Pollution Prevention

ENVIRONMENT

Policy and Concept

Preventive measures are in place to address air and water pollution, while hazardous chemical substances such as asbestos and PCBs are strictly controlled and reduced to protect local environments.

◆ <Kansai Electric Power Group Environmental Policy 4. Protecting local community environments>

4. Protecting local community environments

At the Kansai Electric Power Group, we seek to prevent environmental pollution while working to strictly manage and reduce toxic chemicals in our business activities in order to promote the environmental protection of local communities.

Goals

● Measures to prevent air pollution

Maintaining current sulfur oxide (SOx) emissions per power output

Emission factor: Maintaining the world's lowest levels,
Emissions: Complying with the standards as agreed for each power plant

Maintaining current nitrogen oxide (NOx) emissions per power output

Emission factor: Maintaining the world's lowest levels,
Emissions: Complying with the standards as agreed for each power plant

● Handling of chemical substances

Proper processing of PCB waste

Proceed with certainty to achieve processing before the legal deadline

Proper handling of products containing asbestos

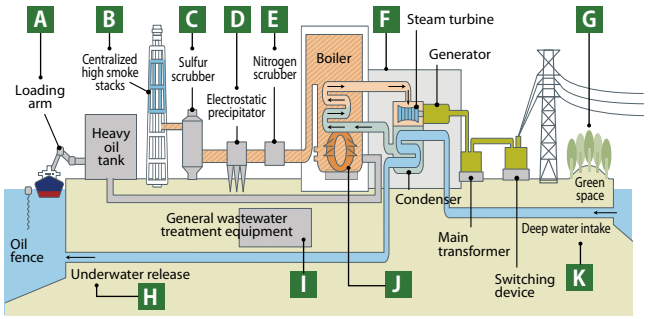
Proper control and processing in compliance with relevant laws and regulations

Efforts

● Air pollution prevention measures (SOx, NOx, soot)

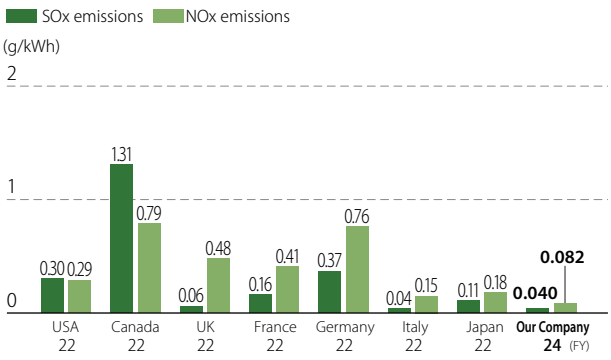
Our Company has implemented measures aimed at reducing the volume of SOx (sulfur oxides) emitted by our thermal power plants by using low-sulfur fuels, installing sulfur scrubbers, and other measures. To address the issue of NOx (nitrogen oxides), we are taking steps to lower emission levels, such as improving combustion methods and installing nitrogen scrubbers. As a result, our SOx and NOx emissions per unit of electric power generated are significantly lower than those of the major countries of Europe and North America, remaining among the lowest in the world. In addition, we have installed high-performance electrostatic precipitators that dramatically cut soot emissions.

◆Environmental measures adopted at thermal power stations



A Oil leakage prevention B Ground-level density reduction measures
C Removal of sulfur oxides D Removal of soot E Removal of nitrogen oxides
F Noise prevention G Afforestation H Heated water discharge measures
I Drainage treatment J Low-sulfur fuel K Heated water discharge measures

◆SOx and NOx emission factors for thermal power generation of major countries and our Company



Sources: OECD.Stat (OECD website) for emissions; World Energy Balances 2024 (IEA) for power generation output

Handling of chemical substances

Handling of asbestos

For buildings and equipment containing asbestos, we are systematically advancing the removal of asbestos and replacement with non-asbestos products. All handling of asbestos is conducted in strict compliance with applicable laws and regulations.

