Actions for Climate Change

Principle and Outline

The Daigas Group believes that climate change represents an important management challenge, and that initiatives to reduce CO_2 emissions are a crucial mission. In January 2021, we established and announced the "Daigas Group Carbon Neutral Vision," indicating our vision of how we strive to become carbon neutral by 2050. In light of the global trend to address climate change, we aim to become carbon neutral by 2050 by reducing CO_2 emissions at the Group, customers, and their value chains, to contribute to achieving a carbon neutral society.

Daigas Group Energy Transition 2050

The Daigas Group has announced its ambition to achieve carbon neutrality ("CN") by 2050 through publication of its "Carbon Neutral Vision" (January 2021), and has outlined its approaches and specific strategies for the energy transition by 2030 in "Energy Transition 2030" (March 2023).

Since then, we have deepened our activities, while being faced with increasing international geopolitical risks, such as Russia's invasion of Ukraine, as well as even greater demands to achieve both carbon neutrality and energy supply stability. In light of this situation, we formulated "Energy Transition 2050" in February 2025, which clarifies our energy transition roadmap for achieving carbon neutrality by 2050.

Energy Transition 2050 summarizes the "Comprehensive Overview of Carbon-Neutral Strategy," "Low-Carbon and Carbon-Neutral Energy Initiatives," and "Daigas Group's Solutions for Customers," and outlines our approaches, initiatives, and co-creation with our customers.

▶ Carbon Neutral Vision (released in January 2021)
▶ Energy Transition 2030 (released in March 2023)
▶ Energy Transition 2050 (released in February 2025)

Challenges Regarding Energy Supply and the Daigas Group's Principle

Our basic approach to energy supply is S+3E[1], in which balancing the three Es is essential for the transition to low-carbon and decarbonized energy.

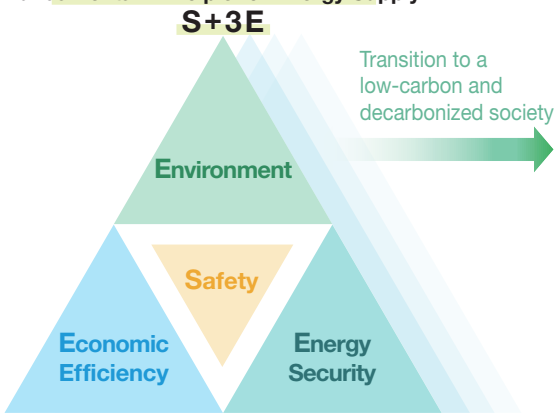
Currently, however, switching to environmentally friendly energy has the potential to lead to increased costs and reduced supply stability when the supply chain is not yet established. This relationship is referred to as the "3E trilemma," and the Daigas Group will challenge itself to satisfy all three Es simultaneously. In particular, because Japan relies on energy imports from overseas as it is not blessed with natural resources, we recognize the need to closely monitor any changes in the international situation and 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.

■ Japan's energy Policy

Achieving S+3E is considered important in Japan's energy policy. The Seventh Strategic Energy Plan, approved by the Cabinet in February 2025, outlines a new policy direction for 2040, placing emphasis on natural gas in a balanced manner with the country's basic policy of S+3E, and indicating a policy of prioritizing a stable supply of energy on the premise of safety.

Fundamental Principle for Energy Supply



3E trilemma in energy supply

Addressing the challenge of simultaneously fulfilling all the three Es through the Daigas Group's initiatives

Environment	⇑	Economic efficiency ⇓ (High-cost CN energy) Energy security ⇓ (Unevenly-located CN energy plants)
Economic Efficiency	⇑	Environment ⇓ (Conventional energy less costly, emitting more CO_2) Energy security ⇓ (Conventional energy more stable in supply)
Energy Security	⇑	Economic efficiency ⇓ (Increased costs due to multiplexing and decentralization) Environment ⇓ (Weather-dependent renewable energy)

Risks to consider in energy supply

- International affairs (international conflicts)
- Geopolitics (low energy self-sufficiency)
- Natural disaster (earthquakes, typhoons)
- Pandemic (COVID-19)
- Regulation (carbon pricing)
- Foreign exchange (yen depreciation)

⋮

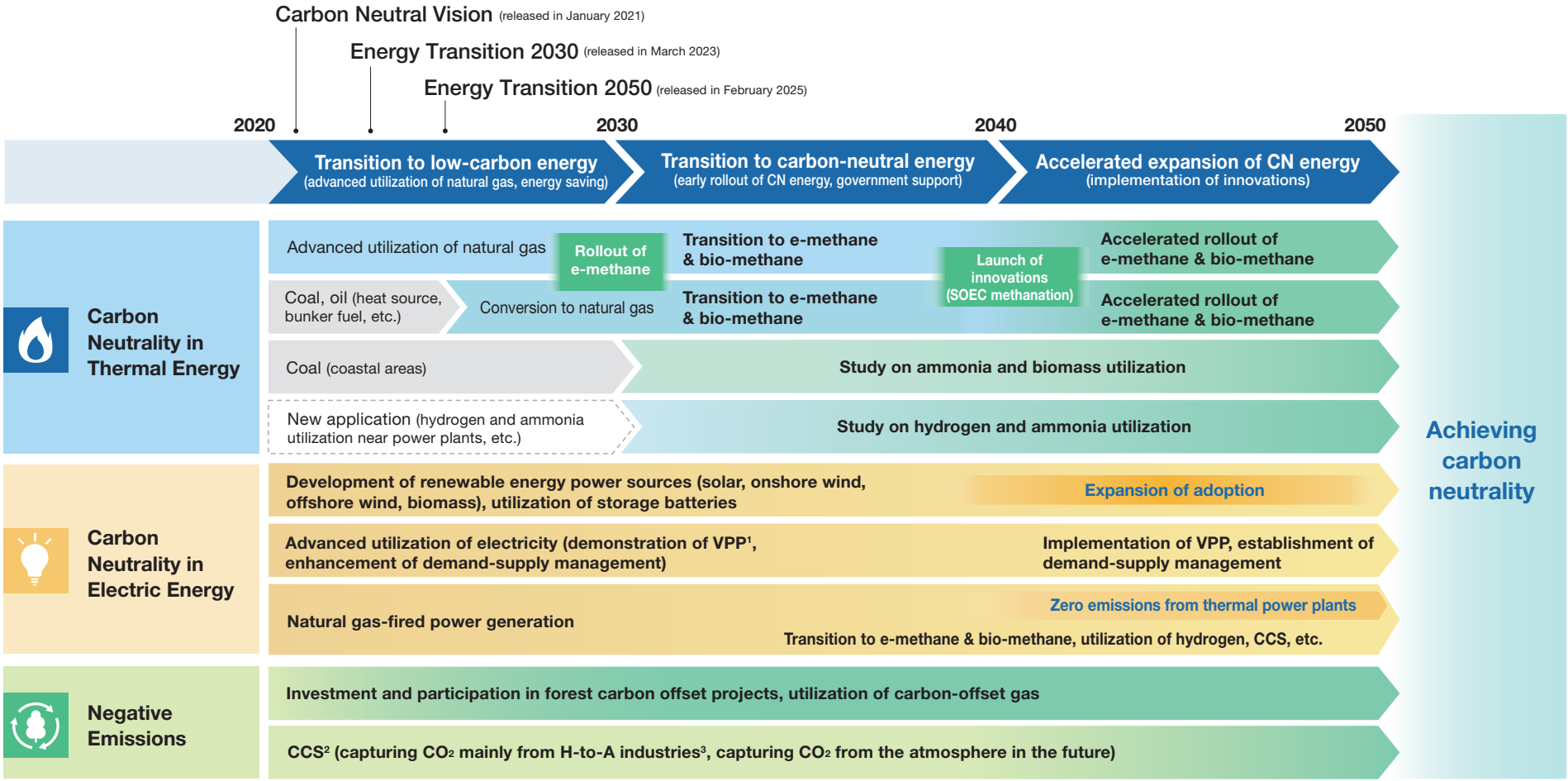
Japan's energy self-sufficiency:12.6%[2]
→Reliance on energy imports

1 S+3E: Safety, Energy Security, Economic Efficiency, and Environment
2 FY2023 Energy Supply and Demand Results (confirmed report)

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.

