Global "sukima" ideas NIPPON KAYAKU

KAYAKU Vision 2025

Nippon Kayaku Group

Integrated Report 2022

Nippon Kayaku Group Corporate Vision

KAYAKU spirit

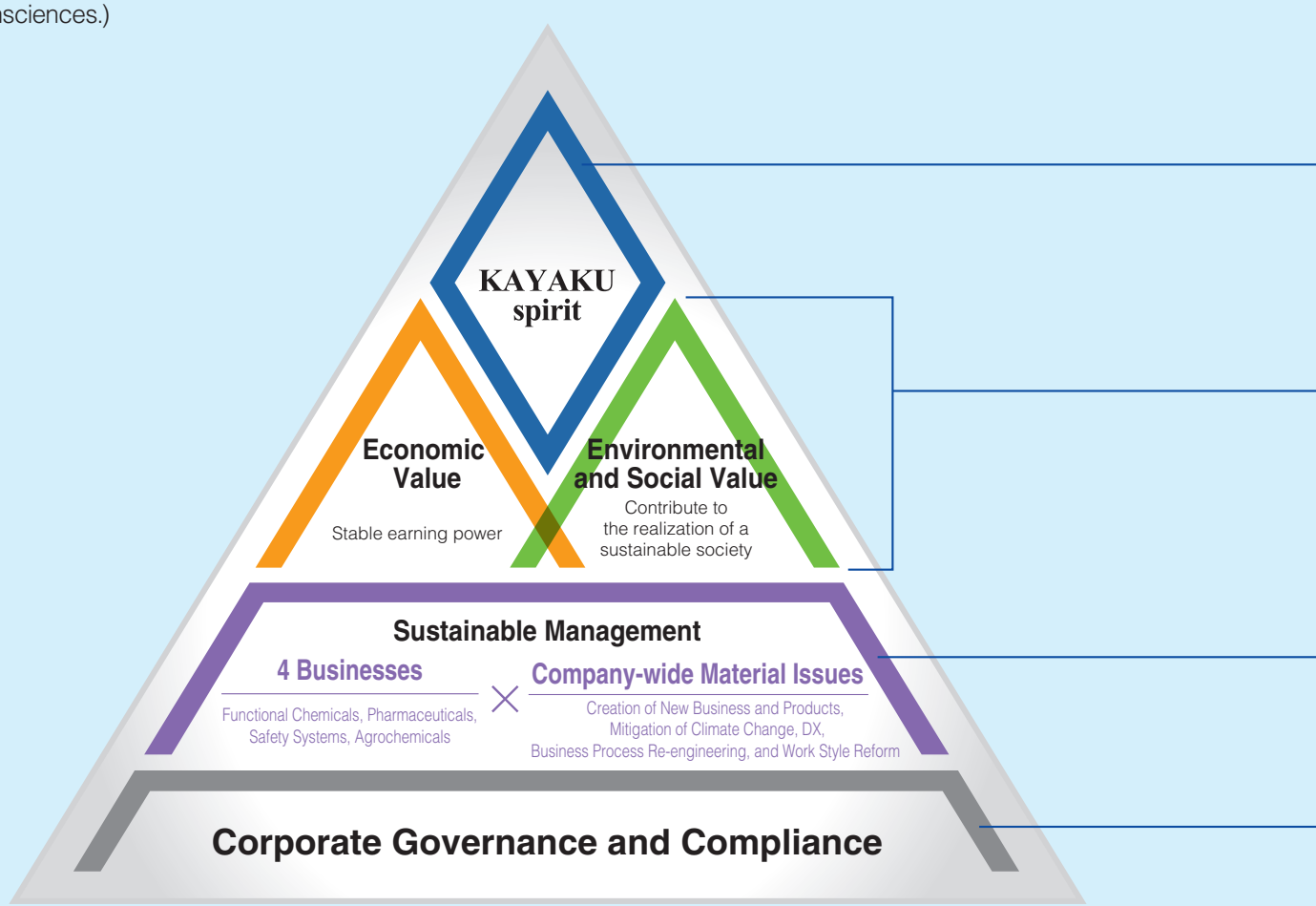
Continuously providing society with the best products through ceaseless progress and the combined forces of our consciences

The Nippon Kayaku Group conducts business activities in various countries and regions.
The **KAYAKU spirit** is our ideal corporate vision, shared by all officers and employees.

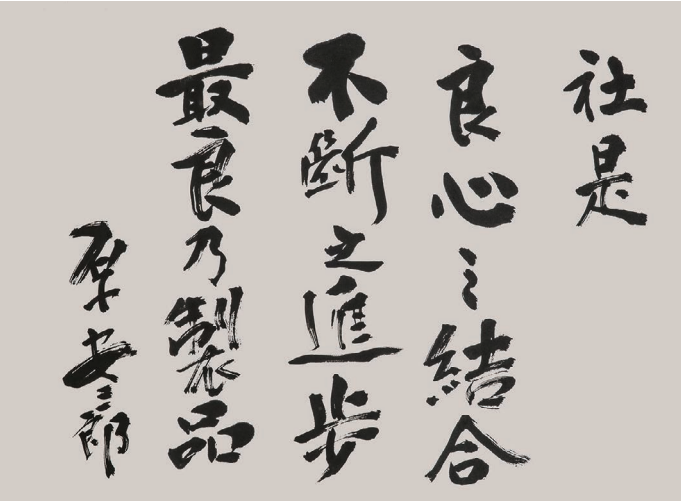
Aiming to Achieve our Vision: *KAYAKU*

Basic Policy on Sustainable Management

Under its corporate vision, the **KAYAKU spirit**, the Nippon Kayaku Group will practice sustainable management that responds to the trust placed in it by all of its stakeholders, by ensuring transparency and fairness in management and contributing to the creation of a sustainable environment and society through its business activities.
(**KAYAKU spirit**: Continuously providing society with the best products through ceaseless progress and the combined forces of our consciences.)



Origin of the KAYAKU spirit



Founded 1916

Company credo established 1962

Yasusaburo Hara—our third president, who was involved in the Group's management for many years—established the company credo in 1962, with the desire to convey the important ideas that should be shared by all officers and employees in an easily understandable manner. This is the origin of the **KAYAKU spirit**. Company credo :The combined forces of our consciences, Ceaseless progress, The best products.

Vision 2025 Sustainable Management

KAYAKU spirit

Continuously providing society with the best products through ceaseless progress and the combined forces of our consciences

Mission in *KAYAKU Vision 2025* (*KV25*)

The Nippon Kayaku Group aims to be a company with a strong presence that can consistently provide happiness and delight to the environment, society and all stakeholders under the **KAYAKU spirit**.

Value created through sustainable management

= **Economic Value** + **Environment and Social Value**

Under the Sustainable Management Basic Policy, company-wide material issues will be addressed by Materiality Cross-Functional Team in four businesses.

Management foundation for continuing business activities

Nippon Kayaku Group Charter of Conduct and Code of Conduct

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Editorial Policy

Organizations Covered

This report covers 28 out of the 48 companies in the Nippon Kayaku Group, in principle. The 28 companies covered are Nippon Kayaku Co., Ltd. and its 27 consolidated subsidiaries (as of September 1, 2022).

Time Period Covered

Fiscal year 2021 (from April 1, 2021 to March 31, 2022). However, the report also contains some information from outside of this time period.

Guidelines Referenced

- International Integrated Reporting Framework
- GRI Standards
- Recommendations of the Task Force on Climate-related Financial Disclosures (TCFD)

Disclaimer

This integrated report contains various forward-looking statements about future developments that are based on Nippon Kayaku Group assumptions and forecasts at present. They are subject to risks and uncertainties which could cause the actual outcome, including the Company's financial position, its development, and/or performance, to differ considerably.

《 **Date published** 》 September 30, 2022

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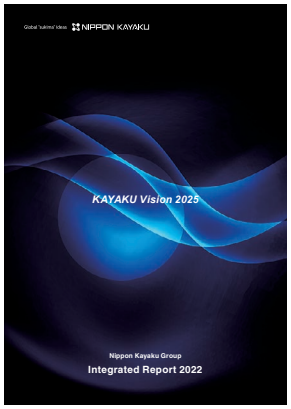
About the Cover

The design of a white title and gradations of blue, our corporate color, glowing against the black background expresses the beginning of the mid-term business plan. The large oval is emblematic of a large window and is symbolic of our vision. The waves overlapping the oval signify a ripple effect. Together, these elements show the ripples of initiatives in the mid-term business plan propagating in many directions.



Other Information Disclosure

The Nippon Kayaku Group discloses various kinds of corporate information on the Group's website in addition to the Integrated Report. Click on the following URLs for more information.

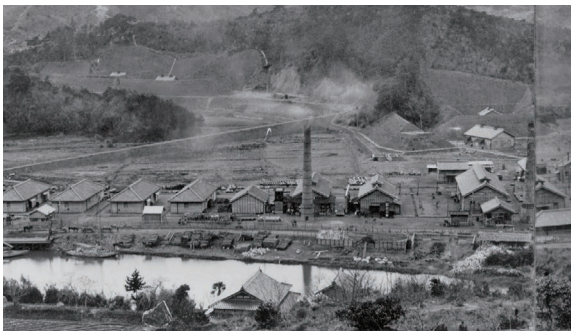
Investor Relations	https://www.nipponkayaku.co.jp/english/ir/
Sustainability • GRI Index	https://www.nipponkayaku.co.jp/english/sustainability/ https://www.nipponkayaku.co.jp/english/sustainability/index/gri/
Reports • Corporate Governance Report • Securities Report (Japanese)	https://www.nipponkayaku.co.jp/media/pdf/english/ir/esg/files/governance_report.pdf https://www.nipponkayaku.co.jp/ir/library/securities.html
• External Evaluation and Awards	https://www.nipponkayaku.co.jp/english/sustainability/library/evaluation/

The History of Value Creation

Providing the best products while evolving core technologies

1916 Formation of Core Technologies

1945 Development as an Integrated Chemical Manufacturer



Nippon Kayaku Seizo's Asa plant, completed shortly after

Functional Chemicals Business

Pharmaceuticals Business

Explosives/Safety Systems Business

Agrochemicals Business

Company name changed to Nippon Kayaku

Founded Nippon Kayaku Seizo Co., Ltd.

*1 A pioneer in Japan

1916 Succeeded in producing sulfur black dye in Japan

1928 Buyout of Teikoku Senryo Seizo Co., Ltd.

1931 Established Yamakawa Seiyaku

*4 1932 Launched the anti-inflammatory drug, ASPIRIN

*3 A pioneer in Japan

1917 Began production of Japan's first industrial dynamite

1943 Merged and absorbed Teikoku Senryo Seizo Co., Ltd. and Yamakawa Seiyaku Co., Ltd.

*2 Technology changes

Began production of the soil fumigant, CHLOROPICRIN

1951 Launches the direct dye, Kayarus, intended for use with cotton, hemp yarn and other cellulose fibers

1954 Developed Kayaphor, a fluorescent dye used to accentuate the whiteness of white textile goods

1960 Launched Kayalon Polyester, a disperse dye for polyester fibers used in car seats, etc.

1963 Entered into a contract with U.S. firm, Standard Oil Co. (Ohio), concerning the introduction of acrylic acid technologies (catalysts)

1948 Began production of the antibiotic, PENICILLIN

1967 Launched the neuromuscular function activator, NEOLAMIN® 3B

1959 Launched sales of C-type instantaneous electric detonators

1963 Launched the Ammonium Nitrate Fuel Oil explosive

1957 Began producing active ingredient for the insecticide, DIAZINON®

1964 Began production of the insecticide, DIAZINON® Granules

*1 A pioneer in Japan

Origins behind the domestic production of synthetic dyes

From the Meiji period through to the early Taisho period, synthetic dyes in Japan were primarily imported from abroad. The cessation of imports following the onset of World War I caused a nationwide dye shortage, prompting the government to call for the domestic production of synthetic dyes as an urgent national issue. The successful domestic production of sulfur black dyes marked the dawn of a new age of domestically produced synthetic dyes.

*2 Technology changes

Shift in manufacturing away from synthetic dye technologies to agrochemicals

Production of the agrochemical, CHLOROPICRIN, a soil fumigant that applied the raw materials used in sulfur black dyes to produce a highly effective insecticide/antimicrobial, began in 1934. This contributed greatly as a remedy for soil pests that were difficult to control, and served as the foundation for the development of the Company's agrochemical business after World War II.

*3 A pioneer in Japan

Origins of industrial explosive production

The sudden outbreak of World War I in 1914 presented a sudden shift in the fortunes of the flagging Japanese economy. While mining production was booming, a reliance on the sale of unused military dynamite and imports resulted in extreme dynamite shortages. In response to the sudden industrial demand for privately-man-

in step with the needs of the times

1965 Growth and Development through Development of New Fields

1990 New Development Based on Our Specialty Materials

Continued on page 6

1969
Began production of epoxy resins

1979
Began pilot production of the ultraviolet curing resin DPHA

1993
Developed CCR-1030, a resist resin for electronic devices and other circuit boards

1991
Established POLATECHNO CO., LTD.

1992
Began shipments of a polarizing film used in projectors and in vehicles

1969
Launched Kayacryl®, an acrylic fiber dye used in wool yarn, etc.

1984
Launched TG-SA®, a developer used in receipts and other thermal paper

1996
Established Wuxi Advanced Kayaku Chemical Co., Ltd.

1998
Launched TG-SH®, a developer used for airline tickets and other thermal paper

1972
Began manufacturing catalysts used in the production of acrylic acid used as a raw material for the high water absorption resin used in diapers, etc.

1990
Initial shipment of catalysts used in the production of methacrylic acid used as a raw material for the polymethacrylic acid used in large water tanks

1969
Launched the antitumor antibiotic, BLEO®

1973
Launched the antispasmogenic agent, MUSCALM®

1984
Launched the anti-cancer drug, RANDA®, and the nitroglycerine injection liquid, MILLISROL®

1987
Launched the anti-cancer drugs, BESTATIN® and LASTET®

1994
Launched the prostate cancer drug, ODYNE®

1995
Launched the breast cancer drug, FARESTON®

*5 Technology changes
1989
Began production of squibs

1992
Began production of disk-type aluminum inflators

1998
Began production of micro gas generators

1999
Invested capital in INDET SAFETY SYSTEMS a.s. (Currently Kayaku Safety Systems Europe a.s.)

2000
Began production of cylinder-type steel inflators

1980
Launched the water gel explosive (emulsion explosive), KAYAMITE

1996
Launched the water gel explosive (emulsion explosive), ULTEX®

1987
Launched the insecticide, CYCLOSAL®

1990
Launched the insecticide, DIAZINON® SL SOL

1992
Launched the bite damage prevention agent, R-731

1999
Launched the insecticide, MATRIC® Flowable

ufactured dynamite, Japan's first industrial explosives manufacturer, Nippon Kayaku Seizo Co., Ltd., was born in 1916.

*4

Answering the demand for Aspirin

Among the important medical supplies the Japanese government called for domestic production, Aspirin was the most sought after, and was a core focus of the Japanese Pharmacopoeia. At the time, imported medical products dominated the domestic market. In 1932, the analgesic anti-inflammatory drug, Yamakawa Aspirin, was released amidst calls for products by Japanese pharmaceutical manufacturers. Yamakawa Aspirin would later go on to carve out a majority share of the domestic market.

*5 Technology changes

Application of technologies used in the development of explosives for automotive safety components

The Company applied its extensive experience with explosives technologies to begin production of squibs, the part used to ignition, in 1989, and airbag inflators in 1992. In 1998, the Company also began production of micro gas generators for seatbelt pretensioners, and has grown to become one of the world's leading automotive safety component manufacturers.

