

Achieving a Harmonized Society with Nature

Efforts to Achieve a Harmonized Society with Nature

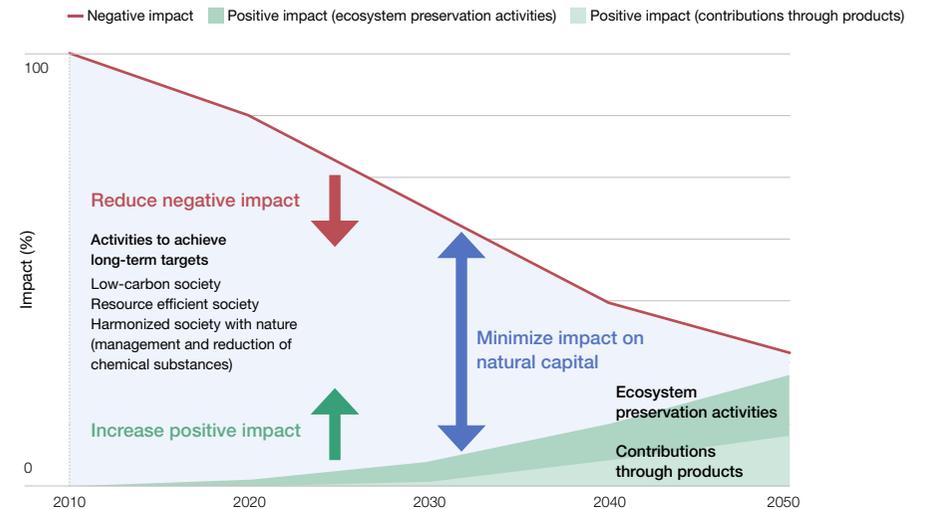
Policy

To adequately preserve the ecosystem and achieve a harmonized society with nature so that we may continue to enjoy nature's benefits, we have established targets to minimize our impact on natural capital as part of our long-term environmental targets. Specifically, we classify our activities into those that have either a negative or positive impact on natural capital with the aim of minimizing any negative impact by 2050.

We perceive our negative impact activities as including the emission of greenhouse gases and chemical substances into the atmosphere and the generation of waste materials. We make a positive impact, meanwhile, by providing products and services that contribute to ecosystem preservation and by undertaking social contribution activities to protect the environment through the preservation of biodiversity and ecosystems.

By classifying Hitachi's activities across the value chain into those with positive and negative impact and then quantifying such impact, we are advancing initiatives to reduce our negative impact and maximize our positive impact.

A Timetable for Minimizing Impact



Initiatives to Minimize Impact on Natural Capital

Hitachi has identified and quantified the negative impact our business activities have on natural capital with the aim of reducing such impact. According to our estimates, approximately 40% of our negative impact in fiscal 2018 was related to climate change, and 20%, respectively, to waste materials, resource consumption, and urban air pollution. These results suggest that we need to further reduce our environmental load to minimize our impact on natural capital, such as by increasing the energy efficiency of our products and services, advancing factory efficiency, using resources more effectively, and properly managing chemical substances. Going forward, we will step up our environmental efforts to achieve our long-term environmental targets for a low-carbon society, a resource efficient society, and a harmonized society with nature.

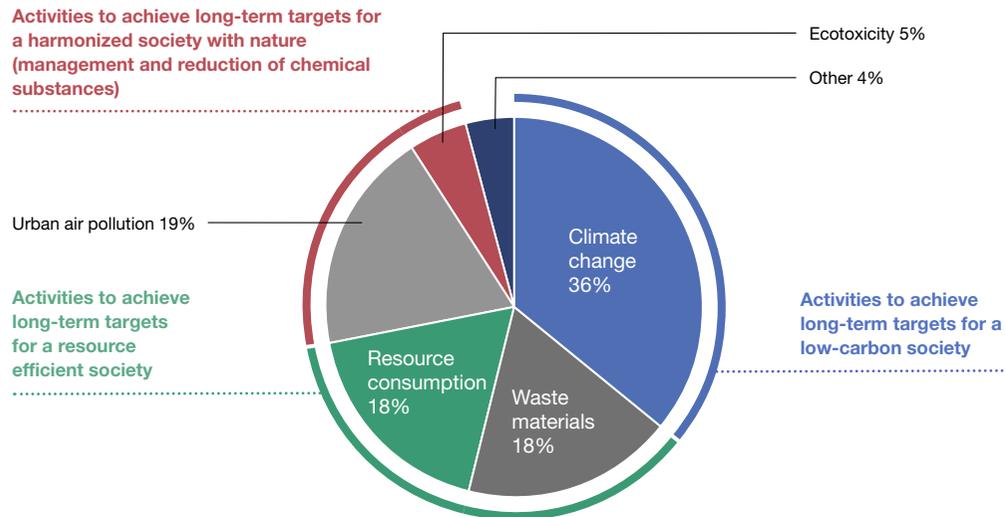
Managing and Reducing Chemical Substances