In line with this approach, we will drive the energy transition by reducing carbon emissions through energy savings and existing technologies until 2030, shifting to carbon neutrality with CN energy from 2030, and accelerating the growth of CN energy through innovation from 2040. Through these efforts, we will fulfill our role as a comprehensive energy company in achieving carbon neutrality with stakeholders while delivering optimal solutions in light of S+3E.



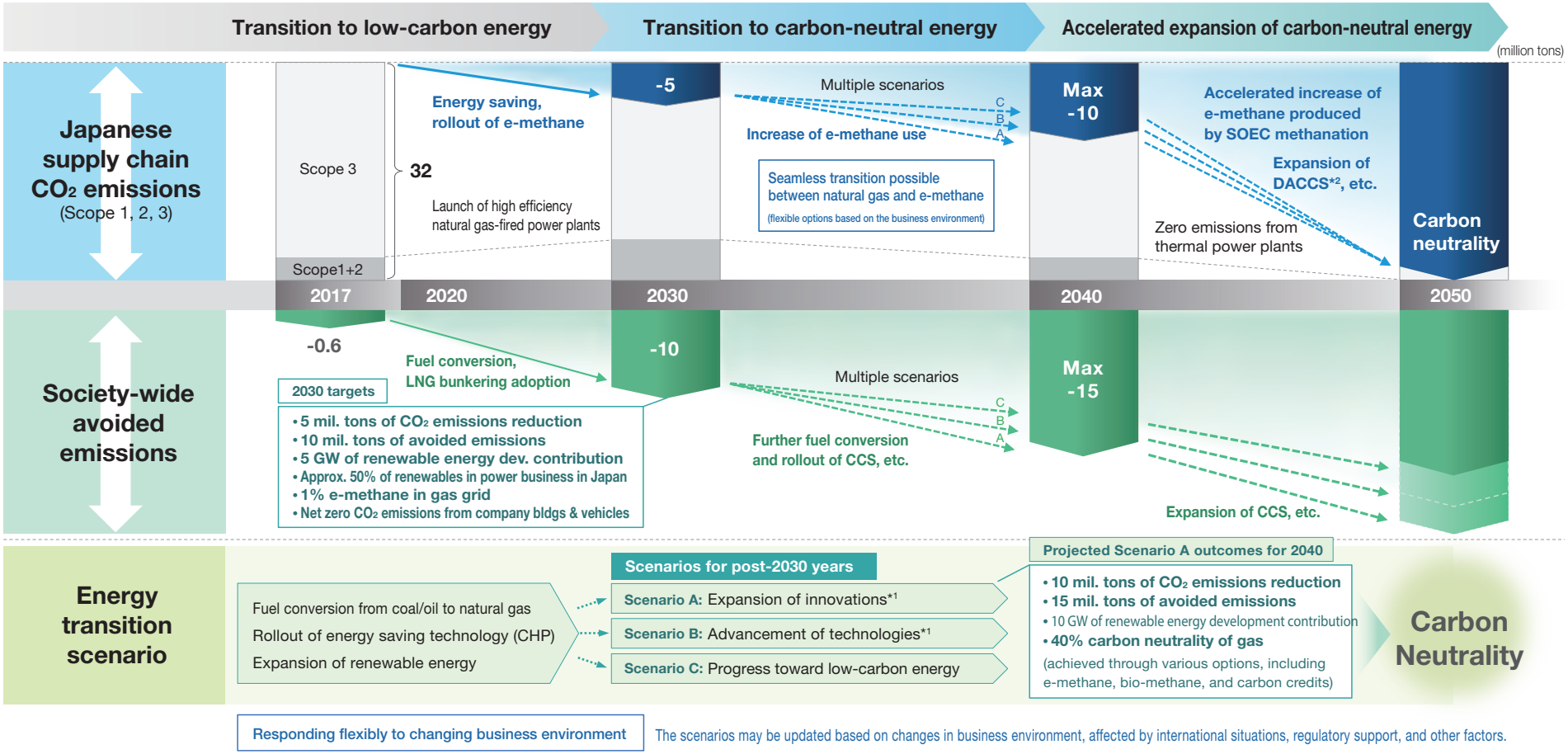
1 Virtual Power Plant: Operating as a single power generation facility by integrating and controlling distributed energy sources through an aggregator, utilizing information and communication technology.
2 Carbon dioxide Capture and Storage
3 H-to-A (Hard-to-Abate) industry: Sectors in which CO_2 emissions reduction is challenging

Roadmap to CO_2 Emissions Reduction

The Daigas Group has formulated a CO_2 reduction roadmap to achieve a CN society in 2050.

With the current emphasis on energy security, the country's energy supply and demand outlook for 2040 requires a variety of scenarios, including risk cases. Based on this, the Group had considered multiple scenarios, including the scenario assumed by the government. Below are the estimated values based on the scenario of "Expansion of innovations," which assumes the maximum progress toward carbon neutrality. This is merely one scenario, and we intend to determine its feasibility by around 2030, and to review the scenario, taking into account international situations and trends in regulatory changes.

Moving forward, our main capital investment will be aligned with the achievement of the Group's long-term GHG emissions reduction target (carbon neutrality by 2050), and we will continue investing in decarbonized assets and products, including clean energy.



*1 Energy demand and supply outlook scenarios from Japan's Seventh Strategic Energy Plan.

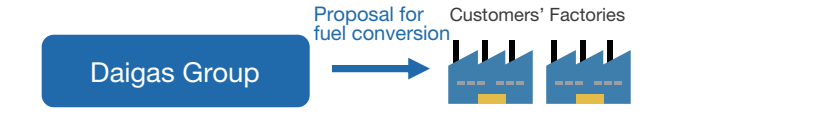
*2 Direct Air Carbon Capture and Storage: Technology that combines DAC for separating and capturing CO_2 with CCS for underground storage.

Approach to Avoided Emissions in Society

As we move toward providing carbon neutral thermal energy, one effective measure during the transition period is fuel conversion from coal and oil to natural gas, which leads to certain reduction of carbon. For example, simply switching from coal to natural gas can reduce CO_2 emissions per unit of heat by about 45%. By switching our fuel to natural gas, the Daigas Group aims to achieve significant regional low carbonization together with our customers and reduce CO_2 emissions throughout society.

Meanwhile, although society's overall CO_2 emissions will decrease significantly, this fuel conversion will increase the use of natural gas, which appears to increase CO_2 emissions throughout the Group's supply chain. This reduction in CO_2 emissions throughout society can be measured with an indicator known as "avoided emissions." It quantifies the extent to which a company's products and services have contributed to reducing CO_2 emissions for others, and the Group will actively promote it as an important indicator.

