

# Initiatives for Achieving Carbon Neutrality

The Daigas Group has formulated Energy Transition 2050. Based on its energy transition roadmap toward achieving carbon neutrality by 2050, the Group will provide optimal solutions that take S+3E into account as a comprehensive energy company and work together with stakeholders to realize a carbon-neutral society.

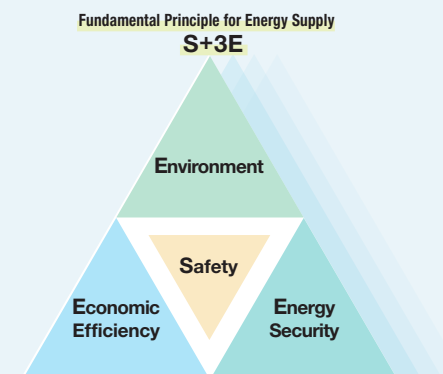
\*S+3E: Safety, Energy Security, Economic Efficiency, Environment

## Challenges Regarding Energy Supply and the Daigas Group's Principle

Our basic approach to energy supply is S+3E, in which balancing the three Es is essential for the transition to low-carbon and decarbonized energy.

However, switching to environmentally friendly energy currently leads to increased costs and reduced supply stability when the supply chain is not yet established. This relationship is referred to as the “3E trilemma,” and the Daigas Group will challenge itself to satisfy all three Es simultaneously. In particular, because Japan has limited natural resources and depends heavily on energy imports, we recognize the need to closely monitor international developments and changes in global energy policies.

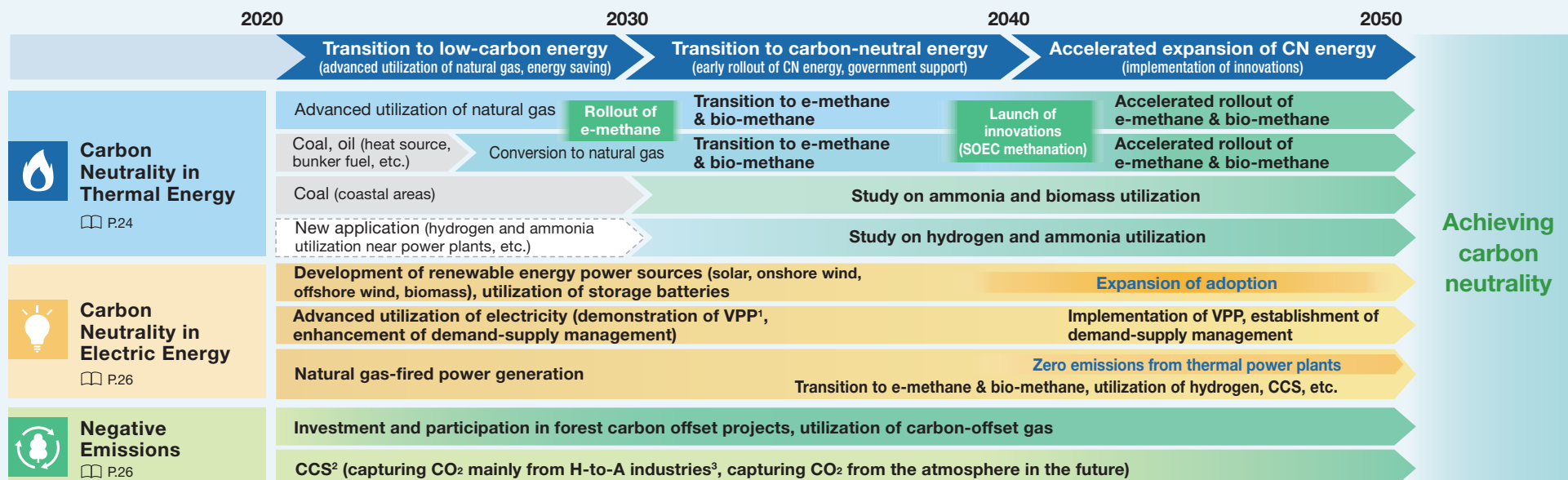
In light of this background, the Group's fundamental principle is to prioritize supply stability while ensuring safety as a cornerstone, and to offer our customers a variety of environmentally and economically friendly options.



## Roadmap to Low-Carbon and Carbon-Neutral Energy

As carbon-neutral (CN) energy remains relatively expensive at the current stage, we believe a phased transition is essential to minimizing social costs.

