

Environmental Data

* Abbreviations indicated under "scope" represent the following group or company:
JFE Group [All]; JFE Steel Group [ST Gr]; JFE Steel [ST]; JFE Engineering Group [EN Gr];
JFE Engineering [EN]; JFE Shoji Group [SH Gr]; JFE Shoji [SH]

Environmental Management

■ Data Regarding Environmental Management

Items		Scope	Unit	FY2015	FY2016	FY2017	FY2018	FY2019
% covered by ISO 14001 certification	Base	All	%	54	50	54	54	58
		ST Gr	%	21	19	20	20	21
		EN Gr	%	5	5	5	5	8
		SH Gr	%	28	26	29	29	29
	Empl oyee	All	%	77	76	70	72	75
		ST Gr	%	-	-	-	72	75
		EN Gr	%	-	-	-	60	66
		SH Gr	%	-	-	-	88	92
Environmental audit (number of sites)	ST Gr	sites	37	34	31	31	32	
	EN Gr	sites	48	46	48	50	48	
Environmental education conducted (total participants)	EN Gr	people	1,127	1,426	996	1,059	1,063	

■ Environmental Accounting Data (1)

Breakdown of environmental protection cost		FY2018		FY2019	
		Investment (billion yen)	Cost (billion yen)	Investment (billion yen)	Cost (billion yen)
Management	Impact monitoring and measurement, and EMS expenses and education	0.3	2.7	0.1	2.6
Global warming countermeasures	Saving and efficiently using energy	12.4	28.6	26.7	27.6
	Recycling industrial water	2.4	17.8	3.9	18.3
Conservation of natural resources	Recycling and waste management of internally generated materials, etc.	1.77	4.8	0.06	5.1
Environmental protection	Air pollution countermeasures	9.9	31.6	11	34.1
	Water pollution countermeasures	1.8	10	4.1	11.3
	Prevention of soil contamination, noise, vibration, and subsidence	0	0.6	0.04	0.6
Other	Charges, etc.	-	1.6	-	1.5
R&D	Technologies for protecting the environment, saving energy, and preventing global warming	1.2	12.9	1	11.3

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Breakdown of environmental protection cost		FY2018		FY2019	
		Investment (billion yen)	Cost (billion yen)	Investment (billion yen)	Cost (billion yen)
Societal activities	Support for nature preservation and forestation, information disclosure, exhibitions, and public relations	-	0.7	-	0.7
Total		29.8	111.3	46.8	113.1

Note: Data cover all investment activities of JFE Steel Corporation and R&D activities of JFE Engineering Corporation.

■ Environmental Accounting Data (2)

Items	Scope	Unit	FY2015	FY2016	FY2017	FY2018	FY2019
Energy-saving investment (accumulated)	All	billion yen	466.2	474.9	492.9	505.4	532.1
Environmental protection investment (accumulated)	All	billion yen	634.0	668.5	692.4	708.5	727.6

Environmental Management (Supplementary Data)

■ List of ISO 14001 Certified Companies (includes certification limited to certain sites of a company)

Operating company* ¹	Group company	
JFE Steel Corporation	JFE MINERAL COMPANY, LTD.	JFE Plant Engineering Co., Ltd.* ²
	Mizushima Ferroalloy Co., Ltd.	JFE Techno-Research Corporation* ²
	JFE Material Co., Ltd.	JFE Metal Construction Inc.* ²
	JFE Plastic Resource Corporation	JFE KYOWA YOKI CO. LTD* ²
	JFE Bars & Shapes Corporation	Japan Pail Corporation* ²
	JFE Galvanizing & Coating Co., Ltd.	JFE SETOUCHI LOGISTICS CORPORATION* ²
	JFE Container Co., Ltd.	Guangzhou JFE Steel Sheet Co., Ltd.* ³
	JFE Welded Pipe Manufacturing Co., Ltd.	Thai Coated Steel Sheet Co., Ltd.
	JFE Pipe Fitting Mfg. Co., Ltd.	Philippine Sinter Corporation
	JFE LOGISTICS CORPORATION	JFE Steel Galvanizing (Thailand)
	JFE Chemical Corp.	PT. JFE Steel Galvanizing Indonesia
	DAIWA KOHTAI CO. LTD* ²	
JFE Engineering Corporation	J&T Recycling Corporation	Fujikako, Inc.
	JFE Aqua Machine and Service Corporation	Asuka Soken Co., Ltd.
	JFE Environmental Service Corporation	