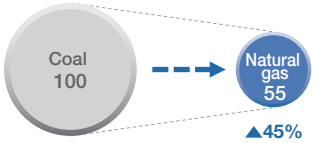
Case Fuel conversion by the Daigas Group (coal to natural gas)



- Fuel conversion substantially reduces customers' CO_2 emissions → Reducing society-wide CO_2 emissions
- Customers' consumption of natural gas supplied by the Daigas Group will lead to an increase in the Daigas Group's CO_2 emissions

Using the indicator of Avoided Emissions

CO_2 Emissions Per Same Calorific Value[2]



Avoided emissions — Reduced by 45% through conversion to natural gas

What is "Avoided Emissions"?

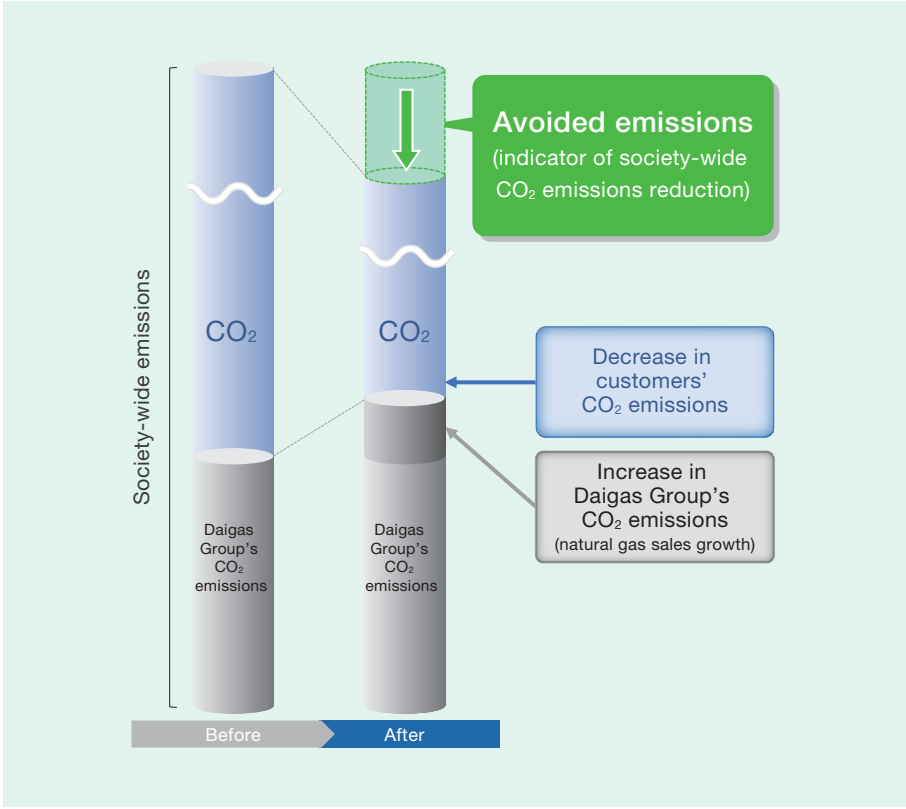
Quantified CO_2 emissions reduction through products and services provided to others

Calculated based on the "Guidelines for Quantifying GHG emission reductions of goods or services through Global Value Chain" (Ministry of Economy, Trade and Industry, March 2018)

Indicator of society-wide avoided emissions through contribution to other companies' emissions reduction

*Prepared based on the "Ordinance Concerning Calculation of GHG Emissions from Business Activities of Specified Emitters" issued by METI and the Ministry of the Environment

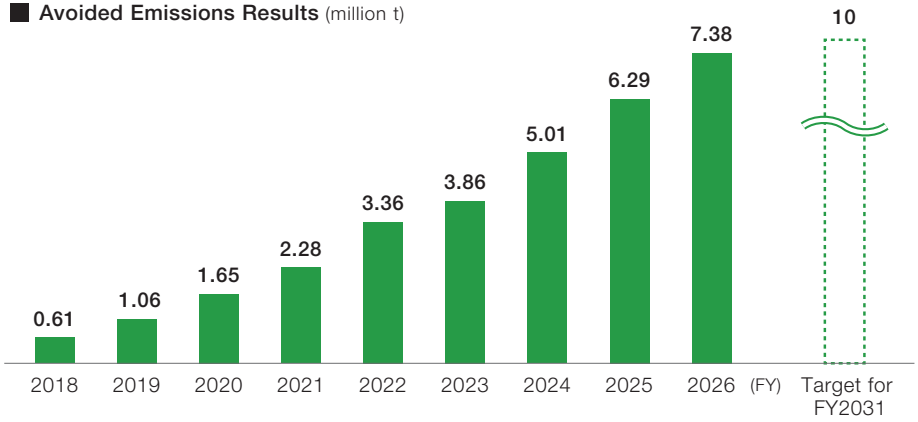
Conceptual Diagram of Avoided Emissions



Daigas Group's Avoided Emissions

The Daigas Group is working to introduce various low-carbon or decarbonized systems both domestically and internationally at our customers' sites and in our own business activities. The avoided CO_2 emission is calculated for such systems that contribute to the reduction of CO_2 emissions in society as a whole.
The Daigas Group contributed to a 7.38-million-ton CO_2 emissions reduction, as revealed by the results of calculations of the effect of reducing CO_2 emissions in FY2026 (FY2026 results) achieved by using the systems listed below that the Daigas Group has introduced since FY2018 at customer sites and in its own business activities.
The results were calculated using the stock-based approach, based on the "Guidelines for Quantifying GHG Emission Reductions of Goods or Services through Global Value Chain" (published by the Ministry of Economy, Trade and Industry in March 2018), assuming the calculation method and baseline concept shown in the table below.

■ **Avoided Emissions Results** (million t)



■ **Calculation Method**

	Low-carbon/ carbon-neutral system	Reduction effect calculation method	Baseline concept
Reduction of CO_2 emissions from business activities	Renewable energy sources Wind farm Solar power plant Biomass power plant etc.	Amount of electricity generated or procured × Average electricity emission factor of thermal power*	Substitution for thermal power generation
	High-efficiency thermal power generation High-efficiency thermal power plant	Amount of electricity generated × Difference in CO_2 emission factor between high-efficiency and existing thermal power	Comparison with emission factor of existing thermal power generation
	Cryogenic power generation facilities using cold heat generated in the manufacturing process of city gas	Amount of electricity generated × Average electricity emission factor of thermal power	Substitution for thermal power generation

	Low-carbon/ carbon-neutral system	Reduction effect calculation method	Baseline concept
Reduction of CO_2 emissions at customer sites	High-efficiency distributed system Household fuel cell system Cogeneration system	Household fuel cell system: Number of installed units × Reduction per unit Cogeneration system: Installed capacity × Reduction per unit capacity	Substitution for conventional water heaters (boilers) and purchased electricity
	Expanded and advanced use of natural gas Fuel conversion High-efficiency water heater	Fuel conversion: Amount developed × Difference in CO_2 emission factor	Emissions comparison with other fuels
	  Gas-powered air conditioning	Gas-powered air conditioning: Capacity sold × Reduction per unit capacity	Substitution for conventional air conditioners
		High-efficiency water heater: Number of installed units × Reduction per unit	Substitution for conventional water heaters
	Proposals for energy saving (Photovoltaic power generation systems/Conversion to LED lighting)	Amount of electricity generated or saved × Average electricity emission factor of thermal power*	Substitution for thermal power generation

* Calculated using the average electricity emission factor of thermal power given in the Plan for Global Warming Countermeasures (2025): 0.65 kg-CO_2/kWh (FY2014)

Efforts to achieve net zero emissions regarding the Group's CO_2 emissions (environmental impact throughout the Daigas Group value chain)

The Daigas Group calculated the amount of greenhouse gas (GHG) emissions from companies that constitute the Daigas Group's value chain network, based on the operational control approach of the GHG Protocol, an international emission accounting standard.

