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Environment Enhancing Environmental Management on an Ongoing Basis

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Hitachi's Approach

To lay the groundwork for strategic environmental management, the Hitachi Group needs to establish and continuously improve systems to reduce the environmental burden of its business operations. Based on a number of certifications and guidelines, including ISO 14001, we have developed Group-wide environmental management systems that allow us to gauge the environmental burden of our business activities and steadily implement a PDCA (plan, do, check, act) cycle to reduce that burden. We also have in place a global environmental management framework, under which we evaluate our environmental activities and keep close track of our environmental performance.

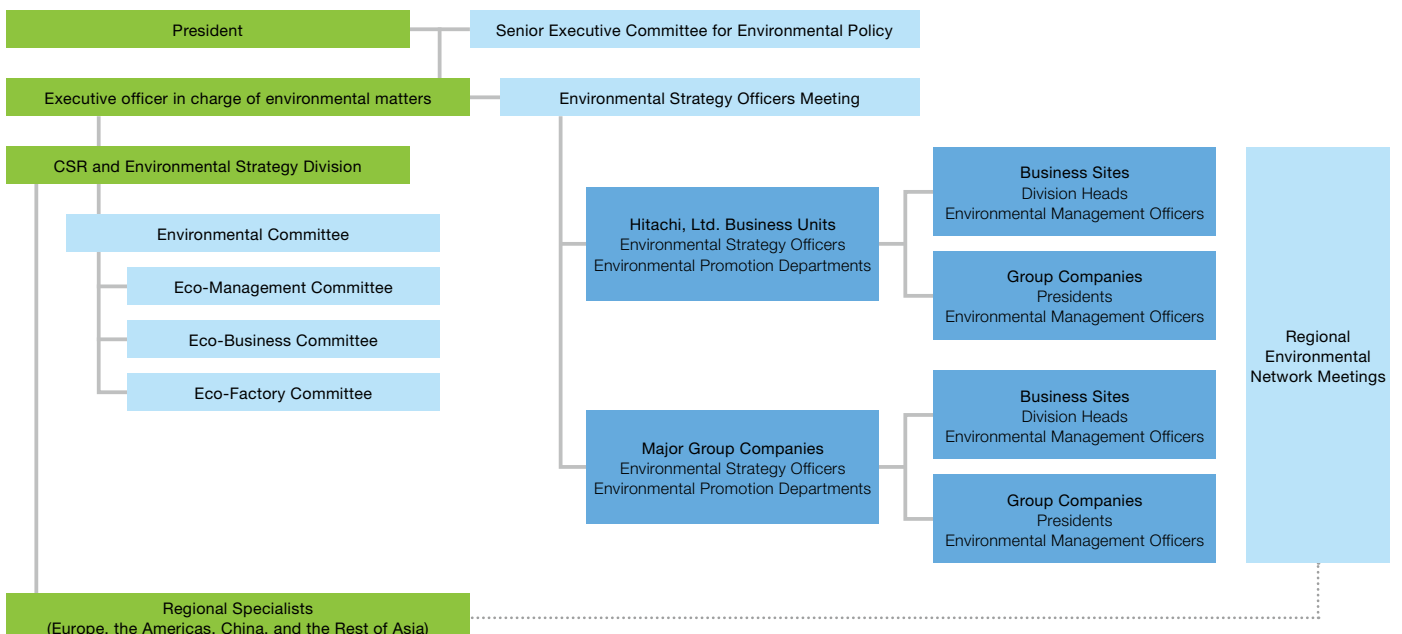
Environmental Management

Environmental Management Framework

Our global environmental management system supports environmental decision making and implementation at Hitachi, Ltd. and 1,056 consolidated subsidiaries (a total of 1,057 companies), as well as 249 equity-method affiliates.

The CSR and Environmental Strategy Division is responsible for developing Group-wide environmental policies. The Senior Executive Committee, which is chaired by the president of Hitachi, Ltd., considers important items related to environmental initiatives. The Environmental Strategy Officers Meeting, comprising representatives from business units and major Group companies, ensures that the Hitachi Group Environmental Action Plan approved by the executive officer in charge of environmental concerns is implemented throughout the Group. The Environmental Committee and committees of working-level experts for each policy area develop targets and ways to achieve them, as well as promote initiatives to be carried out by the Group as a whole. Outside Japan, we assign regional specialists to report on the progress of the Environmental Action Plan and share information on the latest environmental regulations while exchanging views on local environmental issues within each region.

