Environmental Data Collection

Material Balance

Category	Substance	FY2020		FY2021		FY2022		FY2023		FY2024		Unit
		Consolidated	Non-consolidated	Consolidated	Non-consolidated	Consolidated	Non-consolidated	Consolidated	Non-consolidated	Consolidated	Non-consolidated	
INPUT	Electric power	0.88	0.22	0.98	0.23	0.94	0.23	0.95	0.22	0.92	0.21	TWh
	Gas	1.41	0.20	1.66	0.19	1.50	0.20	1.42	0.19	1.27	0.17	TWh
	Petroleum	0.02	0.00	0.02	0.00	0.02	0.00	0.02	0.00	0.01	0.00	TWh
	Raw materials	14	3	16	2	15	3	14	3	12	3	10^4 metric tons
	Recycled materials	0.4	0.4	0.4	0.4	0.5	0.5	0.4	0.4	0.4	0.4	10^4 metric tons
	PRTR-listed substances	506	188	447	186	511	160	963	176	1,001	297	Metric tons
	Water withdrawal	3.78	1.45	4.37	1.41	4.14	1.20	4.23	1.31	4.04	1.30	Million m^3
OUTPUT	Energy-origin CO_2	76	13	63	12	59	13	59	14	56	12	10^4 metric tons of CO_2
	Energy-origin CO_2 (including effects of CN LNG*)	-	-	62	10	56	10	56	11	54	10	10^4 metric tons of CO_2
	Other greenhouse gases	0	0	0	0	0	0	1	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_2O	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	83	0	77	1	107	1	88	4	46	1	Metric tons
	PRTR-listed substances (emissions into atmosphere)	89	3	84	2	110	2	92	5	49	4	Metric tons
	Discarded materials	5	1	5	1	5	1	5	1	4	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	2.53	1.09	2.74	1.03	2.68	0.80	2.71	0.86	2.64	0.84	Million m^3
	PRTR-listed substances (discharge into bodies of water)	0	0	1	1	1	1	1	1	1	1	Metric tons
	Scope1 (energy-origin CO_2)	26	4	31	4	28	4	27	4	24	3	10^4 metric tons of CO_2
	Scope1 (energy-origin CO_2) (including effects of CN LNG*)	-	-	29	2	25	1	24	1	21	1	10^4 metric tons of CO_2
	Scope2 (energy-origin CO_2)	49	10	33	9	31	9	32	10	33	9	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).
* CN LNG (Carbon Neutral Liquid Natural Gas) is LNG that is offset with CO_2 credits, and thus considered to have no CO_2 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	Electric power	Electric power consumption
		Gas	Amount obtained by converting the consumption volume for each type of fuel into the heat value = Σ (consumption volume of each fuel × unit heating value of each fuel) ÷ 3,600 MJ/MWh <Unit heating value of fuel> Natural gas : (China) 43.5/38.9/42.5 MJ/Nm^3 *1, (outside China) 43.5/42.5 MJ/Nm^3 *2, City gas: (NGK alone) 45 MJ/Nm^3, (other than for NGK alone) 45/44.8/45 MJ/Nm^3 *1 Others: according to the Act on Promotion of Global Warming Countermeasures
		Petroleum	Amount obtained by converting the consumption volume for each type of fuel into the heat value = Σ (Consumption volume of each fuel × Unit heating value of each fuel) ÷ 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 FY2020, middle is for FY2021 to 2022, right is from FY2023 *2 Data to left side of "/" is for FY2020 to FY2022, right is from FY2023
	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	Energy-origin CO_2 emission volume = Σ (Consumption of each type of energy × CO_2 conversion factor of each type of energy) <CO_2 conversion factor of energy>	
		Electric power	Japan: Adjusted emission factor values / basic emission factor values*1 for electric utilities in accordance with the Act on Promotion of Global Warming Countermeasures, US (excluding NMC, FMI California, and NL): Green-e values, US (NMC, FMI California, and NL): Green-e values/electric utility published values*2, Belgium and France: AIB values, Australia: Australian National Greenhouse Accounts values, Poland: AIB values / Polish National Centre for Emissions Management values*2, China: IEA values / Ministry of Ecology and Environment of the People's Republic of China values / IEA values*3, Other countries: IEA values
		Fuel	Natural gas: (China) 2.22/2.16/2.17 kgCO_2/Nm^3 *3, (Countries other than China) 2.22/2.17 kgCO_2/Nm^3 *4, City gas: (NGK alone)2.244/2.29/2.27 kgCO_2/Nm^3 *3, (other than for NGK alone) 2.23/2.27 kgCO_2/Nm^3 *4 Other fuels: According to the Act on Promotion of Global Warming Countermeasures *1 Data to left side of "/" is for FY2020 to FY2023, right is from FY2024 *2 Data to left side of "/" is for FY2020, right is from FY2021 *3 Data to left side of "/ "is for FY2020, middle is for FY2021 to 2022, right is from FY2023 *4 Data to left side of "/" is for FY2020 to FY2022, right is from FY2023
	6. Emission volume of other greenhouse gases	Emission volume of other greenhouse gases (tCO_2) = volume of activity × emission coefficient × Global warming potential <Global warming potential> According to the Act on Promotion of Global Warming Countermeasures	
	7. Water discharge	Total volume of water discharged. However, this does not include the rainwater discharge volume.	
	8. PRTR-listed substances	Discharge into bodies of water: Total amount of Japan's PRTR Type 1 listed substances discharged into public bodies of water Emissions into atmosphere: Total amount of Japan's PRTR Type 1 listed substances emitted into the atmosphere	
	9. Total amount of discarded materials generated	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"	
	10. Scope1 through 3	Scope1	Direct emissions of greenhouse gases by the reporting company (generated from industrial processes or the burning of fuel)
		Scope2	Indirect emissions of greenhouse gases by the reporting company resulting from the use of electricity, steam, or heat purchased from other companies
		Scope3	All other indirect emissions of greenhouse gases (not included in Scope1 or 2) that occur in the reporting company's value chain