Until 2030, we will pursue a low-carbon transition through energy conservation and existing technologies. From 2030, we will shift seamlessly to carbon-neutral energy by introducing e-methane, biogas, and other solutions, while advancing power-sector decarbonization through a diverse mix of power sources. From 2040, we will accelerate the deployment of carbon-neutral energy through innovation, thereby leading the energy transition.



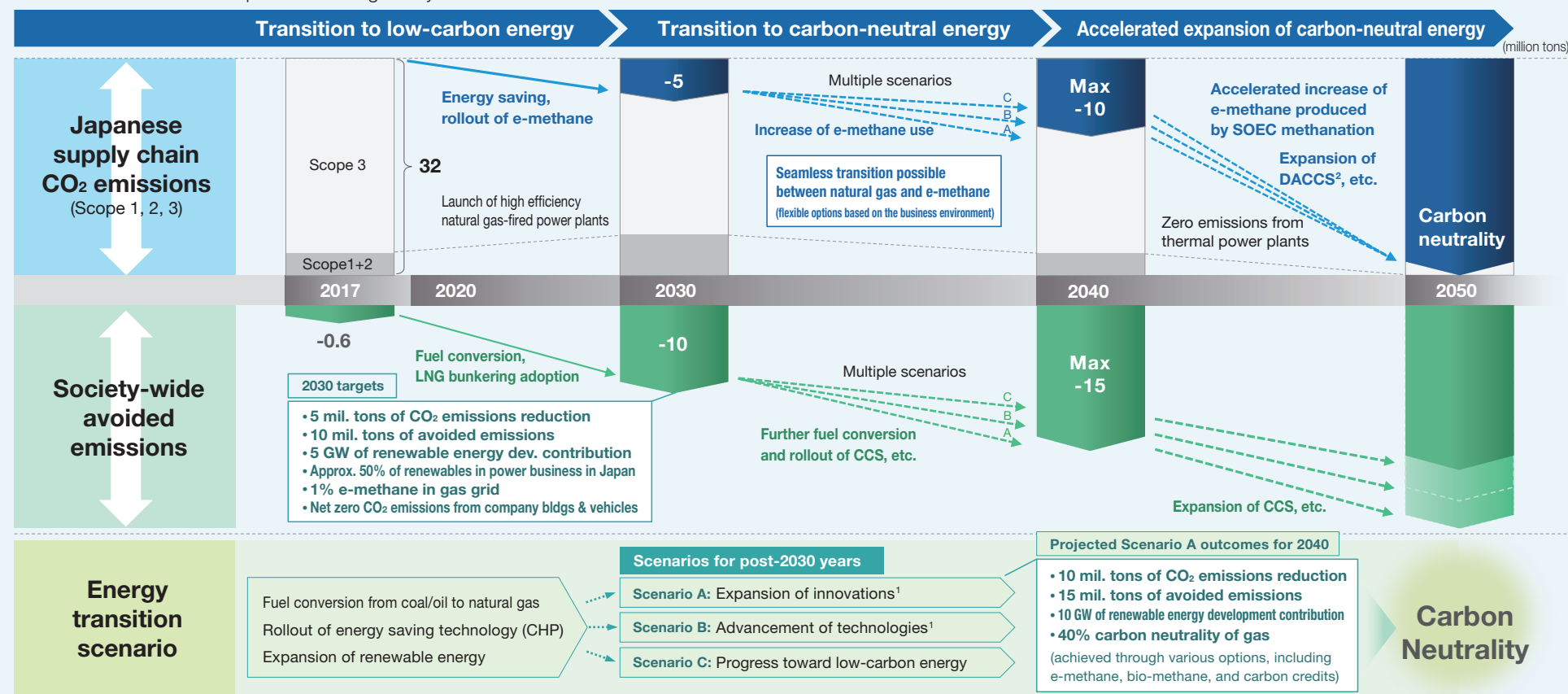
<sup>1</sup> Virtual Power Plant: Operating as a single power generation facility by integrating and controlling distributed energy sources through an aggregator, utilizing information and communication technology.

