

# Addressing Climate Change EX

## Introduction

Our Group sets targets related to ESG and are making efforts toward achieving them not only for sustainable growth in our Company through the safe and steady supply of energy that considers the global environment, but also for the contribution for the sustainable development of society by solving global social issues.

On the environmental front, our goal is to build a viable business foundation that can contribute to the sustainable development of society by analyzing the risks and opportunities brought about by climate change while reflecting them in our management plan and policy, which are all targeted toward realizing a zero-carbon society.

### Support for the TCFD Recommendations

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

Recognizing the size of the impacts that our Group business activities have on the global environment, we declare our support for the TCFD Recommendations to “analyze and disclose business risks and opportunities originating in climate change over the medium and long terms in order to reduce risks of financial market destabilization.”

\*TCFD was established by the Financial Stability Board, which is an international agency that has central banks, financial regulatory authorities and other organizations from major countries as members. In total, 3741 organizations around the world, including financial institutions, businesses and governments, declared their support for the TCFD Recommendations as of August 31, 2022.



## 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.

### 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\*1.

### Zero Carbon Committee

Chaired by the president, the committee has developing the Zero Carbon Roadmap to achieve the Kansai Electric Power Group Zero Carbon Vision 2050 and shares activities in each division involved in zero carbon initiatives, monitoring their development.

### Board of Directors

The results of evaluation and monitoring are reported to the Board of Directors as needed by the above council and committees to have them reviewed and subsequently reflected in the Group’s plans and policies. For example, the Zero Carbon Committee discussed the Kansai Electric Power Group Zero Carbon Roadmap\*2, which was then announced in March 2022 after being reviewed by the Board of Directors.

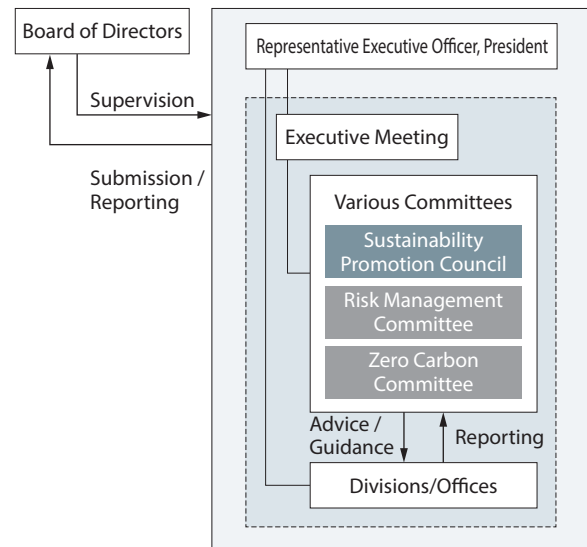
Furthermore, for our inside directors, we are working to create a more robust governance system for climate change by linking the climate change targets in the division and the director’s compensation.

\*1 For more details on risk management, see page 95.

\*2 For more details on the Zero Carbon Roadmap, see page 33.

\*3 For more details on ESG-related compensation, see page 86.

### Climate change governance system



## Strategy

### Climate change risks and opportunities

Our Group has identified the following climate change risks and opportunities in our Group and have properly reflected in the Group’s strategy. These risks and opportunities are identified after discussions at the Sustainability Promotion Council in reference to classifications in the TCFD Recommendations.

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 <sub>2</sub> 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 <sub>2</sub> 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	—	—	

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	○	○	○
	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.	○	○	

\*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 96). 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.

### The Group's climate change strategies

The Group's climate change strategies take into account the risks and opportunities mentioned above. For example, we set out the Zero Carbon Vision 2050 in March 2021 and the Zero Carbon Roadmap in March 2022.

For more details, please refer to the Kansai Electric Power Group website and page 33 of this report.

### Scenario toward 2050

#### Scenario analysis results

We conducted a scenario analysis to evaluate the resilience of the Group's climate change strategies, including the Zero Carbon Vision and the Zero Carbon Roadmap.

Specifically, the analysis was conducted on the following two scenarios, taking into account data published by the IEA, etc. on future demographics and electricity demand.

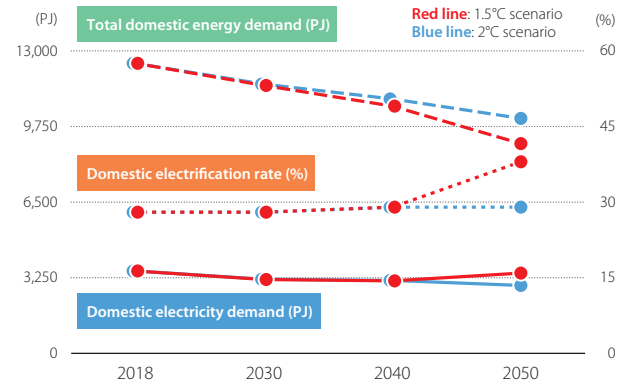
Note: This scenario analysis is based exclusively on potential future events and therefore does not guarantee the results.

