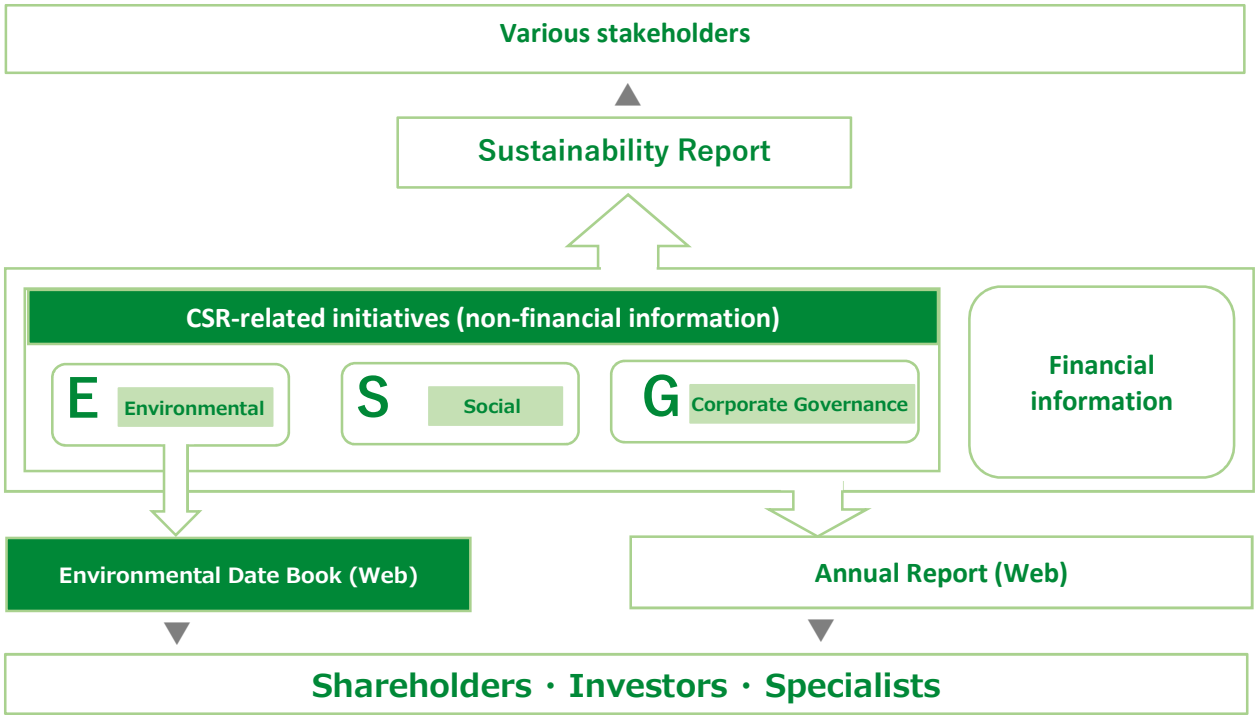
A commitment to environmentally-friendly corporate activity

KYUDEN GROUP

Make a brighter future for generations to come.

KYUDEN GROUP Environmental Data Book 2020

■Positioning of this report



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Scope of Report
Kyushu Electric Power Company
and its group companies

Reporting period
April 1, 2019 – March 31, 2020
(This report contains some information outside the Reporting period)

Publication Date
October 2020

◆Points to note

From April 1, 2020, the power transmission and distribution department of Kyushu Electric Power Co., Inc. has been spun off as Kyushu Electric Power Transmission and Distribution Co., Ltd.

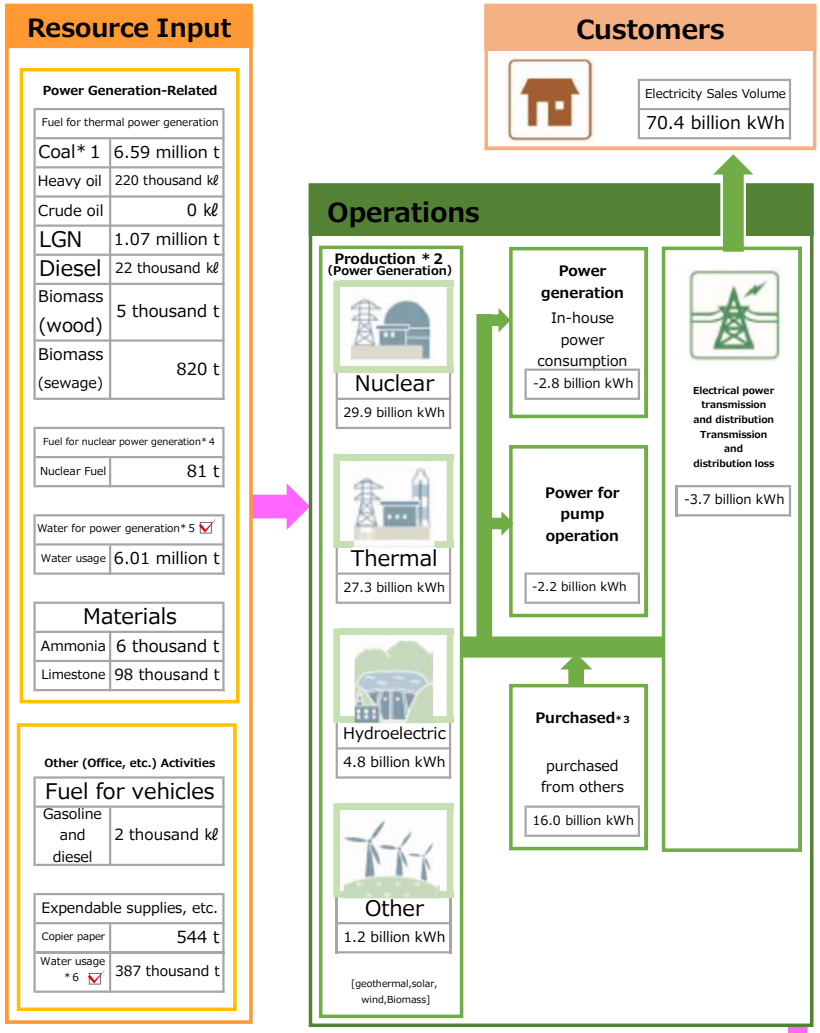
The actual values up to March 31, 2020 are listed as the actual results of Kyushu Electric Power Co., Inc. before the spin-off.

☑ The Environmental Data received Independent Practitioner's Assurance

Environmental data (FY2019 results) with this mark has received Independent Practitioner's Assurance to ensure the reliability of the environmental data it presents.

■Environmental Loads Resulting from Business Operations

Status of Business Operations and Environmental Loads（FY2019）



*1 Based on wet coal

*2 Amount of power generated by the company's own facilities.

*3 "Purchased, etc." in corporate operations includes FIT purchased power and power used for sending and receiving interchange power to or from other companies.

*4 Uranium and plutonium allowance <converted from calorific value>

*5 Does not include seawater used as cooling water

*6 Includes Recycled water/rainwater utilization

*7 Includes CO_2 from In-house power consumption and purchasing power from other companies

Greenhouse gas emissions

・CO_2

Calculated based on "Calculation and publication of basic emission factors and adjusted emission factors for each electric power company" (including the amount of electricity purchased by other companies) ,which is a document announced by the government based on the Act on Promotion of Global Warming Countermeasure.
Post adjustment = unadjusted CO_2 emissions - CO_2 emission credit amortization + fixed price purchase adjusted CO_2 emissions.

・from in-house power consumption

In-house power consumption x CO2 emissions per electricity sales volume(post-adjustment)

・SF_6

Emissions（Natural leakage＋At the time of Equipment inspection, Equipment removal, Trouble, Repair work,etc.）×22,800[GWP]

・N_2O

Emissions（Fuel use、Factory wastewater treatment, Treatment of human waste, etc.）×298[GWP]

・HFC

Consumption of each HFC × corresponding GWP

Air pollutant emissions

・SOx/NOx

The total value of each Thermal power (including internal-combustion power) "total exhaust gas amount x concentration in exhaust gas" converted by weight for each power plant.

Discharged water load

Total value of wastewater x weighting coefficient of each water pollutant (our original coefficient) x total of average concentration of each water pollutant at the time of discharge (discharge).
*Total value (Thermal/Geothermal/NPS) converted to the equivalent of COD(Chemical Oxygen Demand) weight.

COD emissions

Total value of wastewater x average COD concentration at the time of discharge (emission)
*Total value （Thermal/Geothermal/NPS) of COD (Chemical Oxygen Demand) contained in wastewater treated by wastewater treatment equipment

Industrial waste landll disposal

External landfill disposal amount + Internal landfill disposal amount

Low-level radioactive waste generation

Amount generated (200ℓ drum equivalent) −Amount of reduction* (200ℓ drum equivalent)
* The value of the amount of low-level radioactive waste generation by incineration, compression, etc. converted to a 200ℓ drum.

