
1	Purchased products and services	243.6	237.3	294.5
2	Capital goods	42.7	42.9	26.8
3	Fuels and energy related activities not included in scope 1 and 2	22.4	21.2	22.3
4	Transportation and distribution (upstream)	19.0	17.6	22.3
5	Waste generated in operations	26.5	28.8	31.8
6	Business travel	0.8	0.8	0.8
7	Employee commuting	2.5	2.4	2.4
8	Leased assets (upstream)	Not calculated as included in Scope 1 and 2		
9	Transportation and distribution (downstream)	1.0	1.0	1.6
10/11	Processing/use of sold products	–	–	–
12	End-of-life treatment of sold products	15.4	23.2	26.4
13	Leased asset (downstream)	0.4	0.4	0.4
14/15	Franchise/investment	–	–	–
Scope 3 total		374.3	375.6	429.3
Scope1		36.2	35.3	37.4
Scope2		94.7	83.1	74.7
Total of Scopes 1+2+3		505.1	494.0	541.4

Calculation method: Calculated, in principle, using the emissions coefficients in the Basic Guidelines on Accounting for Greenhouse Gas Emissions Throughout the Supply Chain by the Ministry of the Environment and Ministry of Economy, Trade and Industry

\*Calculation results for FY 2021 were independently verified by Sustainability Accounting Co., Ltd.



Click URL

[Important Issues]

Reducing Energy Consumption and Greenhouse Gas Emissions

<https://www.nipponkayaku.co.jp/english/sustainability/environment/warming/>

Independent Third-party Assurance Report

<http://https://www.nipponkayaku.co.jp/english/sustainability/library/warranty-report/>

## Efficient Use of Water Resources and Reduction of Wastewater and Industrial Waste

Five of the 17 sustainable development goals (SDGs) relate to water risks\*: Goal 6 (Clean Water and Sanitation), Goal 12 (Responsible Consumption and Production), Goal 13 (Climate Action), Goal 14 (Life Below Water), and Goal 15 (Life on Land). Water resources are limited and are important resources, and preservation of water resources is a material global issue, just as mitigating climate change is. In the Nippon Kayaku Group, water resources are essential for engaging in business activities, and we have specified water resources as an important sustainability issue. We have long taken consistent steps to curb COD emissions and implement other initiatives aimed at properly handling wastewater from production facilities. We also take steps now to reduce water use and enable use without wasting water resources, along with specifying KPI.

\*Water risks are broadly categorized into the following three types of risks:

<b>Physical risk</b>	Impact on operations from drought, flooding, and water pollution
<b>Regulatory risk</b>	Tightening water quality standards and revisions to waterworks and sewerage charges
<b>Reputation risk</b>	Decline in corporate image based on response to water access rights

For waste as well, it is all necessary to reduce resource consumption by using materials efficiently and promoting recycling during the entire process, from production to consumption and disposal in order to advance toward the realization of a cyclical society that minimizes the burden on the environment. In Key Sustainability Issues and Action Plan on [p. 42](#), we describe how we have set KPI for the recycling rate and zero emissions rate, and reduce waste, while also working on effective use of the waste generated from business activities and considering how it can be used as a resource for something else.

### Prevention of Water Pollution

Nippon Kayaku has set stricter voluntary management standards than the reference values specified in laws and regulations and prefectural and municipal ordinances, and the water we discharge meets the standard values. We also handle dyes, inkjet ink and other colorant-related products. At the Fukuyama Plant and Tokyo Plant where these colorant-related products are manufactured, wastewater that contains colorants generated during the manufacturing process is processed to remove the colorants and then discharged.

Efforts to reduce chemical oxygen demand (COD) emissions by installing activated sludge treatment equipment in plants with high COD emissions successfully limited company-wide COD emissions to 124.2 tons, a slight increase of 1.6 tons, in FY 2021 despite an increase in production volume. The Nippon Kayaku Group will continue to strictly manage wastewater and work to protect the environment.



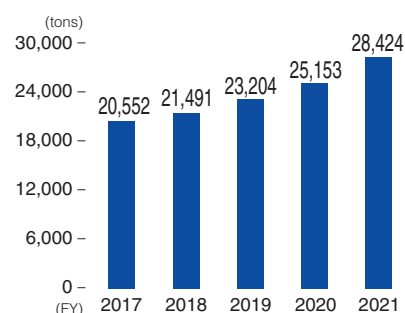
Fukuyama Plant wastewater treatment facility

### Reduction of Industrial Waste

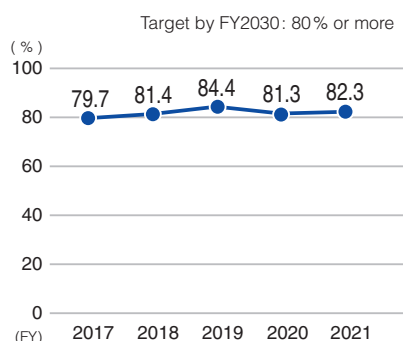
The volume of waste generated in FY 2021 was 28,424 tons, an increase of around 13% from the 25,153 tons generated in the previous fiscal year. However, only 298 tons of landfill waste was produced, a reduction of roughly 74% from the previous fiscal year. This also resulted in a zero emissions rate of 1.0%, to 0.6 percentage point decrease from the previous fiscal year. This clearly shows the results of progress on recycling waste by each plant and business location, and especially on diverting waste produced and recycling it, instead of disposal in the landfill.

In the future, we will continue to explore ways to reduce and effectively use waste, and actively pursue diversion and recycling of waste produced, instead of disposal in the landfill.

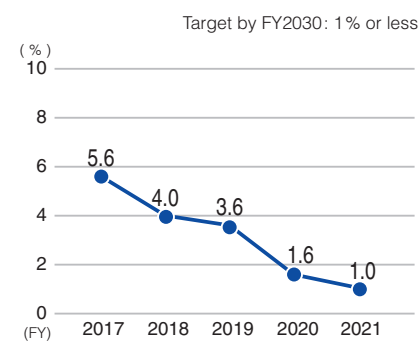
#### Volume of Waste Generated



#### Recycling Rate



#### Zero Emissions Rate



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[Important Issues] Improving Efficiency of Water Resource Use  
<https://www.nipponkayaku.co.jp/english/sustainability/environment/water/>

[Important Issues] Reduction of Wastewater and Industrial Waste  
<https://www.nipponkayaku.co.jp/english/sustainability/environment/waste/>

**M-CFT ③ (Materiality Cross-Functional Team)****DX****>> Mission**

We will establish the environment for digital transformation (DX) by providing company-wide DX education to everyone and increasing the level of IT knowledge, and will generate case examples to prepare the soil for cultivating innovation. Propagating the waves of innovation out through entire value chain will lead to creation of new businesses and new products and provide new value to our customers.

**Yoshitsugu Ishida**

Corporate officer in charge of M-CFT 3  
Member of the Board  
Managing Director  
Head of Financial Group

**Message from the Corporate Officer in Charge of M-CFT 3**

The acceleration of digitalization of all sorts of things these days likely means that companies will be weeded out if they fail to achieve digital transformation (DX). Speed in that transformation is also demanded of chemical manufacturers, which provide value to customers through technology and quality.

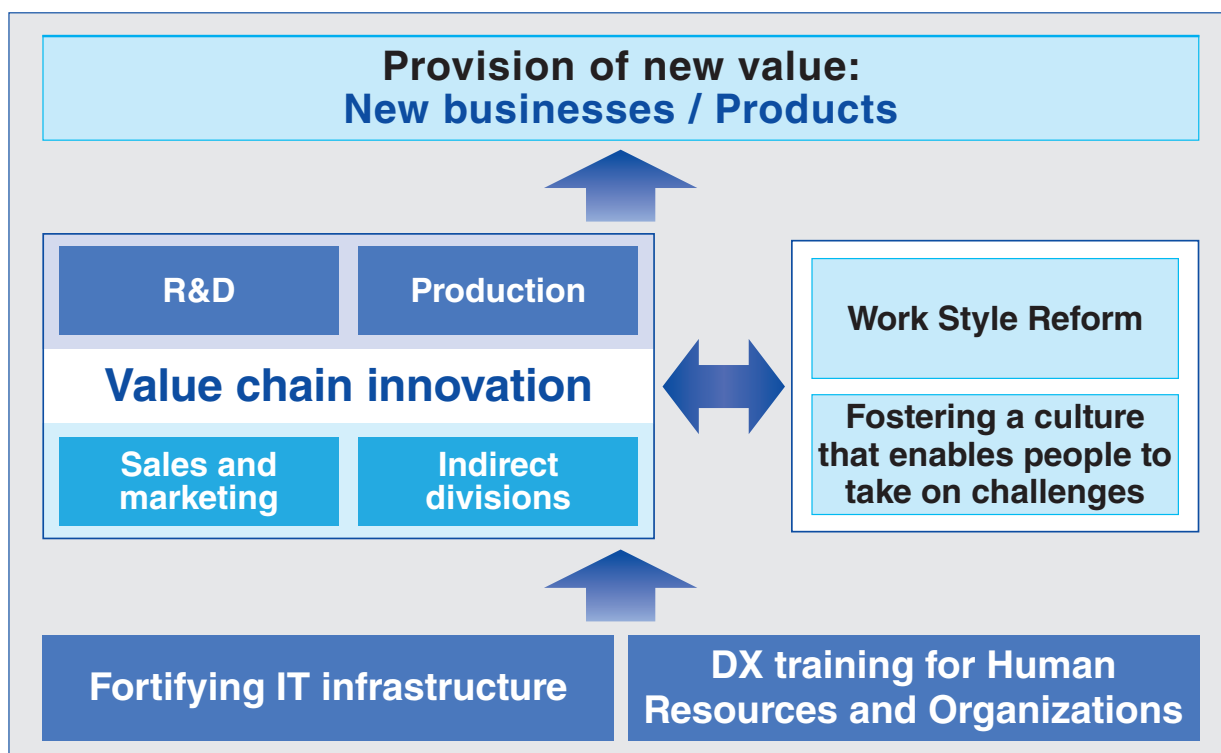
The goal of DX the Nippon Kayaku Group is to create new products and services and provide new value to customers through innovation of the entire value chain. I want those actions to make the Nippon Kayaku Group itself an unbeatable company. To achieve that, we will begin by preparing the soil that will nourish innovation.

We will establish an IT and network environment that makes it easy to use digital technology and create the foundation for innovation, in addition to improving the literacy of every employee in DX and IT. We will take this further and

propagate the waves of innovation through the value chain by taking the lead on generating successful cases of DX in the areas of manufacturing and R&D where overwhelming speed is particularly important.

DX involves attempts at innovation and there is no guarantee that all of those attempts will be successful. We will make it possible for employees to dare to take on challenges in innovation that might fail while simultaneously creating a corporate culture that permits such failures.

The Nippon Kayaku Group has positioned 2022 as the initial year for our DX Challenge. We have formed an M-CFT DX team anchored by the Information Systems Division in the Financial Group and will make steady progress on preparing the soil to bear the fruits of that challenge by FY 2025, the final fiscal year of the mid-term business plan.

**DX Initiatives and Vision of the Nippon Kayaku Group**



## DX training for Human Resources and Organizations



To actively undertake DX in the entire Group, it is important for the employees who handle the digital data and tools to undertake DX with a spirit of challenge and interest in the various areas of DX.

We will focus most on developing human resources who have a solid understanding of operations, digital and IT skills, and can drive innovation while borrowing the skills of external experts on occasion.

In addition to putting effort into fostering a receptive corporate culture and providing various kinds of training to improve literacy, we will pool ideas that emerge from training and elsewhere so they do not end up getting buried, and will strive to support formulation of DX plans to meet the needs of the workplace.

**Main initiatives:** Internal consulting to support DX, DX literacy education, support for DX trials in each division, etc.

## Strengthening IT Infrastructure —Considering Core Operating System Upgrades and IT Tool Maintenance—

As we maintain IT infrastructure, it is particularly important to considering upgrading to next-generation core operating systems. We are focusing on the details of what we hear from each division to elicit current issues from the perspective of employees actually using the systems and simultaneously optimize operations to make sure that the next-generation systems will be highly convenient to use. Sufficient time will be allowed to consider these matters over the four years of the **KV25** mid-term business plan to make sure that the systems can be used to obtain and accumulate data on various business activities and make swift decisions on business and management.

To increase the convenience of IT tools used on a daily basis we will work at a rapid pace to equip workplaces with communication tools. The goal is to improve productivity and build an environment where anyone can participate in chats, web conferences, share work output, and otherwise communicate from anywhere, at any time, and perform work quickly and securely.

**Other initiatives:** Introduction of next-generation network, platform for effective use of information, integrated cloud environment, etc.

