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Efforts to Achieve a Resource Efficient Society Approach

The issues of water and resource scarcity, triggered by increasing water demand and population growth—resulting in higher volumes of resources collected, extracted, used, and eventually emitted as waste—are common concerns for the entire world. Uncertainty concerning natural disasters and geopolitical situations is on the rise as well. Hitachi's business operations will respond to these issues by working with our customers and society to help build a society that uses water and other resources efficiently.

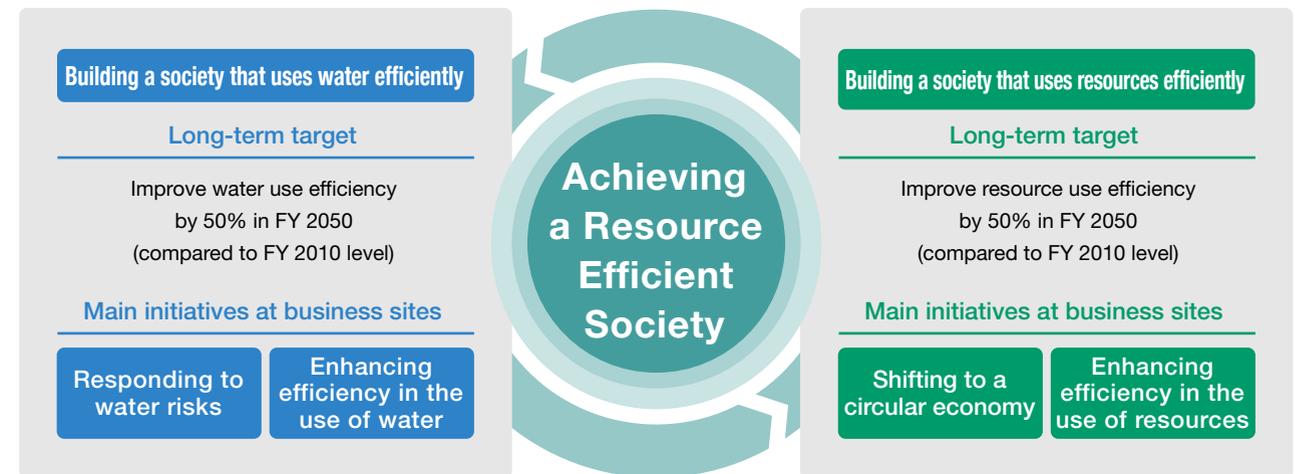
Initiatives in the Value Chain

Hitachi considers the circularity of resources across the value chain to be of key importance, as well as water usage reduction that takes into consideration water risks on a region-by-region basis at each stage of the supply chain. Accordingly, we will optimize water use and wastewater treatment in the supply chain, provide water-efficient products and services, while pushing circular-design initiatives, and develop tools, applications, and services to achieve a circular economy.

Initiatives at Business Sites

We have set a long-term environmental target of improving the usage efficiency of water and other resources by 50% by fiscal 2050 compared to fiscal 2010 levels. We will create higher economic value using less water and other resources and pursue production activities with a low environmental burden.

▶ Initiatives to Achieve a Resource Efficient Society



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Building a Water Efficient Society

Responding to Water Risks

Approach

GRI 303-1/303-2/303-5

Since Hitachi’s exposures to water risks in its businesses vary by region and the type of business, it is important to identify their respective risks and implement countermeasures. To facilitate risk response, we have compiled the procedures for water risk identification and countermeasures into Water Risk Guidelines,^{*1} which are followed by some 140 manufacturing sites around the world that are classified as category A in our environmental management classification.

We use our Environmental Data Collection System (Eco-DS) and various globally recognized tools for water risk assessment as well as region- and operation-specific water risk identification checklists to identify and evaluate the water risks for each business unit and Group company, per country and region, and for the entire Group once a year.

