

Addressing Climate Change



In May 2019, our Company declared our support for the recommendations of the Task Force on Climate-related Financial Disclosures or TCFD.



We have specified ESG-related materiality (important issues), aiming for our growth as a corporate group as well as contributing to the sustainable growth of society by providing solutions to SDGs and other global social challenges. In particular, the Kansai Electric Power Group Zero Carbon Vision 2050 is in place along with the Medium-term Management Plan to address climate change, both of which manifest "Purpose" as stated in our philosophy system. Accordingly, we have set the Zero Carbon Roadmap to achieve carbon neutrality, with decarbonization efforts underway.

Governance

Recognizing climate change as a key business challenge, the following council and committees evaluate and manage the Group's initiatives, providing assistance and guidance as needed to each operating division.

Board of Directors

The results of evaluation and monitoring are reported to the Board of Directors as needed by each council or committee to have them reviewed and subsequently reflected in the Group's plans and policies.

Sustainability Promotion Council

Chaired by the president, the council develops the Group's sustainability measures and monitors their development, focusing on climate change issues (strategies, materiality, risks, opportunities, etc.).

Risk Management Committee

The executive vice president chairs the committee tasked with identifying critical risk factors (including climate change risks), evaluating the significance of each factor, and monitoring risk management development, the results of which are presented to the Executive Meeting and the Sustainability Promotion Council. Risk measures, meanwhile, are reflected in the Group's plans and policies.

The Risk Management Committee disbanded at the end of June 2023, followed by establishment of the Internal Control

Board*¹ in July 2023 as part of organizational restructuring. The board is tasked with the review of internal control, including the Group's risk management*².

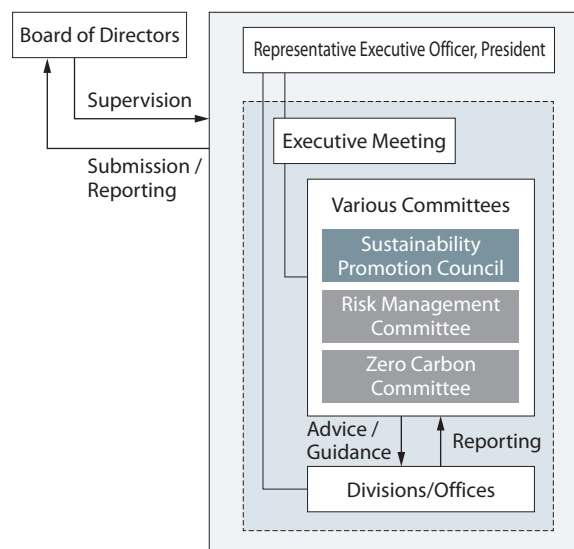
Zero Carbon Committee

Chaired by the president, the committee has set the Zero Carbon Roadmap to achieve the Kansai Electric Power Group Zero Carbon Vision 2050. Specifically, it is designed to share zero carbon initiatives, map out practical plans, and address climate change.

*1 For more details on the Internal Control Board, see page 106.

*2 For more details on risk management, see page 117.

Climate change governance system



Results from meetings held in fiscal 2022

Name of meeting	Frequency	Major climate change topics
Board of Directors	14 times*	• Management status of critical risk items
Sustainability Promotion Council	2 times	• Review of non-financial activities (ESG implementation, risk management review)
Risk Management Committee	3 times	• Identification and selection of critical risk items, including climate change risks • Review of the significance of risk items, monitoring and control of management status
Zero Carbon Committee	5 times	• Status toward achievement of group-wide zero carbon targets and review thereof • Decarbonization initiative status on supply and demand sides • In-house roadmap for fiscal 2023 • Future plans and challenges in the achievement of group-wide zero carbon targets

*Including meetings held for topics other than climate change

Executive compensation based on climate change performance

A performance-based executive compensation system is in place, the indexes of which concern CO₂ emission reduction amount and results from external ESG assessments.

Note: For details about executive compensation, refer to page 107.

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Strategy

Identification of climate change risks and opportunities

With focus on climate change risks and opportunities in the energy sector, we identify 30 items that could impact the grid power market size, investment decisions, and existing assets for our core business (electric power business), taking into account changes and uncertainties in the future business environment. These items, moreover, are reviewed for their consistency with our materiality and risk items selected by each operating division to identify items involving significant impacts, reflected properly on the Group's strategy. The risks and opportunities involved are identified as follows by the Sustainability Promotion Council, with reference to classification based on the TCFD recommendations.

