

# Environmental Data

## GHG Emissions Throughout the Value Chain

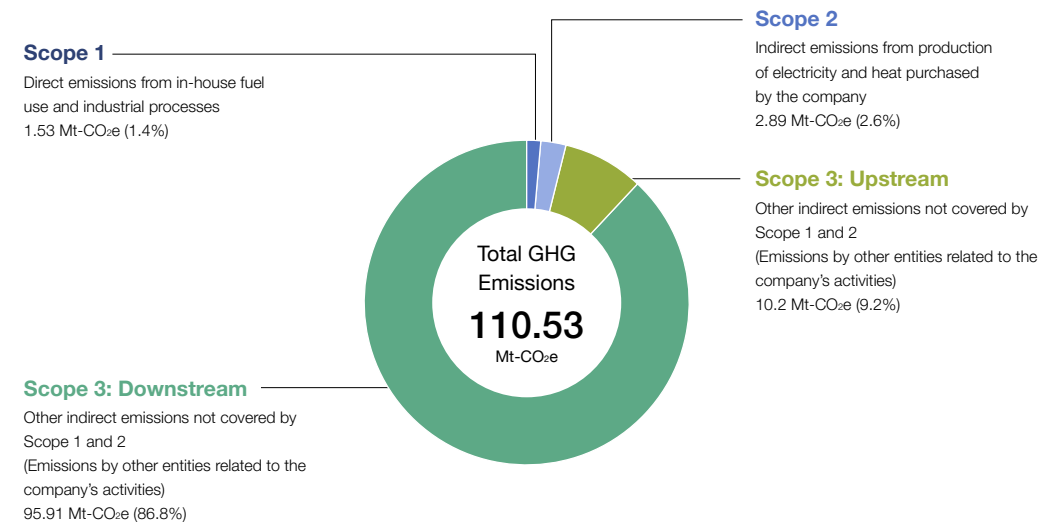
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### Calculating GHG Emissions Throughout the Value Chain (Hitachi Group, FY 2019)

Activities

We calculate greenhouse gas (GHG) emissions throughout the value chain in conformance with GHG Protocol standards. This gives us a good grasp of emission hotspots in our value chain and thereby establish effective targets and reductions measures. CO<sub>2</sub> accounts for almost all of Hitachi's GHG emissions, with there being negligible release of other gases, making it all the more important to focus on CO<sub>2</sub> reduction efforts.

An extremely high share (over 80%) of our value chain emissions comes from the use of the products and services we sell. We thus believe that we can make a major contribution to decarbonization through our business operations by giving priority to enhancing the efficiency and energy-saving features of our products and services.



Detailed Data on GHG Emissions Throughout the Hitachi Value Chain (Hitachi Group, FY 2019) ▶

Greenhouse Gas Emissions ▶

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.

## Environmental Data

## Detailed Data on GHG Emissions Throughout the Hitachi Value Chain (Hitachi Group, FY 2019)

Category	Description	Calculation Results (Mt-CO <sub>2</sub> e)
<b>Scope 1<sup>*1</sup></b>		
Direct emissions	Direct emissions from in-house fuel use and industrial processes	1.53 (1.4%)
<b>Scope 2<sup>*2</sup></b>		
Energy-related indirect emissions	Indirect emissions from production of electricity and heat purchased by the company	2.89 (2.6%)
<b>Scope 3: Upstream (other indirect emissions)</b>		
<b>1</b> Purchased goods and services	Emissions from the resource extraction stage to the manufacturing stage, including raw materials, parts, supplied products, and sales	8.25 (7.5%)
<b>2</b> 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	1.40 (1.3%)
<b>3</b> 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	0.22 (0.2%)
<b>4</b> 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	0.09 (0.1%)
<b>5</b> Waste generated in operations	Emissions from transportation, disposal, and treatment of waste generated in the company's operations	0.12 (0.1%)
<b>6</b> Business travel	Emissions generated from fuel and electric power used by employees for business travel	0.06 (0.0%)
<b>7</b> Employee commuting	Emissions generated from fuel and electric power used in employee commuting	0.06 (0.0%)
<b>8</b> 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
<b>Scope 3: Downstream (other indirect emissions)</b>		
<b>9</b> Downstream transportation and distribution	Emissions from transportation, storage, loading and unloading, and retail sales of products	0.01 (0.0%)
<b>10</b> Processing of sold products	Emissions by downstream companies during processing of intermediate products	N/A <sup>*3</sup>
<b>11</b> Use of sold products <sup>*4</sup>	Emissions from use of products by end users, such as consumers and businesses	95.30 (86.3%)
<b>12</b> End-of-life treatment of sold products <sup>*4</sup>	Emissions from transportation, waste disposal, and treatment of products by end users, such as consumers and businesses	0.49 (0.4%)
<b>13</b> Downstream leased assets	Emissions from operating assets owned by the reporting company as lessor and leased to other entities	0.03 (0.0%)
<b>14</b> Franchises	Emissions by franchises under Scope 1 and 2	N/A
<b>15</b> Investments	Emissions related to management of investments	0.08 (0.1%)
<b>Total</b>		<b>110.53 (100%)</b>