Vehicular CO_2 emissions

Fuel consumption of general vehicles and special vehicles x unit calorific value x CO_2 emission factor＋Electric vehicle charging power x CO2 emissions per electricity sales volume (post-adjustment)

Waste paper disposal

Amount generated - Amount of recycle

Water supply usage

Purchased amount of tap water

Reduction Amount of Environmental Loads in Business Operations

Expected Reductions			
CO_2 reduction amount	Power generation and power purchasing	17.14	million t -CO_2
	Introduction of low pollutant company vehicles	304.7	t -CO_2
SF_6 recovery amount		250	thousand t -CO_2
SOx reduction amount		55	thousand t
NOx reduction amount		17	thousand t
Actual Reduction Amount			
Recycled industrial waste		915	thousand t
Low-level radioactive waste reduction (200ℓ drum equivalent)		3,392	drums
Recycled paper		1,047	t
Recycled water/rainwater utilization ☑		34	thousand t

CO_2 reduction amount

・Reduction due to power generation and purchasing: Calculated using CO_2 emissions (post-adjustment) per electricity sales volume for Kyushu Electric Power in FY2017 , comparing against a baseline which assumes all power is produced via renewable energy (excluding pumping for hydroelectric).

• Facilities efficiency improvement: Calculated using thermal efficiency and power transmission/distribution loss rate for FY2013 as a baseline

CO_2 Emissions Reduction from Introduction of Low Pollutant Company Vehicles

Calculated using a baseline which assumes electric vehicles (including plug-in hybrid cars), hybrid vehicles and fuel-efficient vehicles are not introduced.

SF_6 recovery amount

Calculated using baseline which assumes SF6 is not recovered from machinery into which it is injected during inspection and removal.

NOx reduction amount

Calculated using a baseline which assumes no denitrification is performed at power plants.

Low-level radioactive waste generation

The reduction in volume achieved by incinerating, compressing or otherwise disposing of the low-level radioactive waste generated is converted into an equivalent number of 200 ℓ drums.

Recycled paper

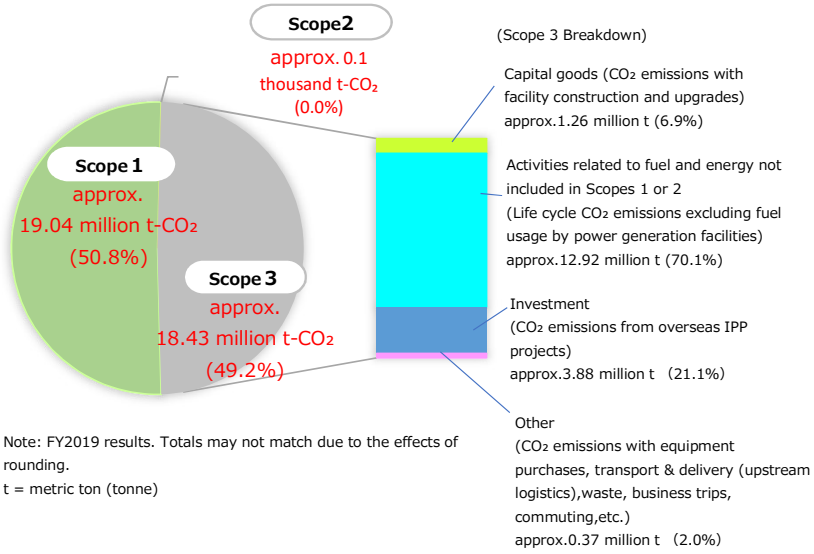
in addition to copier paper,includes newspapers, magazines, cardboard, confidential documents, etc.

Recycled water/rainwater utilization

Recycled water(purchased + treated water)+rainwater utilization

■①Initiatives for Global Environmental Issues

Supply Chain GHG Emissions（Scopes 1, 2, & 3） ☑ （FY2019）



Note: FY2019 results. Totals may not match due to the effects of rounding.
t = metric ton (tonne)

○Calculated based on the Act on Promotion of Global Warming Countermeasure, "Greenhouse gas emission calculation / reporting / publication system","Basic guidelines for calculating greenhouse gas emissions through the supply chain（Ver2.3）2017.12 Ministry of the Environment Ministry of Economy, Trade and Industry"

＊1 Calculated besed on "Emission intensity database for calculating greenhouse gas emissions of an organization through the supply chain（Ver3.0）2020.3 Ministry of the Environment Ministry of Economy, Trade and Industry" was used for the caluculation.（Only Category 5 uses Ver2.6）

＊2 Calculated based on the LC-CO₂ emissions from the various power generation technologies (excluding fuel combustion) described in "Comprehensive Assessment of Life Cycle CO2 Emissions from Power Generation Technologies in Japan（Report Number:Y06）2016.7 Central Research Institute of Electric Power Industry" was used for the caluculation.
For unknown power sources, the coefficients at the time of fuel procurement in the emission intensity database was used for calculation.

Unit：10 thousand t-CO₂

	FY2017	FY2018	FY2019
SCOPE 1	2,640 (74.6%)	1,756 (69.2%)	1,904 (50.8%)
SCOPE 2	0.01 (0.0%)	0.01 (0.0%)	0.01 (0.0%)
SCOPE 3	900 (25.4%)	783 (30.8%)	1,843 (49.2%)
category 1	37 (4.2%)	34 (4.3%)	33 (1.8%)
category 2	110 (11.7%)	107 (13.6%)	126 (6.9%)
category 3	440 (49.3%)	310 (39.5%)	1,292 (70.1%)
category 4	0.1 (0.0%)	0.1 (0.0%)	0.1 (0.0%)
category 5	3 (0.3%)	2 (0.3%)	3 (0.2%)
category 6	0.2 (0.0%)	0.2 (0.0%)	0.2 (0.0%)
category 7	0.8 (0.1%)	0.6 (0.1%)	0.7 (0.0%)
category 15	310 (34.5%)	330 (42.1%)	388 (21.1%)
total	3,540	2,539	3,747

Scope1
・CO_2
Emissions associated with fuel consumption（Calculated based on the Act on Promotion of Global Warming Countermeasure Article21-2,paragraph(1)）and Emissions from private logistics transportation
・SF_6
Emissions（natural leakage＋at the time of equipment inspection, equipment removal, trouble, repair work,etc.）×22,800[GWP]
・N_2O
Emissions（fuel use、factory wastewater treatment, treatment of human waste, etc.）×298[GWP]

・CH_4
Emissions（fuel use、factory wastewater treatment, treatment of human waste, etc.）×25[GWP]

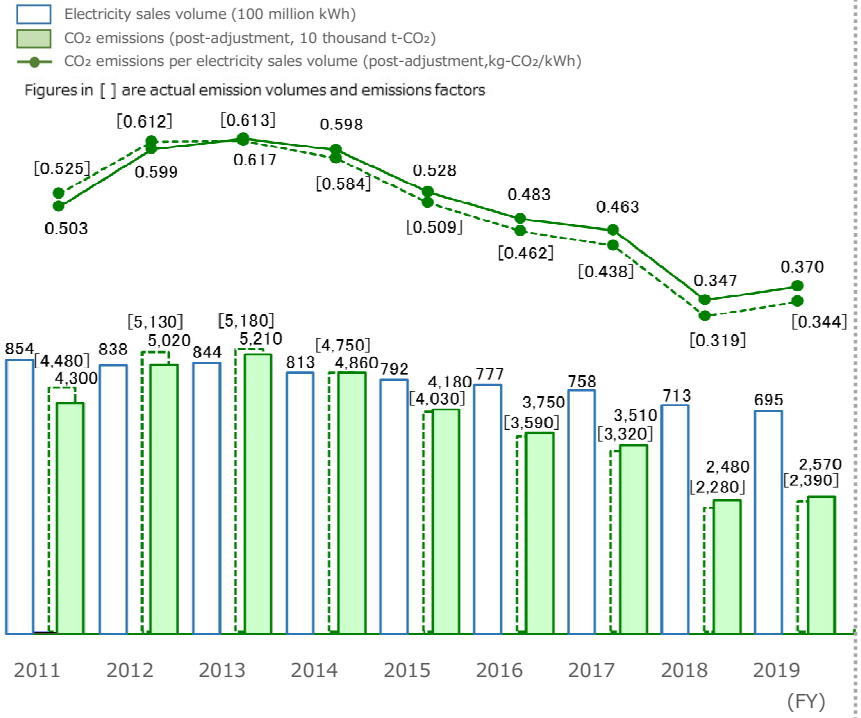
・HFC
Consumption of each HFC × GWP of each HFC

Scope 2
Since CO2 emissions for in-house consumption are included in Scope1, Scope 2 Ïs calculated bymultiplying the amount of electricity purchased in other power supply areas by CO_2 emissions per electricity sales volume (post-adjustment)