Risks

Category	Risk description	Occurrence period ^{*1}		High degree of impact ^{*2}	
		Short to medium term	Long term		
Transition risks	Policies	Lower thermal power generation operation rates due to restrictions on CO ₂ emissions such as introduction of carbon prices	○	○	○
		Uncertain investment predictability due to intense competition and institutional changes with respect to renewable energy development	○	○	
	Technology	Lower demand for grid power due to widespread distributed energy resources, etc.		○	○
	Market	Lower sales of environmentally unfriendly products	○	○	○
	Reputation	Lower public acceptance of nuclear power generation		○	○
Changes in reputation among customers due to increased CO ₂ emissions and emission factors		○	○	○	
Physical risks	Acute	Higher restoration and countermeasure costs of power generation, transmission, and distribution facilities due to extreme weather events	○	○	
	Chronic	Lower hydropower generation operation rates due to changes in precipitation ^{*3}	—	—	

*1 Short to medium term: from present to 2030, Long term: from present to 2050.

*2 Evaluated based on the risk map (details on page 119). The evaluation, however, is not conclusive and is subject to change due to changes in external conditions such as national policies and energy affairs.

*3 Occurrence periods are not evaluated due to the chronic nature of the risks.

Opportunities

Category	Opportunity description	Occurrence period ^{*1}		High degree of impact ^{*2}
		Short to medium term	Long term	
Energy source	More competitive nuclear power generation	○	○	○
Products and services	Changes in electricity use associated with technological innovation in distributed energy resources, etc.		○	
Market	Increased opportunities for investment in renewable energy	○	○	
	Increased revenue opportunities associated with zero carbon initiatives, which accelerate progress in decarbonization technology	○	○	○
	Higher electricity demand due to increase in electrification	○	○	○
Resilience	Increased confidence of customers and society and the resulting business opportunities, all brought about by a resilient business foundation.	○	○	

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Scenario analysis

Scenario setting

We have set scenario drivers to analyze climate change risks and opportunities from the viewpoints of future climate change predictions and the significance of their impact on our Group operations.

In predicting future climate change, we have selected two scenarios—the 1.5°C scenario of achieving carbon neutrality by 2050 and the 2°C scenario of partially reducing GHG emissions—taking into account recommendations by the International Energy Agency (IEA) and the Intergovernmental Panel on Climate Change (IPCC).

“Nuclear power operation” and “incorporation of zero-carbon technology into thermal power generation,” meanwhile, were selected as factors that could significantly impact our operations.

Based on the scenario drivers mentioned above, the following scenarios are in place to analyze climate change risks and opportunities.

Scenario analysis results

The 1.5°C scenario suggests that regardless of nuclear power operation and incorporation of zero-carbon technology into thermal power generation, emissions will increase by about 60% from 2021 levels. On the demand side, promoting energy conservation and improving the electrification rate (to 55-58%) are key in achieving carbon neutrality, while on the supply side, renewable energy levels fluctuate significantly according to the two factors mentioned.

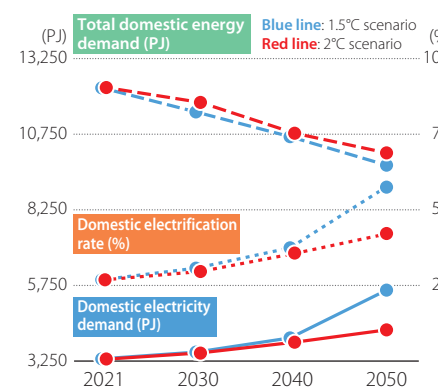
Likewise, the 2°C scenario suggests that electricity demand will increase by about 10% from 2021 levels. On the demand side, the electrification rate stands at about 46% due to less stringent regulations on GHG emissions—a relatively mild increase compared to the 1.5°C scenario. On the supply side, renewable energy needs to be promoted due to decreased thermal power sources associated with delays in incorporating zero-carbon technology into thermal power generation, though GHG emission regulations are less stringent compared to the 1.5°C scenario.