1.5°C scenario	<ul style="list-style-type: none"> <li>Nuclear power plants continue to operate*1 at current levels as thermal power generation decarbonization technology becomes available*2.</li> <li>Global warming at 1.5°C above pre-industrial levels (with carbon neutrality achieved in 2050)</li> </ul>
2°C scenario	<ul style="list-style-type: none"> <li>Nuclear power plants are phased out, and thermal power generation decarbonization technology is not available.</li> <li>Global warming at 2°C above pre-industrial levels (with domestic CO<sub>2</sub> emissions in 2050 reduced 80% from 2013 levels)</li> </ul>

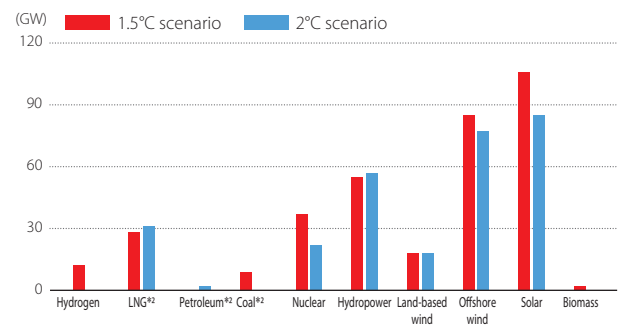
\*1 Assuming that the current output is maintained.

\*2 Assuming that CCUS, hydrogen exclusive firing, ammonia co-firing technologies become available.

### Total domestic energy demand up to 2050 and trends in electrification and electricity demand\*1



### Installed capacity by power source in 2050 (GW)



\*1 Industrial energy demand derives from the "Energy and Economic Statistics," published by the Energy Data and Modelling Center (EDMC); 1% energy saving is anticipated annually until 2050.

\*2 Zero carbon electrification in the 1.5°C scenario

On the demand front, the 1.5°C scenario necessarily involves greater energy conservation and electrification. On the power supply front, meanwhile, the preconditions include nuclear power plants operating at current levels, thermal power generation decarbonization technology to achieve zero carbon in all power sources, and expansion in the renewable energy development. In the end, compared to the 2°C scenario, the 1.5°C scenario is difficult to achieve without stringent measures/regulations and breakthrough innovation.

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## Financial impacts

Based on the analysis results of the given scenarios, the following shows the factors impacting the Group's financial performance and ongoing measures to handle these issues.

Major factors impacting financial performance*1	Ongoing measures, etc.	Financial information
CO <sub>2</sub> emission regulations, etc. to achieve the national energy mix target impact the Group's power source operation, resulting in fluctuations in sales and revenue.	<ul style="list-style-type: none"> <li>Co-firing and exclusive firing of zero-carbon fuels are being reviewed, along with the evaluation and introduction of CCUS technology.</li> <li>Future plans include restarting idled nuclear power plants, shifting to advanced operations, and constructing, expanding, or replacing reactors.</li> <li>Renewable energy is being developed domestically, with focus on offshore wind power generation.</li> <li>Refurbishment of hydropower facilities (replacement of water turbine generators) is underway for continued utilization.</li> </ul>	<ul style="list-style-type: none"> <li>Thermal power generation output (excluding that of affiliates): 47 billion kWh (FY 2021)</li> <li>Actual amount of revenue affected by 1% nuclear capacity factor: 4.3 billion yen (FY 2021)</li> <li>Renewable energy investment target: roughly 1 trillion yen by 2040</li> </ul>
Local power generation for local consumption increases with distributed energy resources becoming widespread, which in turn puts downward pressure on grid power demand, sales, and revenue.	<ul style="list-style-type: none"> <li>Efforts are underway to develop and promote distributed energy solutions such as storage batteries and EVs.</li> <li>Risks of reduced wheeling revenue due to lower grid power demand are minimized to secure revenue, by accommodating institutional changes, for example.</li> </ul>	<ul style="list-style-type: none"> <li>Light and power revenue: 1.6137 trillion yen (FY 2021)</li> <li>Wheeling revenue: 734.2 billion yen*2 (FY 2021)</li> </ul>
Grid expansion costs increase with new power sources (including renewable energy) introduced.	<ul style="list-style-type: none"> <li>Efforts are underway to cut grid expansion costs by upgrading grid operations and harnessing renewable energy, for example.</li> <li>Investment costs in making renewable energy as the main power sources are minimized to secure revenue while accommodating institutional changes, etc..</li> </ul>	<ul style="list-style-type: none"> <li>Power transmission and distribution facilities expansion costs (average between 2017 and 2021): 39.9 billion yen*2</li> </ul>
Costs increase to respond to damage caused by intensified natural disasters due to climate change.	<ul style="list-style-type: none"> <li>Initiatives are underway to ensure expedited recovery from disasters (group-wide comprehensive emergency response drills, etc.).</li> <li>Power transmission and distribution facilities are being reinforced to increase resilience, thereby minimizing damage from disasters.</li> <li>To secure revenue, costs to recover from disasters are minimized by accommodating institutional changes, for example.</li> </ul>	<ul style="list-style-type: none"> <li>Loss due to damage caused by Typhoon No. 21 in 2018: Approximately 12.8 billion yen</li> </ul>

\*1 The factors are identified based on the scenario analysis results, thus subject to change according to external conditions such as national policies and energy affairs.