Functional Chemicals Business | Pharmaceuticals Business | Explosives/Safety Systems Business | Agrochemicals Business

Functional Chemicals Business

Functional Materials

2002
Established KAYAKU CHEMICAL (WUXI) CO., LTD.

2002
Full-scale release of the NC-3000 epoxy resins used for semiconductor encapsulation, etc.

2008
Made a capital investment in MicroChem Corp. (now, KAYAKU Advanced Materials, Inc.)

2014
Launched an adhesive for touch panels

2018
Launched maleimide resins used in 5G circuit boards

2020
Acquired a LCD and semiconductor cleaner business

2021
Made Teikoku Taping System Co., Ltd. a subsidiary

Polatechno

2002
Began production of inorganic polarizers

2004
Made a capital investment in MOXTEC, Inc.

2017
Expanded a business in components for X-ray analysis systems following a buyout of RaySpec Ltd.

2019
Made Polatechno Co., Ltd. a wholly-owned subsidiary

2020
Succeeded the businesses of Polatechno Co., Ltd.

Color Materials

*6
1999
Began full-scale production of colorants for inkjet printers

2002
Began full-scale production of inkjet inks used in industrial applications

2009
Established Shanghai KAYAKU International Trading CO., LTD.

2018
Established NIPPON KAYAKU (THAILAND) CO., LTD.

2020
Launched TG-MD® non-phenol developer for thermal paper

Cayalysts

Pharmaceuticals Business

2004
Launched the anti-cancer drug, IA-CALL®

2013
Launched the biosimilar, FILGRASTIM BS

*7 A pioneer in Japan
2014
Launched the biosimilar, INFLIXIMAB BS

2016
Established Cultivecs Inc. as a joint venture

2018
Launched the biosimilar, TRASTUZUMAB BS

2019
Launched Portrazza®, an anti-EGFR (epidermal growth factor receptor) human monoclonal antibody

2021
Launched domestic sales of ALAGLIO®, a photodynamic diagnostic agent

2022
Launched DARVIAS®, an anti-cancer drug

Safety Systems Business

2001
Began production of disk-type steel inflators

2006
Established Kayaku Safety Systems (Huzhou) Co., Ltd.

2007
Established Kayaku Safety Systems de Mexico, S.A. de C.V.

2008
Founded Kayaku Japan Co., Ltd.

2012
Began production of side airbag inflators

2012
Established Kayaku Safety Systems Malaysia Sdn. Bhd.

2017
Began production of new types of inflators

2021
Began sales of PARASAFE® emergency parachute system for drones used for industrial purposes

Agrochemicals Business

2005
Launched the epidemic prevention agent, SAFROTIN® MC

2010
Launched the spreading agent, WIDE COAT®

2011
Launched the insecticide, LEAF GUARD®

2016
Launched the insecticide/miticide, FUHMON®

2018
Launched the insecticide, FINESAVE®

2020
Constructed a new synthesis line at the Kashima Plant

*6

Colorants for inkjet printers

With the spread in popularity of full color inkjet printers since the early 90s, the light resistant properties of colorants had remained an issue in the side of manufacturers. As a pioneer of colorants, Nippon Kayaku began colorant development for these printers, entering full-fledged production in 1999. While a newcomer to this field, these colorants were soon adopted by printer manufacturers, and have now become the colorant of choice for printer manufacturers the world over.

*7 A pioneer in Japan

Development of the first Japanese antibody biosimilar

Nippon Kayaku began development on biosimilars of medical products that play a vital role in cancer treatments and treatments for autoimmune disorders. Nippon Kayaku followed the release of its first biosimilar, FILGRASTIM BS, in 2013, with the release of the first Japanese antibody biosimilar, INFLIXIMAB BS, in 2014, and the biosimilar, TRASTUZUMAB BS, in 2018.

Illustrated products of the Nippon Kayaku Group

While changing shape and form on the way to becoming the final product intended for use, the products of the Nippon Kayaku Group see use under various everyday circumstances.

Functional Chemicals Business

Products that help optimize the office and enrich and facilitate everyday living environments. Nippon Kayaku provides various chemical products used in the manufacturing of such products.

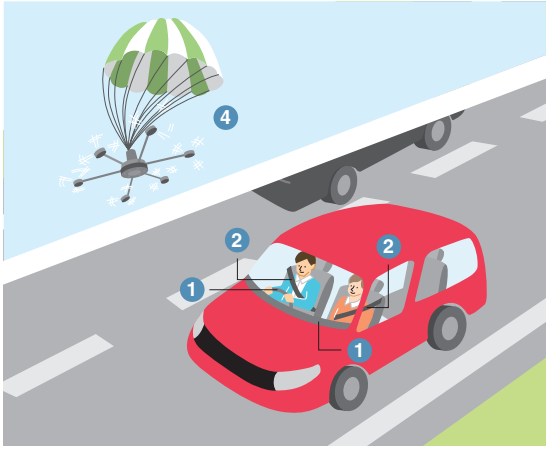
Subsegment ②⑤⑨ Functional materials ③④⑥⑧ Color materials ⑦ Catalysts ①⑨ Polatechno

1. Projectors (polarizing films, inorganic polarizers)
2. PC monitors (ultraviolet curing resins, etc.)
3. Printers (colorants for inkjet printers)
4. Tags (paper dyes)
5. Smartphones (epoxy resins, etc.)
6. Airline tickets (developers for thermal paper)
7. Paper diapers (catalysts for the production of acrylic acid used as a raw material for high water absorption resin)
8. Clothing (dyes for textiles)
9. In-vehicle displays (LCD films, liquid crystal sealant)

Pharmaceuticals Business

Nippon Kayaku strives to achieve the stable supply of medical supplies leading to improvements in the level of healthcare on offer, and the streamlining of medical expenses.

1. Generic drugs
2. Biosimilars
3. Anti-cancer drugs
4. Active pharmaceutical ingredients
5. Diagnostic agents
6. Medical devices



Safety Systems Business

Nippon Kayaku provides automotive safety components that contribute to improving automotive safety.

1. Airbag inflators
2. Micro gas generators for seatbelt pretensioners
3. Squibs (ignition components included in ① and ②)
4. Safety equipment for drones

Agrochemicals Business

Nippon Kayaku provides products that help produce a stable supply of agricultural products, and develop a hygienic environment.

1. Insecticides
2. Herbicides
3. Soil fumigants
4. Rat poisons for cable protection
5. Epidemic prevention agents for pest control

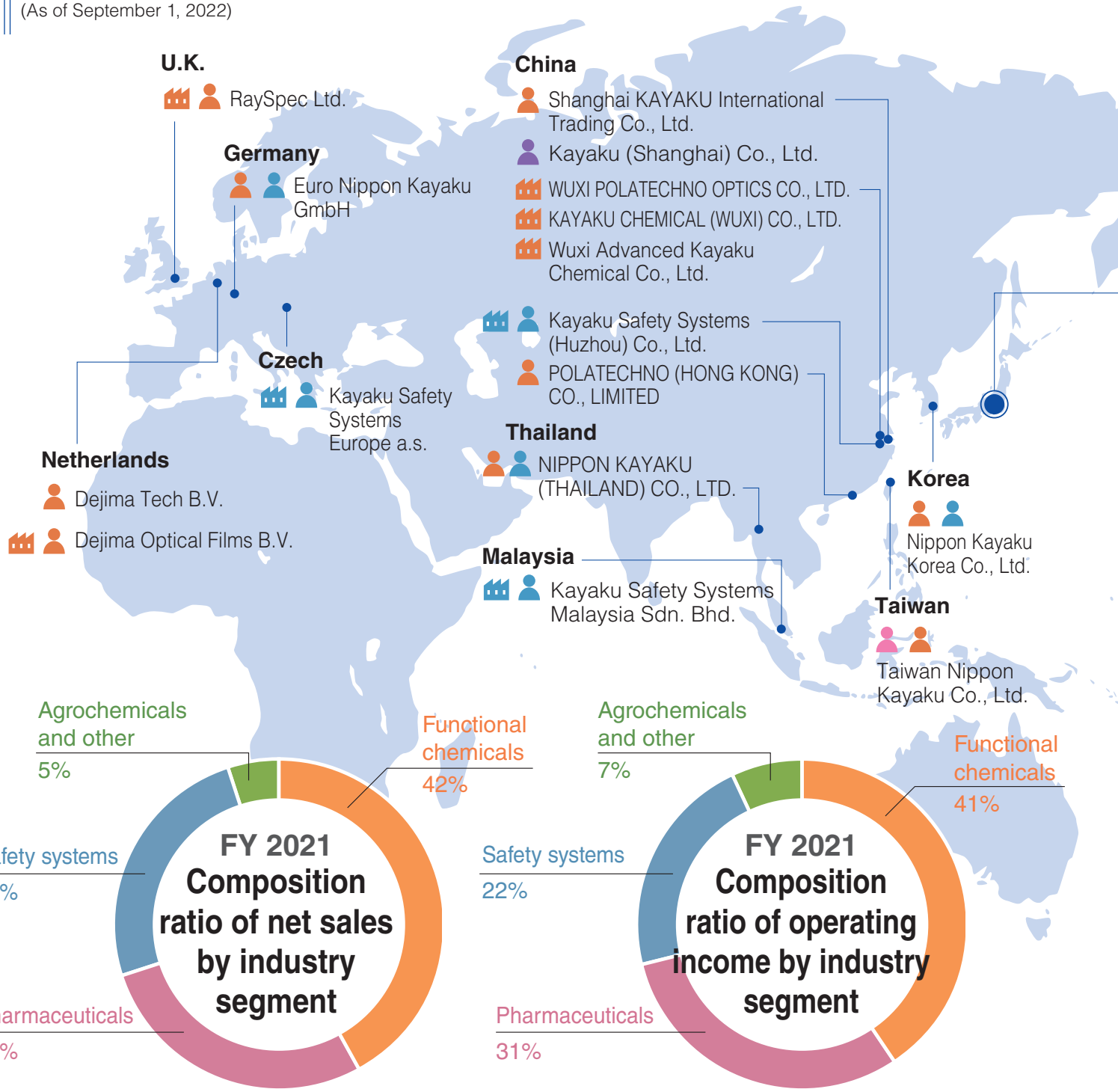
Nippon Kayaku Group Global Business Expansion

Global expansion of the "best products, technologies and services" based on the concept of Global *SUKIMA* IDEAS.

The Nippon Kayaku Group consists of Group companies in Japan and 11 other countries and regions (for a total of 27 consolidated Group companies). These Group companies are engaged in four areas of business, functional chemicals, pharmaceuticals, safety systems, and agrochemicals and other. Nippon Kayaku strives to be an invaluable global company by applying core technologies, technologies which may even come to prominence in niche areas, to deliver the "best products, technologies and service" to fill out "*Sukima* (gaps)" in the global market.

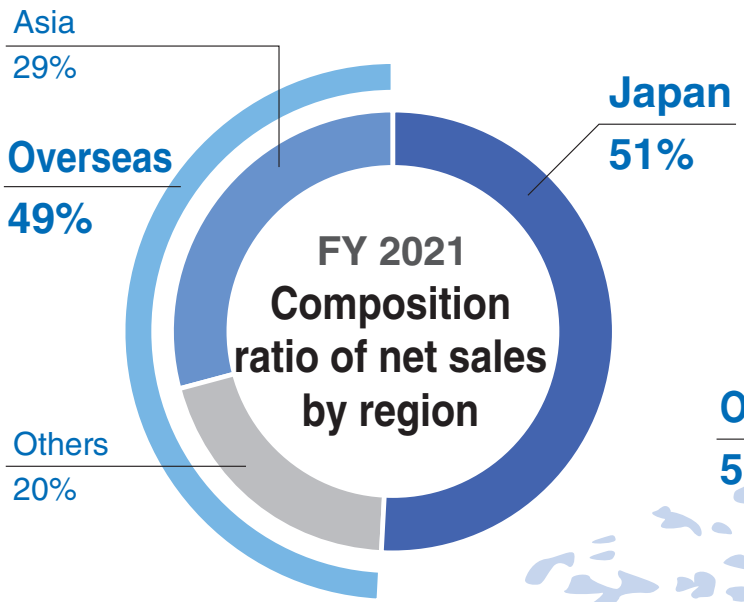
Consolidated subsidiaries: 27 (Japan: 6; Overseas: 21)

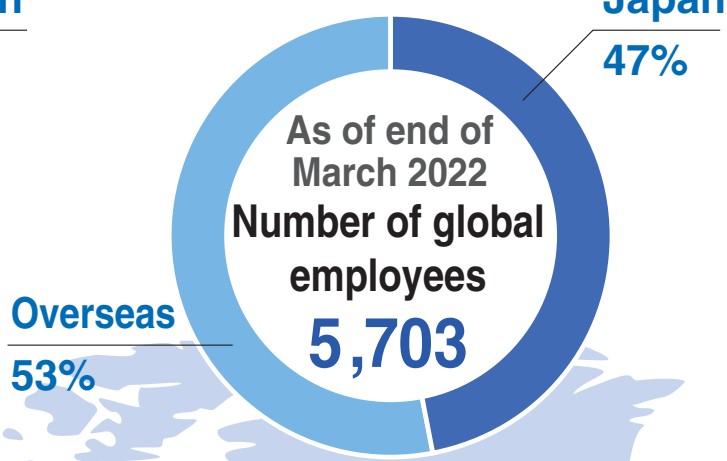
(As of September 1, 2022)



Consolidated net sales: **184.8** billion yen

Consolidated operating income: **21.1** billion yen





Japan

Nippon Kayaku Co., Ltd.

- Teikoku Taping System Co., Ltd.
- POLATECHNO CO., LTD.
- NIKKA FINE TECHNO CO., LTD.
- Kowa Sangyo Co., Ltd.
- NIPPONKAYAKU FOOD TECHNO CO., LTD.
- Wako Toshi Kaihatsu Co., Ltd.

U.S.A.

- MOXTEK, INC.
- KAYAKU Advanced Materials, Inc.
- THE GILMORE ROAD PROPERTY, LLC
- NIPPON KAYAKU AMERICA, INC.

Mexico

- Kayaku Safety Systems de Mexico, S.A. de C.V.

- Functional Chemicals Business
- Pharmaceuticals Business
- Safety Systems Business
- Other Businesses

- Manufacturing and development sites
- Sales locations

Message from the President

Becoming a company that can provide happiness and delight to the environment, society, and all stakeholders

Reflecting on *KAYAKU Next Stage*, FY 2019–2021 mid-term business plan

Review of Operating Results

Please tell us about the summary of *KAYAKU Next Stage*, the previous mid-term business plan.

KAYAKU Next Stage was the first mid-term business plan I undertook after becoming president in June 2019. This was a period affected by market conditions and many other changes in the external environment, even when compared to the entire history of the Nippon Kayaku Group, which stretches back more than 100 years.

Of these changes, the COVID-19 pandemic had a major impact on the operating results of the Nippon Kayaku Group. The pandemic created great uneasiness and uncertainty when it first emerged and the resulting changes in consumer needs and slump in automobile production caused the pace of growth to decline for polarizers (Functional Chemicals Business), automotive safety components (Safety Systems Business). and other products.

However, brisk semiconductor-related (Functional Chemicals Business), a recovery in the pharmaceuticals business from sales efforts to overcome the impact of drug price revisions, and growth in sales volume for generics and biosimilars provided reasons for optimism. As a result, net sales reached a record high of 184.8 billion yen in FY 2021, the final year of the plan, and the operating margin showed signs of recovering after declining since around 2013. We also launched the Aero Business Promotion Department (Safety Systems Business), which handles drone safety components, and engaged in other endeavors in promising areas for future growth.

On the way of working, we made great progress on establishing new work styles to prevent a slowdown in corporate activities during the COVID-19 pandemic, including working from home, telecommuting, and use of digital tools to accelerate communication.

Our lives are built on a delicate balance, and once the balance is upset, the situation can change drastically, and for better or worse, we never know what will happen.

Recognition of Management Issues

Were operating results satisfactory in your view?

No. While we achieved record high net sales in FY 2021, a closer look at operating results reveals two issues.

The first issue is that the operating margin has been declining for some time and we have been unable to reach our target ROE of 8%. While the operating margin did rebound in 2021, we must not allow this to be a temporary increase, but maintain a rising trend over the medium to long term. To accomplish that, it is essential to create new products and new businesses that add high value and continuously introduce them to the market in a timely manner. In today's world where information is distributed at a faster pace and competition is stiffening, I feel a strong sense of crisis that continuing to do the same things we have up to now will not be sufficient and will stall the progress of the Nippon Kayaku Group.