Hitachi's Environmental Management Framework (FY 2016)



Hitachi, Ltd. and 1,056 consolidated subsidiaries (a total of 1,057 companies) and 249 equity-method affiliates.



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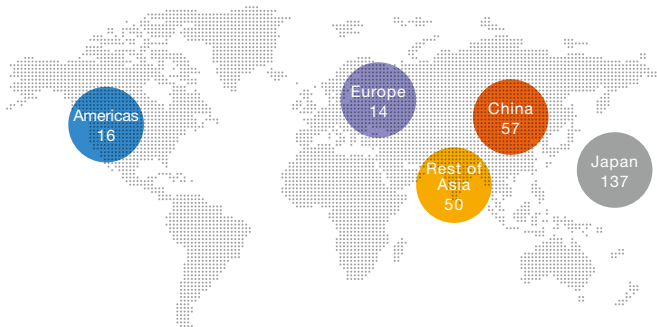
Building Environmental Management Systems

We have established environmental management criteria to ensure efficient management of each business site's environmental load. There are approximately 250 business sites that meet these criteria, and these, together with the CSR and Environmental Strategy Division, have developed and implemented the Hitachi Group Environmental Promotion Organization EMS (environmental management system) to promote the consistent implementation of environmental policies. At the same time, every business site meeting the criteria for environmental management continues to maintain ISO 14001 certification. Certification is also being pursued at business sites that do not yet meet the criteria.

Status of ISO 14001 Certifications (as of April 2016)

	Japan	Outside Japan	Total
Number of Certified Sites**	137	137	274

**1 Including companies with more than one certified business site.



List of ISO 14001-certified sites

Monitoring Environmental Performance Data

For effective environmental management, we collect data on the environmental performance of business operations using the Environmental Load Evaluation System.

This system collects environmental load data from some 250 Hitachi business sites worldwide on items such as energy use, CO₂ emissions, and waste generation, together with information on awards received and other items. By analyzing this information we identify environmental management issues, share instructive examples within the Group, and improve environmental practices. Specifically, we collect and analyze environmental performance data in the key areas of energy, waste materials, water, and volatile organic compounds (VOCs) monthly and quarterly so that performance levels can be further increased.

Environmental Activity Evaluation System

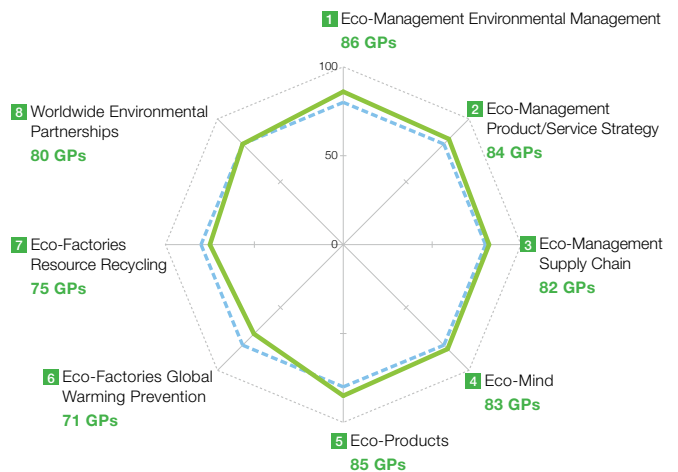
We use our own evaluation system, GREEN 21, to improve the level and quality of our environmental activities. It divides environmental activities into eight categories and evaluates achievements and progress toward Action Plan targets by rating 52 items on a scale from 1 to 5. A perfect score for any category is 100 green points (GPs). We surpassed our fiscal 2015 target of 640 GPs with a score of 646 GPs.

Starting in fiscal 2016, the system was revised to 47 items under six categories. Our aim is to improve our environmental activities based on the target of 240 GPs under the revised system.

