

Message from the Director in Charge of Sales

NAGASE's Potential as a Company That Creates Value with an Eye to the Future

Masatoshi Kamada

Director and Executive Officer

Review of the First Year of ACE 2.0 and Status of Focus Business Activities

The first year of the medium-term management plan **ACE 2.0** produced record-high results. Because the NAGASE Group's business is heavily reliant on the petrochemical industry, soaring raw materials prices contributed positively to certain aspects of our business performance. The spread of COVID-19 led to stay-at-home demand, resulting in increased demand for products such as laptop computers, televisions and video game consoles. Consequently, this demand acted as a tailwind for the NAGASE Group, which supplies the materials for those products.

Meanwhile, as efforts to achieve carbon neutrality intensify, the NAGASE Group has begun to take steps toward decarbonizing the entire chemicals industry. One prime example is our collaboration with Zeroboard Inc. This company provides a cloud service for visualizing greenhouse gas (GHG) emissions. It is advancing decarbonization efforts by spreading this platform throughout supply chains in the chemicals industry through the NAGASE Group.

Under **ACE 2.0**, examples of focus businesses include biotechnology, semiconductors and food ingredients. We are giving top priority to the biotechnology business. The key to our strategy will be how we will take the

biotechnology business to the next stage over the next five years. We will support the transformation of petroleum-derived industries into future-oriented sectors, while also bringing together the Group's biotechnologies, from companies such as Nagase ChemteX Corporation and Hayashibara Co., Ltd., to propose decarbonization solutions. In April 2021, the NAGASE Biotech Office was established to strengthen Group-wide horizontal collaboration and in April 2022, the Nagase R&D Center was renamed the Nagase Bio-Innovation Center. These initiatives are speeding up open communication across the Group. Through this structure, we will focus our efforts over the next five years to establish a solid reputation as "NAGASE, the biotechnology company."

In the semiconductor business, the Semiconductor Strategy Planning Team was established in June 2021 to strengthen efforts on a Group-wide basis. The NAGASE Group is expanding business in China as well as Taiwan and South Korea. In China, we have established the Semiconductor Department and are developing business throughout the semiconductor value chain while utilizing Nagase ChemteX Corporation's epoxy resins for back-end semiconductor processing. In the food ingredients business, Prinova Group, LLC has become our growth driver. Going forward, we will actively expand business into Asia, while leveraging the expertise of Prinova Group, which is strong in the European and U.S. markets. We will further harness the NAGASE Group's strengths by combining these efforts with the biotechnologies of Hayashibara Co., Ltd.

Bold Localization

The "Pursuit of Quality" is a central theme of **ACE 2.0**. With the "Pursuit of Quality," we aim to shift away from a conventional trading company business to a marketing approach. The background to this shift is that customers increasingly need us to serve as a strategic partner that solves various management issues together with them. That is why we will proactively identify issues and propose solutions in tandem with utilizing DX to support our customers' ideals for who they want to be. We will strengthen horizontal collaboration within the Group so that we can accelerate efforts to share information and explore new businesses. In 2021, the creation of N-Sustainable businesses began in earnest. We have not



yet produced results. However, we have been putting together various themes, and we have numerous projects with exciting prospects for the future.

As global business opportunities increase, if we fall behind in the localization of people, organizations and businesses, our local businesses may weaken. Previously, we took the approach of transferring businesses created by head office to local markets. However, speaking from my own international work experience, I believe that we should value and respect the sensibility of local staff who share the NAGASE Group's values, and we should implement bold localization. Only by embracing diversity in people, businesses and thought will the NAGASE Group be able to demonstrate the true value of its global businesses, in my opinion. For example, in the semiconductor business in China, national staff have led the creation of a unique business management model, and the new model has produced results. Although there are only a few Japanese companies in which local personnel serve as top leaders, the NAGASE Group has created businesses that establish a firm foothold in the Chinese market by appointing Chinese personnel as top leaders of local subsidiaries.

Maintaining the Highest Standards of Integrity into the Future

In its corporate advertisements in newspapers and other channels, the NAGASE Group has published messages such as "Listen to the voices of the future," "Let's challenge ourselves. Precedents need not apply," and "For the view that never seen before." As stated in these words, in order to continue to be chosen by our stakeholders, we must create value with an eye to the future, without being preoccupied with precedents.

Above all, I believe that it will be critical to maintain the highest standards of integrity along the way. The highest standards of integrity mean that your thoughts and actions are congruent with one another. NAGASE has grown by turning its heart's ambitions into action without fear of failure. If you have an ambitious goal you wish to achieve, you should make it known and begin taking action. A leader's job is to foster a culture that inspires people to take such action. I intend to continue nurturing NAGASE's collegial, free and open-minded, and energetic corporate culture.

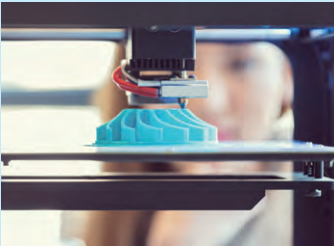
List of Businesses



Functional Materials Segment

»P54

- **Performance Chemicals Dept.:** Provides high-performance materials for the paint, inks and urethane industries. Also focused on developing sustainable products based on the key words “environment” and “bio,” for which demand is quickly increasing.
- **Speciality Chemicals Dept.:** Having established businesses over many years in a diversity of industries, now handles more than 10,000 products. Is also expanding into new fields with a focus on business partners’ elemental technologies.



Main Products and Services

Performance Chemicals Department

- Resin raw materials, resins, pigments, solvents, paint and ink additives, urethane materials, flame retardants, release agents

Speciality Chemicals Department

- Petrochemical products, raw materials for industrial metal-working oil solutions, surfactants and surfactant raw materials, environmental equipment and chemicals (wastewater, exhaust gas, energy conservation), resin raw materials and additives, electronics chemicals, UV curing agent materials, chemical outsourcing coordination

Colors & Advanced Processing Department

- Dyestuffs, colorants, pigments, additives, dispersion processing materials, 3D decorative services, conductive materials, functional sheets, films, adhesives, copolyester resins, endotoxin removal services, tempered glass, hygiene materials

Polymer Global Account Department

- Engineering plastics, commodity plastics, packaging materials and other plastics-related products



Advanced Materials & Processing Segment

»P56

- **Colors & Advanced Processing Dept.:** Offers high-value-added products and services centered around color and function to a wide range of business fields, including the printing, film and LCD industries. Fully utilizes the Group’s manufacturing, research and processing functions to meet customer needs.
- **Polymer Global Account Dept.:** With a well-developed sales network and national staff in Asia, works with global companies to sell resins for the OA equipment, game, electrical and electronics industries. Also focusing on biomass plastics and other eco-friendly businesses.