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

\*1 Includes SF<sub>6</sub>, PFC, HFC, N<sub>2</sub>O, NF<sub>3</sub>, and CH<sub>4</sub>. The gas and fuel conversion factor is based on the list of emissions and calculation methods published by Japan's Ministry of the Environment.

\*2 CO<sub>2</sub> emissions were calculated using the 2017 CO<sub>2</sub> electrical power conversion factor for world countries (in CO<sub>2</sub> per kWh) in the *Emission Factors* (2019 edition), published by the International Energy Agency (IEA).

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


\*4 CO<sub>2</sub> emissions per unit is based on the Inventory Database for Environmental Analysis (IDEA), developed by the National Institute of Advanced Industrial Science and Technology (AIST) and the Japan Environmental Management Association for Industry (JEMAI).

# Environmental Load from Operations

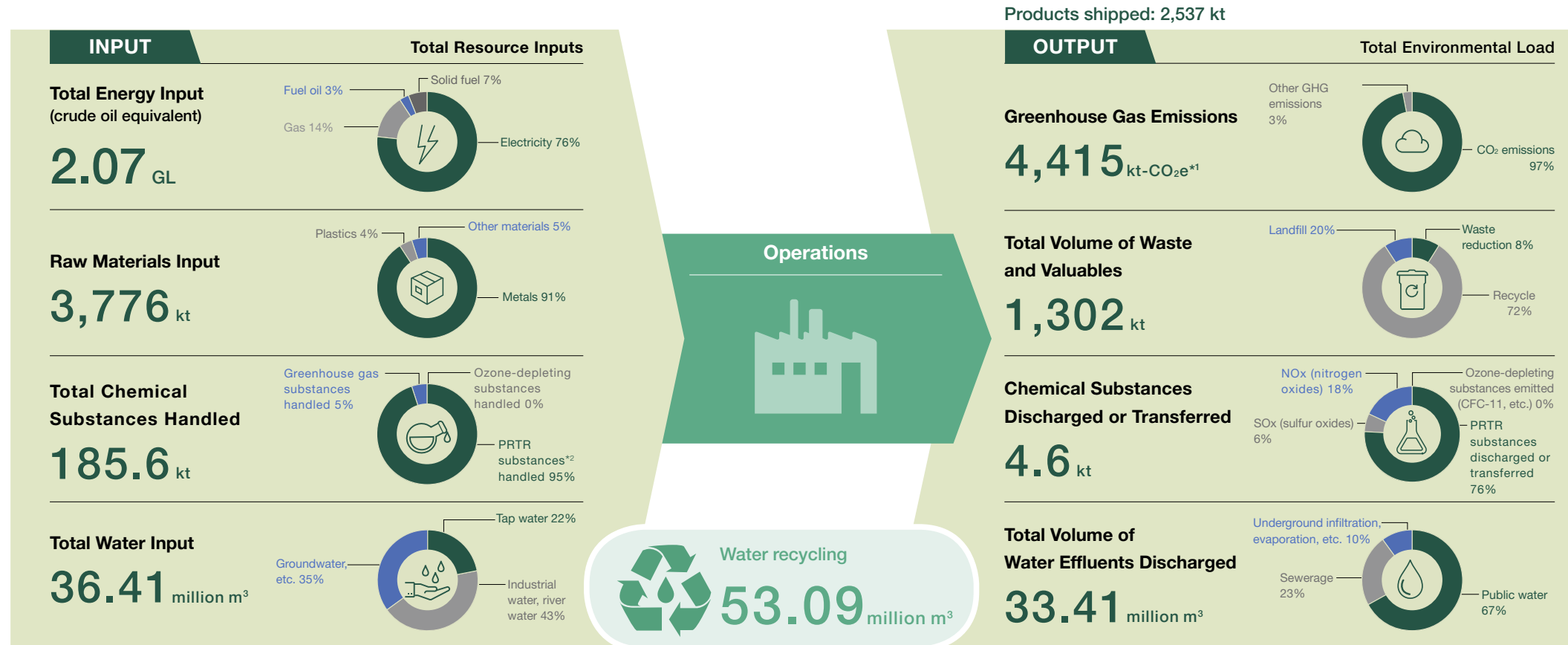
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## Overview of the Environmental Load from Business Operations (Hitachi Group, FY 2019)