Frameworks and Systems Objectives, Activities, and Achievements

Managing Chemical Substances

As for our positive impact activities, we have been advancing social contribution activities like forest conservation and business activities that directly contribute to ecosystem preservation, such as building water treatment plants. We are also looking to quantify the impact of these activities. We began such an effort in fiscal 2018 by estimating the benefits gained through forest conservation, which is a major positive impact activity for the Group. We focused on 24 business sites for which forest areas targeted for conservation activities could be ascertained. Using evaluation methods commonly used in forestry public works, we calculated the benefits in terms of flood prevention, water impoundment, water purification, soil loss prevention, and carbon fixation. We will share the results within the Group and continue to promote our activities going forward.

Negative Impact on Natural Capital (FY 2018)



Note: Calculated using version 2 of the Life-cycle Impact Assessment Method based on Endpoint Modeling (LIME2).

 Scope of Negative Impact Calculations

The results of Hitachi's identification of the negative impact on natural capital caused by its business activities in fiscal 2018 showed that around 20% of that impact was urban air pollution. We believe that control and reduction of volatile organic compounds (VOCs), one of the causes of urban air pollution, and other chemical substances are important to minimizing our impact on natural capital.

In fiscal 2005, Hitachi formulated the Regulations for Environmental CSR-Compliant Monozukuri to manage chemical substances at all stages of its operations—from design and development, procurement, and production to quality assurance and shipping. Chemical substances in our products are divided into two categories, prohibited substances and controlled substances, for separate management to respond to legal and regulatory frameworks at shipping destinations. With regard to chemical substances used in our business operations, we reduce risk by assigning three ranks to the use of such substances: prohibited, controlled, and reduced, as well as by educating chemical substance handlers and managers on laws and regulations and on proper risk assessment.

Managing Chemical Substances in Our Products

Hitachi designates the chemical substances in our products requiring management as Voluntarily Controlled Chemical Substances. Within this category, we distinguish between prohibited substances (Level 1), which are basically illegal to use inside and outside Japan in products (including packaging) but which might be found in products from suppliers, and controlled substances (Level 2), which includes substances we are required to track and manage the use of and substances requiring attention to recycling or appropriate disposal methods. The list of managed substances and levels is regularly revised based on updates to Europe's REACH*1 and other regulations.

Because four types of phthalic esters were to be added to the list of restricted substances in Europe's RoHS directive*2 in July 2019, we designated them as prohibited substances in a January

2019 revision. As a result, the list of Voluntarily Controlled Chemical Substances now contains 22 prohibited substances and 22 controlled substances.

*1 REACH: The European Union regulation on Registration, Evaluation, Authorization, and Restriction of Chemicals.

*2 Europe's RoHS directive: The European Union's Restriction of the Use of the Certain Hazardous Substances in Electrical and Electronic Equipment, such as computers, communication devices, and home appliances.