• Use of asbestos in buildings and facilities

Items targeted		Type of use	Present conditions (usage)
Blown-in materials containing asbestos		Acoustic insulation, thermal insulation, and fireproofing materials in company buildings; acoustic insulation for transformers	•Company buildings 199 buildings (about 3% of total) •Acoustic insulation for transformers 9 units (about 0.3% of total)
Asbestos-containing products	Building materials	Fireproofing panels, roofing materials, flooring for buildings, etc.	•Company buildings May be included in building materials used before August 2006
	Asbestos-cement pipes	Duct wiring for underground wires (transmission, distribution, and communications facilities)	•Transmission ducts approx. 660 km (route length) (about 42% of total length) •Distribution ducts approx. 585.8 km (route length) (about 12% of total length) •Communications ducts Transmission and distribution: approx. 2.3 km (route length) (about 11% of total length) Renewable energy: approx. 0.2 km (route length) (about 5% of total length)
	Thermal insulation	Power generation facilities (thermal power facilities, nuclear power facilities)	•Remaining products containing asbestos Thermal power: approx. 28,393 m^3 (about 9% of total) Nuclear power: approx. 1,889 m^3 (about 20% of total)
	Sealing materials, gaskets	Power generation facilities (thermal power facilities, nuclear power facilities)	•Sealing materials (remaining products containing asbestos) Thermal power: approx. 23,000 (about 24% of total) Nuclear power: approx. 4,700 (about 3% of total) •Gaskets (remaining products containing asbestos) Thermal power: approx. 3,700 (about 9% of total) Nuclear power: approx. 9,000 (about 5% of total)
	Buffers	Suspension insulators for transmission facilities, etc.	•Transmission facilities approx. 540,000 (about 11% of total) •Distribution facilities 2,847 (about 4% of total)
	Thickeners	Electric wire for overhead transmission lines; hydroelectric dams	•Transmission facilities approx. 241 km (route length) (about 2% of total length) •Part of asphalt-surface impervious wall for dam structure 1 facility (Tataragi Dam)
	Insulation materials	Main motors and main circuit fuses of electric locomotives; water turbine generators; circuit breakers	•Main motors: 4 locomotives (4 units/locomotive) •Main circuit fuses: 4 locomotives (1 unit/locomotive) •Water turbine generators (stators): 51 units •Water turbine generators (rotors): 55 units •Magnetic circuit breakers: 21 units
		Transformers for the uninterruptible power-supply system for telecommunication	•Transformers: 1 unit
	Friction materials	Winding machine brakes, etc.	•Water turbine generator brakes: 13 units •Crane brakes: 80 units •Incline brakes: 1 unit •Elevator brakes: 1 unit •Gate winding machine brakes: 99 units •Dust collector brakes: 6 units
	Insulators	Emergency power generators	•Emergency power generators: 3 units

Note: The figures in the table reflect the use of asbestos in buildings and facilities as of the end of March 2025.

Safe, proper disposal of PCB

In line with relevant laws and regulations such as Law Concerning Special Measures Against PCB Waste, we have a program in place to dispose of all equipment containing PCB (transformers, capacitors, fluorescent ballasts, etc.) safely and properly. Specifically, waste materials containing low concentrations of PCB will be fully disposed of by the deadline specified under relevant laws and regulations (the end of March 2027). For equipment containing low concentrations of PCB, the disposal of all pole transformers will be completed by the end of March 2027, while other equipment will be strictly controlled and properly disposed of in accordance with the outcomes of the government's discussions on control and disposal procedures from April 2027 onward.

Handling of other chemical substances

Hazardous chemical substances are strictly controlled and properly handled in accordance with the PRTR (Pollutant Release and Transfer Register) System.

