

Environmental Data Collection

Material Balance

Category	Substance	FY2019		FY2020		FY2021		FY2022		FY2023		Unit
		Consolidated	Non-consolidated	Consolidated	Non-consolidated	Consolidated	Non-consolidated	Consolidated	Non-consolidated	Consolidated	Non-consolidated	
INPUT	Electric power	0.95	0.25	0.88	0.22	0.98	0.23	0.94	0.23	0.95	0.22	TWh
	Gas	1.65	0.23	1.41	0.20	1.66	0.19	1.50	0.20	1.42	0.19	TWh
	Petroleum	0.02	0.00	0.02	0.00	0.02	0.00	0.02	0.00	0.02	0.00	TWh
	Raw materials	15	3	14	3	16	2	15	3	14	3	10 ⁴ metric tons
	Recycled materials	0.4	0.4	0.4	0.4	0.4	0.4	0.5	0.5	0.4	0.4	10 ⁴ metric tons
	PRTR-listed substances	589	236	506	188	447	186	511	160	963	176	Metric tons
	Water withdrawal	4.33	1.55	3.78	1.45	4.37	1.41	4.14	1.20	4.23	1.31	Million m ³
OUTPUT	Energy-origin CO ₂	87	16	76	13	63	12	59	13	59	14	10 ⁴ metric tons of CO ₂
	Energy-origin CO ₂ (including effects of CN LNG)*	-	-	-	-	62	10	56	10	56	11	10 ⁴ metric tons of CO ₂
	Other greenhouse gases	1	0	0	0	0	0	0	0	1	0	10 ⁴ metric tons of CO ₂
	CO ₂ (non-energy origin CO ₂)	0	0	0	0	0	0	0	0	0	0	10 ⁴ metric tons of CO ₂
	CH ₄	0	0	0	0	0	0	0	0	0	0	10 ⁴ metric tons of CO ₂
	N ₂ O	0	0	0	0	0	0	0	0	0	0	10 ⁴ metric tons of CO ₂
	HFC	0	0	0	0	0	0	0	0	0	0	10 ⁴ metric tons of CO ₂
	PFC	0	0	0	0	0	0	0	0	0	0	10 ⁴ metric tons of CO ₂
	SF ₆	0	0	0	0	0	0	0	0	0	0	10 ⁴ metric tons of CO ₂
	VOC	68	0	83	0	77	1	107	1	88	4	Metric tons
	PRTR-listed substances (emissions into atmosphere)	76	3	89	3	84	2	110	2	92	5	Metric tons
	Discarded materials	5	1	5	1	5	1	5	1	5	1	10 ⁴ metric tons
	Recycled	4	1	4	1	4	1	4	1	4	1	10 ⁴ metric tons
	Disposed of externally	1	0	1	0	1	0	1	0	1	0	10 ⁴ metric tons
	Water discharge	3.14	1.40	2.53	1.09	2.74	1.03	2.68	0.80	2.71	0.86	Million m ³
	PRTR-listed substances (discharge into bodies of water)	1	1	0	0	1	1	1	1	1	1	Metric tons
	Scope 1 (energy-origin CO ₂)	31	4	26	4	31	4	28	4	27	4	10 ⁴ metric tons of CO ₂
	Scope 1 (energy-origin CO ₂) (including effects of CN LNG)*	-	-	-	-	29	2	25	1	24	1	10 ⁴ metric tons of CO ₂
	Scope 2 (energy-origin CO ₂)	56	11	49	10	33	9	31	9	32	10	10 ⁴ metric tons of CO ₂

Note: The figures indicating environmental performance in this table have been rounded off for convenience, so the total may not equal the sum of the individual figures.

Note: Discarded materials indicates the sum total of industrial waste and valuable resources.

Note: The figures in the non-consolidated column are the data for NGK production locations (Head Office/Nagoya Site, Chita Site, Komaki Site, Ishikawa Plant).

Note: As with the non-consolidated values, the emission factor for electricity in the consolidated values of Outputs/Energy-origin CO₂ (including effects of CN LNG) and Scope 2 (energy-origin CO₂), has been changed from a fixed value to the actual value from the power company for each fiscal year, beginning in FY2020.

* CN LNG (Carbon Neutral Liquid Natural Gas) is LNG that is offset with CO₂ credits, and thus considered to have no CO₂ emissions. However, we show it as a separate category because it does not qualify for credits under current energy conservation laws.