Scope 3
・Category 1
Emissions associated with purchasing goods
Calculated by Σ[purchase amount of goods by item×emission factor（*1）]
・Category 2
Emissions from capital investment in the electricity business calculated by capital investment ×emission factor（*1）
・Category 3
Fuel combustion emissions (direct) by Eeectric energy purchased from other companies
Calculated by Σ[purchased electric energy by power source × emission factor (type: fuel or company or national average factor]
（In-house / other companies）Fuel combustion emissions (indirect) by other than fuel combustion at power plants
Calculated by Σ[amount of power generated by power source × CO_2 emissions over lifecycle by power source in Japan（*2）]
※Emissions increased significantly compared to FY2018 because of the calculation and addition of the underlined emissions from FY2019
・Category 4
Emissions associated with logistics services calculated by fuel consumption of freight vehicles (materials and equipment) (crude oil equivalent)×emission factor（※1）
・Category 5
Emissions associated with the transportation and treatment of waste generated in-house
Calculated by Σ[processing amount by item × emission factor（*1）]
・Category 6
Emissions from business trips of company employees calculated by number of employees × emission factor（*1）
・Category 7
Emissions associated with movement when company employees commute to work
Calculated by Σ[costs by commuting method × emission factor（*1）]
・Category 8
Included in Scope 1 and 2
・Category 15
CO2 emissions from overseas power generation business
Calculated by Σ[fuel consumption by power source × investment ratio × emission factor（*1）]

Note) Figures may not match up with total values, as they have been rounded to the nearest whole number.

CO_2 Emissions for Kyushu Electric Power Company

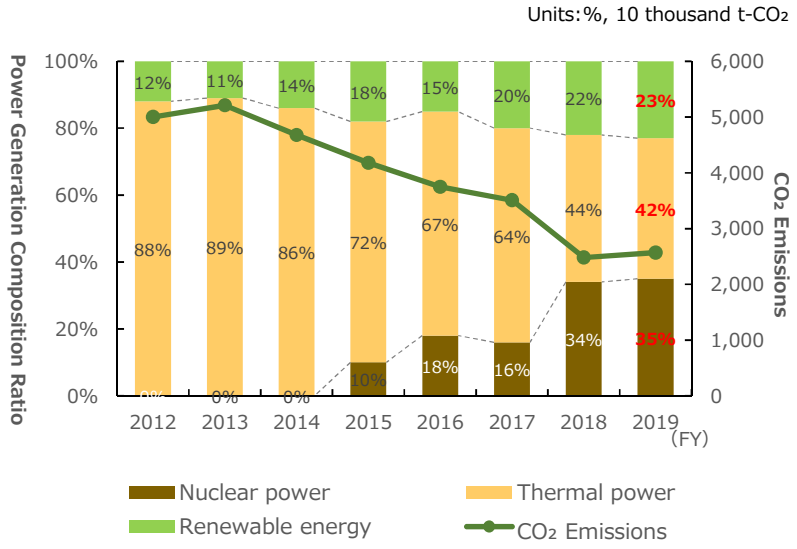


Figures in [ ] are actual emission volumes and emissions factors

Post-adjustment
Adjusted in line with CO_2 emissions credits and feed-in tariffs (FIT).

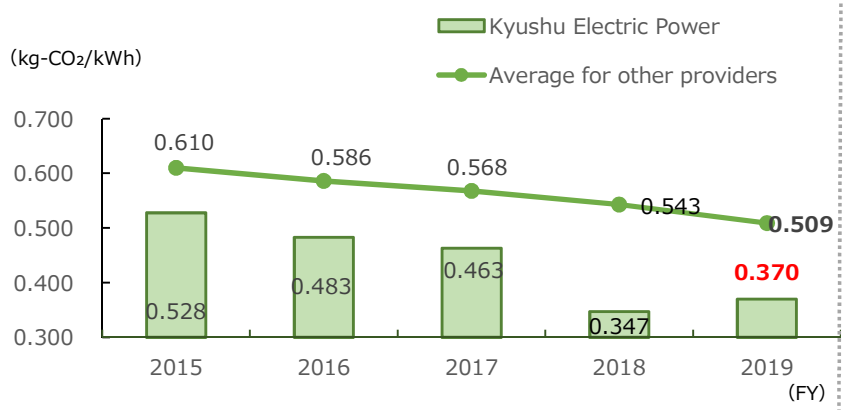
Calculated according to the "Calculation and Announcement of Actual Emission Factors and Post-adjustment Emission Factors for Each Power Provider" released by the national government in accordance with the Act on Promotion of Global Warming Countermeasures (includes portion due to purchasing power from other companies).
Total electricity sales volume differs after FY2016 as the government's guidelines for calculating CO_2 emissions were revised to exclude electricity supplied to remote islands (excluding the Goto Islands, which are handled as part of mainland Nagasaki Prefecture).

Power Generation Composition Ratio and CO_2 Emissions Volume Change Over Time



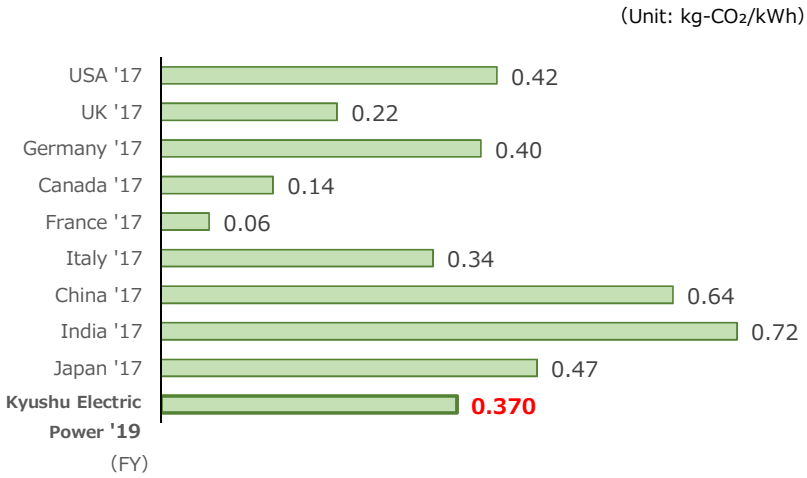
* Power received from other companies does not include unspecied fuel types.
The composition ratio shown here differs from the power source composition ratio for electricity sales volume.

Comparison with Other Providers for CO_2 Emissions



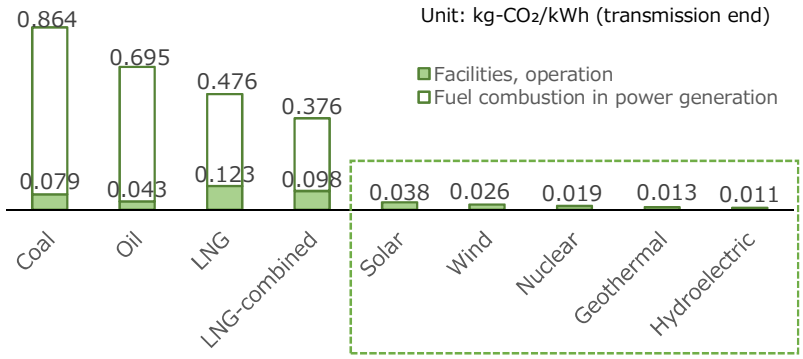
* Average CO_2 emissions volume per electricity sales volume (post-adjustment) of former general power providers (nine companies), excluding Kyushu Electric Power.

CO_2 Emission Factors of Major Countries



Source: Energy and Environment 2018 (The Federation of Electric Power Companies of Japan)

Reference: CO_2 emissions over lifecycle by power source in Japan



Source: Central Research Institute of Electric Power Industry report

Geothermal Power Facilities (March 31, 2020)

Unit : kW

		Output
Existing facilities (approx.218,000)	Otake	12,500
	Hatchoubaru	110,000
	Yamagawa	30,000
	Ogiri	25,800
	Takigami	27,500
	Hatchoubaru Binary	2,000
	Sugawara Binary *1	5,000
	Yamagawa Binary *1	4,990
Planned (2,000)	Otake *2	+2,000

*1 Developed by group company

*2 The additional 2,000 kW is added output from the refurbishment of the Otake Power Station

*Based on CO_2 emissions factor (FY2018)

CO_2 Emission Reductions Achieved Using Geothermal (FY2019) **approx.390 thousand t**

Solar Power Facilities (March 31, 2020)

Unit : kW

		Output
Existing facilities (approx.53,000)	Mega Solar Omuta*	1,990
	Omura Mega Solar *	17,480
	Sasebo Mega Solar*	10,000
	Installations at business sites, etc.	approx.2,300
	Other Mega Solar*	approx.57,600
計画 (approx.60,000)		approx.60,000

* Developed by group company

*Based on CO_2 emissions factor (FY2018)