Performance data

• Atmospheric emissions and drainage*1

		Unit	FY 2022	FY 2023	FY 2024
SOx emissions*2		t	2,111	1,905	1,638
			(2,111)	(1,905)	(1,638)
SOx emission intensity (at the generation end)*3		g/kWh	0.024	0.019	0.016
SOx emission intensity (per thermal power output) (at the generation end)*4			0.045	0.047	0.04
NOx emissions*5		t	3,875	3,524	3,402
			(3,918)	(3,539)	(3,415)
NOx emission intensity (at the generation end)*6		g/kWh	0.044	0.036	0.033
NOx emission intensity (per thermal power output) (at the generation end)*7			0.082	0.086	0.082
Ozone depletion emissions		$t\text{-}CO_2$	361	176	238
	HCFC		234	17	180
	Other		126	159	58
COD emissions*8		t	20	19	17
			(20)	(20)	(17)
Amount of disposed PCB waste		1,000 t	22.0	16.6	16.2
			(22.1)	(16.7)	(16.3)

*1 The figures in parentheses include the results of group companies (excluding those of some group companies)
*2 This is calculated from amounts of sulfur in fuel as well as SOx concentrations in gas emissions (measured values) and gas emission volumes.
*3 SOx emission intensity (at the generation end) = SOx emissions ÷ power output (at the generation end)
*4 SOx emission intensity (per thermal power output (at the generation end)) = SOx emissions ÷ thermal power output (at the generation end)
*5 This is calculated from SOx concentrations in gas emissions (measured values) and gas emission volumes.
*6 NOx emission intensity (at the generation end) = NOx emissions ÷ power output (at the generation end)
*7 NOx emission intensity (per thermal power output (at the generation end)) = NOx emissions ÷ thermal power output (at the generation end)
*8 This is calculated from analyzed wastewater concentration values.
Note: Reporting coverage is shown on page 23.

Management of chemical substances (PRTR)

Releases (t/year)

Name of targeted chemical substance	Unit	FY 2022	FY 2023	FY 2024
Asbestos	t/year	0.0	0.0	0.0
		(0.0)	(0.0)	(0.0)
Ethylbenzene		6.5	7.4	5.9
		(6.5)	(7.4)	(5.9)
Xylene		7.4	8.1	6.4
		(7.4)	(8.1)	(6.4)
Styrene		1.2	1.3	0.0
		(1.2)	(1.3)	(0.0)
Dioxins	mg-TEQ/year	0.019	0.014	0.083
		(0.019)	(0.014)	(0.083)
Trimethylbenzene	t/year	—	—	—
		(—)	(—)	(—)
Toluene		4.7	3.5	4.4
		(4.7)	(3.5)	(4.4)
Hydrazine		<0.1	<0.1	<0.1
		(<0.1)	(<0.1)	(<0.1)
Hexane		0.2	0.1	<0.1
		(0.2)	(0.1)	(<0.1)
Benzenes		0.1	<0.1	<0.1
		(0.1)	(<0.1)	(<0.1)
Boron compound		0.0	0.0	0.0
		(0.0)	(0.0)	(0.0)
PCB		—	—	—
		(—)	(—)	(—)
Methylnaphthalene		1.6	1.4	1.2
		(1.6)	(1.4)	(1.2)
Bromotrifluoromethane		—	—	—
		(—)	(—)	(—)
Nonylphenoxypolyoxyethanol		—	—	—
		(—)	(—)	(—)
Ethylenediaminetetraacetic acid		—	—	—
		(—)	(—)	(—)
Manganese and its compounds		—	—	—
		(—)	(—)	(—)
2-Aminoethanol		—	<0.1	<0.1
		(—)	(<0.1)	(<0.1)
2-Methyl-2-propanethiol		—	0.0	0.0
		(—)	(0.0)	(0.0)
Cyclohexane		—	—	0.0
		(—)	(—)	(—)
2,6-Di-*tert*-butyl-*p*-cresol		(0.0)	(0.0)	(0.0)
Methanol		(0.0)	(0.0)	(—)
4-Methyl-2-pentanone		(0.0)	(0.0)	(—)
Chloroform		(—)	(0.0)	(—)
Dichloromethane		(—)	(0.0)	(—)
Mercury		(—)	(0.0)	(—)
Tetrachloroethylene		(0.0)	(—)	(—)
Heptane		(—)	(—)	(0.0)