Hitachi Group's Voluntarily Controlled Chemical Substances

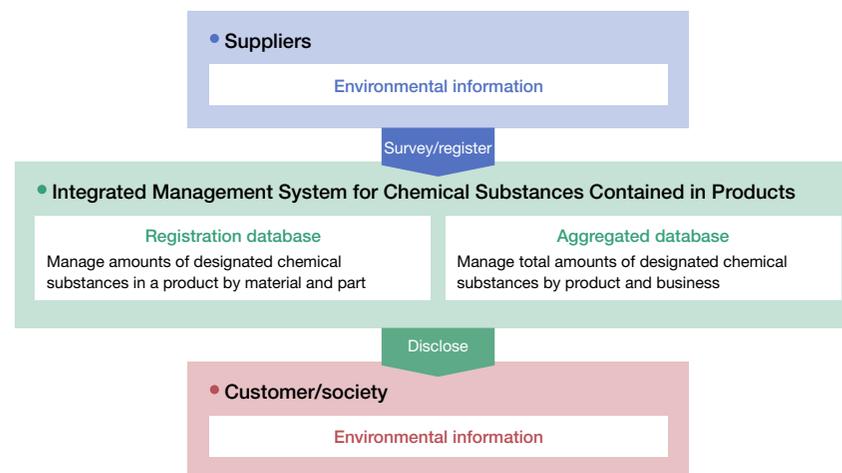
Working with the Supply Chain to Manage Chemical Substances

To ensure that we understand what chemical substances are used in our products—from design and development, procurement, and production to quality assurance and shipping—and to respond to legal and regulatory frameworks at shipping destinations, since fiscal 2005 we have worked with suppliers to gather and manage information on chemical substances in materials, components, and products via the Integrated Management System for Chemical Substances Contained in Products. As of March 31, 2019, chemical substance information for more than 1.54 million parts and products was registered under this integrated management system.

The Integrated Management System for Chemical Substances Contained in Products was upgraded in April 2017 to incorporate the chemSHERPA format.*1 Accordingly, between July 2018 and March 2019, we held 13 briefings on chemSHERPA tools and our system for suppliers using the system at Healthcare Kashiwa, Omika Works, Mito Works, and Hitachi IE Systems. The briefings were attended by approximately 1,500 persons and helped to deepen understanding of these tools.

*1 chemSHERPA: A standard developed by the Japanese Ministry of Economy, Trade, and Industry to facilitate the management of chemical substances in products by creating a shared transmission scheme throughout the supply chain.

Integrated Management System for Chemical Substances Contained in Products



Managing Chemical Substances in Our Business Operations

Since fiscal 2016, we have been cutting emissions of chemical substances from our factories and other sites through stricter management, such as by expanding the number and scope of controlled chemical substances. Initiatives in fiscal 2018 to reduce emissions of chemical substances included switching from paints containing volatile organic compounds (VOCs) to water-soluble and powder paints as well as expanding their use and altering the painting and washing processes. These efforts enabled us to successfully achieve our reduction targets. Information on our efforts has been translated into English and Chinese and shared globally with Hitachi Group members. We also follow legally prescribed procedures in measuring and managing emissions of sulfur oxides (SOx) and nitrogen oxides (NOx),*1 whose measurement is required under the laws and regulations of our business site locations, and are advancing efforts to further restrict emissions.

We comply with Japan's Pollutant Release and Transfer Register (PRTR) Law*2 through Group-wide monitoring of chemical substances released into the atmosphere or into public

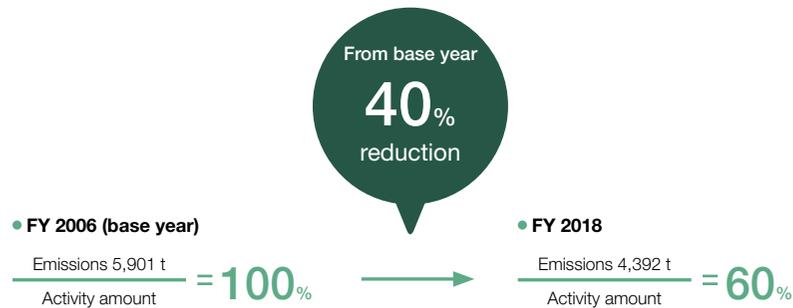
waters, removed outside our plants as waste, or discharged into sewage systems, reporting the results to local governments for each office or plant. Although some substances are exempt from reporting due to their small quantities, our policy is to keep data on the handling, emission, and transfer of all PRTR substances totaling 10 kilograms or more per year, recognizing the need to control these substances as well.

*1 Emissions of SOx and NOx: Calculated by multiplying their concentration and exhaust volume.