The 1.5°C scenario, therefore, involves more ambitious measures and innovation to achieve the targets, in comparison with the 2°C scenario.

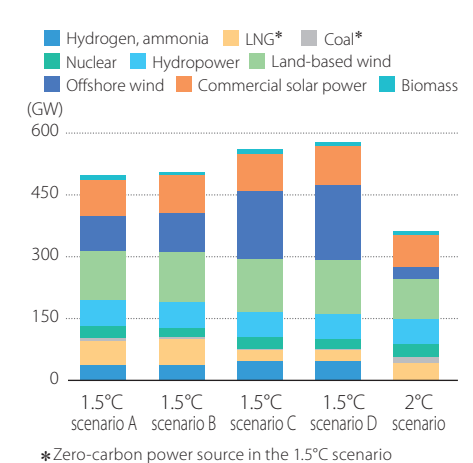
Note: This scenario analysis is based exclusively on potential future events and therefore does not guarantee the results.

	GHG emission regulations	Nuclear power operation	Zero-carbon technology incorporated in thermal power	Description
1.5°C scenario A	1.5°C Achieving carbon neutrality by 2050	Full operation	Progress	<ul style="list-style-type: none"> Scenario involving measures and innovation progress toward carbon neutrality Our envisioned main scenario
1.5°C scenario B		Controlled operation	Progress	<ul style="list-style-type: none"> Scenario reviewing impact from nuclear power operation
1.5°C scenario C		Full operation	Delay	<ul style="list-style-type: none"> Scenario where the effects of incorporation of zero-carbon technology are reviewed
1.5°C scenario D		Controlled operation	Delay	<ul style="list-style-type: none"> Scenario where both nuclear power operation and incorporation of zero-carbon technology lag behind Scenario involving the most challenging conditions toward carbon neutrality achievement
2°C scenario	2°C 80% reduction in 2050 (from FY 2013 levels)	Full operation	Delay	<ul style="list-style-type: none"> Scenario where the most significant impact is expected on our operation in the 2°C scenario, which involves less stringent GHG emission regulations compared to the 1.5°C scenario

Total domestic energy demand up to 2050 and trends in electrification and electricity demand



Installed capacity by power source in 2050



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Financial impacts

Taking into account the climate change risks and opportunities identified and the results of scenario analysis, the following summarizes factors that could impact the Group's financial conditions, and countermeasures in place.

Category	Major factors impacting financial performance		Scenario with the most significant impact toward 2050	Financial information	Ongoing measures, etc.
Risks	Policies	Sales and revenue fluctuate, with stringent GHG emission regulations, etc. influencing the operation of thermal power plants.	1.5°C scenario C/D Reason: Installed capacity of domestic thermal power generation minimizes while the risk of our facilities turning into stranded assets maximizes in 2050.	<ul style="list-style-type: none"> Percentage of coal-fired power generation in the power generation mix: 6% (FY 2022) 	<ul style="list-style-type: none"> Efforts toward co-firing and exclusive firing of zero-carbon fuels Evaluation of CCUS technology and consideration of its implementation
		Increased power generation cost due to the introduction of carbon tax	2°C scenario Reason: Thermal power generation output maximizes during the transition period.	<ul style="list-style-type: none"> Percentage of thermal power generation output in the total output: 53% (coal: 12%, LNG: 36%, petroleum: 5%) (FY 2022) A cost increase of about 420 billion yen is expected with no reductions in CO₂ emissions*1. 	
	Technology	Widespread introduction of distributed power sources accelerates local power generation for local consumption, resulting in decreased sales and revenue due to lower demand for grid power.		1.5°C scenario D Reason: Local power generation for local consumption progresses with the highest installed capacity levels of distributed solar power.	<ul style="list-style-type: none"> A one percent decrease in the amount of retail electricity results in a sales loss of about 23.4 billion yen*2.
Acute	Cost increase resulting from intensified natural disasters		2°C scenario Reason: More GHG emissions are emitted, compared to the 1.5°C scenario, while climate change-induced natural disasters occur more frequently.	<ul style="list-style-type: none"> Loss due to damage caused by Typhoon No. 21 in 2018: Approx.12.8 billion yen 	<ul style="list-style-type: none"> Initiatives to ensure expedited recovery from disasters (group-wide comprehensive emergency response drills, etc.) Increasing resilience of power transmission and distribution facilities to minimize damage from disasters Securing revenue for disaster recovery costs by appropriately accommodating institutional changes, etc.