We work to reduce water use according to the characteristics of local communities and businesses, comply with wastewater standards and other water-related regulations, and strengthen water management with the aim of improving efficiency in the use of water by 50%, which we have set as a long-term environmental target.

▶ Identification of Water Risks Using the Environmental Data Collection System (Eco-DS)

	Regional water risks	Operational water risks
Number of evaluation items related to water resources, water quality, water damage, regulations, reputational risk, etc.	Approximately 50	Approximately 70
Risk identification method	Various water risk assessment tools, including Aqueduct, ^{*2} Water Risk Filter, ^{*3} Flood Hazard Map of the World, ^{*4} are combined to identify risks based on the address information	Risks are identified from information such as a business site’s volume of water intake and effluents discharged, and its water-related initiatives
Risk assessment	Assessed using a five-level scale ^{*5} from low to extremely-high	Assessed using a five-level scale from low to extremely high
Risk results	High at 4 sites	Low to medium-high at all sites, including the 4 to the left
No business sites are facing a comprehensively high water risk.		

^{*1} Prepared with reference to *Setting Site Water Targets Informed By Catchment Context* created by members of the UN Global Compact, the CEO Water Mandate, the Pacific Institute, WRI, WWF, and other global institutions with the aim of helping companies set effective site water targets. In fiscal 2021, issued a revised version of Water Risk Guidelines reflecting the revised content of Water Risk Filter 6.0 and with additional examples of measures.

^{*2} A water risk assessment tool developed by the World Resources Institute (WRI).

^{*3} A water risk assessment tool developed by the World Wide Fund for Nature (WWF) and the German Development Finance Institution (DEG)

^{*4} Flood risk maps published by the European Union.

^{*5} Five-level scale: low, low-medium, medium-high, high, extremely-high

Achievements in Fiscal 2021

In fiscal 2021, we assessed the water risks in each region and identified high regional water risks at a total of four business sites operating in India and Vietnam out of manufacturing sites that are classified as category A in our environmental management classification. With this, we then assessed the operational water risks, which were found to be “low to medium-high at all business sites” including the four business sites identified earlier. For this reason, Hitachi does not consider that any of its business sites face a comprehensively high water risk. The water use at the four business sites is 0.3 million m³, accounting for about 1% of the 25.6 million m³ of water used in Hitachi’s main manufacturing processes.

Water Resource Management System

System

Hitachi has set a long-term goal of improving efficiency in the use of water and is carrying out activities in pursuit of this goal at major manufacturing sites that are classified as category A in our environmental management classification. The Water Risk Response Working Group (WG), consisting of members of major business units and Group companies, discusses the formulation of water-related plans and their level of achievement. These are then deliberated on and finalized in the Eco-Management Meetings. Important items related to environmental initiatives, including water risk, are also discussed or decided on by the Senior Executive Committee and presented to the Board of Directors.

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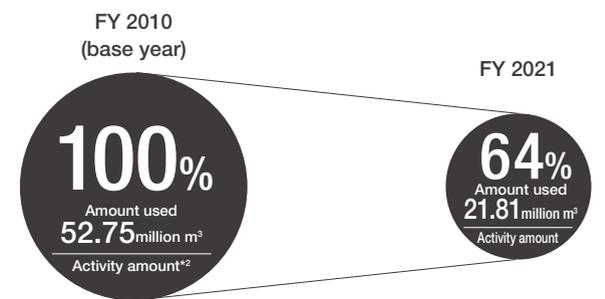
Management of Water Use at Business Sites

Activities

Fiscal 2021 was the final year of the Environmental Action Plan for 2021 (fiscal 2019–2021), which set out a target of a 26% reduction (over the base year of fiscal 2010) for water usage per unit in manufacturing processes. We achieved the target with a 36% reduction. The volume of water used declined by 30.9 million m³, equivalent to 59% from the base year. Our measures to reduce water usage include more stringent management of water intake using flowmeters, leakage control by installing above-ground water pipes, circular use of cooling water, and reuse of purified waste water.

