

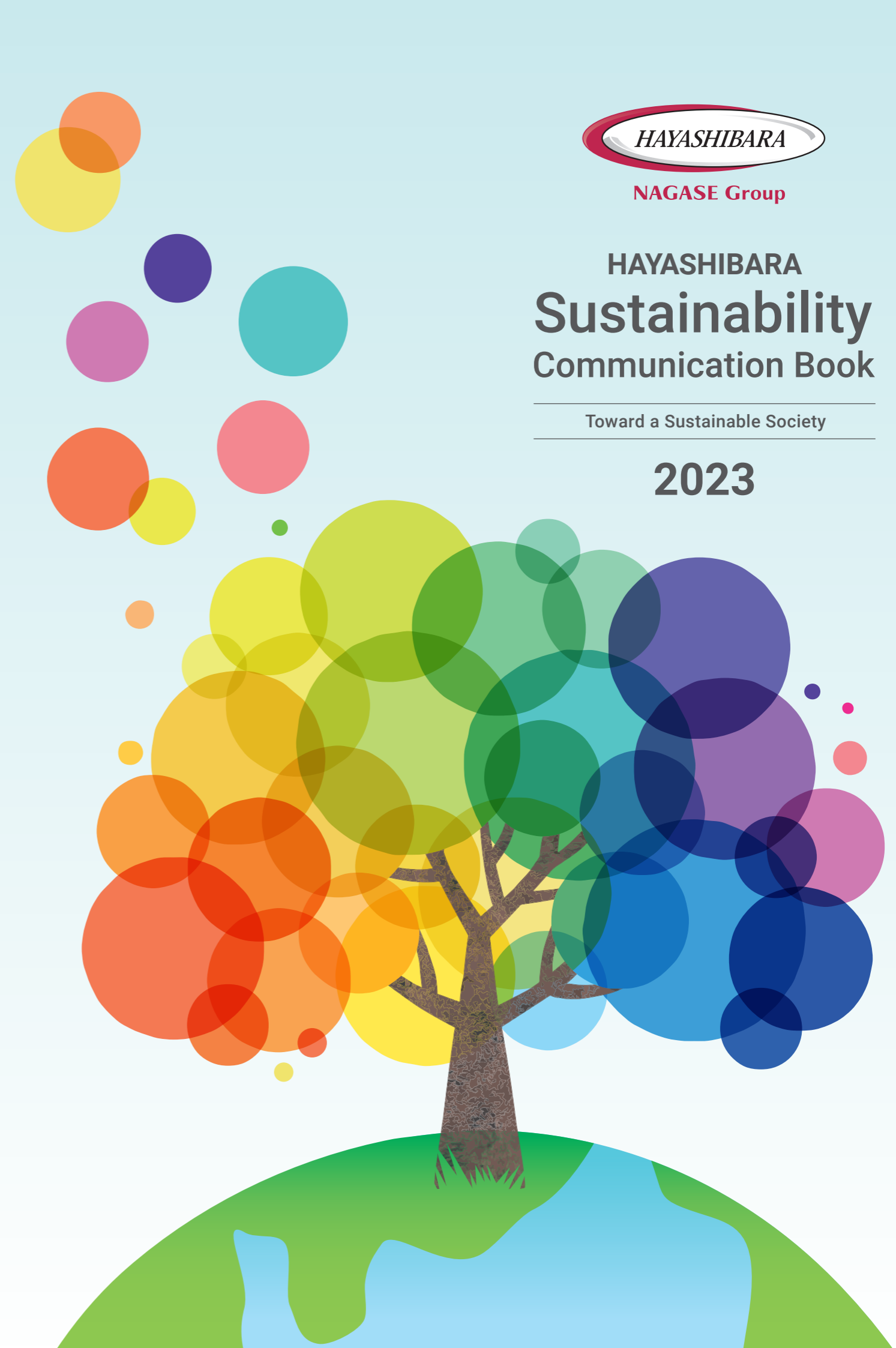


NAGASE Group

# HAYASHIBARA Sustainability Communication Book

Toward a Sustainable Society

## 2023



Contact:

Corporate Design & Management Dept.,  
**Hayashibara Co., Ltd.**

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Hayashibara Sustainability Website  
[https://www.hayashibara.co.jp/data/en\\_sustainability/](https://www.hayashibara.co.jp/data/en_sustainability/)  
Issued: August, 2023



● TREHA, Ascofresh, Fibryxa and NARINVID are trademarks of Hayashibara Co., Ltd.  
● DENABAKE RICH is a trademark of Nagase & Co., Ltd.