*1 With the carbon price tentatively set at 16,900 yen/t-CO₂ according to the IEA's Net Zero by 2050: A Roadmap for the Global Energy Sector (revised in October 2021), the cost of effects is calculated assuming that CO₂ emissions from our power generation operations remain unchanged at about 24.7 million tonnes (fiscal 2022).

*2 Calculated based on light and power revenue in fiscal 2022 (2,344.6 billion yen)

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Category	Major factors impacting financial performance	Scenario with the most significant impact toward 2050	Financial information	Ongoing measures, etc.
Opportunities	Market	<p>1.5°C scenario A/C 2°C scenario</p> <p>Reason: Nuclear power plants operate at the highest levels, resulting in increased sales and revenue opportunities.</p>	<p>A one percent increase in the nuclear power utilization rate reduces fuel costs by about 7.9 billion yen (FY 2022).</p>	<ul style="list-style-type: none"> Initiatives to restart nuclear reactors, improve their operations, and install, expand, or replace nuclear power plants
		<p>1.5°C scenario D</p> <p>Reason: Investment opportunities abound, with the highest installed capacity levels of renewable energy.</p>	<ul style="list-style-type: none"> Renewable energy investment target: one trillion yen by 2040 Renewable energy investment target (installed capacity): 5 GW scale to be newly developed in Japan with a cumulative 9 GW scale by 2040 	<ul style="list-style-type: none"> Developing renewable energy in Japan with a focus on offshore wind power
		<p>1.5°C scenario A/C</p> <p>Reason: Sales and revenue opportunities increase, driven by the highest levels of demand for grid power.</p>	<ul style="list-style-type: none"> A one percent increase in the amount of retail electricity results in a sales increase of about 23.4 billion yen*. 	<ul style="list-style-type: none"> Promotion and expansion of solution services such as electrification proposals for households, utility services for corporations, and EV packages

*Calculated based on light and power revenue in fiscal 2022 (2,344.6 billion yen)

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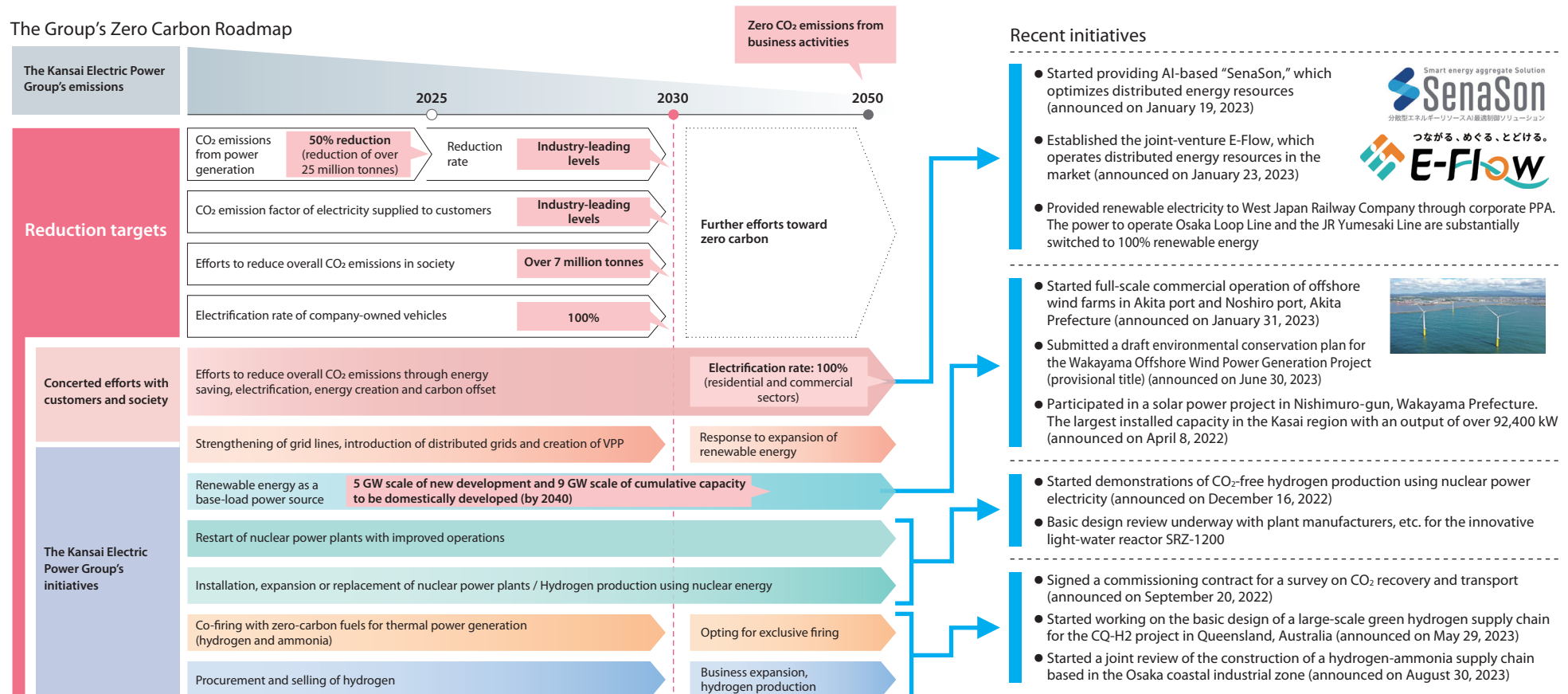
The Group's climate change strategies