Key Indicators

● Green Point (GP) Average: FY 2015 Targets and Results

- FY 2015 target: 640 GPs
- FY 2015 result: 646 GPs



Categories and Evaluation Items

- | | |
|--|---|
| 1 Environmental management, environmental accounting, and compliance with laws and regulations | 5 Assessment of products and services |
| 2 Progress toward goal of reducing CO ₂ emissions; environment business strategies | 6 CO ₂ emission reductions, energy efficiency improvements, and energy savings in transportation |
| 3 Gathering and communicating environmental information across the supply chain | 7 Resource recycling and chemical substances management |
| 4 Environmental education and training of environmental experts | 8 Information disclosure, communication activities, global citizenship activities, and ecosystem preservation |



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Environmental Education Initiatives

Promoting Environmental Education

Promoting greater environmental awareness and understanding among our employees is essential to Hitachi's effort to energize its environmental activities. Toward that end, we are advancing our environmental education. Hitachi Group training is being implemented for all Group employees, starting from newly hired workers to working-level employees. The training covers a wide range of topics, from basic courses to such specific issues as environmental risks and compliance with environment-related laws and regulations.

Actions and Achievements

In fiscal 2015 we provided basic environmental management courses for employees working in air, water, and waste management, as well as training in recent amendments to laws and operational procedures.

In order to respond to the new environmental management standards (ISO 14001) revised in September, during the three-year transition to those standards, explanatory meetings for the internal auditors of the Hitachi Group were held to deepen understanding of the revisions. The meeting held in Japan was attended by 184 internal auditors from 68 Group companies, while 52 internal auditors from 36 Group companies attended the meeting in Chengdu, China. In addition to Hitachi Group training, individual companies and units provide education tailored to their own business area. For general education, we offer Internet-based e-learning courses in Japanese, English, and Chinese. To date 178,035 employees worldwide, equaling 96.4% of target employees, have taken this course.

Environmental Education and Training System

	Target	Introductory	Beginning	Intermediate	Advanced
General education	All employees	Introductory training for new employees	Online e-learning: Eco-Mind education (General topics: Global environmental issues, environmental law, etc.)	Online e-learning: Eco-Mind education (Hitachi Group topics: Environmental policy, Environmental Action Plan, etc.)	
Specialized education	Working-level employees	Basic environmental management course for working-level employees (management of waste; air/water quality; hazardous materials; development & operation of management systems; etc.)			
			Education for Eco-Factories		
			Eco-Product development training		
			Risk communicator training		
	Internal environmental auditors			Brush-up training for ISO 14001	
			ISO 14001 auditor certification training	ISO 14001 senior auditor certification training	

Next Steps

From fiscal 2016, we will continue with environmental education training across all our global operations to enhance the knowledge and skills of staff in charge of factory management. We will also be holding training programs so that we can fully respond to the new standards during the period of transition between the announcement of the revisions to the ISO 14001 Environmental Management Systems in fiscal 2015 and September 2018.

Environmental Compliance

Environmental Compliance Response

Hitachi considers the environmental burden of all business activities and sets voluntary management criteria that are more stringent than regulatory requirements. We regularly monitor water quality, noise levels, and other conditions at each business site and work to minimize environmental risks. In addition, we take every possible step to prevent problems or their recurrence and to strengthen controls by sharing information on environmental laws and regulations, as well as examples of infringements, throughout the Group.

Actions and Achievements

In fiscal 2015, we received a worldwide total of 12 notices concerning water quality, air quality, or waste matter and complaints about noise or odors, all of which were promptly addressed.

Hitachi continues to implement enhanced environmental management in order to prevent repeated or new contamination occurrences.

Global Notices and Complaints

	Water quality	Air quality	Waste matter	Complaints	Other (facilities, etc.)
Fiscal 2015 cases	3	1	1	4	3

To help prevent pollution of soil and groundwater, we are working to complete decontamination of soil and water at business sites where chemical substances have been used or to confirm that they are contamination free. At other business sites, we continue to carry out cleaning and observation activities as needed.