<sup>2</sup> Carbon dioxide Capture and Storage

<sup>3</sup> H-to-A (Hard-to-Abate) industry: Sectors in which CO<sub>2</sub> emissions reduction is challenging

## Roadmap to CO<sub>2</sub> Emissions Reduction

The Daigas Group has formulated a CO<sub>2</sub> reduction roadmap to reduce CO<sub>2</sub> emissions across our supply chain and contribute to reducing CO<sub>2</sub> emissions throughout society. We have also considered multiple scenarios for 2040, including the scenario assumed by the government. Below are the estimated values based on the “Expansion of Innovations” scenario, which assumes the maximum progress toward carbon neutrality. This is merely one scenario, and we intend to determine its feasibility by around 2030 and review the scenario, taking into account international developments and regulatory trends.



### Responding flexibly to changing business environment

The scenarios may be updated based on changes in business environment, affected by international situations, regulatory support, and other factors.

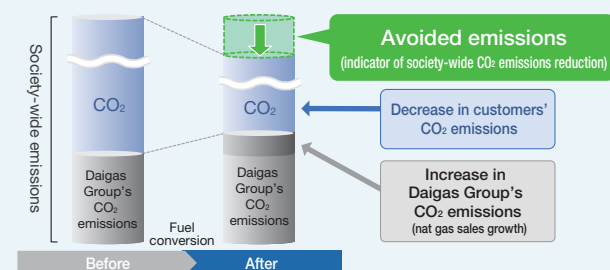
<sup>1</sup> Energy demand and supply outlook scenarios from Japan's Seventh Strategic Energy Plan.

<sup>2</sup> Direct Air Carbon Capture and Storage: Technology that combines DAC for separating and capturing CO<sub>2</sub> with CCS for underground storage.

### Society-wide avoided emissions

As a step toward carbon neutrality in thermal energy, fuel conversion from coal and oil to natural gas is an effective approach for the transition period. For example, switching from coal to natural gas can reduce CO<sub>2</sub> emissions per unit of calorific value by approximately 45%, so expanding the conversion of fuel to natural gas can reduce CO<sub>2</sub> emissions across society as a whole. With this fuel conversion, even though society-wide CO<sub>2</sub> emissions decrease significantly, the use of natural gas expands, so it may appear that CO<sub>2</sub> emissions across the Group's entire supply chain are increasing. This society-wide reduction in CO<sub>2</sub> can be shown using an indicator called “avoided emissions.” Avoided emissions represents quantified emissions reduction through the company's products and services provided to others, and the Daigas Group actively promotes it as a key indicator.

### Conceptual Diagram of Avoided Emissions



## Carbon Neutrality Initiatives in Thermal Energy

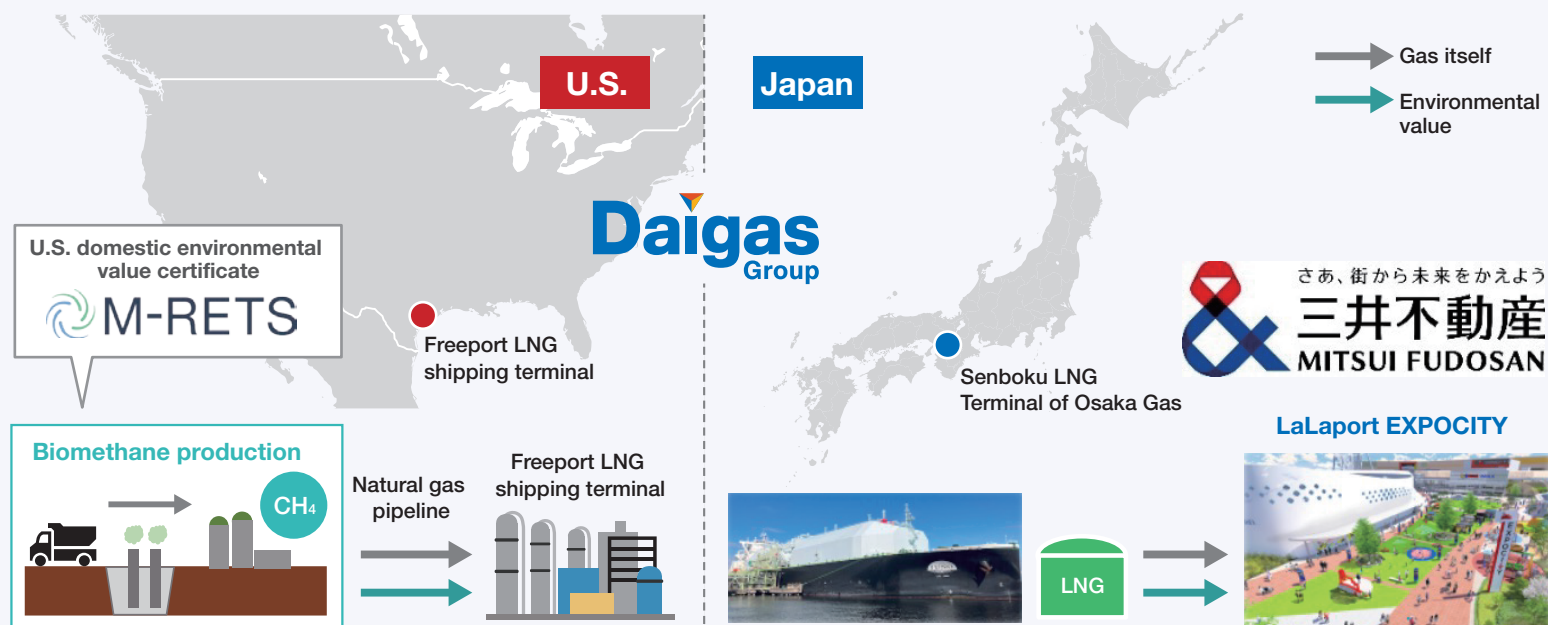
To realize a CN society, we are pursuing carbon neutrality in thermal energy from multiple angles. In addition to building an international supply chain and pioneering supply domestically with a view to the early practical application of e-methane, etc., we are steadily developing a variety of methanation technologies to produce e-methane, in line with our roadmap.