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Operating company*1	Group company	
JFE Shoji Corporation	JFE Shoji Coil Center Corporation	JFE Shoji Matech Inc.*2
	JFE Shoji Kohnan Steel Center Co., Ltd.	Kawasho Foods Corporation*2
	Taisei Kogyo Corporation	K&I Tabular Corporation*2
	Toyo Kinzoku Corporation	Tohsen Corporation*2
	Naigai Steel Corporation	Hoshi Kinzoku Corporation*2
	NIHON JISEIZAI KOGYO CO., LTD.	Dongguan JFE Shoji Steel Products Co., Ltd.
	Hokuriku Steel Co., Ltd.	Guangzhou JFE Shoji Steel Products Co., Ltd.
	Mizushima Steel Corporation	Zhejiang JFE Shoji Steel Products Co., Ltd.
	Mizushima Metal Products Corporation	Jiangsu JFE Shoji Steel Products Co., Ltd.
	JFE Shoji Electrical Steel Co., LTD.	JFE SHOJI STEEL PHILIPPINES, INC.
	JFE Shoji Usuitakenzai Corporation*2	CENTRAL METALS (Thailand) Ltd.
	JFE Shoji Electronics Corporation*2	JFE SHOJI STEEL VIETNAM CO., LTD.
	JFE Shoji Pipe & Fitting Corporation*2	JFE SHOJI STEEL HAI PHONG CO., LTD.
	JFE Shoji Service Corporation*2	JFE SHOJI STEEL MALAYSIA SDN. BHD.
	JFE Shoji Machinery & Materials Corporation*2	PT. JFE SHOJI STEEL INDONESIA
	JFE Shoji Steel Construction Materials Corporation*2	JFE SHOJI STEEL DE MEXICO,S.A. DE C.V.
	JFE Shoji Terre One Corporation*2	JFE SHOJI STEEL INDIA PVT. LTD.
JFE Shoji Business Support, Inc.*2		

*1 ISO 14001 certification is acquired at all manufacturing bases of JFE Steel and JFE Engineering and at all JFE Shoji's business establishments in Japan.

*2 Excluded from the scope of ESG data collection.

*3 Equity-method affiliates.

Climate Change

■ CO₂ Emissions by Scope

Items	Scope	Unit	FY2015	FY2016	FY2017	FY2018	FY2019
Scopes 1 and 2 total* ¹	All	million t-CO ₂	61.5	61.8	62.2	59.9	60.4
	ST Gr	million t-CO ₂	61.4	61.7	62.1	59.7	60.0
	ST* ³	million t-CO ₂	57.3	57.5	58.5	55.4	56.1
	ST subsidiaries	million t-CO ₂	4.1	4.2	3.6	4.3	3.9
	EN Gr	thousand t-CO ₂	63.7	62.9	56.5	212	403
	EN	thousand t-CO ₂	18.3	16.6	17.3	17.5	16.8
	EN subsidiaries	thousand t-CO ₂	45.4	46.3	39.3	195	386
	SH Gr	thousand t-CO ₂	33.2	31.4	35.0	35.6	34.7
	SH	thousand t-CO ₂	0.6	0.5	0.5	0.5	0.5
	SH subsidiaries	thousand t-CO ₂	32.7	30.9	34.6	35.1	34.2
	Scope 1* ⁴ * ⁵	All	million t-CO ₂	54.7	55.0	54.9	52.3
ST Gr		million t-CO ₂	-	-	-	52.1	52.5
ST* ³		million t-CO ₂	52.3	52.6	52.5	49.2	49.8
ST subsidiaries		million t-CO ₂	-	-	-	3.0	2.7
EN Gr		thousand t-CO ₂	-	-	-	171	361
EN		thousand t-CO ₂	-	-	-	7.8	3.8
EN subsidiaries		thousand t-CO ₂	-	-	-	163	357

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Items		Scope	Unit	FY2015	FY2016	FY2017	FY2018	FY2019
Scope 2*2	All		million t-CO ₂	6.6	6.4	7.4	7.6	7.6
	ST Gr		million t-CO ₂	-	-	-	7.5	7.5
	ST*3		million t-CO ₂	5.0	4.9	6.0	6.2	6.3
	ST subsidiaries		million t-CO ₂	-	-	-	1.3	1.2
	EN Gr		thousand t-CO ₂	-	-	-	41.6	42.2
	EN		thousand t-CO ₂	-	-	-	9.7	12.9
	EN subsidiaries		thousand t-CO ₂	-	-	-	31.9	29.3
	SH Gr		thousand t-CO ₂	33.2	31.4	35.0	35.6	34.7
	SH		thousand t-CO ₂	0.6	0.5	0.5	0.5	0.5
	SH subsidiaries		thousand t-CO ₂	32.7	30.9	34.6	35.1	34.2
Unit CO ₂ emissions (numerator: Scopes 1 and 2 total; denominator: sales)*6	All		t-CO ₂ / billion yen	17,923	18,684	16,898	15,463	16,206
Scope 3*7*8	All		thousand t-CO ₂	8,885	13,907	16,272	16,751	16,382
Category 1 Purchased goods and services	All		thousand t-CO ₂	7,334	11,019	13,048	13,371	12,557
Category 2 Capital goods	All		thousand t-CO ₂	-	840	921	1,180	1,401
Category 3 Fuel and energy related activities not included in Scopes 1 or 2	All		thousand t-CO ₂	269	348	386	370	728
Category 4 Upstream transportation and delivery	All		thousand t-CO ₂	341	647	650	491	489
Category 5 Waste generated in operations	All		thousand t-CO ₂	92	155	87	100	57
Category 6 Business travel	All		thousand t-CO ₂	2	4	4	4	4

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Items		Scope	Unit	FY2015	FY2016	FY2017	FY2018	FY2019
Category 7 Employee commuting	All	thousand t-CO ₂	29	46	54	49	49	
Category 15 Investments	All	thousand t-CO ₂	818	848	1,122	1,186	1,097	

*1 Data cover 76 companies

- JFE Steel and 30 major domestic and overseas subsidiaries
- JFE Engineering and 10 major domestic subsidiaries
- JFE Shoji and 33 major domestic and overseas subsidiaries.

