

# Innovation for a Sustainable Future



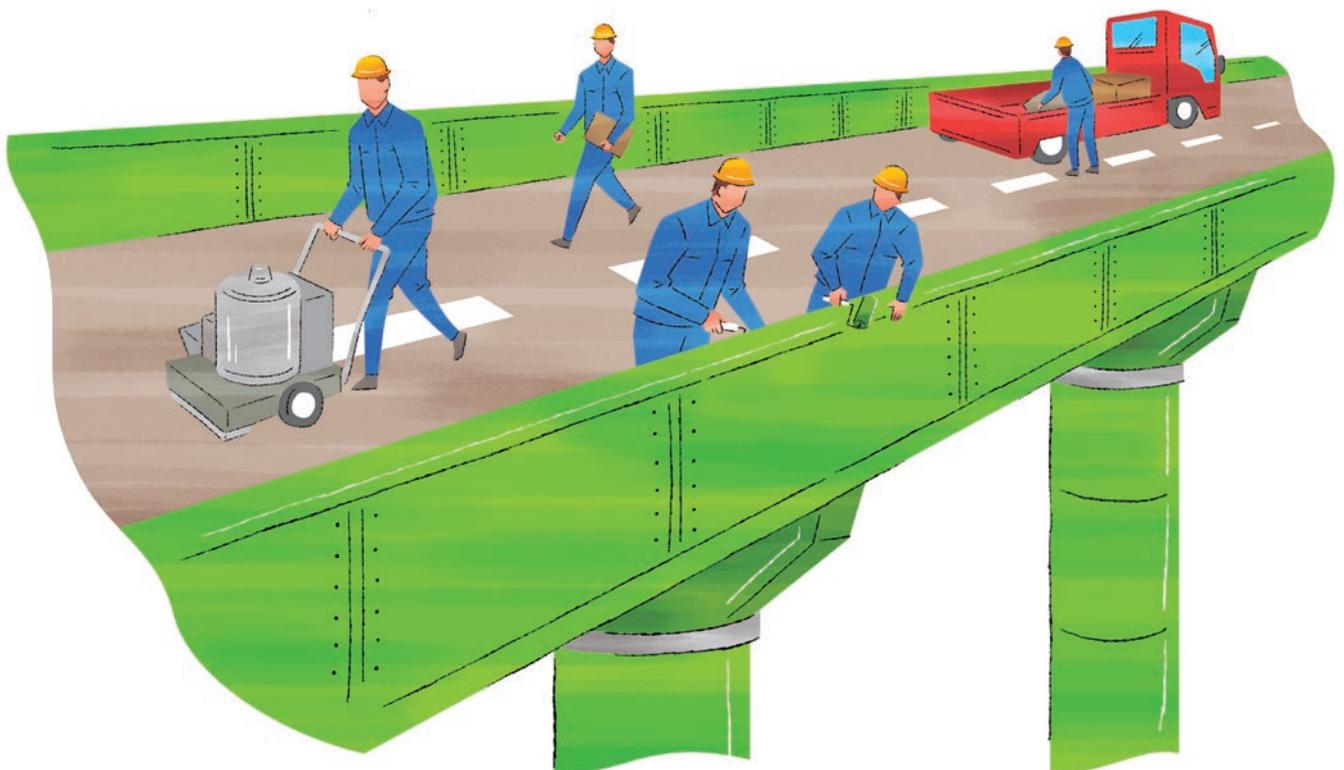
In today's society, problems that are difficult to resolve with conventional approaches are emerging increasingly. We will strengthen our innovation creation capability with active utilization of partnerships.

## Innovation strategies and sustainable products

From automobiles to landmarks, the Nippon Paint Group uses its paint and coating technologies to provide colors and joy in every aspect of people's lives. In particular, as indicated by our Group's Purpose "Enriching our living world through the power of Science + Imagination," we have been committed to the development of sustainable products for many years with the aim of resolving social issues through technology. In FY2020, we strategically built a technology development structure, including the collaborative activities with the University of Tokyo and a wide range of other partners to discover new values for social contribution and the enhancement of our organizational structure to develop anti-viral products. We also promoted contribution to climate change mitigation through products such as heat shield paints and fuel-saving hull coatings. In FY2021 and beyond, we will strive to maximize the Group synergies by establishing indices for global initiatives and shifting to full-scale innovation progress management.

## Sustainable products

Our Group calls products with features that help resolve social issues "sustainable products." The products are classified into two categories: products that reduce environmental impact throughout product lifecycle by reducing VOCs emitted into the atmosphere or using environmentally friendly raw materials; and beneficial products, which actively contribute to the resolution of new social issues with their features, such as helping customers reduce CO<sub>2</sub> emissions during painting. In FY2020, in response to COVID-19, we actively promoted the development of paints with functions to help prevent infections. We will seriously work to contribute to the resolution of various issues such as prevention of climate change and pollution.

