Pollution Prevention

Steadily implementing local environmental protection measures, including preventing air and water pollution, dealing with asbestos issues and preserving biodiversity, we are also strictly managing chemical substances.
At our power plants, for instance, we undertake measures based on laws, local regulations, environmental protection agreements and other rules to reduce air pollution, water pollution, noise, vibrations, and other problems. In addition, we monitor and measure the air and ocean around our power plants and carefully evaluate the environmental effects of our operations on the regional environment to ensure that no problems occur.

●<Kansai Electric Power Group Environmental Action Policy 3. Promotion of environmental protection in local communities>

3. Promotion of environmental protection in local communities
We are committed to conserving the local environment by implementing the following:
(1) Measures to prevent air and water pollution, etc.
(2) Efforts to strictly manage and reduce toxic chemicals
(3) Considering the preservation of biodiversity

◆◆◆ 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
Results: 0.021 g/kWh (consolidated), 0.036 g/kWh (thermal power generation), with all agreed standards met

◆Maintaining current nitrogen oxide (NOx) emissions per power output

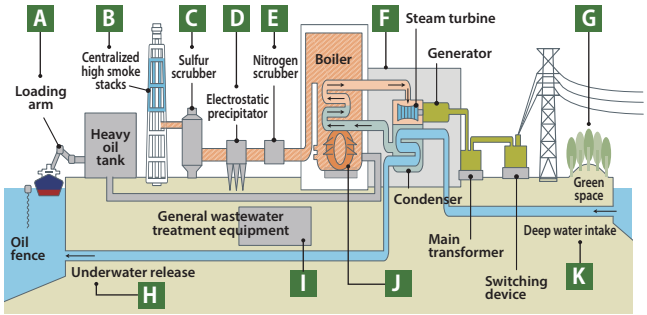
Emission factor: Maintaining the world's lowest levels, Emissions: Complying with the standards as agreed for each power plant
Results: 0.043 g/kWh (consolidated), 0.074 g/kWh (thermal power generation), with all agreed standards met

◆◆◆ Efforts ◆◆◆

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

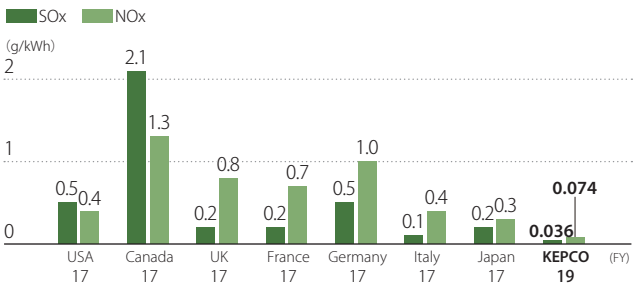
Our Company has implemented measures aimed at reducing the volume of SOx (sulfur oxides) emitted by our thermal power plants by using low-sulfur fuels, installing sulfur scrubbers, and other measures. To address the issue of NOx (nitrogen oxides), we are taking steps to lower emission levels, such as 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 dust 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 Kansai Electric Power



Source: Aggregated data based on OECD Stat. website (OECD) and World Energy Balances 2019 (IEA); excludes Kansai Electric Power Company

Handling chemicals

We regularly monitor the status of buildings and equipment that contain asbestos and systematically advance the removal of asbestos and replacement with non-asbestos products. In these ways, we are managing asbestos suitably as we strictly abide by related laws, regulations and other rules.
Moreover, in addition to abiding by the PRTR (Pollutant Release and Transfer Register) System, we are working actively to manage toxic chemicals strictly and to reduce them.

Scope of use (buildings and facilities) of asbestos

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 286 buildings (about 4% of total) • Acoustic insulation for transformers 27 units (about 1% of total)
Asbestos-containing products	Building materials	Fireproofing panels, roofing materials, flooring for buildings, etc.	• Company buildings May include building materials used before August 2006
	Asbestos-cement pipes	Duct wiring for underground wires (transmission, distribution, and communications facilities)	• Transmission ducts Approx. 661 km (route length) (about 42% of total length) • Distribution ducts Approx. 575 km (route length) (about 5% of total length) • Communications ducts Approx. 2.6 km (route length) (about 10% of total length)
	Thermal insulation	Power generation facilities (thermal power facility, nuclear power facility)	• Remaining products containing asbestos Thermal power: Approx. 79,734 m^3 (about 22% of total) Nuclear power: Approx. 2,065 m^3 (about 21% of total)
	Sealing materials, gaskets	Power generation facilities (thermal power facility, nuclear power facility)	• Sealing materials (remaining products containing asbestos) Thermal power: Approx. 33,000 (about 29% of total) Nuclear power: Approx. 6,700 (about 4% of total) • Gaskets (remaining products containing asbestos) Thermal power: Approx. 4,400 (about 10% of total) Nuclear power: Approx. 16,000 (about 8% of total)
	Buffers	Suspension insulators for transmission facilities, etc.	• Transmission facilities Approx. 570,000 (about 12% of total) • Distribution facilities 792 (about 1% of total)
	Thickeners	Electric wire for overhead transmission lines, hydroelectric dams	• Transmission facilities Approx. 124 km (distance) (about 1% 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	• Main motor: 4 locomotives (4 units/locomotive) • Main circuit fuse: 4 locomotives (1 unit/locomotive)

Note: The figures in the table reflect the use of asbestos in buildings and facilities as of the end of March 2020.

Performance data

Atmospheric emissions and drainage (non-consolidated)		Unit	FY2017	FY2018	FY2019
SOx emissions*1		t	2,734	2,351	2,138
SOx emission intensity (at the generation end)*2		g/kWh	0.028	0.022	0.021
SOx emission intensity (per thermal power output) (at the generation end)*3			0.039	0.037	0.036
NOx emissions*4		t	5,402	4,686	4,414
NOx emission intensity (at the generation end)*5		g/kWh	0.055	0.043	0.043
NOx emission intensity (per thermal power output) (at the generation end)*6			0.077	0.074	0.074
Ozone depletion emissions		$t\text{-}CO_2$	407	971	1153
	HCFC	$t\text{-}CO_2$	407	966	690
	Other		0	5	463
COD emissions*7		t	18	21	22

*1 This is calculated from amounts of sulfur in fuel as well as SOx concentrations in gas emissions (measured values) and gas emission volumes. (Some previous fiscal year amounts were calculated from the amount removed by desulfurization equipment.)
*2 SOx emission intensity (at the generation end) = SOx emissions ÷ power output (at the generation end)
*3 SOx emission intensity (per thermal power output (at the generation end)) = SOx emissions ÷ thermal power output (at the generation end)
*4 This is calculated from SOx concentrations in gas emissions (measured values) and gas emission volumes.
*5 NOx emission intensity (at the generation end) = NOx emissions ÷ power output (at the generation end)
*6 NOx emission intensity (per thermal power output (at the generation end)) = NOx emissions ÷ thermal power output (at the generation end)
*7 This is calculated from analyzed wastewater concentration values.