It all started 140 years ago. Hayashibara's origins can be traced back to a time when sweet foods were very highly valued, and the company made syrup from starch, a gift from the sun.

Since then, we have continued to develop ingredients using the power of microorganisms and enzymes, and have used the insights and learnings gained from interacting with nature to help enrich society.

And now, we have embraced a completely new vision.

With the health of our planet at stake, we are putting our all into research and materials development with a firm focus on sustainability, while respecting nature as never before. We want to work with like-minded partners to co-create value for the future.

## What We Make

Since 1959, when we succeeded in the mass production of glucose using microbial enzymes, we have been innovating and developing materials derived from nature.

### A multifunctional carbohydrate

#### **Trehalose**

Trehalose is widely used in food, cosmetics, pharmaceuticals, and agriculture, with various functions, such as extending the shelf life of food, retaining moisture, and improving productivity by increasing the resistance of crops to environmental stress.

### Soluble dietary fiber

#### **Isomaltodextrin**

Isomaltodextrin is a material that increases bifidobacteria and balances intestinal bacteria. It is used in a variety of foods and beverages because it is stable and barely affects taste or color.

### A unique polysaccharide

#### **Pullulan**

Pullulan is a water-soluble polysaccharide with strong adhesiveness and is used to bind ingredients for food products. It also has excellent film-forming properties and is used for gelatin-free pharmaceutical capsules and coating tablets.

### Environmentally friendly formulation

#### **Enzymes**

Our enzyme products work efficiently under mild conditions. They support our daily lives in various fields, from food and beverages to detergents, water treatment, and textile processing.

# Stay with Nature. Welcome the Future.

Endeavoring to produce food without stressing the soil.  
Endeavoring to develop materials that do not pollute the oceans.  
There are areas in which we can make a contribution because of our long history of working together with nature.

We are looking far into the future, drawing on the power of microorganisms and enzymes that have existed since ancient times.  
Hayashibara will lead the way to a healthy future for people and the Earth, with the same commitment that we have had since our founding.



# Nature for the future

Hayashibara has always sought to enrich lives with abundance and stability by manufacturing products that harness the power of nature. In April 2023, the biochemicals business of Nagase ChemteX Corporation, a pioneer in enzymes, joined us, extending the scope of our biotechnological expertise.

To address serious challenges such as the pandemic-induced supply chain disruptions, international uncertainties, and the climate crisis, we must be conscientious and take action to build a better future. We will advance our environmental, social, and governance practices and work to create sustainable value by strengthening stakeholder partnerships.