\*2 Subject to change under the new wheeling pricing system.

As we are committed to implementing measures declared in the Group's strategies, including the Zero Carbon Vision and the Zero Carbon Roadmap, our businesses are sufficiently resilient in the event of both the 1.5°C scenario and the 2°C scenario. Efforts are also underway to promote nuclear energy, leverage 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.

## 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.

For more information about risk management, refer to page 95.

## Metrics and targets

We will work together with all stakeholders to realize the Zero Carbon Vision 2050 while helping society achieve zero carbon and become sustainable.

## Zero CO<sub>2</sub> emissions from our business activities (by 2050)

### Targets set in the Zero Carbon Roadmap

Reduce CO<sub>2</sub> emissions from power generation by 50% by FY 2025 (compared to FY 2013) and maintain industry-leading reduction levels.

Provide services to help customers and society reduce CO<sub>2</sub> emissions by over 7 million tonnes (by FY 2030).

Decrease the CO<sub>2</sub> emission factor of electricity supplied to customers to industry-leading levels (by FY 2030).

Completely electrify over 5,000 vehicles owned by the Group (by FY 2030).

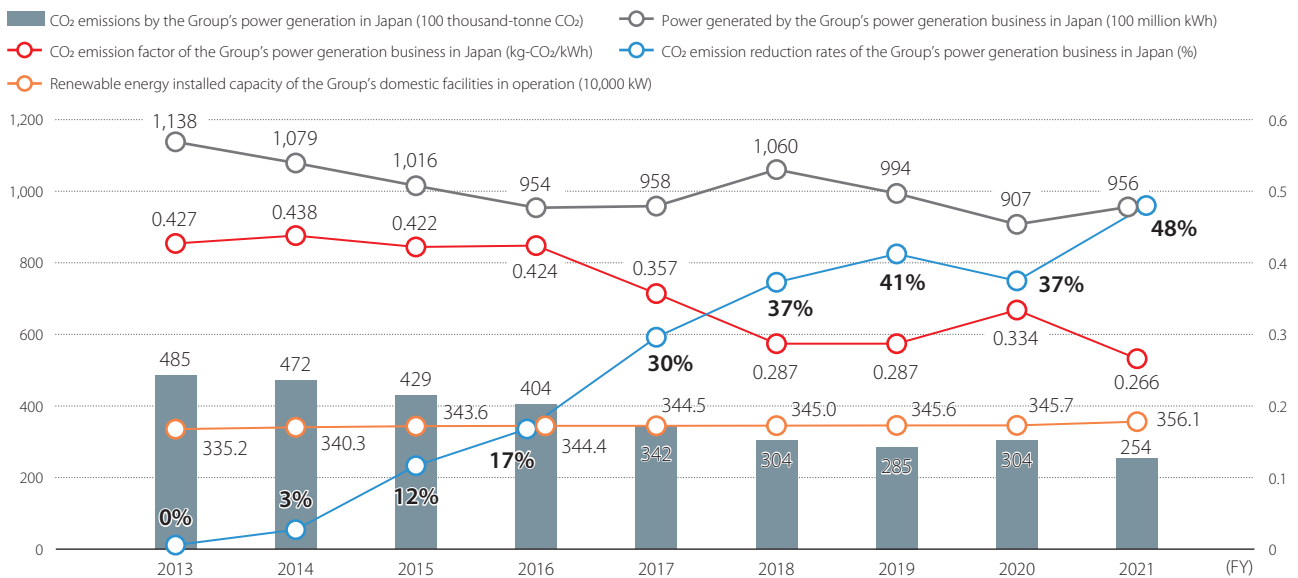
New development of renewable energy domestically at a 5 GW scale and achievement of a 9 GW scale of cumulative capacity (by 2040).

## Fiscal 2021 results

The Group's CO<sub>2</sub> emissions originating from its domestic power generation amounted to around 25.4 million tonnes in fiscal 2021; emissions have been on the decline since the benchmark year of 2013. As a leading company in zero-carbon energy, we are committed to safe, stable operation of nuclear power plants and development and promotion of renewable energy. These efforts have resulted in a 48% reduction in CO<sub>2</sub> emissions from the levels in 2013.




Domestic renewable energy development and expansion of overseas operations, meanwhile, translated into a renewable energy installed capacity of 4.246 GW as of the end of fiscal 2021 with projects going onstream at home and abroad.

### CO<sub>2</sub> emissions from the Group's power generation and related factors, and the Group's renewable energy installed capacity in Japan



## Green bond issuance

We issued the "Kansai Electric Power Green Bond" in April 2022, a bond earmarked for investments in environmental improvement projects. It is designed to promote initiatives presented in the Zero Carbon Vision 2050 by leveraging SDG financing. We, as a leading company in zero-carbon energy, 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%		

## Allocation of green bonds and environmental improvement effects

To be announced around May 2023