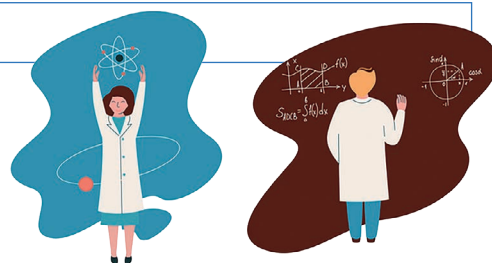


## Research DX —Exploring Platforms for Using Informatics—

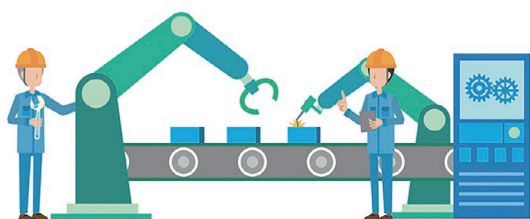
Digital transformation (DX) of research and development through data mining, AI use, data visualization, and other means is especially important to accelerate the creation of new products. We began by actually asking employees involved in research and development and aim to build the infrastructure and mechanisms to support research and development based on the three cornerstones of digital data accumulation, digital data use, and education for literacy and skills.

In 2022, we began testing platforms for use of informatics that make it possible to use data science and computational science in any environment. Making it possible to easily access the platform from laboratories and other places where researchers perform their work without special hardware, such as a dedicated high-performance PC and communication environment, will enable researchers to use sophisticated data routinely. We will reference the results of evaluations by researchers who participated in testing as we target full-scale operation.

**Other initiatives:** Partnering with external organizations to support for data analysis, accumulation of data via electronic notes on experiments, basic seminars on AI for researchers, etc.



## Production DX —DX Linked to Workplaces—



Digital transformation (DX) of production is aimed at expanding business through process innovation to improve efficiency and cost competitiveness. We are beginning to work on DX as we share views and work together, based on inquiries and discussions at each plant in Japan.

Cases of DX we have already embarked on include assessing quality through imaging recognition and building new digitized smart plants (Fukuyama Plant and Asa Plant). We will accumulate expertise whether the first cases are successes or failures, and will roll out successful cases across the organization.

**Other initiatives:** Introduction of manufacturing monitoring systems, etc.

**M-CFT ④ (Materiality Cross-Functional Team)**

## Business Process Re-engineering

### >> Mission

The Nippon Kayaku Group will enhance earning power by revising Group management and business operation management methods and cost management methods, and improving efficiency and productivity through company-wide A3 (always 3% reduction) activities.

**Tomoo Shibuya**

Corporate officer in charge of M-CFT 4  
Member of the Board,  
Representative Senior  
Managing Director  
Head of Strategic  
Corporate Planning  
Group,  
Head of Agrochemicals  
Division



### Message from the Corporate Officer in Charge of M-CFT 4

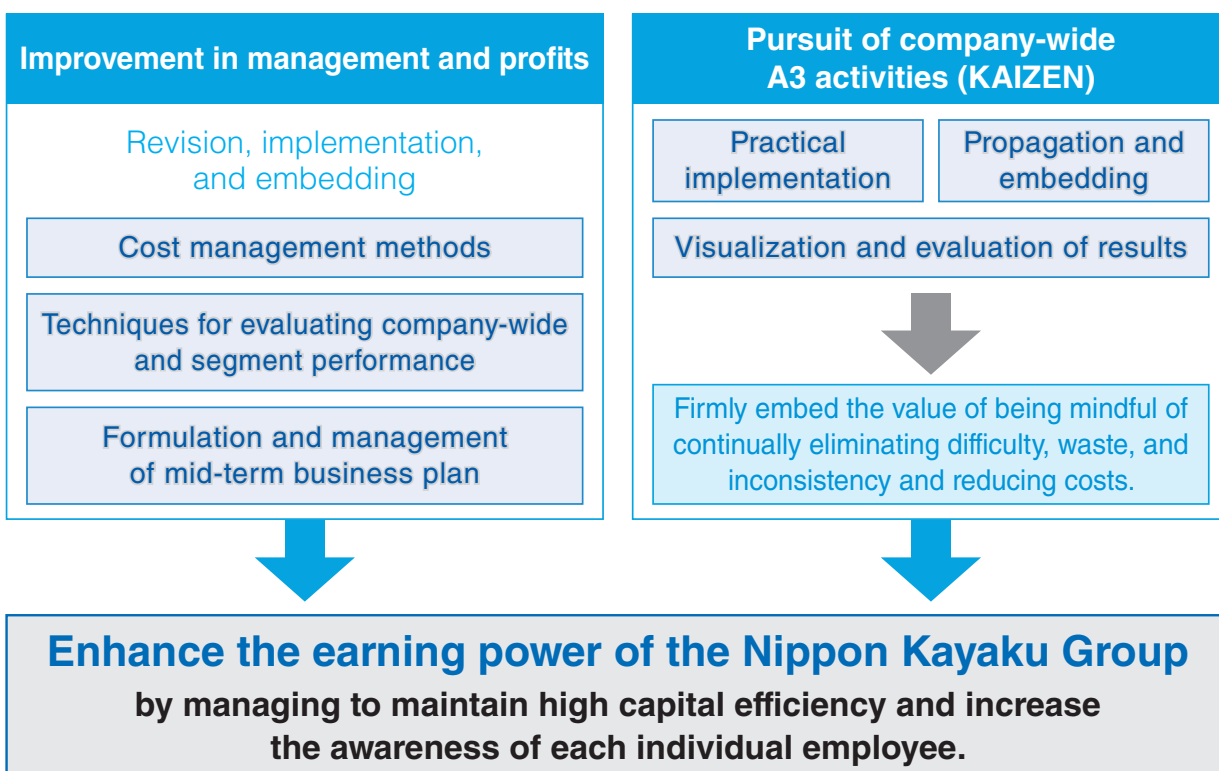
To achieve better management and high capital efficiency that will lead to improved profitability, which is an urgent issue for the Nippon Kayaku Group, it is important to increase the productivity of each person in the Group and across the entire range of work, in addition to continually creating highly profitable new businesses and new products.

The Corporate Planning Division in the Strategic Corporate Planning Group is central to business process re-engineering and considers measures that will contribute to improving profit while working together with each business division, business location, and Group company from the two perspectives of creating mechanisms for work and changing

the mindset of employees. More specifically, the division outlines various action plans, such as using ROIC as a management indicator and promoting campaigns to foster a KAIZEN mindset in each person.

We have set a target for increasing consolidated operating income during the **KV25** mid-term business plan and will enhance the earning power of the Nippon Kayaku Group by revising Group management and business operation, company-wide cost management methods, and other mechanisms while also making sure that all employees actively practice A3 activities (KAIZEN) with an awareness of continually improving operational efficiency and productivity.

### Business Process Re-engineering Team and Overview of Initiatives



## Initiatives in Improving Management and Profits: Introduction of ROIC, etc.

We are pursuing various initiatives aimed at organizing the numerical financial data that is scattered throughout the Nippon Kayaku Group and is hard to use, and putting it to use in improving profits while enabling timely use in making accurate business decisions.

We are using BI tools\* to visualize cost management and reduction, and exploring cost management methods and other means to reduce costs.

\*Business Intelligence tools: Tools for analyzing and visualizing various kinds of data accumulated in the company, which are useful for management and routine business operations.

We also plan to introduce return on invested capital (ROIC) as an indicator for evaluating company-wide and segment performance and evaluating investments, and will link this to speedy and effective profit improvement measures to improve the checking function and analytical ability to discern the real reasons for the decline in earning power.

I am working with each business group and the Finan-

cial Group on considering the evaluation criteria and other aspects to make sure that we are ready to begin using ROIC for evaluation from FY 2023.

Going forward, we intend to explore and discuss activities such as methods for formulating business plans that can increase accuracy while reducing the number of work hours involved in each division, and methods for calculating effective investment that will contribute to accurate decisions.



## Pursuit of Company-wide A3 (KAIZEN) Activities

The term “A3 Activities (KAIZEN)” derives from the name for activities that involve always being conscious of reducing costs by 3%.

Employees in the entire Group have routinely and actively engaged in these activities since 2020 to increase operating efficiency and productivity. These activities are designed to change the mindset of employees and are practiced to firmly instill the value of always being conscious of eliminating diffi-



culty, waste, and inconsistency (referred to as the 3Ms (Muri, Muda, Mura) in Japanese). Both the members who play a central role in pursuing activities in each business division, plant, and laboratory, and core members who work to find solutions for company-wide cross-organizational improvements work with employees as a team to pursue these activities.

Specific activities take a multilateral approach and include communicating information and conducting company-wide KAIZEN campaigns to increase the awareness of employees, finding solutions to cross-organizational issues, and holding information exchange meetings among various business locations.

Close to 70% of employees from Nippon Kayaku and domestic Group companies participated in the company-wide KAIZEN campaign in December 2021 to record and aggregate daily KAIZEN proposals, in particular. We plan to continue this activity in the future to strengthen the ability to communicate to the entire Nippon Kayaku Group and foster a sense of unity, heighten consciousness of KAIZEN, and enhance corporate competitiveness.

### Topic

### Holding Information Exchange Meetings by Occupational Category

Company-wide efforts to propagate and embed A3 activities (KAIZEN) are resulting in the steady propagation of KAIZEN in research, sales, and indirect divisions, in addition to the production divisions, which have actively pursued these activities in the past. To further propagate and embed A3 activities (KAIZEN), we are planning information exchange meetings by occupational category. These meetings were planned to give employees a tangible sense of A3 activities (KAIZEN) in other business locations in addition to their own workplaces. This will enable them to derive new insights and ideas, and help them to solve problems. It has also enabled employees to discover other cases that can be applied in their own workplaces.

These meetings were held in production divisions (May 2022), research divisions (July 2022), and sales divisions (October 2022), and everyone is currently working diligently to prepare for the A3 Activities presentation meeting in November, the main event where they present their A3 activities (KAIZEN). We will continue to actively engage in activities to make sure that everyone is mindful of A3 so that the change in mindset of each employee will lead to achievement of the goals in each division and also make a substantial contribution to achieving **KV25**.



Information exchange meeting for research divisions (held in July 2022)

## M-CFT 5 (Materiality Cross-Functional Team)

## Work Style Reform

## &gt;&gt; Mission

Strive to be “a good, resilient, and vibrant company” and increase employee engagement by implementing work style reforms and human resource system reforms that enable every employee to work with vitality.

## Hiroshi Mikami

Corporate officer in charge of M-CFT 5  
Member of the Board  
Managing Director  
Head of Administration Group



## Message from the Corporate Officer in Charge of M-CFT 5

People play leading roles in the activities of the Nippon Kayaku Group. We aim to be a company that enables each employee to grow by working in a workplace environment which respects their human rights and enables them to feel safe as they work. We want to be company where all employees derive a sense of joy from their work by practicing the **KAYAKU spirit**, our corporate vision.

The Work Style Reform Team will pursue reforms to create a personnel system that gives everyone an equal opportunity to take on challenges and be evaluated impartially. This will lead to proper placement and treatment and enable everyone feel the sense of joy that comes with actual experience in their work. From FY 2021 into FY 2022, this team quickly established a system for responding to the changes in workstyles brought about by the COVID-19 pandemic. We are focusing on promoting the advancement of global human resources and reinforcing appropriate placement of personnel.

We will strive to develop “innovators” who generate innovation, the source of our competitiveness, while focusing on building an organization with diversity that ensures a sense of psychological safety and fosters a highly productive, flexible organizational culture.

Feeling the sense of joy that comes with actual experience

Global human resources

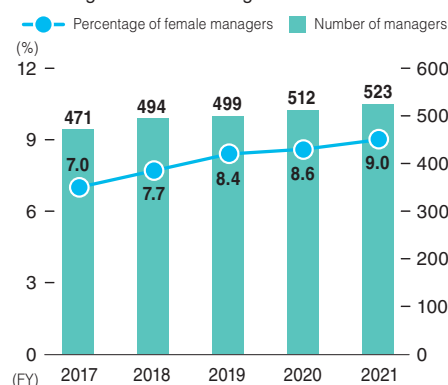
Innovators

## Diversity and Inclusion — Creation of a Comfortable and Rewarding Work Environment —

The Nippon Kayaku Group is focusing on creation of a comfortable and rewarding work environment and increasing employee engagement. This will enable employees to resonate with the corporate vision and maintain a relationship of mutual trust with management while enabling them to derive satisfaction from and perform their work energetically.