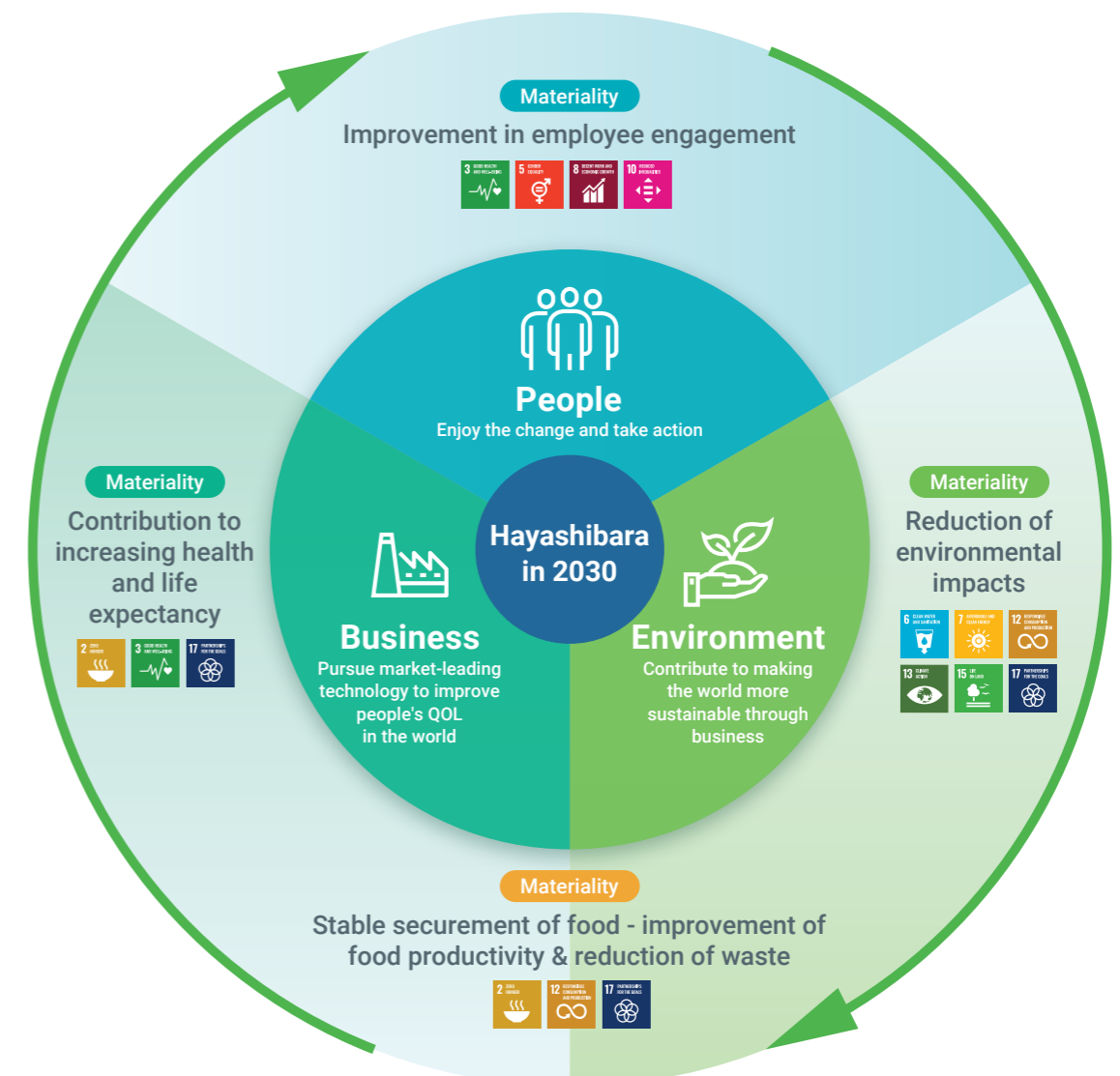


Representative Director  
**Naoki Yasuba**

## Who We Seek to Be

Hayashibara works in partnership with nature and contributes to creating a sustainable society through our business activities.

Offer solutions to social issues  
**Contribute to a more sustainable world**



**Continuously improve corporate value**

# Our Goals

What should we be doing now to achieve our vision of where we want to be in 2030? What can we do? Through an exchange of ideas between the management team and employees based on the themes of the SDGs, we have established four types of materiality (agenda in focus).

## Materiality for Hayashibara

### 1 Contribution to increasing health and life expectancy



We are committed to enhancing the well-being of individuals around the world by improving our technologies. We also provide unique and advanced materials, technologies, and information that meet changing market expectations.

### 3 Improvement in employee engagement



We will create a healthy work environment where all employees can work and use their unique skills to the best of their ability and reach their full potential. We will provide an environment where employees respect each other, and develop their capacities through friendly competition.

### 2 Stable securement of food - improvement of food productivity & reduction of waste



We will strive to reduce waste and loss in the entire supply chain and improve the productivity of existing food resources such as agriculture, livestock, and fishery. We will also develop next-generation food resources through a partnership between industry, academia, and government, and contribute to a sustainable and stable society.

### 4 Reduction of environmental impacts



We will make efforts to reduce the environmental impacts that we generate through business activities, and support our planet by proactively developing products and technologies that contribute to resolving environmental issues.