Material Balance Calculation Basis

INPUT	1. Energy	<p>Electric power Electric power consumption</p> <p>Gas Amount obtained by converting the consumption volume for each type of fuel into the heat value = Σ (consumption volume of each fuel \times unit heating value of each fuel) \div 3,600 MJ/MWh <Unit heating value of fuel> Natural gas : (China) 43.5/38.9/42.5 MJ/Nm³ *¹, (outside China) 43.5/42.5 MJ/Nm³ *², City gas: (NGK alone) 45 MJ/Nm³, (other than for NGK alone) 45/44.8/45 MJ/Nm³ *¹, Others: according to the Act on Promotion of Global Warming Countermeasures</p> <p>Petroleum Amount obtained by converting the consumption volume for each type of fuel into the heat value = Σ (Consumption volume of each fuel \times Unit heating value of each fuel) \div 3,600 MJ/MWh <Unit heating value of fuel> According to the Act on Promotion of Global Warming Countermeasures *¹ Data to left side of "/" is for FY2019 to FY2020, middle is for FY2021 to 2022, right is from FY2023 *² Data to left side of "/" is for FY2019 to FY2022, right is from FY2023</p>
	2. Water withdrawal	Total tap water, industrial water, groundwater, and rainwater
	3. PRTR-listed substances	Total quantity of Japan's PRTR Type 1 listed substances handled
	4. Raw materials	Total amount of raw materials used to manufacture products
OUTPUT	5. Energy-origin CO ₂ emission volume	<p>Energy-origin CO₂ emission volume = Σ (Consumption of each type of energy \times CO₂ conversion factor of each type of energy) <CO₂ conversion factor of energy></p> <p>Electric power Japan: Emission coefficient for each electric utility adjusted in Japan based on the Act on Promotion of Global Warming Countermeasures; US (other than NMC, FMI California, NL): Green-e value; US (NMC, FMI California, NL): Green-e value / value published by electric company*¹; Belgium, France: AIB value; Australia: Australian National Greenhouse Accounts value; Poland: AIB value / Poland National Centre for Emission Management value*¹; China: IEA value / Ministry of Ecology and Environment of the Republic of China value / IEA value*², Other countries : IEA values</p> <p>Fuel Natural gas: (China) 2.22/2.16/2.17 kgCO₂/Nm³ *², (Countries other than China) 2.22/2.17 kgCO₂/Nm³ *³, City gas: (NGK alone) 2.244/2.29/2.27 kgCO₂/Nm³ *², (other than for NGK alone) 2.23/2.27 kgCO₂/Nm³ *³ Others : According to the Act on Promotion of Global Warming Countermeasures *¹ Data to left side of "/" is for FY2019 to FY2020, right is from FY2021 *² Data to left side of "/" is for FY2019 to FY2020, middle is for FY2021 to 2022, right is from FY2023 *³ Data to left side of "/" is for FY2019 to FY2022, right is from FY2023</p>
	6. Emission volume of other greenhouse gases	<p>Emission volume of other greenhouse gases (tCO₂) = volume of activity \times emission coefficient \times Global warming potential <Global warming potential> According to the Act on Promotion of Global Warming Countermeasures</p>
	7. Water discharge	Total volume of water discharged. However, this does not include the rainwater discharge volume.
	8. PRTR-listed substances	<p>Discharge into bodies of water: Total amount of Japan's PRTR Type 1 listed substances discharged into public bodies of water</p> <p>Emissions into atmosphere: Total amount of Japan's PRTR Type 1 listed substances emitted into the atmosphere</p>
	9. Total amount of discarded materials generated	<p>Total amount of discarded materials generated = Externally disposed amount*¹ + Externally recycled amount Recycled amount: Externally recycled amount = Paid disposal*² + Valuable amount (selling off) *¹ Externally disposed amount: Direct disposal by landfill, or simple incineration *² Paid disposal: Outsourcing disposal and paying for recycling"</p>
	10. Scope 1 through 3	<p>Scope 1 Direct emissions of greenhouse gases by the reporting company (generated from industrial processes or the burning of fuel)</p> <p>Scope 2 Indirect emissions of greenhouse gases by the reporting company resulting from the use of electricity, steam, or heat purchased from other companies</p> <p>Scope 3 All other indirect emissions of greenhouse gases (not included in Scope 1 or 2) that occur in the reporting company's value chain</p>