The second issue is that the results produced by mid-term business plans up to this point have tended to diverge from the initial plan as the second and third years of that period progressed.

This was true of ***KAYAKU Next Stage*** as well. The initial plan for net sales in FY 2021, the final year of the plan, was a forecast of 210 billion yen, driven by growth in the functional chemicals and safety systems businesses. However, the resulting 184.8 billion yen differed substantially from the plan. While we can point to the deceleration caused by the COVID-19 pandemic and other external factors, we must acknowledge that we failed to overcome these factors sufficiently. I take our inability to achieve the growth we had envisioned seriously and want to implement improvements to increase plan accuracy.

Atsuhiro Wakumoto

Member of the Board
President
Representative
Director

Measures to Address Management Issues

What measures have you implemented to address management issues?

Immediately upon becoming president, I began to prepare for changes to make the Nippon Kayaku Group even better.

As we continued our efforts to somehow get closer to the initial plan in ***KAYAKU Next Stage***, we engaged in more in-depth discussions of changes focused on the future and, to be frank, it was a period of preparation for a variety of growth.

We revised our vision to provide the necessary time for research and development to continuously create new products and new businesses by 2025 or 2030, according to the timeline needed for each business, and announced our vision in May 2021.*1 By clearly defining growth areas and priorities internally and externally, I think that we have gained a new awareness of our desire to be a company that contributes to society and have stimulated motivation throughout the company.

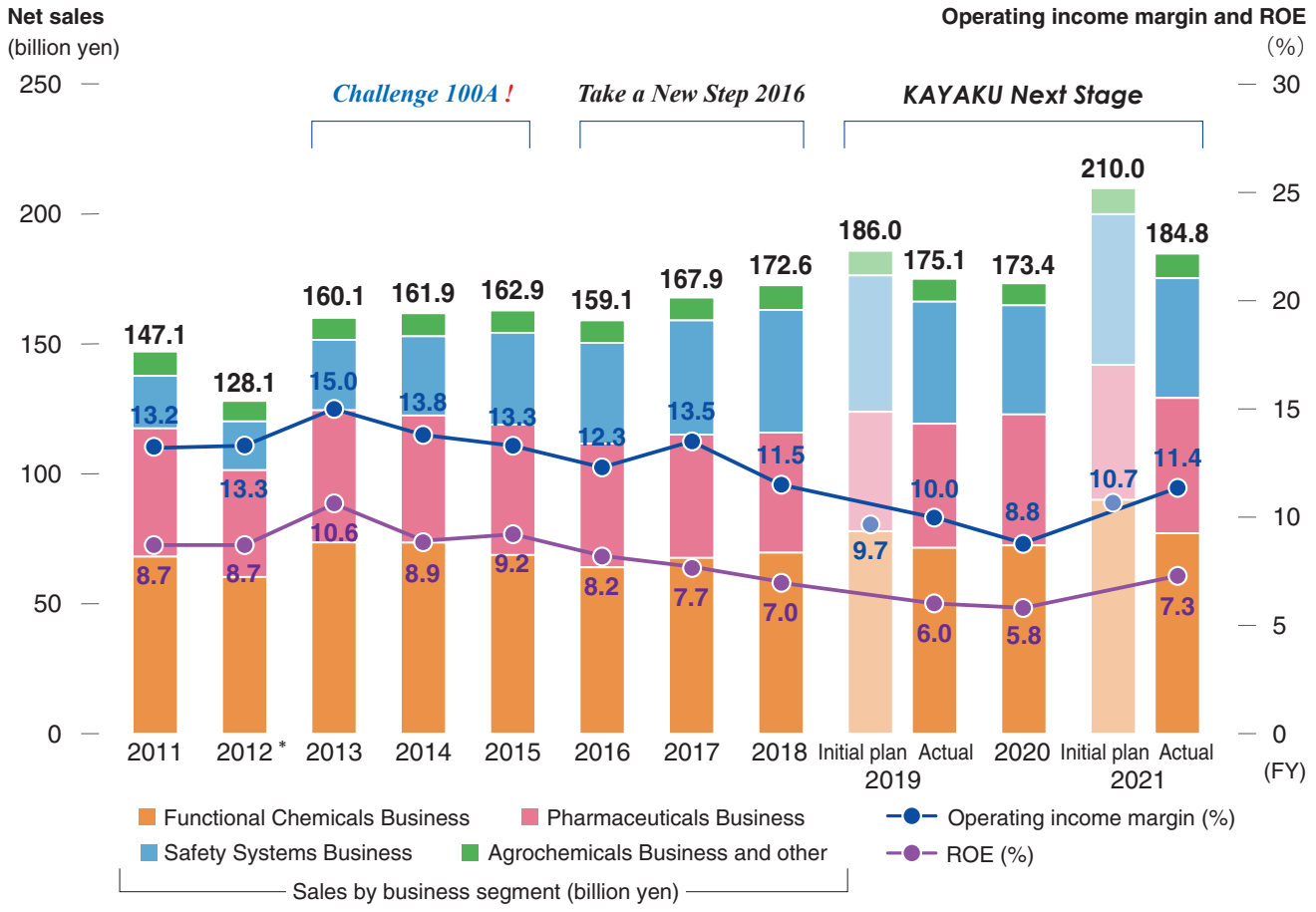
*1 Vision for four main businesses ⇒ p. 28–39

To improve the accuracy of the business plan, officers and employees worked together to materialize a scenario roadmap by backcasting from vision of each business. We also worked to improve the quality and accuracy of the plan through processes such as discussing its validity from the objective viewpoint of outside directors.

The results of these efforts are being used to plan net sales and operating income and company-wide management targets in ***KAYAKU Vision 2025*** (***KV25***), FY 2022–2025 mid-term business plan which is also introduced in this report.*2

*2 ***KV25*** net sales and operating income plan/company-wide management targets ⇒ p. 20

11-year Trend in Nippon Kayaku Group Operating Results



* The fiscal year end was changed from May 31 to March 31 in FY 2012. This resulted in a 10-month accounting period extending from June 1, 2012 to March 31, 2013 for FY 2012, for Nippon Kayaku Co., Ltd. and its consolidated subsidiaries.

FY 2022–2025 Mid-term Business Plan
KAYAKU Vision 2025 (*KV25*)

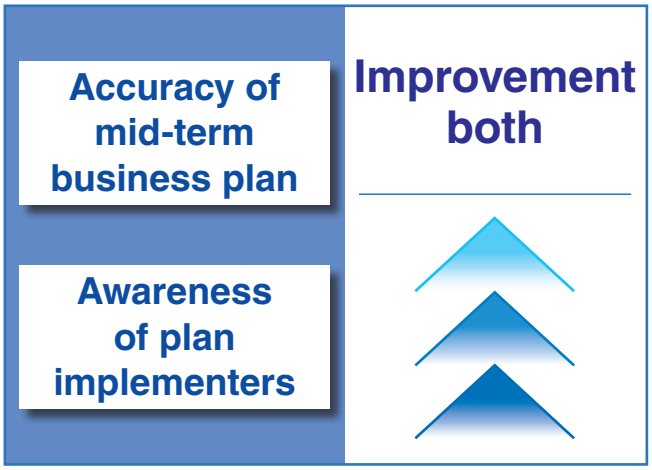
Raising the Awareness of the Plan Implementers

Please explain the concept of *KV25*, the new mid-term business plan.

As I just mentioned, we will create new products and new businesses and improve the accuracy of the plan. The first step was to define the goals and concrete ways to achieve them.

On top of that, I think people are the most important factor in actually pursuing the plan. We will focus on active advancement and utilization of human resources and increasing awareness to create a better organization.

More specifically, we are planning to pursue company-wide cross-organizational activities as the centerpieces of the mid-term business plan and foster a high-quality, highly productive corporate culture, in addition to setting operating targets for each business.



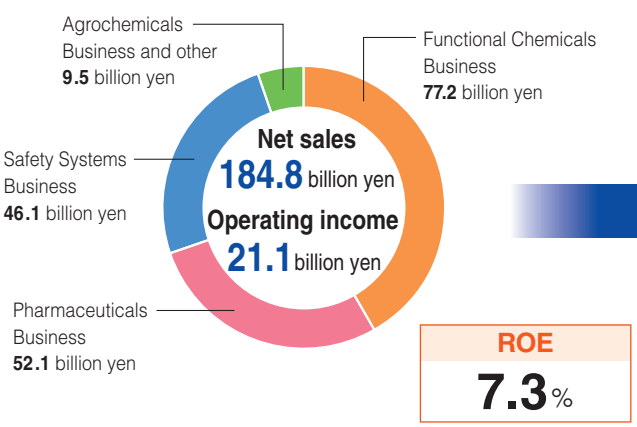
KV25 Vision for 2025

First, please tell us about the company-wide management targets for FY 2025, the final year of *KV25*.

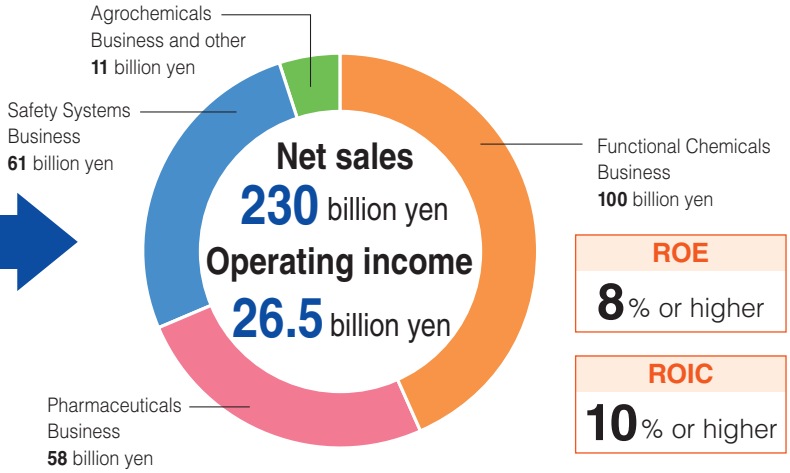
During *KV25*, the plan is to achieve substantial growth and surpass 200 billion yen in net sales, a first for the Nippon Kayaku Group. We have set 230 billion yen in net sales and 26.5 billion yen in operating income as the company-wide business targets. In addition to targeting ROE of 8% or more through profit growth, we have also incorporated ROIC as a KPI for segment management to improve asset efficiency.

We will target expansion of our four main businesses over the medium and long term by allocating management resources to "areas that are important for supporting growth" and "new and promising areas for the future" and actively investing in capital expenditures and R&D.

FY 2021 Operating Results



Operating Performance Plan for FY 2025 (final year of *KV25*)



Net sales and operating income plan for *KV25* ⇒ p. 20

To explain in more detail, we are forecasting firm growth in the catalyst business and a rebound in results of the Polatechno business, which is now operating as an integrated business, in addition to further growth of semiconductor-related products in the functional chemicals business.

In the pharmaceuticals business, the long-term goal is to create our own products in-house in new drugs, medical devices, or other segments, including partnerships and introduction of products. We continue to work on expanding volume in generics and biosimilars.

In the safety systems business, we are targeting further growth through a global rebound in automobile production volume and an increase in the automobile safety component installation rate in China, ASEAN countries, India and other emerging countries. We will also focus on the solid launch of safety equipment for drones.

In the agrochemicals business, the focus will be on using our strength in formulation technology to develop new products and expanding sales of core products in Japan and overseas.

The growth plans for the four main businesses, such as those detailed above, have been incorporated into the company-wide management targets of ***KV25*** with a high degree of accuracy and I am confident that they are achievable.

In addition to the economic value from these targets, we will simultaneously increase environment and social value as management targets.*

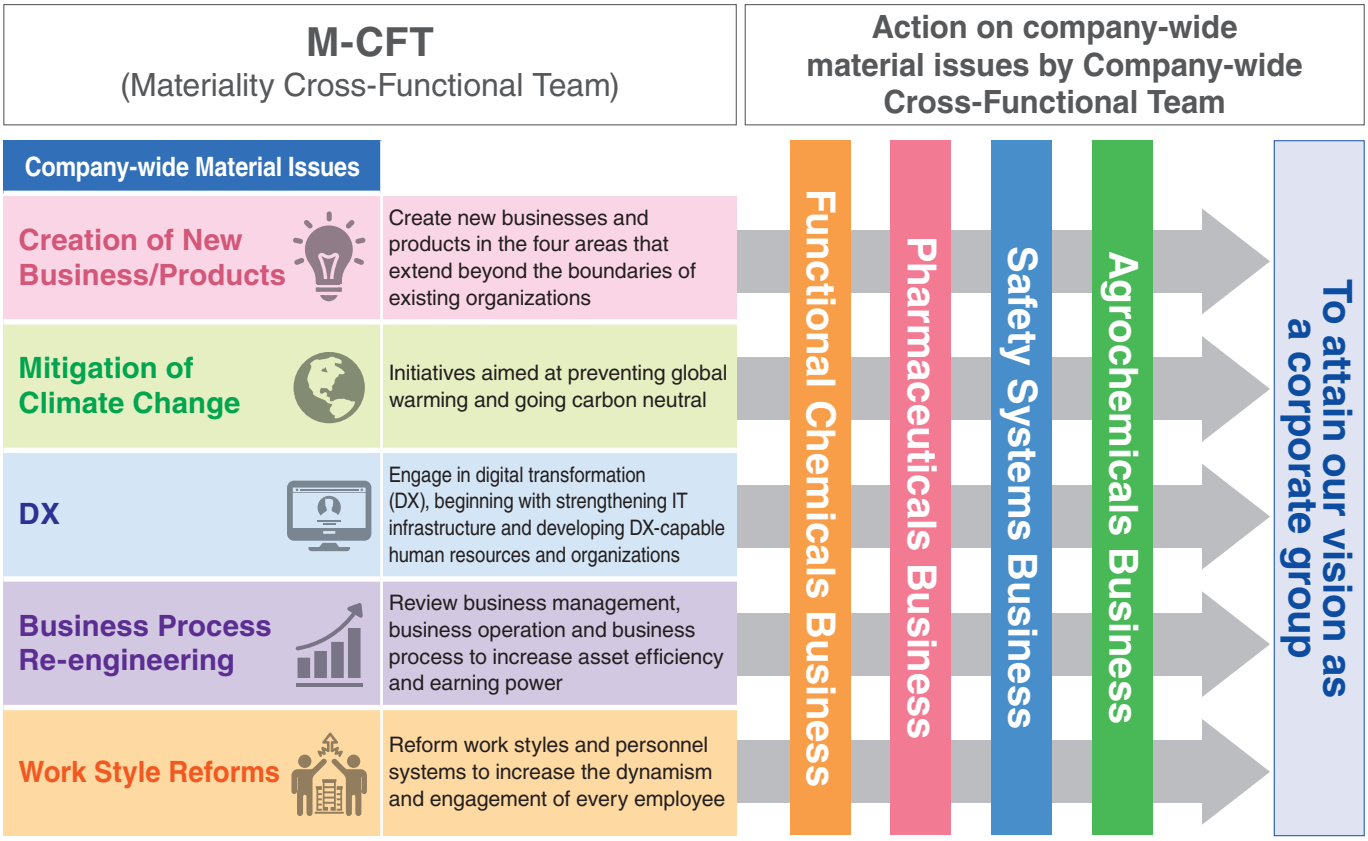
* ***KV25*** Company-wide Management Targets ⇒ p. 20

Company-wide Cross-functional Activities

Tell us about company-wide cross-functional activities of M-CFT on company-wide material issues.

To forge the ability to create environmental and social value on an ongoing basis, we have specified five company-wide material issues: 1) Pursue company-wide R&D to "create new products and new businesses," 2) Analyze climate change risk and identify business opportunities in "mitigation of climate change" according to the TCFD recommendations, Raise the base level of corporate activities that are efficient, productive, and provide job satisfaction, 3) DX, 4) Business Process Re-engineering, and 5) Work Style Reform.