GHG Emissions

Item	Category	Division	FY2020	FY2021	FY2022	FY2023	FY2024	Unit
GHG emissions (Scope1+2: Energy-origin CO_2)*1	-	Including effects of CN LNG*2	76	62	56	56	54	10^4 metric tons of CO_2
GHG emissions (Scope1: Energy-origin CO_2)*1	-	Including effects of CN LNG*2	26	29	25	24	21	10^4 metric tons of CO_2
GHG emissions (Scope2: Energy-origin CO_2)*1	-	-	49	33	31	32	33	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	167	120	100	96	87	Metric tons of CO_2 per 100 million yen
GHG emissions (Scope3) (FY2019-FY2020: Non-consolidated, FY2021-FY2023: Consolidated)	Total		89.3	344.9	351.9	327.0	375.3	10^4 metric tons of CO_2
	1	Purchased products and services	77.0	178.8	192.2	188.1	201.8	10^4 metric tons of CO_2
	2	Capital goods (capital investment)	9.0	13.4	13.9	15.7	16.4	10^4 metric tons of CO_2
	3	Fuel- and energy-related activities not included in Scope1 or Scope2	1.5	8.6	8.2	8.1	7.7	10^4 metric tons of CO_2
	4	Transport (upstream)	1.3	18.8	11.1	10.8	9.8	10^4 metric tons of CO_2
	5	Waste	0.2	1.2	1.0	1.0	0.8	10^4 metric tons of CO_2
	6	Business trips	0.1	0.3	0.3	0.3	0.3	10^4 metric tons of CO_2
	7	Employee commutes	0.2	0.9	0.9	0.8	1.0	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	137.2	10^4 metric tons of CO_2
	12	End-of-life treatment of sold products	-	0.4	0.4	0.4	0.3	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	1	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_2O	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 CO_2 credits, and thus considered to have no CO_2 emissions. However, we show it as a separate category because it does not qualify for credits under current energy conservation laws.