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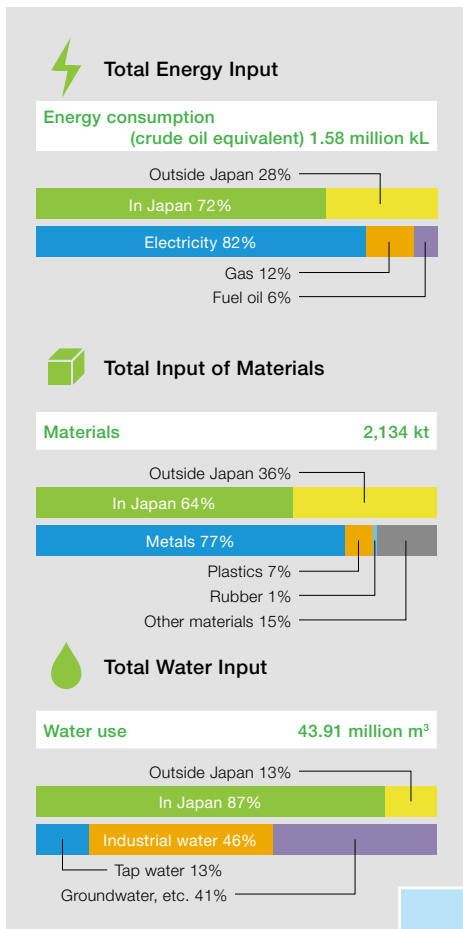
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Environmental Load

Data on Environmental Load from Operations (FY 2015)

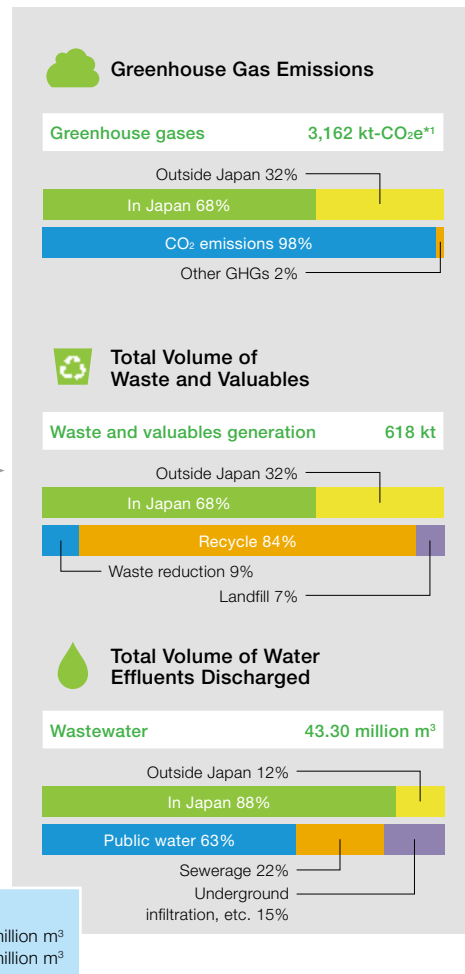
The data below shows the resource inputs and the environmental load for Hitachi Group operations in fiscal 2015.

• Total Input of Resources

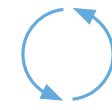


• Total Output of Environmental Load

Products shipped: 3,064 kt (in Japan), 957 kt (outside Japan)



Operations




Water recycling
In Japan: 34.44 million m³
Outside Japan: 2.16 million m³

*1 CO₂e: CO₂ equivalent.

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Detailed Data on Resource Input and Environmental Load Output

Total Input of Resources

Total resources input from Hitachi Group operations.



Total Energy Input

Energy consumption: (crude oil equivalent) 1.58 million kL

		In Japan	Outside Japan
Electricity		3.7 billion kWh (36 PJ)	1.4 billion kWh (14 PJ)
Gas	Natural gas	0.06 billion m ³ (2.7 PJ)	0.05 billion m ³ (2.2 PJ)
	LPG, LNG, etc.	45 kt (2.3 PJ)	11 kt (0.6 PJ)
Fuel oil (heavy oil, kerosene, etc.)		81 thousand kL (3 PJ)	4 thousand kL (0.1 PJ)



Total Input of Materials

Materials: 2,134 kt

		In Japan	Outside Japan
Metals		1,005 kt	633 kt
Plastics		107 kt	42 kt
Rubber		5 kt	15 kt
Other materials		249 kt	78 kt
Chemicals	PRTR substances* ¹ handled	155 kt	22 kt
	Ozone-depleting substances handled	11 t	0 t
	Greenhouse gas substances handled	3,655 t	136 t

*1 PRTR substances: The 462 chemicals designated in Japan's Pollutant Release and Transfer Register (PRTR) Law.