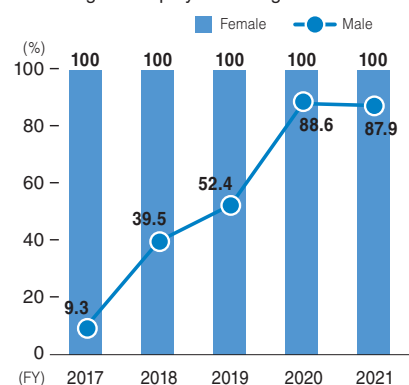
## Encouraging Diversity

Percentage of female managers



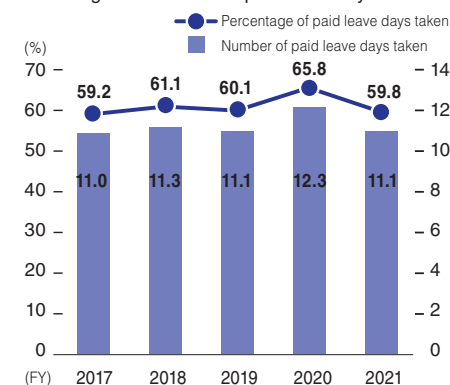
## Gender Equality

Percentage of employees taking childcare leave



## Work-life Balance

Percentage and number of paid leave days taken



Diversity & Inclusion

<https://www.nipponkayaku.co.jp/english/sustainability/social/diversity/>



We are introducing a position class system in our personnel evaluation system that enables work assignments and treatment without regard to age or gender, career, or academic record. This system is rooted in roles and responsibilities.

To achieve gender equality, we have also formulated an action plan to support development of the next generation that strives for a harmonious balance between work, life, and childcare and establishes a workplace environment that makes it easy to work. Specific measures are implemented to encourage men to take childcare leave, and to continually

promote the advancement of women. The percentage of female managers, specified as a KPI to track improvement, is rising year after year and reached 9.0% in FY2021, maintaining the target of 8.0% or higher. The new target for FY2024 is set at 10%.

Telecommuting was implemented as a temporary measure during the COVID-19 pandemic. We began operating this as an official system from January 2022. The adjustable timeframe for staggered work was also expanded from one hour to two hours, to provide greater flexibility in workstyles.

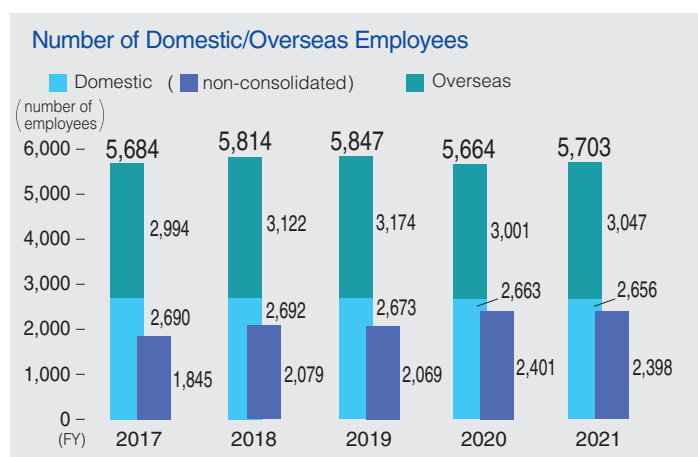
## Promotion of Global Human Resource Development and Activity

Nippon Kayaku Group operates in Japan and 11 other countries. Overseas employees comprise a larger percentage of our total workforce than employees in Japan. To pursue corporate activities quickly and accurately in this sort of environment, we think it is important to eliminate the distinction between domestic and overseas, maintain a global perspective, and develop human resources who can be effective anywhere in the world. The Work Style Reform Team has begun working on initiatives to strengthen development of global human resources in **KV25**.

We will create a list of people who have a strong desire to work overseas from a pool consisting of people with over-

seas work experience, those who have earned M.B.A., and other qualifications; and will hire new graduates as global human resources. We are also expanding the support system to provide pre-assignment training and education on different cultures and commercial practices to create a more effective development program that combines on-the-job training, location rotation, and multiple overseas assignments.

To develop global human resources from among those hired locally at overseas Group companies, we are making sure they know and understand management policies, and are conducting surveys of overseas employees to identify and analyze career intentions. We will focus on establishing these sorts of training and hiring systems as key issues in **KV25**.

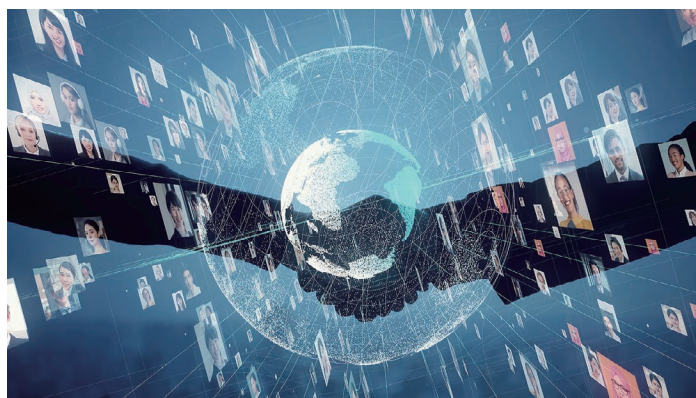


## Appropriate Human Resource Deployment —Digitization Human Resource Information—

A talent management system (the Kaonavi service by kaonavi, inc.) was introduced to visualize information on human resources and enable timely and accurate decisions on personnel matters. We prepared manuals, held a briefing session for employees, and began operation of the service in September 2022. Application of this system to personnel activities is being expanded as necessary.

This service enables us to easily and quickly access data on an employee's evaluation history, personal appeal, qualifications, language skills, desire to work overseas, and suitability for the workplace. A pulse survey also makes it possible to provide a complete set of information on the system that also includes visualization of employee satisfaction and health, and personnel evaluations. Integrated management of personnel information will make it easier to link this information to fostering a workplace culture that makes it easy to work and provides job satisfaction and to development global human resources.

We will pursue advancement of human resources by using a combination of education, training, and one-on-one meetings to visualize each person's career vision.



# Corporate Governance

## Outside Directors Roundtable

As KAYAKU Vision (**KV25**), the mid-term business plan for FY 2022 to FY 2025 begins, our three outside directors engaged in an exchange of opinions on the current state of corporate governance of the Nippon Kayaku Group, reflections on formulating **KV25** and plan characteristics, and effective ways to engage in dialog with shareholders and investors.



**Yo Ota**

Member of the Board  
Outside Director

Partner of Nishimura Asahi Law office  
Outside Audit & Supervisory Board,  
Ricoh Co., Ltd.

Outside Audit & Supervisory Board  
Member, Z Financial Corporation



**Yasuyuki Fujishima**

Member of the Board  
Outside Director

Director, Human Resources  
Development & Employment  
Organization



**Seiichi Fusamura**

Member of the Board  
Outside Director

Outside Audit & Supervisory Board  
Member, Concordia Financial  
Group, Ltd.

## Nippon Kayaku Group Corporate Governance

—Vision for System Establishment and Disclosure Information—

### Moderator:

I would like to ask all of you for your frank opinions as outside directors today. To begin with, I will ask you about the establishment of the governance system for the Nippon Kayaku Group.

### Ota:

The Nippon Kayaku Group has established a corporate governance system as company affiliated with the Prime Market, one of the new Tokyo Stock Exchange market segments. I feel that the general systems have been sufficiently developed through establishment of the Nomination and Remuneration Advisory Committee and formulation of the Corporate Governance Basic Policy in 2020, revision of the Director Remuneration System in 2021, and enactment of the Basic Policy on Sustainable Management, the Nippon Kayaku Group Human Rights Policy, and other policies in April 2022. From this point onward, I think the Nippon Kayaku Group has reached the stage of indicating the effectiveness of the Board of Directors supervisory functions internally and externally and permanently establishing this as a practice, while improving the quality of work performed through the systems established. However, there are also problems the Group must consider in the future, such as the disparity between the policy on striving for diversity in the Board of Directors and the actual state of diversity.

### Fujishima:

As stated in the Corporate Governance Report, the Nippon Kayaku Group is now able to comply with all of the items in revised Corporate Governance Code effected in June 2021. However, I also have the impression that the Group rushed to comply. I completely agree with Mr. Ota's opinion that the Company should delve more deeply into actual conditions. Establishment of the system is not the goal; it is important to operate a continuous cycle of improving the effectiveness of the corporate governance system. The Nippon Kayaku Group has shared its views on seeking outstanding external human resources without regard to gender or nationality and is implementing this to succeed in competition and achieve sustainable growth amid the accelerating pace of change in the world. However, I see a need for further progress.

### Fusamura:

I became a director last year, and have been highly impressed with the way everyone actively, freely, and openly expresses their opinions in the Board of Directors meetings and other meetings of the Nippon Kayaku Group I have attended. In that sense, I think the Group has fulfilled the things typically demanded of companies by society. As a chemical manufacturer, the Group has other points that it must pay attention to, in terms of specific industry characteristics. For example, it is important to have governance that maintains open communication from management to the workplaces, from the perspective of product safety and quality assurance.

### Fujishima:

Because the Nippon Kayaku Group is mainly a BtoB business, the feeling has probably long existed that as long as the direct customers understand the company, everything is fine. However, all products will ultimately end up in the hands of general consumers.

Information on corporate governance and other aspects of management on the corporate website and in the contents of this report is improving with each passing year. However, I still feel there a need to communicate information in a way that is easier for the general public to understand.

## KAYAKU Vision 2025(KV25) FY 2022–2025 Mid-term Business Plan —Improving Plan Accuracy and Company-wide Cross-organizational Activities—

### Moderator:

Please tell me what you think of the formulation of **KV25** and the plan characteristics.

### Fujishima:

**KAYAKU Next Stage**, the previous mid-term business plan, ended in failure to achieve net sales and operating income targets for the final year of the plan. Members of management were strongly intent on reflecting on and talking about that when formulating the current plan, **KV25**, and included us in the discussion from the outset as outside directors. We joined President Wakumoto and members of management in the “visible room of the Vision”\*, set up for exchanging frank opinions, and engaged in repeated discussions rooted in the workplaces. This made it possible to sketch out a clear road-map for definitively achieving the targets for each business. I think that resulted in formulating a highly accurate mid-term business plan, even though the target for net sales was set high, to surpass 200 billion yen and reach 230 billion yen.

\*The room renovated for frankly discussing progress and plans for management of each business division to achieve the Vision from executive director’s room.

### Fusamura:

The emphasis in **KV25** is also placed on management and employees sharing a common understanding of the overall policy as a corporate group. Furthermore, each business division has a plan for steadily implementing concrete initiatives to achieve incremental progress. I sense the will to change for the better in the way management has confronted the issue of improving profit margins head-on and continues to specify the creation of new businesses and new products



Yasuyuki Fujishima, Outside Director

as a material issue for the entire company. They are also putting effort into company-wide cross-organizational activities to manifest synergistic benefits from multiple business divisions.

### Ota:

How to demonstrate synergies among businesses to enhance corporate value has long been an issue for the Nippon Kayaku Group. While the Group has engaged in cross-organizational activities in research and development before, the scope was substantially expanded in **KV25** and a policy on company-wide cross-organizational initiatives was established for five company-wide material issues. The M-CFT\* activities, in which each business group is investing resources to address company-wide material issues, are challenges that the teams have taken on independently to generate synergies that will improve profits and enhance corporate value even if it is difficult to directly appropriate and use specialized technologies in different business areas. I think that is a major characteristic of **KV25**.

The Group also declared that it would pursue sustainable management in pursuing global sustainability, along with the launch of **KV25**. The Group has actively put effort into CSR management thus far, and I expect that to deliver more and more results as the Nippon Kayaku Group delves deeper into CSR management to keep pace with the changes occurring in the world.

\*M-CFT (Materiality Cross-Functional Team): Refers to company-wide cross-organizational teams consisting of members selected from multiple divisions to work on concrete initiatives targeting company-wide material issues. ⇒ [p. 40](#)



Yo Ota, Outside Director



## Constructive Dialog With Shareholders and Investors

—Actively Directing the Perspective Globally—



Seiichi Fusamura, Outside Director

### Moderator:

Please give me your opinion on how to engage in dialog with shareholders and investors.

### Fusamura:

While companies share the same goal of enhancing corporate value with shareholders and institutional investors, there are some areas in which their views will always differ due to the difference in their standpoints. However, the existence of such differences is precisely why it is important to conscientiously explain policies and conditions, seek stakeholder opinions, and endeavor to come to a mutual understanding. The Corporate Governance Basic Policy of the Nippon Kayaku Group states, "Executive Management and Board of Directors or Audit & Supervisory Board Members, including Outside Directors, will consider a system for interviews with shareholders and investors as necessary." As this indicates, I would like to actively cooperate if there are opportunities to state my opinion from my perspective as an outside director.