The Group's businesses are thus capable of securing resilience both in the 1.5°C scenario and in the 2.5°C scenario through cooperation with customers and communities and through the Kansai Electric Power Group's own initiatives, such as renewable energy, nuclear power, and zero-carbon thermal power generation. All of the efforts mentioned above are reflected properly in our climate change strategies, including the Kansai Electric Power Group Zero Carbon Vision 2050 and the Kansai Electric Power Group Zero Carbon Roadmap.

In addition, efforts are underway to promote nuclear energy, introduce thermal power generation decarbonization technology, and expand new development of renewable energy, each being key to realizing the 1.5°C scenario. We are thus potentially capable of achieving carbon neutrality in a relatively advantageous position by 2050, based on the perspective of "S+3E."

Focusing on "S+3E," we are committed to achieving carbon neutrality while flexibly adjusting our strategies to achieve progress in our initiatives, technological development, energy policy trends, etc.

The Group's Zero Carbon Roadmap



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Risk management

Risks associated with our business activities are to be managed autonomously by each operating division (including our group companies). We shall enhance risk management for risks considered to have cross-organizational importance including the supervision of departments with specialized expertise on said risks that can provide advice and guidance to various operating divisions.

As climate change poses significant risks to the Group's business activities, efforts are underway to properly control various risks caused by climate change.

Specifically, a system to control company-wide risks along with other risks excluding those related to climate change (e.g., financial risks) determines the significance of each risk in view of its possible impact and probability, the results of which are plotted on a risk map so as to enable an overview of the status of risk management.

Moreover, risk assessment results are presented to the Executive Meeting and the Sustainability Promotion Council, with necessary risk control measures reflected in the Group's plans and policies to ensure sustainable growth in the future.

The Internal Control Board was established in July 2023 to review internal control, including the Group's risk management. The board consists of the specialized corporate divisions and operating divisions, which together supervise the Group's risk management, such as risk management plans.

For more information about risk management, refer to page 117.

Metrics and targets

We work together with all stakeholders to realize the Kansai Electric Power Group Zero Carbon Vision 2050 and help society shift to carbon neutrality. To this end, we have developed the Zero Carbon Roadmap along with the targets shown below. We also set internal control indexes in fiscal 2023 for zero carbon initiatives to monitor progress toward the goals.

In addition, we will set targets for reducing GHG emissions by 2030 and update the roadmap as needed.