*2 CO₂ Emission Factor for Purchased Electricity in FY2019:

- JFE Steel uses the emission factor of the Commitment to a Low Carbon Society of the Japan Iron and Steel Federation for energy purchased in FY2018.
- JFE Steel's domestic consolidated subsidiaries, the JFE Engineering Group, and the JFE Shoji Group apply the adjusted emission factors of each electric power company for each fiscal year.
- Overseas: based on each country's GHG protocol

*3 Data from FY2015 to FY2016 includes the Sendai Works of JFE Bars & Shapes Corporation.

*4 Data for JFE Steel include CO₂ emissions from non-energy sources.

*5 Starting with FY2018, data for JFE Steel's subsidiaries and JFE Engineering's subsidiary include CO₂ emissions from non-energy sources.

*6 The JFE Group changed its accounting standards from JGAAP to IFRS in FY2018.

*7 Coverage:

(Categories 1, 2, 3, 4, 5) JFE Steel, 25 JFE Steel domestic subsidiaries, JFE Engineering, and JFE Shoji

(Category 6, 7) JFE Steel, 25 JFE Steel domestic subsidiaries, JFE Engineering, 10 JFE Engineering domestic subsidiaries, and JFE Shoji

(Category 15) Japan Marine United, and 9 JFE Steel equity-method affiliates (7 domestic and 2 overseas)

*8 Sources: Green Value Chain Platform (Ministry of the Environment) and others

■ Other Greenhouse Gas

Items		Scope	Unit	FY2015	FY2016	FY2017	FY2018	FY2019	
CO ₂ emissions from energy sources	CO ₂ emissions (Scopes 1 and 2 total)	ST* ¹	million t-CO ₂	55.5	55.7	56.6	53.5	54.2	
		EN Gr* ²	thousand t-CO ₂	63.7	62.9	56.5	66.7	67.5	
	Scope1	ST* ¹	million t-CO ₂	50.5	50.8	50.5	47.3	47.9	
	Unit: CO ₂ emissions (denominator: crude steel production)	ST* ¹	t-CO ₂ /t-s	1.98	1.94	1.99	2.03	2.03	
CO ₂ emissions from non-energy sources		ST Gr* ³	million t-CO ₂	-	-	-	2.61	2.65	
		ST	million t-CO ₂	1.85	1.85	1.91	1.87	1.89	
		ST subsidiaries	million t-CO ₂	-	-	-	0.74	0.76	
		J&T Recycling Co.* ⁴	million t-CO ₂	-	-	-	0.15	0.34	
GHG emissions other than CO ₂		All	thousand t-CO _{2e}	91.0	93.7	94.8	88.7	103.3	
		Methane (CH ₄)	All (ST only)	thousand t-CO _{2e}	71.3	73.4	76.2	72.2	72.9
			All	thousand t-CO _{2e}	19.7	20.3	18.6	16.5	30.4
		N ₂ O	ST	thousand t-CO _{2e}	19.7	20.3	18.6	16.5	20.0
			J&T Recycling Co.* ⁴	thousand t-CO _{2e}	-	-	-	-	10.4
GHG emitted during transportation* ⁵		ST Gr	million t-CO ₂	0.45	0.65	0.65	0.66	0.65	
		ST	million t-CO ₂	0.34	0.33	0.37	0.40	0.40	
		ST subsidiaries	million t-CO ₂	0.11	0.32	0.28	0.26	0.25	
Contribution to CO ₂ emission reductions by renewable energy plants		EN	million t-CO ₂ /year	-	3.17	4.06	4.12	4.13	
		Biomass power generation	EN	million t-CO ₂ /year	-	1.30	1.97	2.12	2.12
		Waste power generation	EN	million t-CO ₂ /year	-	1.61	1.64	1.53	1.53
		Biogas, geothermal, solar power, wind, etc.	EN	million t-CO ₂ /year	-	0.26	0.46	0.47	0.48

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*1 Data from FY2015 to FY2016 includes the Sendai Works of JFE Bars & Shapes Corporation.

*2 Data cover JFE Engineering and 10 consolidated subsidiaries in Japan.

*3 Data cover JFE Steel and 2 consolidated subsidiaries in Japan.

*4 J&T Recycling Co. is a domestic subsidiary of JFE Engineering.

*5 Data cover JFE Steel and 11 domestic and overseas subsidiaries, which are specified consigners designated under the Japanese Energy Saving Act. For Others, data up to FY2015 consist of emissions from trucks and railways used by the Group companies, while the scope is expanded to truck, rail and ship from FY2016.