Total Water Input

Water use: 43.91 million m³

	In Japan	Outside Japan
Tap water	4.17 million m ³	1.48 million m ³
Industrial water	17.65 million m ³	2.48 million m ³
Groundwater, etc.	16.41 million m ³	1.72 million m ³


Total Output of Environmental Load

Environmental load output from Hitachi Group operations.



Greenhouse Gas Emissions

Greenhouse gases: 3,162 kt-CO₂e

		In Japan	Outside Japan
CO ₂ emissions 		2,090 kt-CO ₂ e	995 kt-CO ₂ e
Other GHGs	SF ₆ (sulfur hexafluoride)	33 kt-CO ₂ e	23 kt-CO ₂ e
	PFCs (perfluorocarbons)	1 kt-CO ₂ e	3 kt-CO ₂ e
	HFCs (hydrofluorocarbons)	14 kt-CO ₂ e	2 kt-CO ₂ e
	N ₂ O, NF ₃ , CH ₄	1 kt-CO ₂ e	0 kt-CO ₂ e



Total Volume of Waste and Valuables

Waste and valuables generation: 618 kt

		In Japan	Outside Japan
Waste reduction		49 kt	4 kt
Recycling		363 kt	159 kt
	Reuse	2 kt	1 kt
	Materials recycled	351 kt	155 kt
	Thermal recovery	10 kt	3 kt
Landfill		8 kt	35 kt
Chemicals	PRTR substances discharged or transferred	4 kt	0.4 kt
	SO _x (sulfur oxides)	41 thousand Nm ³	9 thousand Nm ³
	NO _x (nitrogen oxides)	262 thousand Nm ³	88 thousand Nm ³
	Ozone-depleting substances emitted	1 t (0t-ODP* ¹)	0 t (0t-ODP)

*1 ODP (ozone depletion potential): A coefficient derived by conversion into equivalent in metric tons of CFC-11 (trichlorofluoromethane).



Total Volume of Water Effluents Discharged

Water effluents discharged: 43.30 million m³

		In Japan	Outside Japan
Public water		26.74 million m ³	0.62 million m ³
Sewerage		5.30 million m ³	4.07 million m ³
Underground infiltration, etc.		5.99 million m ³	0.59 million m ³
Water quality	BOD (biochemical oxygen demand)	210 t	223 t
	COD (chemical oxygen demand)	125 t	607 t