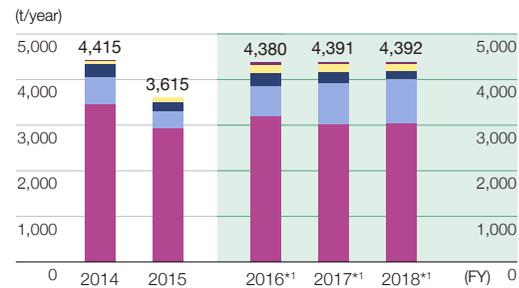
*2 PRTR Law: Act on Confirmation, etc. of Release Amounts of Specific Chemical Substances in the Environment and Promotion of Improvements to the Management Thereof.

Key Indicators

- Reduction in Atmospheric Emissions of Chemical Substances per Unit (Hitachi Group)



- Reducing Atmospheric Emissions of Chemical Substances (Hitachi Group)



Breakdown by Region (t/year)

	(FY)				
	2014	2015	2016* ¹	2017* ¹	2018* ¹
■ Europe	12	9	57	58	64
■ Americas	66	113	187	178	142
■ China	281	199	291	246	184
■ Rest of Asia	604	373	662	899	966
■ Japan	3,452	2,921	3,183	3,010	3,036
Total	4,415	3,615	4,380	4,391	4,392

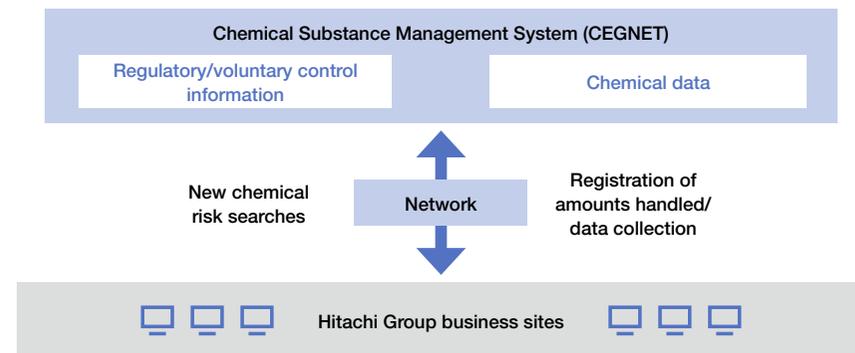
*1 Since fiscal 2016, the scope of controlled chemical substances has been expanded from 41 to 50 substances.

Note: Atmospheric emissions of VOCs and other chemical substances are calculated from the content rate included in the ingredients.

The CEGNET Chemical Substance Management System

To ensure the proper management of chemical substances used in its business operations, Hitachi has operated a database for chemical substance management called CEGNET since 1998 to keep track of the latest laws and regulations and the company's own voluntary regulations.

CEGNET also collects and aggregates data on the amount of chemical substances handled, emitted, and transferred in our operations, helping to reduce the volume of chemicals that we handle.



Reducing Chemical Substances in Our Business Activities

Reducing VOC Usage and Emissions (Hitachi Rail SpA)

Hitachi Rail manufactures technologically advanced rolling stock, ranging from high speed trains to driverless metros. It works metal sub-components, welds car bodies, applies paints, assembles equipment and interiors, and conducts electrical and functional tests.

At the Pistoia and Reggio Calabria Plants in Italy, painting products were switched many years ago to a high-solid paint that emits fewer volatile organic compounds (VOCs), thereby minimizing VOC usage in the production process.

Over the past year, the solvents used for the pre-painting degreasing treatment of metal surfaces were substituted by a new ecological product that is completely VOC-free. VOC usage was further significantly reduced through the adoption of a low-VOC cleaning solvent and solvent-reutilizing equipment for the cleaning of spray guns.

These new technologies have helped reduce total VOC usage in 2018 by about 16 tons compared to 2017, corresponding to a reduction of about 40 % in the total VOCs used at the two plants.



Pre-painting degreasing treatment using a VOC-free solvent.

Reducing VOC Emissions (Hitachi Chemical Group)

The Hitachi Chemical Group produces a diverse array of functional materials and advanced components and systems. This requires the use of around 130,000 tons of chemical substances every year as raw materials for its products and as additives in the production processes. The chemicals used include around 60,000 tons of volatile organic compounds (VOCs) that are the cause of photochemical oxidants and suspended particulate matter.