Activities

 Detailed Data on Resource Input and Environmental Load Output ▶

The following is an outline of total resource inputs (energy, raw materials, etc.) and the environmental load (greenhouse gas emissions, waste generation, etc.) of Hitachi Group operations during fiscal 2019.



\*1 CO₂e: CO₂ equivalent.

\*2 PRTR substances: The 462 chemicals designated in Japan's Pollutant Release and Transfer Register (PRTR) Law.

## Detailed Data on Resource Input and Environmental Load Output

Activities

## Energy Inputs and GHG Emissions During Business Operations

The following is an outline of the energy consumed during Hitachi's business operations and the part of our environmental load consisting of greenhouse gas (GHG) emissions.

Total Energy Inputs		FY 2015	FY 2016	FY 2017	FY 2018	FY 2019
Renewable energy	Electricity	3.9 GWh (39 TJ)	2.9 GWh (29 TJ)	3.2 GWh (11.2 TJ)	7.1 GWh (25.6 TJ)	18.0 GWh (64.8 TJ)
Non-renewable energy	Electricity	5,111 GWh (49.7 PJ)	5,903 GWh (57.4 PJ)	6,020 GWh (58.4 PJ)	6,021 GWh (58.4 PJ)	5,992 GWh (58.2 PJ)
	For heating	—	—	130 GWh (2.7 PJ)	128 GWh (2.6 PJ)	128 GWh (2.6 PJ)
	For cooling	—	—	277 GWh (1.3 PJ)	273 GWh (1.3 PJ)	273 GWh (1.3 PJ)
	To generate steam	—	—	644 t (41.7 TJ)	648 t (41.9 TJ)	648 t (41.9 TJ)
	Gas					
	Natural gas	0.11 billion m <sup>3</sup> (4.9 PJ)	0.18 billion m <sup>3</sup> (8.1 PJ)	0.19 billion m <sup>3</sup> (8.6 PJ)	0.18 billion m <sup>3</sup> (8.4 PJ)	0.15 billion m <sup>3</sup> (7.0 PJ)
	For heating	—	—	18.4 million m <sup>3</sup> (0.9 PJ)	18.6 million m <sup>3</sup> (0.9 PJ)	18.6 million m <sup>3</sup> (0.9 PJ)
	For cooling	—	—	10.3 million m <sup>3</sup> (0.5 PJ)	10.5 million m <sup>3</sup> (0.5 PJ)	10.5 million m <sup>3</sup> (0.5 PJ)
	To generate steam	—	—	560 kt (2.0 PJ)	567 kt (2.0 PJ)	566 kt (2.0 PJ)
	LPG, LNG, etc.	74 kt (4.1 PJ)	241 kt (13.0 PJ)	269 kt (14.5 PJ)	251 kt (13.5 PJ)	150 kt (8.0 PJ)
	Fuel oil (heavy oil, kerosene, etc.)	84 ML (3.2 PJ)	149 ML (5.6 PJ)	117 ML (4.5 PJ)	87 ML (3.3 PJ)	75 ML (2.1 PJ)
	Solid fuel (coke)	0.008 kt (0.0 PJ)	173 kt (5.2 PJ)	179 kt (5.4 PJ)	188 kt (5.5 PJ)	162 kt (4.8 PJ)
Total energy consumption (crude oil equivalent)		61.9 PJ (1.58 GL)	89 PJ (2.30 GL)	91 PJ (2.35 GL)	88 PJ (2.27 GL)	80 PJ (2.07 GL)