Method for calculating GHG emissions (Scope3)

Category	Division	Calculation method
1	Purchased products and services	Σ (purchase price of products and services × emissions intensity*1)
2	Capital goods (capital investment)	Capital investment × emissions intensity*1
3	Fuel- and energy-related activities not included in Scope1 or Scope2	Σ (energy consumption × emissions intensity*1)
4	Transport (upstream)	Σ (weight of transported goods × distance × emissions intensity*2)
5	Waste	Σ (weight of waste materials × emissions intensity*1)
6	Business trips	number of employees × emissions intensity*1
7	Employee commutes	number of employees × number of work days per year × emissions intensity*1
8	Leased assets (upstream)	-
9	Transport (downstream)	-
10	Processing of sold products	-
11	Use of sold products	Σ (number of products sold × annual energy consumption × service life × CO_2 emission factor*3)
12	End-of-life treatment of sold products	Σ (number of products sold × product weight × emissions intensity*1)
13	Leased assets (downstream)	-
14	Franchises	-
15	Investments	-

*1 Value from Emission Factor Database Ver. 3.5 for use with the Basic Guidelines on Accounting for Greenhouse Gas Emissions throughout the Supply Chain
*2 Value from IDEA Database Ver. 2.3
*3 Value from Japan's Act on Promotion of Global Warming Countermeasures

Consumption of Each Energy

Item	FY2020	FY2021	FY2022	FY2023	FY2024	Unit
Electric power	0.88	0.98	0.94	0.95	0.92	TWh
Gas	1.41	1.66	1.50	1.42	1.27	TWh
Petroleum	0.02	0.02	0.02	0.02	0.01	TWh
Basic unit per net sales	513	522	442	413	359	MWh per 100 million yen

The scope is consolidated.

Conservation of Water Resources

Item		FY2020	FY2021	FY2022	FY2023	FY2024	Unit
Water withdrawal	Tap water/industrial water	3.135	3.720	3.494	3.616	3.396	Million m^3
	Groundwater	0.640	0.614	0.648	0.608	0.642	Million m^3
	Rainwater	0.002	0.002	0.001	0.002	0.01	Million m^3
	Total	3.777	4.336	4.143	4.226	4.038	Million m^3
Water discharge	Rivers	0.734	0.733	0.705	0.681	0.645	Million m^3
	Lakes	0.000	0.000	0.000	0.000	0.000	Million m^3
	Sea	1.201	1.218	1.152	1.238	1.188	Million m^3
	Sewerage	0.376	0.458	0.507	0.496	0.500	Million m^3
	Factory complex processing	0.207	0.238	0.233	0.243	0.235	Million m^3
	Other	0.017	0.057	0.079	0.054	0.074	Million m^3
	Total	2.534	2.704	2.677	2.712	2.642	Million m^3
Amount of water consumption		1.243	1.632	1.466	1.514	1.396	Million m^3
Volume recycled		0.066	0.063	0.077	0.102	0.102	Million m^3
Recycling rate*		1.7	1.5	1.9	2.4	2.5	%

The scope is consolidated.
* (Recycling rate) = (Volume recycled) / (Total water withdrawal)

Raw Materials

Item		FY2020	FY2021	FY2022	FY2023	FY2024	Unit
Raw materials	Total	14	16	15	14	12	10^4 metric tons
	Ceramic raw materials					8.7	10^4 metric tons
	Metal materials					2.0	10^4 metric tons
	Plastics					0.3	10^4 metric tons
	Others (cement, rubber, etc.)					0.8	10^4 metric tons
Recycled materials		0.4	0.4	0.5	0.4	0.4	10^4 metric tons

The scope is consolidated.

Chemical Management System

Item	FY2020	FY2021	FY2022	FY2023	FY2024	Unit
VOC	83	77	107	88	46	Metric tons
PRTR-listed substances (emissions into atmosphere)	89	84	110	92	49	Metric tons
PRTR-listed substances (discharge into bodies of water)	0	1	1	1	1	Metric tons

The scope is consolidated.

Discarded Materials

Item	FY2020	FY2021	FY2022	FY2023	FY2024	Unit
Discarded materials	5	5	5	5	4	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	0.2	10^4 metric tons
Basic unit per net sales	10.3	10.5	8.4	8.3	7.2	Metric tons per 100 million yen
Reduction rate against BAU*	24	26	31	31	35	%

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

Toxic Materials

Item		FY2020	FY2021	FY2022	FY2023	FY2024	Unit
PCB waste	Considered to be disposed	166	39	179	104	32	Units
	Disposed amount	21,999	11,480	28,805	470	9,152	kg

The scope is consolidated.

Products and Services Contributing to Environmental Protection

Item	FY2020	FY2021	FY2022	FY2023	FY2024	Unit
Ratio of sales of products and services contributing to environmental protection of the sales of all products and services	57	59	59	64	66	%

The scope is consolidated.