### Large-scale procurement of e-methane through the Live Oak Project in the U.S.

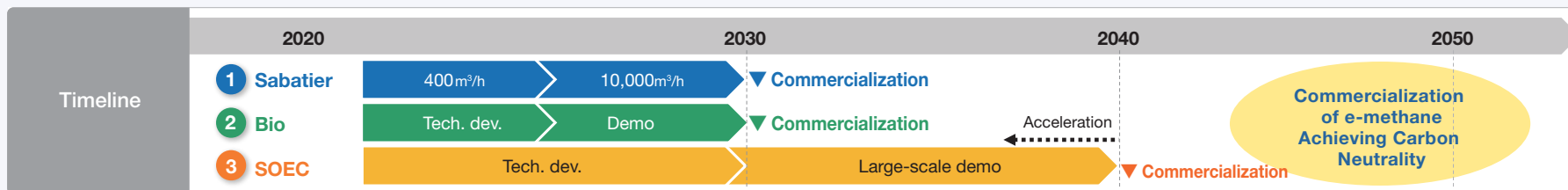
In December 2025, we entered into a joint development agreement with four other companies, for the front-end engineering design (FEED) of an e-methane production project in the U.S. To achieve our 1% target for the use of e-methane in FY2031, we are aiming to begin production (approximately 75 thousand tons/year) during that year and to start importing it to Japan. To that end, we are moving forward with efforts to become the first in the world to produce e-methane on a commercial scale, build an international supply chain, achieve the practical application of e-methane, and ultimately, realize a carbon-neutral society.

### Early practical application by becoming the first in Japan to procure and supply bio-methane produced overseas

With an eye to the future large-scale introduction of e-methane, etc., we are rapidly advancing the use of bio-methane to build an early track record in logistics and regulatory frameworks. Following the conclusion of a procurement agreement in November 2025, our Senboku LNG Terminal received Japan's first shipment of U.S.-produced bio-methane in January 2026. In March of the same year, we supplied bio-methane to Mitsui Fudosan Co., Ltd.'s "LaLaport EXPOCITY" shopping park, the first such supply to a commercial facility in Japan. We swiftly organized the entire flow, from overseas procurement to domestic receipt and supply to customers, which is helping to serve our customers' increasingly diverse decarbonization needs.