■ Energy

Items		Scope	Unit	FY2015	FY2016	FY2017	FY2018	FY2019
Energy consumption and unit energy consumption	Energy consumption	All	PJ	-	-	-	-	670.1
		ST Gr	PJ	-	-	-	-	668.6
		ST*1	PJ	632.8	640.9	644.0	613.3	619.8
		ST subsidiaries	PJ	-	-	-	-	48.8
		EN Gr	PJ	-	-	-	-	1.3
		SH Gr	PJ	-	-	-	-	0.2
	Unit energy consumption (crude steel production)	ST*1	GJ/t-steel	22.6	22.3	22.6	23.3	23.2
Energy consumption (Crude petroleum equivalent)	EN	kl	9,189	10,665	10,960	10,886	8,788	
YOY ratio of unit energy consumption	EN	%	96.2	92.9	97.4	95.4	80.7	
Recovered energy for recycling	Supplied to society	ST	%	35	35	37	39	39
	Consumed internally	ST	%	65	65	63	61	61

*1 Data from FY2015 to FY2016 includes Sendai Works of JFE Bars & Shapes Corporation.

■ Modal Shift Rate

Items		Scope	Unit	FY2015	FY2016	FY2017	FY2018	FY2019
All transportation	Ship and rail	ST	%	61.5	66.1	66.1	60.2	59.6
	Truck	ST	%	38.5	33.9	33.9	39.8	40.4
Transportation of a distance of 500 km or more	Ship and rail	ST	%	95.5	94.7	92.7	91.6	90.9
	Truck	ST	%	4.5	5.3	7.3	8.4	9.1

Scope of calculation: All products and half-finished products transported in Japan

Climate Change (Supplementary Data)

■ CO₂ Emissions and Energy Consumption of JFE Steel Group Subsidiaries (FY2019)

Company name	CO ₂ emissions (unit: t-CO ₂)	Energy consumption (unit: GJ)
JFE MINERAL COMPANY, LTD.	1,119,896	6,323,962
JFE Bars & Shapes Corporation	532,848	9,828,342
Mizushima Ferroalloy Co., Ltd.	324,790	3,123,575
JFE Chemical Corp.	253,340	4,907,869
JFE LOGISTICS CORPORATION	167,703	2,392,170
JFE Material Co., Ltd.	61,898	1,095,040
JFE Galvanizing & Coating Co., Ltd.	68,151	1,382,272
JFE ROCKFIBER CORPORATION	38,077	569,191
JFE Pipe Fitting Mfg. Co., Ltd.	16,337	351,791
JFE Plastic Resource Corporation	22,142	389,888
MIZUSHIMA RIVERMENT CORP.	12,801	168,198
JFE Container Co., Ltd.	10,397	218,321
J-Logitec Co., Ltd.	8,960	130,706
Galvatex Corporation	7,986	153,038
JFE Metal Products & Engineering Inc.	8,403	210,285
JFE Welded Pipe Manufacturing Co., Ltd.	8,257	177,660
JFE Techno-wire Corporation	6,662	142,912
JFE PRECISION CORPORATION	6,439	117,672
K-PLASHEET CORPORATION	4,447	95,381
JFE LIFE CORPORATION	6,714	131,256
CHIBA RIVERMENT AND CEMENT CORP.	4,601	87,655
JFE KENZAI FENCE CO., LTD.	4,274	80,167
JFE Steel Pipe Co., Ltd.	3,160	65,744
GECOSS CORPORATION	3,333	67,268
JFE Kozai Corporation	3,440	73,083
5 overseas companies	1,217,681	16,549,387
Total	3,922,737	48,832,833

■ CO₂ Emissions from Energy Sources and Energy Consumption of JFE Engineering Group Subsidiaries (FY2019)

Company name	CO ₂ emissions (unit: t-CO ₂)	Energy consumption (unit: GJ)
J&T Recycling Corporation	41,475	810,841
J Farm Corporation	2,819	53,319
Fujikako, Inc.	2,198	44,112
NORTHERN JAPAN MACHINERY Corporation	1,055	17,738
Tohoku Dock Ironworks Corporation	994	18,259
JFE Environmental Service Corporation	894	13,519
Asuka Soken Co., Ltd.	726	12,356
JFE Pipeline Engineering Corporation	376	5,849
JFE Technos Corporation	172	2,891
JFE Aqua Machine and Service Corporation	45	955
Total	50,754	979,839

Prevention of Pollution

■ Air Emissions

Items	Scope	Unit	FY2015	FY2016	FY2017	FY2018	FY2019
SOx emissions*1	ST Gr	million Nm ³	4.0	4.5	4.7	4.1	4.3
	ST	million Nm ³	4.0	4.5	4.6	4.1	4.3
	ST subsidiaries	million Nm ³	0.03	0.03	0.05	0.04	0.04
NOx emissions*1	ST Gr	million Nm ³	10.6	11.1	11.7	10.7	11.3
	ST	million Nm ³	10.4	10.9	11.5	10.5	11.1
	ST subsidiaries	million Nm ³	0.24	0.22	0.20	0.19	0.17

*1 13 JFE Steel consolidated subsidiaries in Japan.