### Ota:

Institutional investors engage in dialog from an objective and rational perspective. If you listen to the problems they are pointing out after learning that their perspective differs from the company, I think their perspective will contain many points of insight for management. Institutional investors hold a large percentage of Nippon Kayaku Group shares, and they expect to engage in constructive dialog and receive an explanation of the story for enhancing corporate value, based on the Corporate Governance Code. Alternatively, the Nippon Kayaku Group must persistently and conscientiously explain points the Group wants institutional investors to understand from the Group's perspective.

### Fujishima:

There are more than a few cases in which the objective opinions of institutional investors have actually led to improvement in corporate activities when those opinions were incorporated in concrete actions. As an outside directors, I also recommend the opinions of investors to management when I can determine them to be beneficial for the Group.

The Nippon Kayaku Group operates globally, mainly in the functional chemicals business and safety systems business, so I would definitely like to see a stronger structure established for pursuing constructive dialog with institutional investors and management firms overseas. I think understanding what issues the Group is called on to address globally will better clarify the role of the Nippon Kayaku Group in a sustainable society.

### Moderator:

I highly appreciate the way you stated your opinions in a manner that is easy to understand. It was very informative. This wraps up today's roundtable. Thank you.



(Roundtable held at the head office of Nippon Kayaku Co., Ltd. on July 29, 2022)



Corporate Governance  
<https://www.nipponkayaku.co.jp/english/company/governance.html>

Corporate Governance Basic Policy  
[https://www.nipponkayaku.co.jp/english/company/governance\\_text.html#h01](https://www.nipponkayaku.co.jp/english/company/governance_text.html#h01)

Corporate Governance Report  
[https://www.nipponkayaku.co.jp/media/pdf/english/ir/esg/files/governance\\_report.pdf](https://www.nipponkayaku.co.jp/media/pdf/english/ir/esg/files/governance_report.pdf)

## Assessment on the Effectiveness of the Board of Directors

Since FY 2017, the Nippon Kayaku Group has conducted in-house surveys to assess the effectiveness of the Board of Directors, identify issues, and implement ongoing improvements in effectiveness, mainly in operation and functioning of the Board of Directors\*

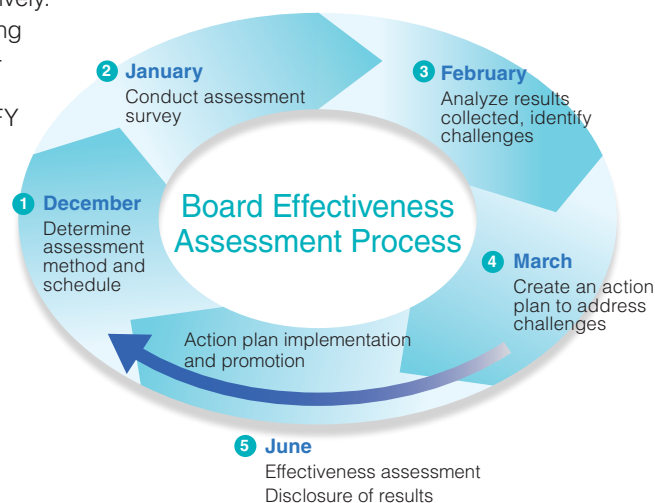
In FY2021, an independent organization was retained to formulate the survey and analyze respondent evaluations as a new means of increasing the independence and objectivity of the assessment. The independent organization compiled and analyzed the free-form opinions concerning the 2021 revisions to the Corporate Governance Code and the Board of Directors voiced in the survey, and reported its analysis and assessment to the Board of Directors. Survey topics included the composition, functions, and operation of the Board of Directors, self-evaluation of information provided to outside directors and outside Audit & Supervisory Board members, initiatives in sustainability, and investment in human capital and intellectual property.

As a result, the various improvements implemented thus far have led to improvement in the assessment and this confirmed that the Board of Directors is fulfilling its role and responsibilities effectively.

However, more issues to address were identified, including ensuring diversity of core human resources and the human resources development policy, and incorporating management in keeping with times for the business portfolio and Board of Directors. We have formulated a FY 2022 action plan for these issues and are implementing it.

### \*Improvements implemented after beginning Board of Directors effectiveness assessment

- Began distributing materials for Board of Directors meetings further in advance
- Ensured that advance explanations of agenda items are provided to outside directors
- Provided opportunities for outside directors to participate in important Company meetings and internal events
- Formulated our Basic Policy on Corporate Governance
- Established the Nomination and Remuneration Advisory Committee
- Elected a female Audit & Supervisory Board member



## Officer Skills Matrix

The Nippon Kayaku Group has set the maximum number of directors at 10 so the Board of Directors can fulfill its role and responsibilities effectively and make management decisions rapidly. We also think it is important to maintain diversity in knowledge, experience, and skills of Board of Directors members to ensure the independence and objectivity of the Board of Directors as well as maintain the necessary number of people who know our businesses and business issues well.

The Nomination and Remuneration Advisory Committee specifies skills considered universally necessary and skills necessary for the M-CFT activities that form the cornerstones of **KV25** for Group directors and Audit & Supervisory Board members, and discloses these as a Skills Matrix, which is reported to the Board of Directors.

Name	Position	Corporate management	International experience	Finance, accounting, and tax matters	Legal and compliance	Risk management	Business strategy and marketing	Personnel and labor and human resource development	Research and development	Manufacturing and quality management	ESG and sustainability	IT DX (digital transformation)
Atsuhiko Wakumoto	Member of the Board, President and Representative Director	◎	◎				○				○	
Tomoo Shibuya	Representative Director, Senior Executive Director	○	○	◎		○					○	
Hiroshi Mikami	Member of the Board, Managing Director	○			○	○		◎		○	○	
Yoshitsugu Ishida	Member of the Board, Managing Director	○	○	○			○					◎
Kazuto Koizumi	Member of the Board, Managing Director	○					○		○	◎		
Masatomi Akezuma	Member of the Board, Managing Director	○	○				◎		○	○		
Yo Ota	Member of the Board, Outside Director		○	○	◎						○	○
Yasuyuki Fujishima	Member of the Board, Outside Director	○	◎				○					○
Seiichi Fusamura	Member of the Board, Outside Director				◎			○				
Akihiro Kojima	Standing Audit & Supervisory Board Member (Full-time)				◎	◎	○					
Megumi Machida	Audit & Supervisory Board Member (Full-time)							○	◎	◎		
Katsuji Higashi	Outside Audit & Supervisory Board Member			◎		◎					○	
Yasuhiro Osaki	Outside Audit & Supervisory Board Member				◎						○	
Ichiro Wakasa	Outside Audit & Supervisory Board Member	◎				◎		○			○	

\*A circle (○) indicates that the person possesses expertise, knowledge, experience, and skills in the category named, and a double circle (◎) indicates a higher level of skill.



## Key Sustainability Issues

## Compliance

## COMPLIANCE

The Nippon Kayaku Group regards compliance as a top priority issue in corporate activities. The Charter of Conduct and Code of Conduct of the Nippon Kayaku Group establish the standards of independent conduct aimed at realizing a sustainable society. We strive to strengthen and broaden compliance activities as we instill these standards in employees and officers.

## Initiatives Since FY 2021

Since FY 2021, the Internal Control Management Division compliance officer has continued to take the lead on initiatives to improve awareness of compliance among officers and employees and establishment of a compliance system for the Nippon Kayaku Group.

## Roll-out of Nippon Kayaku Group Basic Policy on Combating Bribery to Group companies

In Japan, Article 18 of the Unfair Competition Prevention Act regulates the corruption and bribery of foreign public officers and prohibits the provision of illicit gains to foreign public officers. The U.S. Foreign Corrupt Practices Act (FCPA), the UK Bribery Act (UKBA), and other anti-corruption regulations in various countries and regions around the world have also been strengthened.

We have also established the Nippon Kayaku Group Basic Policy on Combatting Bribery in June 2021 and rolled it out to the entire Group, including overseas locations. All consolidated Group companies established this as their official policy by April 2022 and the policy was made clear to all employees, especially those involved in procurement. We are endeavoring to clearly communicate the Nippon Kayaku Group policy to our suppliers by posting the policy on the website of each company, in company brochures, and through other means.



Communicating the Basic Policy on Combating Bribery to suppliers by posting it on the websites of Group companies

## Initiatives Aimed at Enhancing Psychological Safety —From a Compliance Perspective—



Seminar on psychological safety

The Nippon Kayaku Group established “Ensuring Compliance” as a key sustainability issue and has specified “Maintain and enhance an open corporate culture with a high sense of ethics” as its **KV25** action plan. We aim for a healthy organization that makes it possible to mutually discuss ideas just as they occur, and actively incorporate the concept of psychological safety. Conducting a compliance awareness survey, providing feedback on survey results to each workplace, and conducting ongoing compliance training is reducing the number of incidents of power harassment and other types of harassment. However, eradicating such behavior is a matter of high concern for both officers and employees.

In FY 2022, we therefore included the theme of building a team with a high sense of psychological safety in the regular annual seminar for ethics leaders. Participants provided a variety of feedback according to the conditions in their workplaces and they were able to gain a fresh sense

of the importance of constantly working to consciously improve views on psychological safety. We will continue to strive to foster and firmly embed a corporate culture that provides a high sense of psychological safety by also including the same theme in FY 2022 compliance training for all employees, and other means.



[Important Issues] Ensuring Compliance

<https://www.nipponkayaku.co.jp/english/sustainability/governance/compliance/>

## Key Sustainability Issues

# Ensuring Business Continuity

## RISK MANAGEMENT

The Nippon Kayaku Group ensures business continuity by restoring business operations within a targeted timeframe when a disaster or other emergency occurs.

We produce BCP manuals for the head office and each business division and plant, and are working to create a BCP manual for overseas business locations, mainly for BCP projects to be rolled out across the organization. We also conduct BCP drills that officers also take part in every year, and implement other practical measures.

## Nippon Kayaku Group Risk Management

### Risk Management

Risk control activities in each business division and indirect division (from the perspective of division operation)



TOP 5 Risk Control Activities (from the perspective of the frontlines)

The Nippon Kayaku Group conducts risk control activities in each business division and indirect division. Each business division and indirect division identifies risks that could have a major impact on business activities from the perspective of division operation. They consider responses and measures to implement and review these at the end of March every year. For TOP 5 Risk Control Activities, plants, research laboratories, pharmaceutical branches and sales locations, and Group

companies, including overseas Group companies identify the top 5 most critical risks from the perspective of each business location on the frontlines, and consider and review responses and measures. We comprehensively ascertain and analyze risk trends from these two perspectives and use the information in management decision-making after it has been examined by the Risk Management Committee.

Business risks are reviewed annually. In FY 2022, we recognized “Risks related to raw materials procurement” as a risk that should be prioritized for consideration among the risks relating to management strategy, given the important of responding to difficulties in procurement caused by heightened geopolitical risk, and report this in the annual securities report.

## Pursuit of Global Risk Management Activities

The Nippon Kayaku Group Internal Control Management Division takes the lead on pursuing global risk management activities targeted at the key themes of establishing a BCP structure and training and drills in overseas Group companies. In addition to supporting preparation of BCP manuals, the Internal Control Management Division selects one or more Group companies from among Group companies that have completed preparation each year, and conducts an onsite BCP drill attended by the Risk Management Staff.

A drill was not conducted in FY 2020 due to the COVID-19 pandemic. However, it was possible to resume drills in FY 2021



Scene from BCP drill at WAC

and a drill was conducted at Wuxi Advanced Kayaku Chemical Co., Ltd. (WAC), a Group company in China. Staff members of a local consultant attended the drill and the Risk Management Leader participated remotely. The drill was based on the scenario of a fire breaking out. Participants gained an understanding of their roles and responsibilities in handling the response from initial evacuation through recovery to maintain business continuity. They also recognized issues such as the importance of sharing accurate information during an emergency.

We will continue to conduct BCP drills overseas while working with the business groups to ensure business continuity, including at global locations.

### Business Risks Appearing in the Annual Securities Report Submitted in June 2022

\*For details of each risk, see pages 14 to 17 of the Annual Securities Report.