Greenhouse Gas Emissions		FY 2015	FY 2016	FY 2017	FY 2018	FY 2019
CO <sub>2</sub> emissions		4,346 kt-CO <sub>2</sub>	5,322 kt-CO <sub>2</sub>	5,433 kt-CO <sub>2</sub>	4,973 kt-CO <sub>2</sub>	4,374 kt-CO <sub>2</sub>
Other GHGs	SF <sub>6</sub> (sulfur hexafluoride)	56 kt-CO <sub>2</sub> e	37 kt-CO <sub>2</sub> e	40 kt-CO <sub>2</sub> e	35 kt-CO <sub>2</sub> e	24 kt-CO <sub>2</sub> e
	PFCs (perfluorocarbons)	4 kt-CO <sub>2</sub> e	4 kt-CO <sub>2</sub> e	4 kt-CO <sub>2</sub> e	5 kt-CO <sub>2</sub> e	4 kt-CO <sub>2</sub> e
	HFCs (hydrofluorocarbons)	16 kt-CO <sub>2</sub> e	19 kt-CO <sub>2</sub> e	7 kt-CO <sub>2</sub> e	3 kt-CO <sub>2</sub> e	3 kt-CO <sub>2</sub> e
	N <sub>2</sub> O, NF <sub>3</sub> , CH <sub>4</sub> (dinitrogen monoxide, nitrogen trifluoride, methane)	1 kt-CO <sub>2</sub> e	2 kt-CO <sub>2</sub> e	1 kt-CO <sub>2</sub> e	3 kt-CO <sub>2</sub> e	2 kt-CO <sub>2</sub> e
	CO <sub>2</sub> from non-energy sources	6 kt-CO <sub>2</sub>	3 kt-CO <sub>2</sub>	3 kt-CO <sub>2</sub>	7 kt-CO <sub>2</sub>	8 kt-CO <sub>2</sub>
Total GHGs		4,429 kt-CO <sub>2</sub> e	5,387 kt-CO <sub>2</sub> e	5,488 kt-CO <sub>2</sub> e	5,026 kt-CO <sub>2</sub> e	4,415 kt-CO <sub>2</sub> e

Notes: • Starting from fiscal 2019's calculations, Scope 2 emissions were changed from a calculation method using a unified Group-wide electrical power conversion factor to a market-based calculation method, and past data was recalculated based on this. Regarding CO<sub>2</sub> electrical power conversion factors: in Japan (including power plants), adjusted conversion factors for individual power businesses based on the Act on Promotion of Global Warming Countermeasures are used; overseas, the latest values for each fiscal year supplied by the International Energy Agency (IEA) as conversion factors for individual countries are used.

• The gas and fuel oil conversion factor is based on the list of emissions and calculation methods published by Japan's Ministry of the Environment.

## Raw Material Inputs and Waste and Valuables Generation During Business Operations

The following is an outline of the raw materials used during Hitachi's business operations and the part of our environmental load consisting of waste and valuables generation.

Raw Material Inputs		FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	
Raw materials	Metals	1,638 kt	2,710 kt	3,388 kt	4,031 kt	3,454 kt	
		New materials	—	1,497 kt	1,571 kt	1,624 kt	1,372 kt
		Recycled materials, etc.	—	1,213 kt	1,817 kt	2,407 kt	2,082 kt
	Plastics	149 kt	169 kt	151 kt	165 kt	147 kt	
		New materials	—	167 kt	150 kt	163 kt	143 kt
		Recycled materials, etc.	—	2 kt	1 kt	2 kt	4 kt
	Other materials	347 kt	314 kt	258 kt	207 kt	175 kt	
		New materials	—	308 kt	250 kt	201 kt	173 kt
		Recycled materials, etc.	—	6 kt	8 kt	6 kt	2 kt
<b>Total raw materials</b>		<b>2,134 kt</b>	<b>3,193 kt</b>	<b>3,797 kt</b>	<b>4,403 kt</b>	<b>3,776 kt</b>	

Total Volume of Waste and Valuables		FY 2015	FY 2016	FY 2017	FY 2018	FY 2019
Waste reduction		53 kt	68 kt (0.4 kt)	83 kt (9.0 kt)	94 kt (5.6 kt)	101 kt (17.5 kt)
Recycling	Reuser	3 kt	1 kt (0.4 kt)	1 kt (0.4 kt)	1 kt (0.0 kt)	5 kt (2.2 kt)
	Materials recycled	506 kt	1,001 kt (21.5 kt)	1,038 kt (20.2 kt)	1,044 kt (25.6 kt)	919 kt (25.3 kt)
	Thermal recovery	13 kt	12 kt (2.4 kt)	11 kt (1.4 kt)	13 kt (1.4 kt)	21 kt (4.9 kt)
Landfill		43 kt	254 kt (2.0 kt)	223 kt (5.2 kt)	232 kt (3.7 kt)	256 kt (6.1 kt)
<b>Total waste and valuables generation</b>		<b>618 kt</b>	<b>1,336 kt</b>	<b>1,356 kt</b>	<b>1,384 kt</b>	<b>1,302 kt</b>
Nonhazardous (hazardous*)		—	1,309 kt (27 kt)	1,320 kt (36 kt)	1,348 kt (36 kt)	1,246 kt (56 kt)

\*1 Figures in parentheses are the generation of waste defined as hazardous under the Basel Convention.