CO_2 Emission Reductions Achieved Using Solar (FY2019) **approx.20 thousand t**

Wind Power Facilities (March 31, 2020)

Unit : kW

		Output
Existing facilities (64,640)	Koshikijima	250
	Nagashima*	50,400
	Amamioshima*	1,990
	Washiodake*	12,000
Planned (92,000)	Kushima*	64,800
	Karatsu–Chinzei*	27,200

CO_2 Emission Reductions Achieved Using Wind (FY2019) **approx.20 thousand t**

* Developed by group company

*Based on CO_2 emissions factor(FY2018)

Biomass Power and Waste Incineration Power Facilities (March 31, 2019)

Unit : kW

		Output
Existing facilities (approx.165,000)	Miyazaki Biomass Recycle*1	11,350
	Fukuoka Clean Energy*1	29,200
	Reihoku*2	(Up to 1% mixed combustion by weight ratio)
	Matsuura*2	(About 800 t/year)
	Nanatsujima Biomass Power*3	49,000
	Buzen New Energy*3	74,950
Planned (368,000)	Fukuoka Woody Biomass*1	5,700
	Soyno Wood Power*3	14,500
	Kanda Biomass Energy*3	74,950
	Okinawa Uruma New Energy*3	49,000
	Shimonoseki Biomass Energy*3	74,980
	Hirohata Biomass Power*3	approx.75,000
	Oita Biomass Energy※3	approx.22,000
	Ishikari Bioenergy※3	51,500

CO_2 Emission Reductions Achieved Using Biomass (FY2019) **approx.40 thousand t**

*1 Developed by group company

*2 Co-firing in existing coal-fired power generation

*3 Developed by a joint venture with partners including group company

*Based on CO_2 emissions factor (FY2018)

Hydroelectric Power Facilities (March 31, 2020)

Unit : kW

		Output
Existing facilities※1	143 sites	1,282,391
Planned (約12,720)	Inaba*2	420
	Shin-takeda	8,300
	Tsukabaru*3	+4,000

CO_2 Emission Reductions Achieved Using Hydroelectricity (FY2019) **approx.1,140 thousand t**

*1 Excluding Power for pump operation

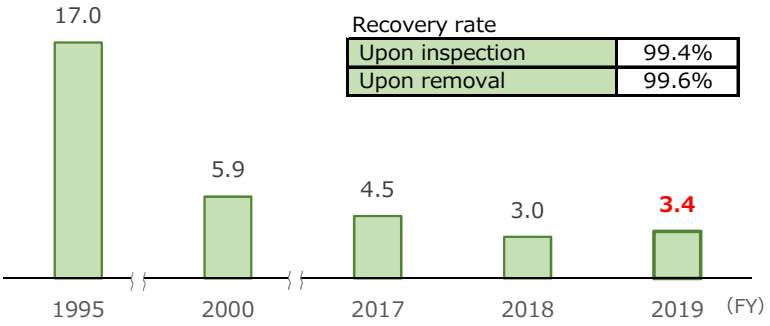
*2 Maximum additional output from facility refurbishment

* Developed by group company

*Based on CO_2 emissions factor (FY2018)

Sulfur hexauoride (SF_6) Emissions

Unit: 10 thousand t-CO_2



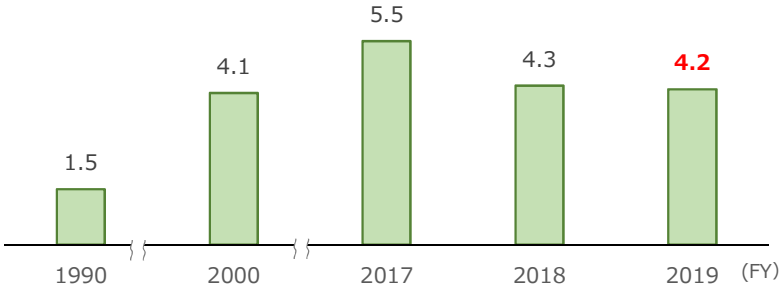
Recovery rate

Upon inspection	99.4%
Upon removal	99.6%

*10,000 t-CO_2 : SF_6 gas volume is converted to CO_2 volume using the global warming potential for SF_6 (22,800 (23,400 until FY2014))

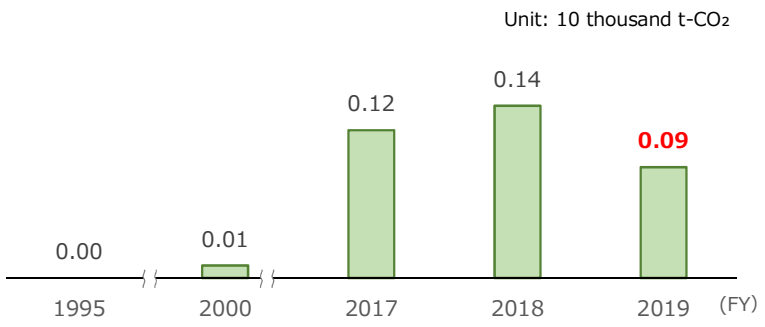
Nitrous oxide (N_2O) Emissions

Unit: 10 thousand t-CO_2



*10,000 t-CO_2 : N_2O gas volume is converted to CO_2 volume using the global warming potential for N_2O (298 (310 until FY2014))

Hydrouorocarbon (HFC) Emissions



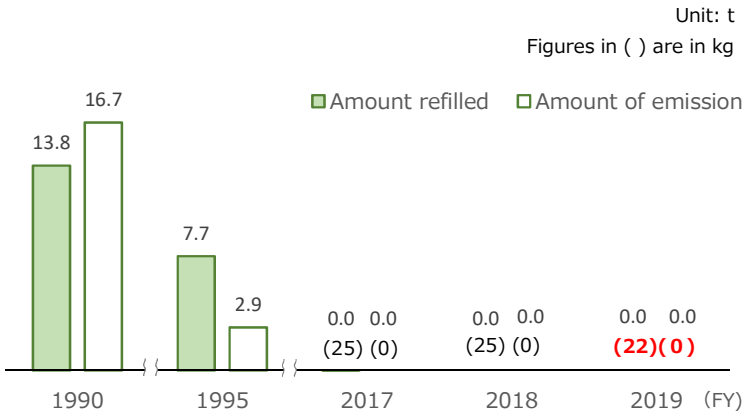
* 10,000 t-CO₂ : HFC gas volume is converted to CO2 volume using the global warming potential for HFC (12–14,800 (140–11,700 until FY2014))

Comparison of CO_2 emission control effect and site area by Nuclear Power, Solar Power, and Wind Power（Equivalent to 1 million kW）

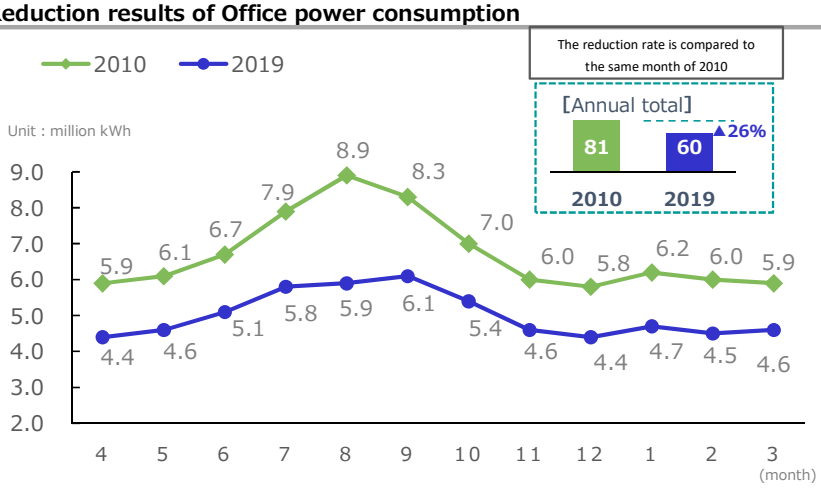
	Nuclear Power generation	Solar Power generation	Wind power generation
CO2 reduction amount	**approx. 2.13 million t-CO_2**	**approx. 0.43 million t-CO_2** →About 1/5 of nuclear power	**approx. 0.61 million t-CO_2** →About 1/4 of nuclear power
Site area	0.6㎢	approx58㎢ →About 97 times that of nuclear power	approx214㎢ →About 350 times that of nuclear power

*Based on CO_2 emissions factor (FY2018)

Amounts of Fluorocarbons Subject to Regulation Refilled and Emissions



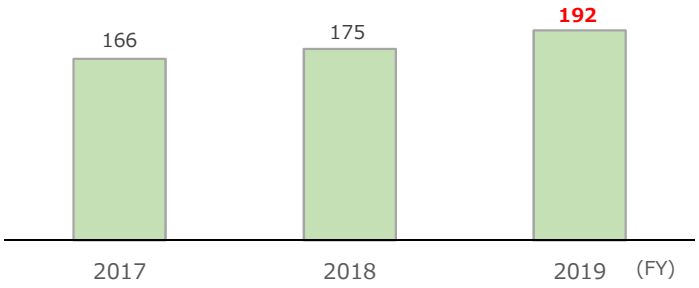
Reduction results of Office power consumption