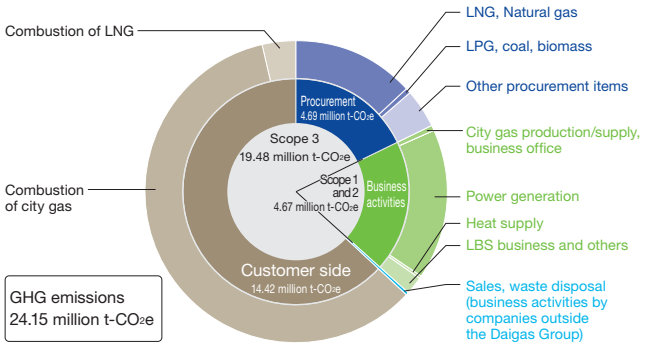
Combined GHG emissions by the Daigas Group and value chain companies, measured by CO_2, totaled about 24.15 million tons of CO_2e in FY2026. The sum breaks down into about 4.67 million tons of CO_2e, or about 19%, for GHG emitted through business activities by the Daigas Group (Scope 1 and Scope 2), and about 19.48 million tons of CO_2e, or about 81%, emitted by others in our value chain (Scope 3). GHG emissions from city gas and LNG combustion on the customer side amounted to 14.42 million tons of CO_2e in the reporting year in terms of CO_2, accounting for about 60% of the total. GHG emissions through electricity generation, as measured in terms of CO_2 in the year, amounted to 4.00 million tons of CO_2e, accounting for about 17% of the total emissions, which represented the majority of GHG emissions from the Group's own business activities. As a way of reducing GHG emissions from power generation, the Group will continue to actively introduce highly advanced energy-efficient power generation facilities and use renewable energy sources.

GHG emissions from material and fuel procurement totaled 4.95 million tons, as measured in terms of CO_2 in the year, accounting for about 20% of the total emissions. The procurement of energy sources, especially LNG, accounted for over 70% of that amount. Under these circumstances, we will continue our efforts to improve fuel efficiency regarding the operation of LNG tankers in collaboration with resource suppliers.

* CO_2 emissions in the domestic supply chain (Scope 1, 2 and 3) amounted to 23.32 million tons.

GHG Emissions from the Value Chain (FY2026 results)

Please see P.37 for detailed data.



Companies subject to the calculation:

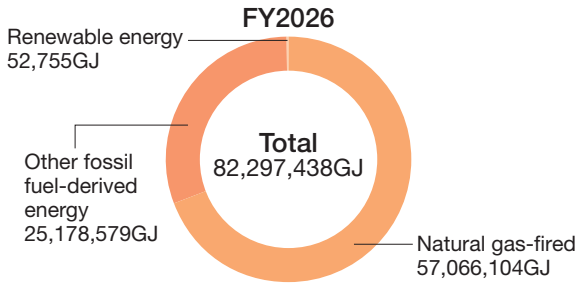
For environmental performance data, 71 companies in total, including Osaka Gas Co.,Ltd. and 70 companies among 154 consolidated subsidiaries are subject to calculation. Those housed in office buildings as tenants and whose environmental data are difficult to grasp and whose environmental effects are minimal, as well as overseas companies, are not subject to such calculation. For energy consumption and GHG emissions, 2 overseas subsidiaries are additionally included, bringing the total to 73 companies.

Reducing CO_2 Emissions from the Group's Own Business Activities—Improving Energy Consumption Management and Operational Efficiency

Within the framework of the Energy Efficiency Act, the Group has energy-saving goals and action plans for each company covered by the Act and regularly monitors energy flows that are important to overall energy efficiency. Each company reviews its energy consumption every year and evaluates progress toward its energy goals and action plans. Initiatives to reduce energy consumption include providing energy management training to employees and suppliers and promoting the adoption of cutting-edge energy management technologies and energy-saving systems.

The Group is also working to reduce CO_2 emissions within the Group with measures such as net-zero CO_2 emissions from our offices and company vehicles and adopting cryogenic power generation at our LNG terminals. In the Materials Business, in FY2025 we installed power generation equipment that utilizes waste heat at our activated carbon factory in India, and in FY2026 we horizontally deployed the initiative and began examining the installation of a carbonization furnace and power generation equipment that uses its waste heat at other factories in India.

Energy Consumption by Energy Source



Reduction of CO_2 Emissions from the Group's Own Business Activities—Initiatives to Achieve Net-zero CO_2 Emissions from Offices and Company Vehicles

The Daigas Group is aiming to achieve net-zero CO_2 emissions* from its offices and company vehicles. We are currently working toward our FY2027 target of achieving a 67% reduction in CO_2 emissions compared to FY2018.

At the Group's offices, we are working to offset CO_2 emissions associated with our energy consumption through the use of non-fossil certificates (electricity) and carbon-offset city gas. At the same time, we are promoting the switch of company vehicles to EVs at all the Group's sites. As a result of these initiatives, in FY2026 we reduced CO_2 emissions from our offices and company vehicles by 57%.

* For Osaka Gas and its three core energy business companies (Osaka Gas Marketing Co., Ltd.; Daigas Energy Co., Ltd.; Daigas Gas and Power Solution Co., Ltd.), as well as Osaka Gas Network Co., Ltd.

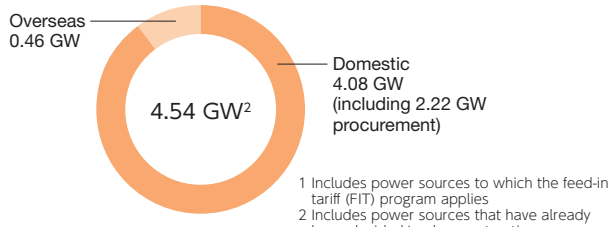
Reduction of CO_2 Emissions from the Group's Own Business Activities—Facilitating the Development of Renewable Energy Sources

The Daigas Group aims to raise by FY2031 the percentage of renewables in its power portfolio in Japan to about 50% and renewables development contribution on a global basis to 5 GW. To achieve these targets, it is engaged in renewable energy businesses such as wind, solar, and biomass.

In FY2026, the percentage of renewables in our power portfolio was 38%, and renewable power development contribution was 4.54 GW, ensuring the early achievement of the targets within the Medium-Term Management Plan 2026.

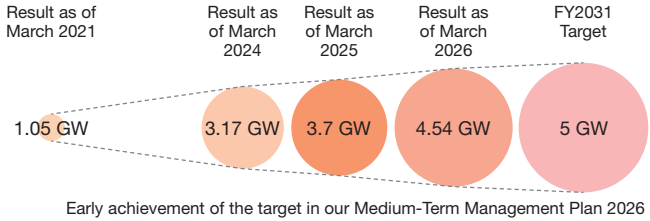
With the start of operations at the Sodegaura Biomass Power Plant and the Wakayama Gobo Biomass Power Plant in FY2026, all eight of the biomass-fired power plants in which the Daigas Group has decided to invest have begun operations. Moreover, in January 2026 we began operations at the Goto Offshore Wind Farm, Japan's first floating offshore wind farm. To promote the local production and local consumption of energy, we will prioritize supply of the electricity produced at the offshore wind farm to local retail electricity providers. In July 2024, we joined Floating Offshore Wind Technology Research Association "FLOWRA," a group of power generation companies working on technology development to achieve large-scale commercialization of floating offshore wind power generation. Furthermore, in November 2024, we joined the "24/7 Carbon-free Energy Compact," an international initiative aiming to popularize carbon-free electricity supply at all times, and will continue to contribute to further popularization in the future.