Electronics Department

- Fine polishing abrasives, optical materials for displays, touch panel components, functional paints, conductive and insulating materials, adhesive and encapsulating materials, high-heat-resistant films, optical lenses

Information & Communication · Energy Office

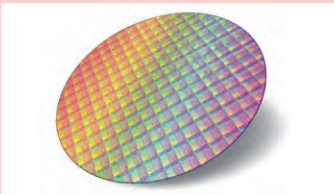
- Battery Energy Storage systems, energy management systems, optical wireless communication devices, high-frequency devices, low dielectric materials, MLCC materials, ALD coating, sensing modules, optical materials for XR, semiconductor and electronic device-related equipment

Functional Resin Department

- Formulated epoxy resins and related materials

Precision Process Materials Department

- Photolithography materials for flat panel displays and semiconductors, 3D printing-related materials



Electronics & Energy Segment

»P58

- **Electronics Dept.:** In addition to providing functional materials and their constituent components to the silicon wafer, semiconductor, electronic components and display industries, is working with partner companies to develop products that align with market and customer needs.
- **Information & Communication · Energy Office:** Provides technologies (materials, processes and equipment) and mechanisms for realizing new information communications and energy infrastructure in a smart society by leveraging the Group’s product development capabilities.
- **Functional Resin Dept.:** Nagase ChemteX Corporation’s modified epoxy resins, developed based on its formulation and compounding technologies, are sold in and outside Japan, with key fields including the electrical/electronics industry, mobility, the environment, energy and semiconductors.
- **Precision Process Materials Dept.:** Offers photolithography for displays and semiconductors, and high-performance materials for 3D printing, both in and outside Japan, based on Nagase ChemteX Corporation’s formulation technology from the perspectives of precision cleaning, surface treatment, and photosensitive materials design.



Mobility Segment

»P62

- **Mobility Solutions Dept.:** Will contribute to the realization of a safe, secure and comfortable mobility society by grasping the needs of the mobility industry, including automobiles, agricultural machinery, construction machinery and aircraft, and by pursuing new technological innovations and offering diverse solutions.



Mobility Solutions Department

- Automotive interior/exterior and functional components: Various resins, functional paints, adhesives, lightweight components, decorative components, HMI components
- CASE-related: xEV-related components, heat management components, battery materials, sensors, LiDAR devices, autonomous driving technologies



Life & Healthcare Segment

»P64

- **Life & Healthcare Products Dept.:** In recent years, we have taken up medical imaging fields besides pharmaceutical business. And leveraging the entire NAGASE Group’s capabilities such as R&D and manufacturing functions, we launched a new anti-aging agent to reinforce our product line in the cosmetics and perfumery field.
- **Food Ingredients Dept.:** Provides a wide range of solutions for the processed foods and nutrition markets globally through the Group’s research, manufacturing, processing, procurement, application development and regulatory functions. Contributes to healthy, enriched lifestyles through food.



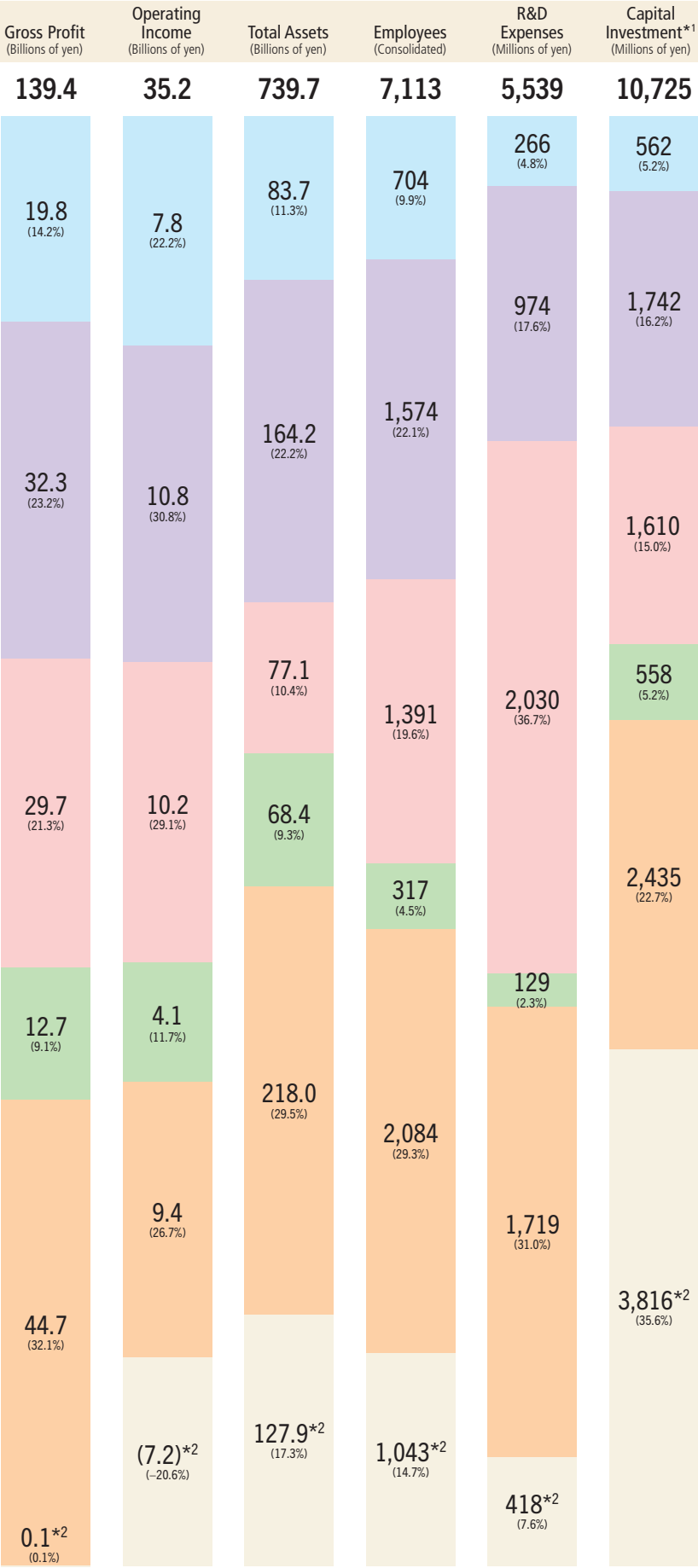
Life & Healthcare Products Department

- Raw materials and active ingredients for cosmetics and household products, Intermediates and APIs for pharmaceuticals, materials for in-vitro diagnostics

Food Ingredients Department

- Food ingredients (TREHA™ and others, enzymes), functional ingredients, nutritional ingredients, premix (OEM/ODM), materials for agriculture, fisheries and livestock

Key Indices by Segment

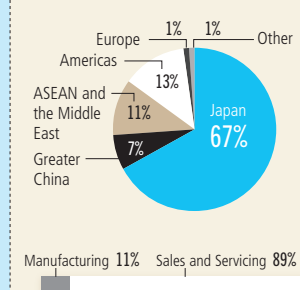


*1 Investments in tangible and intangible fixed assets.
*2 Other/Corporate: Includes businesses not included in reported segments and eliminated inter-segment transactions, etc.