Hitachi Chemical (Nantong) mainly produces functional resin and chemical raw materials. Nearly 100% of the VOCs volatilized during the production process are detoxified by a combustion deodorizer and then discharged into the atmosphere. In fiscal 2018, its entire plant engaged in Leak Detection and Repair (LDAR) activities to further reduce the emission of VOCs. A simplified VOC measurement device was used to identify leaks from valves and piping joints, and appropriate repairs were made, leading to the detection and suppression of minute VOC emissions that had been overlooked in the past. As a result, atmospheric emissions were reduced by 1.3 tons compared to the previous fiscal year.

Moving forward, efforts will actively be made by the Group as a whole to further limit emissions.

LDAR Activities



Detecting a VOC leak.



Making repairs.

Preserving Ecosystems

Initiatives to Preserve Ecosystems

At Hitachi, we seek to reduce the burden (negative impact) on natural capital caused by business activities and to promote the positive impact, such as by undertaking social contribution activities to protect nature and providing products and services that help preserve the ecosystem, thereby minimizing our impact on natural capital by fiscal 2050 and realizing a harmonized society with nature.

In fiscal 2016 Hitachi created an Ecosystem Preservation Activities Menu citing the specific activities to be undertaken to promote the preservation of the ecosystem, including not only CO₂ emission reductions, resource recycling, and chemical substances management but also activities that are difficult to quantify but are nonetheless important, such as the protection of rare species and efforts to make biodiversity a criterion when making investment decisions. We are encouraging each business site to advance their own initiatives. This menu was created by referencing the pioneering activities of other corporations and organizations and consists of 116 items covering all aspects of our business operations, including the value chain. Each business site selects those activities it will undertake from the menu, and the total number of initiatives becomes the Group's target for ecosystem preservation. Our goal for new initiatives in fiscal 2018 was 600, and 953 were actually launched.

Initiatives based on the Ecosystem Preservation Activities Menu have now become well-established, so no new Group-wide goals will be set for fiscal 2019 and beyond. Rather, ecosystem preservation activities will be advanced in accordance with the goals set by each business site.

Ecosystem Preservation Activities Menu

Category		Activities Taken	Number of Items
Business sites	Production	Reducing use of resources that cannot be reused	4
	Transportation	Using packaging that takes ecosystem into consideration	7
	Collection, disposal, and recycling	Reducing hazardous materials in products	2
	Product planning, development, and design	During R&D, estimating impact on biodiversity during a product's life cycle and implementing, if needed, mitigation measures	3
	Site management	Using native species, setting up biotopes	17
	Water use	Using rainwater	1
Value chain	Investment and acquisition	Confirming impact on biodiversity when investing in or acquiring a business, and implementing measures to minimize such impact	1
	Market entry and expansion	Including biodiversity as an investment criterion	1
	Business development	Developing products and services to purify water, air, and soil and expanding such businesses	1
	Procurement	Preferentially procuring paper and other office supplies that take biodiversity into consideration	17
	Transportation	Implementing ballast water measures during marine transportation	2
	Sales	Implementing sales expansion of products that take biodiversity into consideration	9
	Collection, disposal, and recycling	Reusing and recycling components	7
Entire value chain	Promoting the use of renewable energy	1	
Community	Engagement	Promoting employee activities outside the company	3
	Social contribution	Implementing desert greening and afforestation activities	12
Water use that takes watershed ecosystem into consideration	Water intake	Observing and collecting biota information (impact on ecosystem depending on intake volume)	14
	Water discharge	Setting up biota management indicators and making observations (species and numbers of inhabiting organisms)	14

Promoting Ecosystem Preservation

Tokyo Waterworks—Corporate Forest: Forest Maintenance Activities to Conserve Tokyo’s Water Resources (Water & Environment Business Unit, Hitachi, Ltd.)