■ **Contribution to Developing Renewables Capacity on a Global Basis[1] (FY2026)**



1 Includes power sources to which the feed-in tariff (FIT) program applies
2 Includes power sources that have already been decided/under construction

■ **Contribution to Developing Renewables Capacity on a Global Basis: Targets and Results**



Early achievement of the target in our Medium-Term Management Plan 2026

CO_2 Reduction Initiatives at Customers and in the Value Chain

The Daigas Group believes that it is important to reduce not only GHG emissions from its own business activities but also CO_2 emissions at customers' sites. We are seeking to assist customers in reducing their CO_2 emissions by popularizing the use of natural gas and developing and proposing highly energy-efficient equipment. We are also cooperating with our business partners and affiliated companies to reduce CO_2 emissions from logistics.

Efforts to reduce CO_2 emissions in LNG transportation

Heavy fuel oil is mainly used for marine fuel, and the International Maritime Organization (IMO) has set a goal of zero GHG emissions by around 2050. In April 2025, Osaka Gas became the first city gas company to start a Shore-to-Ship[1] LNG fuel supply business for ships, aiming to reduce the carbon footprint of marine fuel. Moreover, in April 2026, we began a Ship-to-Ship[2] LNG fuel supply business for ships in the Osaka Bay and Setouchi area. We have been supplying LNG fuel to ships using the Truck-to-Ship method[3] since 2019, and with the start of the Ship-to-Ship supply business, we are now able to supply LNG fuel using all three major methods, which enables us to contribute to the stable and flexible supply of LNG fuel. In the future, we aim for the smooth transition to decarbonization of marine fuel by replacing LNG supplied as marine fuel with e-methane.

1 A method in which LNG is supplied from an onshore LNG terminal to LNG-fueled ships moored at a quay or pier.
2 A method in which a bunkering vessel comes alongside an LNG-fueled ship moored at a quay or anchored at an anchorage to supply LNG.
3 A method in which LNG is supplied to an LNG-fueled ship moored at a quay from an LNG tanker truck parked at the pier.

■ LNG bunkering methods

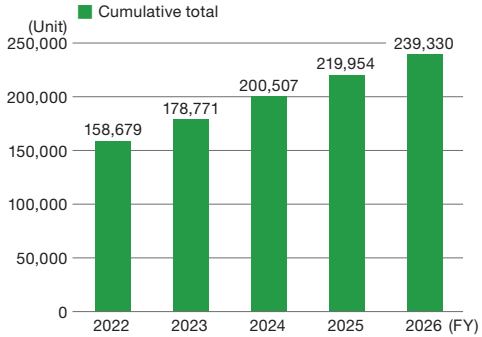
Approaches at customer sites to reduce CO_2 emissions through the introduction of high-efficiency decentralized system

To help realize a low-carbon society, Osaka Gas is striving to sell and disseminate "ENE-FARM" as a co-generation system for household use that helps conserve energy and reduce CO_2 emissions, which generates electricity through chemical reactions between the hydrogen extracted from city gas and oxygen in the air. "ENE-FARM" is a high-efficiency energy system that makes effective use of the heat generated alongside electricity to supply hot water.

In addition to attaining the highest power generation efficiency in the world[1] of 55%[2], the main unit of "ENE-FARM type S," which was launched in April 2020, is significantly more durable and compact than previous models. Moreover, the model is equipped with an electric water-heating mode, which allows customers to use hot water heated by a built-in electric heater even when the supply of gas is interrupted, to significantly improve convenience. In addition, with our IoT connection services, we have developed and are operating the "ENE-FARM Failure Sign Monitoring System" to monitor for signs of failure in a timely manner using ENE-FARM operating data.

Furthermore, we offer various enhanced services, which have been chosen by many customers, including the surplus power purchase service "E-Share," designed to improve ENE-FARM's environmental friendliness and economic efficiency even more.

■ Cumulative Sales Total of the Fuel Cell Systems



1 Household fuel cell system whose rated output is 1 kW or less in Lower Heating Value (LHV). (based on a survey conducted by Osaka Gas as of December 2025).
2 Power generation efficiency when rated power generation is continued for at least three hours (e.g. under the surplus electricity purchase system). In the cases other than the above, the rated power generation efficiency is 54% (overall efficiency: 87%) in Lower Heating Value (LHV).

Use of low-carbon energy to decarbonize cement manufacturing

Osaka Gas, its wholly owned subsidiary Daigas Energy Co., Ltd., Mitsubishi UBE Cement Corporation ("MUCC"), and Saibu Gas Co., Ltd. have successfully completed a demonstration test involving the use of natural gas as a heat source to co-fire cement calcination kilns in MUCC's Kyushu Plant Kurosaki District. One effective way for low carbonization in the cement manufacturing process is to reduce the amount of CO_2 emitted from coal and other heat sources used in cement calcination kilns. This demonstration test used a newly developed natural gas co-firing burner to replace 40% of the coal used with natural gas at a commercial scale. This is the first time in Japan* that natural gas has been used in a cement calcination kiln during commercial operation. The results of the demonstration test have also increased the potential for e-methane to be used in cement calcination kilns.

We will examine an early transition to natural gas, which is a low-carbon energy source, and then aim to transition from natural gas to e-methane. In turn, we will contribute to the carbon-neutral manufacturing of cement, which is a fundamental material for the development of social infrastructure.

* As of August 2025. Based on a survey conducted by MUCC.

A business aiming to achieve local production for local consumption of biomass fuel and a stable supply system using fast-growing trees

In March 2019, Osaka Gas established Green Power Fuel Corporation (hereinafter, "GPF"), a joint venture company that procures and sells domestically grown woody biomass for biomass power plants, in cooperation with Seishin Shinrin Shigen Co., Ltd. and Nippon Paper Lumber Co., Ltd.

In cooperation with Seishin Shinrin Shigen, which has abundant knowledge about forestry, and Nippon Paper Lumber, which has a long track record in dealing in domestically grown woody biomass, GPF procures and transports unused wood from woodlands in Japan as power generation fuel to ensure stable, long-term biomass supply for several biomass power plants, such as Hirohata Biomass Power Plant and Hyuga Biomass Power Plant owned by the Group.

Furthermore, in December 2021, we signed a cooperation agreement with Shiso City, Hyogo Prefecture, regarding the utilization of fast growing trees for fuel applications, with the aim of local production and local consumption of biomass fuel and sustainable growth of Japan's forestry. We also signed a comprehensive agreement with Himeji City, Hyogo Prefecture in March 2025 regarding efforts to decarbonize through the use of wood resources for energy.

Both agreements focus on "fast growing trees[1]," which are expected to have shorter growth and logging cycles than those of general tree species, from the perspective of further increasing its biomass procurement volume and ensuring procurement stability. We will work to build a stable biomass fuel supply system and develop a sustainable business model for forestry in Japan through the utilization of fast growing trees, and will use the results to realize the independent operation[2] of biomass power plants after the purchase period under the FIT scheme expires.

1 A general term for trees that grow faster than the commonly planted tree species. Some representative species include Chinaberry and Chinese Fir.

