



E *Environment*

- ◆ Environmental Management
- ◆ Environmentally Friendly Business
- ◆ Climate Change
- ◆ Pollution Prevention
- ◆ Resource Circulation
- ◆ Efforts Toward Conserving Biodiversity
- ◆ Water Resources

Environmental Management

◆◆◆ Policy and Concept ◆◆◆

● Environmental policy

Our Group's CSR Action Charter stipulates that CSR Action Principles should be observed when conducting all business activities. As we are a responsible energy business deeply involved in environmental issues, these principles aim to reduce the environmental burden and risks related to our business activities while recognizing the significance of their impact on the global environment, and to contribute to building a sustainable society by providing products and services that have low environmental impacts – all designed to create a better environment for everyone. Moreover, in line with our conduct standards for individuals, we fully recognize the significance of environmental conservation, pay due consideration to the environmental impact of our business activities and support environmentally friendly practices with an emphasis on resource and energy conservation.

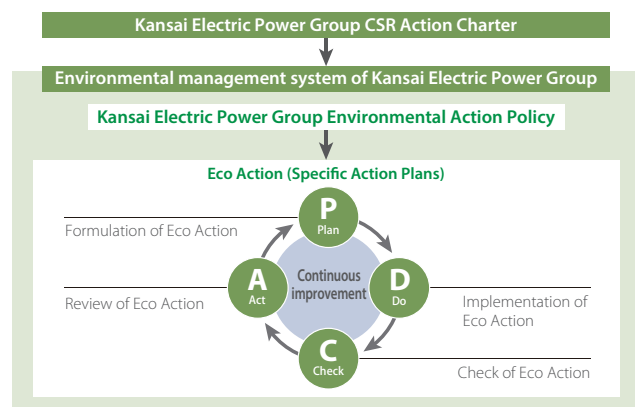
Accordingly, the Kansai Electric Power Group Environmental Action Policy serves as a guideline for our medium- to long-term environmental management, focusing on environmental challenges such as global warming, resource circulation and environmental protection in local communities, each of which is closely linked to our business activities. This action policy consists of four pillars, including “initiatives contributing to the realization of a low-carbon society,” with specific measures in place to achieve the stated objectives, subject to review and examination by the Sustainability and CSR Promotion Board, the results of which are communicated to our employees as well as to employees of group companies.

● Environmental management system

With an ISO 14001-based environmental management system in place, our Group is engaged in advanced environmental measures and risk management. Our environmental management system, supervised by top management, is being upgraded through a continuous PDCA cycle – i.e., development of environmental policies; development, implementation, check and review of our Group's Eco Action (an action plan for environmental management); and management review by the Sustainability and CSR Promotion Board.

Eco Action covers both our business activities and office activities while the latter concerns group-wide efforts to conserve resources and save energy.

◆ Environmental management system of the Kansai Electric Power Group (PDCA cycle)



● Kansai Electric Power Group Environmental Action Policy

1. Initiatives contributing to the realization of a low-carbon society

- (1) Lowering electric power's carbon intensity
- (2) Technological developments for constructing the Smart Grid
- (3) Contributing to energy conservation, cost reductions and CO₂ emissions reductions for customers and society
- (4) Overseas activities
- (5) Technical development efforts
- (6) Value chain efforts
- (7) Efforts to reduce greenhouse gases other than CO₂

2. Initiatives contributing to the realization of a recycling-oriented society

- (1) Promotion of proactive 3R efforts aimed at zero emissions
- (2) Promoting safe, reliable, and complete disposal of PCB wastes
- (3) Promoting green procurement

3. Promotion of environmental protection in local communities

- (1) Measures to prevent air and water pollution, etc.
- (2) Efforts to strictly manage and reduce toxic chemicals
- (3) Considering the preservation of biodiversity