	Number	Risk category
Risks related to management strategy	1	Raw materials procurement
	2	Product quality
	3	Accident occurrence
	4	Research and development
	5	Changes in regulations/policies
	6	Foreign exchange volatility
	7	Intellectual properties
	8	Information leakage
	9	Unforeseen computer system shutdown
Risks related to business continuity (risk management)	10	Natural disasters
	11	Infectious diseases
	12	Climate change
	13	Risks related to legal violations and other compliance issues



[Important Issues] Risk Management




















































<https://www.nipponkayaku.co.jp/english/sustainability/governance/riskmanagement/>

# Results of KAYAKU Next Stage Mid-term CSR Action Plan 2019–2021

ESG	No	Important CSR issues	Mid-term CSR Action Plan FY2019–2021	Key Performance Indicator (KPI)
S	1	Innovation through business	<ul style="list-style-type: none"> <li>Business divisions will work as one team on pursuing R&amp;D with an eye on exit to market, and create new products and businesses in core businesses and areas of synergy.</li> <li>Invest management resources in medium and long-term R&amp;D themes while enhancing core technologies and meeting the future needs of society.</li> </ul>	Amount invested in R&D over three years
	2	Quality and customer safety	<ul style="list-style-type: none"> <li>Make ongoing improvements to the quality management system and work to strengthen local management capabilities, and create a stronger quality management and quality assurance system.</li> <li>Pursue quality management, improve the level of production technology and expertise, and work to reduce flaws in the process.</li> </ul>	Number of serious complaints by customers <sup>1</sup>
				Number of serious flaws in processes <sup>1</sup>
	3	Business partner assessment	<ul style="list-style-type: none"> <li>Implement supply chain management that takes environmental and social aspects into consideration, based on the CSR Procurement Guidelines.</li> </ul>	Number of times assessments of main business partners are performed
E	4	Energy use and green-house gases Wastewater and waste Efficient use of water resources Use of materials that contribute to resource conservation	<ul style="list-style-type: none"> <li>Pursue activities to save energy and combat global warming. Achieve the environmental targets for FY 2020 and formulate targets for FY 2030.</li> <li>Work to integrate ISO14001 company-wide and advance environmental management that addresses both the risks and opportunities of environmental problems.</li> </ul>	Mid-term environmental targets
				<ul style="list-style-type: none"> <li>Amount of CO<sub>2</sub> emitted from energy sources</li> <li>VOC emissions volume</li> <li>COD emissions volume</li> <li>Volume of waste generated</li> <li>Recycling rate</li> <li>Zero emissions rate</li> </ul>
				Company-wide integration of ISO14001 Formulation of FY 2030 environmental targets
	5	Occupational health and safety in the workplace	<ul style="list-style-type: none"> <li>Strictly follow basic rules on health and safety and improve equipment and work procedures to build a strong foundation for safe operations.</li> <li>Promote health management and provide a workplace environment that enables employees to work with enthusiasm and achieve work-life balance.</li> </ul>	Number of serious accidents <sup>2</sup> White 500 certification
				Percentage of employees taking paid leave Percentage of employees who take mental health training
	6	Compliance	<ul style="list-style-type: none"> <li>Exercise strict compliance, which is a basic principle upon which we conduct corporate activities, and operate the business in a fair manner.</li> <li>Establish a basic policy on preventing corruption, and maintain and strengthen an open and honest corporate culture with high ethical values.</li> </ul>	Percentage of employees who undergo regular health check-ups
G	7	Provision of appropriate information on products and services	<ul style="list-style-type: none"> <li>Increase the presence of the Nippon Kayaku Group by complying with regulations in each business and providing appropriate information and technical services to customers.</li> </ul>	Number of serious compliance violations <sup>4</sup> Formulation of a basic policy on preventing corruption Coverage ratio of companies implementing compliance training
	8	Maintaining and expanding employment and development of human resources	<ul style="list-style-type: none"> <li>Promote diversity and inclusion by hiring diverse human resources and effective human resource allocation and exchanges.</li> <li>Pass down and strengthen technical capabilities in monozukuri (manufacturing) and achieve globalization in human resources through ongoing human resource development.</li> </ul>	Number of serious accidents <sup>2</sup> White 500 certification
				Percentage of employees taking paid leave Percentage of employees who take mental health training
	9	Respect for human rights and assessment	<ul style="list-style-type: none"> <li>Operate businesses in a manner that considers the human rights of employees and all people involved in the supply chain.</li> </ul>	Percentage of employees who undergo regular health check-ups
S	10	Local communities	<ul style="list-style-type: none"> <li>Actively communicate with local communities where our businesses are located and strive to co-exist and prosper together with them as a company rooted in the local community.</li> </ul>	Number of serious accidents <sup>2</sup> White 500 certification
				Percentage of employees taking paid leave Percentage of employees who take mental health training
				Percentage of employees who undergo regular health check-ups
	11	Economic performance	<ul style="list-style-type: none"> <li>Generate stable profits and return profits to society while reinvesting profits as management capital to achieve sustainable growth and enhance corporate value.</li> </ul>	Number of serious accidents <sup>2</sup> White 500 certification
				Percentage of employees taking paid leave Percentage of employees who take mental health training
	12	Strengthening corporate governance	<ul style="list-style-type: none"> <li>Strengthen corporate governance of the entire group and manage in a highly transparent and sound manner.</li> </ul>	Percentage of employees who undergo regular health check-ups
G	13	Ensuring business continuity	<ul style="list-style-type: none"> <li>Ensure business continuity by responding to the many different risks associated with our businesses, maintaining the production structure, securing the appropriate materials, and strengthening disaster response measures.</li> </ul>	Number of serious accidents <sup>2</sup> White 500 certification
				Percentage of employees taking paid leave Percentage of employees who take mental health training
				Percentage of employees who undergo regular health check-ups
	14	Environmental performance	<ul style="list-style-type: none"> <li>Actively communicate with local communities where our businesses are located and strive to co-exist and prosper together with them as a company rooted in the local community.</li> </ul>	Number of serious accidents <sup>2</sup> White 500 certification
				Percentage of employees taking paid leave Percentage of employees who take mental health training
	15	Compliance	<ul style="list-style-type: none"> <li>Exercise strict compliance, which is a basic principle upon which we conduct corporate activities, and operate the business in a fair manner.</li> <li>Establish a basic policy on preventing corruption, and maintain and strengthen an open and honest corporate culture with high ethical values.</li> </ul>	Percentage of employees who undergo regular health check-ups



We fully informed all our officers and employees of our Mid-term CSR Action Plan 2019-2021 to enhance their awareness of CSR management. Everyone in the Nippon Kayaku Group worked as one to implement this plan. Initiative results and topics for FY 2021, the final fiscal year of the plan, are as follows.

Goals for FY 2021	FY 2021 results	Topics concerning FY 2021 initiatives	Relevant SDGs
(C) ¥40 billion over 3 years	(C) ¥13 billion in FY 2021 ¥36.5 billion (FY 2019-2021)	<ul style="list-style-type: none"> <li>Decided to invest in Taiwan lab to expand resists for MEMS next-generation telecommunications and roll out semiconductor cleaners</li> <li>Made progress in the development of inkjet ink for flexible packaging (film) (scheduled for launch in fiscal 2023)</li> <li>Completed factory trial production of catalyst for the manufacture of completely green hydrogen using solar (heat) Sent prototype / sample to Australia for testing at a 500kW plant</li> <li>Successful launch of NASA's James Webb Space Telescope equipped with an inorganic polarizer made by MOXTEK, contributing to space exploration</li> <li>Started research on biotechnology and polymer technologies with partners in academia, etc.</li> <li>Released new generic anti-cancer drug pemetrexed intravenous solution in liquid form enabling room temperature storage</li> <li>Commercialized and launched parachute safety devices for drones</li> <li>Expanded innovative agrochemical formulation themes, engaged in specific creation of new compounds and research outside the agrochemical field</li> </ul>	           
(C) 0 complaints	(C) 0 complaints	<ul style="list-style-type: none"> <li>No serious complaints by customers</li> <li>Functional Chemicals Group—which includes Fukuyama Plant, Asa Plant, Tokyo Plant, head office and research center, and Taiwan Nippon Kayaku—worked on integrated operation of QMS, and obtained ISO9001 integrated certification in July 2021</li> </ul>	
(C) 0 complaints	(C) 3 incidents	<ul style="list-style-type: none"> <li>Agrochemicals Group—which includes Kashima Plant and Agrochemicals Laboratories—worked on integrated operation of QMS, and obtained ISO9001 integrated certification in August 2021</li> </ul>	
(N) 50 times/year	(N) 7 times	<ul style="list-style-type: none"> <li>Following on from FY 2020, on-site audits were not possible in many cases due to the impact of the COVID-19 pandemic, and the number of cases of shifting to web-based audits or written audits increased</li> </ul>	  
Targets to be achieved by FY 2020 <ul style="list-style-type: none"> <li>(N) 79,500 tons or less</li> <li>(N) 42.0 tons or less</li> <li>(N) 150.0 tons or less</li> <li>(N) 23,500 tons or less</li> <li>(N) 80% or higher</li> <li>(N) 3% or lower</li> </ul> Integration	(N) 64,700 tons (N) 52.1 tons (N) 124.2 tons (N) 28,400 tons (N) 82.3% (N) 1.0% Pending	<ul style="list-style-type: none"> <li>The scope of the new targets for Medium-term Corporate Master Plan for the Environment up to FY2030 was expanded from Nippon Kayaku (non-consolidated) to include group companies both in Japan and overseas, and the target was set at reducing greenhouse gas emissions (Scope 1+2) by 32.5% compared to FY2019 In FY2021 we planned to reduce emissions to 122,300 tons or less, and achieved the target with emissions of 112,400 tons</li> <li>Support for the Task Force on Climate-related Financial Disclosures (TCFD) Recommendations</li> <li>Figures for total waste produced will include emissions for the Joetsu Plant (2,000 tons) in Nippon Kayaku (non-consolidated) as of FY 2021 Emissions at other plants increased by 3,200 tons due to increased production volume</li> <li>With the group-wide promotion of recycling, the recycling rate has increased from 81.3% in FY 2020 to 82.3%, and the zero emission rate has improved from 1.6% in FY 2020 to 1.0%</li> </ul>	           
(C) 0 complaints (N) Maintain certification  (N) 70% (N) 100%*3  (N) 100%	(C) 0 complaints (N) Acquired certification for 2021 Certified Health and Productivity Management Organization (Large Corporate Division) (N) 59.8% Postponed collective training (N) 100%	<ul style="list-style-type: none"> <li>Acquired certification for 2021 Certified Health and Productivity Management Organization (Large Corporate Division)</li> <li>Introduced telecommuting system on a trial basis and reviewed staggered working hours system regulations</li> <li>Collective mental health training was postponed due to the impact of the COVID-19 pandemic, with e-learning training implemented as an alternative</li> </ul>	  
(C) 0 complaints Formulation  (D) 100%	(C) 0 complaints Formulated  (D) 100%	<ul style="list-style-type: none"> <li>No significant compliance violations</li> <li>Nippon Kayaku Group Basic Policy on Combating Bribery established in June 2021, information distributed and policy rolled out at both domestic and overseas companies</li> <li>Conducted training for all domestic group companies under the theme (s) of revision of regulations for handling of internal whistleblowing and establishment of the Nippon Kayaku Group Basic Policy on Combating Bribery</li> </ul>	
(N) Implementation	(C) Implementation	<ul style="list-style-type: none"> <li>In the functional chemicals business, we provided customers with SDS and product labels that conform to national standards, and provided information on chemical substances and appropriate handling information to ensure the safe use of our products. In addition, we responded to various customer requests for surveys and provided appropriate survey results and information. We will review customer feedback, reflect it in our plans for the next fiscal year, and work toward continuous improvement.</li> <li>In the safety systems business, we set items contributing to customer satisfaction as business plans, quality policies, and targets based on responses to customer satisfaction surveys, and confirmed that they are maintained.</li> <li>In the agrochemicals business, we have established a system for collecting harmful insects, evaluating effectiveness, and providing feedback to guidance agencies. We confirm the results of internal and external tests to verify the effectiveness of agrochemicals and check that they are reflected in local control guidelines.</li> </ul>	
(N) 8%*5 (N) 2.3% (N) Note results only	(N) 9.0% (N) 1.99% (N) ¥57,000/person	<ul style="list-style-type: none"> <li>The target for percentage of female managers is set at 10% for FY 2024. In FY 2021 the percentage was 9.0%, a year-on-year increase of 0.4%</li> <li>Continued collaboration with special support schools as an initiative to employ people with disabilities</li> <li>In addition to the existing job and rank-based training system, programs for developing human resources who can play active roles globally are being reviewed as a key company-wide theme</li> </ul>	  
(N) Once a year or more	(N) Twice	<ul style="list-style-type: none"> <li>Conducted training on the themes of human rights and portrait/publicity rights</li> <li>Nippon Kayaku Group Human Rights Policy adopted by the Board of Directors (established April 1, 2022)</li> </ul>	  
(C) Publish results (N) Note results only	(C) 26 times (N) ¥154 million	<ul style="list-style-type: none"> <li>Regional meetings were affected by the COVID-19 pandemic, and many business sites canceled meetings for the second consecutive year following on from FY 2020, although meetings resumed at some business sites during the period when the pandemic calmed down</li> <li>Due to the impact of the COVID-19 pandemic and the cancellation of many events as in 2020, expenditures on social contributions remained at a similar level</li> </ul>	    
(C) 8% (C) ¥5.6 billion (C) ¥50.0 billion over three years	(C) 7.3% (C) ¥4.0 billion (C) ¥11.6 billion in FY 2021	<ul style="list-style-type: none"> <li>Despite the impact of global semiconductor shortages and other factors, the Company posted record sales, and profit increased 36.6% year-on-year to ¥17.1 billion</li> <li>In order to reduce capital equity, we repurchased 2 million treasury shares (¥3 billion) and cancelled 7 million treasury shares (¥8.1 billion)</li> </ul>	 
(N) Once a year  (C) 45 times over three years	(N) Once  (C) 18 times in FY 2021	<ul style="list-style-type: none"> <li>Appointment a female Audit &amp; Supervisory Board Member</li> <li>Introduced restricted stock compensation and reviewed officers' compensation system</li> <li>Amended Basic Policy on Corporate Governance in response to revisions to the Corporate Governance Code</li> <li>Created and disclosed a skills matrix</li> <li>Third party organization assessed the effectiveness of the Board of Directors</li> </ul>	
(C) 100%  (C) Once a year or more	(C) 100%  (C) Twice	<ul style="list-style-type: none"> <li>Departments of Nippon Kayaku (non-consolidated) and all Group companies both in Japan and overseas implemented top five risk control activities</li> <li>Domestic Group companies used a newly introduced emergency communication system, as a BCP drill in preparation for the occurrence of earthquakes Overseas, BCP drills conducted at Group companies in China were verified and instruction given using a web conferencing system</li> <li>Introduced telecommuting system on a trial basis, reviewed staggered working hours system regulations and encouraged the use of web conferencing systems as measures against the COVID-19 pandemic</li> </ul>	  