Environmental Action Plan for 2021 Management Values

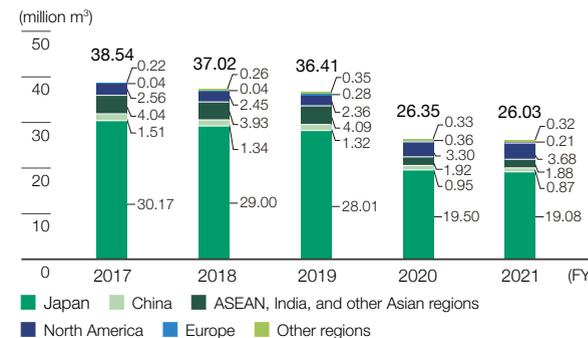
▶ Reduction in Water Usage^{*1} per Unit (Hitachi Group)



Reduction in water usage^{*1} per unit compared to base year **36% reduction**
FY 2021 reduction target: 26%

^{*1} Amount of water used in the manufacturing processes.
^{*2} Activity amount is a value closely related to water use at each business site (for example, output, sales, and production weight).

▶ Water Usage^{*1} (Hitachi Group)



^{*1} The total amount of water input in manufacturing processes and for other purposes, such as in offices.
 Note: In addition to this figure, the fiscal 2021 water inputs of an energy-related company and automotive business companies, which became consolidated subsidiaries in fiscal 2020, were 4.75 million m³/year and 3.91 million m³/year, respectively. The companies' inputs will be incorporated into the Hitachi Group's water input from fiscal 2022.

🔗 **Case Studies of Improving Water Use Efficiency**
<https://www.hitachi.com/environment/casestudy/index.html#case03>

📄 **P069 Environmental Load from Operations**

Products and Services that Contribute to Resolving Water Issues

Activities

Hitachi is committed to contributing to the effective use of limited water resources. We will strive to solve numerous issues faced by customers that are involved in the water supply and sewerage business by combining our track record and know-how of operational technology (OT) and products and services cultivated over many years as a comprehensive water service provider with IT which Hitachi possesses abundant experience and knowledge of in diverse fields.

▶ Hitachi's Water-related Products and Services

Activity field	Products or services (implementation to date)
Creating water resources	Wastewater recycling systems
	Seawater desalination systems
Developing water infrastructure	Water and sewage treatment, etc. (over 200 sites in about 40 countries and regions)
	Water purification plants (approximately 700 plants in Japan)
	Sewage treatment plants (approximately 900 plants in Japan)
	Comprehensive digital solutions for water and sewage treatment operators

We are also engaged in verification tests and joint research with national and local governments, companies, and other organizations in various countries to establish new technologies and systems for the water business. In recent years, we have participated in a verification project for an integrated seawater desalination and water reuse system in the Republic of South Africa, a verification project to optimize the operational planning of water pumps using a virtual power plant in Japan, and joint research on the automation of water purification plant operations through the use of AI.

🔗 **Water Environment Solutions**
https://www.hitachi.com/businesses/infrastructure/product_site/water_environment/index.html

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Building a Society That Uses Resources Efficiently GRI 417-1

Approach to Transitioning to a Circular Economy

Approach

To help build a recycling-oriented society, Hitachi will advance a shift from the conventional linear economy to a circular economy. We strive to realize this goal with a dual approach of pursuing effective and sustainable use of resources and assets in Hitachi’s business activities and achieving the circularity of resources throughout the value chain.