Control CO_2 emissions by introducing fuel-efficient vehicles and eco-driving

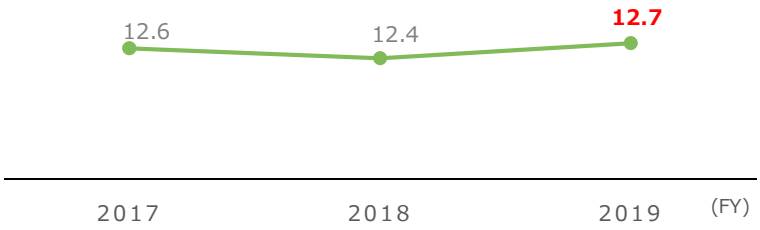
Electric vehicles introduced (total)

Unit : vehicles



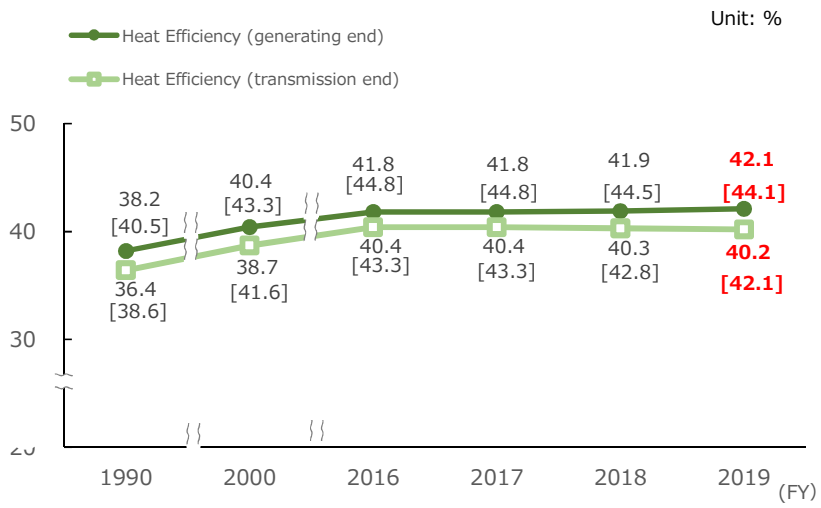
General-purpose vehicle fuel consumption rate

Unit : km/ℓ



Thermal Power Total Heat Efficiency

Unit: %



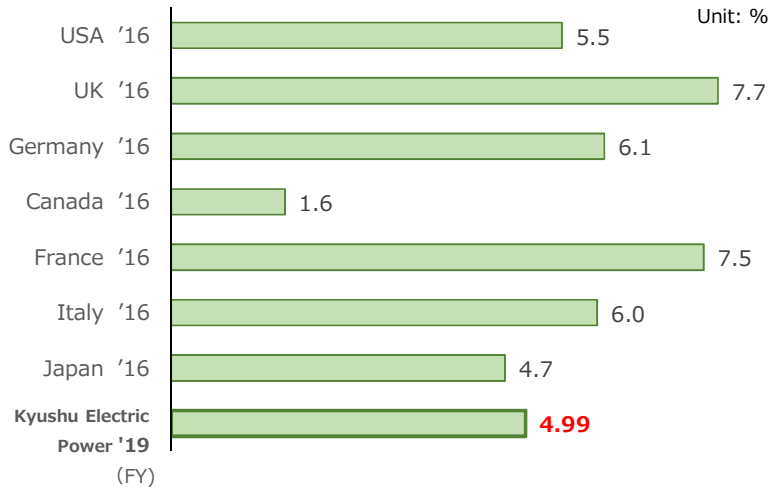
[ ] are lower calorific value base-converted values for which Comprehensive Energy Statistics conversion factors, etc., have been used.

(reference)

High caloric value
calorific value where water vapor produced by combustion is condensed and the latent heat held within recovered.

Low caloric value
calorific value where heat held in water vapor is not condensed and recovered but instead remains.

Country Comparison for Transmission/Distribution Loss Rates



Source : Overseas electric power industry statistics 2018 (JAPAN ELECTRIC POWER INFORMATION CENTER,INC.)

■②Initiatives to Establish a Recycling Society

Industrial Waste Production Amounts and Recycling Rates (FY2019)

		Amount produced (t)	Amount recycled (t)	Recycling rate (%)	Main recycling uses
Coal ash		752,110	752,110	100	Cement materials Concrete mixtures
Other industrial waste	Heavy crude oil ash	7	7	100	Vanadium recovery
	Gypsum	134,065	134,065	100	Cement materials
	Sludge	2,891	993	34	Cement materials
	Waste oil	2,266	2,250	99	Reuse in fuel oil
	Waste plastic	254	249	98	Combustion aid materials
	Scrap metal	13,462	13,456	100	Metallic materials
	Waste concrete poles	11,198	11,198	100	Subbase, construction aggregate
	Glass, ceramic waste	151	151	100	Glass product materials
	Industrial waste requiring special treatment	573	525	92	Cement materials
	Other	189	142	75	Combustion aid materials
	Subtotal	165,056	163,036	98.8	—
Total Industrial Waste		917,166	915,146	approx. 100	—

* Totals may not match due to the effects of rounding.

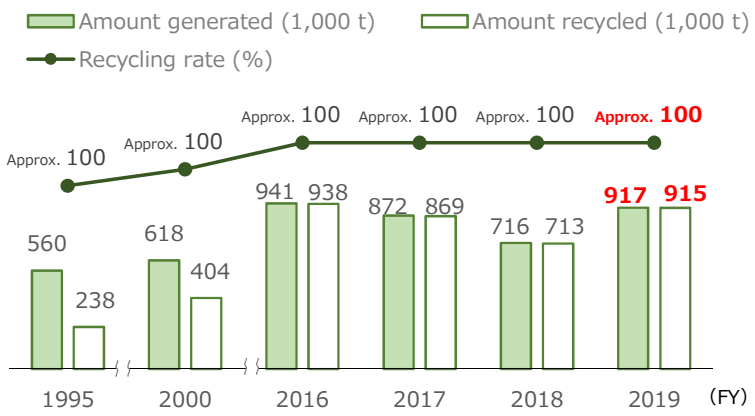
* t = metric ton (tonne)

(reference)

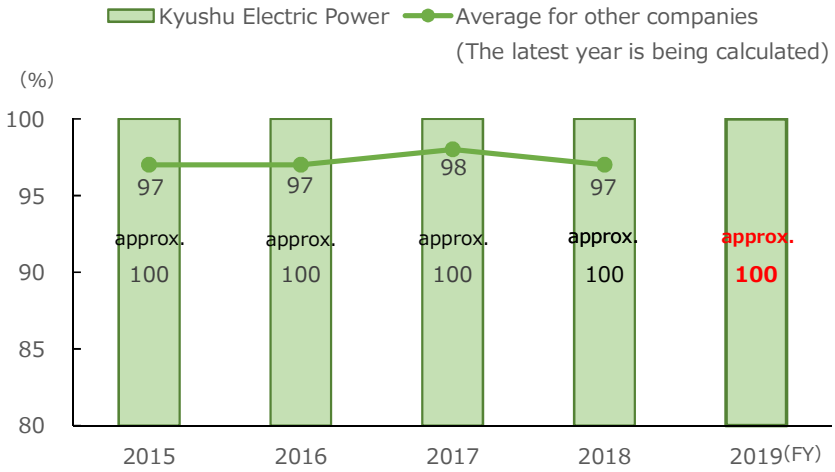
Industrial Waste

Sludge, asbestos, waste oil, waste alkali and waste acid designated as industrial waste requiring special treatment, according to the Waste Management and Public Cleansing Act, due to the risk they pose to human health and living environments.

Industrial Waste Production Amounts and Recycling Rates



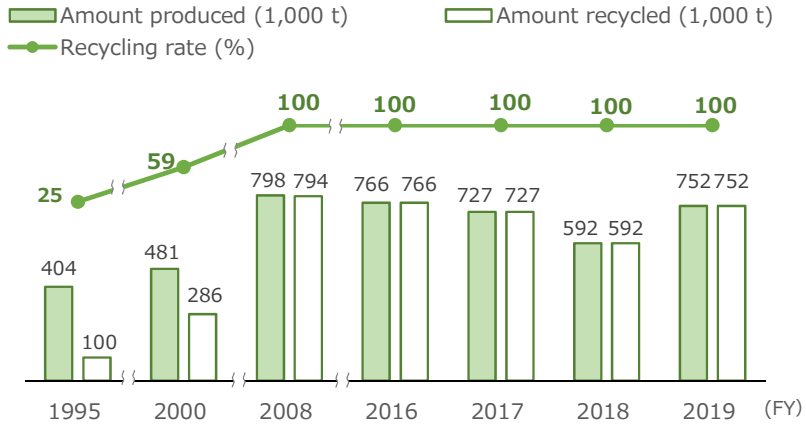
Waste Recycling Rate Comparison with Other Companies



Average for other companies
* Average CO_2 emissions volume per electricity sales volume (post-adjustment) of former general power providers (nine companies), excluding Kyushu Electric Power.