We then appointed an executive director to be in charge of each issue and formed the M-CFT (Materiality Cross-Functional Team) to eliminate the walls between business groups and tackle issues cross-organizationally company-wide. This team is characterized by its company-wide, cross-organizational activities. It avoids the formulaic practices and rigid views that are easy to fall prey to when business and divisions have only vertical relationships, while aiming to become a flexible and resilient corporate group by utilizing lateral connections the team has with



KV25 Materiality
Company-wide material issues and M-CFT (Materiality Cross-Functional Team) ⇒ p. 40

multiple businesses to amplify and share outcomes.

I view this M-CFT as the centerpiece of ***KV25***. The divisions in charge of each business will naturally persist with their industrious efforts to achieve the numbers in the business plan. With that alone, however, the results produced by the Nippon Kayaku Group will only amount to the sum of the numbers achieved by each business. To demonstrate the synergies commanded by multiple divisions company wide, I think we need a framework for employees to go beyond organizational boundaries of the various divisions and cooperate with one another, rather than confine their own activities to the business at hand. We will work to expand the sort of climate where innovative ideas are generated from the diversity in specialization and roles, age, and other attributes, and employees become capable of actively taking the initiative to resolve problems, from M-CFT to the entire company and make the Nippon Kayaku Group a strong company.

Cultivating Corporate Culture

What kind of organizations and talent pools should employees strive for during *KV25*?

From the moment we decide on a plan, the environment surrounding us changes by the minute. It may sound paradoxical, but implementing ***KV25*** will require resilient organizations and human resources who can respond flexibly to changes and ascertain results from a medium and long-term perspective, rather than just persisting with the initial plan through the ups and downs.

We continue to engage in activities to thoroughly eliminate the 3Ms (“Muri (overreaching), Muda (waste), Mura (inconsistency”) and promote the sense of value in being constantly mindful of KAIZEN (continuous improvement), based on the idea that no manufacturing industry can exist without cost reduction.

Moreover, we need a corporate culture that permits failure and enables people to take on challenges in the process of trial and error to increase the productivity of operations through DX and other means. We will work to create a framework to support proposals from each division and a personnel system that properly values taking on challenges.

A good work environment in which we can frankly discuss issues with each other is essential. We aim for an organization that provides a high sense of psychological safety from the perspectives of diversity and inclusion, and compliance.

While I recognize that each of these efforts will lead to active communication, I think it is important to engage in face-to-face dialog when working on something as a group. We therefore began renovating the officer’s room in the Head Office to create a space where all officers and employees can engage in frank and unreserved discussion, and began using this room as the ”visible room of the Vision.” Engaging in many discussions there made it possible to reach the point of formulating ***KV25***.

In the ”visible room of the Vision"

While we have been able to use remote tools for engaging in back-and-forth conversations lately, there are still some nuances that just are not communicated. Face-to-face dialog is good for discerning from someone’s expression or tone of voice when they are really against something they appear to be for, and for engaging in discussion while truly listening. Facing one another and earnestly searching for a win-win solution is also the starting point of business. If we can exchange opinions frankly and mutually deepen our understanding, it will probably make socializing over drinks after meetings more fun.

We aim to create flexible, resilient organizations and talent pools that can firmly support corporate activities by cultivating a good corporate culture.

To Our Stakeholders

Stakeholder Engagement

Please explain about value that we continue to provide stakeholders as the Nippon Kayaku Group.

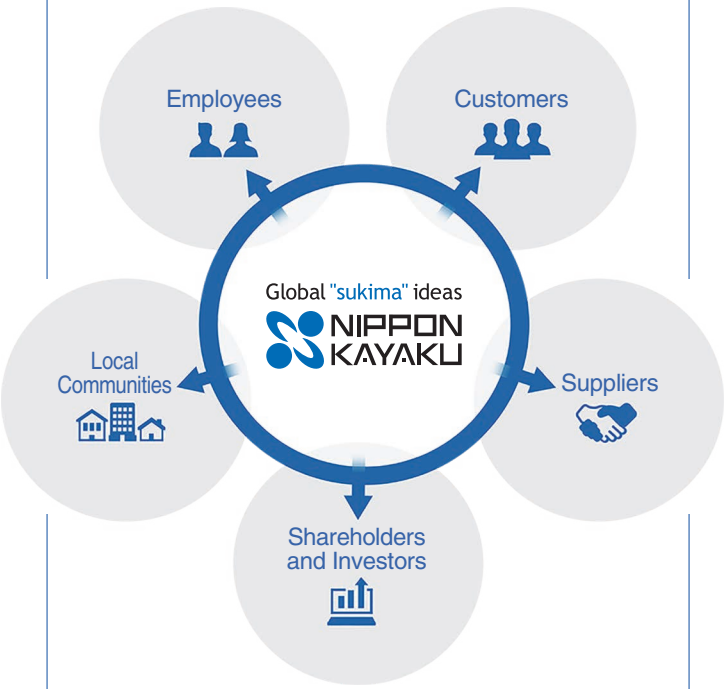
In FY 2021, the Nippon Kayaku Group celebrated the 106th anniversary of its founding. Our corporate activities are based on the company credo, "The Combined Forcres of Our Consciences, Ceaseless Progress, The Best Products," established by Yasusaburo Hara, who became the third president in 1962, even today.

Nippon Kayaku Group respects the spirit of altruism and will endeavor to provide happiness and well-being to all of our stakeholders by being mindful of engaging in business activities that benefit people, society, and the environment while simultaneously targeting economic value and environmental and social value.*1

*1 ***KV25*** Company-wide Management Targets (Economic value and Environmental and social value) ⇒ p. 20

Mission in *KAYAKU Vision 2025* (*KV25*)

The Nippon Kayaku Group aims to be a company with a strong presence that can consistently provide happiness and delight to the environment, society and all stakeholders under the **KAYAKU spirit**.



Continuously Providing Customers With the Best Products

Please explain our vision of continuously providing customers with the best products, technologies, and services.

In addition to making QCD*2 our top priority as a manufacturer and striving for "ceaseless progress," we must be keenly aware of our ability to connect with customers through products, technologies, and services. We will never forget that receiving valuable information from customers is what first enables us to provide products, technologies, and services. We want to build the cycle needed by customers, rather than engage in one-way efforts.

*2 Quality, Cost, and Delivery

We will also strive to operate each of our four main businesses with the full understanding that we must focus especially on cost, out of the three elements of QCD, and that customers will first seek products because they are reasonably priced. We will continue to comply with the laws and target further improvements in quality while listening to customers, and will strive to provide products that customers can use with assurance.

Globally Sustainable Management

Please explain the Nippon Kayaku Group corporate vision as it relates to pursuing global management in every country and region.

We already recognize the locations where we operate our businesses as one global market, without distinguishing between domestic and international. Wherever there are business opportunities, we strive to move agilely toward expansion in those areas. However, this does not change our pursuit of sustainable management while having a good understanding of the culture and customs of each country and region, and respecting human rights and the environment. We do not pursue efficiency alone; we practice the **KAYAKU spirit** globally by making sure that all local employees understand the corporate vision and engaging in dialog with stakeholders in each area.

The Group is currently segmented by business and role, such as sales locations of the functional chemicals business and manufacturing sites of the safety systems business. However, we are now able to provide customers with products from multiple businesses in several locations. In addition to pursuing possibilities that are not limited to one business in this manner, I want to build locations that are at the forefront of sustainable management and can provide happiness and well-being to those regions in an integrated manner. This would include employing talent with roots in the local community and searching for business opportunities to promote local communities.

Eliminate national and international borders and provide happiness and delight

Constructive Dialogue with Our Shareholders and Investors

What is your message to shareholders and investors?

Our shareholders and investors provide us with numerous insights on management through financial results briefings, IR events, and one-on-one meetings and regularly voice valuable opinions of the Nippon Kayaku Group. We deeply appreciate their responsiveness. I would like to continue to actively exchange information and engage in constructive dialog with all stakeholders and ask for your continued cooperation.

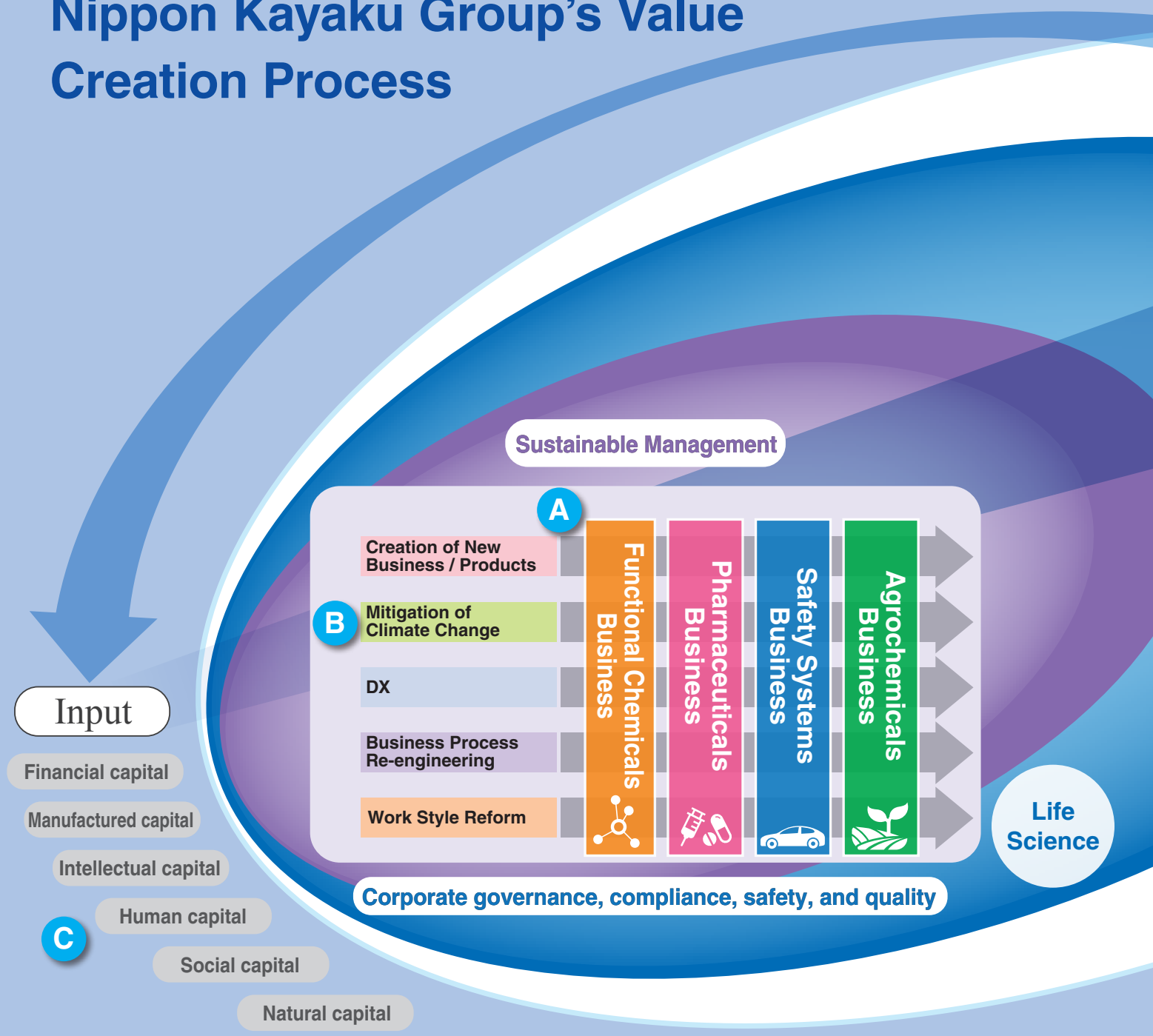
As a Group, we do not pursue financial soundness alone. We aim to be a company that can maintain a good balance among and provide happiness and well-being to all stakeholders. To accomplish these aims, we will continue to enhance corporate value while skillfully developing human resources within a good corporate culture and effectively utilize integral strengths such as intellectual property and other intangible assets.

I ask for your continued support in the future.

September 1, 2022
President, Representative Director

Interviewer
- Sustainability Promotion Department, Corporate Planning Division
- Corporate Communications Division

Nippon Kayaku Group's Value Creation Process



A Addressing Company-wide Material Issues Cross-organizationally

The Nippon Kayaku Group corporate value creation process positions sustainable management at the core of corporate activities. This process is characterized by a primary focus on fundamentals such as corporate governance and compliance, safety, and quality. Based on these fundamentals, we concentrate on growing our four businesses, enlist all businesses and divisions in a cross-organizational effort to address company-wide material issues*, and share our sense of values, results, and outcomes.

* Company-wide material issues: Creation of new business / products, mitigation of climate change, DX, business process re-engineering, work style reform

p. 40 Company-wide material issues and M-CFT (Materiality Cross-Functional Team)

p. 44-59 Activities of each M-CFT

B Mitigation of Climate Change

As a chemical manufacturer, we are actively working to go carbon neutral. In April 2022, the Nippon Kayaku Group endorsed the TCFD recommendations and disclosed information based on the TCFD recommendations on our corporate website in July.

p. 48 Mitigation of climate change

KAYAKU spirit

Output

The best products, technologies, and services that protect life and health of consumers and support a comfortable life

- Mobility
- D Environment and Energy
- Electronics

Outcome

Shareholders

- Sustainable growth
- Returning of profits

Business partners

- Value co-creation

Customers

- Products that provide economic value
- Product that contribute to the SDGs

Employees

- A workplace where employees can work with security and peace of mind
- Maintaining employment

Environment and Society

- Contributing to a sustainable society through products
- Carbon neutrality

C Targeting a Virtuous Cycle for Human Capital

Many people outside of the Nippon Kayaku Group appreciate our honest, sincere corporate culture, and its employees tend to think of it as an environment that fosters a sense of unity and solidarity and enables them to do what they want within an organization. We value this sort of atmosphere and consciously cultivate a corporate culture that enables employees to take on challenges, values constant mindfulness of KAIZEN, and provides a strong sense of psychological safety. We aim to actively overcome issues, develop a more creative talent pool, and create a virtuous cycle for human capital.

p. 54 DX (culture that enables employees to take on challenges)

p. 56 Work reform (valuing constant mindfulness of KAIZEN)

p. 58 Work style reform (strong sense of psychological safety)

p. 64 Compliance (strong sense of psychological safety)

D New Value Creation

Creating new businesses / products is the company-wide material issue that is most important for improving profitability over the medium and long term. We aim to create new businesses / products in Mobility, Environment and Energy, Electronics, and Life Sciences, four areas that are important for a sustainable society, by systematically organizing technologies and intellectual property developed thus far, specifying the intellectual property strategy for each business, and actively engaging in open innovation.

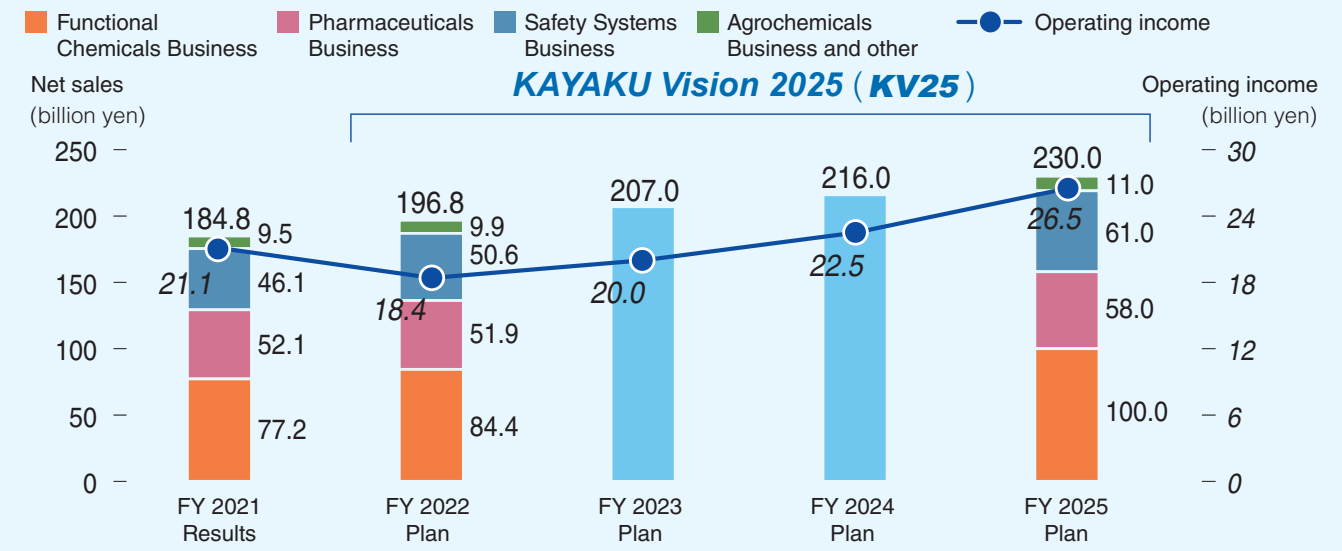
p. 44 Creating new businesses / products

p. 46 Intellectual property initiatives

FY 2022–2025 Mid-term Business Plan
KAYAKU Vision 2025 (KV25)

KV25 Net Sales and Operating Income Plan

Net Sales and Operating Income Plan



Plan numbers are based on the numbers publicly disclosed in the financial results presentation on May 13, 2022.