Beyond the issues of the long-term use of products, and the reuse, repair, refurbishment, repurposing, and remanufacturing of products that are no longer needed in the course of our business activities, our customers’ needs are changing from goods to experiences, or from ownership to leasing. Responding to such a society, we will promote the effective use of resources and assets, such as with leasing, pay-per-use systems, subscriptions, products as a service, reuse, and models for sharing. Also, in order to support the business model described above, at the stages of procurement, development, and design we will advance eco-designs. This includes ease of disassembly, adoption of mono-materials, durability, repairability, and resource saving as well as greater use of recycled materials and environmentally friendly materials. Having already been applying Environmentally Conscious Design Assessments and Life Cycle Assessments (LCAs) for newly developed products, we have now set clear goals of achieving 100% implementation and are working to promote it.

With regard to initiatives spanning the value chain, we feel it will be imperative to advance the efforts together with a diverse range of stakeholders on a medium- to long-term basis. For example, if we introduce products as a service, we will not dispose of old products ourselves, rather, we aim to reliably attain circularity by sharing goals and engaging in co-creation with a diverse range of stakeholders in the value chain in order to realize the effective and sustainable use of resources and assets.

Additionally, we will actively promote the research and development involving raw materials, products, tools, applications, and services necessary for this and leverage the advantages of Hitachi’s OT × IT × Products to support the achievement of circularity not only in our value chain, but in our customers’ activities as well.

▶ **Efficient Use of Resources Throughout the Value Chain**



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Management of Waste Generated at Business Sites

Activities

For fiscal 2021, which is the final year of the Environmental Action Plan for 2021 (fiscal 2019–2021), we set a target of a 12% reduction (from a base year of fiscal 2010) for waste and valuables*¹ generated per unit, and bettered this by achieving an 18% reduction. The amount of waste and valuables generated was reduced by 241 kt or 18% compared to the base year. We strived to reduce waste by installing recycling facilities within our business sites as well as through closed-loop recycling, whereby the by-products and scrap from the production process are reused as resources by other business sites, and repeated use of packing and cushioning materials during transport.

Also, we are promoting activities to achieve the goal of the Zero Waste to Landfill*² initiative, which seeks to minimize landfill disposal to realize the ongoing, sustainable utilization of resources we have used, and in fiscal 2021, 64 business sites out of 155 target sites achieved their goals. For hazardous wastes, we collect environmental load data using the Environmental Data Collection System (Eco-DS) to centrally manage the volumes of hazardous wastes generated and exported by type, and to ensure thorough compliance with laws and regulations, as well as proper disposal within the Group.

*1 Waste and valuables: Materials generated through business activities. Each country has a legal definition of waste, and in Japan, the term refers to refuse, bulky refuse, ashes, sludge, excreta, waste oil, waste acid and alkali, carcasses, and other filthy and unnecessary matter, which are in a solid or liquid state according to the Waste Management and Public Cleansing Law. Valuables, meanwhile, are those materials left over after business activities other than waste, and can be sold or transferred free of charge to other parties as items of value.

*2 Zero Waste to Landfill goal: Defined as a final disposal rate (landfill disposal/waste and valuables) of less than 0.5% in any given fiscal year in the Hitachi Group. Pursued in assumed conformance with regulations, conditions, etc.

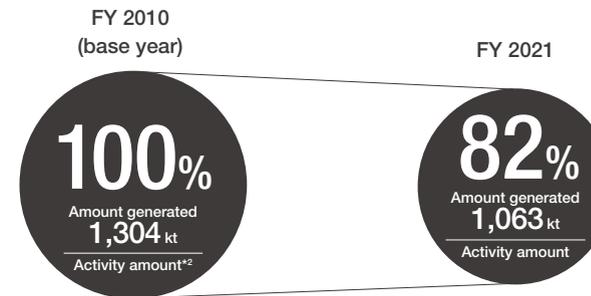
[Sites Achieving Zero Waste to Landfill Goal](http://www.hitachi.com/environment/data/zerolandfill.html)