## Inputs, Discharges, and Transfers of Chemical Substances During Business Operations

The following is an outline of the chemical substances handled during Hitachi's business operations and the part of our environmental load consisting of chemical substance discharges and transfers.



Chemical Substances Handled	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019
PRTR substances handled	177 kt	190 kt	205 kt	189 kt	177 kt
Ozone-depleting substances handled	11 t	208 t	77 t	130 t	62 t
Greenhouse gas substances handled	3,791 t	3,425 t	5,656 t	5,640 t	8,520 t
<b>Total chemicals handled</b>	<b>180.8 kt</b>	<b>193.6 kt</b>	<b>210.7 kt</b>	<b>194.8 kt</b>	<b>185.6 kt</b>



Chemical Substances Discharged or Transferred	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019
PRTR substances discharged or transferred	4.4 kt	4.5 kt	4.3 kt	4.1 kt	3.5 kt
SOx (sulfur oxides)	144 t	290 t	297 t	274 t	255 t
NOx (nitrogen oxides)	719 t	1007 t	931 t	929 t	822 t
Ozone-depleting substances emitted (CFC-11, etc.)	1 t (0 t-ODP*)	1 t (0 t-ODP)	1 t (0 t-ODP)	1 t (0 t-ODP)	2 t (0 t-ODP)
<b>Total Discharges and Transfers</b>	<b>5.3 kt</b>	<b>5.8 kt</b>	<b>5.5 kt</b>	<b>5.3 kt</b>	<b>4.6 kt</b>

Note: Includes a materials company that became a reporting company in fiscal 2016.

\*1 ODP (ozone depletion potential): A coefficient indicating the extent to which a chemical compound may cause ozone depletion relative to the depletion for CFC-11 (trichlorofluoromethane, ODP = 1.0). The conversion factor uses the ODP and global warming potential of Japan's Ministry of the Environment.

## Water Inputs and Effluent Discharges During Business Operations

The following is an outline of the total water resources used during Hitachi's business operations and the part of our environmental load consisting of effluent discharges.



Total Water Inputs		FY 2015	FY 2016	FY 2017	FY 2018	FY 2019
Surface water	Tap water (water for drinking and other household uses)	5.65 million m <sup>3</sup>	7.77 million m <sup>3</sup>	7.40 million m <sup>3</sup>	7.61 million m <sup>3</sup>	7.95 million m <sup>3</sup>
	Industrial water, river water	20.13 million m <sup>3</sup>	18.41 million m <sup>3</sup>	17.46 million m <sup>3</sup>	16.63 million m <sup>3</sup>	15.58 million m <sup>3</sup>
Groundwater		18.13 million m <sup>3</sup>	14.92 million m <sup>3</sup>	13.56 million m <sup>3</sup>	12.74 million m <sup>3</sup>	12.84 million m <sup>3</sup>
Rain water		0.00 million m <sup>3</sup>	0.03 million m <sup>3</sup>	0.02 million m <sup>3</sup>	0.01 million m <sup>3</sup>	0.02 million m <sup>3</sup>
Recycled water (recycled from the wastewater of other organizations)		0.00 million m <sup>3</sup>	0.21 million m <sup>3</sup>	0.10 million m <sup>3</sup>	0.03 million m <sup>3</sup>	0.02 million m <sup>3</sup>
<b>Total water use</b>		<b>43.91 million m<sup>3</sup></b>	<b>41.34 million m<sup>3</sup></b>	<b>38.54 million m<sup>3</sup></b>	<b>37.02 million m<sup>3</sup></b>	<b>36.41 million m<sup>3</sup></b>