4. Promoting environmental management and environmental communication

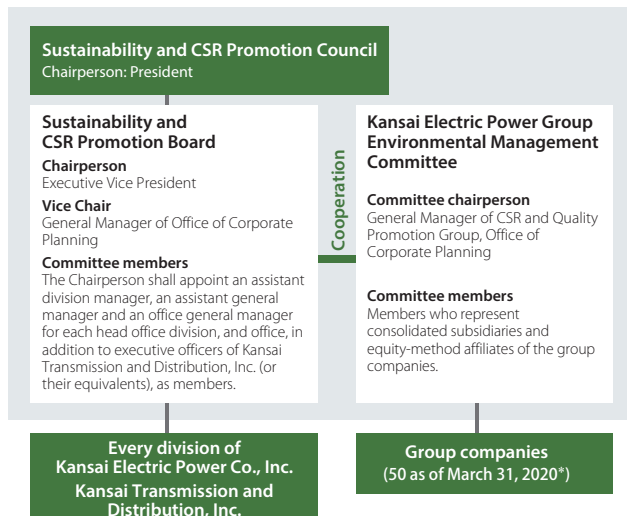
- (1) Continuous improvement using environmental management systems based on ISO 14001 systems and strict adherence to laws and regulations
- (2) Active advancement of environmental awareness raising activities with local communities and customers and disclosure of environmental information

◆◆◆ System ◆◆◆

Environmental management efforts are ongoing, with the President (as Chief Environmental Management Officer) leading the environmental officers of each division and organization. Meanwhile, the Office of Corporate Planning and the Office of Energy and Environmental Planning are promoting corporate environmental management, utilizing their expertise in environmental issues while providing assistance and guidance to each division (support for independent environmental management).

The Sustainability and CSR Promotion Board, which is in principle held twice a year, reviews our environmental management system, the results of which are reflected in the system itself. At the same time, the Kansai Electric Power Group Environmental Management Committee, comprised of representatives from consolidated subsidiaries and equity-method affiliates, usually holds an annual meeting to exchange information on issues concerning our Group's environmental management activities while cooperating as needed with the Sustainability and CSR Promotion Board.

◆ Environmental management promotion system of the Kansai Electric Power Group



* The 50 companies, which are selected from 80 consolidated subsidiaries and 4 equity-method affiliates, exclude those that have low environmental impacts and Kansai Transmission and Distribution, Inc.

◆◆◆ Goals ◆◆◆

● Environmental Management System (list of Eco Actions)

Kansai Electric Power Group Eco Actions (results in fiscal 2019 and targets for fiscal 2020)

◆ Initiatives contributing to the realization of a low-carbon society

Item	FY2019		FY2020
	Targets	Results	Targets
Advancing efforts to control CO ₂ emissions	<ul style="list-style-type: none"> Keep the top spot for the amount of CO₂-free power generation in Japan Halve CO₂ emissions associated with power generation in Japan in FY2030 (compared to FY2013) About 0.37 kg-CO₂/kWh*¹ for the entire electric power business by FY2030 	<ul style="list-style-type: none"> We kept the top spot for the amount of CO₂-free power generation in Japan (based on surveys and comparisons made in the electric power statistics) Reduction of about 40% from fiscal 2013 levels of CO₂ emissions associated with power generation in Japan (FY2019 results: About 28.5 million t-CO₂) [The Electric Power Council for a Low Carbon Society (ELCS): FY2018] 0.463-kg-CO₂/kWh*¹ [Our Company: FY2019] 0.318-kg-CO₂/kWh*^{1,2} 	<ul style="list-style-type: none"> Keep the top spot for the amount of CO₂-free power generation in Japan Halve CO₂ emissions associated with power generation in Japan in FY2030 (compared to FY2013)
Continuing safe and stable operation of nuclear power plants* ³	<ul style="list-style-type: none"> Advance efforts to operate nuclear power plants that make safety the top priority 	<ul style="list-style-type: none"> We continued the safe and stable operations at running plants We implemented safety improvement measures that conform to new regulatory requirements and voluntary efforts for various other safety measures. 	Operation of nuclear power plants that make safety the top priority
Further development and utilization of renewable energy	<ul style="list-style-type: none"> Achieve 6 million kW of installed capacity by 2030s (2 million kW or more new development in Japan and abroad) 	<ul style="list-style-type: none"> Accumulated installed capacity with a total of 4.43 million kW (Capacity of facilities that have begun operation (completed construction): about 3.89 million kW; Project underway: about 0.54 million kW) 	Continued
Maintaining and improving the thermal efficiency of thermal power plants* ³	<ul style="list-style-type: none"> Benchmark indicators*⁴ (A: 1.00, B: 44.3%) 	<ul style="list-style-type: none"> A-benchmark indicator: 1.03, B-benchmark indicator: 47.9% 	Continued
Reducing transmission and distribution loss* ⁵	<ul style="list-style-type: none"> Reduce from current level 	<ul style="list-style-type: none"> 4.8% 	To be maintained and reduced
Promoting use of innovative forms of energy among customers and communities	<ul style="list-style-type: none"> Contribute to making energy use by customers and society more sophisticated 	<ul style="list-style-type: none"> We worked to expand use of devices and services that contribute to more sophisticated utilization of energy by customers and society. Smart meters deployed: 0.94 million/year (Cumulative total: 11.53 million), progress rate: about 88% 	Continued
Limiting SF ₆ emissions* ⁶ (gas recovery rate upon inspection/removal of equipment)	<ul style="list-style-type: none"> 97% (upon inspection) 99% (upon removal) 	<ul style="list-style-type: none"> 99.0% (upon inspection) 99.4% (upon removal) 	Continued