Although net sales reached a record high of 184.8 billion yen in FY 2021, the final year of ***KAYAKU Next Stage***, FY 2019–2022 mid-term business plan, we did not achieve the initial plan of 210 billion yen, mainly due to the impact from the COVID-19 pandemic on the functional chemicals and safety systems businesses. After reflecting on this, we paid particular attention to improving the specificity and accuracy of the road map to the targets for each business division in formulating ***KAYAKU Vision 2025 (KV25)***, the four-year mid-term business plan beginning from FY 2022.

In FY 2022, the initial fiscal year of ***KV25***, we forecast a decline in profit due to the steep rise in the price of raw materials in each business and increased expenses from resuming operations, which had been shrunk in some instances as a result of the COVID-19 pandemic. From FY 2023 onward, we anticipate growth in each segment of the functional chemicals business, growth of generics and biosimilars and introduction of new products in the pharmaceuticals business, and growth from expansion of the automotive safety components in the safety systems business. The plan for FY 2023 is over 200 billion yen in net sales. For FY 2025, the final year of the mid-term business plan, we are targeting 230 billion yen in net sales and 26.5 billion yen in operating income.

KV25 Company-wide Management Targets

Economic Value (FY 2025)

Net sales **230** billion yen	Steady growth to over 200 billion yen in FY 2023
Operating income **26.5** billion yen	Exceeding the previous record high of 24.1 billion yen
ROE **8** % or higher	Targeting improvement by increasing asset efficiency
ROIC **10** % or higher	Managing each division by ROIC and increasing asset efficiency

Environmental and Social Value

Greenhouse gas emissions **32.5** % reduction in 2030 (compared to 2019)	**Carbon neutrality** Achieve neutrality in **2050**
Realization of a digital society Provide environmentally friendly semiconductor components to contribute to digital transformation (DX)	**Realization of a healthy society** Provide a stable supply of drugs to contribute to higher quality of life (QoL)
Continue to safeguard life Provide products that ensure safety and security in the mobility area	**Support food supply** Provide safe agrochemical products that can meet global food requirements
Become a company with presence Increase customer satisfaction Perform human rights due diligence at suppliers	**Development of human resources** Increase employee satisfaction Encourage diversity (Percentage of female managers of 10% or higher, etc.)

We established KPI for economic value and environmental and social value created as company-wide management targets in ***KV25***, to pursue sustainable management.

The KPI targeted for economic value are ROE of 8% or higher by improving asset efficiency, in addition to net sales and operating income. We also incorporated return on invested capital (ROIC) as a management indicator, to increase asset efficiency by evaluating management of each division.

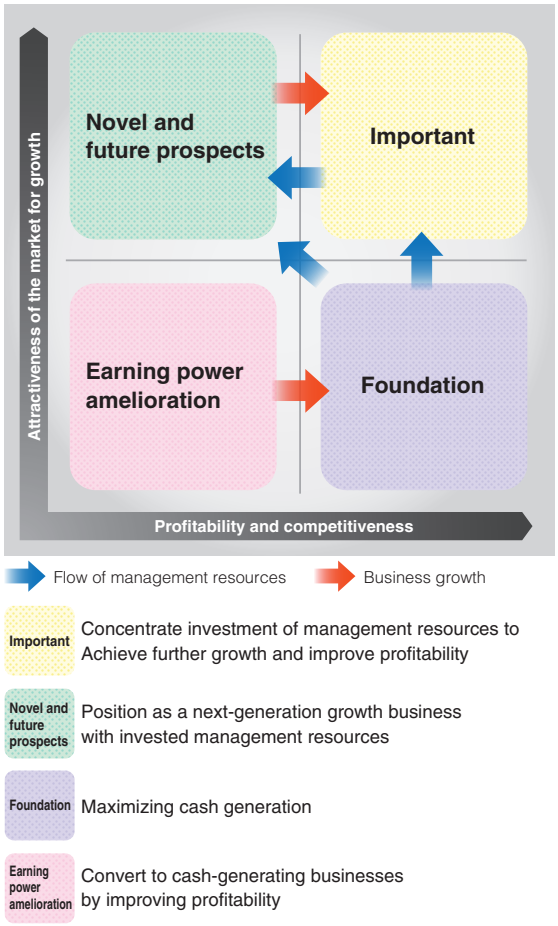
One of the KPIs targeted for environmental and social value is a 32.5% reduction in greenhouse gas emissions by 2030, compared to 2019, and achieving Scope 1 carbon neutrality by 2050 as a long-term goal.

We will also continue to create value from each division through building a digital society, creating a healthy society, continuing to protect lives, and supporting the supply of food as we work to increase customer satisfaction and build a framework for due diligence on human rights that includes the supply chain.

For our employees, whom we are closest to and value highly, we aim to increase employee satisfaction by establishing a work environment that makes it easy to work and provides job satisfaction, increasing the percentage of female managers, and implementing other initiatives to encourage diversity.

KV25 Business Portofolio

Business Portfolio (Main Investment Fields and Product Group) — ***KV25*** Focus Area —



Businesses		
Important	Functional Chemicals Business	Semiconductor and MEMS materials, Industrial IJ inks, X-ray analyzer components
	Pharmaceuticals Business	Biosimilars, formulated drugs (generic anti-cancer drugs)
	Safety Systems Business	Inflators
	Agrochemicals Business	Formulations (Functional agrochemical formulations)
Novel and future prospects	Functional Chemicals Business	Next-generation communication resins, semiconductor cleaners, semiconductor manufacturing equipment, new functional colorants, catalysts that contribute to a carbon-neutral society, new optical films for automotive applications
	Pharmaceuticals Business	Biomedicine, new anti-cancer drugs, new medical devices
	Safety Systems Business	New pyrotechnic device for automotive applications, drone safety device
	Agrochemicals Business	Biostimulants, new agrochemicals, new formulations (new functional agrochemical formulations)
Foundation	Functional Chemicals Business	Semiconductor resins, consumer inkjet colorants, catalysts for the production of acrylic and methacrylic acid, dye-type polarizers
	Pharmaceuticals Business	Generic anti-cancer drugs, diagnostic reagents, active pharmaceuticals
	Safety Systems Business	Micro gas generators and Squibs
	Agrochemicals Business	Pesticides, contract manufacturing

The basic strategy of the Nippon Kayaku Group is to grow our four main businesses in functional chemicals, pharmaceuticals, safety systems, and agrochemicals.

KV25 clearly specifies the business areas that can utilize the strengths of the Nippon Kayaku Group to achieve sustainable growth. We reassessed the portfolio for each business from a medium and long-term perspective to strategically allocate business resources to markets with growth potential.

We evaluated and categorized the four businesses along the two axes of "Attractiveness of the market for growth" and "Profitability and competitiveness." Concentrating investment in the "Important" upper right quadrant for areas that score high on both axes and the "Novel and future prospects" upper left quadrant for areas that score high on "Attractiveness of the market for growth" will promote growth in businesses with high earning potential. The business utility of areas in need of "Earning power amelioration" will be reviewed from an objective perspective and business resources will be allocated according to the need for management and control.

Message from Head of Financial Group

We will focus on enhancing corporate value by maintaining our solid financial structure as a strength; sustainable growth of our four main businesses; and active investment in areas where we anticipate growth.

Yoshitsugu Ishida
Member of the Board,
Managing Director
Head of Financial Group

Financial Strategy Aimed at Sustainable Growth

Through ***KAYAKU Vision 2025*** (***KV25***), the four-year mid-term business plan beginning in FY 2022, the Nippon Kayaku Group will maintain our solid financial structure, a strength, at a certain level as we contribute to the realization of a sustainable society by providing economic value and environmental and social value through mitigation of climate change and other measures.

We will actively invest in areas where we can anticipate synergies and innovation in existing businesses, achieve management targets of ***KV25***, and strive for subsequent long-term growth, while maintaining a balanced portfolio through sustainable growth of our four main businesses.

The funds needed for investment in growth will be secured through corporate bonds, borrowing, or other forms of financing, after considering the cost of capital. We will continue to build a solid financial base that will enable us to manage business resources appropriately through balance sheet management focused on optimal capital structure and respond flexibly to changes in the market environment as well as business risks and other risks. We will concentrate on enhancing corporate value while maintaining our "A" corporate rating by R&I (Rating and Investment Information, Inc.) as an objective evaluation of our credit rating.

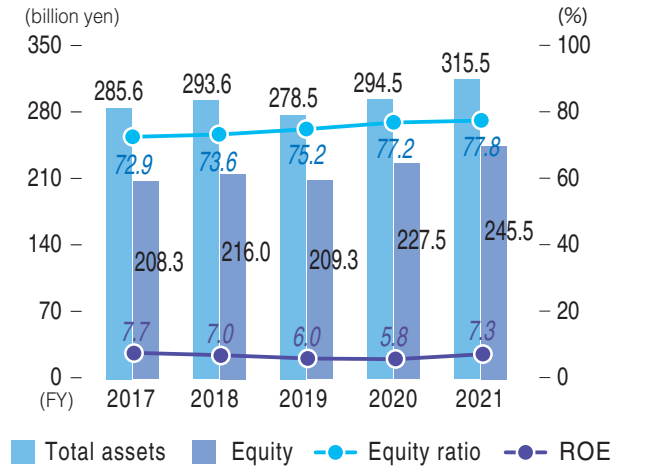
Appropriate Management of Business Resources that Form the Financial Base

The Nippon Kayaku Group focuses on cash flow management and balance sheet management. We recognize the need to maintain ROE, a KPI set as a company-wide target, at around 8%. This is the minimum condition for the Nippon Kayaku Group to command presence.

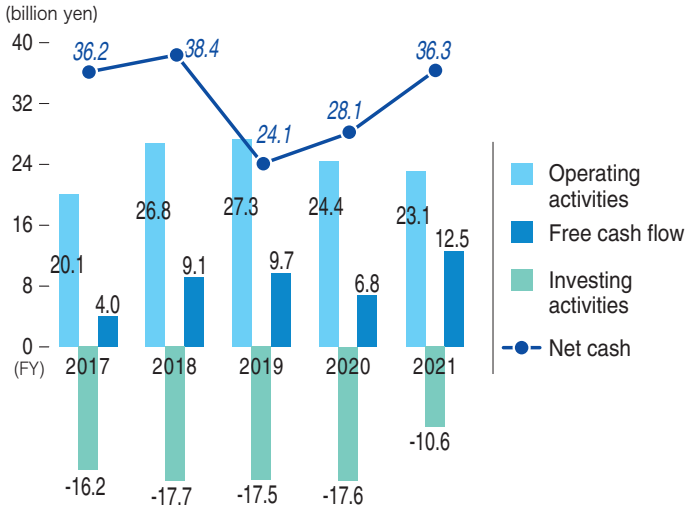
ROE rebounded to 7.3% at the end of the final fiscal year of ***KAYAKU Next Stage***, FY 2019–2021 mid-term business plan, along with profit growth. The equity ratio increased to 77.8%.

In ***KV25***, we will target profit growth through business growth and will strive to shorten and appropriately manage the days of receivables and inventories on hand as operating capital. We will examine the reasons for cross-shareholdings every year and sell those we have deemed as no longer needed, while taking the impact on the market into consideration. In addition to this, we will also consider other measures, including the appropriate timing for reducing holding of idle assets, mainly consisting of former plant premises, with the goal of managing and maintaining cash and equivalents at an appropriate level and targeting ROE at an appropriate level for the corporate group.

Trend in Assets



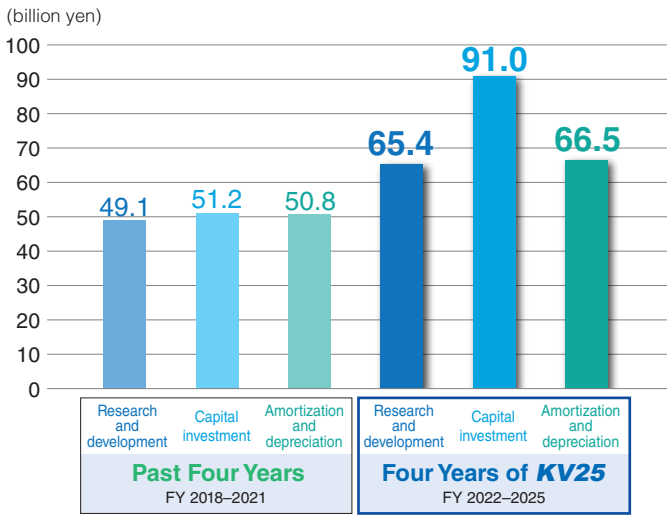
Trend in Cash Flows



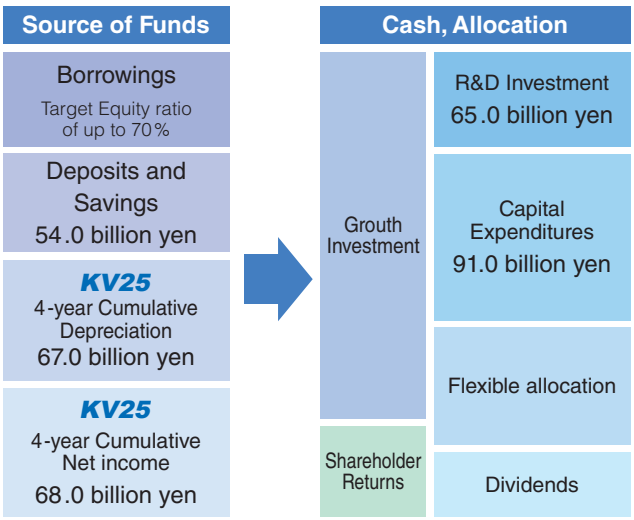
Financial Strategy Aimed at Sustainable Growth

During the four years of ***KV25***, we plan to substantially increase investment in R&D expenses and capital investments. We have developed concrete plans for capital investment in expanding manufacturing equipment for inkjet inks used in industrial applications*1 and epoxy resin manufacturing equipment*2 in the functional chemicals business, after considering the forecast for growth in demand, profitability, investment efficiency, and other factors. We also plan to add capacity for inflator and squib manufacturing equipment*3 at global sites in the safety systems business.