\*4: Number of incidents deemed serious by the Ethics Committee or the Risk Management Committee

(C): Consolidated (N): Non-consolidated (D): Domestic

\*5: Target for the end of FY 2020 \*6: Expenses for donations, Asunaro House activity expenses, plant festivals, and other local events

# Directors, Audit & Supervisory Board Members, and Executive Directors (As of September 1, 2022)

## Board of Directors



### 1 Atsuhiro Wakumoto

Member of the Board  
President  
Representative Director Born on March 15, 1957

1979 Joined the Company  
2008 General Manager of Global Business Division, Safety Systems Group  
2010 General Manager of Marketing Division, Safety Systems Group  
2012 Director  
2016 Member of the Board, Managing Director  
2018 General Manager of Marketing & Sales Division, Safety Systems Group, Head of Safety Systems Group  
2019 President, Representative Director (current)

### 2 Tomoo Shibuya

Member of the Board  
Representative Senior Managing Director  
Born on December 15, 1957

1980 Joined the Company  
2005 General Manager of Public Relations & Investor Relations Division, Strategic Corporate Planning Group  
2006 General Manager of Corporate Planning Division, Strategic Corporate Planning Group  
2007 Vice President of LifeSpark Inc.  
2010 General Manager of Corporate Planning Division, Strategic Corporate Planning Group  
2013 Director  
2017 Member of the Board, Managing Director, Head of Strategic Corporate Planning Group, Head of Research & Development Group, Head of Agrochemicals Division  
2018 Head of Financial Group, General Manager of Finance & Accounting Division  
2019 Head of Financial Group  
2021 Representative Director, Head of Strategic Corporate Planning Group, Head of Agrochemicals Division (current)

### 3 Hiroshi Mikami

Member of the Board  
Managing Director  
Born on March 8, 1959

1981 Joined the Company  
2012 General Manager of Human Resources Management Division, Manager of Personnel & Payroll Dept.  
2015 Director  
2017 General Manager of Human Resources Management Division  
2018 Member of the Board, Managing Director, Head of Administration Group  
General Manager of Human Resources Management Division  
2020 Head of Administration Group (current)

### 4 Yoshitsugu Ishida

Member of the Board  
Managing Director  
Born on September 8, 1958

1981 Joined the Company  
2010 General Manager of Planning & Coordination Division, Safety Systems Group  
2016 Director  
2018 General Manager of Strategic Planning Division, Safety Systems Group  
2019 Member of the Board, Managing Director, Head of Safety Systems Group  
2021 Head of Financial Group (Executive Lead of Safety Systems Group)  
2022 Head of Financial Group (current)

### 5 Kazuto Koizumi

Member of the Board  
Managing Director  
Born on January 18, 1960

1982 Joined the Company  
2012 General Manager of Takasaki Plant  
2015 General Manager of Quality & Pharmacovigilance Division, Pharmaceuticals Group  
2017 Director  
2019 Member of the Board, Managing Director, Head of Pharmaceuticals Group (current)

### 6 Masatomi Akezuma

Member of the Board  
Managing Director  
Born on March 17, 1961

1986 Joined the Company  
2010 Chairman & General Manager of KAYAKU CHEMICAL (WUXI) CO.,LTD.  
2014 General Manager of Functional Materials Division, Functional Chemicals Group  
2017 Director  
2020 Chairman & General Manager of Development Division of Polatechno Co.,Ltd.  
General Manager of Polatechno Division, Functional Chemicals Group  
2021 Member of the Board, Managing Director, Head of Functional Chemicals Group (current)

### 7 Yo Ota

Member of the Board  
Outside Director  
Born on October 3, 1967

1993 Registered lawyer. Joined Nishimura Tokiwa Law office  
2001 Registered lawyer in New York State, USA  
2004 Outside Audit & Supervisory Board Member of the Company  
2005 Outside Director, Denki Kogyo Co., Ltd.  
2007 Partner of Nishimura Asahi Law office (current)  
2016 Member of the Board, Outside Director (current)  
2017 Outside Audit & Supervisory Board, Ricoh Co.,Ltd. (current)  
2019 Outside Audit & Supervisory Board, Z Financial Corporation (current)

### 8 Yasuyuki Fujishima

Member of the Board  
Outside Director  
Born on March 25, 1947

1969 Joined the Ministry of International Trade and Industry (currently the Ministry of Economy, Trade and Industry)  
1997 Representative of the Economic Planning Agency to the Policy Board of Bank of Japan  
1998 Japan Ambassador Extraordinary and Plenipotentiary to Panama, Ministry of Foreign Affairs  
2002 Outside Director, Wacom Co., Ltd.  
2005 Representative Director and Senior Managing Executive Officer, Sojitz Corp.  
2010 President & Representative Director, Mutual Service Aid Guarantee Corporation  
2016 Member of the Board, Outside Director (current)  
2017 President & Representative Director, Ceremonial Occasions Research Institute, Inc.  
2018 Director, Human Resources Development & Employment Organization (current)

### 9 Seiichi Fusamura

Member of the Board  
Outside Director  
Born on March 18, 1947

1971 Assistant judge of Kyoto District Court  
1998 General Manager of Judicial Research Department, Ministry of Justice  
2001 Director-General of the Civil Affairs Bureau, Ministry of Justice  
2006 Chief of Saitama District Court  
2009 Chief of Sendai High Court  
2011 Chief of Nagoya High Court  
2012 Outside Audit & Supervisory Board, Nippon Paper Industries Co., Ltd.  
Lawyer registration  
2013 Chairman of Public Security Examination Commission  
Chairman of Tokyo Metropolitan Labor Relations Commission  
2016 Outside Audit & Supervisory Board, The Bank of Yokohama, Ltd.  
2020 Outside Audit & Supervisory Board, Concordia Financial Group, Ltd. (current)  
Member of the Board, Outside Director (current)



## Audit & Supervisory Board Members



### 1 Akihiro Kojima

Standing Audit & Supervisory  
Board Member (Full-time) Born on September 24, 1958

1982 Joined the Company  
2007 General Manager of Secretarial Division, Strategic Corporate Planning Group  
2017 General Manager of Internal Control Management Division  
2018 General Manager of Audit Division  
2019 Standing Audit & Supervisory Board Member (current)

### 2 Megumi Machida

Audit & Supervisory  
Board Member (Full-time) Born on March 26, 1961

1985 Joined the Company  
2015 Manager of Development Management Department, Pharmaceuticals Group  
2018 Manager of R&D Management Department, Pharmaceuticals Group  
2020 General Manager of Regional Administration Division, Administration Group  
General Manager of Tokyo Research Administration Office  
2021 Audit & Supervisory Board Member (current)

### 3 Katsuji Higashi

Outside Audit & Supervisory  
Board Member Born on November 27, 1952

1981 Registered as certified public accountant and joined Ohta Tetsuzo Auditing Company Office  
2001 Representative Partner of Shinnihon Auditing Company (currently Ernst & Young ShinNihon LLC.)  
2014 Established accounting firm (current)  
2016 Audit & Supervisory Board Member of the Company (current)

### 4 Yasuhiro Osaki

Outside Audit & Supervisory  
Board Member Born on September 14, 1954

1985 Assistant Professor, School of Law, Waseda University  
1992 Professor, School of Law (currently, Faculty of Law), Waseda University (current)  
2010 Outside Director, NBC Meshtec Inc.  
2016 Audit & Supervisory Board Member of the Company (current)

### 5 Ichiro Wakasa

Outside Audit & Supervisory  
Board Member Born on January 1, 1955

1977 Joined Meiji Life Insurance Company (currently Meiji Yasuda Life Insurance Company)  
2014 Member of the Board and Deputy President of Meiji Yasuda Life Insurance Company  
2018 Outside Director of The Hyakugo Bank, Ltd.  
2021 Representative Director and Chairman of Meiji Yasuda System Technology Company Limited  
2022 Audit & Supervisory Board Member of the Company (current)

## Executive Directors

### Atsuhiko Wakumoto

President

### Tomoo Shibuya

Senior Managing Director  
Head of Strategic Corporate Planning Group  
Head of Agrochemicals Division

### Yoshimi Inoue

Senior Managing Director  
Head of Research & Development Group

### Hiroshi Mikami

Managing Director  
Head of Administration Group

### Yoshitsugu Ishida

Managing Director  
Head of Financial Group

### Kazuto Koizumi

Managing Director  
Head of Pharmaceuticals Group

### Masatomi Akezuma

Managing Director  
Head of Functional Chemicals Group

### Takao Izawa

Managing Director  
Head of Technical Operation Group

### Sigeyuki Kawamura

Managing Director  
Head of Safety Systems Group

### Hiroo Koyanagi

Director  
General Manager of Catalysts Division,  
Functional Chemicals Group

### Shinji Inoue

Director  
General Manager of Color Materials Division,  
Functional Chemicals Group

### Tsutomu Kawamura

Director  
General Manager of Finance & Accounting  
Division, Financial Group

### Kenichiro Yoshioka

Director  
General Manager of Functional Materials  
Division, Functional Chemicals Group

### Takumi Fujita

Director  
Chairman & General Manager of Kayaku  
Safety Systems (Huzhou) Co., Ltd.

### Hiroshi Shimada

Director  
General Manager of Strategic Planning  
Division, Pharmaceuticals Group

### Yasuhito Kato

Director  
General Manager of Agrochemicals  
Division

### Hideyuki Yuya

Director  
General Manager of Polatechno Division,  
Functional Chemicals Group

### Yoshinori Kato

Director  
General Manager of Environmental  
Protection & Safety Division, Technical  
Operations Group

### Tadayuki Kiyoyanagi

Director  
General Manager of Functional  
Chemicals R&D Laboratories, Functional  
Chemicals Group

### Makoto Takeda

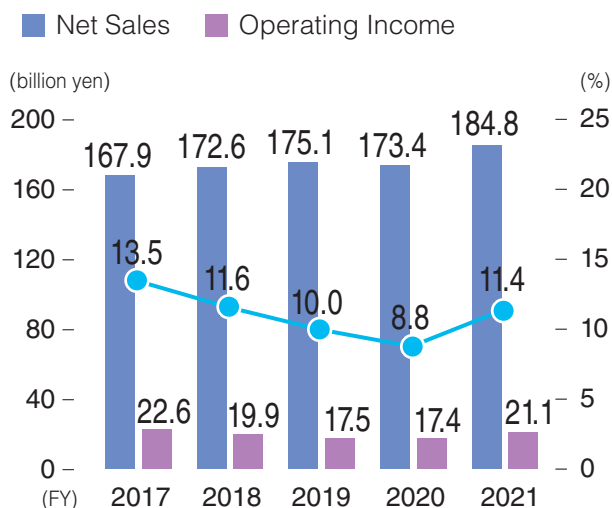
Director  
General Manager of General Affairs  
& Human Resources Division,  
Administration Group

# Financial and Non-Financial Highlights

## Financial Highlights

### Net Sales/Operating Income

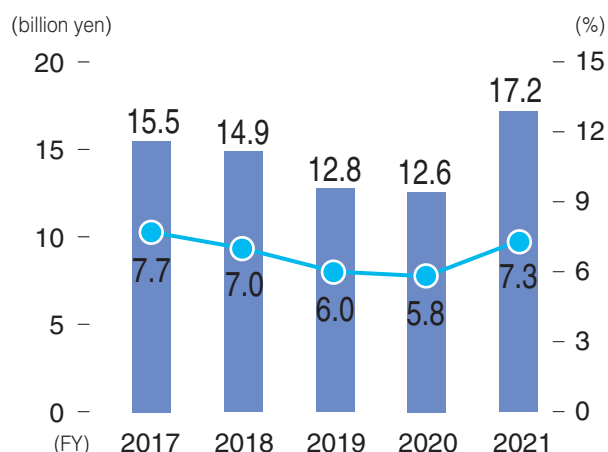
#### Operating Income Margin (%)



Net sales have been increasing since FY 2017 and reached a record high of ¥184.8 billion in FY 2021. The operating margin, which has been declining in recent years, turned around in FY 2021 due to growth in sales in the functional chemicals and pharmaceuticals businesses, and a rebound in market conditions in the safety systems business.