Transfers (t/year)

Name of targeted chemical substance	Unit	FY 2022	FY 2023	FY 2024
Asbestos	t/year	4.6	136.1	11.8
		(4.6)	(136.1)	(11.8)
Ethylbenzene		<0.1	<0.1	<0.1
		(<0.1)	(<0.1)	(<0.1)
Xylene		<0.1	<0.1	0.1
		(<0.1)	(<0.1)	(0.1)
Styrene		0.0	0.0	0.0
		(0.0)	(0.0)	(0.0)
Dioxins	mg-TEQ/year	0.00055	0.00071	0.00084
		(0.00055)	(0.00071)	(0.00084)
Trimethylbenzene	t/year	—	—	—
		(—)	(—)	(—)
Toluene		0.1	0.0	0.1
		(0.1)	(0.1)	(0.3)
Hydrazine		2.8	4.1	4.3
		(2.8)	(4.1)	(4.3)
Hexane		0.0	0.0	0.0
		(1.7)	(1.6)	(1.8)
Benzenes		0.0	0.0	0.0
		(0.0)	(0.0)	(0.0)
Boron compound		0.0	2.0	5.7
		(0.0)	(2.0)	(5.7)
PCB		—	—	—
		(—)	(—)	(—)
Methylnaphthalene		0.0	0.0	0.0
		(0.0)	(0.0)	(0.0)
Bromotrifluoromethane		—	—	—
		(—)	(—)	(—)
Nonylphenoxypolyoxyethanol		—	—	—
		(—)	(—)	(—)
Ethylenediaminetetraacetic acid		—	—	—
		(—)	(—)	(—)
Manganese and its compounds		—	—	—
		(—)	(—)	(—)
2-Aminoethanol		—	0.0	<0.1
		(—)	(0.0)	(<0.1)
2-Methyl-2-propanethiol		—	<0.1	1.2
		(—)	(<0.1)	(1.2)
Cyclohexane		—	—	<0.1
		(—)	(—)	(<0.1)
2,6-Di-*tert*-butyl-*p*-cresol		(<0.1)	(<0.1)	(<0.1)
Methanol		(<0.1)	(<0.1)	(—)
4-Methyl-2-pentanone		(<0.1)	(<0.1)	(—)
Chloroform		(—)	(<0.1)	(—)
Dichloromethane		(—)	(<0.1)	(—)
Mercury		(—)	(<0.1)	(—)
Tetrachloroethylene		(<0.1)	(—)	(—)
Heptane		(—)	(—)	(0.1)

Notes:
- The chart shows total values reported in compliance with the PRTR Act.
- "0" indicates no releases or transfers at targeted business sites.
- "<0.1" indicates less than 0.1 t/year releases, etc.
- "—" indicates no business sites targeted for totaling.
- Significant figures are displayed in two digits.
- The figures in parentheses include the results from the Company, Kansai Transmission and Distribution, Inc., and the majority of group companies.
- Reporting coverage is shown on page 23.