From the 1st quarterly Securities Report for the 166th Period
*1 Fukuyama Plant (Fukuyama City, Hiroshima Prefecture): Approx. 4.3 billion yen
*2 Asa Plant (Sanyoonoda City, Yamaguchi Prefecture): Approx. 6.6 billion yen
From the Annual Securities Report for the 165th Period
*3 Kayaku Safety Systems (Huzhou) Co., Ltd.: Approx. 0.5 billion yen
Kayaku Safety Systems de Mexico, S.A. de C.V.: Approx. 0.7 billion yen
Kayaku Safety Systems Malaysia Sdn. Bhd.: Approx. 0.8 billion yen



KV25 Investment and Capital Policy



Established 200 billion yen limit

- Aggressive investment in priority and new/promising businesses
- Environmental and DX capital Investment
- Strategic investment: Incorporating external sources (M&A, product introductions, etc.)
- Acquisition of treasury shares
- Dividend payout ratio of 40% or more

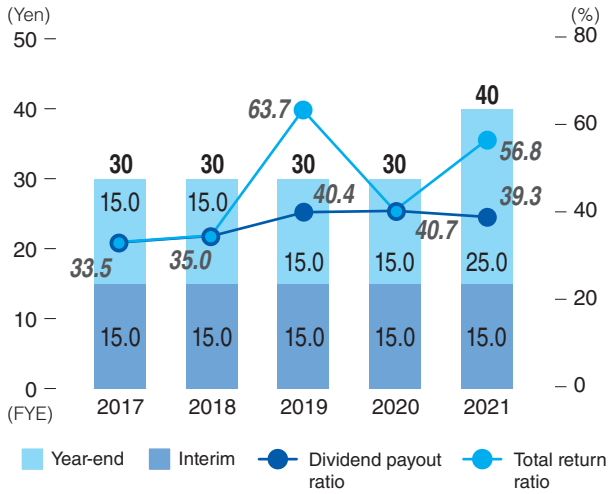
During ***KV25***, we will also utilize borrowing up to an equity ratio of around 70%, and provide sufficient shareholder return while investing in growth. We have set a maximum of 200 billion yen for total cash allocations, including agile allocations for strategic investment in product introductions and M&A, in addition to allocations for R&D investment and capital expenditures, and will actively pursue investment in the future.

Shareholder Return

The Nippon Kayaku Group regards returns to our shareholders as important. We will also target a dividend payout ratio of 40% or higher during ***KV25***, FY 2022–2025 mid-term business plan. We intend to be flexible in acquiring treasury shares as part of profit return while ensuring sufficient retained earnings. Retained earnings will be used for capital investments, R&D expenses, etc. in business growth for future development to enhance corporate value.

In FY 2021, we declared interim dividends of 15 yen per share, with a record date of September 30, and year-end dividends of 25 yen per share, for total annual dividends of 40 yen per share. The dividend payout ratio was 39.3%, resulting in a dividend payout ratio of 40% over the three years of ***KAYAKU Next Stage***. The total return ratio for FY 2021 was 56.8%, after acquiring roughly 3 billion yen in treasury shares from May through September 2021.

Targeting a dividend payout ratio: 40% or more



Special Feature: Rapid Advances in Semiconductor-related

Market Overview and *KV25* Plan

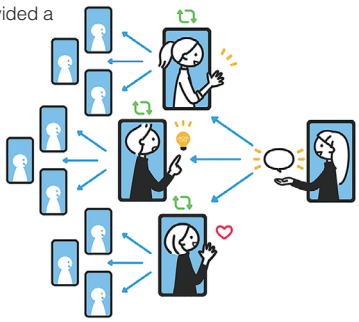
Expansion of Resins for Semiconductors

- Demand for our high-purity epoxy resins for package circuit boards has been growing recently, in addition to use as materials for semiconductor encapsulation, which must have a high degree of electrical reliability.

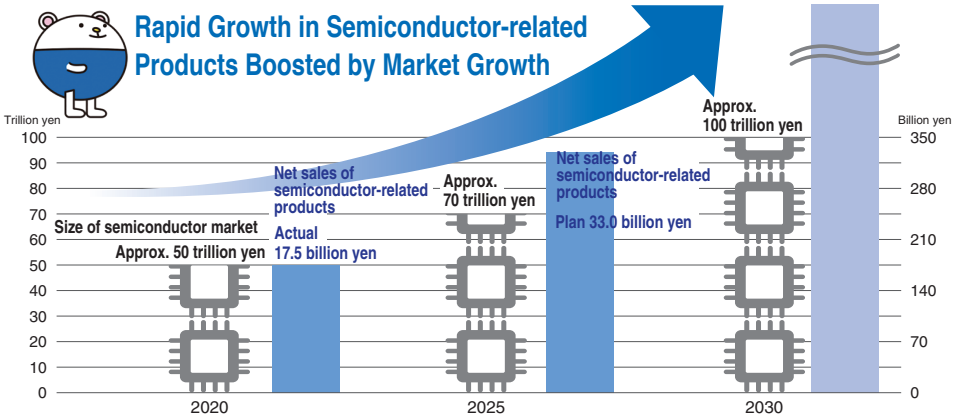
- Semiconductors are core to the infrastructure needed for rapidly advancing digitalization brought about by the establishment of 5G communications networks and proliferation of telecommuting, SNS, and other communications. The increase in demand for semiconductors has provided a tailwind for resins.

Growing Semiconductor Market and Synergies among Our Products

- The semiconductor market is projected to grow rapidly to 100 trillion yen in 2030. We have used this opportunity to capture business in cleaners for semiconductors and equipment for the semiconductor manufacturing process.
- We plan to fully utilize these synergies to reach 33 billion yen in combined net sales from resins, cleaners and equipment, and other semiconductor-related products in FY 2025, and plan to achieve dramatic growth along with the market.



Rapid Growth in Semiconductor-related Products Boosted by Market Growth



Final fiscal year of **KV25** mid-term business plan

Numbers for semiconductor market size: "Strategy for Semiconductors (Synopsis)," Ministry of Economy, Trade and Industry website

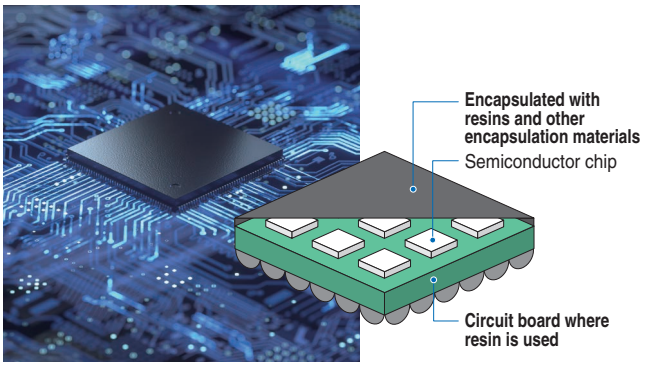
Depicting the future with and maleimide resins, and equipment for

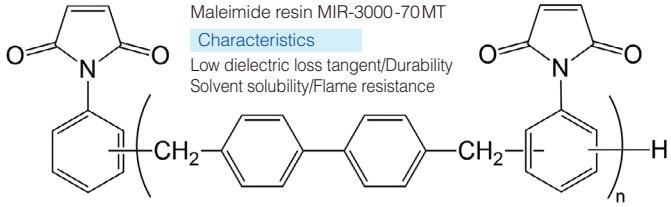
Epoxy and

Cleaners for Semiconductors

The LCD and semiconductor cleaner business was transferred to Nippon Kayaku from Henkel AG & Co. KGaA of Germany and began operations in April 2020.

Epoxy and Maleimide Resins





Rapid Growth in Resin Materials with Such Characteristics

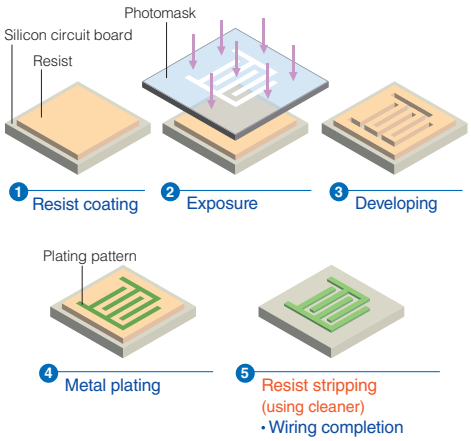
- We supply epoxy resins with such characteristics for uses that necessitate high electrical reliability and for electronic materials subject to stringent environmental restrictions on halogen, etc.
- In 2019, Nippon Kayaku launched a new maleimide resin for areas that require a low dielectric loss tangent with a good balance of characteristics, such as the semiconductor package circuit boards used for 5G.
- Demand for these resin materials is expected to grow more and more for uses such as cell phone base stations and data center servers.

Cleaners for Semiconductors

Capturing Demand for Cleaner Used in

- In the LCD and semiconductor cleaner business, we focused on use in manufacturing processes and captured demand.
- Nippon Kayaku utilizes its strengths in technological expertise to offer an outstanding product

Wiring formation using the semi-additive method



Products — Functional Materials Business, Functional Chemicals Group —

synergies among epoxy cleaners for semiconductors, manufacturing processes

Maleimide Resins

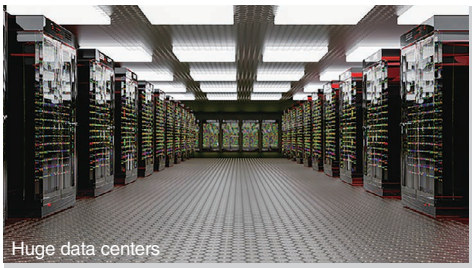
High-purity epoxy and maleimide resins that are flame resistant, have low dielectric loss and other desirable characteristics for use in semiconductor encapsulation and circuit boards

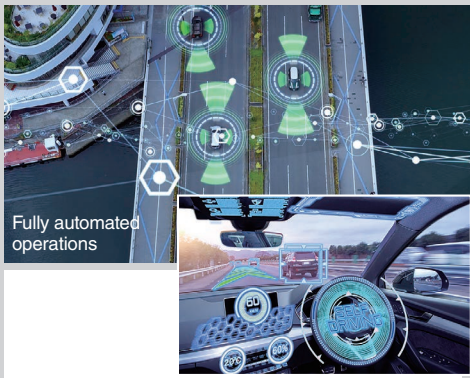
Equipment for Manufacturing Processes

Teikoku Taping System Co., Ltd. handles laminators, etc. used in semiconductor manufacturing processes. Shares in the company were transferred to Nippon Kayaku and business operations as part of the Nippon Kayaku Group began in April 2021.

Contributing Value to a Future Society

We will provide products that add high value to a society that uses electronic equipment and semiconductors in information and communications, mobility, healthcare, smart farming, and many other scenarios related to living.





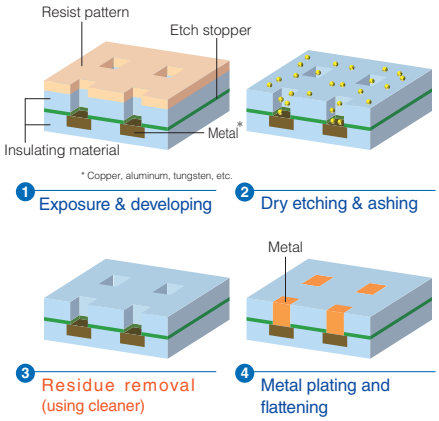
Demonstrating Presence in a Society Where Semiconductors are used in all Sorts of Things

- In the digitally transformed near future, electronic equipment will be used in all sorts of scenarios and semiconductors will become increasingly important.
- The Nippon Kayaku Group is centering its focus on the strategy of expanding sales of resin materials for circuit boards. We will perform research and development on materials for state-of-the-art semiconductors, in addition to providing a stable supply of existing materials.
- We will utilize synergies with cleaners and equipment for manufacturing processes to expand in many directions and target sustained growth.

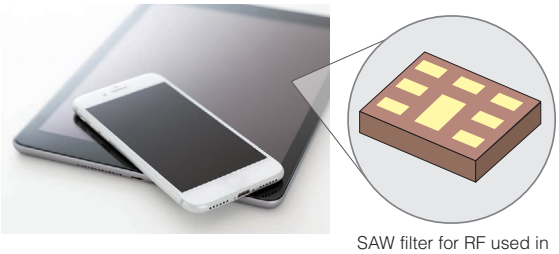
Manufacturing Processes

line-up for highly intricate processes that include developing and stripping solution, resist stripping solution used in wafer-level packages, and solution to remove the residue from dry etching.

Metal plating residue removal (subtractive) method

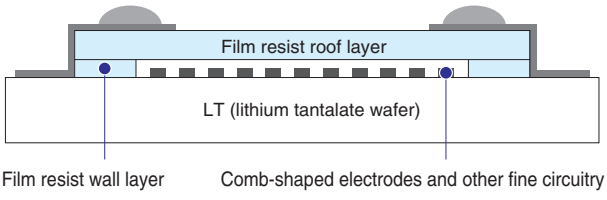


Equipment for Manufacturing Processes



SAW filter for RF used in communications equipment

Hollow structure of micro-electromechanical system created with laminators
(component consisting of SAW filter, etc.)



Providing Solutions for Manufacturing Processes Too

- We provide the equipment used for material lamination and stripping, attaching wafer supports, and other processes in semiconductor manufacturing.
- Our products are recognized for our ability to set precise conditions for the laminators used to bond wafers and film resists. This is used in building hollow structures to protect the intricate circuits of SAW (Surface Acoustic Wave) filters for RF used in communications equipment.
- We use hardware and software we have developed to customize according to the customer's needs. This can contribute to highly productive foundry operation. We will also continue to provide solutions for processes while working together with the resins and cleaner business.

Special Feature: Sales Launch of Emergency Parachute System

Market Overview and *KV25* Plan

Sales Launch of PARASAFE® Safety Device for Drones Used in Industrial Applications

A drone descending after activating PARASAFE®

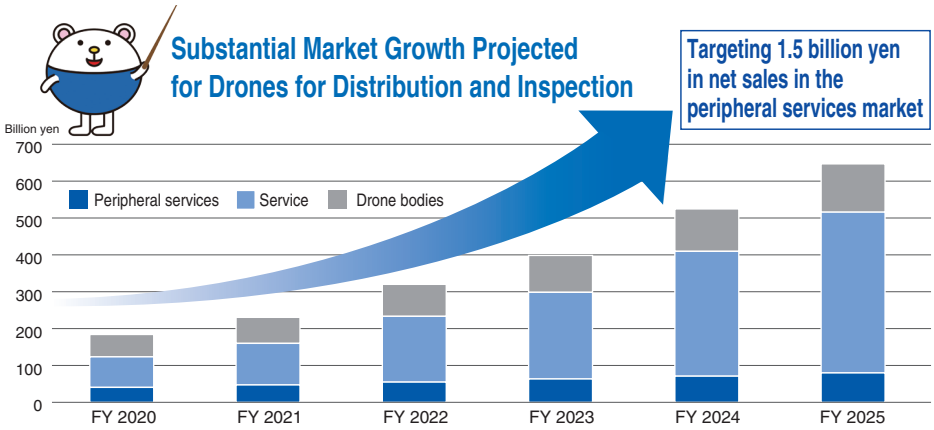
- The active use of drones is projected for disaster relief as well as industrial applications such as distribution and inspection, measurement and surveys. In Japan, there are plans to establish new legislation on uses* by FY 2022 and we plan to take another step toward commercialization.
- In the safety systems business, we created the product PARASAFE®, a safety device for drones used in industrial applications, as a new air mobility and launched sales in December 2021. PARASAFE® swiftly deploys a parachute when a drone drops from the sky due to unforeseen circumstances, preserving safety at ground level while preventing damage to the drone itself, and cameras and other on-board equipment.

* We expect the laws for Level 4 unmanned air-craft (operation beyond the visual line of sight (BVLOS) over populated areas without pilot action) to be established.

Safety Component Market for Drones Used in Industrial Applications

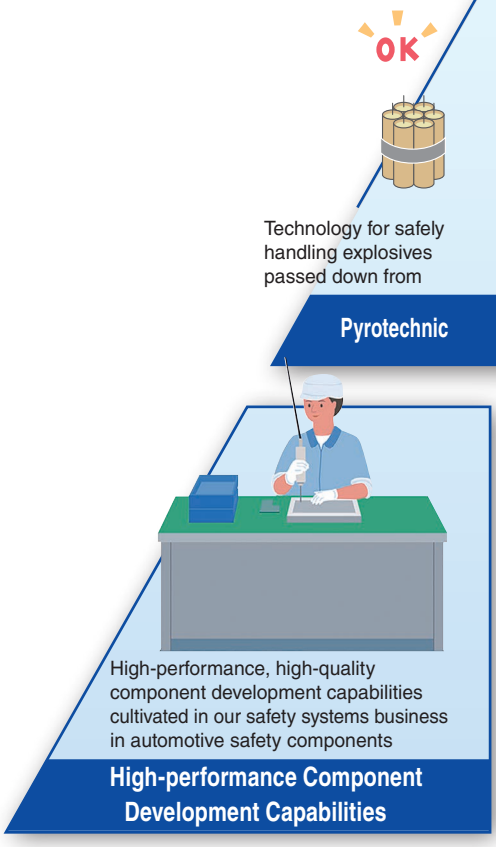
Drone equipped with PARASAFE®

- We are targeting PARASAFE® at drones used in distribution and inspection. The market in drone bodies, peripheral equipment, and service for drones used for these purposes is projected at around 600 billion yen in 2025.
- The Nippon Kayaku Group established the new Safety Systems Group Aero Business Promotion Department, specializing in business strategy, marketing, development, and preparation for market launches, including PARASAFE®. This department is working in partnerships with drone manufacturers to quickly commercialize PARASAFE®.
- We are targeting 1.5 billion yen in net sales in FY 2025, the final year of the KV25 mid-term business plan. Over the long term, we want to grow this business to around 10 billion yen in FY 2035.