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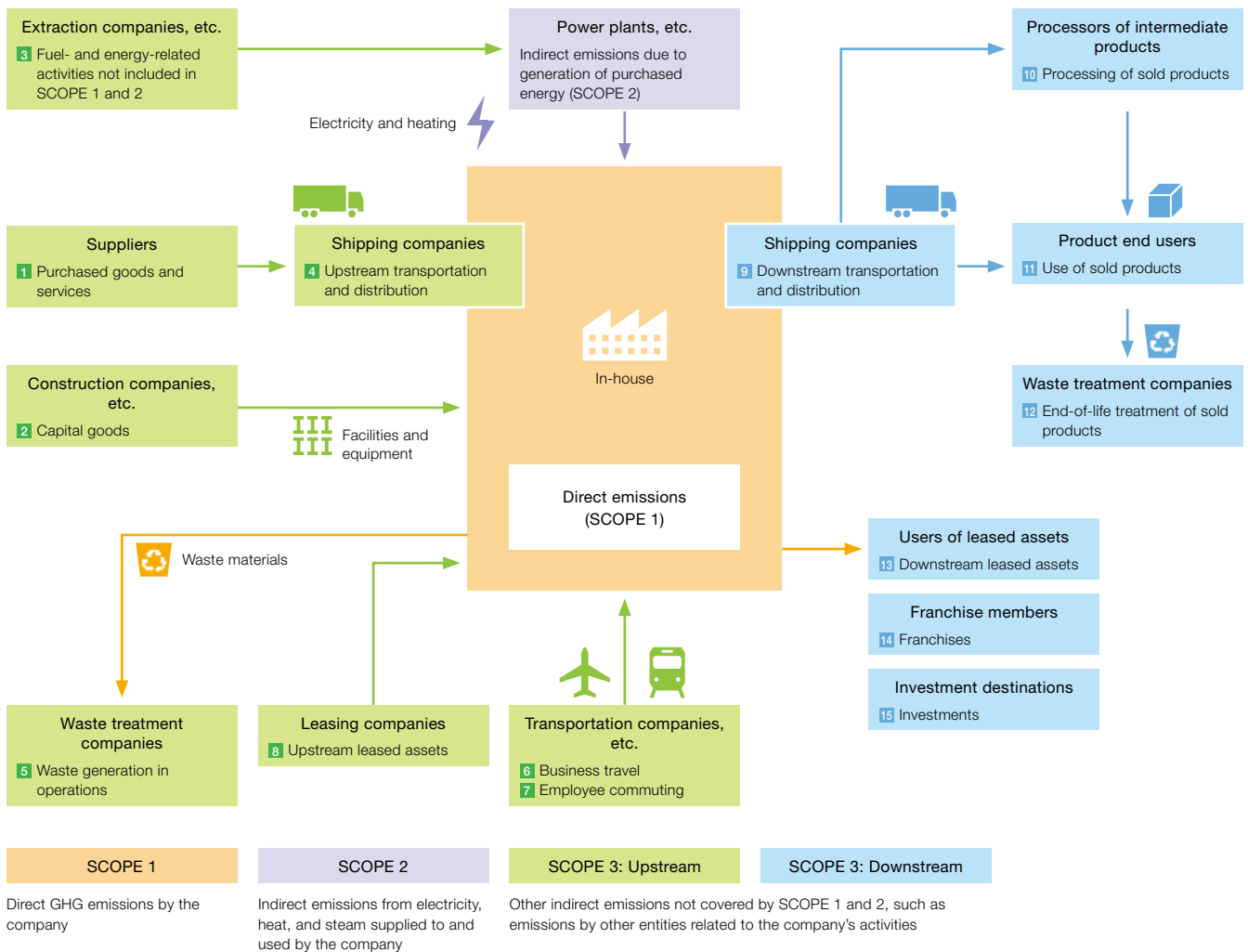
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Environmental Load Through the Value Chain

Calculation of GHG Emissions Throughout the Value Chain

We calculate greenhouse gas (GHG) emissions throughout the entire value chain to more effectively reduce these emissions. As over 90% of emissions come from use of the products we have sold, we worked to reduce emissions by developing Eco-Products that meet environmentally conscious criteria throughout their life cycle.

Categories of GHG Emissions in the Value Chain



In-house: Within the scope of the company's organizational boundaries. In principle, the scope of all business activities of the company itself and activities within or controlled by its consolidated subsidiaries.
 Upstream: In principle, activities related to purchased products and services.
 Downstream: In principle, activities related to sold products and services.



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GHG Emissions Throughout the Hitachi Value Chain