*¹ Amount of CO₂ emissions per unit of electricity use (sales)

*² This value is provisional. Based on the Law Concerning the Promotion of the Measures to Cope with Global Warming and other factors, the actual value of the CO₂ emission factor will be officially announced by the country.

*³ Targets and results apply only to our Company.

*⁴ Indicators based on the benchmark system of the Law Concerning the Rational Use of Energy

*⁵ Targets apply only to Kansai Transmission and Distribution, Inc.

*⁶ On the calendar year basis

◆ Initiatives contributing to the realization of a recycling-oriented society (non-consolidated)

Item	FY2019		FY2020
	Targets	Results	Targets
Maintaining industrial waste recycling rate	• 99.5%	• 99.8%	Continued
Proper processing of PCB wastes	• Proceed with certainty to achieve processing before the legal deadline	• Amount of high-level PCB processed (Cumulative total): 5,365*	Continued

* Number of high-voltage transformers, condensers and other electrical equipment that were subcontracted to the Japan Environmental Storage & Safety Corporation (JESCO).

◆ Promotion of environmental protection in local communities (non-consolidated)

Item	FY2019		FY2020
	Targets	Results	Targets
Maintaining sulfur oxide (SOx) and nitrogen oxide (NOx) emission factors	SOx	Overall: 0.021 g/kWh Thermal: 0.036 g/kWh All agreed values were met.	Continued
	NOx	Overall: 0.043 g/kWh Thermal: 0.074 g/kWh All agreed values were met.	
Conservation of biodiversity	• Consideration of biodiversity through business activities	<ul style="list-style-type: none"> • We studied the status of vegetation around the Kurobe Dam through literature and field surveys. • We examined biodiversity conservation further based on survey results. 	Continued

◆ Office energy and resource conservation activities (group-wide items)

Item	Reducing office electricity consumption	Reducing office water consumption	Improving fuel efficiency of company vehicles	Reducing copy paper consumption
Targets	Reduce by 1% or more from previous year	Reduce as much as possible	Improve as much as possible	Reduce as much as possible
Record of results	Non-consolidated			
	<p>(GWh) 80 60 40 20 2017 2018 2019 (FY)</p>	<p>(1,000 m³) 600 400 200 0 2017 2018 2019 (FY)</p>	<p>(km/L) 12.0 11.0 10.0 9.0 2017 2018 2019 (FY)</p>	<p>(t) 800 700 600 500 2017 2018 2019 (FY)</p>
	Group companies*			
	<p>(GWh) 80 60 40 20 2017 2018 2019 (FY)</p>	<p>(1,000 m³) 600 400 200 0 2017 2018 2019 (FY)</p>	<p>(km/L) 11.0 10.0 9.0 2017 2018 2019 (FY)</p>	<p>(t) 800 700 600 500 2017 2018 2019 (FY)</p>

* Calculated for 38 consolidated subsidiaries (excluding Kansai Transmission and Distribution, Inc.) for which three-year data (FY2017–2019) is available.