■ Release to Waterways

Items	Scope	Unit	FY2015	FY2016	FY2017	FY2018	FY2019
COD (chemical oxygen demand)	ST	t/day	3.1	3.1	3.0	3.3	3.2
	ST subsidiaries*1	t/day	0.08	0.13	0.14	0.17	0.15
	EN	kg/day	6.0	6.1	5.6	6.8	8.4

*1 12 JFE Steel consolidated subsidiaries in Japan.

■ Chemical Substances Management

Items		Scope	Unit	FY2015	FY2016	FY2017	FY2018	FY2019
PRTR-registered substances* ²	Amount released	All* ¹	t	-	-	-	1,019	925
		ST Gr	t	842	842	897	814	773
		ST	t	456	429	516	545	488
		ST subsidiaries	t	386	413	381	269	285
		EN Gr	t	-	-	-	205	152
		EN	t	104	87	85	147	107
		EN subsidiaries	t	-	-	-	58.4	45.4
	Amount transferred	All* ¹	t	-	-	-	9,210	7,867
		ST Gr	t	8,638	7,047	8,934	9,176	7,833
		ST	t	3,590	2,212	2,726	2,533	1,866
		ST subsidiaries	t	5,048	4,835	6,208	6,643	5,967
		EN Gr	t	-	-	-	34	34
		EN	t	24	28	28	28	29
		EN subsidiaries	t	-	-	-	5.7	5.4

*1 JFE Shoji is not included in the scope of the report as the company is not subject to PRTR registration.

*2 Coverage:

- JFE Steel and 18 consolidated subsidiaries in Japan.
- JFE Engineering and 4 consolidated subsidiaries in Japan.

Prevention of Pollution (Supplementary Data)

SOx and NOx Emissions of JFE Steel Group Subsidiaries (FY2019)

Company name	SOx emissions(unit: Nm ³)	NOx emissions(unit: Nm ³)
JFE Material Co., Ltd.	10,167	20,269
JFE Chemical Corp.	9,514	34,728
JFE MINERAL COMPANY, LTD.	7,919	64,174
JFE Bars & Shapes Corporation	13,140	9,749
JFE Galvanizing & Coating Co., Ltd.	1,874	11,535
JFE PRECISION CORPORATION	192	1,313
Mizushima Ferroalloy Co., Ltd.	338	22,603
K-PLASHEET CORPORATION	175	0
JFE Container Co., Ltd.	145	0
JFE Plastic Resource Corporation	165	464
CHIBA RIVERMENT AND CEMENT CORP.	35	610
JFE Metal Products & Engineering Inc.	53	1,803
JFE Pipe Fitting Mfg. Co., Ltd.	24	858
MIZUSHIMA RIVERMENT CORP.	0	1,027
Galvatex Corporation	0	683
Total	43,741	169,817

Efficient Use of Natural Resources

Natural Resources

	Items	Scope	Unit	FY2015	FY2016	FY2017	FY2018	FY2019
Input	Raw materials for steel production	ST	million tonnes	69.0	70.1	71.3	66.0	67.0
	Iron ore	ST	million tonnes	43.4	43.5	43.5	40.1	41.4
	Coal	ST	million tonnes	19.9	21.0	22.0	20.6	20.3
	Lime	ST	million tonnes	5.7	5.6	5.8	5.3	5.3
	Recycled materials (steel scrap)	ST	million tonnes	0.6	0.7	1.2	1.3	1.1
	Raw materials	EN	thousand tonnes	32.9	39.1	41.8	47.3	39.4
Products supplied	Steel products	ST*1	million tonnes	28.0	28.8	28.5	26.3	26.7
	Engineering products	EN	thousand tonnes	31.2	36.1	39.7	44.5	36.6

*1 Data from FY2015 to FY2016 includes the Sendai Works of JFE Bars & Shapes Corporation.

■ Co-products and Wastes

Items		Scope	Unit	FY2015	FY2016	FY2017	FY2018	FY2019
Co-products	Amount generated*1	ST Gr	million tonnes	15.4	15.3	16.2	16.1	15.6
		ST	million tonnes	14.6	14.5	15.7	15.3	15.1
		ST subsidiaries	million tonnes	0.771	0.776	0.539	0.792	0.546
	Amount recycled internally	ST	million tonnes	3.6	3.7	4.2	6.0	5.0
	Internal recycle rate	ST	%	24.6	25.4	27.5	39.3	32.9
	Landfill amount*1	ST Gr	million tonnes	-	0.087	0.081	0.081	0.074
		ST	million tonnes	0.042	0.045	0.047	0.052	0.043
		ST subsidiaries	million tonnes	-	0.042	0.034	0.029	0.031
Recycling rate	ST	%	99.7	99.7	99.7	99.7	99.7	
Marine, land, and civil engineering material (using co-products)	Co-products generated	ST	million tonnes	14.6	14.5	15.4	15.3	15.1
	Used by local communities	ST	million tonnes	11.0	10.8	11.2	9.2	10.1
	Rate of local communities use	ST	%	75.1	74.3	72.2	60.4	66.8
Wastes	Amount generated*2*3	EN Gr	thousand tonnes	-	-	158.0	131.7	211.0
		Offices	EN	t	340.2	320.8	429.8	386.4
	Yokohama HO		t	258.4	241.7	357.1	299.9	299.0
	Tsu works		t	81.8	79.1	72.7	86.5	68.2
	Productions	EN	t	816.3	973.2	773.0	1,039.3	1,340.5
		Tsurumi works	t	252.1	443.4	302.3	506.6	653.8
Tsu works		t	564.2	529.8	470.7	532.7	686.7	