## Fostering shared value through dialogue with stakeholders



# Our Action Plan

We have formulated a Sustainability Action Plan to address these materialities. To align the entire company, we have clarified our goal of providing value to our stakeholders in 2030, and are moving swiftly and concretely into action.

## Sustainability Action Plan

Single-year plans and results are reported on the website.

	Value delivery in 2030	Related Materiality
People and Corporate Culture Enjoy the change and take action	Development of leaders to drive business growth and enhancement of diversity	3
	Maximizing employees' potential and motivating their willingness to contribute	3
	Pursuit of integrity through strengthening of corporate governance	3
	Promotion of health and productivity management	3
Business Pursue market-leading technology to improve people's QOL in the world	Food ingredient business	Contribution to future of food culture and delivery of vitality to the world (Commitment for UN Food Systems Summit 2021) 1 2
	Personal health care business	Improvement of quality of life and contribution to increasing healthy life expectancy 1 4
	Wellness products business	Broadening our stakeholders' understanding of our commitment to sustainability 1
	Functional dyes business	Contribution to solving social challenges with our products 1
	Creation of new technology through open innovation	1 2 4
Environment Contribute to making the world more sustainable through business	Contribution to a sustainable society by reducing environmental impacts	4
	Improvement in productivity, and sustainability of manufacturing sites	3
	Provision of safety and reliability through world-class management system	1 2 4
	Establishment of quality culture	1 2 4
	Reduction of environmental impacts throughout supply chain	4

Materiality...

- 1 Contribution to increasing healthy life expectancy
- 2 Stable securement of food - improvement of food productivity & reduction of waste
- 3 Improvement in employee engagement
- 4 Reduction of environmental impacts

## Supporting the Action Plan with a cultural transformation

### Promoting integrity



We are dedicated to promoting the spread and understanding of integrity in our governance management, emphasizing transparency and a sense of responsibility. Additionally, we aim to cultivate a workplace culture that fosters open and candid dialogue.

### Advancing a culture of quality



We strive to foster a culture of quality, ensuring the stable delivery of safe and reliable products. The Quality Assurance Division regularly shares educational articles to instill this commitment in our employees.

# Contributing to wellness with naturally-derived products

There is a crisis of malnutrition in developing countries, while over-nutrition and unbalanced diets are of concern in developed countries.

We aspire to provide naturally-derived ingredients, technologies, and information around the world to promote healthy lifestyles and healthy longevity in this era of 100-year lifespans.



## Materiality 1 Contribution to increasing health and life expectancy

## Action Report

### Shifting the focus to gut health



#### 5th Hayashibara Life Seminar

Prof. Yuji Naito M.D., Ph.D., of Kyoto Prefectural University of Medicine, gave a lecture. He explained in detail that aging and the intestines are closely related and that diversity of intestinal bacteria is the secret to healthy longevity. He also recommended foods to improve the intestinal environment.

Venue: Sanyo Shimbun Santa Hall, Okayama City

### Optimal nutrition for a healthy diet

#### Showcasing the use of functional ingredients to prevent frailty

We exhibited a booth at Care Show Japan 2023, the largest exhibition for elderly and nursing care food in Japan. We introduced TREHA™, which makes meat and fish tender and juicy; Ascofresh™, a stable vitamin C that can be used with proteins without browning or generating off-notes; and Fibryxa™, a water-soluble dietary fiber that helps maintain bowel health and a well-nourished body.



### True beauty and sustainability begin with ingredients

#### Our sustainability of cosmetic ingredients showcased in the review of International Federation of Societies of Cosmetic Chemists (IFSCC)

At the IFSCC scientific congress in London in September 2022, we showcased our concept of "Holistic Sustainability": we believe true beauty comes from respecting the preciousness of nature and the well-being of people and the planet. We strive to develop functional materials to promote the overall health of the skin and its usefulness in personal care through sustainable manufacturing processes that do not impact the environment.