Source: Energy and Environment 2018 (The Federation of Electric Power Companies of Japan)

Coal Ash Production Amount and Recycling Rate



Waste Paper and Other General Waste Production Amounts and Recycling Rates (FY2019)

	Amount produced (t)	Amount recycled (t)	Recycling rate (%)	Main recycling uses
Waste paper	1,054	1,047	99	Recycled paper
Shells	317	73	23	Subbase
Dam driftwood	2,551	2,551	100	Substitute for straw litter

t = metric ton (tonne)

Paper Recycling (FY2019)

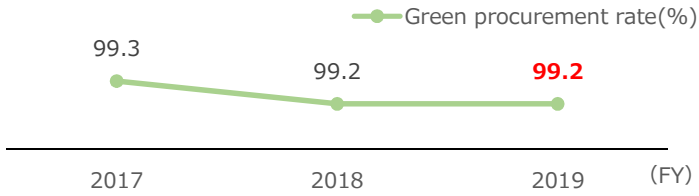
	Amount recovered (t)	Main recycling use
Newspapers	54	Paper (copier paper, catalog paper, etc.), newspaper
Magazines	18	Cardboard material, paper twine
Cardboard	58	Cardboard material
Confidential documents	778	Paper (copier paper, catalog paper, etc.),toilet paper, cardboard material
Other	140	Paper (copier paper, catalog paper, etc.), toilet paper, cardboard material, paper twine
Total	1,047	—

Newspapers
Includes amount of recovered magazines and cardboard at some sites

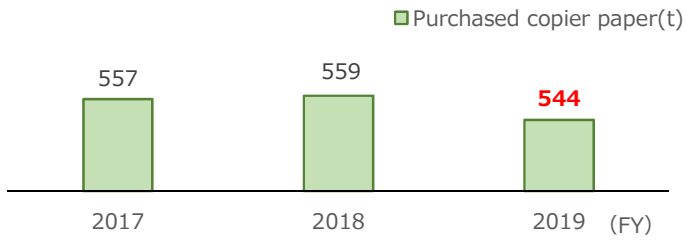
Other
"Other" includes copier paper, envelopes, etc.

*Totals may not match due to the effects of rounding.

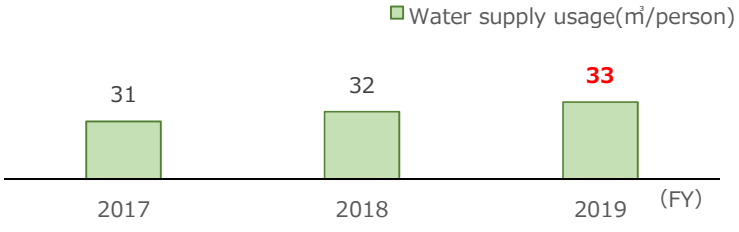
Green procurement rate



Purchased copier paper



Water supply usage



PRTR investigation results（FY2019）

Unit : kg

Index No.	Chemical substance	Applications	Qty. handled	Qty. released into the air	Qty. transferred
33	Asbestos	Insulation agent	2,000	—	2,000
53	Ethylbenzene	Painting and Antifouling	3,800	3,800.0	—
71	Ferric chloride	Wastewater treatment agent	35,000	0.0	—
80	Xylene	Painting	5,600	5,600.0	—
164	2,2-Dichloro-1 1,1-trifluoroethane	Refrigerant for air conditioners	1,000	—	—
211	Dibromotetrafluoroethane	Fire extinguisher	2,600	330.0	2,200
300	Toluene	Boiler	8,100	8,100.0	—
333	Hydrazine	Water treatment agent	19,900	0.4	—
405	Boron compound	Reactor reactivity control material / analytical reagent	3,000	0.0	—
438	Methylnaphthalene	Diesel generator	470,750	2,347.7	122

PRTR
Pollutant Release Transfer Register

Status of spent fuel storage (as of the end of FY2019)

Unit : drums (200 drum equivalent)

	Accumulated generation	Accumulated emission	Quantity stored	
			Inside the NPS	Carry-out amount
Genkai NPS	▲838	1,720	38,418 (39,256)	12,712 (10,992)
Sendai NPS	1,028	0	27,303 (26,275)	640 (640)
合計	190	1,720	65,721 (65,531)	13,352 (11,632)

* (Data of 2019.3.31)

■③Local Environment Preservation

SOx and NOx Emissions by Thermal Power Station（FY2019 figures）

Unit: t　t=metric ton (tonne)

Thermal power station* (Fuel)	SOx	NOx
Shin-Kokura (LNG)	0	21
Karita (Coal/heavy oil/crude oil)	49	154
Buzen (Heavy oil/crude oil)	0	0
Matsuura (Coal)	1,578	1,652
Shin-Oita (LNG)	0	820
Reihoku (Coal)	1,922	2,295
Sendai (Heavy oil/crude oil)	0	0
Total	3,539	4,941

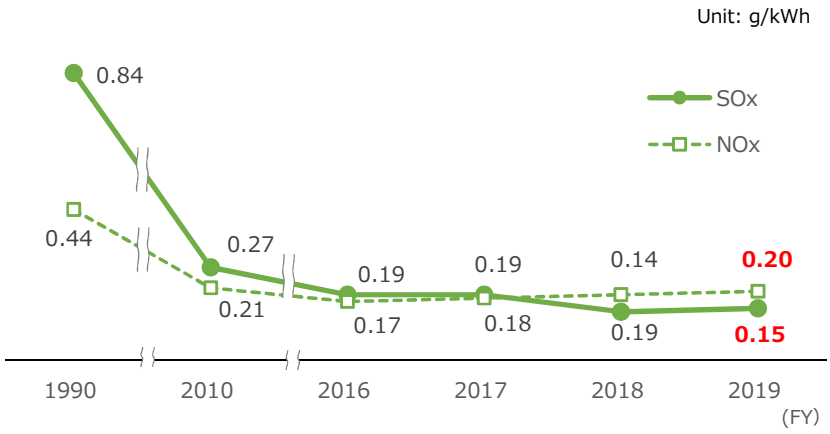
* Excludes internal combustion power stations

(reference)

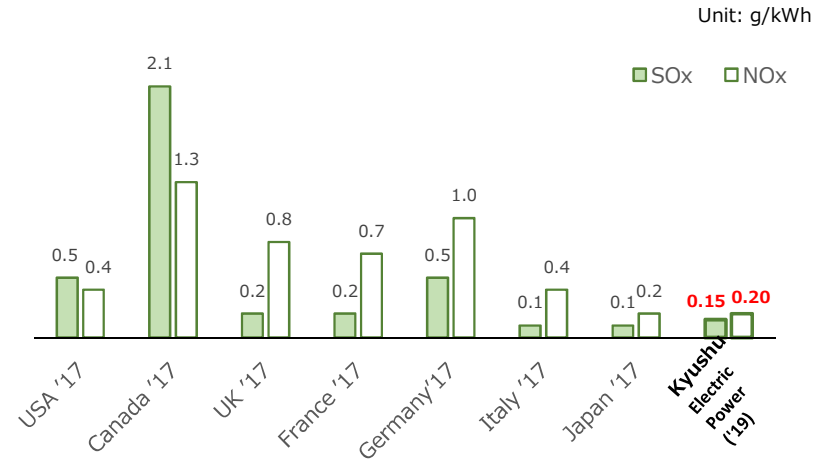
SOx
Generic term for sulfur oxides, including SO_2 (sulfur dioxide) and SO_3(sulfuric trioxide). Generated when fossil fuels such as coal and petroleum are burned and the sulfur content in the fuel oxidizes, they cause air pollution and acid rain.

NOx
Generic name for nitrogen oxides, including NO (nitric oxide) and NO_2(nitrogen dioxide). Generated from the combustion of nitrogen-containing fuel, and also from the oxidation of nitrogen in the air during combustion, they cause air pollution and acid rain.