### Profit Attributable to Owners of Parent

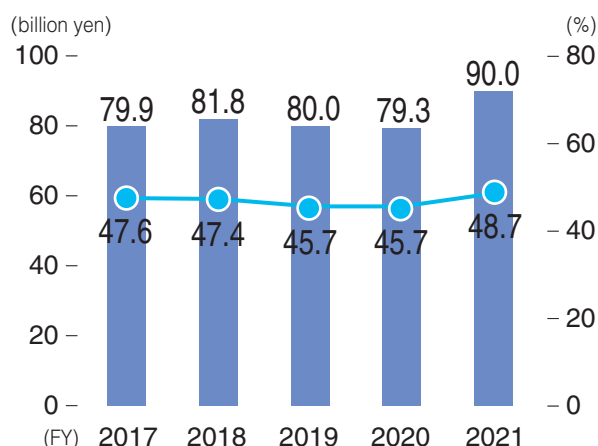
#### ROE (Return on Equity, %)



Net profit attributable to owners of parent and ROE, which have been declining in recent years, rebounded in FY 2021 along with the growth in operating income. Net profit attributable to owners of parent reached ¥17.2 billion and ROE reached 7.3%.

### Overseas Net Sales

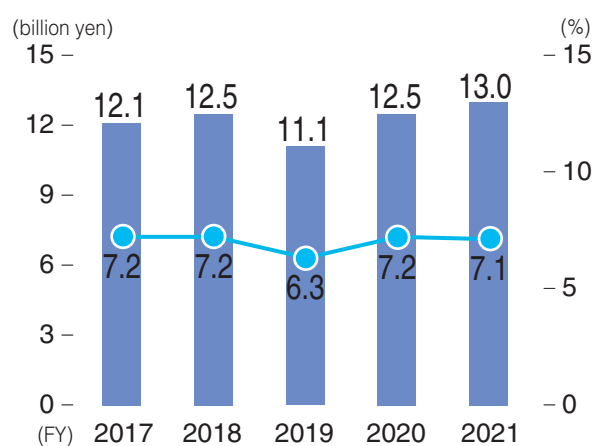
#### Overseas Net Sales Ratio (%)



Overseas net sales reached ¥90 billion and the overseas sales ratio reached 48.7% in FY 2021, propelled by product expansion overseas, mainly in the functional chemicals and safety systems businesses.

### R&D Expenses/Ratio of R&D

#### Expenses to Net Sales (%)

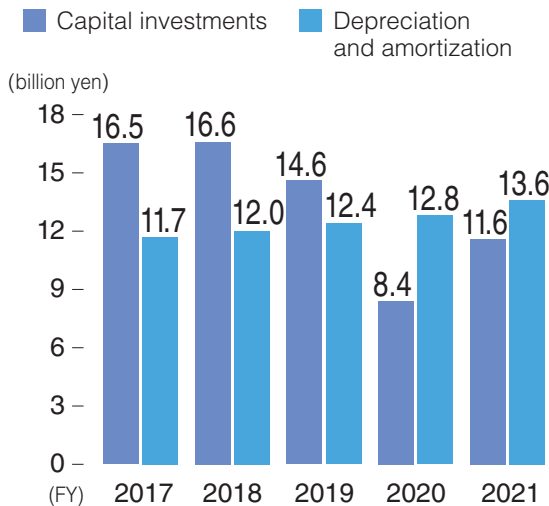


Company-wide R&D expenses during the **KAYAKU Next Stage** mid-term business plan for FY 2019–2021 totaled ¥36.6 billion. The ratio of R&D expenses to net sales is trending at around 7% and was 7.1% in FY 2021.

## Non-Financial Highlights

### Capital Investments

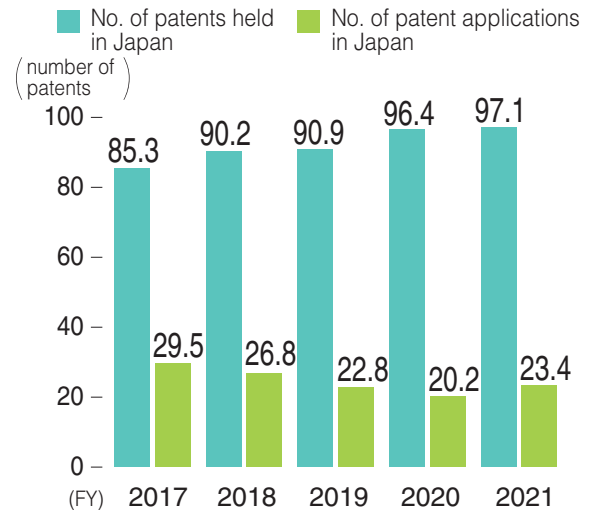
#### Depreciation and Amortization



A total of ¥50 billion in capital investments was initially planned for **KAYAKU Next Stage** mid-term business plan for FY 2019-2021. However, investment plans in the functional chemicals and safety systems businesses were delayed due to the COVID-19 pandemic.

### Number of Patents Held

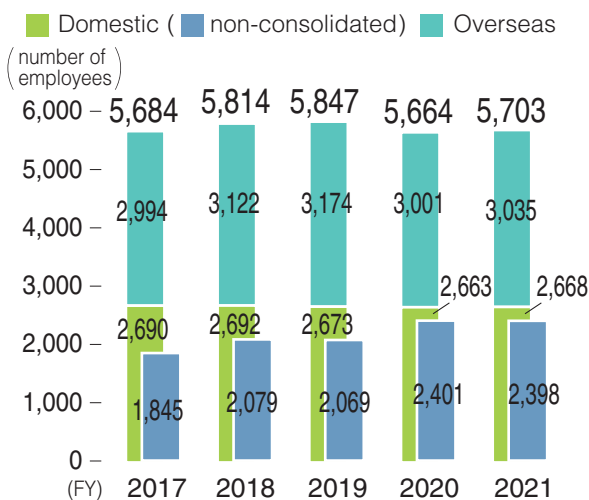
#### Patent Applications



The number of patents held in Japan has been increasing since 2017 due to the continual submission of patent applications previously. Patent applications in Japan were declining, but turned around and increased in 2021 in the Research & Development Group and each business, mainly in the functional chemicals and safety systems businesses.

### Number of Domestic

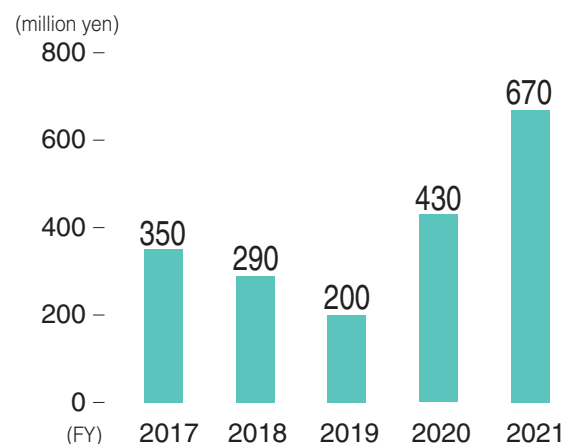
#### Overseas Employees



Global expansion of manufacturing and sales locations resulted in 3,035 employees at 21 overseas Group companies, comprising a majority of the 5,703 employees in the Nippon Kayaku Group, consisting of Nippon Kayaku Co., Ltd. and its 28 consolidated Group companies.

### Environment Related

#### Capital Investments



Systematic, ongoing environment-related capital investments increased by roughly 55% in FY 2021, to ¥670 million. Pollution prevention equipment for water quality accounted for around 40% of this, and equipment to achieve energy savings and prevent global warming accounted for 36%.

# 11-Year Summary of Consolidated Financial Data

Fiscal year	2021	2020	2019	2018
<b>Results for the year (millions of yen)</b>				
Net sales	¥ 184,805	¥ 173,381	¥ 175,123	¥ 172,639
Cost of sales	120,837	117,067	117,059	109,461
Selling, general and administrative expenses	42,916	41,124	40,587	43,238
Operating income	21,050	15,194	17,485	19,939
Profit before income taxes	23,700	17,523	18,141	21,283
Profit attributable to owners of parent	17,181	12,574	12,815	14,851
<b>Amounts per share (yen)</b>				
Profit attributable to owners of parent	¥ 101.70	¥ 73.62	¥ 74.25	¥ 85.77
Cash dividend applicable to the year	40.00	30.00	30.00	30.00
Net assets	1,459.06	1,332.06	1,225.71	1,247.75
<b>Year-end financial position (millions of yen)</b>				
Current assets	¥ 175,843	¥ 156,852	¥ 153,102	¥ 161,958
Current liabilities	45,760	37,491	38,800	41,412
Working capital	130,083	119,361	114,302	120,546
Property, plant and equipment	89,060	88,980	85,960	87,246
Total assets	315,459	294,535	278,496	293,571
Net assets	246,425	228,273	210,019	229,043
<b>Year-end statistics</b>				
Number of shares outstanding (thousands)	170,503	177,503	177,503	182,503
Dividend payout ratio (%)	39.3	40.7	40.4	35.0
Number of round-lot shareholders	13,051	13,748	12,090	12,437
Number of employees	5,703	5,664	5,847	5,814
<b>Financial ratios</b>				
Current ratio (times)	3.8	4.2	3.9	3.9
Equity ratio (%)	77.8	77.2	75.2	73.6
ROE (%)	7.3	5.8	6.0	7.0
ROA (%)	5.6	4.4	4.5	5.1
<b>Sales by business segment (millions of yen)</b>				
Functional chemicals business	¥ 77,152	¥ 72,465	¥ 71,540	¥ 69,688
Functional materials	31,068	23,759	21,073	20,217
Color materials	22,402	22,323	26,118	22,168
Digital printing materials	—	—	—	—
Color chemicals	—	—	—	—
Catalysts	5,983	10,886	6,759	6,406
Polatechno Business	17,696	15,495	—	—
Polatechno Group	—	—	17,589	20,896
Electronic materials	—	—	—	—
Pharmaceuticals business	52,083	50,441	47,774	46,231
Safety systems business	46,112	41,997	46,990	47,218
Other businesses	9,456	8,477	8,817	9,500
Agrochemicals	7,404	6,444	6,820	7,460
Other	2,051	2,032	1,997	2,040

\* The closing date of accounts was changed from May 31 to March 31 beginning from FY 2012. As a result, the term of consolidation for FY 2012 consists of the 10 months from June 1, 2012 to March 31, 2013 for Nippon Kayaku and some of its subsidiaries.