GHG Emissions

Item	Category	Division	FY2019	FY2020	FY2021	FY2022	FY2023	Unit
GHG emissions (Scope1+2: Energy-origin CO ₂)* ¹	-	Including effects of CN LNG* ²	87	76	62	56	56	10 ⁴ metric tons of CO ₂
GHG emissions (Scope 1: Energy-origin CO ₂)* ¹	-	Including effects of CN LNG* ²	31	26	29	25	24	10 ⁴ metric tons of CO ₂
GHG emissions (Scope 2: Energy-origin CO ₂)* ¹	-	-	56	49	33	31	32	10 ⁴ metric tons of CO ₂
Basic unit per net sales (Scope1+2: Energy-origin CO ₂)* ¹	-	Including effects of CN LNG* ²	198	167	120	100	96	Metric tons of CO ₂ per 100 million yen
GHG emissions (Scope3) (FY2019-FY2020: Non-consolidated, FY2021-FY2023: Consolidated)	Total		97.7	89.3	344.9	351.9	327.0	10 ⁴ metric tons of CO ₂
	1	Purchased products and services	84.2	77.0	178.8	192.2	188.1	10 ⁴ metric tons of CO ₂
	2	Capital goods (capital investment)	9.9	9.0	13.4	13.9	15.7	10 ⁴ metric tons of CO ₂
	3	Energy	1.6	1.5	8.6	8.2	8.1	10 ⁴ metric tons of CO ₂
	4	Transport (upstream)	1.4	1.3	18.8	11.1	10.8	10 ⁴ metric tons of CO ₂
	5	Waste	0.2	0.2	1.2	1.0	1.0	10 ⁴ metric tons of CO ₂
	6	Business trips	0.1	0.1	0.3	0.3	0.3	10 ⁴ metric tons of CO ₂
	7	Employee commutes	0.2	0.2	0.9	0.9	0.8	10 ⁴ metric tons of CO ₂
	8	Leased assets (upstream)	-	-	-	-	-	10 ⁴ metric tons of CO ₂
	9	Transport (downstream)	-	-	-	-	-	10 ⁴ metric tons of CO ₂
	10	Processing of sold products	-	-	-	-	-	10 ⁴ metric tons of CO ₂
	11	Use of sold products	-	-	122.6	123.9	101.9	10 ⁴ metric tons of CO ₂
	12	Disposal of sold products	-	-	0.4	0.4	0.4	10 ⁴ metric tons of CO ₂
	13	Leased assets (downstream)	-	-	-	-	-	10 ⁴ metric tons of CO ₂
	14	Franchises	-	-	-	-	-	10 ⁴ metric tons of CO ₂
	15	Investment	-	-	-	-	-	10 ⁴ metric tons of CO ₂
Other GHG emissions* ¹	Total		0	0	0	0	1	10 ⁴ metric tons of CO ₂
	-	CO ₂ (non-energy origin CO ₂)	0	0	0	0	0	10 ⁴ metric tons of CO ₂
	-	CH ₄	0	0	0	0	0	10 ⁴ metric tons of CO ₂
	-	N ₂ O	0	0	0	0	0	10 ⁴ metric tons of CO ₂
	-	HFC	0	0	0	0	0	10 ⁴ metric tons of CO ₂
	-	PFC	0	0	0	0	0	10 ⁴ metric tons of CO ₂
	-	SF ₆	0	0	0	0	0	10 ⁴ metric tons of CO ₂

*1 The scope is consolidated.

*2 CN LNG (Carbon Neutral Liquid Natural Gas) is LNG that is offset with CO₂ credits, and thus considered to have no CO₂ emissions. However, we show it as a separate category because it does not qualify for credits under current energy conservation laws.

Consumption of Each Energy

Item	FY2019	FY2020	FY2021	FY2022	FY2023	Unit
Electric power	0.95	0.88	0.98	0.94	0.95	TWh
Gas	1.65	1.41	1.66	1.50	1.42	TWh
Petroleum	0.02	0.02	0.02	0.02	0.02	TWh
Basic unit per net sales	596	513	522	442	413	MWh per 100 million yen

The scope is consolidated.

Conservation of Water Resources

Item		FY2019	FY2020	FY2021	FY2022	FY2023	Unit
Water withdrawal	Tap water/industrial water	3.710	3.135	3.720	3.494	3.616	Million m ³
	Groundwater	0.620	0.640	0.614	0.648	0.608	Million m ³
	Rainwater	0.001	0.002	0.002	0.001	0.002	Million m ³
	Total	4.331	3.777	4.336	4.143	4.226	Million m ³
Water discharge	Rivers	0.828	0.734	0.733	0.705	0.681	Million m ³
	Lakes	0.000	0.000	0.000	0.000	0.000	Million m ³
	Sea	1.618	1.201	1.218	1.152	1.238	Million m ³
	Sewerage	0.419	0.376	0.458	0.507	0.496	Million m ³
	Factory complex processing	0.241	0.207	0.238	0.233	0.243	Million m ³
	Other	0.013	0.017	0.057	0.079	0.054	Million m ³
	Total	3.140	2.534	2.704	2.677	2.712	Million m ³
Amount of water consumption		1.191	1.243	1.632	1.466	1.514	Million m ³
Volume recycled		0.090	0.066	0.063	0.077	0.102	Million m ³
Recycling rate*		2.0	1.7	1.5	1.9	2.4	%

The scope is consolidated.