Zero CO ₂ emissions from our business activities (by 2050)	
Targets set in the Zero Carbon Roadmap	
Targets	Recent results
Reduce CO ₂ emissions from power generation by 50% by FY 2025 (compared to FY 2013) and maintain industry-leading reduction levels.	<ul style="list-style-type: none"> CO₂ emissions from the Group's power generation: Approx. 24.7 million t-CO₂ (FY 2022) Reduction from FY 2013 levels: 49%
Provide services to help customers and society reduce CO ₂ emissions by over 7 million tonnes (by FY 2030).	<ul style="list-style-type: none"> Approx. 1.9 million t-CO₂ (FY 2022)
Decrease the CO ₂ emission factor of electricity supplied to customers to industry-leading levels (by FY 2030).	<ul style="list-style-type: none"> CO₂ emission factor (adjusted): 0.420 kg-CO₂/kWh (FY 2022)*¹
Completely electrify over 5,000 vehicles owned by the Group (by FY 2030).	<ul style="list-style-type: none"> Electrification rate: Approx. 9% (FY 2022)*²
New development of renewable energy domestically at a 5 GW scale and achievement of a 9 GW scale of cumulative capacity (by 2040).	<ul style="list-style-type: none"> Started generating about 3.83 GW (FY 2022)

*¹ Reported to the government in compliance with the Act on Promotion of Global Warming Countermeasures, etc.
*² The electrification rate of the fleet at the Kansai Electric Power Co., Inc. and Kansai Transmission and Distribution, Inc.

We endorsed the GX League Basic Concept in March 2022, which aims to create a society where corporate companies work on decarbonization for sustainable growth. With this concept in place, a provisional emission trading scheme was launched in fiscal 2023 to encourage companies to achieve their voluntary reduction targets. We have therefore set the following three targets for reducing GHG emissions, which were submitted in September 2023.

Reduction target levels* ① 2023-2025 total: 70.66 million t-CO₂eq
② FY 2025: 21.35 million t-CO₂eq (-55% from FY 2013 levels)
③ FY 2030: 14.00 million t-CO₂eq (-70% from FY 2013 levels)

*Total of annual direct (Scope 1) and indirect (Scope 2) emission targets submitted to the GX League

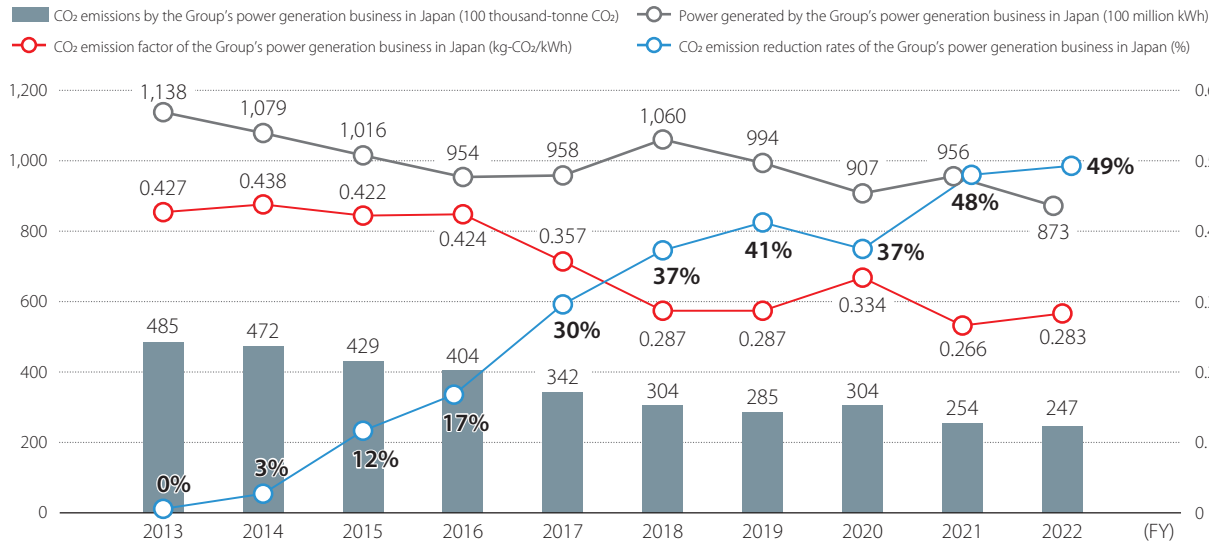
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Recent performance