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Items		Scope	Unit	FY2015	FY2016	FY2017	FY2018	FY2019
Wastes	Constructions	EN	t	91,308.9	101,812.2	88,140.4	109,045.2	145,397.7
	Subsidiaries	EN subsidiaries	t	-	-	69,835.7	22,634.4	63,876.7
	Landfill	EN Gr	t	1,877.5	1,954.4	1,666.5	2,125.1	4,489.3
	Offices	EN	t	9.2	8.4	9.0	10.7	8.5
		Yokohama HO	t	3.2	3.3	4.3	4.1	3.3
		Tsu works	t	6.0	5.1	4.7	6.6	5.2
	Productions	EN	t	374.0	329.8	289.0	353.3	312.6
		Tsurumi works	t	99.4	67.0	70.6	83.2	77.3
		Tsu works	t	274.6	262.8	218.4	270.1	235.3
	Constructions	EN	t	1,494.3	1,616.2	1,368.5	1,761.1	4,168.2
	Recycle rate	EN Gr	%	94.0	96.3	96.7	97.0	95.8
	Offices	EN	%	97.1	96.9	97.6	96.7	97.3
		Yokohama HO	%	98.7	98.5	98.7	98.5	98.8
		Tsu works	%	91.5	88.9	89.0	85.2	85.2
	Productions	EN	%	39.1	53.4	45.3	46.8	68.0
		Tsurumi works	%	49.8	78.9	61.0	68.7	79.4
Tsu works		%	34.0	32.5	37.0	32.1	60.9	
Constructions	EN	%	98.3	98.4	98.4	98.4	97.1	

*1 Data cover JFE Steel and 25 consolidated subsidiaries in Japan.

*2 Data cover JFE Engineering and 10 consolidated subsidiaries in Japan.

*3 Data from FY2019 includes wastes generated at offices and productions of JFE Engineering.

■ Wastes at JFE Engineering Construction Sites

Items		Scope	Unit	FY2015	FY2016	FY2017	FY2018	FY2019
Rubble	Amount generated	EN	t	60,373	56,767	58,824	78,410	113,637
	Landfill amount	EN	t	40	414	94	297	1,533
	Recycle rate	EN	%	99.9	99.3	99.8	99.6	98.6
Sludge	Amount generated	EN	t	11,840	21,814	23,463	16,142	17,225
	Landfill amount	EN	t	53	98	849	199	205
	Recycle rate	EN	%	99.5	99.5	96.3	98.8	98.8
Industrial waste excluding rubble and sludge	Amount generated	EN	t	19,096	23,231	5,853	14,494	14,535
	Landfill amount	EN	t	1,401	1,103	425	1,265	2,430
	Recycle rate	EN	%	91.7	95.0	92.2	91.0	82.1

■ Paper Consumption at JFE Shoji

Items	Scope	Unit	FY2015	FY2016	FY2017	FY2018	FY2019
Consumption of copier papers	SH	boxes	4,838	4,904	5,100	4,832	4,675
	Tokyo	boxes	2,623	2,614	2,674	2,661	2,516
	Osaka	boxes	610	545	527	372	399
	Nagoya	boxes	212	305	308	217	293
	Branch	boxes	1,393	1,440	1,591	1,582	1,467

Efficient Use of Natural Resources (Supplementary Data)

■ Examples of Recycling and Processing at JFE Group (FY2019)

Content		Unit	Volume
Plastic containers and packaging bidding		million tonnes	0.10
Using waste plastics in the iron and steelmaking process	Used directly in the iron and steelmaking process	million tonnes	0.06
	Collected as gas and used as fuel	million tonnes	0.05
Treating fluorescent tubes		million tubes	20
Waste home appliances		million units	0.50