#### Ongoing commitments

##### Assisting in stabilizing the supply of antibody drugs

Trehalose stabilizes proteins and nucleic acids and preserves the quality of antibody drugs to treat cancer, diseases caused by immune abnormalities, and severe infectious diseases.

##### Tackling nutrition intake in an aging society

We have developed recipes for dysphagia food using TREHA™, which makes it easier to swallow and tasty and contributes to improving care food in hospitals and nursing homes.

##### Addressing emergency ration challenges

Stabilized Vitamin C Ascofresh™ is designed to overcome of vitamin C deficiency, which is a challenge in emergency rations. It is also used as a complete food containing all the daily required nutrients.



TREHA™ is the trade name of food-grade trehalose.

# Action Report

## Achieving Zero Hunger



©Mayumi Rui

### Supporting the Japan Association for the World Food Programme (JAWFP)

In support of the mission of the United Nations World Food Programme (WFP) to eradicate hunger and poverty, we have participated as a partner in JAWFP's corporate program since FY2022. We support their activities through donations and make increasingly multifaceted contributions to stable food security.

## Using the power of enzymes for a richer diet

### Enhances the natural goodness of eggs for a long-lasting taste

DENABAKE RICH™ is an enzyme that improves the emulsifying properties of egg yolks and can be used in various products containing eggs. By acting on the phospholipids contained in egg yolks, it makes cake fluffy and soft with reduced egg content. Considering the current egg shortage, we believe this product can contribute to providing a stable supply of essential food products.



## Supporting the SDG efforts of our customers

### Offering solutions through original recipes

We aim to co-create a better future with our customers through providing information on the SDGs by attaching the SDG logo to recipe materials that use our products. This is to help reduce food loss and waste, and energy consumption during cooking.



### Ongoing commitments



#### Working towards agriculture friendly to people and nature

Trehalose stabilizes biofertilizers, reducing the use of chemical fertilizers, and improves the stress tolerance of crops, thus lessening impacts on the environment and farmers.

#### Improving the flavor of plant-based protein

Plant-based protein has grown in presence as global population increases, presenting challenges in the form of unpleasant odors and dried texture. TREHA™ helps overcome these challenges.

#### Reducing food waste with corporate partners

The addition of TREHA™ will extend the shelf life of processed foods and reduce food waste. We offer our partner companies practical and effective methods to use this product.

TREHA™ is the trade name of food-grade trehalose.

## Materiality 2 Stable securement of food - improvement of food productivity & reduction of waste

### Helping to create sustainable food systems

Population and climate pressures may cause global food shortages. We will support sustainable food systems by boosting crop and livestock productivity with our ingredients and technologies, and by co-creating next-generation food resources through industry-academia-government collaboration.



# A prosperous future through a joy of work

The company and its employees should share the same vision, but be able to make the most of their diverse personalities.

By respecting the well-being of our employees, we aim to be a company united in creating a better future.



## Materiality **3** Improvement in employee engagement

### Action Report

#### Designing a workspace where everyone can work comfortably



##### Promoting automation in manufacturing plants

We are investing in the creation of workplaces open to everyone playing a role, regardless of gender or age. For example, filling and packaging Pullulan, a powdered product, was once an arduous task. However, we have automated the process from assembling cardboard boxes to filling, packaging, and storing in the warehouse so that anyone can carry out the work.

#### Aspiring to create a more comfortable workplace

##### Flexible dress code to suit the time, place, and occasion

We have introduced a flexible dress code for employees engaged in work that falls outside of the purview of the health and safety dress code.



#### Contributing to the global community

##### In-house lectures planned by employees

Hayashibara's SDGs advisor, Professor Atsufumi Yokoi (Okayama University Senior Vice President and UNESCO Chairholder), gave a lecture on the theme of "Global Society and Sustainability Management." This lecture deepened our understanding of the relationship between SDGs management and employee engagement and human capital management, and the link between personal growth and contributing to the global community.



#### Ongoing commitments



##### Mental and physical health consultation

A new Health Promotion Section was established to promote health and productivity management. A nurse from this Section is stationed in the office to hold regular consultation meetings and provide stretching guidance.