Partial excerpt from data prepared by Impress Corporation

Fusing the expertise we have safety technology and the business since our founding

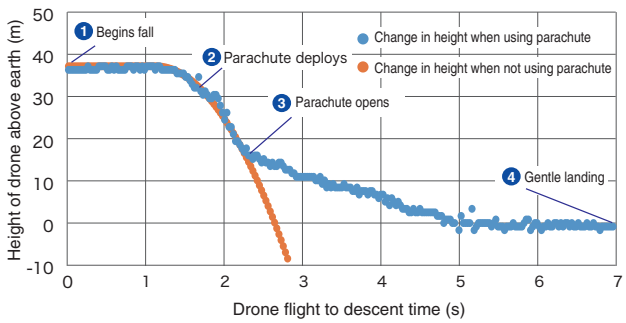


Collaboration and Other Initiatives

PoC Trial in National Strategic Special Zone

- In October 2021, before PARASAFE® was launched, we conducted a PoC (proof-of-concept) trial by actually flying a drone in Yabu City, Hyogo Prefecture designated as a national strategic special zone. This trial confirmed proper operation and effectiveness of PARASAFE® in a simulated emergency descent.

Confirmed activation of the safety device resulted in a gentle landing for the falling drone

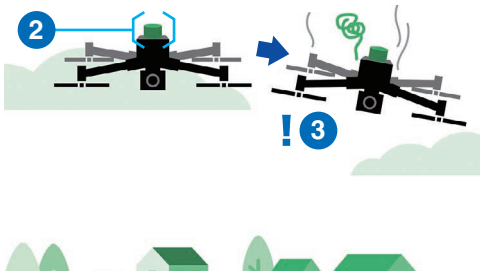


Exchanging Information With the Industry

Exhibit at Japan Drone Expo 2022

The Aero Business Promotion Department is focusing on widespread use and standardization of PARASAFE®. It is also actively working on exchanging information with the industry and companies involved through exhibitions such as the Japan Drone Expo. We are expanding the solutions we can propose to airbag-type safety devices, water flotation safety devices, etc.

Core Technologies for



1 Pyrotechnic Safety Technology

Industrial pyrotechnics have the outstanding ability to reliably generate a certain amount of energy in an instant. We have handled pyrotechnics since our founding and our extensive expertise in the properties and safe handling of pyrotechnics is a major advantage of Nippon Kayaku.

2 High-performance Component Development Capabilities

In addition to materials, another strength of our company is our ability to develop components that offer both high performance and reliability

for Drones — An Initiative of PARASAFE® and Aero Business, Safety Systems Group —

cultivated in pyrotechnic automotive safety components with new areas of expertise

our industrial explosives business when the company was founded

Safety Technology

Initiatives that will become new strengths in applying the knowledge expected of a safety components manufacturer

Sensing and Programming Technology

Value Provided to a Future Society

We apply the pyrotechnic safety technology we have cultivated in automotive safety components to provide evolving air mobility that is reliable, and highly safe and secure.

Continuing to Provide Safe and Secure Air Mobility

- The market in drones and other types of air mobility is tracing a straightforward path of expansion globally. In addition to use in urban areas, use in agriculture, security, and a wide range of other uses is also anticipated. Diversification and evolution of aircraft bodies is also anticipated, and PoC trials are being conducted on a whole range of aircraft according to purpose and function, from small models weighing several kilograms to large models exceeding 100 kg, and flying cars that can transport people.
- We will secure our position as a peripheral device manufacturer and contribute to realizing a society with safe and secure air mobility by providing the optimal safety components for each one.

PARASAFE®

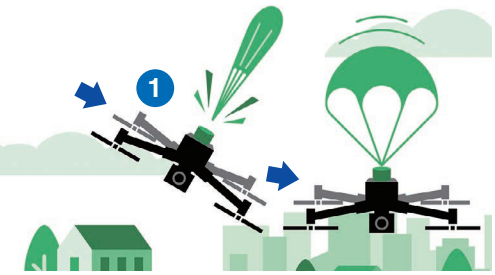


Image of PARASAFE® deployed for a falling drone

and durability. We manufacture all products in-house, using our expertise in material and form design, simulation of operation, etc.

3 Sensing and Programming Technology

A device called an ATS (Autonomous Trigger System) is necessary to activate safety components when a dangerous fall is detected. We select the optimal sensors from drone flight data and simulations, develop an activation program, and are working on other technologies for ATS.

Initiatives Aimed at Expanding Air Mobility

PARASAFE® for drones up to 25 kg

PARASAFE® for drones up to 15 kg

Expansion of the PARASAFE® Line-up

Nippon Kayaku will use feedback on and user evaluations of the product design for the PARASAFE® sold for drones weighing up to 25 kg to expand our line-up. We are also planning products for small drones (weighting up to 15 kg) and large drones (weighing up to 100 kg) to meet a diverse range of needs.

Development of Safety Devices for Flying Cars

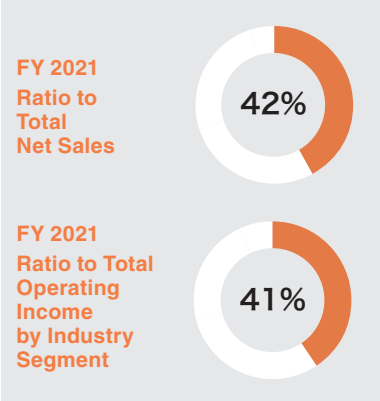
In April 2022, we began developing parachute-type ARS (Air Mobility Recovery System) safety devices for flying cars that weigh between 700 kg to 1.5 tons. ⇒ p. 45 (Development of Safety Devices for Flying Cars to Contribute to Future Mobility)

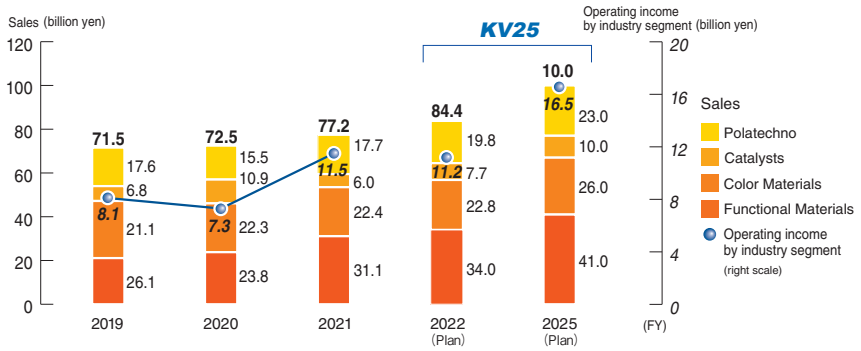
Pursuing ARS development

Functional Chemicals Business

We will focus on strengthening earning power by expanding core businesses and creating new businesses and new products, and will invest resources in these key strategies in a well-balanced manner.

Masatomi Akezuma
Member of the Board,
Managing Director,
Head of the Functional Chemicals Group





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

Business Overview for FY 2021

- Functional Materials: Demand for epoxy resins for semiconductors for use in circuit boards and encapsulation remained strong. Resist, other MEMS materials, and the cleaner business also grew owing to the robust semiconductor market.
- Color Materials: Sales of materials for inkjet inks for home, offices, and other consumer uses remained high from the stay-at-home demand during the COVID-19 pandemic. Sales for industrial applications were strong, corresponding to the rebound in demand for printing advertisements, etc.
- Catalysts: Both sales and profit declined owing to the timing deviation of replacement demand once every few years in plants that manufacture acrylic acid and methacrylic acid.
- Polatechno (optical materials and precision components): Polarizers for automobile applications and other optical materials saw a deceleration in demand due to the integrated circuit shortage at customers' plants from the second quarter. However, demand was strong for components for X-ray analysis systems in precision components and polarizing films for LCD projectors were also strong.

KV25 Mid-term Business Plan and Business Vision

During ***KV25***, we will focus on the two strategies of strengthening earning power by expanding core business and creating new businesses and new products. We will actively invest in increasing production capacity for epoxy resins, in inks for inkjet printers in industrial applications, and other products which are continuing to grow, while targeting net sales of 100 billion yen and segment operating income of 16.5 billion yen in FY 2025, the final fiscal year of the plan.

While persistently high material prices and the impact on distribution accompanying geopolitical risk and other aspects of the external environment are causing concern, demand is robust in the semiconductor market, which is showing signs of recovery from the COVID-19 pandemic. We are seeing investment in data centers, the proliferation and expansion of 5G communications, effective use of AI, the metaverse, and other acceleration of digital transformation (DX), increasing use of electronic equipment in automobiles, and carbon neutrality. These trends are thrusting the world into a super cycle of continuing high demand for semiconductors, which we expect will continue to record remarkable growth up to 2030.

In the four subsegments, we will focus on utilizing the synergies between our core resins and cleaners and manufacturing equipment to expand sales of semiconductor-related products in functional materials. In color materials, we will focus on expanding sales of inkjet inks for digital printers used in industrial applications and achieving results and expanding sales in functional colorants*. In catalysts, we will build a structure that will ensure stable net sales of around 10 billion yen, and expand use of catalysts by providing information suitable for our customers' plants and enhancing other technical services. In the Polatechno business, we will focus on expanding sales of high durability polarizers for heads-up displays (HUD) and other automobile applications (optical materials), and on differentiated products such as high-quality X-ray-related components. (Precision components)

We will also concentrate on communication with customers and the supply chain and strive to build information sharing and relationships of trust internally and externally, while actively considering incorporation of external business resources and collaboration.

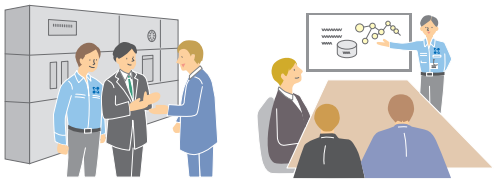
*Establish production technology and mass production of materials for image sensors, dichroic colorants for light-dimming windows, and other products.

Click URL
Functional Chemicals Business
https://www.nipponkayaku.co.jp/english/company/business/functional-chemicals/index.html

Strengths We Possess

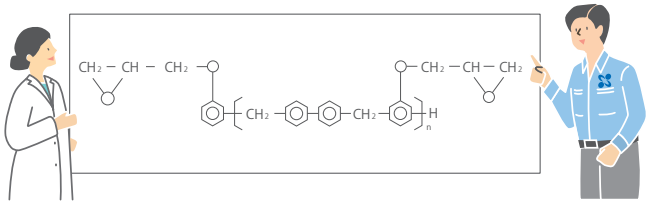
1 Close-to-the-customer business focused on VOC*

*Voice of Customer



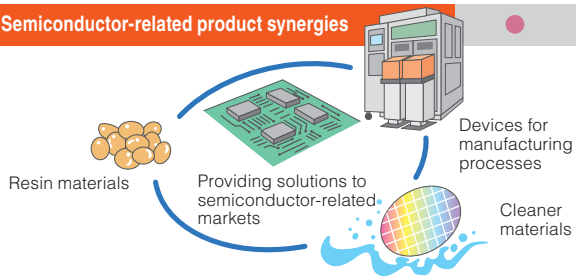
- Provide total solutions by accurately ascertaining needs and connecting them to sales and technology
- Establish manufacturing, sales, and service locations globally (See p. 8: Global expansion)

2 Functional molecule design



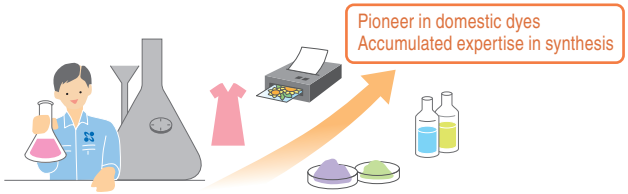
- Enables the design of resins with special functions according to the purpose, such as high-purity, high heat-resistance, etc.

3 Semiconductor-related product synergies



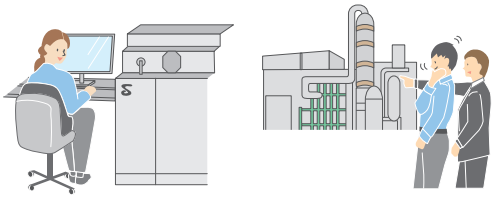
- Strengths in using epoxy and maleimide resins for 5G, MEMS materials, cleaner materials, semiconductor manufacturing equipment, and other products for reciprocal identification of customer needs and expansion of sales

4 Precise organic synthesis



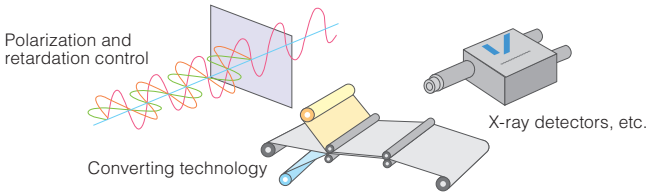
- Possess expertise in the synthesis of a wide range of color materials, from dyes that were the first in history in Japan, to colorants for inkjet printers and functional colorant materials
- Capable of fine customization of properties, etc. according to the type of printer

5 Catalyst composition design and technical services



- Creation of high-performance catalysts using expertise in the composition of metallic elements used and grain size design
- Provision of technical services such as filling methods that manifest top performance

6 Light control in polarizers, X-rays, etc.

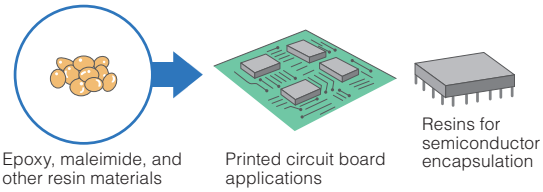


- Knowledge in development of high durability dye-type polarizers, inorganic polarizers, precision components (for X-ray analysis systems used in elementary analysis)
- Possess material design and film converting technology

Current Core Products

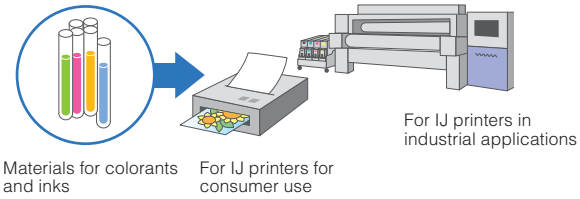
Epoxy resins

The semiconductor market will grow to 100 trillion yen by 2030



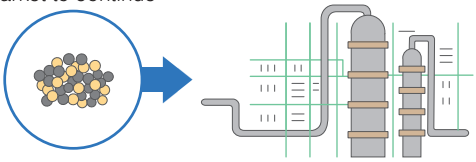
Colorants for inkjet (IJ) printers

Expect continued expansion of the digital printing market



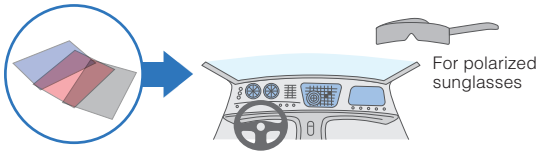
Catalysts for the production of acrylic acid and methacrylic acid

Expect 5% to 6% annual growth of the acrylic acid and methacrylic acid market to continue



High durability dye-type polarizers

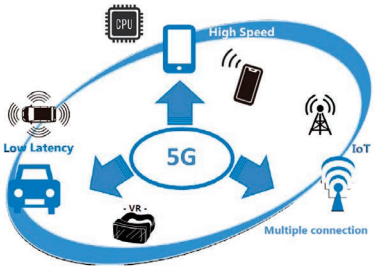
Capture evolution and expansion of display function for automobile applications



● Functional materials ● Color materials
● Catalysts ● Polatechno business

Growth Areas and Things We Want to Achieve in 2025

Semiconductors and peripheral areas



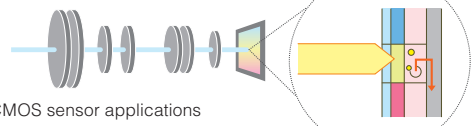
Capture expansion of semiconductor demand from the proliferation of IoT and next-generation high-speed communications

Expansion of colorants for inkjet printers in industrial applications

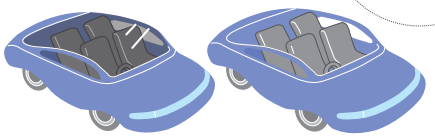
Expansion of demand for digital printing for flexible packaging materials, textiles, etc.