◆◆◆ Efforts ◆◆◆

● Environmental education (practical knowledge and awareness raising)

We conduct education for our employees in order to develop human resources that understand the Kansai Electric Power Group Environmental Action Policy and are able to implement it.

Specifically, we are conducting specialized education to provide practical knowledge, etc.

● Environmental compliance

Recognizing “strict enforcement of compliance” as part of materiality (important issues), our Group is committed to eliminating any major violations of environmental compliance.

Major violations of environmental compliance reported in FY2017–2019 are summarized below.

◆ Major environmental compliance violations

Item	Targets	Results		
		FY2017	FY2018	FY2019
Major environmental compliance violations	0	1 (0)	1 (0)	4

- Major violations of environmental compliance occurred or reported in each fiscal year are included.
- The results for FY2017–2018 were reviewed since “major violations of environmental compliance” were redefined as “violations that have impacted (or could impact) the surrounding environment and/or human health.” (The numbers in parenthesis are violations reported before the redefinition.)

Major violations of environmental compliance occurred or reported in FY2019 are summarized below.

◆ Summary of major violations of environmental compliance

- Delayed recovery of spills (insulating oil containing trace amounts of PCB) from facilities caused by natural disasters
- Loss of PCB-containing products (fluorescent lighting ballasts) during construction work
- Absence of measures against the dispersion of asbestos during demolition of facilities (two violations reported)

We are implementing efforts to identify root causes, review in-house rules (observance of relevant laws and regulations), educate employees and improve facilities to prevent any recurrence of these violations.

In addition, details of these incidents are communicated company-wide and preventive measures are shared between all those concerned to prevent similar violations from taking place at other offices.

● Performance data

Eco Action-related (non-consolidated)		Unit	FY2017	FY2018	FY2019
SF ₆ gas emissions		t	0.1	0.2	0.1
	• Upon inspection	t	0	0.2	0.1
	• Upon removal	t	0.1	0.1	0.0
SF ₆ gas recovery rate					
	• Upon inspection	%	99.6	98.5	99.0
	• Upon removal	%	99.3	99.3	99.4
Transmission and distribution loss rate ^{*1*2}		%	4.4	5.1	4.8
Number and rate of smart meters installed ^{*2}		million %	About 9.32 About 71	About 10.58 About 81	About 11.53 About 88

^{*1} Transmission and distribution loss rates = (area transmission-end power – area consumption power (end use) – substation power) / area transmission-end power × 100 [%]

^{*}Area in this case refers to the entire supply area of Kansai Transmission and Distribution, Inc.