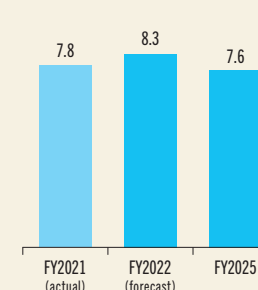


Functional Materials Segment

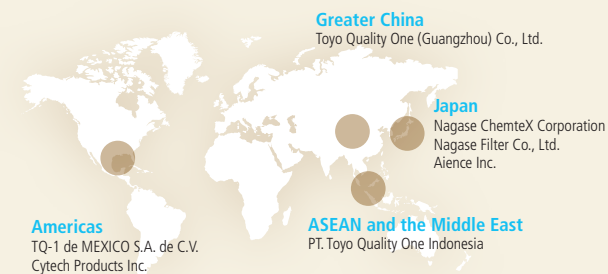
Gross Profit by Region and Field



Operating Income Target (Billions of yen)



Main Manufacturing Bases (Includes equity affiliates)



Performance Chemicals Business

Business Opportunities

- Promotion of sustainability business of productivity enhancement in the paint, ink and urethane industries

Business Risks

- Lost opportunities in the general purpose chemicals trading business due to the penetration of DX as symbolized by EC
- Diluting of functional value as functional chemicals become more generalized

Strengths

- Supply chain management functions backed by an overwhelming market maintained for many years, as well as a global network, problem-solving capabilities and professionalism

Medium-Term Issues

- Measures to address supply chain maintenance based on BCP and consideration for the environment
- Promote sustainability in the industry and contribute to improving the environmental value of chemicals

Committed to improving the industry's social value and environmental value through technological expertise and mobility



Tamotsu Isobe

GM, Performance Chemicals Department

In the first year of **ACE 2.0**, from a numerical aspect, results were favorable not just in Japan but also on a global consolidated basis. In addition to the supply chain management functions that NAGASE has traditionally excelled at handling, such as addressing rising prices in basic chemicals and derivative products and systematic response to supply issues, we also produced rapid procurement of alternative products by leveraging our unique global network and displayed professionalism in the department even in the face of adversity as symbolized by the pandemic.

As a new test, we have developed a decarbonized platform for the paint industry. In a solution that can contribute to improving social value and economic value through the entire industry, we are promoting provision of a greenhouse gas (GHG) reduction and offset solution centered on visualization of Company-wide promotion of GHG emissions. Promotion of sustainability and activities to improve productivity are already moving ahead in the paint and ink and urethane industries. The department believes it can contribute to improving the social value of the industry by identifying new commercial materials and technologies and taking early action. With fresh information obtained from technological expertise cultivated through all chemicals and obtained from the relationships of trust built up with suppliers added to digital functions in our global network, we will create value that only NAGASE can provide.

Sustainability Topic

Began Building a Shared Logistics Platform for Chemicals Using AI

Leveraging Japan Pallet Rental Corporation's TranOpt AI matching system, we aim to build a shared transport platform specializing in chemicals to address the "logistics crisis," an urgent issue facing the chemicals industry. Multiple manufacturers handling products such as chemicals or paint launched a study workgroup to begin trials of joint transport using TranOpt. This will contribute to covered to sustainable chemicals logistics.



Speciality Chemicals Business

Business Opportunities

- Contribute from an environmental aspect in a business environment that requires sustainability

Business Risks

- Environmental impact of businesses centered on chemicals
- Dilution of the value provided as a trading company due to reform of business methods through DX

Strengths

- Strong relationships of trust with suppliers cultivated from the standpoint of a parent organization department
- In-depth knowledge of the industry and chemicals, and information capabilities that leverage the Group's capabilities

Medium-Term Issues

- Portfolio optimization and acceleration of global expansion
- Operational streamlining and human resource development

Making an in-depth contribution precisely because of being a business with a heavy environmental impact



Noriaki Arashima

Executive Officer

GM, Speciality Chemicals Department

Looking back at the progress of **ACE 2.0**, the external environment was good, and business itself was brisk. In the wastewater solution business, one of our environment-related businesses, we achieved results in some projects. Our department provides consulting services to address issues faced by plants, such as exhaust gas, wastewater treatment and energy conservation, and provide optimal solutions based on technology and expertise.

In the porous coordination polymer, metal organic framework* (PCP/MOF) business, we invested in manufacturer Atomis Inc. and moved into the carbon dioxide (CO₂) separation and recovery business. In the organic synthesis business using the micro-flow method, which is expected to conserve energy and enable synthesis by reducing waste, we started an N-Sustainable Business initiative that included the introduction of pilot equipment. As our department's business centers on chemicals, there is a risk of a heavy impact on the environment, but at the same time we see this as an opportunity and believe we can contribute to sustainability through environment-related and organic synthesis businesses.

From the standpoint of DX, as well, the department is promoting digital marketing and shifting to effective sales promotion activities and sales activities to ascertain customers' needs.

* Expected to have various applications as a new material with the properties of selectively separating, adsorbing and storing macromolecules and low weight molecules using space.

Sustainability Topic

Achieve Both the 3Rs and Enhance Corporate Value through Environmental Solutions

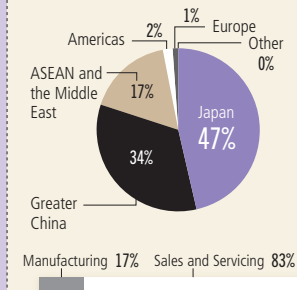
In response to the severe maintenance management required on the front lines of plant wastewater and exhaust gas treatment, and issues of sharing knowledge due to personal skills, we provide three solutions for energy saving, exhaust gas and wastewater for various issues faced at the front lines. These solutions contribute to reducing operational management labor, enhance productivity, cut costs, show consideration for the environments around plants and create recycling of liquid wastes through the 3Rs (reduce, reuse and recycle), which contributes to things such as the reduction of CO₂ emissions.