Commercialization of functional colorants

Taking in the expansion and spread of each market

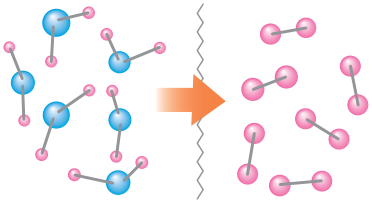


CMOS sensor applications



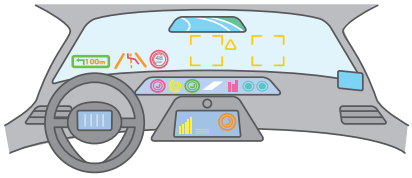
Smart light-dimming window applications

Development of catalysts for hydrogen production



R&D on catalysts that contribute to a zero carbon society

In-vehicle applications

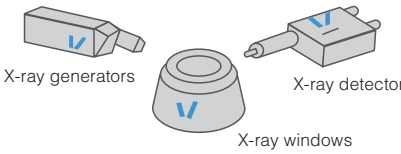


Response to the evolution of heads-up displays, smart room mirrors, and other vehicle display devices

Expansion of the X-ray business

Increasing demand of the recycle of rare metals

Expansion of components for X-ray analysis systems



Vision for the Functional Chemicals Business

Contribute to a rich lifestyle and sustainable society by providing valuable products that leverage technology

Contribution to SDGs

Key Areas

Functional Materials

Providing important materials with unique materials

- Expansion in semiconductor-related businesses, including circuit boards, encapsulants, cleaners, and manufacturing equipment
- Development and launch of next-generation telecommunications resins (low-inducement materials)
- Expansion of epoxy resins production capacity

Color Materials

Contributing to digitization and resource conservation with inkjet and functional colorants

- Expansion of industrial inkjet inks and improvement of production system
- Mass production and expansion of image sensor materials
- Mass production and expansion of dichotomous colorants

Catalysts

Providing high-yield catalysts to contribute to enriching people's lives and reducing CO_2

- Enhanced yields for catalysts for the manufacture of acrylic and methacrylic acids
- Steady repeat orders and new development
- Development of a contributing catalyst towards a decarbonized society

Polatechno

Contributing to the realization of a super-smart society with products that control light using proprietary materials

- Expansion of new applications for components and inorganic polarizers for X-ray analyzers
- Expansion of new automotive applications for highly durable polarizers in head-up displays

Topics

Expansion of Inkjet Inks Used in Industrial Applications That Make Environmentally Friendly Printing Possible

The color materials for our inkjet inks are increasingly used for digital printing in industrial applications, in addition to printing at the office and printers for home use, which were formerly the main source of demand. In addition to making blocks such as those used in offset printing (blocks to transfer ink) unnecessary, digital printing offers the advantage of being able to rapidly print small quantities of a large variety of materials just by switching data. Moreover, it only requires use of just enough ink to express color and does not require a water wash after printing, so it is environmentally friendly.

The Color Materials Division provides color materials suitable for purposes such as printing on flexible materials used for advertising and packaging foods, and on-demand printing for textiles. The division aims to capture and expand demand accompanying the proliferation and expansion of inkjet printers used in industrial applications.

Development of Catalysts That Contribute to Realization of a Society That Uses Hydrogen as an Energy Source

In recent years, hydrogen has shown promise as a form of clean energy for fuel cells, power generation, automobiles, and other purposes that could provide a stable supply. In the catalysts business, we are developing catalysts that will contribute to realizing a society that uses hydrogen as an energy source.

The method of manufacturing hydrogen using catalysts that is drawing interest is an environmentally friendly method that condenses light and heat from solar power in a reaction site containing both water vapor and a catalyst to thermochemically break down water. This method is characterized by the ability to use renewable energy and generate advantages of scale through a three-dimensional reaction site. In October 2021, we were able to provide protype catalysts for hydrogen production to a pilot plant. These catalysts were developed using the technology we have accumulated up to this point. We will work together with a partner on actual hydrogen production at this plant, and plan to finish by obtaining initial data on economic feasibility and other factors in FY 2022. We are targeting commercialization in the near future, around 2025.

In addition to catalysts used in hydrogen production, we are also exploring ways for catalysts to serve as hydrogen carriers that will make efficient storage, transport, and use possible by tremendously shrinking storage volume. We are searching for areas where the base technology for catalyst development can be used across the entire range of hydrogen energy systems.

Optical Film for Wide-angle Windshields That Eliminate Double Images for Heads-up Displays (HUD)

Automotive Engineering Exposition

The Polatechno business manufactures and sells dye-type polarizing films that have superior durability, light-fastness, and long life spans. These are used in automobile instrument panels. This business also uses optical design and film processing technology and is focusing on development of high-performance films capable of meeting the evolving needs of automobiles.

At the Automotive Engineering Exposition held in May 2022, we exhibited a product we developed that can improve visibility by using the screen side (vehicle front windshield) of a heads-up display (HUD) to project and eliminate double images. People involved in the market were able to experience the superior results. We will strive to add to the line-up of components and materials related to HUD, which is expected to become much more widespread in the future, on top of products we are already providing such as polarizing films that block solar heat and anti-glare (retardation) film for polarized sunglasses.

R&D on Epoxy Resins Produced Using Biomass Raw Materials

As demand for semiconductor-related products expands along with the expansion of IoT and digital transformation (DX), further advances are being made on miniaturization of semiconductor chips with numerous transistors mounted on them. This has dramatically improved performance and efficiency in electric power consumption. However, this poses the dilemma of a trend of increase in total energy consumption associated with the operation of electronic devices and manufacturing higher performance semiconductors due to the installation of semiconductors in all sorts of things.

The Functional Chemicals R&D Laboratories is performing R&D on new low CO_2 emitting epoxy resins produced using biomass raw materials as one part of its efforts to address such issues. Materials derived from plants are environmentally friendly materials that can themselves be called carbon neutral. The laboratory is pursuing R&D with a strong awareness of resolving issues to realize a sustainable society, while also targeting materials that possess superior properties for semiconductors.

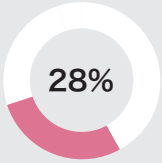
Pharmaceuticals Business

The Pharmaceutical business will grow through market penetration of new drugs and providing biosimilars and generic anti-cancer drugs.

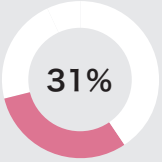
We will also expand the pipeline of new drugs through in-house development, introduction, and alliances with external organizations.

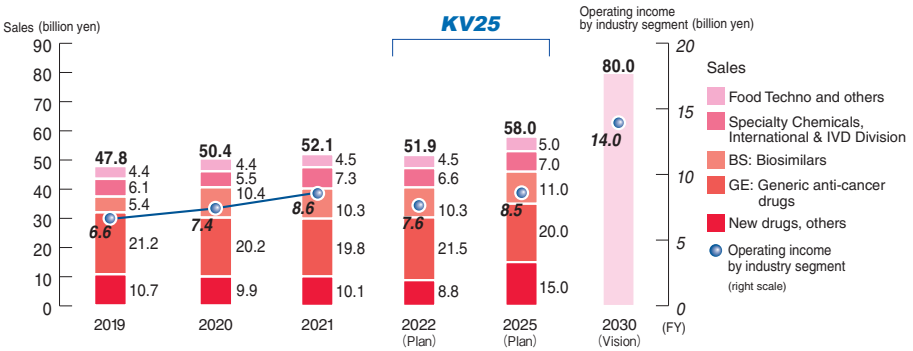
Kazuto Koizumi
Member of the Board,
Managing Director,
Head of the
Pharmaceuticals Group

FY 2021 Ratio to Total Net Sales



FY 2021 Ratio to Total Operating Income by Industry Segment





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

Business Overview for FY 2021

- Sales of pharmaceuticals in Japan saw growth in unique formulations for generics and biosimilars, which covered the negative impact from interim annual drug price revisions.
- The Specialty Chemicals, International & IVD Division achieved growth in revenues due to the rebound in product exports from the impact of the COVID-19 pandemic and growth in contract manufacturing of products.
- Operating income by industry segment increased along with growth in net sales.

KV25 Mid-term Business Plan and Business Vision

The value a pharmaceutical company provides to society is the development of superior drugs and medical devices, and provision of new diagnostic and therapeutic treatment opportunities to patients. The Nippon Kayaku Group aims to take on challenges in areas where it excels and continuously create new products.

The Vision for the Pharmaceuticals Business set the targets of 80 billion yen in net sales and 14 billion yen in segment operating income. To achieve this, we are targeting 58 billion yen in net sales and 8.5 billion yen in segment operating income in 2025, the final year of ***KV25***, the new mid-term business plan. We will grow the pharmaceuticals business by providing biosimilars and mainly unique formulations of generic anti-cancer drugs to the market, and through market penetration of new drugs.

The Pharmaceuticals Research Laboratories, which were re-established as the structure for developing new drugs in-house, are pursuing research targeting the generation of themes that will enter clinical trials by FY 2025. We will also fill our pipeline through two initiatives involved introducing new products and actively engaging in alliances with academia and other external organizations.

Supplying products that comply with regulations and have met high quality assurance standards is our mission as a pharmaceutical business. We will continue to provide stable supply, further strengthen the quality assurance system, and invest capital to secure production capacity. The pharmaceuticals business will also comply with laws and regulations, manage external contractors, build a strong supply chain, and implement other initiatives by pursuing business through appropriate measures.

Click URL
Pharmaceuticals Business
https://www.nipponkayaku.co.jp/english/company/business/pharmaceuticals/index.html

Strengths We Possess

1 Integrated business operation from R&D to manufacturing and sales

- We possess domestic manufacturing locations and contribute to a stable supply of high quality pharmaceutical drugs.
- The ability to share information bidirectionally between R&D and manufacturing and sales is a strength.

2 R&D platform that supports multiple modalities

- We possess the human resources and organizations for utilizing our core technologies in small molecule drugs, polymers, and biosimilars.

3 System for compiling and providing information to medical professionals

- We have medical representatives stationed nationwide who possess advanced expertise and cover information on all products, have established a Pharmaceutical Information Center, and built a support system for cancer treatment.
- Information is compiled and provided from the patient's perspective.

4 Manufacturing technology for active pharmaceutical ingredients

- We have a comprehensive range of multipurpose manufacturing equipment that can be used for contract manufacturing of pharmaceutical API and intermediates.
- We have introduced global GMP Standards and take care that our manufacturing processes are friendly to environment and people.

* We have poured effort into building complete containment systems in facilities and maintain compliance with cGMP, EU-GMP, PIC/S GMP, and other standards.

Current Core Products

New Drugs

DARVIAS® for treatment of peripheral T-cell lymphoma; PORTRAZZA®, a therapeutic agent for lung cancer; ALAGLIO®, a photodynamic diagnostic agent for bladder cancer, etc.

Generic Anti-cancer Drugs

PACLITAXEL, PEMETREXED, etc.

Biosimilars

INFLIXIMAB BS, a therapeutic treatment mainly for inflammatory bowel disease, TRASTUZUMAB BS, a therapeutic treatment mainly for breast cancer, etc.

Active pharmaceutical ingredients (APIs) and diagnostic agents

Contract manufacturing of APIs and intermediates, diagnostic agents for Japan and the U.S., etc.

Improving healthcare Compilation and provision of medical information

Essential drugs, etc. Stable supply of pharmaceuticals

Growth Areas and Things We Want to Achieve in 2030

Pharmaceuticals developed in-house

New drug development in the cancer field using our R&D platform

Establish a platform for sustained growth

Results achieved through alliance activities

Focusing on introduction and other activities to follow PORTRAZZA®, ALAGLIO®, DARVIAS ®, etc.

Demonstrate Nippon Kayaku's presence in pharmaceuticals and medical devices in the cancer field and peripheral fields

Vision for the Pharmaceuticals Business

Develop outstanding pharmaceuticals and devices and provide new diagnostic and therapeutic opportunities
Contribute to people's health by providing a stable supply of biosimilars formulations and generics

Contribution to SDGs

Key Areas

New Drugs

- Increase in share of ALAGLIO® in the TURBT* market
- Market penetration of DARVIAS®
- Maximizing value through market penetration

*Transurethral Resection of Bladder Tumor: A surgical technique in which a surgical cystoscope is inserted through the urethra and a tumor is resected while preserving the bladder, without opening the abdomen.

Generic Anti-cancer Drugs (GE)

- Expansion of PEMETREXED and TEMOZOLOMIDE
- Development and launch of new generics
- Establishment of production structure to increase production capacity for generics

Biosimilars (BS)

- Promotion of biosimilars from revision of the medical payment system
- Expansion of the line-up by introducing new drugs

Toward "The Vision" in 2030

- Filling the pipeline
  - Development of new drugs in-house and through collaboration with external organizations
  - Introduction of new drugs and new medical devices

Topics

Accelerating New Drug Development

Nippon Kayaku possesses strength in the cancer segment and we have expanded our business from new drugs to essential drugs, generics, and biosimilars. We will continue to build a structure that can continuously generate a full pipeline and will pursue development of new drugs in-house and through collaboration with external organizations.

More specifically, we will focus on widespread use of PORTRAZZA® for lung cancer treatment, which we obtained the domestic sales rights to in 2019, and ALAGLIO®, a photodiagnostic agent for bladder cancer, which we similarly concluded a domestic sales agreement on in 2021. We will also prioritize market penetration of DARVIAS® for treatment of peripheral T-cell lymphoma, which we began selling in August 2022 after licensing domestic commercialization from Solacia Pharma K.K., and other new drug sales.

The Pharmaceuticals Research Laboratories formed a research group for in-house development and creation of new drugs from a medium to long-term perspective and established a structure for systematically tackling the business as a whole. The laboratories aim to advance a stage to where they are able to select promising themes, which also include alliances with academia and other external organizations, and begin clinical trials by around 2025.

We will fill the pipeline with new drugs through a combination of introduction and licensing, and research and development.

Growth of Generics and Biosimilars and Expansion of the Line-up

We will continue to steadily launch generics and biosimilars, mainly in the cancer segment, an area of strength, and contribute to improving patient outcomes while targeting business growth. In addition to the strong start for PEMETREXED, which was launched for sale in July 2021, we launched various products and expanded indicationsfrom FY2021 through August 2022.

April 2021	Added dosage and administration for the anti-cancer drug, CAPECITABINE Tab.
July 2021	Launched antimetabolite anti-cancer drug PEMETREXED for Intravenous Inj. and I.V. Infusion
August 2021	Added dosage and administration for the anti-cancer drug CARBOPLATIN I.V. Infusion
October 2021	Added indication and dosage and administration for the anti-cancer drug IMATINIB Tab.
December 2021	Launched the anti-emetic drug Fosaprepitant I.V. Infusion
March 2022	Launched the anti-cancer drug BORTEZOMIB Inj.
April 2022	Concluded alliance agreement on the biosimilar BEVACIZUMAB (recombinant)
June 2022	Added indication and dosage and administration for the anti-cancer drug IMATINIB Tab.
June 2022	Launched the anti-cancer drug DASATINIB Tab., a tyrosine kinase inhibitor
August 2022	Launched AZACITIDINE Inj., a therapeutic drug for myelodysplastic syndrome and acute myelogenous leukemia