2 Under the feed-in tariff (FIT) scheme, renewable electricity is purchased at fixed prices for 20 years at maximum. After this period, the generated electricity must be sold at market prices. For this reason, GPF aims to substantially reduce mainly transportation costs by using domestically produced fuels, thereby realizing sustainable fuel costs.

Building a system to evaluate carbon credit quality using generative AI

The Daigas Group is working to realize a carbon-neutral society with a wide range of initiatives, including expanding the use of renewable energy, improving energy efficiency, and introducing new technologies. We also believe that contributing to stakeholders' decarbonization efforts with carbon credits tailored to customer needs is an important initiative.

Carbon credits are gaining attention both in Japan and abroad as a means to offset carbon dioxide emissions that cannot be fully reduced through renewable energy use and energy-saving efforts. Osaka Gas promotes the acquisition and utilization of carbon credits through investments in domestic and international projects.

In March 2025, we became the first in the world to offer a web service that evaluates the quality of carbon credits using generative AI, which is called "GreenChecker." Using an AI system developed in-house, the service assesses the consistency between carbon credit creation project plans and multiple predefined standards, ensuring quick quality checks of carbon credits. Moreover, we expanded the service's functions in January 2026 to enable assessment of J-Credits and JCM*. As a result, we have established a framework to check consistency with international systems and evaluate risks, enabling users to make decisions on whether to use carbon credits based on more trustworthy information. In the future, through collaboration with our partner companies, we will work to expand the fields in which the service can be used and build a carbon credit transaction platform, thereby contribute to the achievement of carbon neutrality.

* JCM: Joint Crediting Mechanism

Contributing to the promotion and expansion of credits generated from paddy fields under the JCM

In October 2025, we formulated the Paddy Field JCM Consortium alongside seven other companies to promote and expand credits generated from paddy fields under the Joint Crediting Mechanism ("JCM"). The Consortium is analyzing the impacts of rice yields and weather conditions on the implementation of Alternate Wetting and Drying ("AWD") techniques through projects promoted by each company using AWD techniques in the Philippines. The aim is to contribute to the promotion and expansion of JCM in the agriculture sector with partner countries*. We will provide all procured credits through carbon-offset city gas, etc., and will promote initiatives to expand the scale to 100,000 t-CO_2/year over the medium to long term.

Moreover, in February 2026, we were selected for a subsidy program relating to the creation of JCM credits in the Philippines and Vietnam. As part of the project, between March 2026 and March 2027, we will conduct surveys on the impact on biodiversity in the paddy fields that have adopted AWD techniques in the Philippines and Vietnam, through the use of environmental DNA, and will examine the feasibility of a business model in which AWD both reduces methane emissions and protects biodiversity. In anticipation of the expansion of the JCM market, Osaka Gas is participating in a methane emissions reduction project using AWD in the Philippines. By creating credits that visualize biodiversity conditions and providing expertise to host countries, we aim to enhance the likelihood of adoption of proposals from Japan.

* Countries that jointly promote projects to reduce GHG emissions based on bilateral agreements with Japan and then share the emission reduction effects under the Paris Agreement between both parties

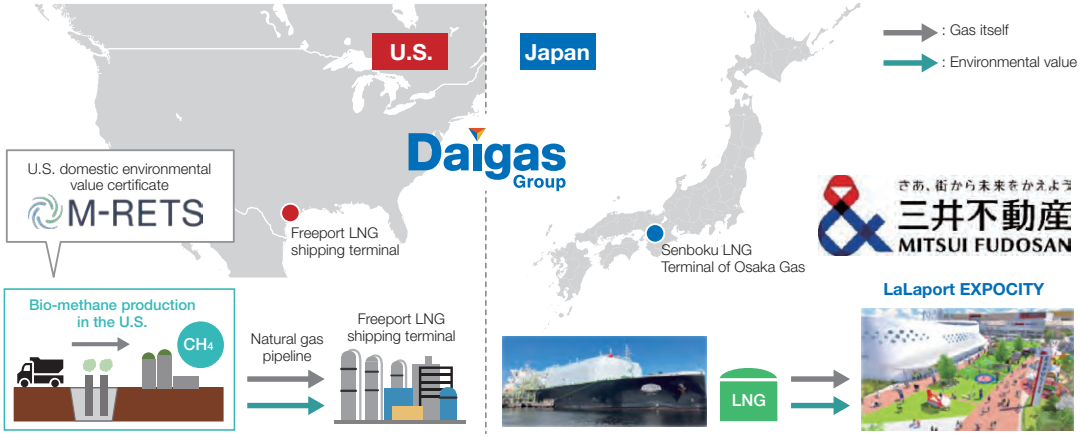
Initiatives for bio-methane use

In November 2025, a subsidiary[1] of Osaka Gas USA Corporation (itself a wholly owned subsidiary of Osaka Gas) entered into an agreement for the procurement of bio-methane produced by Archaea Energy in the U.S. Bio-methane is a gas refined from biogas[2] (by removing CO_2 and other impurities) that has a methane concentration comparable to natural gas. As it is considered not to emit additional CO_2 when combusted, it is attracting attention as a means to decarbonize city gas fuel.

In March 2026, Osaka Gas and Daigas Energy Co., Ltd. reached an agreement to supply carbon-offset gas with environmental value certificates[2] for this U.S.-produced bio-methane to Mitsui Shopping Park LaLaport EXPOCITY. This is the first time[3] that bio-methane produced overseas has been used at a commercial facility in Japan.

Moving forward, we will continue promoting the use of bio-methane and the creation of a domestic and international supply chain.

■ Project overview



1 Osaka Gas Trading and Export LLC (wholly owned subsidiary of Osaka Gas USA)
2 Currently, environmental value from e-methane and bio-methane produced overseas is not permitted for use in Japan's Greenhouse Gas Emissions Accounting, Reporting, and Disclosure System (SHK system), and discussions are underway on calculation rules by government councils and other organizations. For this initiative, we plan to use environmental value generated through the Midwest Renewable Energy Tracking System (M-RETS), a system for the certification and tracking of environmental value operated in North America.
3 As of March 2026

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 (Live Oak Project) in the U.S.

As part of this project, in the U.S. state of Nebraska we will manufacture e-methane using green hydrogen* generated through renewable energy and biomass-derived CO_2 collected from bioethanol plants as raw materials.

We will aim for importing e-methane into Japan, in view of the final investment decision in FY2028, e-methane production set to start in FY2031 (production capacity: approximately 75,000 tons/year), and the achievement of the goal of injecting 1% carbon-neutral gas into the gas grid by 2030.

* Hydrogen obtained from water electrolysis using renewable energy (no CO_2 is emitted during the manufacturing process)

Osaka Gas Urban Development Co., Ltd. completed construction of its first logistics facility “MFLP･OGUD Osaka-Torishima” —environmentally friendly facility, including ZEB certification—

Osaka Gas Urban Development Co., Ltd. completed construction of “MFLP･OGUD Osaka-Torishima” (Konohana-ku, Osaka), a joint project with Mitsui Fudosan Co., Ltd., in February 2024. “MFLP･OGUD Osaka-Torishima” is the first logistics facility project by Osaka Gas Urban Development, with solar panels installed on its rooftop that generate approximately 650,000 kWh of electricity through a corporate PPA project[1] with Daigas Energy Co., Ltd. In addition, it supports carbon neutrality, including provision of LED lighting for indoor lighting in common and private areas and RE100-compliant green power to meet customer needs.