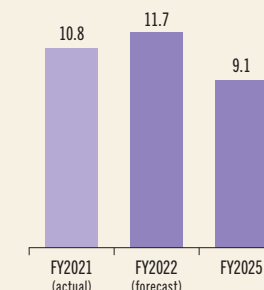


Advanced Materials & Processing Segment

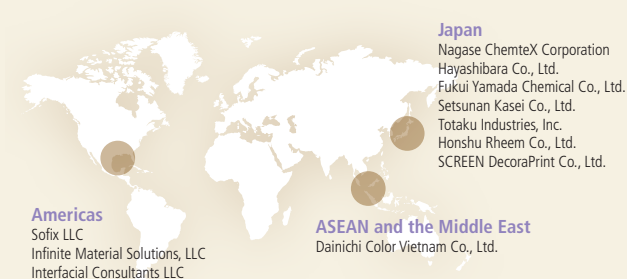
Gross Profit by Region and Field



Operating Income Target (Billions of yen)



Main Manufacturing Bases (Includes equity affiliates)



Colors & Advanced Processing Business

Business Opportunities

- Rising global awareness of sustainability and the need for products that contribute to the environment

Business Risks

- Establishing a presence as new technology arises
- Sluggishness in chemical-related investment due to changes in the external environment

Strengths

- Customer approach from a technological perspective
- Product planning capabilities utilizing manufacturing and laboratory functions

Medium-Term Issues

- Take on the challenge of selling “things” and selling “ideas”

Sustainability needs toward decarbonizing society provide an opportunity



Hayaki Goto

GM, Colors & Advanced Processing Department

In the first year of **ACE 2.0**, we identified the functions required of the department, studied stakeholders, and found ways to raise value. We are still only partway toward achieving results, but believe this was an acceptable period to gather information for the second year of the plan onward.

TIMELESS®, a gas control technology applicable to film and paper packaging materials, was jointly developed by NAGASE & Co. and MIB Co., Ltd., which acquired the patent, and is a technology particularly expected to contribute to expanding business over the medium- to long-term. TIMELESS® provides gas control functions, so we expect it to become popular as an alternative to plastic valve products, such as those conventionally used for packaging coffee beans, which expel carbon dioxide gas from the beans through plastic valves to prevent the bags from swelling or bursting.

Our department will contribute to society by delivering environmentally friendly products that leverage our expertise in matching materials in key fields such as sustainability, bio, organic synthesis, dispersion processing and recycling plastics. We view the rising global momentum toward achieving a decarbonized society as an opportunity and by fusing with the biotechnology business that NAGASE has continued meticulously pursuing, aim to further increase corporate value.

Sustainability Topic

Enter the U.S. Coffee Market through an Environmental Technology Moving Away from Plastics

NAGASE is the exclusive distributor for coffee applications for TIMELESS® and we will make a full-scale expansion into the U.S. market going forward. The U.S. coffee market is larger and forecast to have greater demand than Japan. We have already moved forward on taking action and received a positive response. There has also been an example of using TIMELESS® to preserve the freshness of fruit and vegetables, so we expect to contribute to the reduction of food loss through this market.



Polymer Global Account Business

Business Opportunities

- Advantageous position as customers diversify production bases and duties are increasingly divided internationally due to various factors such as geopolitical problems, the pandemic and climate change.

Business Risks

- From a sustainability standpoint, ensuring traceability in such ways as through a chemical information network

Strengths

- Sound supplier and customer base, technical expertise and information as well as know-how, and a supply chain network in the Asia-Pacific area

Medium-Term Issues

- Review of portfolio aimed at improving business profitability

Ensure a competitive position by leveraging the supply chain network capabilities



Koji Yoshida

GM, Polymer Global Account Business

The department's strength, established over many years of resin sales, is a business network in a supply chain connecting chemical manufacturers, process manufacturers and brand owners. Customers are diversifying production bases and moving ahead on dividing duties internationally to address business continuity in the wake of various factors such as the U.S.-China trade friction, the COVID-19 pandemic, war in Ukraine and irregular weather, but NAGASE can provide the same sales service throughout the Asia-Pacific area and, by incorporating some of the functions of chemical manufacturers in domains that they specialize in, is strengthening its presence in the supply chain.

Under **ACE 2.0**, we will leverage this network capability in a plan to conduct a demonstration test to calculate customers' carbon footprint, which will ensure the traceability of chemical manufacturers from shipment onward and secure their competitive edge in the supply chain. We have also opened to all companies our platform to survey substances creating an impact on the environment. In this way, from a sustainability perspective as well, we believe that we are able to gather various types of information from the upstream (chemicals manufacturers) to the downstream (consumers), in addition to building a business model that can add extras to the buying-and-selling business which is based on friendly relationships within the supply chain with an industry foundation of the existing business.

Sustainability Topic

Expanding the Communication Platform, plaplat™

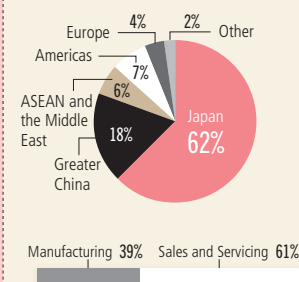
plaplat™, a platform to survey the environmental impact of substances that started operating in 2021, is, thanks to peoples' support, being used by over 300 client companies in Japan. This fiscal year we will strengthen its functionality and enhance its convenience as well as aim to elevate the platform into becoming one that attracts even more customers by communicating information linked to the “sustainability of plastic” and by enhancing online content.



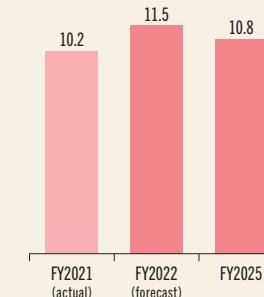


Electronics & Energy Segment

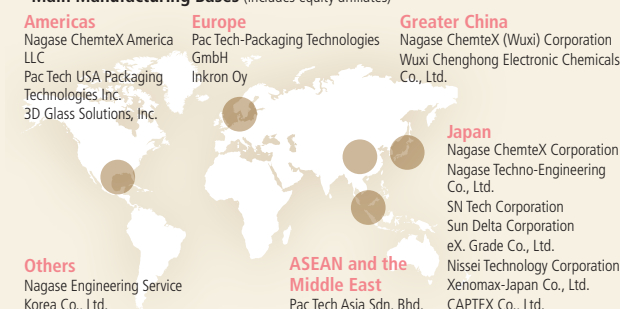
Gross Profit by Region and Field



Operating Income Target (Billions of yen)



Main Manufacturing Bases (Includes equity affiliates)



Electronics Business

Business Opportunities

- Utilize an extensive global network in the electronics industry supply chain
- Market development responding to customer needs and trends

Business Risks

- Generalization of existing technologies and products
- Shift to development envisaging recycling and reuse

Strengths

- Customer-oriented sales structure, search and proposal of products accurately reflecting customer needs, market development support for suppliers and technical reliability

Medium-Term Issues

- Build a business model utilizing DX, develop new service businesses based on data and develop cutting edge materials

Providing new products and services for the future that are a further step ahead of the IoT society



Hironao Makise

GM, Electronics Department

The department is involved in the development and sales of display and semiconductor related materials used in various electronic products such as smartphones. Our customer-oriented sales system ascertains bottlenecks in the development process and the key standards and specifications, and searches for and proposes products that meet development needs. And by sharing customer needs and trends, we take charge of market development functions for suppliers.