■ List of JFE Group's Recycling Businesses

Area	Name of company, plant, business establishment, etc.	Plant	Addresses		
Sapporo	Sapporo Bio Food Recycle Corporation	Food waste recycling plant	45-53 Nakanuma-cho, Higashi-ku Sapporo-shi, Hokkaido		
Sendai	J&T Recycling Corporation	Sendai Plant			
		Sendai plastic packaging-waste sorting and baling plant	1-6-1 Minato, Miyagino-ku Sendai-shi, Miyagi		
		Plastic material recycling plant	same as above		
		Fluorescent tube recycling plant	same as above		
		Recycled pallet manufacturing plant	same as above		
Rifu Plant	Refuse paper and plastic (RPF) manufacturing plant	6-5-14 Shirakashidai, Rifu-cho Miyagi-gun, Miyagi			
Kashima	JFE Bars & Shapes Corporation	Electric furnace recycle plant			
		Direct current arc furnace	7 Minamihama, Kamisu-shi, Ibaraki		
Chiba	J&T Recycling Corporation				
	Chiba Recycle Center	Waste gasifying and melting furnace	1 Kawasaki-cho, Chuo-ku Chiba-shi, Chiba		
	Chiba Biogas Center	Food waste recycling plant	same as above		
Tokyo	J&T Recycling Corporation	Tokyo Waterfront Eco Clean			
		Fluidized bed gasification and melting furnace (industrial)	Oumi 3-chome chisaki, Koto-ku, Tokyo		
		Vertical furnace (medical)	same as above		
Kawasaki	J&T Recycling Corporation	Ohgishima Plant	10 Ohgishima, Kawasaki-ku Kawasaki-shi, Kanagawa		
		Kawasaki PET Bottle Recycling Plant	5-1 Mizue-cho, Kawasaki-shi Kawasaki-ku, Kanagawa		
		Kawasaki Eco Clean	5-73 Ohgimachi, Kawasaki-ku Kawasaki-shi, Kanagawa (and other locations)		
		Solid waste recycling plant	same as above		
	JFE Plastic Resource Corporation	Mizue Recycling Plant	Waste plastic recycling plant	699-23 Mizue-cho, Kawasaki-ku Kawasaki-shi, Kanagawa (and other locations)	
		NF Board® manufacturing plant	NF Board® manufacturing plant	5-1 Mizue-cho, Kawasaki-ku Kawasaki-shi, Kanagawa	
		JFE Urban Recycle Corporation	Home Appliance Recycling plant	Consumer/office appliance recycling plant	6-1 Mizue-cho, Kawasaki-ku Kawasaki-shi, Kanagawa

(Continued from the previous page.)

Area	Name of company, plant, business establishment, etc.	Plant	Addresses
Yokohama	J&T Recycling Corporation		
	Yokohama Eco Clean	Kiln-stoker incinerator	2-1-5 Suehiro-cho, Tsurumi-ku Yokohama-shi, Kanagawa (and other locations)
		Kiln-ash melting furnace	same as above
	Chemical Works	Liquid/sludge waste intermediate-treatment plant	3-1 Benten-cho, Tsurumi-ku Yokohama-shi, Kanagawa
		Dry cell battery and battery recycling plant	2-1-8 Suehiro-cho, Tsurumi-ku Yokohama-shi, Kanagawa
	Tsurumi Fluorescent Tube Recycling Plant	Fluorescent tube recycling plant	same as above
	Yokohama Plastics Recycling Plant	Yokohama City plastic packaging-waste sorting and baling plant	same as above
	Kanazawa Recycling Plant	Solid waste recycling plant	1-14-5 Fukuura, Kanazawa-ku Yokohama-shi, Kanagawa
	J Bio Food Recycle Co., Ltd.		
	Yokohama Plant	Food waste recycling plant	2-1-5 Suehiro-cho, Tsurumi-ku Yokohama-shi, Kanagawa
Kurashiki (Mizushima)	Mizushima Eco-works Co., Ltd.	Waste gasifying and melting furnace	1-14-5 Kawasaki-dori, Mizushima, Kurashiki-shi, Okayama
	JFE Environmental Service Corporation Kurashiki Works		
	Kurashiki Works	Waste wood carbonizing facility	1-14-1 Kawasaki-dori, Mizushima, Kurashiki-shi, Okayama
	JFE Bars & Shapes Corporation	Electric furnace recycling plant	
		Direct current arc furnace	1-5-2 Kawasaki-dori, Mizushima, Kurashiki-shi, Okayama (and other locations)
Fukuyama	JFE Plastic Resource Corporation		
	Fukuyama Recycling Plant	Waste plastic recycling plant	113 Minoki-cho, Fukuyama- shi, Hiroshima
	J&T Recycling Corporation		
	Fukuyama RPF Plant	RPF manufacturing plant	115-1 Minoki-cho, Fukuyama- shi, Hiroshima
	Fukuyama PM Recycling Plant	Plastic material recycling plant	same as above
	Fukuyama Palette Plant	Recycled pallet manufacturing plant	same as above
	Steel Works	Kiln incinerator	1 Kokan-cho, Fukuyama-shi, Hiroshima
		Controlled landfill	same as above
		Liquid waste neutralization plant	same as above

(Continued from the previous page.)

Area	Name of company, plant, business establishment, etc.	Plant	Addresses
Fukuyama	Fukuyama Recycle Electric Generation Co., Ltd.	Refuse-derived fuel (RDF) gasifying power generation plant (commissioned operation)	107-8 Minoki-cho, Fukuyama-shi, Hiroshima
Toyama	JFE Material Co., Ltd.	Rare metal recovery plant for spent catalysts	2-9-38 Shosei-machi, Imizu-shi, Toyama

Water Security

■ Water

Items	Scope	Unit	FY2015	FY2016	FY2017	FY2018	FY2019	
Amount of water accepted*1	All	million tonnes	-	-	241	240	242	
	ST Gr	million tonnes	229	237	241	238	241	
		ST	million tonnes	203	212	220	218	221
		ST subsidiaries	million tonnes	26.4	24.9	20.6	20.5	19.8
	EN Gr	thousand tonnes	-	-	832	918	1,410	
		EN	thousand tonnes	95	94	97	102	106
		EN subsidiaries	thousand tonnes	-	-	735	816	1,304
	SH Gr	thousand tonnes	247	140	166	165	149	
		SH	thousand tonnes	-	-	-	-	-
		SH subsidiaries	thousand tonnes	247	140	166	165	149
Amount of water released*2	ST Gr	million tonnes	-	-	146	144	143	
		ST	million tonnes	128	126	128	126	126
		ST subsidiaries	million tonnes	-	-	17.8	18.0	17.0
	EN	thousand tonnes	165	148	140	146	126	

(Continued from the previous page.)