These environmentally friendly efforts were highly regarded, and it received the A rank of the CASBEE Osaka Mirai (Comprehensive Assessment System for Built Environment Efficiency in Osaka City) and the highest rank of ZEB certification.

DBJ Green Building Certification[2] was also obtained.

1 Corporate PPA project
Long-term contracts for the purchase of renewable energy power between companies as consumers of electricity and power producers.

2 DBJ Green Building Certification
A certification system for real estate that takes environmental and social considerations into account.
Real estate sustainability is certified on a five-star scale from ★ to ★★★★★ based on a comprehensive assessment of five criteria, including the building’s environmental performance and consideration for the surrounding environment and community.

Osaka Gas Urban Development Co., Ltd. has adopted ZEH-M Oriented as standard features of its condominium

Osaka Gas Urban Development Co., Ltd. obtained ZEH developer certification in April 2022, and has since adopted ZEH-M Oriented as standard features for its new condominium brand “Scenes.” For Scenes, efforts have been made to obtain Comprehensive Assessment System for Built Environment Efficiency (CASBEE) rank A certified, and certification as a low-carbon building (a building that contributes to the reduction of carbon dioxide emissions). In addition, the company is actively adopting energy-saving equipment such as household fuel cell system ENE-FARM, low-E double glazing, heated bathtubs, water-saving toilets, and LED lighting. Eight new condominiums have been offered with ZEH-M as standard features by FY2026 (Ready: 3 and Oriented: 5).

Rental apartment series “Urbanex” of Osaka Gas Urban Development Co., Ltd. obtained certification for ZEH-M Oriented certification

Osaka Gas Urban Development Co., Ltd. develops urban-type rental apartment series “Urbanex.” Urbanex Tanimachi 4-Chome, Urbanex Temmabashi South, and Urbanex Tsukaguchi obtained ZEH-M Oriented certification[1].

In addition to obtaining ZEH-M Oriented certifications for its rented apartments, the company also works to introduce renewable energy through Style Plan E-ZERO[2], and to obtain environmental certifications, such as CASBEE for Real Estate[3] and DBJ Green Building Certification.

■ Rented apartments with ZEH-M Oriented certification and renewable energy

Name	Urbanex Tanimachi 4-Chome	Urbanex Temmabashi South	Urbanex Tsukaguchi
Exterior view			
Outline	Completed in May 2026 Total number of units: 106	Completed in 2025 Total number of units: 42	Completed in 2025 Total number of units: 40

1 ZEH-M Oriented certification
ZEH is an abbreviation for “net Zero Energy House.” ZEH-M Oriented certification is obtained by reducing annual primary energy consumption by 20% or higher by achieving substantial energy conservation while maintaining the indoor environment through measures such as improving insulation performance and introducing efficient equipment, etc. in ZEH-M, the housing complex version.

2 Style Plan E-ZERO
Electricity price menu offered by Osaka Gas, with zero CO_2 emissions and consisting of 100% renewable energy.

3 CASBEE for Real Estate
CASBEE evaluates and rates the building’s environmental performance. It is a system that comprehensively assesses the building’s environmental performance including indoor comfort and consideration for the landscape, in addition to aspects of reducing environmental impact such as energy conservation, resource conservation, and recycling performance. CASBEE for Real Estate was developed to utilize the environmental assessment results of buildings in CASBEE for real estate assessment. The assessment is conducted on existing buildings that have been completed for at least one year, and buildings are scored in five categories of energy/greenhouse gases, water, resource use/safety, biodiversity/site, and indoor environment, and rated on four levels: “rank S★★★★★,” “rank A★★★★,” “rank B+★★★,” and “rank B★★.”

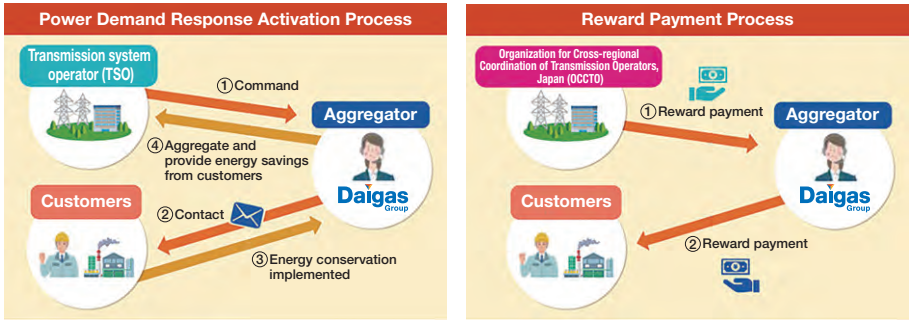
Initiatives to Reduce Future Energy Consumption

The Daigas Group has been offering “D-Response,” a demand-response service that allows customers to control their power load equipment and private power generation equipment (load equipment and the like), as an aggregator in the capacity market* operated by the Organization for Cross-regional Coordination of Transmission Operators, Japan (OCCTO). This service enables customers to receive rewards by reducing their electricity demand. As of the end of FY2026, this service has been implemented at approximately 256 locations, and we aim for further promotion and expansion moving forward.

* In the capacity market, future supply capacity (kW) is traded, rather than electricity volume (kWh).

■ D-Response

When power supply is tight, demand response is activated at the discretion of the transmission system operator.



Start of a Joint Demonstration Project on Demand Response through Automated Control of EV Charging

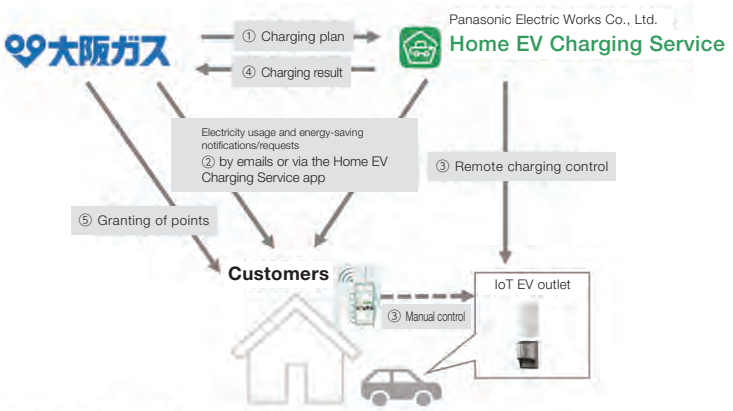
Aiming to stabilize electricity supply and demand and achieve a carbon-neutral society, Osaka Gas has collaborated with Panasonic Electric Works Co., Ltd. (“Panasonic”) to begin a joint field test on demand response (DR) for EV charging (“the field test”).

Through the field test, between June and December 2026, we will remotely control EV charging at 50 detached homes in the Kansai area by combining our DR Option with Panasonic’s Home EV Charging Service app and IoT EV outlets*. After the control is implemented, we will examine the potential to develop the power supply-demand balancing capabilities through the control by multiplying our charging data by electricity market prices. We will also look at participants’ convenience and acceptability of the initiative.

Through the field test, we aim to create a society in which we can flexibly adjust and control electricity demand, which is expected to grow in line with the spread of EVs, without increasing the burden on customers.

* The combination of Panasonic’s 200 V EV outlet and a separate IoT control module is referred to as an IoT EV outlet.

■ Conceptual image of the demonstration project



① Osaka Gas creates charging plans and shares them with Panasonic.
② Electricity usage (energy-saving) requests are sent to customers via email from Osaka Gas or Panasonic’s Home EV Charging Service app.
③ Charging is remotely controlled via Panasonic’s IoT EV outlet (customers perform manual control for a certain period).
④ Osaka Gas calculates demand-response volume and financial benefit of control by multiplying charging data by electricity market prices.
⑤ Osaka Gas grants customers points.