In the first year of **ACE 2.0**, we increased strategic partners jointly involved in development to meet the needs of customers and markets, and are moving forward on enhancing the product lineup. We are expecting growth in materials for the semiconductor industry in China and in business importing Chinese silicon wafers to Japan.

Going forward, we expect a shift to a society where diverse data is analyzed and converted to knowledge and aims to energize industry and solve social issues. We will promote expanding sensing devices for compact, light, power-saving and safe mobile terminals connected to a variety of fields, as well as the functional materials and materials fields that support these devices. At the same time, we need to respond to development that incorporates recycling and reuse from the standpoint of sustainability. In addition, we also want to move ahead on considering new service businesses based on data in anticipation of the further development of the IoT society.

Sustainability Topic

Support Customers' Development through Marketing Sites

We launched Thermosetting Material Sommelier, a BtoB marketing site that allows searching physical conditions of materials from multiple manufacturers used for electric component encapsulation or adhesives in March 2022. In addition to expanding our product lineup, we are also enhancing the information required in terms of standards, specifications and environmental considerations to support customer development. Moreover, we are also focusing on expanding sales of the UV curable material and room temperature curable material, which need less energy to cure than thermosetting resins and also generate fewer CO₂ emissions.



Information & Communication · Energy Business

Business Opportunities

- Social moves to realizing a smart society and carbon neutrality

Business Risks

- Providing products and services that balance improving customer profitability with social contribution

Strengths

- Development and proposal of new materials leveraging Group manufacturing and development companies and laboratory functions
- Proposal of various types of services through collaboration with Group companies

Medium-Term Issues

- Collaboration with Group companies in the development of proprietary products for the 5G/6G markets

Developing various businesses to realize a smart society and to contribute to the global environment



Tetsu Iwanaga

GM, Information & Communication · Energy Office

The office was established by integrating two organizations involved in next-generation information and communication and the energy business, and has the objective of providing various services needed for a smart society.

In the first year of **ACE 2.0**, we built strategies to contribute to a smart society, and proactively invested in promising companies and formed business alliances to solidify a foothold to build NAGASE-led businesses. We have an eye on commercializing the augmented reality (AR) glasses market, which is expected to expand in the future, and invested in Cellid, Inc., which is engaged in both hardware and software development for AR glasses.

In the next-generation information and communication business, we promote businesses that contribute to society by proposing materials and technological development for 5G/6G infrastructure, we well as solutions. In the energy business, as a contribution to carbon neutrality, we are working on on-site and off-site PPA* and commercialization of lithium-ion batteries for the power grid, while also tackling the reuse of used batteries in the EV market in consideration of the SDGs, centered around lithium-ion batteries from Group company, CAPTEX CO., LTD. The latter endeavor will commercialize EV battery residual value evaluation services and aims to launch the service within fiscal 2022.

* Power Purchase Agreement

Sustainability Topic

Advance the Commercialization of the Used Lithium-Ion Battery Diagnostic Service Business

To spread the use of safe and high-quality reused lithium-ion battery products, quantitative evaluation of the residual value of used lithium-ion batteries through a diagnosis of their deterioration and management of information on lithium-ion batteries and their usage history are indispensable. However, a technology or structure to do this quickly and with a high degree of generalization has not yet been established. We are a member, mainly through Guangzhou Nagase Trading Co. Ltd., of a consortium established by The Japan Research Institute, Limited that promotes the verification of a diagnostic service business for used lithium-ion batteries, and aims to start services from FY2022.



Source: Green Investment Promotion Organization



Electronics & Energy Segment

Functional Resin Business

Business Opportunities

- Needs for environmentally friendly products that contribute to addressing climate change and improvements
- Moves toward safe, secure, stable and highly convenient network foundations

Business Risks

- Reduced communication and productivity due to the COVID-19 pandemic
- Reduced information gap due to DX, change in customers' material searches and conversions in the environment and energy fields

Strengths

- Integrated production and sales system that combines trading company functions and manufacturer functions
- Providing solutions backed by technological and development capabilities as a manufacturer

Medium-Term Issues

- Shrinking needs for formulated epoxy resins, and the issue of differentiating in a business with low barriers to entry

Aim to build a unique role model integrated trading company and manufacturer functions



Takayuki Hashimoto
GM, Functional Resin Department

Our department aims to build a unique role model that integrates trading company and manufacturer functions through market development based on the Group's technology, under the integrated manufacturing and sales structure of the functional resin businesses of both NAGASE & CO., LTD. and Nagase ChemteX Corporation.

In the first year of **ACE 2.0**, the department defined an overall strategy and key measures. For improvement of quality, we will: 1) completely optimize Nagase ChemteX Corporation's core businesses; 2) promote the development of de facto standard or No. 1 products; and 3) accelerate overseas development in the electrical structures field, all while centered on organic growth in the business of formulated epoxy resins, which are used in a wide range of industries including mobility, communications (ICT, telecommunications), semiconductors, heavy electrical machinery, environment and energy. For innovation, we will create new and sustainable businesses by developing materials and solutions other than formulated epoxy resins. We will also consider moving ahead on collaborations with other companies or research institutes, or M&A, to target the semiconductor field to accelerate the achievement of customer success.

We have reviewed our organizational structure to create a system that enables rapid decision-making to be able to implement this overall strategy and key measures. We are also focusing on DX initiatives, such as started activities toward building new digital marketing, as one method of implementing the overall strategy.

Sustainability Topic

Aim to Develop Environmentally Friendly Functional Resins through the Group's Comprehensive Capabilities

We provide solutions to environmental issues mainly by indirectly contributing to the fields of environmentally friendly vehicles, energy and telecommunications data processing by providing formulated epoxy resins. Going forward, we will promote a lineup of environmentally friendly functional resins by utilizing the Group's capabilities and developing environmentally friendly cutting-edge materials. We aim to contribute to addressing social and environmental challenges by providing solutions responding to the 3Rs.



Source: Toyota Motor Corporation website

Precision Process Materials Business

Business Opportunities

- Create new businesses due to the rising awareness of sustainability

Business Risks

- A shrinking market for LCD displays, difficulty in procuring raw materials, high costs, sudden fluctuations in exchange rates and emergence of local manufacturers in China and elsewhere

Strengths

- Total solution capability by combining NAGASE's technologies and products with complementary products

Medium-Term Issues

- Development of new industrial fields and value provided making full use of advanced technology accumulated to date

Provide value through total solutions using sales, manufacturing and development functions



Takashi Takeda
GM, Precision Process Materials Department

Our department was established by integrating the sales functions in the photolithography business at NAGASE & CO., LTD. and the manufacturing and research and development functions of Nagase ChemteX Corporation, while adding new businesses. In addition to the wide array of product lineups, experience, expertise and supply chain network of NAGASE & CO., LTD. we could combine Nagase ChemteX Corporation's technical expertise cultivated over many years and customer process problem resolution capabilities to provide total solutions.