Total Volume of Water Effluents Discharged		FY 2015	FY 2016	FY 2017	FY 2018	FY 2019
Public water		27.36 million m <sup>3</sup>	26.16 million m <sup>3</sup>	23.12 million m <sup>3</sup>	22.44 million m <sup>3</sup>	22.46 million m <sup>3</sup>
Sewerage		9.37 million m <sup>3</sup>	8.93 million m <sup>3</sup>	8.62 million m <sup>3</sup>	8.18 million m <sup>3</sup>	7.74 million m <sup>3</sup>
Underground infiltration, evaporation, etc.		6.58 million m <sup>3</sup>	3.68 million m <sup>3</sup>	3.39 million m <sup>3</sup>	3.48 million m <sup>3</sup>	3.21 million m <sup>3</sup>
<b>PRTR</b>		<b>43.30 million m<sup>3</sup></b>	<b>38.77 million m<sup>3</sup></b>	<b>35.13 million m<sup>3</sup></b>	<b>34.10 million m<sup>3</sup></b>	<b>33.41 million m<sup>3</sup></b>
Total water effluents discharged	BOD (biochemical oxygen demand)	433 t	346 t	392 t	390 t	209 t
	COD (chemical oxygen demand)	732 t	531 t	617 t	1,701 t	413 t <sup>*1</sup>

\*1 The fiscal 2019 figure excludes business sites (which accounted for around 60% of demand the previous year) from which data collection has been hampered due to the spread of COVID-19.

## Environmental Load by Region

### Achieving a Decarbonized Society

Activities

CO <sub>2</sub> Emissions by Region (Hitachi Group) 	(kt-CO <sub>2</sub> /year)				
	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019
Europe	7	10	16	15	30
Americas	375	1,454* <sup>1</sup>	1,519* <sup>1</sup>	1,343* <sup>1</sup>	1,228* <sup>1</sup>
China	211	265	283	236	286
Rest of Asia (excluding China and Japan)	402	470	499	540	572
Japan	2,541	2,392	2,377	2,285	2,030
Power plants* <sup>2</sup>	810	732	739	554	228
<b>Total</b>	<b>4,346</b>	<b>5,322</b>	<b>5,433</b>	<b>4,973</b>	<b>4,374</b>

\*<sup>1</sup> Includes 1,070 kt-CO<sub>2</sub> (fiscal 2016), 1,163 kt-CO<sub>2</sub> (fiscal 2017), 1,112 kt-CO<sub>2</sub> (fiscal 2018), and 950 kt-CO<sub>2</sub> (fiscal 2019) emitted by a materials company that became a reporting company in fiscal 2016.

\*<sup>2</sup> Emissions by power plants selling electricity in Japan were retroactively added to total CO<sub>2</sub> emissions in fiscal 2017.

- Notes:
- Starting from fiscal 2019's calculations, Scope 2 emissions were changed from a calculation method using a unified Group-wide electrical power conversion factor to a market-based calculation method, and past data was recalculated based on this. Regarding CO<sub>2</sub> electrical power conversion factors: in Japan (including power plants), adjusted conversion factors for individual power businesses based on the Act on Promotion of Global Warming Countermeasures are used; overseas, the latest values for each fiscal year supplied by the International Energy Agency (IEA) as conversion factors for individual countries are used.
  - Energy-related CO<sub>2</sub> emissions in fiscal 2019 were 1,489 kt-CO<sub>2</sub> (Scope 1) and 2,885 kt-CO<sub>2</sub> (Scope 2).

### Achieving a Resource Efficient Society

Activities

Water Usage by Region (Hitachi Group)	(million m <sup>3</sup> /year)				
	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019
Europe	0.01	0.02	0.04	0.04	0.28
Americas	0.89	3.09* <sup>1</sup>	2.78* <sup>1</sup>	2.71* <sup>1</sup>	2.68* <sup>1</sup>
China	1.22	1.51	1.51	1.34	1.39
Rest of Asia (excluding China and Japan)	3.56	4.00	4.04	3.93	4.05
Japan	38.23	32.72	30.17	29.00	28.01
<b>Total</b>	<b>43.91</b>	<b>41.34</b>	<b>38.54</b>	<b>37.02</b>	<b>36.41</b>

\*<sup>1</sup> Includes water used by a materials company that became a reporting company in fiscal 2016 (2.12 million m<sup>3</sup>/year in fiscal 2016, 1.91 million m<sup>3</sup>/year in fiscal 2017, and 1.92 million m<sup>3</sup>/year in fiscal 2018).