Initiatives for Carbon Dioxide Capture, Utilization, and Storage (CCUS·DAC)

Osaka Gas is cooperating with partners to explore and collaborate on carbon dioxide capture and utilization (CCU) and carbon dioxide capture and storage (CCS), applying the expertise of both companies.

In May 2023, Osaka Gas started conceptual design and economic feasibility studies in collaboration with Mitsui Chemicals, Inc., applying our expertise in e-methane and CO_2 storage. Our goal is to separate and capture CO_2 from exhaust gas emitted from the manufacturing plants and utility facilities of Mitsui Chemicals, Inc.'s Osaka Works, with the aim of utilizing CO_2 (CCU) both domestically and internationally and storing it underground (CCS). Furthermore, also in May 2023, we signed a joint study agreement with Shell Singapore Pte. Ltd. ("Shell") to combine our knowledge of CO_2 emissions from factories with Shell's global network and expertise relating to CO_2 liquefaction and transportation and CCS to conduct a feasibility study of a CCS value chain that envisions collecting and liquefying captured CO_2, transporting it by ship to a storage site in the Asia-Pacific region, and injecting and storing it underground.

Starting in March 2024, we have been working with Mitsubishi UBE Cement Corporation, drawing on our knowledge of e-methane and CO_2 storage, to design a CCUS value chain and assess its economic feasibility, consisting of CCS, including capturing CO_2 derived from thermal energy emitted from cement calcination kilns and cement raw materials at Mitsubishi UBE Cement Corporation's Kyushu Plant and injecting and storing it underground, as well as reusing it using e-methane.

Furthermore, by combining Mitsubishi Heavy Industries, Ltd. and Osaka Gas's expertise in e-methane and CO_2 storage with Mitsubishi Heavy Industries, Ltd.'s expertise in CO_2 capture, liquefied CO_2 transportation, and CO_2 management (CO_2NNEX®*), we are conducting a business feasibility assessment of CCUS, consisting of CCS, including CO_2 capture measures, CO_2 transportation by ship, and underground storage, as well as reusing it as e-methane.

In addition, we are using our core materials technology to move forward with initiatives for direct air capture (DAC) technology. Working with the Georgia Institute of Technology in the U.S., which takes a lead in DAC research, we are proceeding with the development of fiber-shaped adsorbents. These high-performance CO_2 adsorbents can use abundant low-temperature heat sources such as solar and waste heat. Our aim is to develop a world-class energy-saving DAC system.

Through these initiatives, we aim to build a CO_2 value chain and promote the expansion of carbon recycled fuel applications.

* CO_2NNEX is a registered trademark of Mitsubishi Heavy Industries, Ltd.

Support and Participation in Climate Change Prevention

Participated in the “Keidanren Carbon Neutrality Action Plan” (formerly titled “Commitment to a Low Carbon Society”)

Recognizing that global warming is a global long-term issue to be solved, the Japan Business Federation (Keidanren) formulated a plan titled “Keidanren’s Commitment to a Low Carbon Society” in 2013 (revised in 2017), presenting a vision common to the Japanese industries of leveraging their technological prowess to play a central role in achieving the target of reducing global GHG emissions by half by 2050. This plan envisions that each member industry should work to reduce CO_2 emissions from business activities and people’s lives in Japan by introducing the best available technologies (BAT) to the maximum and that aspiring initiatives to stop global warming should be actively encouraged abroad. The plan also sets targets for strategically developing innovative technologies that will help achieve a breakthrough for the reduction of CO_2 emissions by half by 2050.

Among the industrial organizations participating in this plan, the Japan Gas Association and the Electric Power Council for a Low Carbon Society have established their own action plans to achieve a low-carbon society in the city gas industry and the electricity industry, respectively. Osaka Gas, a member of both organizations, participates in those plans for both industries, cooperates in annual surveys of progress in reducing CO_2 emissions and energy-saving measures, and promotes initiatives to address global warming (climate change).

In June 2021, this plan was renewed as the “Keidanren Carbon Neutrality Action Plan.” From now on, we will formulate a plan to achieve carbon neutrality by 2050 and promote initiatives to serve that purpose.

Participation in the “GX Future League”

Osaka Gas has joined the GX Future League, a framework for companies who are committed to creating GX demand and achieving emissions reductions throughout their supply chains.

We have also joined a working group within the League, in which we are exploring ways to build momentum for GX demand creation and further improve evaluations of companies contributing to GX demand creation.

Support for the “GX Acceleration Declaration”

In December 2024, Osaka Gas issued a declaration of intent regarding corporate procurement and initiatives for GX products[1], titled the “GX Acceleration Declaration”[2].

As early implementation in society of GX products is crucial to accelerating green transformation throughout society, the Company will promote GX throughout our supply chain by actively contributing to the social implementation of GX products through the evaluation of the GX value of our products and services, in addition to our Scope 1 and 2 reduction efforts.

1 Products that significantly reduce emissions during the manufacturing process or contribute to reducing the emissions of others.
2 A framework established in December 2024 following the discussion within the GX League, a consortium in which a group of internationally competitive companies that boldly take on the challenge of transitioning to carbon neutrality will drive GX.

Together with Kobe City, Osaka Gas was selected as a “Decarbonization Leading Area” by the Ministry of the Environment

Osaka Gas supports regional decarbonization policies promoted by the government and is working with local governments and other stakeholders to advance decarbonization initiatives tailored to the region’s characteristics.

In 2024, together with Kobe City and five other companies, we applied and were selected as part of the Ministry of the Environment’s “Decarbonization Leading Areas*(fifth round)” program with our plan aimed at evolving the post-earthquake reconstruction project, the “Kobe Biomedical Innovation Cluster,” into a decarbonized city that protects lives on the occasion of 30 years since the Great Hanshin-Awaji Earthquake. To promote this project, we concluded a partnership agreement with Kobe City for mutual partnership and cooperation.

The Company will promote urban development of decarbonized communities by providing a variety of solutions, including support for the introduction of renewable energy and energy-saving equipment and renewable energy supply.

* “Decarbonization Leading Areas” are regions that aim to achieve net-zero CO_2 emissions from electricity consumption in households and business sectors by 2030 and also make efforts to achieve reductions in other greenhouse gas emissions by utilizing local characteristics.

Signing ceremony for the partnership agreement with Kobe City

From left: Shinichi Ueda, Senior Executive Officer of Osaka Gas; Masao Imanishi, Deputy Mayor of Kobe City

Participating in the creation of guidelines for avoided greenhouse gas emissions

Osaka Gas participated in the formulation of “Guidelines for Calculating and Disclosing Avoided Organizational Greenhouse Gas Emissions,” published by the avoided environmental emission assessment study group of the Institute of Life Cycle Assessment, Japan in December 2024, as a member of the study group. These guidelines were made to enable organizations to understand the scale of their contribution to society by calculating their avoided emissions, and to use the results in organizational management and decision-making toward future decarbonization, as well as to communicate with society through disclosure. Osaka Gas was also involved in the production of the “Guidelines for Calculating Avoided Greenhouse Gas Emissions in the City Gas Industry,” published by the Japan Gas Association in March 2024. The project contributed to encouraging city gas business operators to quantify the amount of avoided emissions by their own businesses and services both at home and abroad, to appropriately communicate this information to stakeholders, and to utilize the results in management indicators.