Hitachi provides water and sewerage systems and other water environment solutions, and it also promotes forest maintenance activities toward the conservation water resources to ensure supplies of safe and high-quality water. The Tokyo Waterworks—Corporate Forest project is part of the implementation plan for the Water Resource Forest Created by Everyone, an initiative announced by the Tokyo Metropolitan Government Bureau of Waterworks in March 2017 to conserve water resources. Hitachi and other participating companies support this project by carrying out planting, thinning, and other maintenance activities in the water conservation forests along the upper basin of the Tama River. The activities started in June 2017 and are being implemented over a period of three years.

Of the water conservation forests providing water to the Tokyo metropolitan area, Hitachi employees work together to help maintain 3.19 hectares in the city of Koshu, Yamanashi Prefecture, which we have named the Water Resources Forest “Kinopon.”

Participating employees get an opportunity to learn about the history and methods of forest conservation that go back more than 110 years from members of the Tokyo Waterworks Bureau, as well as about the changes that occur through the seasons. Working in the forest enables participants to gain a deeper understanding of water resources and forests and to develop a greater awareness of the environment.



Participants pose next to a sign for the Water Resources Forest “Kinopon.”

Hitachi contributes to the conservation of the environment to ensure safe, stable, and high-quality drinking water by planting trees for the next generation and by protecting and nurturing forests.

“Arakawa Clean Aid” Aimed at Addressing the Problem of Ocean Plastic Waste (Hitachi Building Systems Co., Ltd.)

Hitachi Building Systems supports the activities of the Arakawa Clean Aid Forum, a specified nonprofit organization that promotes cleanup activities along the Arakawa riverbed to restore its rich natural environment. The Arakawa River is one of the major water sources for the Kanto Region, which includes Tokyo.

The Arakawa Clean Aid Forum examines the kinds and volume of trash that are collected to ascertain the causes of litter and to identify amelioration measures with the aim of reducing damage to the ecosystem.

These cleanup activities, organized jointly by the Arakawa Clean Aid Forum and the Ministry of Land, Infrastructure, Transport, and Tourism, are held at more than 100 locations each year and attract a total of more than 10,000 participants.

Hitachi Building Systems initially participated with a handful of employees, but since 2015, when the riverbed cleanup became part of a new employee training program, more than 400 people have participated over several days each year. The cleanup is followed up with group work, including a meeting where the results of analysis and the opinions of participants are reported. Such meetings allow new employees to experience the full meaning and impact of CSR. In 2017 and 2018 Hitachi Building Systems employees accounted for some of the largest volume of trash collected and were honored with awards from the Arakawa Clean Aid Forum.

Much of the plastic waste in the ocean flows in from rivers. Hitachi Building Systems views the riverbed cleanup as contributing directly to resolving this increasingly serious global concern and will continue to support Arakawa Clean Aid in the future.



New employees who participated in Arakawa Clean Aid.

Tree-Planting Activities at Business Sites Outside Japan (Systems & Services Business, Hitachi, Ltd.)

Hitachi Computer Products (America), located in Oklahoma, has been engaging in afforestation activities since 1986. In 1990, the company began cultivating saplings on its grounds and transplanting them around buildings and along roads. Members of the Green 21 Team of employee volunteers led an effort to plant 400 fruit tree saplings in 2018, bringing the total area covered by planted trees to around 15 acres (approximately 60,000 m²). Wildflowers also grow around these trees, creating a habitat for butterflies, bees, and other pollinators. The company plans to continue planting an additional 600 trees over a 3-acre area by 2024.

In addition, the company has been distributing saplings to its employees every year on Oklahoma's Arbor Day, a tree-planting holiday, since 2013, encouraging them to plant the

saplings in their own yards or on company grounds. In 2018, 700 saplings were distributed to 300 employees.

In China, meanwhile, Hitachi Financial Equipment System (Shenzhen) has been taking part in various tree-planting activities since 2009 in response to an appeal made by the municipal government. In 2018, 40 employees and family members planted 50 trees in Zhongshan Park in the Nanshan District, bringing the total number of trees planted through the company's activities to 1,030.

These activities not only contribute to CO₂ absorption and ecosystem preservation but also help to raise environmental awareness among employees and their families.



Trees and wildflowers growing on the grounds of Hitachi Computer Products (America).



The grounds have become a habitat for pollinators like this monarch butterfly.



Employee volunteers from Hitachi Financial Equipment System (Shenzhen) and their family members who took part in tree-planting activities.