##### Initiatives for dialogue between management and all employees

The management and employees have been in dialogue about how they want to see Hayashibara in 2030. The dialog with almost all employees finished up at the end of March 2023, and mutual understanding has been strengthened.

##### Promoting a work-life balance

We encourage employees to harmonize their work and private lives by introducing a flextime system, no-overtime days, remote work, and educational activities to encourage male employees to take parental leave.

# Action Report

## New materials from upcycled raw materials



### Taste-improving ingredient developed from farm waste

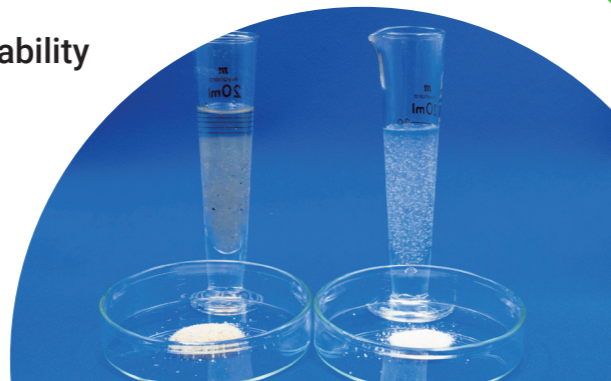
We have developed a new functional product, NARINVID™, from agricultural products that would otherwise be discarded, such as young picked citrus and other fruit that has fallen off the tree. Together with our partners who take on the challenge of developing sustainable products, we will provide new value in the fields of beverages and flavors.

## New solutions for the environment

### Super absorbent polymer with biodegradability jointly developed by the NAGASE Group\*

Super absorbent polymers (SAP), which are used in a wide range of fields including hygiene products such as disposable diapers and pads, as well as agriculture, have been recognized as being problematic due to their large environmental burden. We have now succeeded in developing a naturally-derived SAP with high absorbability, which we aim to bring to market in 2025 or later.

\*Nagase & Co., Ltd., Nagase ChemteX Corporation, Hayashibara Co., Ltd.



Comparison of absorbability of biodegradable SAP from other companies (left) and our developed product (right) ▲

## Materiality 4 Reduction of environmental impacts

### Striving to attain planetary health by bringing harmony between people and the Earth

We have committed to being an eco-friendly company through two policies - reducing the environmental impact of our business activities, and developing products and technologies that help solve environmental issues. We show our results through environmental performance data and work to improve them.



## Working with corporate partners to reduce logistics burdens

### Promoting the use of consolidated charter services

Japan's logistics industry is expected to face the so-called "2024 Problem," which is the further shortage of truck drivers due to the overtime restrictions that will come into effect next year. To address this issue, we are focusing in particular on improving transportation efficiency. Through the use of consolidated charter services and other measures, we have reduced transportation distances by 1.52 million km between 2020 and 2022.



## Ongoing commitments

### Promoting green purchasing practices

We are using FSC-certified paper for some product packaging and switching to environmentally friendly materials for novelty goods.

### Optimization of energy use

We are promoting energy conservation and CO<sub>2</sub> reduction by installing solar panels, switching to LED lighting, and improving boiler efficiency at plants.

### Environmentally friendly wastewater treatment

Hydrogen peroxide, used in the manufacture of semiconductors and other products, has a negative impact on the environment. Our microorganism-derived enzyme, catalase, breaks this down into harmless water and oxygen, helping to balance industrial production and environmental conservation.





# Initiatives and External Recognition

## Endorsed Initiatives

WE SUPPORT



### United Nations Global Compact

We have become a signatory to the UN Global Compact, a worldwide initiative, and will further promote sustainability initiatives by respecting the Ten Principles.



### Japan Association for the World Food Programme (JAWFP)

We offer support to the mission of the UN World Food Programme as a partner of JAWFP's corporate program. Our support consists of donations.



### United Nations Food Systems Summit 2021

We made a commitment at the UN Food Systems Summit 2021 held in the United States. With our naturally-derived ingredients, we will help realize a sustainable food system.



### Tokyo Nutrition for Growth Summit 2021

We endorsed the Tokyo Nutrition for Growth Summit 2021 held by the Japanese government. We are promoting the dissemination of safe and sustainable wholesome food while supporting the health of people and the planet with our food ingredients.