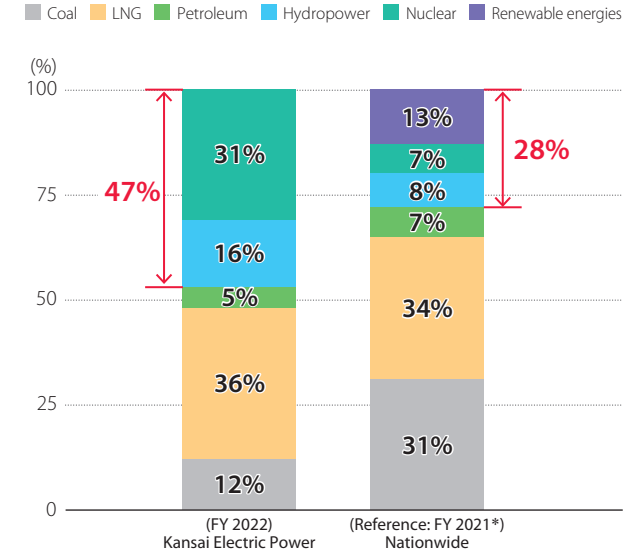
The Group's CO₂ emissions originating from its domestic power generation business amounted to around 24.7 million tonnes in fiscal 2022, registering a 49% decrease from benchmark levels in fiscal 2013. Non-fossil fuel power generation accounts for as much as 47% of our total output. As a leading company in zero-carbon energy, we will continue to ensure safe, stable operation of our nuclear power plants, developing and introducing renewable energy.

CO₂ emissions from the Group's* power generation and related factors



*The figures representing the Group's power generation in Japan are calculated according to the ratio of capital contribution (power generation by companies in which we have less than a 50% stake is excluded for fiscal 2022).

Ratio of non-fossil fuel power generation



*The nationwide breakdown is derived from General Energy Statistics from the Agency for Natural Resources and Energy. FY 2021 records were referred to, as FY 2022 records were not available at the time of publication.

GHG emissions (The Company and Kansai Transmission and Distribution, Inc.)	Unit	FY 2020	FY 2021	FY 2022
Direct greenhouse gas emissions (Scope 1)*1*2	10,000 t-CO ₂ eq	2,857.2	2,377.1	2,304.3
Indirect greenhouse gas emissions (Scope 2)*1*3	10,000 t-CO ₂ eq	0.6	0.5	0.5
Other indirect greenhouse gas emissions (Scope 3)*1*4	10,000 t-CO ₂ eq	2,409.9	1,924.2	3,126.1
Category 1 #5*14		266.6 (159.9)	248.5 (143.4)	255.0
Category 2 #6*14		166.7 (158.8)	104.9 (99.9)	101.7
Category 3 #7*14		1549.8 (1561.6)	1147.6 (1151.2)	2,353.5
Category 4 #8		0.0	0.0	0.0
Category 5 #9		1.0	1.1	1.0
Category 6 #10		0.2	0.2	0.2
Category 7 #11		0.6	0.6	0.6
Category 8 #12	10,000 t-CO ₂ eq	—	—	—
Category 9 #12		—	—	—
Category 10 #12		—	—	—
Category 11 #13*14		—	421.36 (347.5)	414.1
Category 12 #12		—	—	—
Category 13 #12		—	—	—
Category 14 #12		—	—	—
Category 15 #12		—	—	—


*1 The amount of greenhouse gases emitted in our entire supply chain is calculated in accordance with the Basic Guidelines on Accounting for Greenhouse Gas Emissions Throughout the Supply Chain (ver. 2.5) issued by the Ministry of the Environment and the Ministry of Economy, Trade and Industry.
 *2 Direct GHG emissions (Scope 1) refer to emissions (energy-derived CO₂, SF₆ and N₂O emissions) reported by electric companies in line with the Act on Promotion of Global Warming Countermeasures along with CO₂ emissions from transportation fuel use, which are excluded from the reporting obligations. SF₆ emissions, which are factored in, are based on calendar year.
 *3 Indirect GHG emissions (Scope 2) include CO₂ emissions originating from electricity and heat purchased from external corporations, which should be reported by electric operators in line with the Act on Promotion of Global Warming Countermeasures.
 *4 Indirect emissions not covered by Scope 1 or Scope 2 (emissions from other corporations related to the business activities of the company concerned)
 *5 Product/service price (purchased or procured) × emission intensity + total gas sales × emission intensity
 With the interpretation of the Basic Guidelines on Accounting for Greenhouse Gas Emissions Throughout the Supply Chain (issued by the Ministry of the Environment and the Ministry of Economy, Trade and Industry) revised, records for the past fiscal years were adjusted. The figures in parentheses were determined before revision of the calculation method.