Environmental protection records at thermal power plants

Item				Sakaiko Power Station	Sakai LNG Center	Nanko Power Station	Kansai International Airport Energy Center	Maizuru Power Station	Gobo Power Station	Himeji No. 1 Power Station 5, 6 U	Himeji No. 2 Power Station	Ako Power Station
Main fuel				LNG	LNG	LNG	Kerosene	Coal	Heavy/ crude oil	LNG	LNG	Heavy/ crude oil
Air quality related	Sulfur oxides	Amount emitted hourly (m^3N/h)	Air Pollution Control Act (total amount regulation)	84	—	98	13	515*1	6,510*3	122	195	2,158*3
			Agreed value	—	—	—	—	255	184	—	—	180
			Actual value	—	—	—	—	160*4	54	—	—	35
		Amount emitted daily (t/d)	Agreed value	10.1	—	—	—	—	—	—	—	—
			Actual value	—	—	—	—	—	—	—	—	—
		Amount emitted annually (t/y)	Agreed value	940	—	—	—	1,523 × 10^3m^3N	970 × 10^3m^3N	—	—	650 × 10^3m^3N
			Actual value	—	—	—	—	564 × 10^3m^3N	3.764 × 10^3m^3N	—	—	6.8 × 10^3m^3N
	Nitrogen oxides	Amount emitted hourly (m^3N/h)	Air Pollution Control Act (total amount regulation)	625	—	255	—	—	—	—	—	—
			Agreed value	—	—	—	—	244	110	104	72	94
			Actual value	45.3	—	25	—	213	35	61	65	43
		Amount emitted daily (t/d)	Agreed value	7.7	—	1.8	—	—	—	—	—	—
			Actual value	2.1	—	0.7	0	—	—	—	—	—
		Amount emitted annually (t/y)	Agreed value	1,420	—	400	—	1,457 × 10^3m^3N	560 × 10^3m^3N	590 × 10^3m^3N	505 × 10^3m^3N	340 × 10^3m^3N
			Actual value	417.1	—	42	0.015	1,024 × 10^3m^3N	2.503 × 10^3m^3N	142.278 × 10^3m^3N	259 × 10^3m^3N	18.0 × 10^3m^3N
	Soot particles	Emission concentration (g/m^3N)	Air Pollution Control Act	0.04	0.05	0.03	0.05	0.1	0.07	0.05	0.05	0.05
			Agreed value	0.02	—	Not emitted	—	0.009	0.01	—	—	0.015
			Actual value	<0.002	—	<0.002	—	0.004	0.006	<0.002	—	0.002
Water quality related	Hydrogen ion concentration index		Water Pollution Control Act and ordinances	5.8–8.6	—	5.0–9.0*2	—	5.0–9.0	—	5.0–9.0	5.0–9.0	5.0–9.0
			Agreed value	—	—	—	—	5.8–8.6	5.8–8.6	5.8–8.6	5.8–8.6	5.8–8.6
			Actual value	7.7–7.8	—	8.1	—	6.5–8.0	6.2–7.9	6.9–7.9	6.9–7.8	6.6–7.6
	Chemical oxygen demand	Highest concentration (mg/L)	Water Pollution Control Act and ordinances	12	—	—	—	160	—	70	70	70
			Agreed value	—	—	—	—	15	10	15	15	15
			Actual value	2.0	—	—	—	5.8	5.1	2.4	5.6	1.6
		Pollution load amount (kg/d)	Water Pollution Control Act and ordinances	209.2	—	—	—	—	—	38.8	54.6	85.5
			Agreed value	—	—	—	—	22	36.8	15.2	35	22.4
			Actual value	16.09	—	—	—	6.39	6.1	2.3	11.7	2.2
	Amount of suspended solids	Highest concentration (mg/L)	Water Pollution Control Act and ordinances	50	—	600*2	—	200	—	90	90	90
			Agreed value	—	—	—	—	15	20	20	20	20
			Actual value	<5	—	17	—	<1	2.4	3	5	<1
	Amount of inclusion of n-hexane extractable substances	Highest concentration (mg/L)	Water Pollution Control Act and ordinances	2	—	4*2	—	5	—	5	5	5
			Agreed value	—	—	—	—	1	1	1	1	1
			Actual value	<1.0	—	<1.0	—	<1.0	0.2	0.2	0.2	<0.5

*1 Regulated value of Kyoto Prefecture ordinance execution rules to protect and nurture the environment
*2 Regulated value of Osaka City sewer ordinance execution rules
*3 Regulated K value
*4 The estimated maximum value is approximately 640 m^3N/h, attributable to damage to desulfurization equipment at Unit 1 on May 8, 2024 (estimated as it exceeded the meter's measurement limit).

Notes:
- "<0.1" refers to a maximum concentration of less than 0.1.
- Figures representing the Company only