Category	Description	Calculation Results (Mt-CO ₂ e)
SCOPE 1^{*1}		
Direct emissions	Direct emissions from in-house fuel use and industrial processes	0.77 (0.3%)
SCOPE 2^{*2}		
Energy-related indirect emissions	Indirect emissions from production of electricity and heat purchased by the company	2.92 (1.1%)
SCOPE 3: Upstream (other indirect emissions)		
1 Purchased goods and services	Emissions from the resource extraction stage to the manufacturing stage, including raw materials, parts, supplied products, and sales	8.61 (3.2%)
2 Capital goods	Emissions generated in the construction, manufacture, and shipping of the company's own capital goods, such as equipment, devices, buildings, facilities, and vehicles	1.38 (0.5%)
3 Fuel- and energy-related activities not included in SCOPE 1 and 2	Emissions from procuring fuel necessary for electricity and other energy production, including resource extraction, production, and shipping	0.24 (0.1%)
4 Upstream transportation and distribution	Emissions from distribution of raw materials, parts, supplied products, and sales prior to delivery of materials to the company, as well as other distribution activities of products for which the company bears the expense	0.18 (0.1%)
5 Waste generated in operations	Emissions from transportation, disposal, and treatment of waste generated in the company's operations	0.08 (0.0%)
6 Business travel	Emissions generated from fuel and electric power used by employees for business travel	0.07 (0.0%)
7 Employee commuting	Emissions generated from fuel and electric power used in employee commuting	0.07 (0.0%)
8 Upstream leased assets	Emissions from the operation of assets leased by the company, excluding those counted in SCOPE 1 and 2	Included in SCOPE 1 and 2
SCOPE 3: Downstream (other indirect emissions)		
9 Downstream transportation and distribution	Emissions from transportation, storage, loading and unloading, and retail sales of products	0.01 (0.0%)
10 Processing of sold products	Emissions by downstream companies during processing of intermediate products	N/A ^{*3}
11 Use of sold products	Emissions from use of products by end users, such as consumers and businesses	258.23 (94.6%)
12 End-of-life treatment of sold products	Emissions from transportation, waste disposal, and treatment of products by end users, such as consumers and businesses	0.17 (0.1%)
13 Downstream leased assets	Emissions from operating assets owned by the reporting company as lessor and leased to other entities	0.03 (0.0%)
14 Franchises	Emissions by franchises under SCOPE 1 and 2	N/A
15 Investments	Emissions related to management of investments	0.09 (0.0%)
Total		272.85 (100%)

Note: Figures in parentheses are percentages of GHGs emitted throughout the value chain.

*1 Includes SF₆, PFC, HFC, N₂O, NF₃, and CH₄.

*2 The CO₂ electrical power conversion factor used to calculate emissions uses the 2005 emission coefficients for individual countries published by the International Energy Agency (IEA) in the 2010 edition of CO₂ Emissions from Fuel Combustion.

*3 Cannot be determined due to insufficient information on processing.



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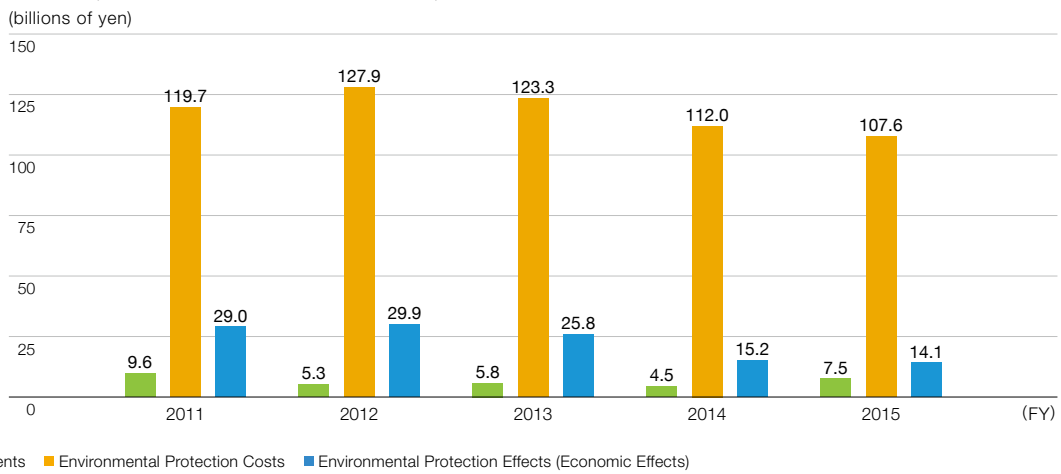
Environmental Accounting