In the first year of **ACE 2.0**, we made greater than expected progress in developing new products and entering new markets through initiatives conducted under multiple themes toward converting the business portfolio from its bias toward process materials for the flat panel display (FDP) industry. In the 3D printing business, which is progressing with commercialization as a materials business that leads to manufacturing innovation, we are creating a system to be able to provide total solutions, including process proposals, for customers introducing new manufacturing processes, in addition to achieving breakthrough evolution of material functions.

We feel the rising needs for sustainability will be a major tailwind for new businesses, and are actually seeing the expansion of circular economy businesses and progress in research and development activities for businesses that can contribute to energy efficiency use.

Sustainability Topic

Separation Membrane Process Development Aimed at Reducing Energy during Chemical Recycling Selected for a NEDO Subsidy

Nagase ChemteX Corporation's Sakai Plant is taking a central role in implementing the 3Rs in liquid crystal process chemicals. A plan is underway to further develop regeneration and refining technologies to expand the range of target substances and applications. As one aspect of that, development of a solvent-resistant separation membrane process aimed at reducing energy costs in organic solvent collection that was jointly proposed with Unitika Ltd. (and jointly researched with Kobe University) was selected for a subsidy from the New Energy and Industrial Technology Development Organization (NEDO).

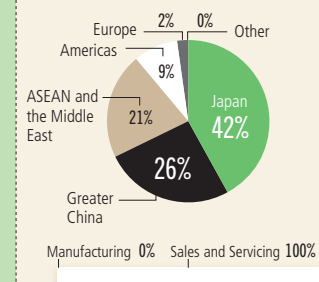


Solvent-resistant separation membrane process test equipment

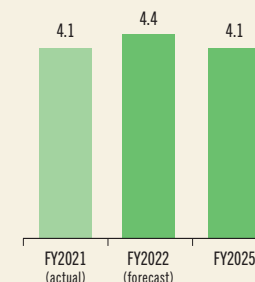


Mobility Segment

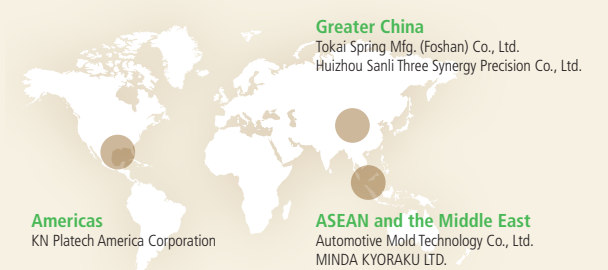
Gross Profit by Region and Field



Operating Income Target (Billions of yen)



Main Manufacturing Bases (Includes equity affiliates)



Mobility Solutions Business

Business Opportunities

- Expansion of EV on the back of carbon neutrality and the spread of CASE^{*1}, emergences of new mobility and MaaS

Business Risks

- Dramatic changes in the mobility industry and the possibility of significant changes in industry players

Strengths

- Ability to discover a wide range of product lineups, products and technologies, and the ability to build global supply chains
- Strong relationships with suppliers built on trust

Medium-Term Issues

- Stagnant domestic market and strengthening the system to expand in overseas markets

Strengthen response to EV and take on the challenge of new mobility



Daiji Matsuoka

GM, Mobility Solutions Department

Production of EV^{*2} will undoubtedly increase going forward due to the global trend toward carbon neutrality and acceleration of electrification due to the spread of CASE. Our department has traditionally sold various materials, including for internal combustion, to Japanese auto-makers, but to expand the business portfolio in line with societal trends, under **ACE 2.0** will look to expanding business with global automakers, including emerging EV manufacturers. We have built a worldwide spec-in and supply system for major EV manufacturers in Europe and the U.S., in particular, and forecast further growth going forward.

We believe our department will be able to find new business opportunities for EV, even as EV technology innovations continue to move ahead and the business environment changes dramatically and the industry players are changing with them. We will not just sell materials for automobiles, but also want to take on the challenge of expanding business opportunities in the new mobility field, such as with drones, MaaS and automated driving. We will continue our efforts to provide global solutions that consider the environment, safety and comfort in the next-generation mobility society, where people, goods and data come and go as part of "Ideal NAGASE."

^{*1} CASE: An acronym for Connected, Autonomous, Shared & Services, and Electric.

^{*2} EV: Electric vehicles, a comprehensive term encompassing hybrid vehicles (HEV or HV), plug-in hybrid vehicles (PHEV or PHV) and fuel cell vehicles (FCEV or FCV).



Anticipate the tide of change and contribute to the evolution of mobility

The mobility industry is facing a "once-in-a-century revolution." Moves such as major global companies newly entering the market and the appearance of new automakers in Japan stand out. With the recovery of automobile production, demand for NAGASE Group products has also increased in Japan and overseas, mainly in ASEAN countries. Furthermore, soaring market prices have improved profitability. In mobility, a growth field, the NAGASE Group will create new value by achieving both safety and environmental friendliness and comfort.

Sustainability Topic 1

Aim to Eliminate Labor Shortages in the Transport Industry with Compact EV as the Key

Since FY2020, we have been working on last mile logistics using compact EV for the purpose of eliminating the shortage of delivery personnel in the logistics industry. We are considering a MaaS business where compact EV can be used for deliveries by people who have time available. We are moving ahead on building the business while working together with automobile-related manufacturers, delivery companies and others to contribute to the department's goal of N-Sustainable businesses accounting for 25% of gross profit by 2025.



Sustainability Topic 2

Global Development of Synthetic Leather Supporting the Evolution of EV Interiors

The department proposes and creates stylish EV interiors through product development by KYOWA LEATHER CLOTH CO., LTD., which is involved in development, manufacture and sales of synthetic leather. We provide ideal synthetic leather globally by proposing a variety of colors and embossed finishes* and combining materials, taking into consideration texture, feel, function and design. Synthetic leather, which contributes to improved electrical cost performance, also contributes to reducing energy required for transport as it is comparatively lighter than authentic leather.