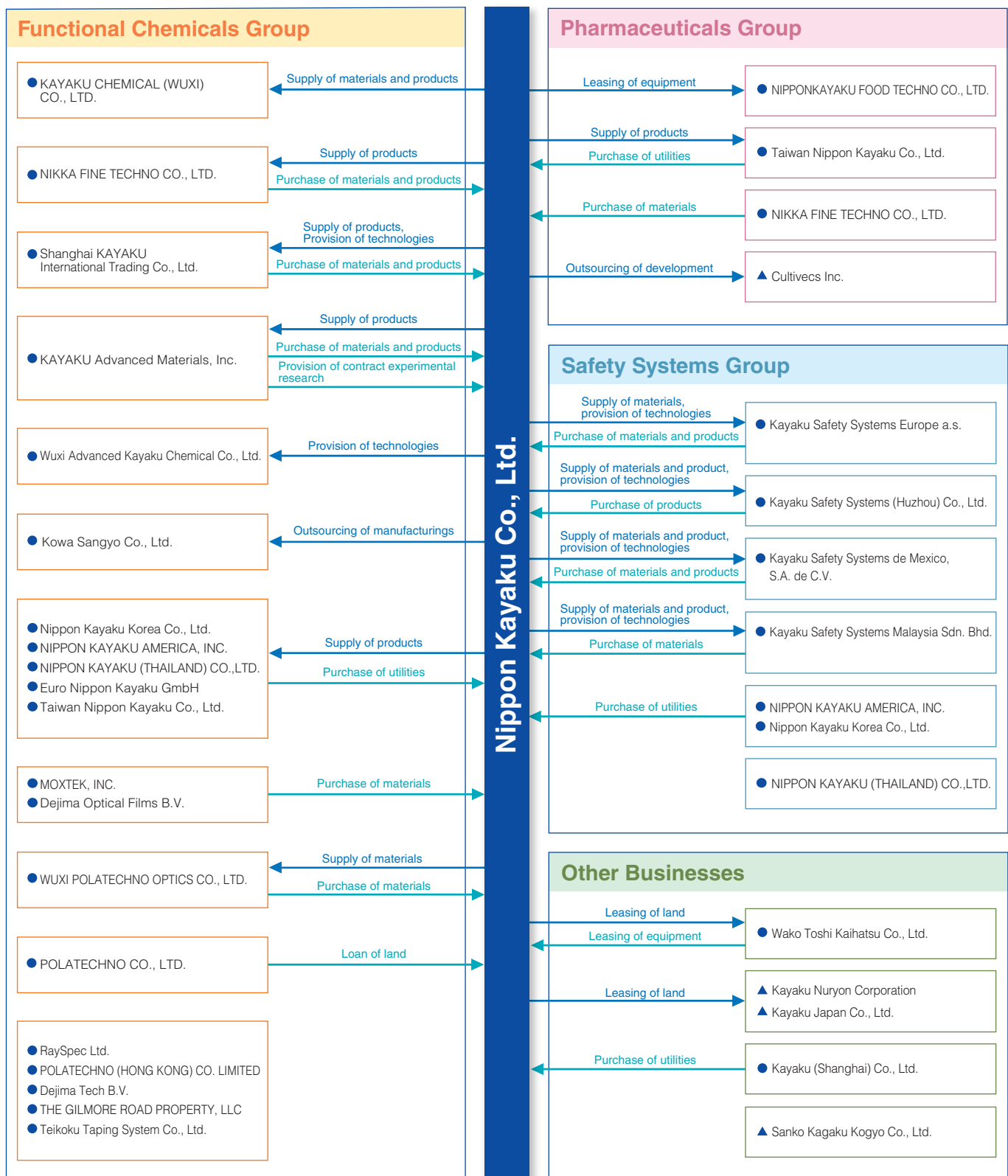
2017	2016	2015	2014	2013	2012	2011
¥ 167,888	¥ 159,117	¥ 162,922	¥ 161,861	¥160,080	¥128,104	¥147,109
102,475	95,253	96,653	94,664	90,645	73,757	84,690
42,791	44,213	44,570	44,890	45,332	37,278	43,031
22,615	19,646	21,713	22,301	24,090	17,066	19,398
22,061	22,397	25,148	23,972	25,388	19,816	18,427
15,488	15,635	17,291	15,653	16,718	12,342	11,401
¥ 89.45	¥ 90.23	¥ 96.09	¥ 86.38	¥ 92.25	¥ 68.09	¥ 62.89
30.00	30.00	30.00	25.00	25.00	20.00	20.00
1,203.23	1,120.73	1,075.56	1,030.16	918.35	828.87	745.30
¥ 157,814	¥ 153,602	¥ 151,170	¥ 141,282	¥141,843	¥131,553	¥121,400
42,746	41,321	39,740	38,915	41,271	39,857	38,909
115,068	112,281	111,430	102,367	100,572	91,696	82,491
83,228	80,230	81,040	81,576	75,166	67,183	61,526
285,600	272,791	272,679	265,126	247,592	224,705	204,674
220,619	205,866	200,492	199,680	177,935	160,454	144,019
182,503	182,503	182,503	182,503	182,503	182,503	182,503
33.6	33.2	31.2	28.9	27.1	29.4	31.8
13,048	8,629	10,815	9,257	10,174	12,516	14,597
5,684	5,517	5,188	5,165	4,794	4,619	4,583
3.7	3.7	3.8	3.6	3.4	3.3	3.1
72.9	71.1	69.3	70.4	67.2	66.9	66.0
7.7	8.2	9.2	8.9	10.6	8.7	8.7
5.5	5.7	6.4	6.1	7.1	5.7	5.6
¥ 67,664	¥ 64,029	¥ 68,788	¥ 73,558	¥ 73,610	¥ 60,320	¥ 68,149
19,794	18,914	18,398	18,559	18,378	10,929	12,363
21,023	20,057	21,229	—	—	—	—
—	—	—	12,130	12,090	—	—
—	—	—	9,909	9,536	7,195	8,599
5,650	4,188	4,990	7,525	8,710	6,303	8,163
—	—	—	—	—	—	—
21,196	20,869	24,172	25,434	24,896	—	—
—	—	—	—	—	35,895	39,025
47,485	47,648	50,200	48,932	50,898	41,115	49,389
43,937	38,782	35,342	30,485	27,086	18,785	20,202
8,800	8,657	8,590	8,884	8,485	7,882	9,368
6,735	6,572	6,519	6,696	6,245	5,771	6,901
2,065	2,084	2,072	2,188	2,240	2,110	2,467



# Nippon Kayaku Group Status

## Group Company Diagram (As of September 1, 2022)

The Nippon Kayaku Group is comprised of Nippon Kayaku Co., Ltd., 36 subsidiaries, and 11 affiliated companies. Among them, the status of 27 subsidiaries and 4 affiliated companies which are applied equity method is as described below.



● Consolidated subsidiaries

▲ Affiliated company (applied equity method)

# Company Overview/Investor Information

## Company Overview

<b>Business Name</b>	Nippon Kayaku Co., Ltd.
<b>Representative</b>	Atsuhiko Wakumoto, President
<b>Foundation</b>	June 5, 1916
<b>Head Office Address</b>	Meiji Yasuda Seimei Bldg., 1-1 Marunouchi 2-chome, Chiyoda-ku, Tokyo 100-0005, Japan

<b>Number of Employees</b>	2,398 (non-consolidated), 5,703 (consolidated) (as of March 31, 2022)
<b>Banks of Accounts</b>	Bank of Tokyo-Mitsubishi UFJ, Jyoy Bank, Development Bank of Japan, The Norinchukin Bank

## Investor Information (as of March 31, 2022)

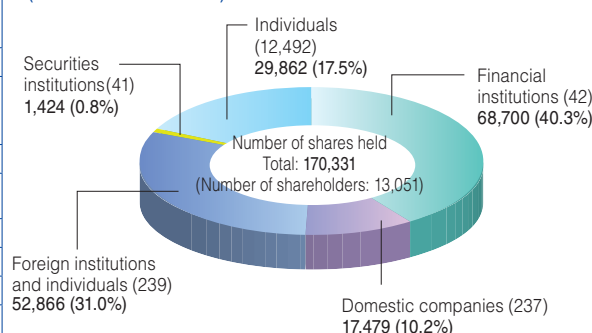
<b>Fiscal Year</b>	April 1 to March 31
<b>Annual Shareholders Meeting</b>	Normally held in June in Tokyo
<b>Record Date</b>	Voting rights at the Annual Shareholders Meeting: March 31 Year-end dividend: March 31 Second-quarter dividend: September 30

<b>Stock Exchange Listing</b>	First Section of the Tokyo Stock Exchange
<b>Number of Common Stock</b>	Authorized: 700,000,000 Issued: 170,503,570
<b>Paid-in Capital:</b>	¥14,932,922,842
<b>Number of Shareholders:</b>	14,975

### Major Shareholders

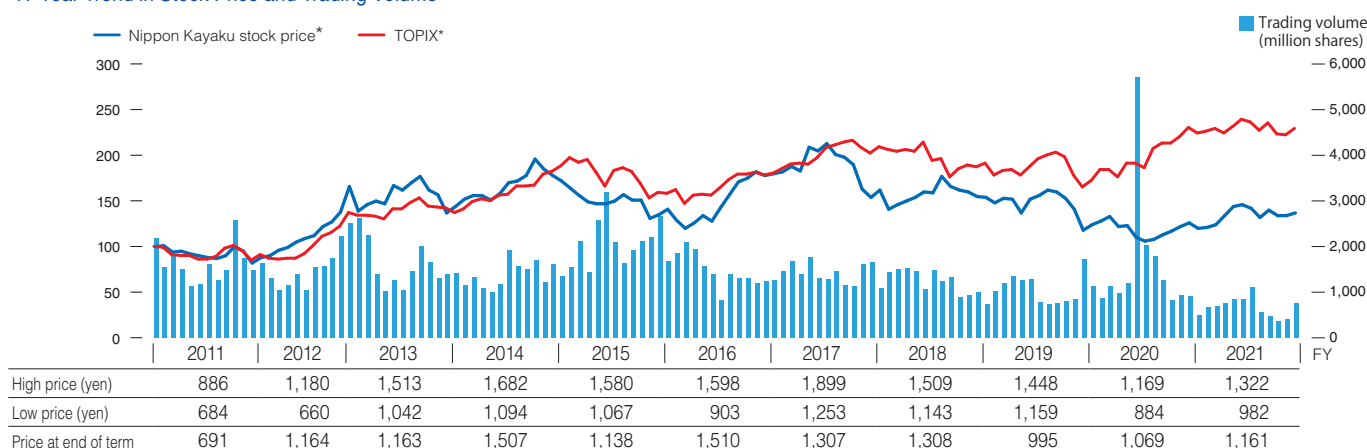
Shareholders	Number of shares held (unit: thousand)	Shareholding ratio (%)
The Master Trust Bank of Japan, Ltd. (trust account)	25,732	15.29
NORTHERN TRUST CO. (AVFC) RE SILCHESTER INTERNATIONAL INVESTORS INTERNATIONAL VALUE EQUITY TRUST	13,610	8.08
Custody Bank of Japan, Ltd. (Trust Account)	11,513	6.84
NORTHERN TRUST CO. (AVFC) RE U.S. TAX EXEMPTED PENSION FUNDS	6,711	3.98
Kayavestor Club	6,002	3.56
National Mutual Insurance Federation of Agricultural Cooperatives	5,150	3.06
MUFG Bank, Ltd.	5,090	3.02
The Jyoy Bank, Ltd.	5,089	3.02
Meiji Yasuda Life Insurance Company	4,843	2.87
NORTHERN TRUST CO. (AVFC) SUB A/C NON TREATY	4,280	2.54

### Breakdown of Round-lot Shareholders (unit: thousand shares)



Notes: 1. The Company owns 2,252,070 in treasury stock, but is not included among the shareholders listed above. Note that the shareholder ratio is calculated using the total number of shares, excluding treasury stock.  
2. The percentages for the shareholding ratio are rounded down to two decimal places.

### 11-Year Trend in Stock Price and Trading Volume



Nippon Kayaku discloses financial results, press releases, and other information to shareholders and investors. This information can be found under Investor Relations tab on our corporate website.  
IR information <https://www.nipponkayaku.co.jp/english/ir/>

## Communication with Shareholders and Institutional Investors

The Nippon Kayaku Group holds financial results briefings, one-on-one meetings, IR social gatherings, plant briefings, and other events through the year. These are held to promote constructive dialog between shareholders and institutional investors, and Nippon Kayaku directors and executive directors with official posts.

The Corporate Communications Division is the contact for investor relations (IR), and communicates directly with shareholders and investors through one-on-one meetings and other means to help them increase their understanding of industry conditions, management policy, and ESG.

Contact for Nippon Kayaku Group IR activities administrative office: Corporate Communications Division, Strategic Corporate Planning Group  
TEL: 03-6731-5237 E-mail: [prir@nipponkayaku.co.jp](mailto:prir@nipponkayaku.co.jp)

Global "sukima" ideas



Head Office:

Meiji Yasuda Seimei Bldg., 1-1, Marunouchi 2-chome, Chiyoda-ku, Tokyo 100-0005, Japan  
<https://www.nipponkayaku.co.jp/english/>



#### Our Company Logo

This logo symbolizes Nippon Kayaku's company policies.

The space at the center represents the cosmos, world, and expanses of the Earth.  
The two soaring ellipses represent creativity and courage and the two circles are the confidence between Nippon Kayaku, which aspires to extraterrestrial space, and the public.

I am Kayakuma the Bear, the mascot character created to familiarize people with **KAYAKU spirit**, the corporate vision of Nippon Kayaku.