SOx and NOx Emissions per Quantity of Thermal Power Generated



SOx and NOx Emissions per Quantity of Thermal Power Generated, by Country



Source(Overseas/Japan):Federation of Electric Power Companies' pamphlet "Energy and Environment 2018"

Water Usage for Power Generation and Wastewater Volume at Thermal and Nuclear Power Stations (FY2019)

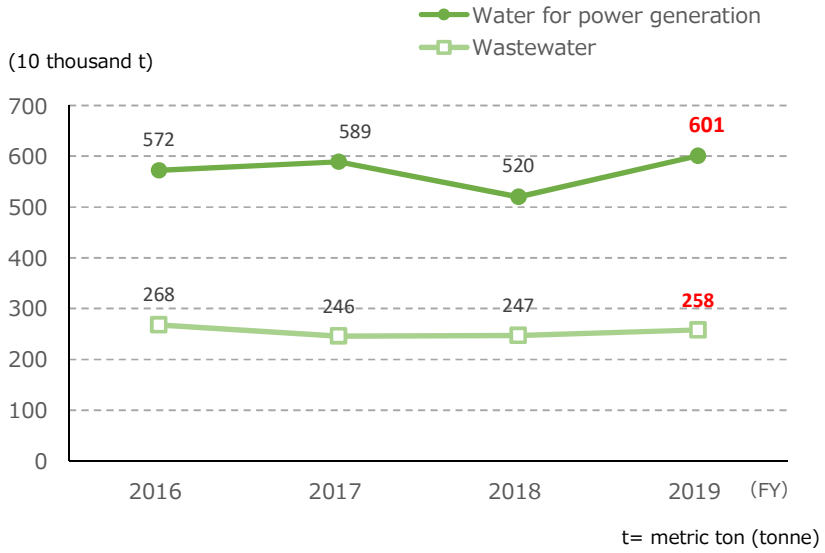
Unit: 10 thousand t

Power station		Water for power generation	Wastewater
Thermal power	Shin-Kokura	28	16
	Karita	41	6
	Buzen	11	9
	Matsuura	165	62
	Ainoura	0	0
	Shin-Oita	57	44
	Reihoku	166	55
	Sendai	15	4
Nuclear power	Genkai	67	31
	Sendai	46	31
Internal combustion power		4	–
Total		601	258

Water for power generation
Amount of consumption deducted for daily use from external input (city water, well water, etc.).Does not include seawater used for cooling water or water circulating in the power station.

Wastewater
Amount of wastewater properly treated by wastewater treatment equipment at each power station.

Water Usage for Power Generation and Wastewater Volume at Thermal and Nuclear Power Stations ☑



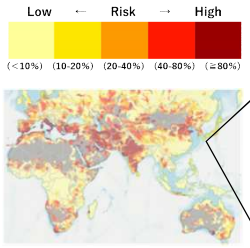
t= metric ton (tonne)

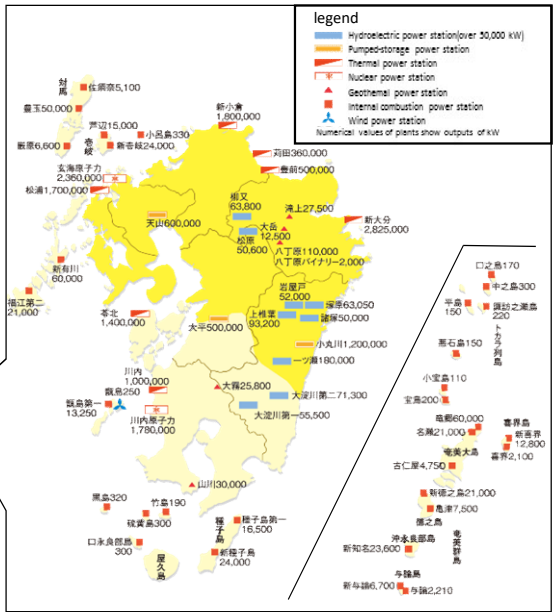
Water for power generation
Amount of consumption deducted for daily use from external input (city water, well water, etc.).Does not include seawater used for cooling water or water circulating in the power station.
※Until FY2018 results, internal-combustion power plant results are excluded.

Wastewater
Amount of wastewater properly treated by wastewater treatment equipment at each power station.
※Internal-combustion power plant results are excluded.

Water Risk Assessment

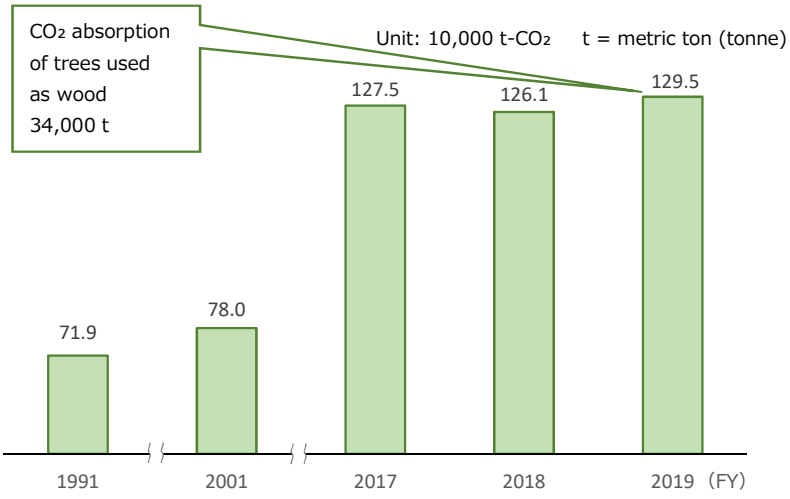
According to the "Aqueduct Water Risk Atlas", there are no high-risk areas in the Kyushu area .But we will continue to strive for proper management of power generation water and wastewater.





※「Aqueduct water risk atlas/BASELINE/ Water Stress（2020.7.31）」
【出典】https://www.wri.org/aqueduct

CO_2 Absorption and Fixation by Company-Owned Forests



＊Calculated based on measured values from forest survey according to Japan's national greenhouse gas inventory calculation method

＊The amount of CO_2 absorption until FY'01 does not include trees younger than 15 years

④Collaborating with Communities

Energy/environmental education

Unit : times

	FY2017	FY2018	FY2019
Eco-mother activity frequency	200	approx.200	approx.200
On-demand course frequency	529	approx.560	approx.440
Environmental education in Kuju Kyuden Forest	24	22	28

■⑤Promoting Environmental Management

Number of Qualifiers (2017-2019)

Unit: people

Qualification	No. of qualifiers		
	2017	2018	2019
Qualified Person for Energy Management	740	723	706
Energy Manager for Type 2 Designated Energy Management Factory	52	51	47
Pollution control managers (including pollution prevention chief managers)	718	704	684
Waste treatment facility technology managers	179	169	158
Specially-controlled industrial waste management officers	585	544	535

■Environmental Accounting

Economic Effects of Environmental

Scope of aggregation : Kyushu Electric Power Company　Target period : 2018.4.1～2019.3.31　Unit : Billion Yen

Classification of environmental activities		Main activities	Economic Effects	
			2018	2019
Resource circulation	Waste measures	Sale of disused valuables	3.3	3.4
	Waste reduction	Reduction of processing costs such as final disposal by recycling	62.3	79.4
Total			148.2	82.8

* Totals may not match due to the effects of rounding.

Effects of Environmental Activities

Scope of aggregation : Kyushu Electric Power Company　Target period : 2018.4.1～2019.3.31

Classification	Item (unit)			Effects of Environmental Activities	
				2018	2019
Local environmental preservation	Suppression of GHG emissions	Nuclear Power Generation	(10 thousand t-CO_2)	1,394	1,038
		New energy power generation / purchase		518	399
		Hydroelectric / Geothermal		357	254
		Improved thermal efficiency		33	29
		Reduction of transmission and distribution loss		7	0
		Utilization of Kyoto mechanism, etc.		0	0
		SF_6 Emission reduction		25	25
Local environmental preservation	SOx reduction amount		(1,000t)	45	55
	NOx reduction amount			17	17
	Soot and Dust reduction amount			142	37
Resource circulation	Industrial Waste	Amount recycled	(1,000t)	713	915
		Appropriate disposal amount		3	2
	General Waste Management and Disposal	Amount recycled		3	5
		Appropriate disposal amount		0	1
	Low-level radioactive waste reduction (200ℓ drum equivalent)		(drums)	3,375	33,892
	Spent nuclear fuel amount		(Quantity)	4,201	4,486

Nuclear Power Generation
Estimated assuming that the amount of power generated by nuclear power was covered by the average of all our power sources

New energy power generation / purchase, Hydroelectric / Geothermal
Estimated assuming that the amount of electricity generated by renewable energy (hydropower excluding power for pump operation) is covered by the average of all of our power sources

Improved thermal efficiency, Reduction of transmission and distribution loss
Calculated based on 2013 value

Utilization of Kyoto mechanism, etc.
Amortized by June of the following year, including the amount reflected for the calculation of CO2 emissions per electricity sold in the relevant year

SF_6 Emission reduction
Convert the amount recovered during inspection / removal to CO2 weight using the SF_6 GWP (22,800)

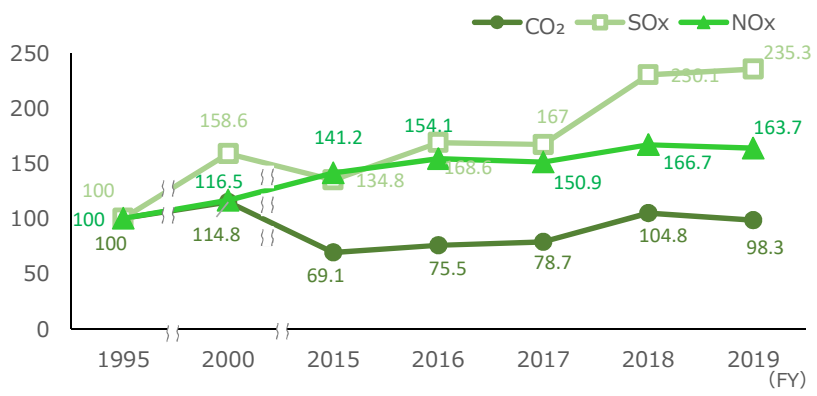
SOx,Nox,Soot reduction amount
Calculated based on the difference from the actual emission amount, using the emission amount (estimated value) when no measures are implemented as the baseline.