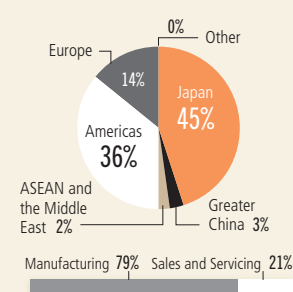
* A process adding a surface embossed with a pattern



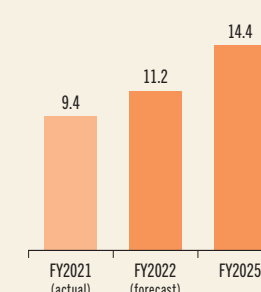


Life & Healthcare Segment

Gross Profit by Region and Field



Operating Income Target (Billions of yen)



Main Manufacturing Bases (Includes equity affiliates)



Life & Healthcare Products Business

Business Opportunities

- Business environment where we can proactively take on challenges of new business creation with liberal ideas.

Business Risks

- Changes in the business environment outpacing the speed of structural reforms

Strengths

- Industry-leading customer base, global business foundation
- R&D functions and manufacturing technologies within the group
- Human resources with advanced specialist knowledge
- Planning and proposal abilities with optimal combination of the materials within and outside the Group

Medium-Term Issues

- Materialization of our vision, 'Grow your happiness'

Fully engaging in challenges of new business creation to contribute to people's well-being



Bunji Ono

GM, Life & Healthcare Products Department

In the first year of **ACE 2.0**, we aggressively invested in the fields of biopharmaceuticals, flow-synthesis technology, AI for drug discovery, medical imaging software, and health-tech while steadily improving efficiency in the core business. We also contributed to new business creation in biotechnology and sustainability fields collaborating with NAGASE Biotech Office.

In health-tech filed, we invested in S'UIMIN, which provides high-precision sleep monitoring service utilizing unique wearable device and AI.

This is an attempt to try to create new business opportunities not being bound by the current area of activities, and going forward, we intend to firmly embed the corporate culture that takes on new challenges fueled by creativity and imagination beyond organizational constraint.

Our business domain is composed of pharmaceutical & medical business and cosmetic business which directly affect people's quality of life. We have set our future (ideal) vision as "Grow your happiness" and aim at the status that every employee can work with high aspiration and pride being aware that the expansion of our activity will contribute to human's well-being. Although the external environment changes severely and is hard to predict, we will identify the essential issues we should aim to resolve over the medium- to long-term, and provide insightful solutions which even exceed our clients' expectation grasping the essence of their issues.

Sustainability Topic

Engaging in New Business in the Medical and Cosmetic Businesses, Including the Development of New Technologies and Introduction of AI

We pursue various kinds of initiatives to solve social issues related to human's health and welfare such as new manufacturing technologies for biopharmaceuticals which can lead to significant cost reduction, AI for drug discovery, medical imaging technologies which address diversified needs of medical workers, and so on. Furthermore, we are at the planning stage of a unique platform business targeted beauty salons to create new value in our cosmetic business.



Food Ingredients Business

Business Opportunities

- Significant changes in eating habits in response to growing consciousness about sustainability and health

Business Risks

- Bias in distribution of ingredients production bases and food materials manufacturing bases

Strengths

- Procurement capabilities of Prinova Group LLC, sales network in Europe and the U.S. and high-value-added business
- NAGASE Group's overseas network
- In-house ingredients and application proposal capabilities at Hayashibara Co., Ltd. and Nagase ChemteX Corporation

Medium-Term Issues

- Creating synergies between Group companies in response to portfolio changes resulting from the acquisition of the Prinova Group LLC

Expanding the Prinova Group's procurement and supply capabilities and high-value-added businesses that the Prinova Group LLC possesses



Koichiro Kojima

GM, Food Ingredients Department

In 2019, the Group welcomed Prinova Group LLC, with its strengths in handling vitamins and amino acids and expertise in formulations. In the first year of **ACE 2.0**, we made progress in working together with the Prinova Group LLC and started creating a track record, particularly in Japan and Southeast Asia. A significant strength of the department is leveraging the Prinova Group LLC's procurement capabilities and its global supply capabilities. We provide a stable global supply of nutrition to meet the health-conscious needs of customers, not just with single ingredients, but by blending to meet customer requirements and provide greater value. We also foresee further synergies through the expansion of applications for in-house ingredients at Hayashibara Co., Ltd. and Nagase ChemteX Corporation.

From the standpoint of medium- to long-term business expansion, we have great expectations for the global expansion of high-value-added businesses, at which the Prinova Group LLC excels. Firstly, we will expand business in Europe and the U.S., then invest in places such as the rest of Asia and South America, taking into account the circumstances in the region. With the participation of the Prinova Group LLC we have expanded our portfolio so that it matches the growing awareness of sustainability, and we aim to raise our proposal capabilities for food in the future and achieve health for people and a poverty-free world through the business of ingredients.

Sustainability Topic

Contributing to Sustainable Food, Establishing an Application Development Base in North America

- 1) The Group is displaying its comprehensive capabilities to develop applications based on the key terms of "alternative proteins" and "plant-based." We will contribute to the realization of a sustainable world through food.
- 2) We will establish an application lab in North America and build a global sales structure to globally develop the application proposal capabilities of Hayashibara Co., Ltd. together with Prinova Group LLC.



Regional Strategy

Note: Employees in the consolidated group (as of March 31, 2022)

Built on a foundation of chemistry, the NAGASE Group is engaged in global business across a wide spectrum of industries. Utilizing the wide-ranging expertise accumulated through that network and experience, we provide a fine-tuned response to the needs of each country and region.

Greater China

Base established: 1971/Number of employees: 874

Quickly Responding to Technological Advances in the Industry through Bold Localization

As China's domestic industrial structure and technology level are rapidly becoming more advanced, we established Nagase (China) Co., Ltd., which is a regional headquarters, in 2019 to enhance the expertise of local human resources and promote the creation of business developed in China. We shifted operation from the previous region-centered sales structure to one centered on businesses, and consolidated the reporting lines of all our bases with the general managers of each business in Greater China. Leveraging our information gathering expertise and local networking resources, we are quickly responding to the technological advances in the industries of Semiconductor, Mobility, Electronics, Life & Healthcare, Chemicals, and Advanced Materials & Processing, and providing value-added products and services.

- Main Businesses
- Semiconductors

We will strengthen the expansion of products and services throughout the entire supply chain, industry branding, and support for companies' overseas advancement and local manufacturing.

● Mobility

We will expand sales to include Chinese, European and U.S. brands, and enhance products for new energy vehicles.

● Electronics

We will expand sales of components for next-generation displays including OLED and Micro-LED, and increase business for new applications such as AR/VR and sensors utilizing 5G/6G infrastructure.

Topics

We are concentrating on food ingredients, perfumery, and pharmaceutical-related businesses as developing businesses. In food ingredients, we are making progress in expanding raw materials for health food products, digital marketing using the NAGASE Food Ingredients Food Development Center (Xiamen) where we develop applications, and collaboration with the Prinova Group LLC. In perfumery, we will respond to the manufacturers of Chinese-developed cosmetics and establish a system to expand sales of Hayashibara Co. Ltd.'s AA2G™ (a stabilized ascorbic acid derived from Vitamin C and starch), while in pharmaceuticals, we will work to expand sales of TREHA™ SG. We will make advances in bold localization and meet the needs of customers while learning the diverse values of local human resources.