* (Recycling rate) = (Volume recycled) / (Total water withdrawal)

Raw Materials

Item	FY2019	FY2020	FY2021	FY2022	FY2023	Unit
Raw materials	15	14	16	15	14	10 ⁴ metric tons
Recycled materials	0.4	0.4	0.4	0.5	0.4	10 ⁴ metric tons

The scope is consolidated.

Chemical Management System

Item	FY2019	FY2020	FY2021	FY2022	FY2023	Unit
VOC	68	83	77	107	88	Metric tons
PRTR-listed substances (emissions into atmosphere)	76	89	84	110	92	Metric tons
PRTR-listed substances (discharge into bodies of water)	1	0	1	1	1	Metric tons

The scope is consolidated.

Discarded Materials

Item	FY2019	FY2020	FY2021	FY2022	FY2023	Unit
Discarded materials	5	5	5	5	5	10 ⁴ metric tons
Recycled	4	4	4	4	4	10 ⁴ metric tons
Disposed of externally	1	1	1	1	1	10 ⁴ metric tons
Plastic recycled + disposed of externally	-	-	-	-	0.1	10 ⁴ metric tons
Basic unit per net sales	12.5	10.3	10.5	8.4	8.3	Metric tons per 100 million yen
Reduction rate against BAU*	24	24	26	31	31	%

The scope is consolidated.

* This is the improvement rate in the basic unit for production output based on FY2013.

Toxic Materials

Item		FY2019	FY2020	FY2021	FY2022	FY2023	Unit
PCB waste	Considered to be disposed	26	166	39	179	104	Units
	Disposed amount	5,097	21,999	11,480	28,805	470	kg

The scope is consolidated.

Products and Services Contributing to Environmental Protection

Item	FY2019	FY2020	FY2021	FY2022	FY2023	Unit
Ratio of sales of products and services contributing to environmental protection of the sales of all products and services	59	57	59	59	64	%

The scope is consolidated.

Environmental Accounting

Item	FY2019	FY2020	FY2021	FY2022	FY2023	Unit
Environmental conservation costs/Capital investment* ¹	13.6	26.8	9.4	19.4	28.6	100 million yen
Environmental conservation costs/Expenditures* ¹	29.8	35.0	41.4	31.8	50.0	100 million yen
Economic benefits* ¹	5.7	4.5	6.9	7.7	7.2	100 million yen
Cost-effectiveness* ¹ * ²	19.2	12.9	16.7	24.1	14.4	%
CO ₂ eco-efficiency* ³ * ⁴ * ⁵	109	122	187	226	233	%
Discarded materials eco-efficiency* ³ * ⁴ * ⁶	146	176	172	216	217	%

*1 The scope is NGK and domestic group companies

*2 (Cost-effectiveness) = (Economic benefits) / (Expenditures)

*3 The scope is consolidated.

*4 FY2013 = 100%

*5 (CO₂ eco-efficiency) = (Net sales) / (CO₂ emissions)

*6 (Discarded materials eco-efficiency) = (Net sales) / (Amount of discarded materials)

Environmental Management System

Item	FY2019	FY2020	FY2021	FY2022	FY2023	Unit
NGK	4	4	4	4	4	Number of bases certified
Domestic Group	22	18	19	19	19	Number of bases certified
Overseas Group	21	21	21	21	21	Number of bases certified

New manufacturing sites that have been in operation for less than two years are excluded.

Environmental Audits

Item	FY2019	FY2020	FY2021	FY2022	FY2023	Unit
Significant findings	0	0	0	0	0	Cases

The scope is consolidated.

Environmental Risk Management

Item	FY2019	FY2020	FY2021	FY2022	FY2023	Unit
Major violations	0	0	0	1	1	Cases

The scope is consolidated.

External Recognition of Environmental Performance

Item	FY2019	FY2020	FY2021	FY2022	FY2023
CDP-Climate Change	A-	B	B	A-	A-
CDP-Water Security	B-	B	B	A-	B
CDP SUPPLIER ENGAGEMENT	B	B	A	A-	B

The scope is consolidated.

Eco Test Certification

Item	FY2019	FY2020	FY2021	FY2022	FY2023	Unit
Number of successful examinees	37	73	44	29	43	Persons

The scope is NGK only.