Items	Scope	Unit	FY2015	FY2016	FY2017	FY2018	FY2019
Amount of water consumption*2	ST Gr	million tonnes	-	3,679	3,690	3,665	3,616
	ST	million tonnes	3,326	3,340	3,410	3,376	3,323
	ST subsidiaries	million tonnes	-	339	280	289	293
Amount evaporated	ST	million tonnes	75	86	92	92	95
Ratio of amount released and evaporated	ST	%	6.3	6.3	6.5	6.5	6.6
Amount recycled*2	ST Gr	million tonnes	-	3,442	3,449	3,427	3,375
	ST	million tonnes	3,123	3,128	3,190	3,158	3,102
	ST subsidiaries	million tonnes	-	314	259	269	273
Recycling rate*2*3	ST	%	93.9	93.7	93.5	93.5	93.4
	ST subsidiaries	%	-	91	93	93	93

*1 Coverage:

- JFE Steel and 25 consolidated subsidiaries in Japan.
- JFE Engineering and 7 consolidated subsidiaries in Japan.
- 33 JFE Shoji domestic and overseas consolidated subsidiaries.

*2 25 JFE Steel consolidated subsidiaries in Japan.

*3 Industrial water circulated (%) = (Total amount – industrial water accepted)/total amount used × 100

■ Water Related Data by Water Intake Source and Discharge Source

Items	Scope	Unit	FY2017	FY2018	FY2019
Total amount accepted	All* ¹	million tonnes	219.6	218.3	220.9
River/lake		million tonnes	0	0	0
Groundwater		million tonnes	0	0	0
Industrial water/waterworks		million tonnes	219.6	218.3	220.9
Ocean		million tonnes	0	0	0
Rainwater		million tonnes	0	0	0
Other intake source		million tonnes	0	0	0
Total amount released	All* ¹	million tonnes	128.8	126.0	126.6
Ocean		million tonnes	128.3	125.6	126.2
Surface water		million tonnes	0	0	0
Underground/well		million tonnes	0	0	0
Off-site water processing		million tonnes	0.4	0.4	0.5
Beneficial use/other use		million tonnes	0	0	0
Other discharge source		million tonnes	0	0	0

*1 Data cover JFE Steel and JFE Engineering.

Water Security (Supplementary Data)

■ Amount of Water Accepted and Released at JFE Steel Group Subsidiaries (FY2019)

Company name	Amount accepted (unit:tonnes)	Amount released (unit:tonnes)
JFE MINERAL COMPANY, LTD.	2,357,033	2,332,290
JFE ROCKFIBER CORPORATION	52,926	52,926
Mizushima Ferroalloy Co., Ltd.	431,617	15,065
JFE Material Co., Ltd.	3,860,186	3,860,186
CHIBA RIVERMENT AND CEMENT CORP.	6,977	6,977
MIZUSHIMA RIVERMENT CORP.	17,001	17,001
JFE PRECISION CORPORATION	575,747	575,747
JFE Plastic Resource Corporation	17,355	13,744
JFE Bars & Shapes Corporation	4,875,906	2,964,831
JFE Metal Products & Engineering Inc.	101,075	136,362
JFE KENZAI FENCE CO., LTD.	68,532	68,532
JFE Galvanizing & Coating Co., Ltd.	1,029,897	870,286
JFE Container Co., Ltd.	297,120	297,120
JFE Welded Pipe Manufacturing Co., Ltd.	64,475	64,475
JFE Steel Pipe Co., Ltd.	1,463	1,463
Galvatex Corporation	699,911	699,911
JFE Pipe Fitting Mfg. Co., Ltd.	4,246	35,329
JFE Techno-wire Corporation	89,535	89,535
JFE Kozai Corporation	14,879	14,879
GECOSS CORPORATION	63,005	63,221
JFE LOGISTICS CORPORATION	117,257	117,257
J-Logitec Co., Ltd.	3,217	3,217
JFE Chemical Corp.	4,488,973	4,210,610
K-PLASHEET CORPORATION	35,416	11,142
JFE LIFE CORPORATION	492,413	470,335
Total	19,766,162	16,992,441

■ Amount of Water Accepted at JFE Engineering Group Subsidiaries (FY2019)

Company name	Amount accepted (unit: thousand tonnes)
J&T Recycling Corporation	1,216
JFE Environmental Service Corporation	0.03
NORTHERN JAPAN MACHINERY Corporation	0.003
Tohoku Dock Ironworks Corporation	57.3
JFE Aqua Machine and Service Corporation	0.002
Fujikako, Inc.	0.02
J Farm Corporation	30.6
Total	1,304