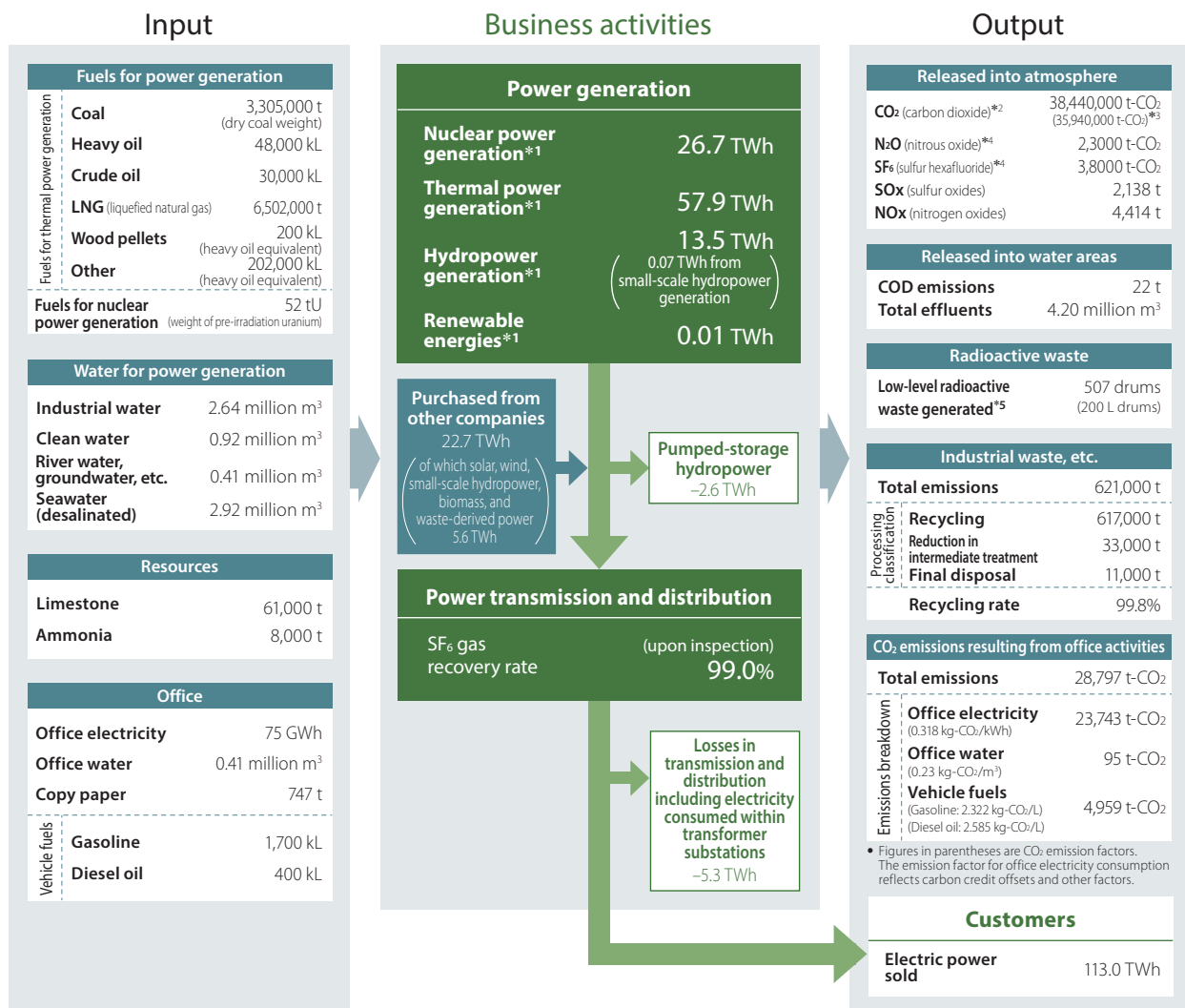
^{*2} Data of Kansai Transmission and Distribution, Inc. only

Office-related (non-consolidated)		Unit	FY2017	FY2018	FY2019
Energy and resource conservation (Office division)	Office electricity consumption ^{*1}	GWh	77	74	75
	Office water consumption ^{*1}	1,000 m ³	452	426	413
	Fuel efficiency of company vehicles	km/L	11.31	11.4	10.95
	Vehicle fuel consumption (gasoline)	1,000 kL	2.1	2.0	1.7
	Vehicle fuel consumption (diesel oil)	1,000 kL	0.3	0.3	0.4
	Copy paper consumption	t	809	773	747
CO ₂ emissions resulting from office activities ^{*2}	Office electricity	10,000 t-CO ₂	3.3	2.4	2.4
	Office water	10,000 t-CO ₂	0.01	0.01	0.01
	Vehicle fuels	10,000 t-CO ₂	0.6	0.5	0.5

*1 The scope of this calculation was reviewed for the actual consumption amounts of office electricity and water.

*2 CO₂ emissions from office activities = amount of electricity consumption × adjusted factors
CO₂ emissions from office water consumption = amount of office water consumption × emission factor
CO₂ emissions from vehicle use = amount of vehicle fuel consumption × coefficient by type of fuel

◆ Status overview of our business activities and environmental load (FY2019)



Note 1: This table contains non-consolidated figures for Kansai Electric Power Co., Inc. only.

Note 2: Totals may not sum due to rounding.

Note 3: Thermal power generation figures do not include biomass power generation.

*1 Excludes amounts of power for inside power plants

*2 Includes CO₂ originating from electricity purchased from other companies

*3 Emissions reflecting environmental values, etc. adjusted according to the renewable energy feed-in tariff system

*4 CO₂ conversion

*5 Net generation (generated amount – reduced amount)