*6 Capital goods price × emission intensity
 Records for the past fiscal years were adjusted due to the partial revision of the calculation method.
 *7 Fuel/heat consumption × emission intensity + electricity purchased by other companies × emission intensity + emissions originating from electricity purchased by other companies for sale to end users
 With the interpretation of the Basic Guidelines on Accounting for Greenhouse Gas Emissions Throughout the Supply Chain (issued by the Ministry of the Environment and the Ministry of Economy, Trade and Industry) revised, records for FY 2020/2021 were adjusted. The figures in parentheses were determined before revision of the calculation method.
 *8 Fuel consumption × emission intensity
 *9 Waste disposal volume × emission intensity + fuel consumption × emission intensity
 *10 Number of employees × emission intensity
 *11 (City classification-based) Σ (number of employees × operating days × emission intensity)
 *12 Not applicable because of specific to our business
 *13 Total gas sales × emission intensity
 Records for the past fiscal years were adjusted due to partial revision of the calculation method.
 *14 The figures in parentheses were determined before revision of the calculation method.
 Third Party Assurance
 Direct GHG emissions (Scope 1) and indirect GHG emissions (Scope 2) in FY 2022, both with , are certified by an independent third party, Deloitte Tohmatsu Sustainability Co., Ltd. in the Kansai Electric Power Group Integrated Report 2023 (Japanese ver.)
<https://www.kepco.co.jp/corporate/report/integrated/>

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Green bond issuance

We further promote initiatives presented in the Zero Carbon Vision 2050 by leveraging SDG financing. As a leading company in zero-carbon energy, we are committed to working toward a more sustainable society.

Kansai Electric Power Green Bond	Issuance date	Tenor	Issuance amount	Interest rate	Use of proceeds	Association with SDG targets
The 547th bond	April 14, 2022	5 years	30 billion yen	0.330%	Development, construction, operation, and renovation of renewable energy projects (hydro-, wind-, and solar-power); survey and demonstration of hydrogen-related projects; energy creation/storage promotion projects	
The 548th bond	April 14, 2022	10 years	25 billion yen	0.574%		
The 556th bond	July 20, 2023	10 years	20 billion yen	0.900%		
The 558th bond	September 7, 2023	10 years	20 billion yen	1.073%		

Allocation status of proceeds and environmental benefits (As of March 31, 2023)

◆ Allocation status of proceeds

Kansai Electric Power Green Bond	The 547th bond	The 548th bond
Financing amount (net proceeds)	29.9 billion yen	24.9 billion yen
Allocated amount	29.9 billion yen (allocation completed)	24.9 billion yen (allocation completed)
Refinancing amount	24.8 billion yen	20.6 billion yen

◆ Businesses to be financed

Supply side	Renewable energy	Hydropower plants	Number of cases: 73 Installed capacity: 1,699 MW	Number of cases: 104 Installed capacity: 2,767 MW
		Wind power plants	Number of cases: 1 Installed capacity: 138.6 MW	Number of cases: 2 Installed capacity: 706 MW
Solar power plants		Number of cases: 1 Installed capacity: 92.4 MW	Number of cases: 2 Installed capacity: 21.8 MW	
	Hydrogen business	—	R & D	
Demand side	Renewable energy	Number of cases: 1 ● Services where our solar power equipment is installed on the rooftop of a corporate customer's building, etc., with operation and maintenance services provided	Number of cases: 1 (Same as on the left)	

◆ Environmental benefits

CO ₂ emission reductions	Supply side	Renewable energy	Hydropower plants	5,072,935 t-CO ₂ /year	
			Wind power plants	1,848 t-CO ₂ /year	—
			Solar power plants	27,930 t-CO ₂ /year	126 t-CO ₂ /year
	Demand side	Renewable energy	1,987 t-CO ₂ /year		
Outline of the demonstration	Supply side	Hydrogen business	—	<ul style="list-style-type: none"> ● Demonstration of power generation by co-firing and exclusive firing of hydrogen ● Joint development and survey of new hydrogen production technology ● Verification research on businesses capitalizing on surplus electricity and green hydrogen ● Search for locations suitable for hydrogen production 	