Environmental Accounting

Item			FY2020	FY2021	FY2022	FY2023	FY2024	Unit
Environmental conservation costs/Capital investment*1			26.8	9.4	19.4	28.6	15.9	100 million yen
Environmental conservation costs/ Expenditures*1	Total		35.0	41.4	31.8	50.0	49.5	100 million yen
	Pollution prevention costs	Costs of managing and maintaining equipment for preventing pollution	9.7	8.1	8.3	13.2	11.8	100 million yen
	Global environmental conservation costs	Costs related to conservation of the global environment	5.4	6.2	4.3	8.5	13.6	100 million yen
	Costs related to resource recycling	Costs related to conserving resources, saving water, and disposing of waste, and other resource recycling	8.6	9.2	7.8	9.0	10.9	100 million yen
	Upstream and downstream costs	Costs for curtailing environmental impacts outside of our business areas (outside the company)	0.1	0.1	0.1	0.0	0.1	100 million yen
	Administrative costs	Costs for initiatives that indirectly contribute to curtailing environmental impacts	6.8	4.0	5.2	5.3	6.3	100 million yen
	Research and development costs	Cost of research and development for reducing environmental impacts	1.6	1.6	1.7	4.1	4.1	100 million yen
	Social activity costs	Costs related to environmental conservation and communication with society about the environment	2.7	2.2	2.3	2.4	2.5	100 million yen
	Environmental damage costs	Costs related to damage done to the environment	0.2	9.9	2.1	7.5	0.2	100 million yen
Economic benefits*1	Total		4.5	6.9	7.7	7.2	9.8	100 million yen
	Energy conservation	Effect of energy conservation activities	1.2	1.6	3.0	2.9	6.4	100 million yen
	Resource conservation (water)	Effect of water conservation	0.0	0.0	0.0	0.0	0.0	100 million yen
	Resource conservation (raw materials)	Effect of efficient use of resources	0.3	0.1	0.1	0.1	0.3	100 million yen
	Resource conservation (containers and packaging)	Effect of reuse of containers and packaging	0.0	0.0	0.0	0.0	0.0	100 million yen
	Resource conservation (reduced disposal)	Effect of reduced disposal as waste	1.2	1.7	1.7	1.2	1.0	100 million yen
	Resource conservation (gain on sale)	Effect of sales of valuables	1.7	3.5	2.8	3.0	2.1	100 million yen
Cost-effectiveness*1 *2			12.9	16.7	24.1	14.4	19.8	%
CO2 eco-efficiency*3 *4 *5			122	187	226	233	259	%
Discarded materials eco-efficiency*3 *4 *6			176	172	216	217	253	%

*1 The scope is NGK and domestic group companies
*2 (Cost-effectiveness) = (Economic benefits) / (Expenditures)
*3 The scope is consolidated.
*4 FY2013 = 100%
*5 (CO_2 eco-efficiency) = (Net sales) / (CO_2 emissions)
*6 (Discarded materials eco-efficiency) = (Net sales) / (Amount of discarded materials)

Environmental Management System

Item	FY2020	FY2021	FY2022	FY2023	FY2024	Unit
NGK	4	4	4	4	4	Number of bases certified
Domestic Group	18	19	19	19	19	Number of bases certified
Overseas Group	21	21	21	21	18	Number of bases certified

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

Environmental Audits

Item	FY2020	FY2021	FY2022	FY2023	FY2024	Unit
Significant findings	0	0	0	0	0	Cases

The scope is consolidated.

Environmental Risk Management

Item	FY2020	FY2021	FY2022	FY2023	FY2024	Unit
Major violations	0	0	1	1	0	Cases

The scope is consolidated.

External Recognition of Environmental Performance

Item	FY2020	FY2021	FY2022	FY2023	FY2024
CDP-Climate Change	B	B	A-	A-	B
CDP-Water Security	B	B	A-	B	A
CDP-Supplier Engagement	B	A	A-	B	A

The scope is consolidated.

Eco Test Certification

Item	FY2020	FY2021	FY2022	FY2023	FY2024	Unit
Number of successful examinees	73	44	29	43	49	Persons

The scope is NGK only.