## Roadmap for Social Implementation of Methanation Technology



### 1 Existing technology: Initiatives for the commercialization of Sabatier methanation technology

In February 2026, we launched the Nagaoka Sabatier methanation demonstration test jointly with INPEX CORPORATION, as part of one of the world's largest technology development projects aimed at commercializing methanation technology for CO<sub>2</sub> emissions reduction and effective CO<sub>2</sub> utilization<sup>1</sup>. With a processing capacity of 400 Nm<sup>3</sup>-CO<sub>2</sub>/h, the facility's annual production capacity is equivalent to the gas consumption of approximately 10,000 households. The demonstration test will run through the end of FY2027, with the objective of acquiring technical knowledge for scale-up, including understanding the behavior of the methanation reaction and evaluating durability. Drawing on the technical knowledge obtained through this demonstration, we will carry out the conceptual design of a large-scale Sabatier methanation facility (10,000 m<sup>3</sup>/h), thereby contributing to the realization of carbon neutrality.



Sabatier methanation demonstration facility in Nagaoka Courtesy of INPEX

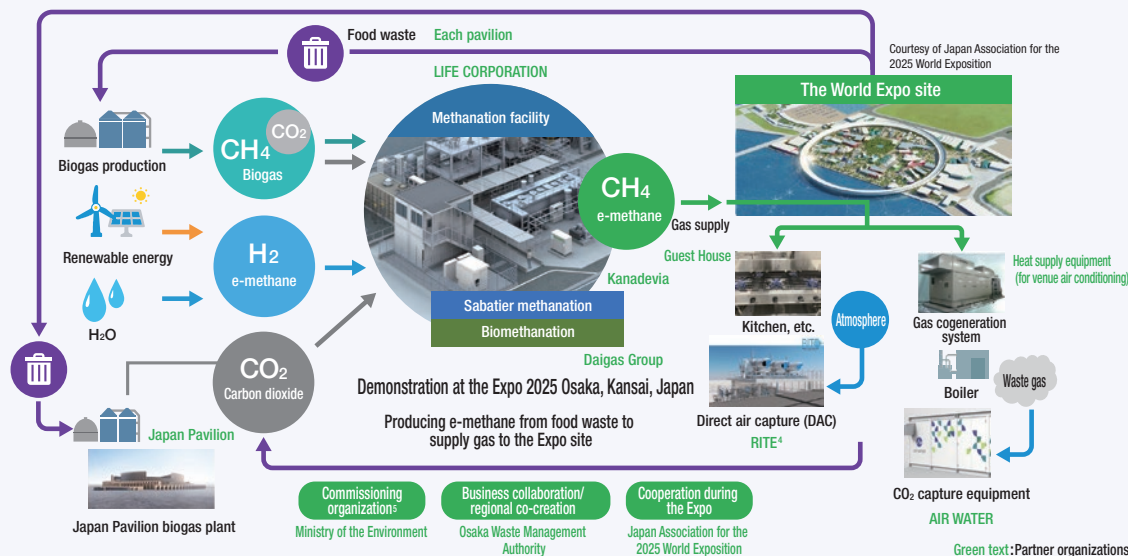
### 2 Innovative technology: Promotion of biomethanation technology development

From April to October 2025, we conducted a demonstration project<sup>2</sup> at the Expo 2025 Osaka, Kansai, Japan site to produce e-methane from food waste and renewable energy, successfully achieving the target production rate of 7 Nm<sup>3</sup>/h of e-methane (with a methane concentration of 95% or higher).

### 3 Innovative technology: Promotion of SOEC methanation technology<sup>3</sup>

We completed the bench-scale test facility in June 2025. We will conduct verification tests at this facility to achieve high energy conversion efficiency and drive further scale-up. With a view to commercialization in the 2040s, we aim to achieve world-leading energy conversion efficiency of approximately 85-90%.

Flow diagram of methanation demonstration at the venue of Expo 2025 Osaka, Kansai, Japan



<sup>1</sup> NEDO Grant Project: "Development of Carbon Recycling and Next-Generation Thermal Power Generation Technologies / Practical Utilization Technology Development for Effective Use of CO<sub>2</sub>: 'CO<sub>2</sub> Utilization Technology for Gaseous Fuels'"

<sup>2</sup> Ministry of the Environment Commissioned Project: "Project to Construct and Demonstrate a Model for Reducing the Cost of Hydrogen Supply by Utilizing the Existing Infrastructure (FY2022)"

<sup>3</sup> NEDO Green Innovation Fund Project: "Innovative Technology Development for Synthetic Methane Production: 'SOEC Methanation Technology Innovation Project'"

<sup>4</sup> Research Institute of Innovative Technology for the Earth

<sup>5</sup> Ministry of the Environment Commissioned Project: "Project to Construct and Demonstrate a Model for Reducing the Cost of Hydrogen Supply by Utilizing the Existing Infrastructure"

## Carbon Neutrality Initiatives in Electric Energy

The Daigas Group is collaborating with various partners both in Japan and abroad to advance the development of renewable energy, a key power source for decarbonization. At the same time, we are developing and operating grid-scale and renewable energy co-located battery storage systems that help compensate for the weather-dependent variability of renewable energy output and enable the effective use of renewable electricity. Through these initiatives, we will build a power portfolio that delivers excellent stability, environmental performance, and economic efficiency.