<http://www.hitachi.com/environment/data/zerolandfill.html>

GRI 306-1/306-2/306-3

Environmental Action Plan for 2021 Management Values

▶ **Reduction in Waste and Valuables Generation*¹ per Unit (Hitachi Group)**

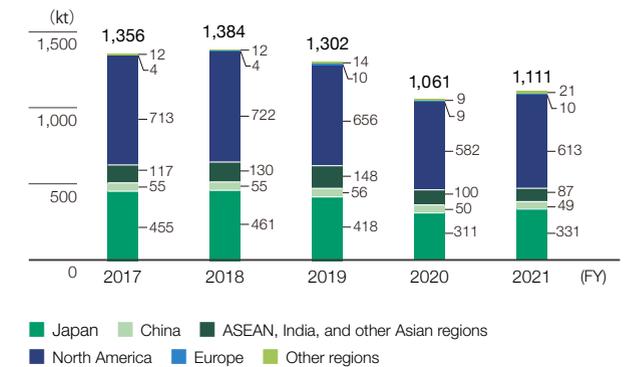


Reduction in waste and valuables generation per unit compared to base year **18% reduction**
FY 2021 reduction target: 12%

*1 Amount of waste and valuables generated from the production process.

*2 Activity amount is a value closely related to waste and valuables generation at each business site (for example, output, sales, and production weight).

▶ **Waste and Valuables Generation*¹ (Hitachi Group)**



*1 The total amount of waste and valuables generated in manufacturing processes plus that generated in offices and other nonmanufacturing businesses.

Note: In addition to this figure, the fiscal 2021 waste and valuables generated by an energy-related company and automotive business companies, which became consolidated subsidiaries in fiscal 2020, were 70,860 t and 58,549 t, respectively. The companies' waste and valuables generated will be incorporated into the Hitachi Group's waste and values generated from fiscal 2022.

P069 Environmental Load from Operations

[Case Studies of Efficient Use of Resources](#)

<https://www.hitachi.com/environment/casestudy/index.html#case04>

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Plastic Recycling Activities

Activities

Hitachi Global Life Solutions, whose plastic consumption accounts for around 70% of the Hitachi Group's total, uses recycled plastic in parts for washing machines and refrigerators and packing materials for ceiling lights. The company procures recycled plastic materials produced within the Hitachi Group using plastic parts recovered from end-of-life home appliances and plastic containers as well as purchasing recycled plastics from materials manufacturers.

While large components in washing machines (such as enclosure bases in the lower parts of units) were previously made with mixtures of new and recycled materials, a switch to almost 100% recycled plastics use has been achieved through the clearing of technical problems and handling of procurement issues.

Hitachi Global Life Solutions works to recycle four categories of end-of-life home appliances (air conditioners, TVs, refrigerators/freezers, and washing machines/dryers) at 19 recycling plants as part of cooperative efforts among five companies*¹ in response to the 2001 Act on Recycling of Specified Home Appliances. A total of 91,130 kt of recyclable materials*² were recovered in fiscal 2021 of which approximately 81,768 kt were recycled. By product type, the recycling rate for refrigerators and freezers was 80%, exceeding the legal requirement of 70% by 10 percentage points, and for washing machines and dryers it was 94%, exceeding the legal requirement of 82% by 12 percentage points.

We are working to strengthen our activities from fiscal 2022 onward with the goal of achieving a 100%*³ effective utilization rate of waste plastics throughout the entire Hitachi Group by fiscal 2030.

*1 Hitachi Global Life Solutions; Sharp Corporation; Sony Corporation; Fujitsu General Limited; and Mitsubishi Electric Corporation.

*2 Parts and materials recovered from four categories of end-of-life home appliances (air conditioners, TVs, refrigerators/freezers, and washing machines/dryers) and recycled through in-house use, selling them, or transferring them free of charge to others who will use them. Data values are aggregated from Hitachi Global Life Solutions and Johnson Controls-Hitachi Air Conditioning.

*3 Effective utilization encompasses material recycling, chemical recycling, and thermal recovery. Pursued in assumed conformance with regulations, conditions, etc.