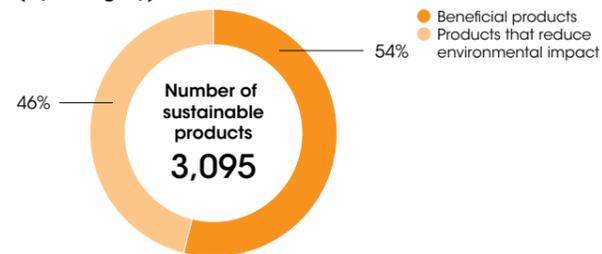


**Achievements in sustainable products**

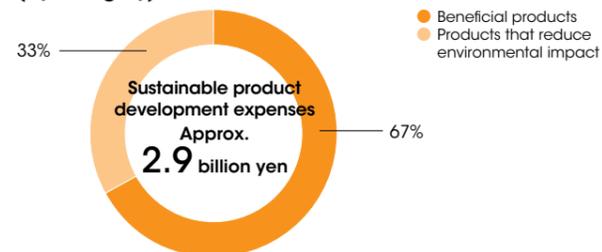
In FY2020, we sold approximately 3,000 sustainable product items in Japan. Of this total, sales of beneficial products with features designed to contribute to solving social issues reached approximately 24.5 billion yen. Research and development expenditures amounting to approximately 2.9 billion yen were allocated to some 120 development themes for sustainable technologies and products in Japan in FY2021.

Going forward, we plan to disclose data on a global basis.

**Total number of sustainable products sold in FY2020 (by category)**



**FY2021 sustainable product development expenses (by category)**



**Sustainable product (1) Antifouling hull paint AQUATERRAS**

Nippon Paint Marine Coatings' antifouling hull paint AQUATERRAS won in April 2021 the TECHNOLOGY AWARD of the environmental award GREEN4SEA VIRTUAL AWARDS hosted by the European maritime NPO SAFETY4SEA for the first time as a Japanese company.

AQUATERRAS is the world's first biocide free self-polishing antifouling paint with a marine-environment-friendly formulation, free of heavy metals, active ingredients and silicone. In addition, this product can reduce the total resistance on hull by up to 10%, thereby contributing to reduction of CO<sub>2</sub> emission. AQUATERRAS received a global award for its innovative technology that achieves both environmentally responsible and efficient vessel operation.

In January 2021, moreover, we launched FASTAR, the next-generation hydrolysis antifouling hull paint that incorporates for the first time a hydrophilic and hydrophobic nanodomain technology, focusing on coating surface control technology, under the concept "Precise, Predictable, Performance."

These low-friction antifouling hull paint products have been continuously developed and provided since 2007, when LF-Sea, the world's first product of this kind, was developed. In 2013, we launched A-LF-Sea, an advanced ultra-fuel-saving antifouling paint for ship bottoms. This type of products has reduced CO<sub>2</sub> emission from global shipping. Our unique low-friction technology, the water trapping technology, won the Minister of the Environment Award in 2019 for its contribution to CO<sub>2</sub> reduction. As of the end of June 2021, low-friction antifouling paint on ship bottoms has been adopted for approximately 3,800 vessels in total.



**Sustainable products (2) Anti-viral paint brand PROTECTON**



In accordance with our mission of protecting people's health and creating a safe and pleasant future, the PROTECTON

brand debuted in September 2020. PROTECTON is a paint technology brand with anti-viral and anti-bacterial functions developed by combining our paint, coatings, and surface treatment technologies. The name implies the function to "PROTECT" people's lives from threats of viruses and bacteria + to turn the function "ON" to the surfaces of all things.

We are developing the PROTECTON brand for deployment across our partner companies in Japan. We have already launched five anti-viral paint products for industrial, DIY, and household use, including PROTECTON Barriex™ Spray released by Nippon Paint Industrial Coatings in July 2021. PROTECTON will produce various types of products in addition to paint products as a product brand with anti-viral and anti-bacterial functions.

**PROTECTON brand proven effective in suppressing novel coronavirus (including its variant): Joint development of new anti-viral nano photocatalyst**

Five PROTECTON products have been proven to be effective in suppressing the novel coronavirus (SARS-CoV-2) and its Alpha variant on coated surfaces. This is based on a joint research project between our Group and the Graduate School of Engineering of the University of Tokyo and the Institute of Medical Science. This is the first time in Japan that anti-viral and anti-bacterial products have been proven to be effective in suppressing the Novel coronavirus

(SARS-CoV-2) and its Alpha variant. We have also developed a new anti-viral nano photocatalyst that suppresses Novel coronavirus and its variant (Alpha variant), and are considering its social implementation by introducing it into new PROTECTON products.

Our Group and the University of Tokyo have jointly conducted research activities on coatings technologies with anti-viral functions and functions to prevent the spread of infections for a sustainable post-COVID-19 society. This is one of the joint research themes under the industry-academia co-creation agreement we concluded on May 18, 2020. Through the collaborative research with them, we will continue to conduct tests to verify the effectiveness of our innovative coatings technologies including anti-viral technology using visible light-responsive photocatalyst in suppressing the SARS-CoV-2 virus under actual conditions of use.

\* The products used for the test are not intended for medical use as a medical product or medical device. The test results do not indicate the effectiveness of these products in preventing infections.

\* These products do not suppress indoor airborne viruses.