General Waste Management and Disposal
Amount of waste paper, dam driftwood, and shellfish in general waste

Spent nuclear fuel amount
Includes fuel to be reused

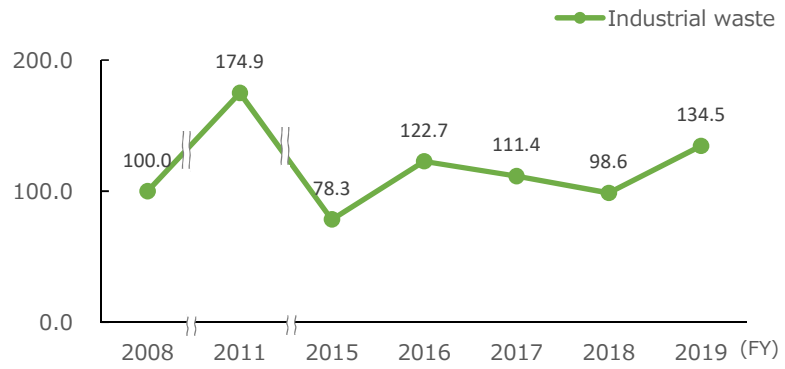
*FY2018 CO_2 emissions was used to calculate the CO_2 emission control effect per electric energy

Changes in CO_2, SOx, NOx Environmental efficiency（Electricity SalesVolume Standard）



Environmental efficiency = 【Electricity sales volume】(kWh) / Environmental load (t)

Changes in Industrial Waste Environmental efficiency（Electricity SalesVolume Standard）



Environmental efficiency = 【Electricity sales volume】(kWh) / Environmental load (t)

■Group Companies

Main achievements（Summary）

Item			Unit	Results		
				FY2017	FY2018	FY2019
Initiatives to Address Global Environmental Issues	Office power	usage	1 million kWh	24	23.7	22.2
		Usage per unit area	kWh/㎡	91.2	89	83.4
	Private logistics transportation (Excluding special vehicles)	Low-emission vehicle introduction ratio	%	69.5	71	73.2
		Fuel consumption rate (fuel efficiency)	km/ℓ	11.2	11.9	11.8
	SF_6 recovery rate	During machine maintenance	%	100	100	99.5
		During machine removal	%	100	100	100
	Recovery implementation rate during machine maintenance for fluorocarbons subject to regulation		%	100	100	96
	Copier paper usage		Million sheets	133.8	134.3	129.8
	Water supply	usage	1,000t	143.5	139.3	127.1
		per person	㎥/person	12.5	12	10.8
Initiatives to Establish a Recycling Society	Recycling rate	Industrial Waste	%	93	92	94
		Coal ash	%	100	100	100
		other than coal ash	%	75	69	87
		Waste paper	%	94	94	94
	Green procurement rate		%	86	82	86
Local environmental preservation	SOx emissions per quantity of thermal power generated		g/kWh	0.41	0.38	0.18
	NOx emissions per quantity of thermal power generated		g/kWh	0.26	0.24	0.18

Low-emission vehicle introduction ratio
Percentage of Electric vehicles (including plug-in hybrid vehicles), hybrid vehicles and fuel-efficient vehicles

no records
Those what own the equipment but do not have a record of inspection or removal of the equipment

Copier paper usage
A4 size conversion number

Green procurement rate
The scope of procurement is office supplies (paper, stationery)
Products that meet socially recognized standards, etc.

Changes in greenhouse gas emissions

Unit : 1,000t-CO_2

	FY2017	FY2018	FY2019
CO_2(carbon dioxide)	143	280	269
CH_4(methane)	0.2	0	0
N_2O(Dinitrogen monoxide)	0	0	0
HFC(Hydrofluorocarbon)	0	70.9	0
PFC(Perfluorocarbon)	—	—	—
SF_6(Sulfur hexafluoride)	0	0	0
Total	143.2	350.6	269.0

* Totals may not match due to the effects of rounding.

CO_2
Excluding electricity sold to electric power companies, etc.
Based on CO_2 emissions factor (FY2017)

■Independent Practitioner's Assurance for the Environmental Data

Independent Practitioner's Assurance Report

This Environmental Data Book has been assured by Deloitte Tohmatsu Sustainability Co., Ltd., to ensure the reliability of the environmental data it presents.

Deloitte.
デロイト トーマツ

(TRANSLATION)

Independent Practitioner's Assurance Report

August 31, 2020

Mr. Kazuhiro Ikebe,
President & Chief Executive Officer,
Kyushu Electric Power Company, Incorporated.

Masahiko Sugiyama
Representative Director
Deloitte Tohmatsu Sustainability Co., Ltd.
3-2-3, Marunouchi, Chiyoda-ku, Tokyo

We have undertaken a limited assurance engagement of the environmental data indicated with ☑ for the year ended March 31, 2020 (the "Environmental Quantitative Information") included in the "KYUDEN GROUP Environmental Data Book 2020" (the "Report") of Kyushu Electric Power Company, Incorporated. (the "Company").

The Company's Responsibility

The Company is responsible for the preparation of the Environmental Quantitative Information in accordance with the calculation and reporting standard adopted by the Company (indicated with the Environmental Quantitative Information). Greenhouse gas quantification is subject to inherent uncertainty for reasons such as incomplete scientific knowledge used to determine emissions factors and numerical data needed to combine emissions of different gases.

Our Independence and Quality Control

We have complied with the independence and other ethical requirements of the Code of Ethics for Professional Accountants issued by the International Ethics Standards Board for Accountants, which is founded on fundamental principles of integrity, objectivity, professional competence and due care, confidentiality and professional behavior. We apply International Standard on Quality Control 1, *Quality Control for Firms that Perform Audits and Reviews of Financial Statements, and Other Assurance and Related Services Engagements*, and accordingly maintain a comprehensive system of quality control including documented policies and procedures regarding compliance with ethical requirements, professional standards and applicable legal and regulatory requirements.

Our Responsibility

Our responsibility is to express a limited assurance conclusion on the Environmental Quantitative Information based on the procedures we have performed and the evidence we have obtained. We conducted our limited assurance engagement in accordance with the International Standard on Assurance Engagements ("ISAE") 3000, *Assurance Engagements Other than Audits or Reviews of Historical Financial Information*, issued by the International Auditing and Assurance Standards Board ("IAASB"), ISAE 3410, *Assurance Engagements on Greenhouse Gas Statements*, issued by the IAASB and *the Practical Guideline for the Assurance of Sustainability Information*, issued by the Japanese Association of Assurance Organizations for Sustainability Information.

The procedures we performed were based on our professional judgment and included inquiries, observation of processes performed, inspection of documents, analytical procedures, evaluating the appropriateness of quantification methods and reporting policies, and agreeing or reconciling with underlying records. These procedures also included the following:

- Evaluating whether the Company's methods for estimates are appropriate and had been consistently applied. However, our procedures did not include testing the data on which the estimates are based or reperforming the estimates.
- Performing interviews of responsible persons and inspecting documentary evidence to assess the completeness of the data, data collection methods, source data and relevant assumptions applicable to the sites.

The procedures performed in a limited assurance engagement vary in nature and timing from, and are less in extent than for, a reasonable assurance engagement. Consequently, the level of assurance obtained in a limited assurance engagement is substantially lower than the assurance that would have been obtained had we performed a reasonable assurance engagement.

Limited Assurance Conclusion

Based on the procedures we have performed and the evidence we have obtained, nothing has come to our attention that causes us to believe that the Environmental Quantitative Information is not prepared, in all material respects, in accordance with the calculation and reporting standard adopted by the Company.

The above represents a translation, for convenience only, of the original Independent Practitioner's Assurance report issued in the Japanese language.

Member of
Deloitte Touche Tohmatsu Limited