Please refer to P.32 for details on our efforts to strengthen our power-supply portfolio

### Development and procurement of renewable energy

Thanks to the commencement of operations at eight biomass power plants in which we hold equity interests, we achieved our FY2027 renewable energy development contribution target of 4 GW ahead of schedule. To accelerate the achievement of our FY2031 target of 5 GW, we will expand our business by leveraging the strengths of our value chain, which spans everything from power source development and procurement to PPA acquisition.



Wakayama Gobo Biomass Power Plant

### Expansion of storage battery business

We are currently strengthening our battery storage business to enhance the stability of the power grid thereby supporting the expansion of renewable energy, and to ensure stable supply capacity in the future.

In FY2026, we commenced commercial operations at the Senri Power Storage Plant and the Takeo Power Storage Plant, our first grid-scale battery storage facilities in Japan. By FY2031, we aim to achieve 1 GW of battery storage capacity across both grid-scale and renewable energy co-located battery storage systems.



Senri Power Storage Plant

## Initiatives for Negative Emissions

The Group aims to achieve carbon negativity and is also working to address CO<sub>2</sub> emissions from hard-to-abate industries such as steel and cement. Through carbon dioxide capture and storage (CCS), forest carbon offset, carbon credit businesses, and environmental value management systems, we will support our customers' decarbonization efforts and contribute to the sustainable growth of industry.

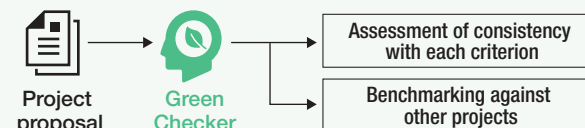
### Contribution to carbon neutrality through the use of credits

In January 2026, GreenChecker, a generative AI-based carbon credit quality assessment service launched in 2025, was expanded to support J-Credit and JCM<sup>1</sup>. These credits are recognized as eligible carbon credits under GX-ETS<sup>2</sup>, and are expected to contribute to the achievement of Japan's Nationally Determined Contribution (NDC)<sup>3</sup> targets. Going forward, we will strengthen our value chain, including our quality assessment capabilities, and leverage these strengths in procurement and sales activities to drive business growth.

<sup>1</sup> Joint Crediting Mechanism

<sup>2</sup> Japan's emissions trading system. A system for companies to reduce emissions or trade emissions allowances within government-established limits, based on the Government of Japan's Pro-Growth Carbon Pricing Concept

<sup>3</sup> GHG emissions reductions targets that each country submits and updates every five years based on the Paris Agreement. On February 18, 2025, the Cabinet approved and submitted Japan's GHG reduction targets to the United Nations, which aim for a 60% reduction in GHG emissions from FY2013 levels by FY2035, and a 73% reduction by FY2040.



### Start of CO<sub>2</sub>NNEX<sup>®</sup> operation as part of the methanation demonstration in Nagaoka

As part of the methanation demonstration in Nagaoka in collaboration with INPEX CORPORATION, in June 2026 we commenced operation of CO<sub>2</sub>NNEX<sup>®</sup>, a platform for the transfer and management of clean gas certificates that certify the environmental value of e-methane. This is the first system in the city gas industry, and its implementation is the second case, following the Expo 2025 Osaka, Kansai, Japan. Moving forward, together with Nagaoka City, ASAHI-SHUZO SAKE BREWING CO., LTD., and IWATSUKA CONFECTIONERY CO., LTD., both of which are located near the demonstration facility, we will work to establish a local-production for local-consumption model. Through these efforts, we aim to create one of the leading precedents for a future certificate scheme and contribute to the social implementation of e-methane.

\*CO<sub>2</sub>NNEX is a registered trademark of Mitsubishi Heavy Industries, Ltd.