## External Recognition



**Rated Silver by EcoVadis**  
We were awarded Silver in the sustainability survey by EcoVadis (France), an international supply chain assessment organization.



**2023 Certified Health & Productivity Management Outstanding Organizations Recognition Program**  
The Ministry of Economy, Trade and Industry and the Japan Health Council certified us as a corporation that implements especially excellent health and productivity management practices.



**Certified Sports Yell Company 2023**  
We were certified by the Japan Sports Agency for being a company that promotes sports to improve the health of its employees.

EcoVadis uses an independent review and analysis process to objectively examine and evaluate the sustainability of more than 100,000 supplier companies in more than 200 industries in more than 200 countries. EcoVadis evaluates corporate policies, measures, and performance in four areas: environment, labor and human rights, ethics, and sustainable procurement. The Silver rating is awarded to companies that score within the top 25% of all companies in the survey.

# Topics 2022

- 2022/04/14 Participated in the UN WFP Corporate Program as a Partner to eradicate hunger and poverty
- 2022/06/19 Received an award from Okayama City for being a company actively involved in promoting the formation of a gender-equal society
- 2022/07/08 Fukuchiyama Plant received Incentive Award from the Minister of Health, Labour and Welfare for being an excellent workplace in terms of health and safety
- 2022/08/09 Update to our Web Magazine, *Sustainable Actions* "Giving a new value to a locally produced Japanese paper material: YUNOKA cosmetics with mitsumata extract"
- 2022/09/01 Placed an ad article in the women's magazine, *ELLE*, on the sustainability of personal care ingredients
- 2022/09/08 Hosted the 24th Trehalose Symposium in Tokyo
- 2022/10/08 Co-hosted a health event with Okayama City and local companies
- 2022/12/20 An interview about our efforts was posted on the website of Statista Japan, a data statistics and research company
- 2022/12/20 Signed the United Nations Global Compact and joined the Global Compact Network Japan
- 2023/01/27 Hayashibara's article was published in business magazine, *Forbes*, on Japanese manufacturing industry
- 2023/02/01 Featured in the SDGs x Food Industry page on the website of the Ministry of Agriculture, Forestry and Fisheries
- 2023/02/28 Recognized as a Sports Yell Company 2023 by the Japan Sports Agency
- 2023/03/09 Certified in the Health & Productivity Management Outstanding Organizations Recognition Program 2023 (Large Enterprise Category)
- 2023/03/13 Held a lecture on the theme of thinking about human health from the gut at the 5th Hayashibara Life Seminar
- 2023/03/14 Okayama University published a review article on the pharmacological effects of NK-4, a functional dye produced by Hayashibara



The promotion of work-life balance among employees was received with high praise



The company was recognized for its lengthy accident-free period and its efforts to reduce risk in the workplace



Trehalose Symposium – a cross-disciplinary scientific gathering established in 1997



Many city residents dropped by for a health checkup

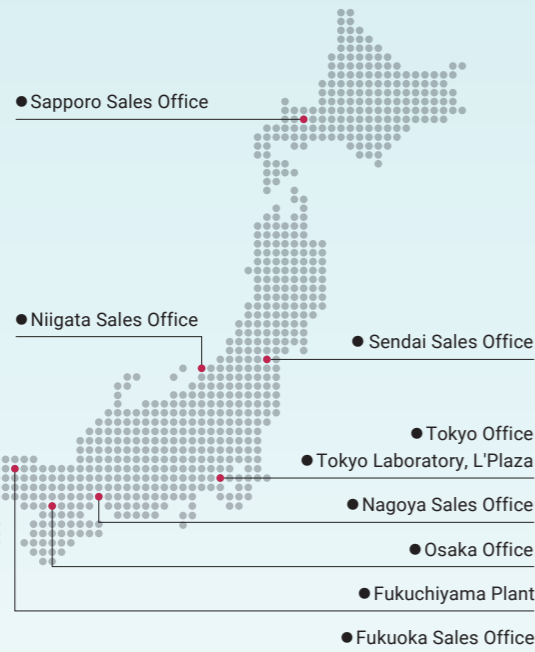
**Company Profile**

(As of April 1, 2023)