Environmental Accounting

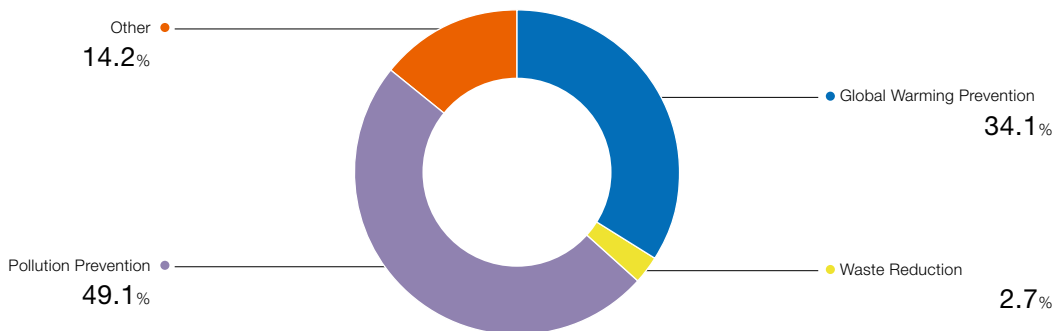
Hitachi has adopted and made public a set of environmental accounting procedures conforming to the Japanese Ministry of the Environment's Environmental Accounting Guidelines 2005. We have used the results of these procedures to raise the efficiency of our environmental investments and activities, more effectively allocating management resources to our ongoing environmental efforts.

Achievements

Environmental Investments, Environmental Protection Costs, and Economic Effects



Fiscal 2015 Environmental Investment by Countermeasure





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Environmental Investments

		Costs (billions of yen)				
	Description	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015
Total investment	Investment in energy-saving equipment and equipment that directly reduces environmental load	9.61	5.28	5.81	4.46	7.50

Environmental Protection Costs

		Costs (billions of yen)				
Item	Description	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015
Expenses						
Business area	Maintenance costs for equipment with low environmental load, depreciation, etc.*1	27.78	31.84	38.63	26.90	24.22
Upstream/downstream	Green procurement expenses, recovery and recycling of products and packaging, recycling expenses	1.43	1.38	1.27	1.09	0.97
Administration	Labor costs for environmental management, implementation and maintenance of environmental management system	8.25	7.67	6.77	6.47	5.97
Research and development	R&D to reduce environmental burden caused by products and production processes, product design expenses	79.81	84.71	75.62	76.12	75.71
Social activities	Planting, beautification, and other environmental improvement expenses	0.45	0.41	0.51	0.36	0.45
Environmental remediation	Environmental mitigation costs, contributions, and charges	1.94	1.90	0.53	1.03	0.27
Total		119.66	127.91	123.33	111.97	107.59

*1 Equipment depreciation costs are calculated using the straight-line method over five years.

Environmental Protection Effects

• Economic Effects*1

		Costs (billions of yen)				
Item	Major FY 2015 Activities	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015
Net income effects	Recovering value from waste by sorting and recycling	13.72	17.85	15.98	7.54	7.27
Reduced expenses effects	Installing high-efficiency equipment (lighting, power supply)	15.27	12.07	9.82	7.65	6.78
Total		28.99	29.92	25.80	15.19	14.05

*1 Economic effects include:

- Net income effects: Benefits with real incomes, including incomes from the sale of resalable materials and incomes from environmental technology patents.
- Reduced expenses effects: Reduction in electricity, waste treatment, and other expenses through environmental load reduction activities.

• Physical Effects*1

		Amount Reduced				
Item	Major FY 2015 Activities	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015
Reduction in energy used during production	Installing LED lighting, upgrading air-conditioning equipment, etc.	93 million kWh	107 million kWh	70 million kWh	68 million kWh	59 million kWh
Reduction in landfilled waste incurred during production	Promoting sale of waste material, reducing volume of liquid waste, recycling, etc.	4,754 t	3,788 t	2,420 t	3,979 t	5,498 t

*1 As with depreciation costs, benefits from equipment investments are calculated using the straight-line method over five years.

• Efficiency of Environmental Load Reduction*1

Item	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015
Efficiency of energy reduction efforts (million kWh/100 million yen)	2.0	1.7	1.3	1.2	1.2
Efficiency of landfilled waste reduction efforts (t/100 million yen)	183	146	95	166.7	194.6

*1 Environmental load reduction divided by reduction costs.