ASEAN and the Middle East

Base established: 1975/Number of employees: 734

Creating Regional Businesses and Introducing Regional Management Policies to Support Them

We are continuously maintaining strong relationships with suppliers in the resin business and deeper involvement in the automotive industry, which has been a strength for a long time. In addition, we are strengthening our effort on transfer business from China supported by personnel from Greater China affiliates. Going forward, we will also aim to create businesses through tie-ups with regional brand owners as well as the development and commercialization of businesses that are close to consumers in anticipation of demographic changes and economic development. We believe that, in addition to the management of each regional subsidiary on a standalone basis, we must introduce regional management policies to promote these businesses organically within the region.

- Main Businesses
- Food Ingredients

We will accelerate business expansion through action guidance for regional food businesses, and reform of the structure to take accountability for profit and loss.

● Resin

We will maintain strong relationships with suppliers.

● Automobiles

We will strengthen and deeply intensify our approach to customers from Japanese-owned companies

Topics

In Indonesia, we launched a fleet management business which analyzes transport data and provides solutions, and aim to help solve environmental issues by making transport more efficient. Through the initiatives of Zeroboard Inc. in the industrial areas of Thailand as well, we support regional business management by reducing carbon emissions and through initiatives for decarbonization.

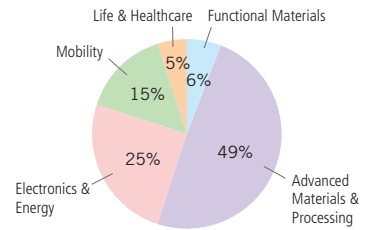


Masatoshi Kamada

Director, Executive Officer and Greater China CEO

Gross Profit/21.8 billion yen (FY2021)

Breakdown

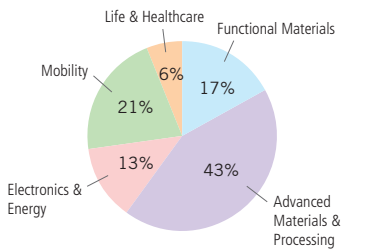


Eiroku Oki

Executive Officer and ASEAN and India CEO
Regional Operating Centre Leader

Gross Profit/12.7 billion yen (FY2021)

Breakdown



Europe

Base established: 1980/Number of employees: 268

Focusing on Export Business Related to Pharmaceuticals and Expanding Sales of Chemicals Including Biodegradable Materials

In Europe, the amount of pharmaceutical-related exports is growing rapidly alongside increased demand for in-vitro diagnostic drugs and drug substances. We continue to focus on expanding sales of Hayashibara Co., Ltd. products within Europe and on exporting generic APIs* to Japan, while actively considering collaboration with contract manufacturing organizations (CMOs) to expand business.

Meanwhile, production stagnation in supply chains and regional procurement affected by geopolitical risks are becoming critical issues, and there is strong demand for product development that does not rely on difficult-to-procure raw materials. In order to meet the demands for changeover to raw materials with limited environmental impact and recycling, we will enhance the sales expansion of products that use biodegradable raw materials and biomaterials, among others.

In the short term, we believe it is important to maintain customers' supply chains. In the medium to long term, we will roll out new products that have reduced impact on the environment and advance regional procurement.

* Active pharmaceutical ingredients

- Main Businesses
- Pharmaceuticals

We will increase profitability through the sales expansion of our own (Hayashibara) products and others in line with demand for in-vitro diagnostic drugs and drug substances.

● Mobility

Due to an increase of manufacturing and recycling in the automobile industry, we will focus on lithium and bio-based batteries.

● Chemicals

We will expand sales of biodegradable raw materials for the resin and papermaking industries.

Topics

Currently, we are actively considering collaboration with CMOs and responding to opportunities for business expansion. Meanwhile, in regard to the repercussions of production stagnation in supply chains caused by the spread of COVID-19 and other factors, we will advance initiatives in fields that reduce the impact of supply chains, including pharmaceutical intermediates and processing materials, enzymes for industrial use, and petrochemicals based on green hydrogen.

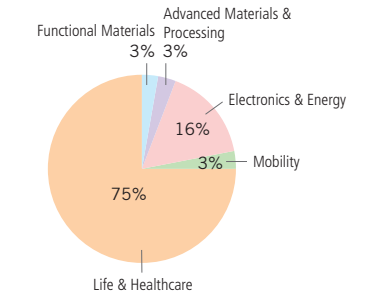


Hiroyuki Ueshima

Director, Executive Officer and Europe CEO

Gross Profit/8.4 billion yen (FY2021)

Breakdown



Americas

Base established: 1971/Number of employees: 1,404

Continuing Investment in the Rapidly Growing Food Ingredients Market and in New Technologies

For the last two and a half years, we have experienced regular supply chain disruptions as an unintended consequence of the global pandemic. Now we also have the additional specter of expanding geopolitical conflicts which pose additional risks to business continuity. We provide alternative solutions to our customer's challenges through our manufacturing, application development, and research capabilities in the region.

The largest business in the region is in the nutritional and food ingredients market. The nutritional ingredients market is predicted to continue to grow at a rapid pace in our region, at a CAGR of roughly 8–9%. Leveraging our already strong position in our core areas and adding to it our continued expansion into downstream, value-added markets represents our key strategic initiatives for the nutritional and food ingredients markets in the Americas. Our growth plan for our core distribution business will be to pursue investment opportunities in adjacent product areas or in new geographic markets.

Keeping up with the needs of our customer and the markets we serve and by making the requisite investments in new technologies such as AI/ML, additive manufacturing, and biotechnology, NAGASE Group will continue to provide value.

* A manufacturing method that utilizes additive manufacturing technologies such as 3D printing

- Main Businesses
- Food Ingredients

To respond to strong demand, we will continue to invest in downstream areas and expansion of capacity.

● 3D Printing

Through the new service, Empowr3D, we provide a comprehensive support for 3D printing, from ideation to material development and commercialization, by providing the best solution for customers.

Topics

The commercialization of bio-based chemicals will continue to be an important area of focus. In addition to this, we are leveraging existing technology platforms, brought through the IFC acquisition, that utilize post-consumer recycled plastics to produce composite products for use in a variety of application spaces. We will look to leverage IFC's know-how to expand our presence in the circular economy through the development of new applications utilizing recycled plastic inputs."



Bradley Hilborn

Americas CEO and Nagase Holdings America Corporation CEO

Gross Profit/23.8 billion yen (FY2021)

Breakdown