## Environmental Data

Waste and Valuables Generation by Region (Hitachi Group)					
	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019
Europe	1	2	4	4	10
Americas	63	744*1	725*1	734*1	670*1
China	36	48	55	55	58
Rest of Asia (excluding China and Japan)	98	107	117	130	146
Japan	420	435	455	461	418
<b>Total</b>	<b>618</b>	<b>1,336</b>	<b>1,356</b>	<b>1,384</b>	<b>1,302</b>

\*1 Includes 675 kt (fiscal 2016), 675 kt (fiscal 2017), 689 kt (fiscal 2018), and 601 kt (fiscal 2019) of a materials company that became a reporting company in fiscal 2016.

## Achieving a Harmonized Society with Nature

Activities

Atmospheric Emissions of Chemical Substances by Region (Hitachi Group)					
	FY 2015	FY 2016*1	FY 2017*1	FY 2018*1	FY 2019*1
Europe	9	57	58	64	57
Americas	113	187	178	142	215
China	199	291	246	184	125
Rest of Asia (excluding China and Japan)	373	662	899	966	792
Japan	2,921	3,183	3,010	3,036	2,697
<b>Total</b>	<b>3,615</b>	<b>4,380</b>	<b>4,391</b>	<b>4,392</b>	<b>3,886</b>

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

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

## Environmental Management Data

### Number of ISO 14001 Certified Companies\*1 (Hitachi Group, as of April 30, 2020)

Activities

	FY 2019
Europe	15
Americas	14
China	45
Rest of Asia (excluding China and Japan), etc.	42
Japan	82
<b>Total</b>	<b>198</b>

\*1 Companies with at least one certified business site.

### Number of Regulatory Violations and Complaints

Activities

		306-3		307-1		
		FY 2015	FY 2016	FY 2017	FY 2018	FY 2019
Regulatory violations	Water quality	3	1	3	4	4
	Air quality	1	2	1	2	0
	Waste matter	1	1	0	3	0
	Other (equipment registration, etc.)	3	2	4	4	1
Complaints		4	6	5	3	5

## Environmental Accounting

Activities

Environmental Investments		(billions of yen)				
		FY 2015	FY 2016	FY 2017	FY 2018	FY 2019
Total investment	Investment in energy-saving equipment and equipment that directly reduces environmental load	7.50	5.12	10.99	9.86	9.71

Environmental Protection Costs		(billions of yen)				
Items		FY 2015	FY 2016	FY 2017	FY 2018	FY 2019
Expenses						
Business area	Maintenance costs for equipment with low environmental load, depreciation, etc.*1	24.22	19.19	22.17	23.57	22.62
Upstream/downstream	Green procurement expenses, recovery and recycling of products and packaging, recycling expenses	0.97	0.63	0.72	0.68	0.68
Administration	Labor costs for environmental management, implementation and maintenance of environmental management system	5.97	5.12	5.69	6.72	4.98
Research and development	R&D to reduce environmental burden caused by products and production processes, product design expenses	75.71	63.13	62.55	61.86	77.01
Social activities	Planting, beautification, and other environmental improvement expenses	0.45	1.21	1.00	0.93	0.25
Environmental remediation	Environmental mitigation costs, contributions, and charges	0.27	0.22	0.33	0.40	0.17
<b>Total</b>		<b>107.59</b>	<b>89.50</b>	<b>92.46</b>	<b>94.16</b>	<b>105.71</b>

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

### Environmental Protection Effects

Economic Effects*1		(billions of yen)				
Items	Major FY 2019 Activities	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019
Net income effects	Recovering value from waste by sorting and recycling	7.27	4.96	6.90	8.35	12.42
Reduced expenses effects	Installing high-efficiency equipment (lighting, power supply)	6.78	7.77	14.54	7.70	6.20
<b>Total</b>		<b>14.05</b>	<b>12.73</b>	<b>21.44</b>	<b>16.05</b>	<b>18.62</b>

\*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		(million kWh)				
Item	Major FY 2019 Activities	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019
Reduction in energy used during production	Installing LED lighting, upgrading air-conditioning equipment, etc.	59	51	41	55	48

\*1 Physical effects refer to the annual amount of reduction in electricity consumption due to measures invested in during each fiscal year.

### Environmental Liability

Activities

We have appropriated 6.3 billion yen in expenses for the disposal of PCB-containing waste and 1.3 billion yen to clean up contaminated soil as the amounts that we can reasonably project as of March 2020 as future environmental liabilities.