Company Name HAYASHIBARA CO., LTD.  
 Founded 1883  
 Established July 10, 1932  
 Representative Director Naoki Yasuba  
 Headquarters Nihon-Seimei Okayama Bldg.II Shinkan  
 1-1-3 Shimoishii, Kita-ku, Okayama 700-0907, JAPAN  
 TEL:+81-86-224-4311 FAX:+81-86-224-8492  
 Capital ¥500,000,000  
 Shareholder Nagase & Co., Ltd. 100%  
 Number of employees 786  
 Main Business Development, manufacturing and sales of food ingredients, pharmaceutical ingredients, cosmetic ingredients, health food ingredients, functional dyes, enzymes and phospholipids

**Main Offices**

- Headquarters
- Okayama Sales Office
- Okayama Laboratory, L'Plaza
- Wellness Products Unit
- Fujisaki Institute
- Okayama Plant I
- Okayama Plant II
- Okayama Functional Saccharide Plant
- Fujita Plant
- Fujita Pharmaceutical Plant

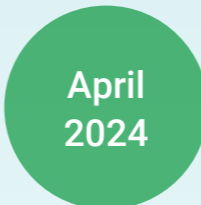


**Nagase ChemteX's enzyme business integrated into new key component**

On April 1, 2023, Nagase ChemteX Corporation's biochemicals (enzymes) business was integrated with Hayashibara. By bringing together the proprietary technologies of both companies, we will further develop our bio-related business, which is positioned as a priority area in the NAGASE Group's medium-term management plan, and contribute to the creation of a sustainable world where people live with peace of mind.



▲Fukuchiyama Plant (Kyoto)



**Hayashibara expands on the philosophy and idea of Sustainability and becomes Nagase Viita**

On April 1, 2024, Hayashibara will change its name to Nagase Viita. "Viita" comes from the Latin word "Vita," meaning life or living. Adding another "i" to become "ii" depicts our dedication to a prosperous and sustainable future in harmony with nature. This name is a testament to our determination to collaborate with companies, researchers, and people of all generations around the world. It represents our commitment to co-creating a future where people and nature can genuinely thrive together, as we reflect on life as yet unborn.

**About the NAGASE Group Delivering next.**

The NAGASE Group, of which Hayashibara plays a vital role, is a general trading company with Nagase & Co., Ltd. - a chemical specialty trading company founded in Kyoto in 1832 - at its core. With approximately 100 Group companies in Japan and overseas, NAGASE has been providing a multitude of value from resin raw materials and additives to functional polymers, plastic products, electronic materials, functional food materials, and pharmaceutical raw materials and intermediates on the global stage. NAGASE will continue to contribute to the realization of a sustainable world where people live with peace of mind, each of us embodying our value proposition to identify, develop and expand through daily activities.



**NAGASE Group Sustainability Basic Policy**

The measures we take concerning sustainability are consistent with the highest standards of integrity in the NAGASE Group's management philosophy and the vision of a sustainable world where people live with peace of mind. We acknowledge that sustainable growth can be achieved by continuing corporate activities that contribute to solving social and environmental issues, and thus, we make proactive efforts by developing a policy for sustainability activities.

**Non-financial goals (KPIs) of the NAGASE Group**

We quantitatively evaluate and monitor our efforts toward two goals.

■ **Improvement of employee engagement**

The NAGASE Group recognizes that improving employee engagement is the most important factor in achieving sustainable growth, and has defined the condition we aim for as the "relationship between company (organization) and employee built on mutual respect and mutual motivation." We promote the implementation of regular engagement surveys with the aim of understanding and spreading the concept of employee engagement within the Group.

■ **Carbon Neutrality**

The NAGASE Group, which operates globally, recognizes that addressing climate change is an important issue, and has set a goal of achieving carbon neutrality (Scope 1 and 2), which means virtually eliminating GHG emissions by 2050. In addition, we have set a target of reducing Scope 3 emissions by 12.3% or more (compared to 2022 levels) by promoting discussions with our supply chain.